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Diablo Canyon Power Plant

Receiving Water Monitoring Program: 1995–1998 Progress Report

June 25, 1999

Prepared for:
Pacific Gas and Electric Company
77 Beale Street
San Francisco, CA 94105

Document No. E9-025.2

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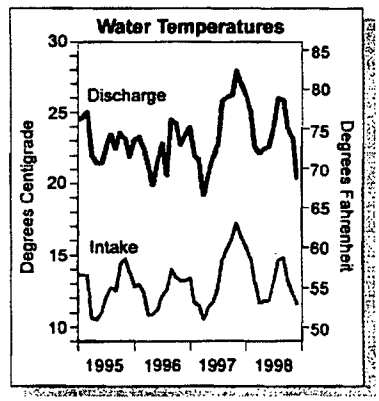
SUMMARY

Physical and biological characteristics of the Pacific Gas & Electric Company Diablo Canyon Power Plant (DCPP) discharge receiving waters were monitored from July 1995 through December 1998 under Monitoring and Reporting Program 90-09 revised by the Central Coast Regional Water Quality Control Board in February 1995. In this report we describe new or continuing effects of the DCPP discharge on nearshore marine communities. New or continuing effects of the discharge are identified by comparing changes detected in the operation period from 1987 through June 1995 (OpPeriod-1) that were presented in the TEMP Analysis Report to changes detected during the recent operation period from July 1995 through 1998 (OpPeriod-2).

Water Temperatures and Dissolved Oxygen

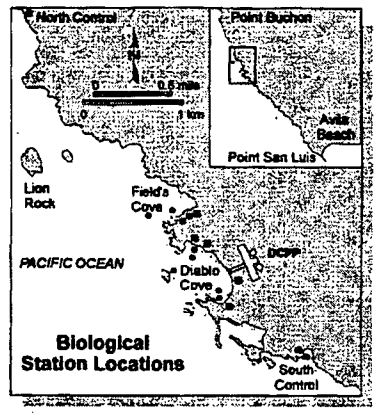
As part of the Receiving Water Monitoring Program (RWMP) we collected data on ambient seawater temperatures from 1995 through 1998 to describe natural variability. Seawater temperatures in 1995 and 1996 were relatively normal, with cool upwelling periods in spring and summer followed by warming in fall and cooling in winter. In 1997 and 1998, however, one of the strongest El Niño events in recent history produced record warm temperatures along the entire California coast. In contrast to the warm El Niño conditions, an episode of cooler than normal seawater temperatures (La Niña) occurred during the later portion of 1998.



The temperature of the DCPP cooling water discharge varies with ambient intake temperatures, electrical generation heat load, condenser cooling efficiency, and other operating conditions of the power plant. Although these factors caused variation in absolute seawater temperatures at the point of discharge, discharge delta-T° values remained relatively steady at about 11°C (≈20°F). Ambient seawater temperatures were very similar between control sites to the north and south of Diablo Cove. These areas were not affected by warming from the discharge. Intertidal and shallow subtidal temperatures in Diablo Cove averaged between 2.5° and 4.0°C above ambient, with highest monthly mean temperatures between 5° and 6°C above ambient. Field's Cove is an

area to the north of Diablo Cove where plume contact is substantially reduced from Diablo Cove. Temperatures in Field's Cove averaged approximately 1°C above ambient.

Dissolved oxygen (DO) concentrations (mg/l) were high at all of the stations in Diablo Cove, Field's Cove, and control areas. DO levels regularly exceeded 100% solubility at control stations, and measurements in Diablo Cove also indicated the water was well oxygenated. All of the stations were located in shallow areas and experienced good mixing and aeration due to tide and swell. DO concentrations were lowest at the Diablo Cove stations due, in part, to the inverse relationship between temperature, and gas saturation levels in seawater.

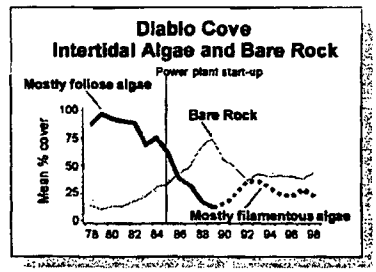


Biological Studies

We collected and analyzed data to compare the abundances of intertidal and subtidal algae, invertebrates, and fishes in discharge and control areas. The sampling methods used for the RWMP were identical to those used since the studies first began in 1976. An array of stations inside and outside Diablo Cove were sampled during the 1995 through 1998 study period.

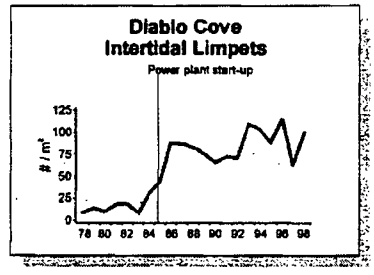
Intertidal Algae

Effects of the discharge on the algal communities in Diablo and Field's Coves continued during the 1995 through 1998 period. Changes prior to 1995 resulting in reductions in foliose algal cover in Diablo Cove and increases in filamentous algae and bare rock substrate relative to pre-operation levels continued during 1995 through 1998. The spatial extent of discharge effects increased in Diablo Cove for some species by extending over broader shoreline elevations. Widespread increases in warm-water tolerant algal species have not been observed. This may be the result of secondary effects such as invertebrate grazing and colonization. During both operation periods, changes were also detected in Field's Cove, providing evidence that discharge effects continued to extend beyond Diablo Cove. However, fewer species were affected in Field's Cove than in

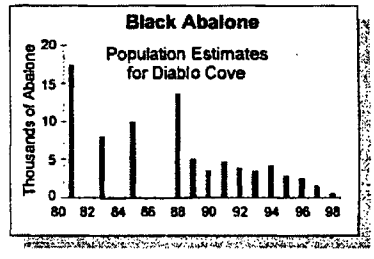


Diablo Cove indicating that Field's Cove continues to represent a transition zone with reduced discharge effects.

Intertidal Invertebrates



The discharge continued to affect intertidal invertebrates in both Diablo and Field's Coves. Invertebrate grazers in Diablo Cove are comprised of many species of limpets and snails. Grazer populations fluctuated in response to the abundances of crustose and filamentous algal films in Diablo Cove. Although Diablo Cove and the control sites had many species in common, the proportions of those species were very different between areas. The appearance of several species previously unrecorded in Diablo Cove was likely related to El Niño conditions that occurred during 1997. These oceanographic conditions also occurred during plant operation in 1987, 1990, and 1992–1993 and produce warmer seawater temperatures and northern flowing currents that can transport larvae from southern California. Discharge effects to invertebrates in Field's Cove were much reduced from the changes observed in Diablo Cove.



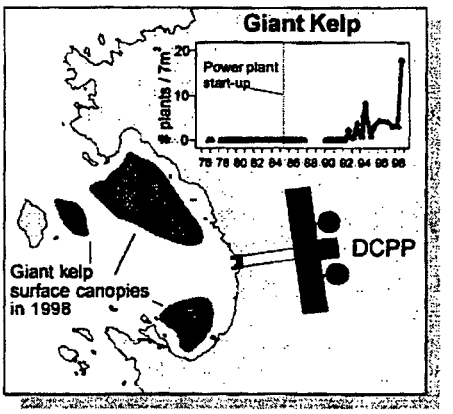
Black abalone continued to decrease in abundance in Diablo Cove and control areas from 1995 through 1998. The population estimate for the 1998 Diablo Cove survey was the lowest ever recorded during the 18-year study. Continuing declines in Diablo Cove were probably due to withering syndrome disease and the absence of strong recruitment of juvenile abalone into the population in recent years.

Intertidal Fishes

We observed lower abundances of intertidal fishes and numbers of species in Diablo Cove compared to Field's Cove during the 1995–1998 period. These results were generally similar to previous years of operation. Rock prickleback was the dominant intertidal fish species before power plant operation. We believe that the decline of this species in Diablo Cove reflects its known thermal sensitivity. Significant losses of intertidal algal cover that provided both habitat and food in Diablo Cove also contributed to reductions in intertidal fishes.

Subtidal Algae

Changes in the subtidal algal community in Diablo Cove that occurred following power plant start-up continued through the 1995–1998 period, including further increases in giant kelp. Although the giant kelp canopy was greatly reduced by the warm seawater temperatures during the 1997 El Niño, it rapidly recovered and reformed a dense canopy throughout Diablo Cove by spring 1998. Declines in algal understory species were partially due to shading effects of the surface kelp canopy. As a result we found decreases in total understory algal cover, mean species richness, and diversity during the 1995–1998 period. Some of the changes at the shallow Field's Cove station were located in a transition area with reduced thermal effects as indicated by the presence of giant kelp and premature senescence of bull kelp.



Subtidal Invertebrates

Invertebrate assemblages and individual taxa at subtidal stations in Diablo Cove showed continuing changes due to the discharge during the 1995 through 1998 period. Most notably, several species of marine snails continued to decrease. In contrast to Diablo Cove, most invertebrate taxa remained unchanged at the Field's Cove stations. A few taxa in Field's Cove had changes that paralleled the patterns of change observed for those species in Diablo Cove. This indicated that discharge effects in Field's Cove were present but much reduced in magnitude from the effects in Diablo Cove.

The rate of decrease in red abalone abundance was faster in Diablo Cove during the 1995–1998 period than elsewhere in the study area. Predation and WS disease were the likely causes of these declines.

Subtidal Fishes

The assemblage of fishes that characterized north and south Diablo Cove immediately after power plant start-up was still present in the 1995–1998 period. This assemblage was characterized by increased occurrences of warm-temperate species more characteristic of

southern California and bay habitats, and by reductions of cool-temperate species in shallow areas of the cove. New occurrences of several fishes in Diablo Cove that have more southern, warm water distributions likely resulted from larval transport during the El Niño conditions that prevailed in 1997.

Continuing changes in the fish assemblage occurred in both Diablo Cove and control areas. The increased abundance of giant kelp habitat in Diablo Cove from 1995 through 1998 may have resulted in the increased abundances of some kelp-associated fish species including juveniles of some rockfish species that use the kelp habitat during recruitment. Decreases in abundance occurred in over 80% of the fish taxa at the control area between the operational periods of 1987–1994 and 1995–1998. Some of the declines were in species with commercial and sportfishery value, such as black-and-yellow rockfish and kelp greenling. Greater fishing effort at South Control than in Diablo Cove probably contributed to these declines. Other declines, however, occurred in small species that were not targeted by fishing. Therefore the changes may have been due to natural fluctuations related to an extended period of ocean warming and reduced productivity in the California ocean current system.

1.0 INTRODUCTION

Monitoring of the marine environment near the Diablo Canyon Power Plant (DCPP) was conducted from July 1995 through December 1998 as required by National Pollutant Discharge Elimination System (NPDES) Permit Order No. 90-09 revised in February 1995 by the Central Coast Regional Water Quality Control Board (RWQCB). In July 1995 the revised Receiving Water Monitoring Program (RWMP) for DCPP was implemented. Changes in the marine environment in the vicinity of DCPP are monitored in accordance with the RWMP to detect effects of the plant's cooling water discharge. This report describes important new or continuing effects of the DCPP discharge on nearshore marine communities.

Nearshore communities of DCPP have been monitored and reported on since 1976. Results from 1976 through June 1995 were presented in the Thermal Effects Monitoring Program (TEMP) Analysis Report (Tenera 1997). The TEMP Analysis Report contained comprehensive analyses and descriptions of changes in the receiving water community resulting from the DCPP discharge. Three semi-annual reports (PG&E, 1996a, 1996b, 1997) presented data collected in the RWMP from July 1995 through December 1996. A comprehensive report on the RWMP results from 1995–1997 described new or continuing changes resulting from the discharge that occurred after the completion of the TEMP (Tenera 1997). Reports have shown that changes resulting from the discharge occurred in both the intertidal and subtidal marine communities. Changes were greatest in magnitude in the intertidal and shallow subtidal areas of Diablo Cove. Changes of lesser magnitude were detected in the intertidal areas of South Diablo Point and in Field's Cove to the north of Diablo Cove.

New or continuing effects of the discharge are identified in this current report by comparing changes detected in the operation period from 1987 through June 1995 (Tenera 1997) to changes detected during the recent operation period from July 1995 through December 1998. This approach was previously used to evaluate the July 1995 through December 1997 operation period (Tenera 1999). For analytical purposes, the DCPP operation period (1985 through 1998) was partitioned into two sub-periods:

- 'OpPeriod-1' – January 1987 through June 1995, and
- 'OpPeriod-2' – July 1995 through December 1998.

OpPeriod-1 was monitored during the TEMP studies, while OpPeriod-2 was, and continues to be, monitored during the RWMP studies.

1.1 Study Design and Analysis

Stations contacted by the discharge plume (discharge stations) were compared with control stations to determine if observed changes exceeded natural variation and were presumed to be effects of the discharge. The study area extends from Point Buchon to Point San Luis (**Figure 1-1**). Within the study area, stations were located in the areas of Diablo Cove and Field's Cove that were exposed to the thermal discharge and in control areas beyond the influence of the discharge. Water temperatures and abundances of organisms at control area stations (control stations) provided baseline information on natural changes. **Table 1-1** shows the study components of the RWMP, sampling frequency, and types of data collected.

Qualitative Comparison with Previous Results

Analysis of variance results presented in this report were compared qualitatively with statistical results from the TEMP Analysis Report to identify new or continuing effects of the discharge (Tenera 1997). A direct statistical comparison between the two results was not made because the methods of analysis, and the stations analyzed, were different for all monitoring elements except subtidal fishes. The comparisons between OpPeriod-1 and OpPeriod-2 responses formed the basis for categorizing the effects of the DCPP discharge into three general responses from OpPeriod-1 relative to controls.

1) *Continuing discharge effects* - taxa with statistically significant effects in OpPeriod-2 were categorized as having continuing effects when:
   - no effects were detected between the two periods indicating no change in magnitude had occurred,
   - increased differences between the two periods were detected indicating an increasing magnitude of effect, or
   - decreased differences between the two periods were detected indicating a decreasing magnitude of effect or a reversal of a previous trend.
2) *New discharge effects* - taxa with no significant effects in OpPeriod-1 with significant OpPeriod-2 effects.
3) *No discharge effects* - taxa with no detectable effects in either period.

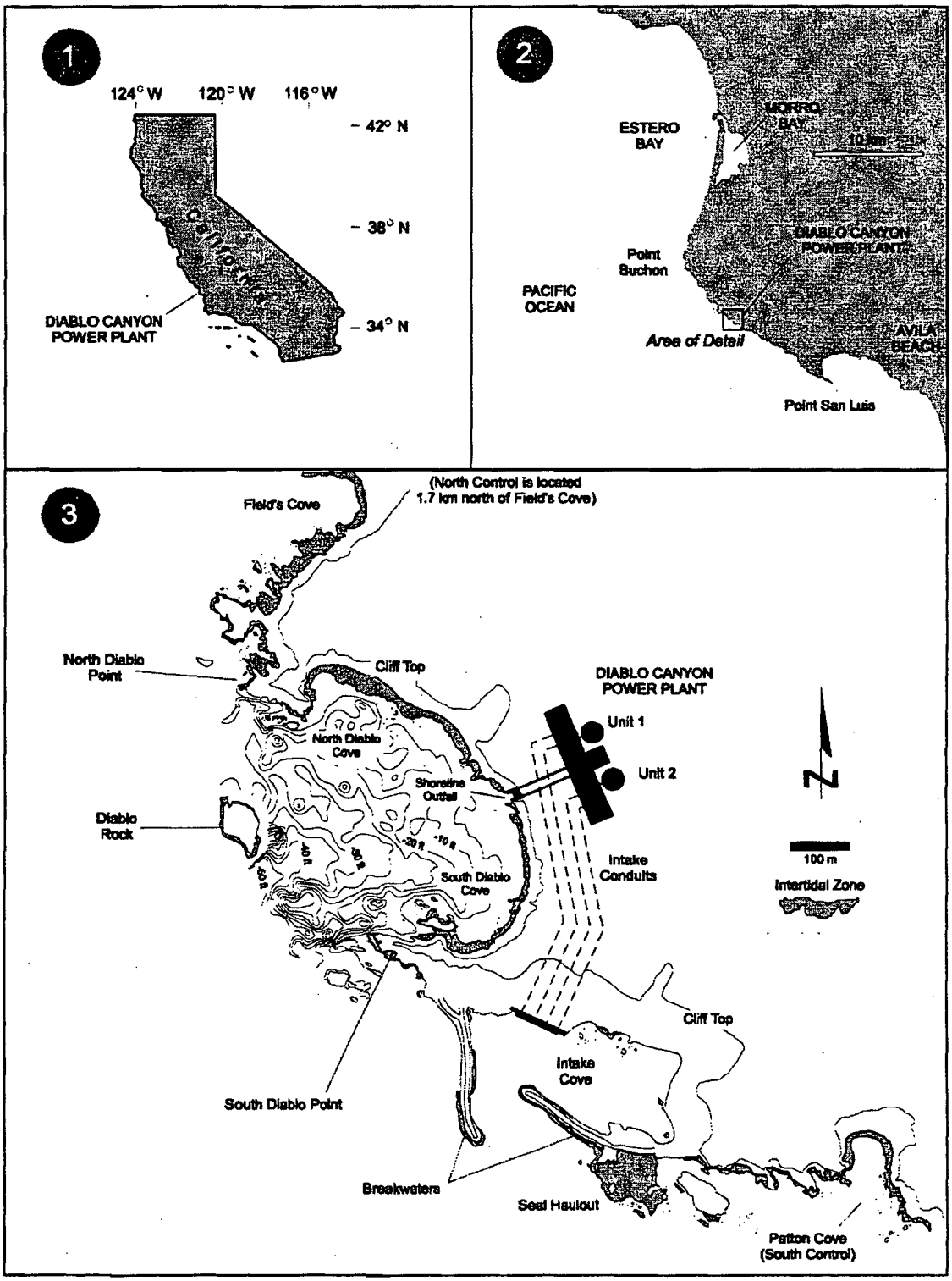


Figure 1-1. Location of Diablo Canyon Power Plant.

Table 1-1. Tasks, stations, and frequency of surveys for the DCPP Receiving Water Monitoring Program, 1995–1998 (OpPeriod-2).

Task and Sampling Frequency	Stations	Typical Sampling Periods[1] J F M A M J J A S O N D
Intertidal Horizontal Band Transects (algae, invertebrates, substrate)		
2 surveys per year	NC-1, NDC-2, NDC-3, SDC-1, SDC-3, SC-1	
4 surveys per year	FC-1, FC-2, FC-3	
Intertidal Vertical Band Transects (algae, invertebrates, fishes, substrate)		
1 survey per year	NDC 1-V, SDC 2-V	
4 surveys per year	FC 1-V	
Intertidal Black Abalone Census (abalone, substrate)		
1 survey per year (random quadrats along transects)	10 - 100 m transects	
1 survey per year (2x10 m transect)	10 - 2x10 m transects	
Periodic qualitative observations	various areas (*various dates depending on concurrent sampling*)	
Subtidal Benthic Stations (algae, invertebrates, substrate)		
2 surveys per year	NDC 3 -3m, NDC 4 -4m, NDC 6 -3m, SDC 2 -3m, SDC 3 -4m 1, SC 1 -3m	
4 surveys per year	FC 1 -3m, FC 2 -9m	
Subtidal Fish Assessment (fishes)		
2 surveys per year	NDC FO-1, 2, 3, 4; SDC FO-1, 2, 3; SC FO-1, 2, 3	
Subtidal Red Abalone Census (abalone, macroinvertebrates)		
2 surveys per year	20 sta. (Diablo Cove) + 10 sta. (Field's Cove and South Control combined)	
Habitat-Forming Kelp Survey (bull kelp, giant kelp)		
1 survey per year	Diablo Cove	
Physical Oceanographic Monitoring		
Intertidal Temperatures (3 measurements per hour)	Primary stations: [+0.75 m] NC-1, NC-2, NDC-2, NDC-3, SDC-1, SDC-3, SC-1	
Intertidal Temperatures (3 measurements per hour)	Supplemental stations: 13 in Field's Cove	
Subtidal Temperatures (3 measurements per hour)	Primary stations: [-3 m] NC 1, FC 1, NDC 3, NDC 6, SDC 1, SC 1; [-4 m] NDC 4, SDC 4	
Subtidal Temperatures (3 measurements per hour)	Supplemental stations: NDC 5 -8m, SDC 5 -10m, IC 1 -10m	
Dissolved Oxygen (4 surveys per year)	[-3 m] NC 1, FC 1, NDC 3, NDC 6, SDC 1, SC 1; [-4 m] NDC 4, SDC 4	

[1] Stations were usually sampled within corresponding shaded months, depending on sea conditions and optimal low-tide periods.

Continuing effects that changed in magnitude or reversed in direction were newly identified in OpPeriod-2 but were still categorized as "continuing" because they occurred in taxa that had previously been shown to be affected by the discharge.

In some cases, taxa with inconclusive statistical results were categorized as having continuing effects between periods in Diablo Cove because of their continuing low abundances at the discharge stations.

Data Analyzed

The data in this report were analyzed using analysis of variance (ANOVA). The ANOVA model used a modified Before-After/Control-Impact (BACI) (Stewart-Oaten et al. 1986) design similar to the model used in the TEMP Analysis Report to test the hypothesis that there were no effects resulting from the discharge (Tenera 1997). Data from OpPeriod-1 were used as a baseline to detect changes in OpPeriod-2. The estimates of the mean differences in abundance between discharge and control stations between the two periods were used to determine if statistically significant changes occurred. Significant effects of the discharge were then categorized as new or continuing effects by referencing results in the previous TEMP Analysis Report (Tenera 1997).

Data used in the ANOVA model were obtained by computing a mean abundance for the control station(s) for each survey and then calculating a difference, or delta, for each discharge station using the formula $x_i^C - x_i^I$ (the mean abundance for the control stations (x_i^C) minus the mean abundance for a discharge station (x_i^I) for each survey i). This convention was used instead of the formula ($x_i^I - x_i^C$) (Stewart-Oaten et al. 1986) so that the sign (positive or negative) of the delta reflected the direction of change relative to the control.

The data analyzed included abundance estimates for individual taxa based on count and percent cover data, cover estimates for substrates, mean species richness (# species/area) and mean species diversity (Shannon-Weiner H'). Mean species richness and diversity values calculated for each station from each survey were analyzed instead of using totals to account for differences in sample sizes between the two periods analyzed. These analyses identified the taxa that contributed to the majority (95% or 99%) of the total abundance. Some of these taxa were not analyzed because their abundances were too low or too variable among stations.

The numbers of control and discharge stations used in the analyses varied by sampling method. The intertidal horizontal band transect (HBT) and subtidal benthic study analyses used delta values computed for each discharge station, and the subtidal fish study data used delta values for areas computed using the transects located within north and south Diablo Cove. This array of stations differed from that used in the previous Analysis Report (Tenera 1997). The numbers of stations statistically analyzed for each sampling method are compared in **Table 1-2.**

Table 1-2. Comparison of numbers and locations of sampling stations used during OpPeriod-1 and OpPeriod-2 by sampling method.

	OpPeriod-1 [Jan. 1987–June 1995] (TEMP Analysis Report)		OpPeriod-2 [July 1995–Dec. 1998] (Current Report)	
Sampling Method	**Control Stations**	**Discharge Stations**	**Control Stations**	**Discharge Stations**
Intertidal Horizontal Band Transects	3 (2 North Control, 1 South Control)	8 (1 Field's Cove, 2 North Diablo Cove, 2 South Diablo Cove, 3 South Diablo Point)	2 (1 North Control, 1 South Control)	7 (3 Field's Cove, 2 North Diablo Cove, 2 South Diablo Cove)
Subtidal Benthic Stations	2 (South Control)	5 (3 North Diablo Cove, 2 South Diablo Cove)	1 (South Control)	5 (1 Field's Cove, 2 North Diablo Cove, 2 South Diablo Cove)
Subtidal Fish Stations	3 (South Control)	7 (4 North Diablo Cove, 3 South Diablo Cove)	3 (South Control)	6 (3 North Diablo Cove, 3 South Diablo Cove)

The intertidal HBT and subtidal benthic data were analyzed by summer and winter seasons to account for seasonal variation. The seasons of winter and summer were defined as December through March and June through September, respectively, for intertidal studies. Surveys completed in the months of April (winter) and October (summer) were included in the analyses of the seasons for the subtidal studies because of the longer time period required to complete the sampling. The subtidal fish data were not analyzed by season because sampling occurred only during summer months after June 1995. The data for fishes from the summer surveys in years prior to 1995 were used to obtain a single mean annual abundance estimate for each area, and those estimates were used in computing the deltas.

Analysis Assumptions

Data analyzed using ANOVA must conform to certain statistical assumptions. The assumptions include independently sampled data from a population with a normal distribution and independent and homogeneous errors among groups (Winer et al. 1991). The assumption of homogeneity of variances was tested using the Levene and Cochran tests (Winer et al. 1991).

The assumption tests were performed both on raw data and data that were transformed using either log(x), 1/(x), or √(x) for counts and arcsine (x) for percentage cover. The transformations of count data required an added constant for observations with values of zero. The value of the constant could have potentially biased the analysis of the data, therefore assumptions tests were run with constants of 1.0, 0.5, and 0.1. The best combination of constant and transformation was chosen based on the homogeneity of variance tests and the power of the data to detect a 50% change between periods. If the homogeneity of variance test results indicated that variances were not equal among groups, Satterthwaite's adjusted degrees of freedom were used in the SAS Proc Mixed procedure (Littell et al. 1996).

Analysis of Variance Model

The following three-way ANOVA model was used to test the hypothesis that discharge group stations were unaffected by the power plant discharge:

$$X_{ijkl} = u + S_i + T_j + P_k + ST_{ij} + SP_{ik} + TP_{jk} + STP_{ijk} + e_l$$

Where

X_{ijkl} = the delta value for a survey at a station S_i during season T_j within period P_k ;

u = the mean difference across all stations, seasons and periods;

S_i = the effect of the ith Station;

T_j = the effect of the jth Season;

P_k = the effect of the kth Period;

ST_{ij} = the effect of the Station x Season interaction;

SP_{ik} = the effect of the Station x Period interaction;

TP_{jk} = the effect of the Period x Season interaction;

STP_{ijk} = the effect of the Station x Season x Period interaction; and

e_l = error term.

The surveys (e_l) within each combination of station, period, and season were the replicates for the analysis. The subtidal fish studies were analyzed using a two-way model without a term for season.

Hypothesis Testing

All tests used a probability level of 90% to determine significance. A level of 90% was chosen over the more commonly used 95% to increase the statistical power of the tests, thereby decreasing the probability of making a Type II error (i.e., incorrectly concluding that there was no effect when an effect actually occurred) (Winer et al. 1991; Mapstone 1995). This lower probability level slightly increased the likelihood of finding significant changes where none may have occurred (Type I error). The statistical power of a test is a measure of the probability of correctly concluding that a change occurred (Winer et al. 1991). In these analyses, power was also calculated as the ability of the test to detect a theoretical 50% change between periods (Schroeter et al. 1993).

The difference in sample sizes between OpPeriod-1 and OpPeriod-2 potentially affected the statistical power of the analyses to detect differences between periods. Statistical power is affected by sample size, variation of the data being analyzed, and magnitude of the difference being detected. OpPeriod-1 was eight and one-half years in length and sampling was done four times yearly for most studies. OpPeriod-2 was three and one-half years in length and sampling was done two to four times yearly for most studies. The ability to detect smaller differences will usually be increased by larger sample sizes. While a considerable number of new impacts were detected with the current analyses, impacts of smaller magnitude may be detected with additional sampling in OpPeriod-2.

The presence of statistically significant interaction terms in an analysis can complicate the detection of discharge effects. Differences in one factor that are not constant or additive across the levels of another factor result in significant interaction terms. If a significant (prob. ≤ 0.10) two- or three-way interaction that included the model factor of Period was detected in the analysis of a data set, then paired comparisons between operation periods for individual station-

period or season-period combinations were examined for discharge effects. If the results showed that a significant difference between operation periods was caused by one station with a large change between periods, and this was not evident at other stations, then it was assumed that an alternative hypothesis, other than the discharge, may have been responsible for the result. A discharge effect would be indicated if the paired comparisons showed that the interaction was the result of a general, but variable, change between periods at most stations. Statistically significant differences between operation periods that were only detected for a particular season or set of stations were noted in the results. If none of the two- or three-way interactions containing the model factor of Period were significant (prob. ≤ 0.10), changes indicating new or continuing effects were tested separately for Diablo Cove and Field's Cove using a statistical comparison between periods for the stations in those areas.

Statistically significant differences between operation periods could also be detected when there were no actual changes in abundance at Diablo or Field's Cove stations. These statistical anomalies could occur because the differences used in the analysis were calculated using control abundances that were changing relative to discharge station abundances. Results showed that some of the taxa affected by the discharge after power plant start-up remained in low abundances in Diablo Cove. A significant increase could occur for these taxa if abundances at control stations decreased between periods without any change in discharge station abundances. Taxa with anomalous results are identified in the text.

Multivariate Analyses

Multivariate statistical methods are useful for characterizing communities and measuring responses of communities to natural and human-induced disturbances (Boesch 1977; Green 1979). These methods provide representations of community structure and dynamics that can be examined for spatial and temporal responses to disturbances or ecological interactions (Ardisson et al. 1990; Gray et al. 1990; Agard et al. 1993; Olsgard and Gray 1995). Correspondence analysis (CA) was used in this report to summarize and contrast community changes over time at control and plume-contacted areas (Greenacre 1984; Digby and Kempton 1987; ter Braak 1987).

The occurrence of rare taxa within a sample can distort the results of CA and, therefore, an analysis was done for each study to eliminate rare taxa. Only those taxa that comprised the majority (95% or 99%) of the total abundance and that occurred in a majority (80% or 90%) of

the surveys were used in the analyses. Data for some of the studies were log transformed (log[x+1]) prior to analysis to compensate for scale differences among taxa that can occur when both count and coverage data are used in the analysis, or when there are large counts for some taxa. Annual means for the period of 1990 through 1998 were computed and analyzed using CA to derive annual survey and taxa scores. Only these years were analyzed in order to eliminate variation due to the initial effects of the discharge. CA annual survey and taxa scores were plotted to examine contrasting patterns of temporal variation among discharge and control stations.

Species Identifications and Coding

We used the terms "taxon" and "species" interchangeably in this report. "Taxon" is a more general term that may refer to a single species or to several species grouped together. Although most organisms were identified to the species level during the RWMP study, some species were grouped for analysis if they were closely related and difficult to distinguish or if they formed a logical ecological grouping such as filamentous algae. For example, various species of the algae *Farlowia* and *Pikea* that were usually identified individually in the field were combined for analysis due to the known difficulties in separating these species.

1.2 Report Format

The names of the sampling stations used in this report follow those used in the TEMP Analysis Report (Tenera 1997). A comparison of current and previous (TEMP) station names is presented in **Appendix A**.

Sections 1 and 2 of this report provide background information and physical data relevant to the biological results presented in subsequent sections. A complete listing of temperature and dissolved oxygen data is presented in **Appendix B**. Results, methods, and discussion of the intertidal and subtidal biological studies follow in Sections 3 and 4.

Only data from the intertidal horizontal band transects (HBT), subtidal benthic stations, and subtidal fish assessments were statistically analyzed in this report (**Table 1-1**). Results from the black and red abalone studies were presented and discussed using graphical and tabular analyses. The vertical band transect (VBT) study collected data on the presence of intertidal algae and

invertebrates and data on the abundance and lengths of intertidal fishes. Data for VBT fishes were presented and discussed using graphical and tabular analyses. The fish data were not analyzed statistically because the VBT station in Field's Cove is potentially contacted by the discharge plume and could not be used as a control. The algae and invertebrate VBT data were not analyzed because of their qualitative nature and because of the extensive quantitative data on algae and invertebrates in the HBT study. All of the VBT data, as well as the data from the other intertidal biological studies, are summarized in **Appendix C**. Data from the subtidal biological studies are summarized in **Appendix D**. Output from all ANOVA analyses are in **Appendix E**.

Meteorological conditions during the study period were recorded daily and are archived at the Diablo Canyon Power Plant oceanographic laboratory.

2.0 Power Plant Operations, Temperature, and Dissolved Oxygen Monitoring

This section provides a basic explanation of the design and operation of the cooling water system at DCPP and describes its effect on ocean temperatures in the vicinity of the power plant. Dissolved oxygen monitoring results from 1995 through 1998 are also summarized.

2.1 Power Plant Operations and Discharge Temperatures

The main cooling systems at DCPP condense steam from the turbine-power cycle of the plant and discharge the heated effluent into the receiving waters in Diablo Cove. Two independent generation units with separate systems of intake and discharge conduits share the same intake structure and discharge location (**Figure 1-1**). During normal operation, circulating water pumps (CWP) draw seawater from the Intake Cove through the Unit 1 and Unit 2 shoreline intakes. The seawater is pumped through 1-in diameter, 40-ft long titanium tubes in the condensers of each power plant unit. High-pressure steam passes over the array of tubes and re-condenses in the power plant's secondary cooling loop. The manufacturer's estimated average flow rate of each CWP is 433,500 gallons per minute (2.5 billion gallons per day) at maximum capacity. Flow rates are less when CWPs are taken out of service during unit refueling outages (**Figure 2-1a, Table 2-1**).

Table 2-1. DCPP refueling outage dates and durations, 1995–1998.

Unit	Start Date	End Date	Duration (days)
1	9/30/95	11/26/95	57
2	4/6/96	5/24/96	48
1	4/19/97	6/2/97	44
2	2/14/98	3/28/98	42

Discharge temperatures are higher than ambient ocean temperatures because steam in the secondary coolant loop contacts the condenser tubes and transfers its heat to the flowing seawater inside. The resulting liquid-water condensate returns to the steam generator to sustain the power cycle. The warmed seawater then exits the condenser and discharges into the ocean at the shoreline of Diablo Cove. The resulting discharge water temperature is about 11°C (≈20°F)

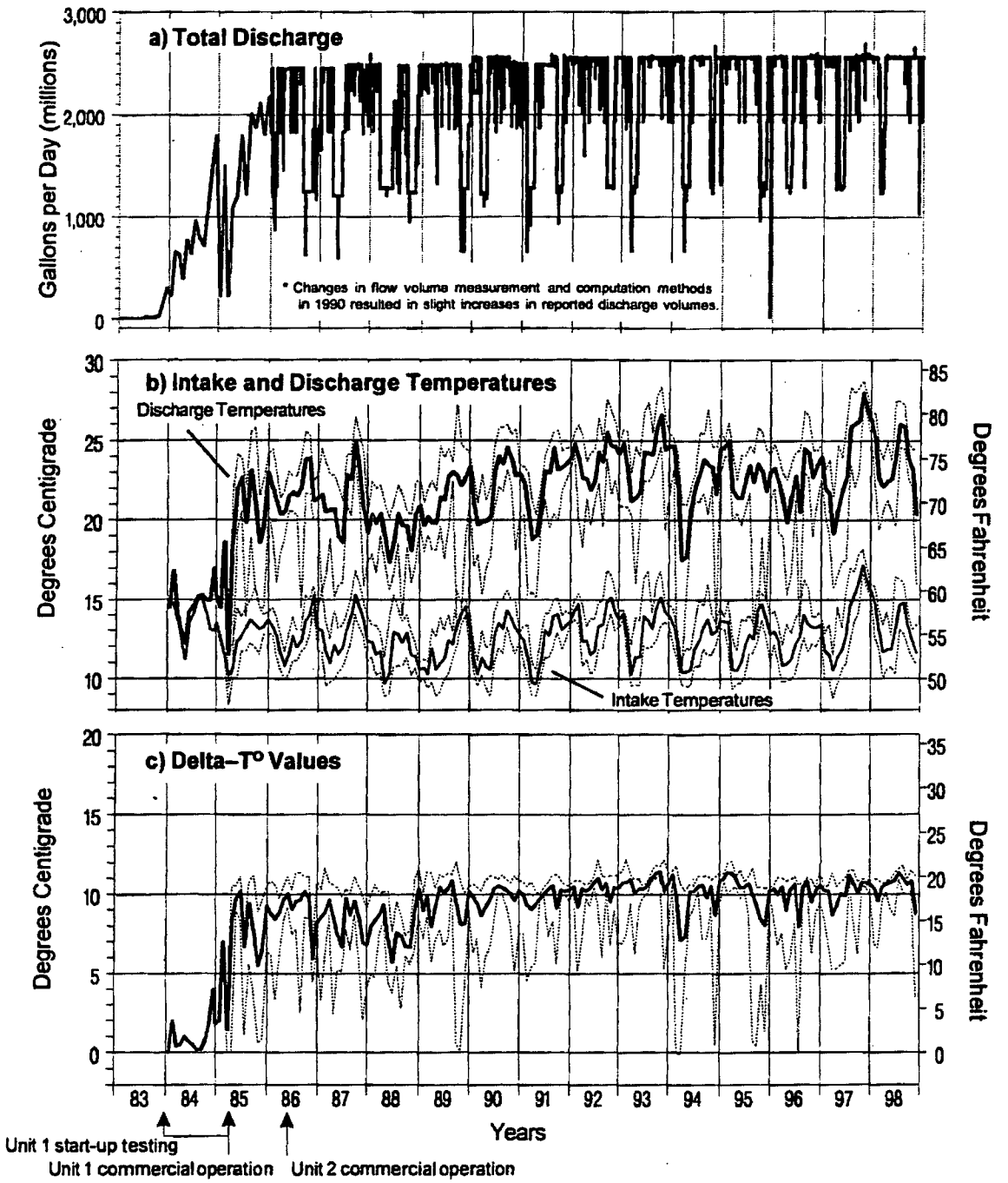


Figure 2-1. Power plant discharge characteristics. (a) Daily discharge flow volumes. (b) Monthly intake and discharge temperatures. (c) Monthly differences between intake and discharge temperatures (delta–T° values). Data in b and c are averages of daily temperature values with dotted lines being the highest and lowest daily temperature values by month. Data were from monthly and annual NPDES reports submitted by PG&E to the RWQCB.

warmer than the incoming seawater. The first warm-water discharges from DCPP began intermittently in 1984 with start-up testing of Unit 1. Commercial (full power) operation of Unit 1 began in May 1985 and Unit 2 began in March 1986.

Discharge temperatures vary depending on ambient intake temperatures (**Figure 2-1b**), electrical generation heat load, condenser cooling efficiency, and other operating conditions of the power plant. Discharge temperatures are lower during outages if the CWPs remain operational for the unit that is out of service (i.e., greater dilution of the heat load with ambient temperature water). Warmest ambient temperatures normally occur in fall (approximately 15°C or 59°F) and lowest ambient temperatures normally occur in late spring (approximately 9°C or 48°F). In fall 1997, both the warmest monthly mean discharge temperature since 1983 (nearly 28°C or 82°F) and the maximum daily mean discharge temperature (28.7°C or 84°F) occurred (**Figure 2-1b**).

DCPP thermal discharges have modified the temperature regime in portions of Diablo Cove over the past 14 years. Discharge flows, temperatures, and delta-T°s varied considerably between 1984 and 1986. During this period the plant underwent start-up testing of both units and a lengthy shutdown of Unit 1 for its first refueling outage. Discharge temperatures stabilized from 1988 to 1994, but delta-T° values gradually increased (**Figure 2-1c**). One of the causes of the increasing delta-T° values was fouling of the feedwater nozzles. This was corrected during an outage in spring 1999 and delta-T° values have since stabilized.

Since 1996, both DCPP units 1 and 2 have extended their fuel cycles to a total of 21 months from a previous cycle duration of 18 months. Therefore, each unit's fuel cycle lasted about 100 days longer in 1997 and 1998 than in previous years. Discharge volumes and temperatures were more consistent during these two years than in years when outages occurred more frequently.

2.2 Receiving Water Temperature Monitoring

The following section explains the instrumentation, methods, and study sites used for measuring temperatures. We measured ocean temperatures continuously at permanent stations in the vicinity of the DCPP thermal discharge. The analyses compare the 1995–1998 temperature monitoring data with temperature measurements from previous years.

2.2.1 Methods

To characterize the effect of power plant operation on seawater temperature, permanent stations located along the Diablo coast continually record temperature and monitor the extent of the thermal plume. Instrumentation, secured inside metal canisters for protection, record temperature data in two zones. Near-field stations are adjacent to the discharge in Diablo Cove and are contacted regularly by the discharge plume. Far-field stations are located outside the Diablo Cove and receive less plume contact. Temperature units at intertidal stations are located along the rocky shore at the +0.6 m Mean Lower Low Water (MLLW) elevation (**Figure 2-2**). Subtidal temperature recorders are located at depths from -3 to -4 m MLLW (**Figure 2-3**). The designation of individual stations reflects the area location and number, followed by the elevation or depth, relative to MLLW (e.g., NDC1 -3m is subtidal station 1 at north Diablo Cove

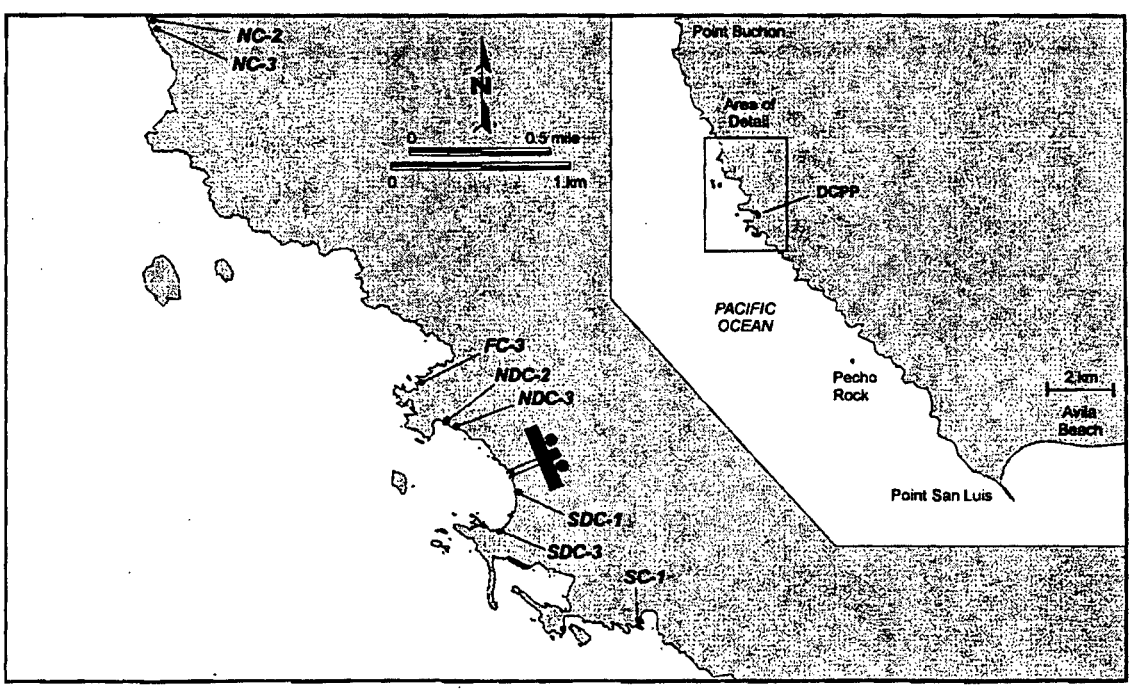


Figure 2-2. Locations of intertidal temperature monitoring stations.

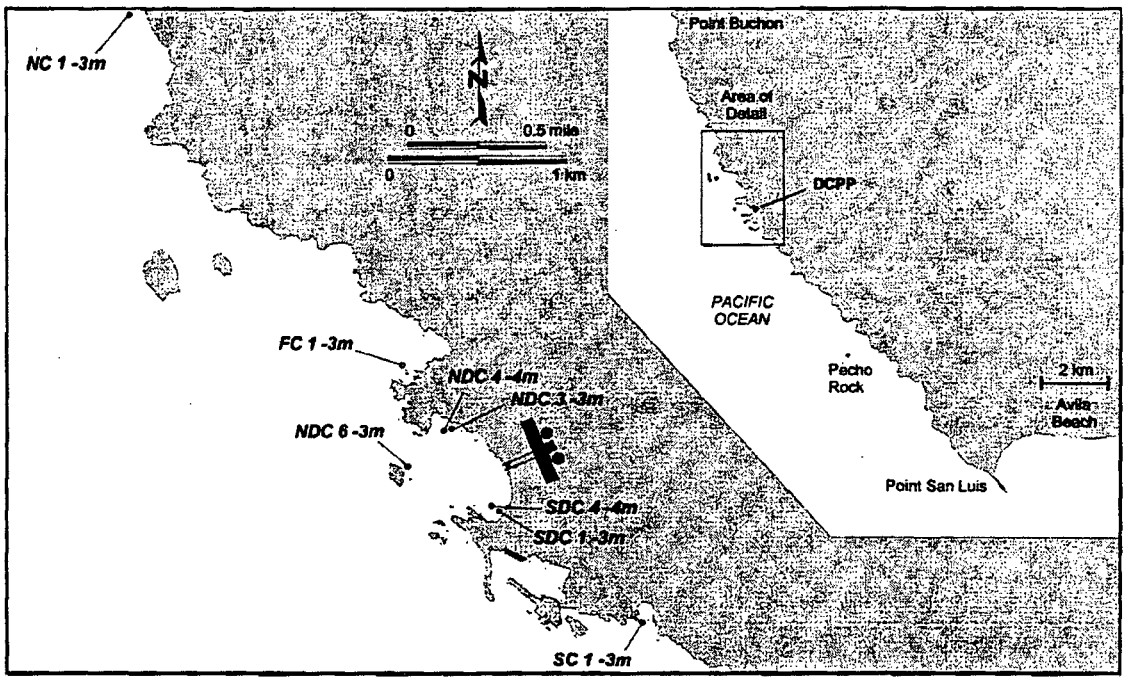


Figure 2-3. Locations of subtidal temperature and dissolved oxygen monitoring stations.

at a depth of -3 m MLLW).We established several stations as controls to measure ambient ocean temperatures at sites beyond the influence of the discharge (**Figures 2-2 and 2-3**):

- Intertidal (NC-2, NC-3, and SC-1), and
- Subtidal (NC 1-3m, and SC 1 -3m).

Each instrument synchronously logs temperatures every 20 minutes throughout its deployment period. Instrument precision is 0.01°C with an accuracy of ± 0.2°C. Temperature units are deployed at a station for approximately 60 days and then exchanged with a serviced unit. Intertidal temperature units record air temperatures when tidal levels recede below about +0.6 m MLLW. Air temperatures are not analyzed and were removed from the database by referencing concurrent tidal height measurements. The average temperature readings for the simultaneous 20-minute records among control stations are used to determine ambient temperature conditions for intertidal and subtidal areas separately. These average temperatures are used to compute the differences between ambient and both near-field and far-field temperatures (delta-T°). Delta-T° values are computed by subtracting the mean temperature for the pooled control stations, averaged for each 20 minute reading, from the corresponding temperature record (or temperature

mean for multiple stations) for the near-field and far-field stations. We summarize the data in this report as monthly means ±99 percentile values.

Several intertidal and subtidal temperature recorders were also deployed in the vicinity of Field's Cove in 1997 (**Figure 2-4**) to provide additional data to refine numerical plume models. Intertidal recorders collected data from October 1997 through April 1998, and subtidal temperature recorders collected data from July 1997 through January 1998. The results from these studies will be presented to the RWQCB in a separate report.

2.2.2 Results

Monthly mean temperatures recorded at intertidal and shallow subtidal (-3 m MLLW) stations in north Diablo Cove, south Diablo Cove, Field's Cove (**Figures 2-5 and 2-6**), and control areas illustrate the long-term pattern of receiving water temperatures and delta-T° values before and during power plant operation. Prior to power plant start-up, water temperatures at the intertidal and shallow subtidal stations were similar to controls, except in the intertidal at south Diablo Cove (**Figure 2-5**). Solar warming and low water circulation at south Diablo Cove likely caused seasonal temperature increases above control station temperatures. After power plant start-up, delta-T° values increased at near-field and far-field stations (**Figures 2-5 and 2-6**). Temperature increases at north Diablo Cove exceeded those measured at either south Diablo Cove or Field's Cove. Although monthly mean discharge temperatures were as high as 11°C above ambient (**Figure 2-3c**), receiving water temperatures at all the intertidal and subtidal stations in Diablo Cove never exceeded ambient by more than about 6°C. Intertidal and shallow subtidal temperatures in Diablo Cove averaged about 4°C above ambient.

El Niño oceanographic events caused coast-wide warming periods in 1987, 1992–1993, and 1997–1998. During OpPeriod-2 an extended period of warm ambient temperatures associated with a strong El Niño event occurred from July 1997 through September 1998 (**Figure 2-7**). The warmest discharge temperatures occurred in fall 1997 with maximum temperatures approaching 29°C (**Figure 2-3b**). In contrast, unseasonably cool temperatures occurred during the last three months of 1998. The resulting cooler temperatures contrast sharply with the record warm water temperatures measured during the same period in 1997 (**Figure 2-7**).

Intertidal Temperatures

Monthly mean intertidal seawater temperatures exceeded ambient at north Diablo Cove stations NDC-2 and -3, and south Diablo Cove stations SDC-1 and -3 (**Figure 2-5**). This continued the pattern evident since power plant start-up in 1985. The average of the monthly mean temperatures at Diablo Cove stations ranged between 2.5° and 3.5°C above ambient, with highest monthly temperatures between about 5° and 6°C above ambient. Monthly mean intertidal water temperatures registered approximately 1°C above ambient at Field's Cove station FC-3 (**Figure 2-4**).

Subtidal Temperatures

Seawater temperatures exceeded ambient at subtidal stations NDC-3 and SDC-1 in Diablo Cove, and FC-1 in Field's Cove during the entire power plant operation period (**Figure 2-6**). The monthly mean temperature among stations in Diablo Cove ranged between 2.5° and 4.0°C above ambient with highest monthly temperatures between 4° and 5°C above ambient.

The discharge plume flowed more consistently toward north Diablo Cove than toward south Diablo Cove causing warmer average temperatures in north Diablo Cove. Temperatures at south Diablo Cove varied between seasons more than at north Diablo Cove (**Figure 2-6**). Outside Diablo Cove, mean monthly subtidal delta-T° values were consistently 1°C higher than ambient at Field's Cove station FC-1. Equipment failure occasionally prevented collection of temperature data at some subtidal and intertidal stations. A complete summary of temperature data at each station is presented in **Appendix B**.

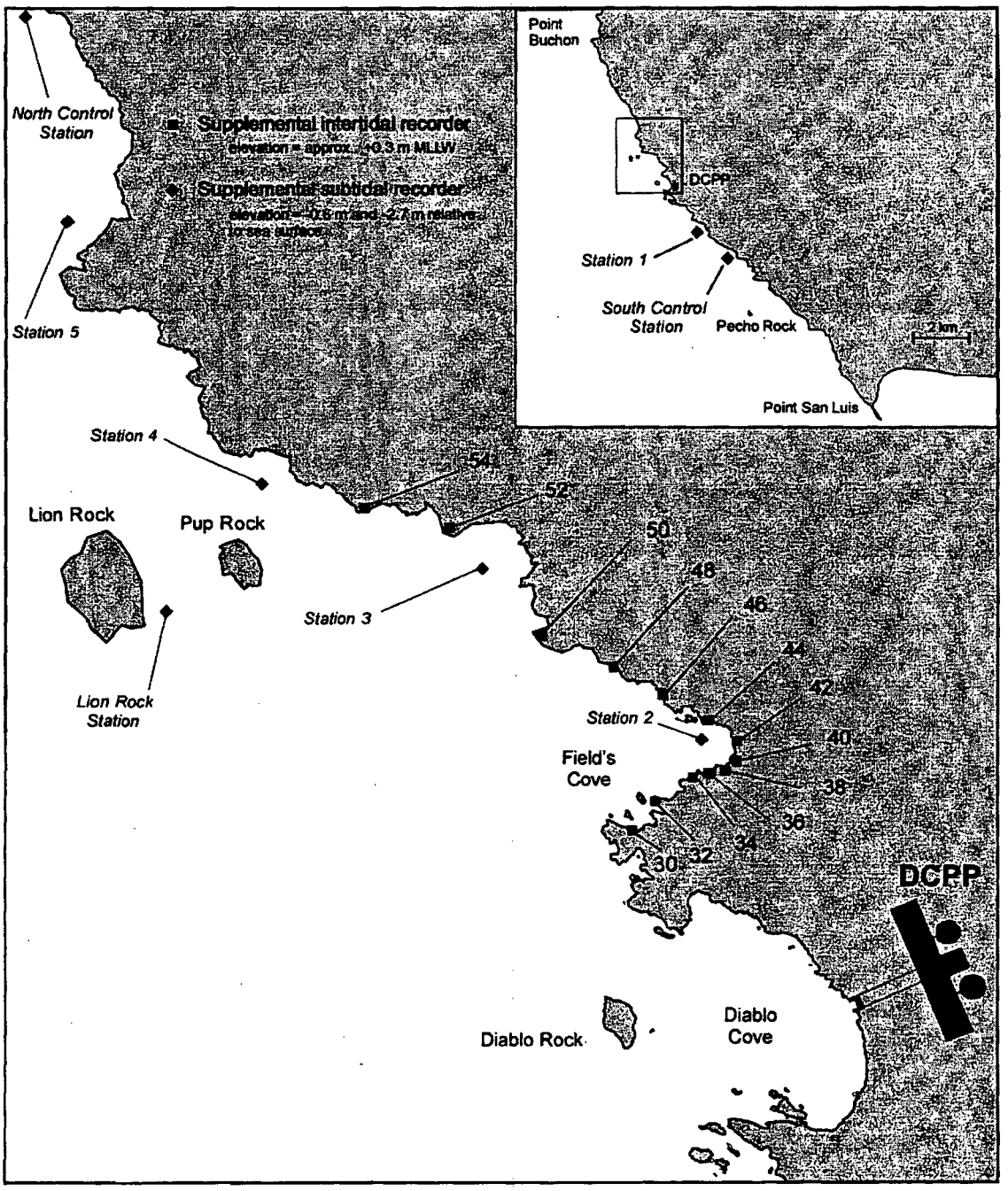


Figure 2-4. Locations of supplemental intertidal and subtidal temperature recorders.

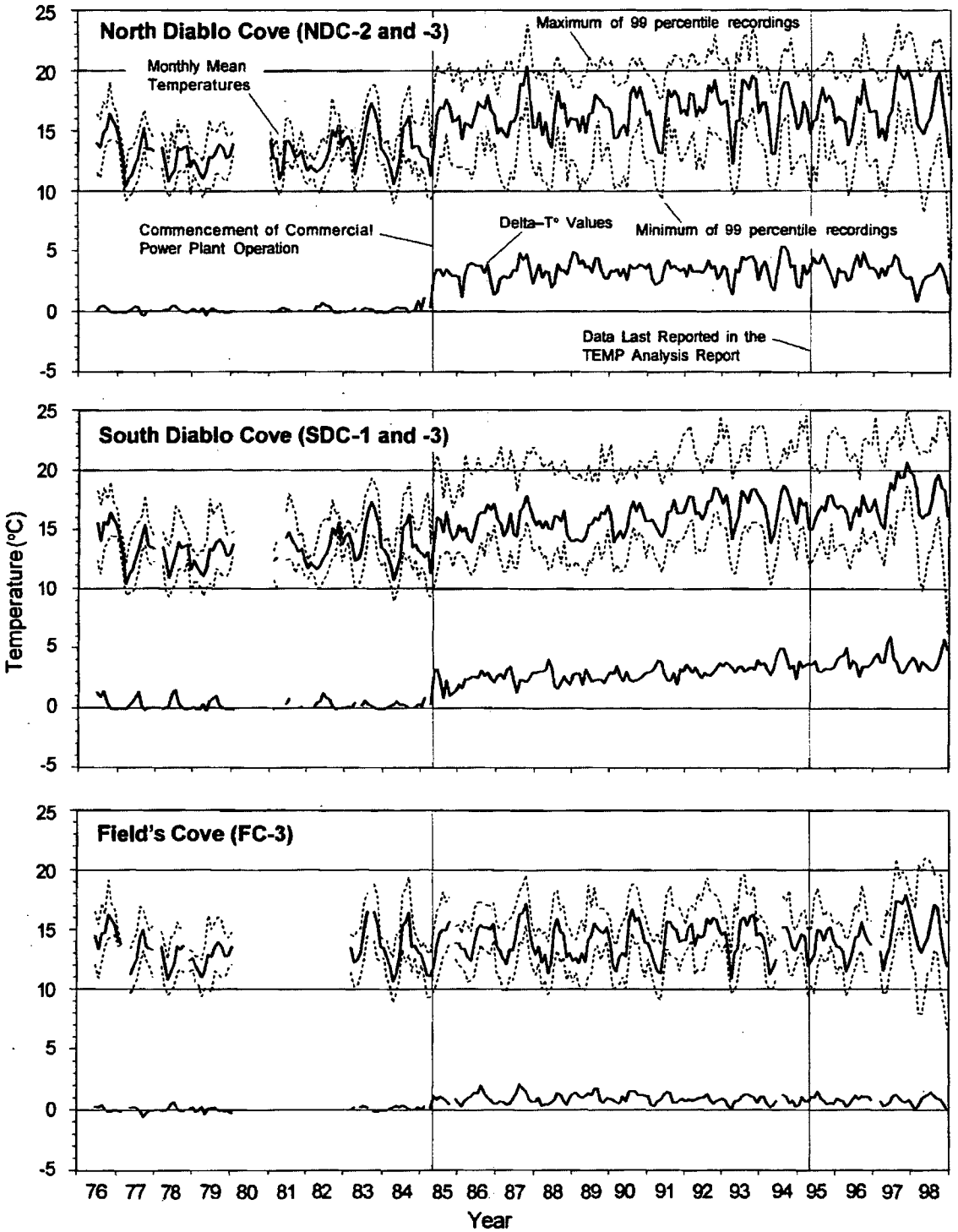


Figure 2-5. Intertidal (+0.6 m MLLW) monthly mean temperatures and delta–T° values for the north and south Diablo Cove and Field's Cove sampling areas. Dotted lines denote the highest and lowest 99 percentile values of recordings taken every 20 minutes in the month. Ambient temperatures were recorded at NC-2 and SC-1.

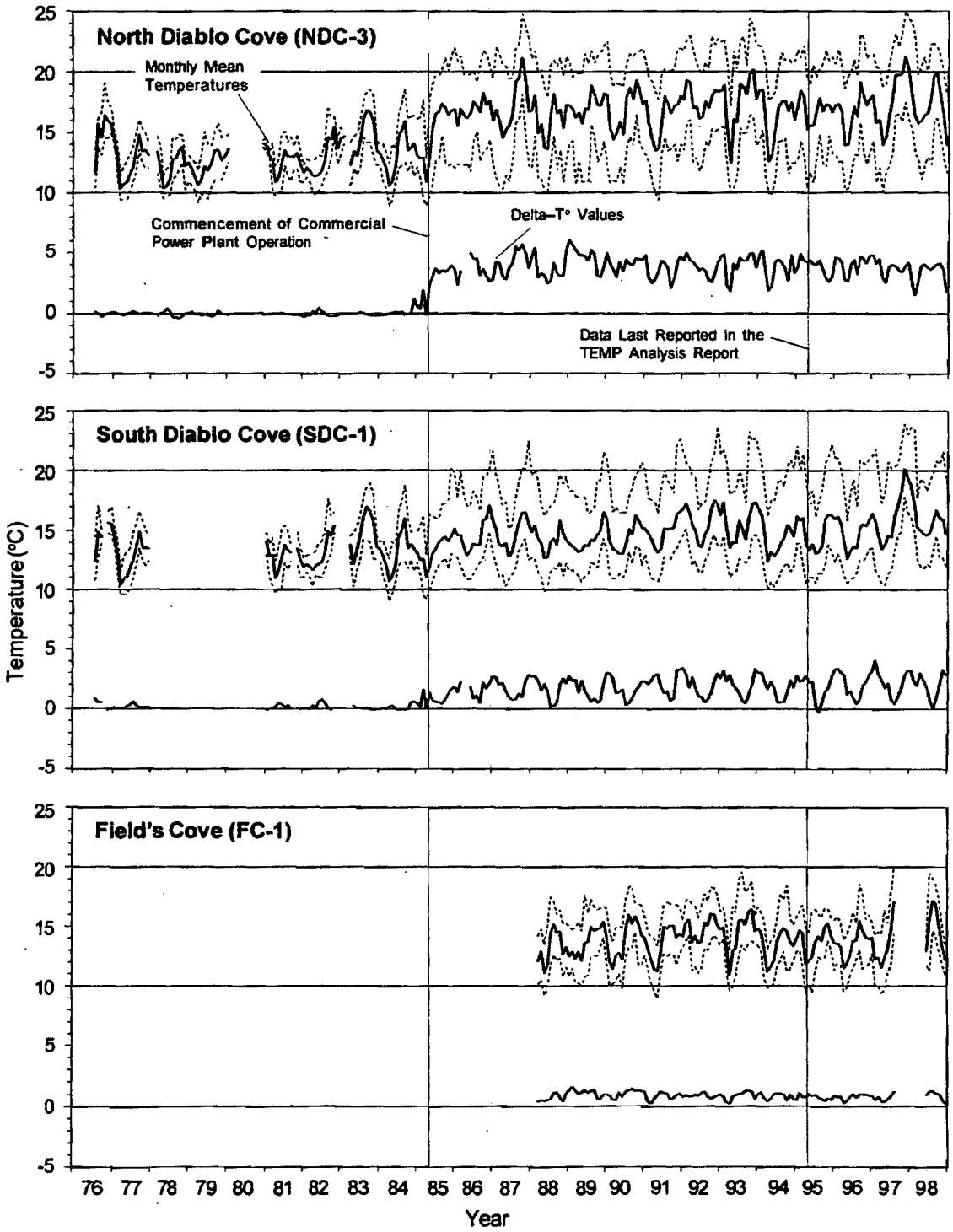


Figure 2-6. Subtidal (-3 m MLLW) monthly mean temperatures and delta–T° values for the north and south Diablo Cove and Field's Cove sampling areas. Dotted lines denote the highest and lowest 99 percentile values of recordings taken every 20 minutes in the month. Ambient temperatures were recorded at NC-1 and SC-1.

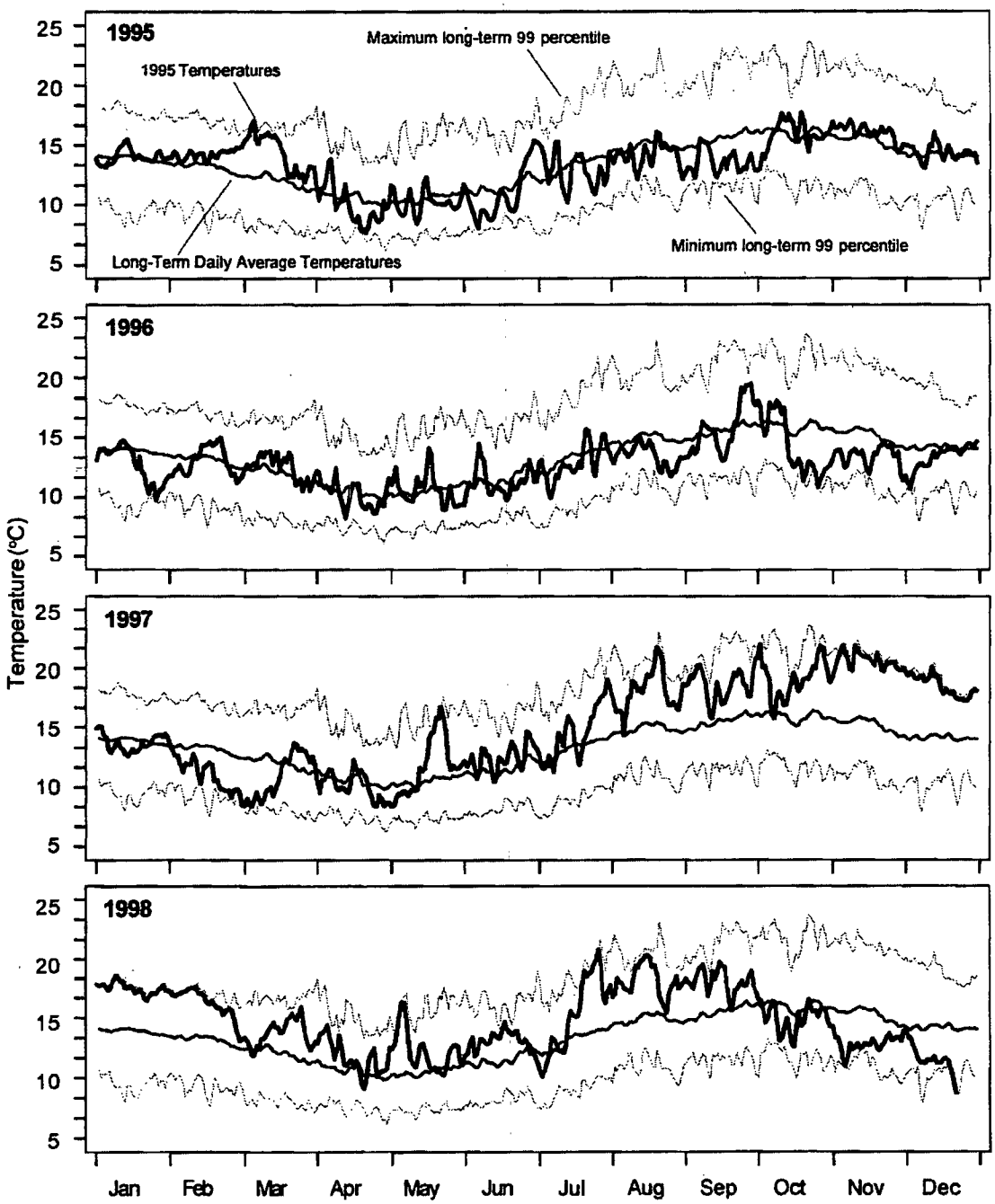


Figure 2-7. Subtidal (-3 m MLLW) ambient temperatures (daily means) from 1995 to 1998 compared with long-term average temperatures (1976-1998). Dotted lines denote the highest and lowest 99 percentile values from all daily recordings taken every 20 minutes (1976-1998). Data were averaged from stations NC-1 and SC-1.

2.3 Dissolved Oxygen Monitoring

The following sections report dissolved oxygen (DO) data collected from the third quarter of 1995 through the fourth quarter of 1998 and conclude that the warm water discharge affected DO concentrations in Diablo Cove.

2.3.1 Methods

DO concentrations were measured quarterly at eight stations in the vicinity of DCPP (**Figure 2-2**) from July 1995 through November 1998. The depth of the stations ranged from -3 m to -4 m MLLW. Biological and temperature data were also collected at these stations as part of other monitoring tasks.

Two methods were used to determine DO concentrations. From July 1995 through August 1996, water samples were collected in the field and then chemically tested in the laboratory. Starting in the fourth quarter of 1998, DO was measured *in situ* at the station with a calibrated, submersible oxygen sensor integrated with a conductivity-temperature-depth (CTD) unit. Compared to the chemical testing method, the CTD unit improved the overall efficiency of collecting and processing dissolved oxygen data. Dissolved oxygen concentrations from both methods are reported in units of mg/l of dissolved oxygen.

To measure DO using the chemical testing procedure, water samples were collected from a boat positioned over each station, using two Frautschy bottles lowered on a hydrographic wire to the middle and bottom depths at each station. The middle depth was 1.5 m below the surface for -3 m MLLW stations and 2.0 m below the surface for -4 m MLLW stations. Collection depths for bottom samples were -3 m or -4 m below the surface for shallow and deep stations, respectively. Surface water samples were collected in a bucket and transferred to 300 ml glass sample bottles. Following procedure, each sample was chemically preserved with alkaline iodide azide and manganous sulfate. Samples were processed in the lab using the modified Winkler titration method (Rand et al. 1975).

The CTD method measures continuous DO concentrations from surface to bottom with a submersible oxygen sensor. Field biologists deployed the calibrated sensor from a boat and allowed it to equilibrate for at least three minutes just below the water surface. The CTD unit

was lowered slowly to the bottom and retrieved slowly at a rate not exceeding 1 ft per second. The CTD unit stores digital data from each station. After sampling all stations, we downloaded and processed the data in accordance with procedures. We pooled average DO concentrations in 0.5 m depth ranges at surface, mid-depth, and bottom strata. We summarized data quarterly and annually using the mean DO concentration from surface, mid-water and bottom depths at each station.

2.3.2 Results

Annual mean DO concentrations varied among years (**Table 2-2**). The lowest annual mean concentrations occurred at most stations in 1995, and highest concentrations occurred in 1997. A complete listing of all data by depth and quarter is presented in **Appendix B**.

At the discharge and control stations, dissolved oxygen measurements have been consistently high and in many cases exceed the 100% solubility concentration (**Tables 2-3 and 2-4**). DO levels regularly exceeded 100% solubility at control stations, while measurements in Diablo Cove also indicated the water was well oxygenated. All stations were located in shallow areas and experienced good mixing and aeration due to tide and swell.

Table 2-2. Summary of quarterly dissolved oxygen concentrations (mg/l) at subtidal stations. Data from Field's Cove and Diablo Cove stations are compared to control stations as absolute and percent differences (delta).

	1995			1996			1997			1998		
	Annual station mean (n=2)	Delta from control mean	% delta	Annual station mean (n=4)	Delta from control mean	% delta	Annual station mean* (n=3)	Delta from control mean	% delta	Annual station mean (n=4)	Delta from control mean	% delta
Controls												
NC 1 -3m	7.83	–	–	8.14	–	–	8.90	–	–	8.60	–	–
SC 1 -3m	7.37	–	–	8.23	–	–	9.31	–	–	9.28	–	–
Control	7.60	–	–	8.19	–	–	9.11	–	–	8.94	–	–
Field's Cove												
FC 1 -3m	7.27	-0.33	-4.34	7.78	-0.41	-5.01	8.23	-0.87	-9.55	8.53	-0.42	-4.66
Diablo Cove												
NDC 3 -3m	7.15	-0.45	-5.92	7.62	-0.57	-6.96	7.89	-1.22	-13.39	7.94	-1.00	-11.18
NDC 4 -4m	7.02	-0.58	-7.63	7.32	-0.87	-10.62	7.74	-1.36	-14.93	7.63	-1.31	-14.63
NDC 6 -3m	6.75	-0.85	-11.18	7.05	-1.14	-13.92	6.98	-2.13	-23.38	7.23	-1.72	-19.20
SDC 1 -3m	7.10	-0.50	-6.58	7.29	-0.90	-10.99	7.77	-1.34	-14.71	7.38	-1.57	-17.52
SDC 4 -4m	6.85	-0.75	-9.87	7.07	-1.12	-13.68	7.36	-1.75	-19.21	7.18	-1.76	-19.66

*Data for the third quarter of 1997 were not collected due to a scheduling error (reported in Tenera 1999).

Table 2-3. Dissolved oxygen saturation concentrations at 32 parts per thousand (ppt) salinity by water temperature.

Temp °C (°F)	DO (mg/l)
10 (50)	9.19
12 (54)	8.81
14 (57)	8.44
16 (61)	8.11
18 (64)	7.79
20 (68)	7.51
22 (72)	7.24

Table 2-4. Dissolved oxygen saturation concentrations (%) averaged at all depths at control and discharge stations, 1996–1998. Saturation levels could not be determined for dissolved oxygen data collected prior to December 1996 due to the absence of concurrent salinity and temperature data.

	1996	1997				1998				Average
Station	Dec	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	96-98
North Control										
NDC 3-3	114	110	111	nd	111	104	101	104	91	**106**
Diablo Cove										
NDC 3-3	118	114	103	nd	103	102	92	104	114	**106**
NDC 4-4	113	110	100	nd	100	101	88	102	103	**102**
NDC 6-3	98	93	87	nd	62	101	84	96	98	**90**
SDC 1-3	102	107	104	nd	104	99	84	96	99	**99**
SDC 4-4	95	103	84	nd	84	95	79	94	94	**91**
South Control										
SDC 1-3	114	114	120	nd	120	105	94	115	121	**113**
Field's Cove										
FC 1-3	112	105	99	nd	99	100	97	102	107	**103**

2.3.3 Discussion

Lower concentrations of dissolved oxygen were measured at discharge stations compared to control stations. This is probably due, in part, to the inverse relationship between temperature and gas saturation levels in seawater. As the temperature of seawater increases, the saturation level for dissolved gasses decreases. Since all Diablo Cove stations were exposed to increased temperatures from the thermal discharge, they would be expected to have lower gas saturation levels and consequently lower dissolved oxygen concentrations. The average (1996–1998) DO saturation at station NDC 6-3 was the lowest of all stations sampled. This station also had the warmest temperatures in Diablo Cove, averaging approximately 4°C above ambient (Tenera 1997).

3.0 INTERTIDAL STUDIES

Intertidal algae, invertebrates, and fishes have been studied at DCPP during pre-operation and operation periods. The primary intertidal community study was the horizontal band transect study (HBT) that collected data on the abundance of algae and invertebrates. Counts of intertidal fishes were collected and the presence of algal and invertebrate taxa (regardless of abundance) was recorded in vertical band transect (VBT) surveys. Black abalone were counted with other invertebrates in the HBT study and were also studied in Diablo Cove using a random sampling method.

3.1 Intertidal Algae

In the period from power plant start-up through 1994, total algal cover, algal diversity, and algal species richness (number of taxa) decreased at stations in Diablo Cove, relative to controls (Tenera 1997). Losses of algal cover resulted in increased amounts of bare rock that later became colonized primarily with ephemeral (seasonal or short-lived) algae. Observed effects were less at the Field's Cove and South Diablo Point stations and diminished with distance from the discharge.

This section describes important new or continuing effects of the power plant discharge on intertidal algae through analysis of the HBT data collected at Diablo Cove, Field's Cove, and control stations from OpPeriod-2. Identified discharge effects were categorized as either new or continuing by comparing results of the current analysis with results of the previous TEMP analysis (Tenera 1997).

3.1.1 Methods

This section describes the sampling methods employed and analysis approach used to determine effects from the DCPP discharge.

Sampling Methods

The HBT sampling methods used in OpPeriod-2 were the same that were used in OpPeriod-1. All HBT stations in OpPeriod-2 (**Figure 3-1**) had been established before the power plant began commercial operation and were sampled at various time intervals before and after power plant

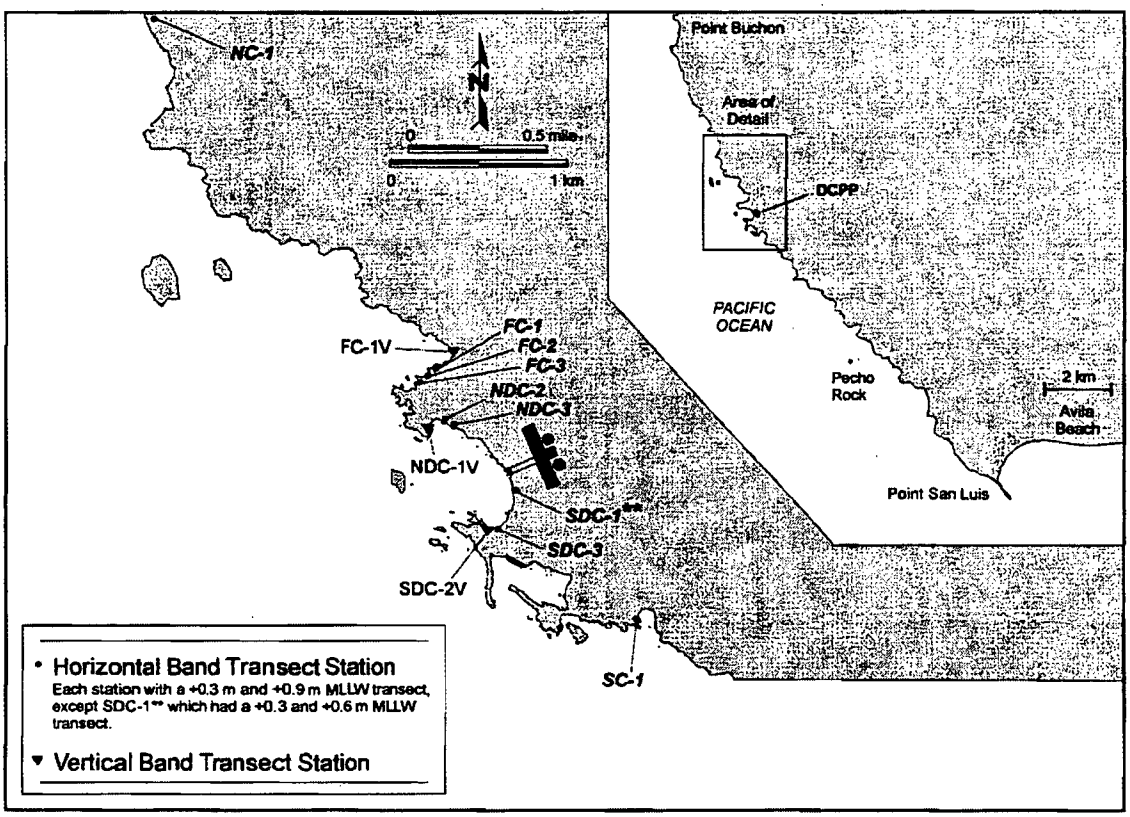


Figure 3-1. Horizontal and vertical band transect stations.

start-up. Stations were mainly on bedrock and boulders, but various amounts of cobble and sand also occurred at the stations.

Intertidal algae and invertebrates tend to occur in zones or bands along the shore. Therefore, each station consisted of an upper and lower elevation sampling transect, both oriented parallel to the waterline. Each transect was about 30 m long, one at the +0.9 m (3 ft) and the other at the +0.3 m (1 ft) MLLW tide level. The sampling area of each transect consisted of ten 1 m^2 fixed quadrats. The substrate at the +0.9 m MLLW level at SDC-1 near the discharge was mainly cobble that was barren in the pre-operation study. Therefore, the upper transect at that station was located at the +0.6 m MLLW tide level where algae and invertebrates were more abundant.

We used sampling techniques and measures of abundance that are commonly used in intertidal studies. Visual estimates of percent cover were made for all algal species and bare substrate. Overstory species were sampled first for coverage estimates, and then their branches and blades were brushed aside to allow estimates of understory and crustose species cover. Species less than

one percent cover were recorded as "present" on the data sheet. Total algal cover per quadrat often exceeded 100% due to overlayering of multiple taxa. The HBT sampling method is described in greater detail in Tenera (1997).

Analysis Methods

Effects of the discharge on intertidal algae during OpPeriod-2 were based on statistical results of ANOVA of species abundances relative to controls, between OpPeriods-1 and -2 (see Section 1.1 – *Study Design and Analysis*). The algal species analyzed were crustose taxa and those that formed 95% of the total algal cover (excluding crustose taxa) in either of the two operation study periods at Diablo Cove and Field's Cove stations. Bare rock, mean species richness (number of species/m^2), total algal cover, and diversity were also analyzed. The upper and lower elevation transect data for all sampling areas were analyzed separately.

Data from stations SDC-1 and -3 in south Diablo Cove were included in the analyses. These stations were excluded from analysis used in the TEMP Analysis Report because they were severely impacted by severe storms that occurred in winter 1982/83. Continuing sampling has shown a pattern of increased algal abundance at these stations. The data from these stations were included in the ANOVA tests because many algal species common to the area eventually repopulated SDC-1 and -3.

The use of these stations was justified because the analyses in this report used only operational study period data. An assumption of the ANOVA analyses is that all stations are subject to the same regional sources of natural variation over a time period. This was not the case in the pre-operation period when storm events severely affected stations in south Diablo Cove. No similar events unique to any of the HBT stations have been observed during the operational period that would justify excluding a station from analysis. The different suite of stations analyzed in this report was one of the reasons that the ANOVA results were only compared qualitatively with the findings of the TEMP Analysis Report.

The ANOVA results for changes between OpPeriods-1 and -2 by taxon are presented in **Appendix E1**. New or continuing effects of the discharge were based on comparisons of the ANOVA results to the findings described in the TEMP Analysis Report. The comparisons for individual taxa and community-level indices were grouped into the general categories of discharge effects described in Section 1.1.

Algal species composition and abundance in the three study areas sampled in OpPeriod-2 were also analyzed for changes using correspondence analysis (CA). The taxa that comprised the majority (95%) of the total abundance (excluding crustose taxa) and that occurred in at least 10% of the surveys were analyzed for each elevation. Data for these taxa were combined into annual means for the control, Diablo Cove, and Field's Cove stations (**Appendix C1**).

3.1.2 Results

Thirty-three algal taxa plus bare rock, mean species richness, diversity, and total algal cover were analyzed for changes relative to controls at the upper and lower elevation transects in Diablo and Field's Coves. Five of the algal taxa had inconclusive test results (**Appendix E1**). All of the other taxa exhibited new or continuing effects of the discharge in Diablo and Field's Coves (**Tables 3-1 to 3-4**).

Change in OpPeriod-2 at the upper sampling elevation in Diablo Cove was characterized by a further simplification of the algal assemblage, with decreases in both species richness and diversity (**Table 3-1**). Total algal cover did not decline further in OpPeriod-2 although it remained lower than abundances at the control stations (**Figure 3-2a**).

New effects at the upper elevation transects in Diablo Cove included increases in the ephemeral taxon *Ulva/Enteromorpha* spp. (bladed green algae) and the perennial taxon *Prionitis* spp. (a branched red alga more common in the lower intertidal) (**Table 3-1**). Non-coralline crustose algae became more abundant in Diablo Cove following power plant start-up and further increased in abundance at the upper elevation transects in Diablo Cove in OpPeriod-2. *Endocladia muricata* is one of the most common algal species in the upper intertidal zone. This and several other taxa reversed a prior trend of decrease at the upper elevation transects in Diablo Cove.

Change at the lower sampling elevation in Diablo Cove in OpPeriod-2 was also characterized by a further simplification of the algal assemblage, with decreases in both species richness and diversity (**Table 3-2**). Total algal cover at the lower sampling elevation in north Diablo Cove remained lower than pre-operation levels and control levels of abundance (**Figure 3-2b**). A decrease in *Mastocarpus papillatus* was a new change in OpPeriod-2 that involved one of the few remaining abundant algal species in the low intertidal transects in Diablo Cove.

Phyllospadix spp. (surfgrass) was another abundant plant species that continued to decrease in OpPeriod-2, relative to controls (**Table 3-2**).

Increases at the low elevation transects in Diablo Cove were largely represented by changes in non-coralline crustose algae, bare rock, and ephemeral algae (**Table 3-2**). The three ephemeral algae taxa that increased were Chrysophyta, filamentous red algae, and *Ulva/Enteromorpha*. Increases in filamentous red algae, *Ulva/Enteromorpha*, bare rock, and non-coralline crustose algae were consistent with increases also observed at the upper elevation transects (**Table 3-1**).

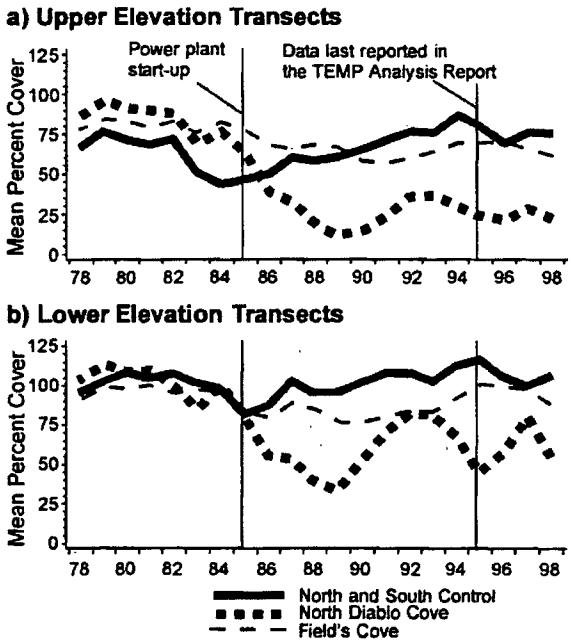


Figure 3-2. Changes in total algal cover (excluding crustose algae) at the horizontal transect stations.

Mazzaella flaccida (iridescent seaweed), a formerly abundant intertidal algal species in Diablo Cove, was categorized as an increase for OpPeriod-2 (**Table 3-2**). However, the analysis compared continuing low abundances in Diablo Cove to declining control abundances resulting in a statistically significant increase between periods.

Fewer taxa changed in Field's Cove than in Diablo Cove at the upper elevations transects during OpPeriod-2 (**Table 3-3**). As a result, algal diversity and total cover in Field's Cove did not decline further in OpPeriod-2 from the previous declines identified in OpPeriod-1. *Mazzaella flaccida* significantly declined in OpPeriod-1 and contributed to a large portion of the decline in total algal cover detected previously. However, its abundance stabilized in OpPeriod-2 with no further declines (**Table 3-3**). A decrease in the abundance of *Pelvetia compressa* (rockweed) and several other species were new changes identified in Field's Cove in OpPeriod-2. The increases in *Endocladia muricata*, *Gelidium coulteri*, and non-coralline crustose algae are consistent with the patterns detected in these same taxa at upper elevation transects in Diablo Cove (**Table 3-1**). However, the increases in these taxa in Field's Cove were smaller than the changes in Diablo Cove (**Appendix E1**).

Table 3-1. Significant discharge effects on upper elevation intertidal algae within Diablo Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Prionitis spp.	Bare rock (*)
Ulva/Enteromorpha	*Endocladia muricata* (§)
	Gastroclonium subarticulatum (§)
	Gelidium coulteri (§)
	Mazzaella affinis (§)
	Non-coralline crustose algae (+)
Significant Decreases	
	Algal diversity (–)
	Chondracanthus canaliculatus (*)
	Corallina vancouveriensis (–)
	Crustose coralline algae (–)
	Cryptopleura violacea (–)
	Fucus gardneri (–)
	Gelidium pusillum (§)
	Mastocarpus jardinii (–)
	Mastocarpus papillatus (–)
	Mazzaella flaccida (–)
	Pelvetia compressa (–)
	Phyllospadix spp. (–)
	Porphyra spp. (–)
	Species richness (–)
	Total algal cover (*)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

Significant increases in species richness and total algal cover were detected as new changes for the Field's Cove lower elevation transects **(Table 3-4).** These increases were in contrast to the absence of change or continuing declines in these community-level indices in Diablo Cove and at the upper elevation transects in Field's Cove. Changes that were similar to Diablo Cove included increases in ephemeral algae (Chrysophyta and *Ulva/Enteromorpha* spp.) and bare rock. As in the upper elevation transects in Field's Cove, *Mazzaella flaccida* significantly declined and contributed to a large portion of the decline in total algal cover in OpPeriod-1. It remained at a lower level of abundance in OpPeriod-2. A further increase in *Egregia menziesii*, a temperature-sensitive kelp, at the lower elevation transects in Field's Cove contrasts with the declines in *Fucus gardneri* and *Pelvetia compressa*, also temperature-sensitive species, at the upper elevation transects.

Table 3-2. Significant discharge effects on lower elevation intertidal algae within Diablo Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
	Bare rock (*)
	Chrysophyta unid. (§)
	Coralline crustose algae (+)
	Endocladia muricata (§)
	Filamentous red algae (+)
	Mazzaella affinis (§)
	Mazzaella flaccida (§)[1]
	Mazzaella heterocarpa (§)
	Non-coralline crustose algae (*)
	Ulva/Enteromorpha (+)
Significant Decreases	
Mastocarpus papillatus	Algal diversity (–)
	Calliarthron/Bossiella (*)
	Chondracanthus canaliculatus (–)
	Corallina vancouveriensis (*)
	Cryptopleura violacea (–)
	Cryptosiphonia woodii (*)
	Egregia menziesii (–)
	Gelidium coulteri (§)
	Mastocarpus jardinii (–)
	Mazzaella leptorhynchos (–)
	Phyllospadix spp. (–)
	Prionitis spp. (§)
	Species richness (–)
	Total algal cover (*)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

[1] *Mazzaella flaccida* continued in low abundance between periods—the statistically significant increase was attributed to a declining control abundance.

Diablo Cove, Field's Cove, and control areas remained distinct from one another in species composition and abundance at both upper and lower elevations from 1990 through 1998 (**Figures 3-3 and 3-4**). Control transects had the least amount of variation, as represented by first dimension survey scores, compared to transects in Diablo Cove and Field's Cove. By comparing the survey scores with the associated taxa scores for the upper elevation, *Mastocarpus papillatus* and *Endocladia muricata* contributed to the clustering of survey scores for Field's Cove (Figure 3-3a). Ephemeral algae (*Ulva/Enteromorpha*) contributed to the clustering of survey scores for Diablo Cove, similar to results for the lower elevation. The upper elevation at the control area was mainly characterized by perennial taxa including *Mazzaella flaccida*, *Pelvetia compressa* and *Mastocarpus jardinii* (Figure 3-3b).

Table 3-3. Significant discharge effects on upper elevation intertidal algae within Fields Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Gelidium pusillum	Bare rock (*)
	Endocladia muricata (§)
	Gelidium coulteri (§)
	Non-coralline crustose algae (+)
Significant Decreases	
Corallina vancouveriensis	Algal diversity (*)
Coralline crustose algae	*Mazzaella flaccida* (*)
Cryptopleura violacea	*Phyllospadix* spp. (–)
Fucus gardneri	*Porphyra* spp. (–)
Pelvetia compressa	*Prionitis* spp. (*)
	Total algal cover (*)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

By comparing the lower elevation survey scores (**Figure 3-4a**) with the associated taxa scores (**Figure 3-4b**) it was evident that the presence of *Egregia menziesii* contributed to the clustering of survey scores for Field's Cove and ephemeral algae (*Ulva/Enteromorpha* and filamentous red algae) contributed to the clustering of survey scores for Diablo Cove. The control area was characterized by lower abundances of ephemeral taxa, and greater abundances of perennial taxa including *Mazzaella flaccida* and *Phyllospadix* spp.

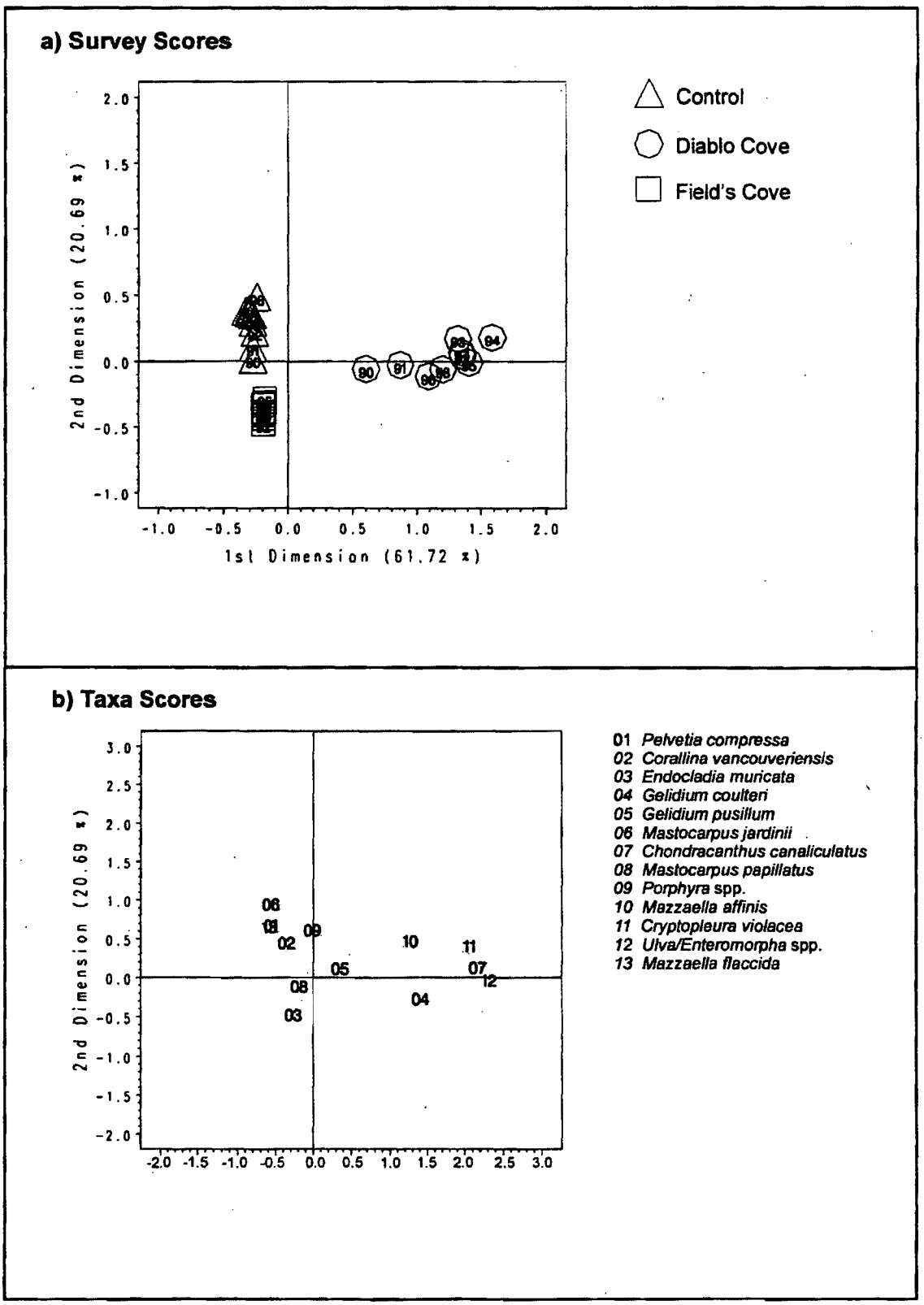


Figure 3-3. Correspondence analysis results for intertidal algae sampled at the upper elevation horizontal band transects.

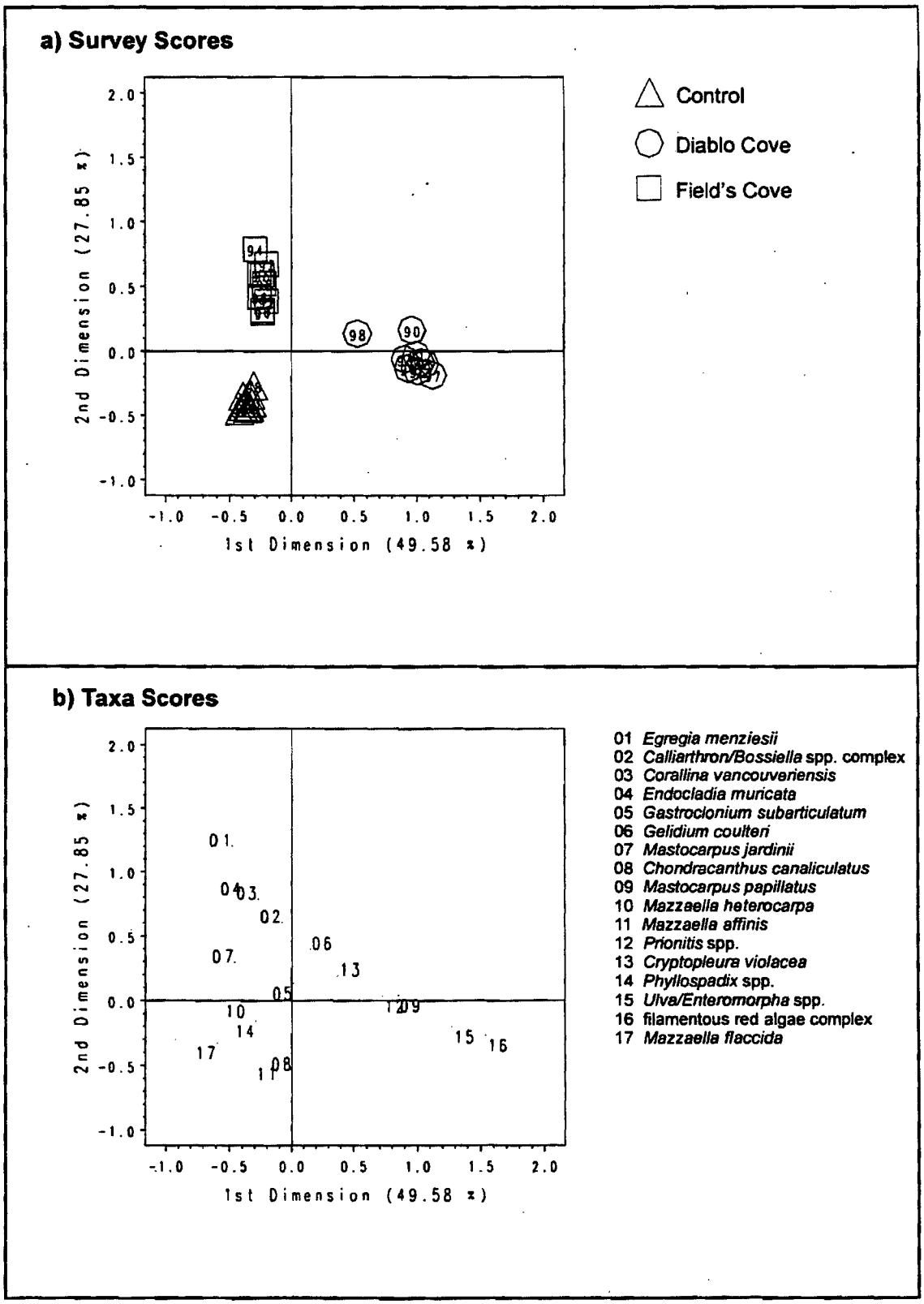


Figure 3-4. Correspondence analysis results for intertidal algae sampled at the lower elevation horizontal band transects.

Table 3-4. Significant discharge effects on lower elevation intertidal algae within Field's Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Articulated coralline algae (juv.)	Bare rock (*)
Chrysophyta unid.	*Corallina officinalis* (+)
Gelidium pusillum	*Egregia menziesii* (+)
Mazzaella lilacina	*Gelidium coulteri* (§)
Osmundea spp.	*Mastocarpus jardinii* (§)
Species richness	*Mazzaella affinis* (§)
Total algal cover	*Porphyra* spp. (+)
	Ulva/Enteromorpha (+)
Significant Decreases	
Cryptosiphonia woodii	Coralline crustose algae (§)
Endocladia muricata	*Mastocarpus papillatus* (*)
	Mazzaella flaccida (*)
	Mazzaella heterocarpa (–)
	Mazzaella leptorhynchos (*)
	Non-coralline crustose algae (§)
	Phyllospadix spp. (–)
	Prionitis spp. (*)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

3.1.3 Discussion

OpPeriod-1 discharge effects as measured in the HBT study occurred mainly in Diablo Cove and declined outside the cove (Tenera 1997). These effects consisted of losses in total algal cover, diversity, and mean species richness (number of taxa). Bare rock space increased as a result of losses in foliose perennial algal cover, but the bare substrate was eventually colonized by ephemeral algae.

OpPeriod-2 algal changes generally followed the same patterns of change described in Tenera (1997) and indicated that algal species composition and abundance in Diablo Cove had not stabilized. Continuing decreases in *Phyllospadix* spp. and new decreases in *Mastocarpus papillatus* were the most notable changes in Diablo Cove during OpPeriod-2. These taxa were among the more abundant taxa in the intertidal zone in Diablo Cove during OpPeriod-1. Surveys of *Phyllospadix* spp. (surfgrass) within the study area were done in the summer of 1997. A report containing the results of these surveys and a summary of power plant effects on surfgrass was submitted to the RWQCB in 1998 (Tenera Inc., 1998).

Some of the changes in Diablo Cove may have been due to secondary effects, such as invertebrate grazing and colonization. These secondary effects could account for a decrease in the abundance of warm-water tolerant species that would otherwise be expected to remain unchanged in the presence of the discharge. Another possible mechanism for an alga decreasing in abundance and later increasing in abundance may be the selection for and establishment of warmer water phenotypes of that species.

Diablo Cove exhibited the greatest number of observed effects during OpPeriod-2, with discharge effects on some taxa expanding over a wider range of shoreline elevations. Upper elevation transects showed new increases in ephemeral algae and continuing increases of non-coralline algae. Discharge effects in these taxa had previously only been detected at lower intertidal transects (Tenera 1997). Another new change at the lower elevation transects was a decrease in *Mastocarpus papillatus*.

Effects of the discharge on the algal assemblage in Field's Cove were considerably reduced in magnitude from those in Diablo Cove. Some of the changes also contrasted with patterns of change observed in Diablo Cove. Increases in species richness and total algal cover in Field's Cove contrasted with the absence of change or further declines in these community indices in Diablo Cove. Other changes similar to those observed in Diablo Cove included increased abundances of ephemeral algae, non-coralline crustose algae, and bare rock. Additionally, fewer significant changes were detected in Field's Cove relative to Diablo Cove (taxa lists in **Tables 3-1 and 3-2** compared to **Tables 3-3 and 3-4**). Another indication that Field's Cove was a transition zone with diminished discharge effects was the contrasting results among temperature-sensitive taxa. While decreases were detected in *Pelvetia compressa* (rockweed) at the upper elevation transects, a significant increase was detected in the temperature sensitive *Egregia menziesii* at the lower elevation transects. Similarly, the temperature sensitive *Mazzaella flaccida*, previously used as an indicator species to delineate the extent of discharge effects outside Diablo Cove, stabilized (relative to control abundances) at a reduced level of abundance in Field's Cove.

In conclusion, the additional four years of sampling (1995–1998) provided the opportunity to examine whether the magnitude and spatial extent of previously identified trends in discharge effects had stabilized. The results indicate that many of the previously identified discharge effects continued in both Diablo Cove and Field's Cove. The magnitude and spatial extent of effects increased in Diablo Cove for some species with new changes extending over broader

vertical ranges. Some of the changes observed in Diablo Cove were also detected in Field's Cove, providing evidence that discharge effects continued to extend into Field's Cove although fewer species were affected in Field's Cove. In addition, species that had declined in Diablo Cove either increased in abundance in Field's Cove (*Egregia menziesii*) or remained at a stabilized level of reduced abundance (*Mazzaella flaccida*). These results provide evidence that areas of Field's Cove remained a transition zone with reduced discharge effects.

3.2 Intertidal Invertebrates

Intertidal invertebrates have been studied at DCPP using the horizontal band transect (HBT) method since 1976. Following power plant start-up in 1985, invertebrate species richness at Diablo Cove stations increased at the upper intertidal elevation and did not change at the lower intertidal elevation. Changes in the invertebrate community were characterized by increases in purple urchins, limpets, barnacles, and tube-dwelling polychaetes, and declines in six-rayed sea stars and black abalone. Intertidal invertebrate community structure (composition and abundance) at Diablo Cove stations continued to change until late 1992 (Tenera 1997). Community structure changes of lesser magnitude continued from 1992 through 1995. A similar pattern of changes in community structure was also evident at Field's Cove stations, though effects of the discharge decreased with distance from Diablo Cove.

This section describes important new or continuing effects of the power plant discharge on intertidal invertebrates through analysis of the HBT data collected at Diablo Cove, Field's Cove, and control stations from OpPeriod-2. Identified discharge effects were categorized as either new or continuing by comparing results of the current analysis with results of the previous TEMP analysis (Tenera 1997).

3.2.1 Methods

The following section describes the sampling and analysis methods used in the study of intertidal invertebrates. In the HBT study, we sampled invertebrates in the same quadrats as the algae (see Section 3.1.1 – *Intertidal Algae Sampling Methods*) at both the +0.3 m and +0.9 m MLLW tidal elevations.

Sampling Methods

In five of ten quadrats, all species were recorded as either present or absent, and individuals larger than 2.5 cm in greatest dimension were counted. In the remaining five quadrats, the same method was used except that select species of invertebrates were counted regardless of size. The percent cover of encrusting invertebrates such as sponges and tunicates was estimated using the same methods as used for algae. All sizes of black abalone were counted in these ten quadrats and in an additional five quadrats.

Nine HBT stations were sampled and included in this study:

- two Control stations (NC-1 and SC-1),
- four Diablo Cove stations (NDC-2 and -3, and SDC-1 and -3), and
- three Field's Cove stations (FC-1, -2, and -3).

During OpPeriod-2, the Diablo Cove and control HBT stations were sampled twice annually, and the Field's Cove HBT stations were sampled four times annually.

Analysis Methods

Abundance of individual taxa was analyzed for changes between OpPeriod-1 and OpPeriod-2 using ANOVA (see Section 1.1 – *Study Design and Analysis*). The invertebrate taxa analyzed were those that formed 99% of the total abundance in the two periods at the Diablo Cove and Field's Cove stations. Data from stations SDC-1 and -3 in south Diablo Cove were included in the ANOVA tests. These stations were excluded from analysis in the TEMP Analysis Report because they were severely impacted by the 1982/83 winter storms (see discussion in Section 3.1 – *Intertidal Algae Analysis Methods*). The upper and lower elevation transect data were analyzed separately.

Changes in invertebrate assemblages can be identified by multivariate techniques. Correspondence analysis was used to contrast patterns of change in invertebrate assemblages among areas for the period of 1990 through 1998. The taxa that comprised the majority (95%) of the total abundance and that occurred in at least 10% of the surveys were used in analyses for each elevation. Data for these taxa were log(x+1) transformed to compensate for scale differences between counted and coverage taxa and then combined into annual means for the stations in the following four areas:

- Control (NC-1 and SC-1)
- North Diablo Cove (NDC-2 and -3)
- South Diablo Cove (SDC-1 and -3)
- Field's Cove (FC-3).

Discharge effects from the current report were compared with statistical results from the TEMP Analysis Report to identify new or continuing effects of the discharge.

3.2.2 Results

Intertidal invertebrate community structure, both composition and species abundances, differed substantially with elevation; consequently results of the HBT invertebrate study are presented separately by elevation.

Upper elevation

Correspondence analysis (CA) of eight taxa for upper-elevation (+0.9 m) invertebrate assemblages at north Diablo Cove and south Diablo Cove differed substantially from each other, and from Field's Cove and control stations (**Figure 3-5a**). CA of data from 1990 through 1998 showed that the north Diablo Cove assemblage differed from those at other locations as a result of greater abundances of *Lottia digitalis* (ribbed limpet), *Macclintockia scabra* (rough limpet), and *Chthamalus fissus* (acorn barnacle) (**Figure 3-5b,** axis 1). A pattern of increasing community dissimilarity from the control was evident at north Diablo Cove from 1990 through 1998. The south Diablo Cove assemblage differed from Field's Cove and control locations primarily as a result of a greater abundance of *Tetraclita rubescens* (red volcano barnacle) (**Figure 3-5b**, axis 2). The invertebrate community structure at south Diablo Cove, unlike that of north Diablo Cove, did not diverge further from the control during OpPeriod-2. Community structure at Field's Cove was very stable from 1992 through 1998 and closely resembled that of the control in 1996 and 1998.

ANOVA comparing OpPeriod-1 and OpPeriod-2 detected discharge effects in 22 of 25 upper elevation invertebrate species within Diablo Cove. Most of these effects were categorized as continuing, rather than new (**Table 3-5**). Continuing discharge-related increases in the abundance of *Chthamalus fissus*, *Lottia digitalis*, and *Macclintockia scabra* within Diablo Cove explained the divergence in community structure evident in the correspondence analysis. Invertebrate species richness also continued to increase in Diablo Cove from 1995 through 1998. *Phragmatopoma californica* (sand-tube polychaete), *Lottia pelta* (shield limpet), and *Pagurus* spp. (hermit crab) declined in Diablo Cove during the 1995 through 1998 period following significant increases after power plant start-up (Tenera 1997). New significant increases were detected at the upper elevation transects in *Strongylocentrotus purpuratus* (purple urchin), *Pista* spp. (tube-dwelling polychaete), and *Haliotis cracherodii* (black abalone). However, black abalone are not abundant within Diablo Cove (see Section 3.3 - *Intertidal Black Abalone*), and

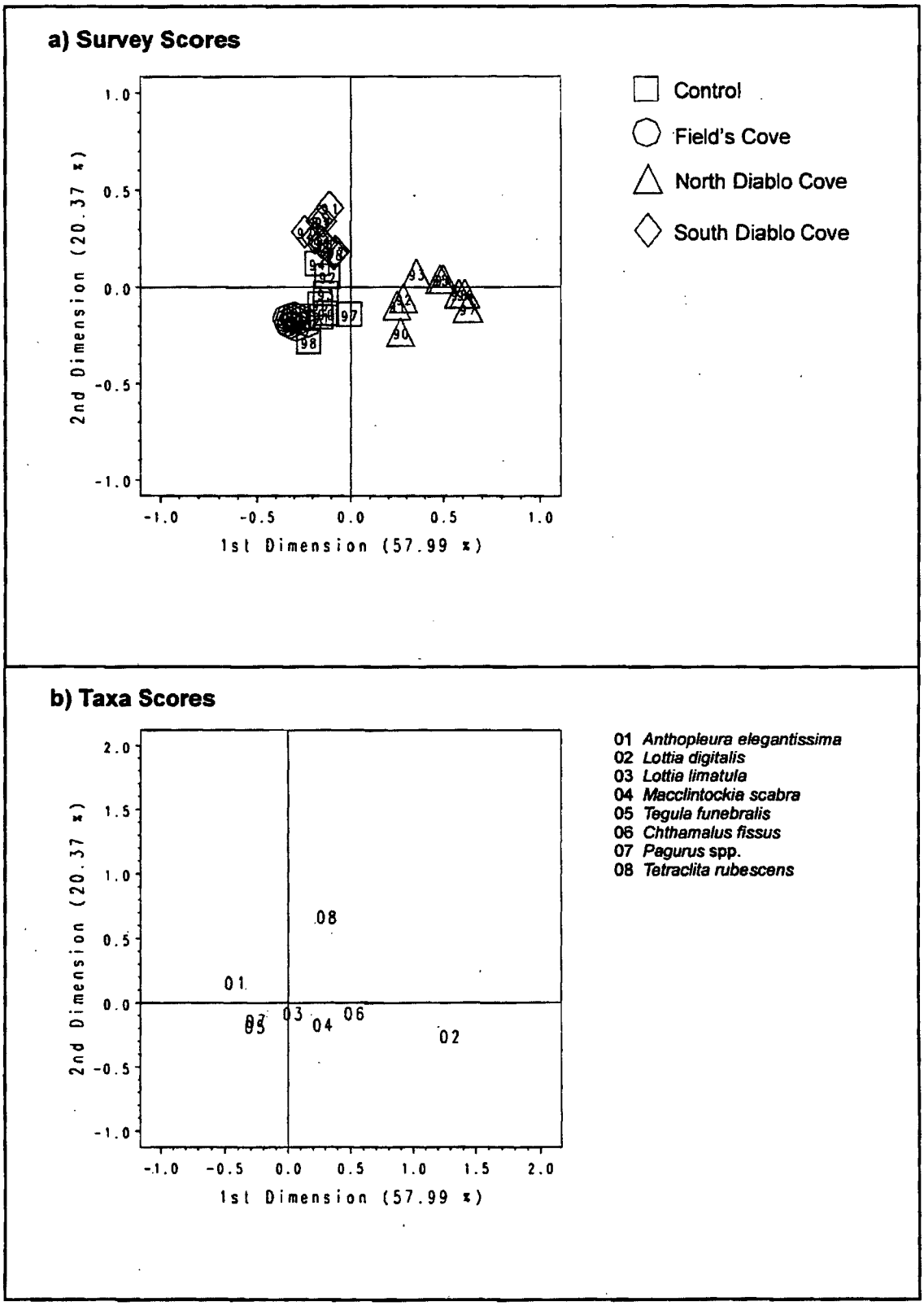


Figure 3-5. Correspondence analysis results for intertidal invertebrates sampled at the upper elevation horizontal band transects.

the apparent increase actually resulted from a decline in its abundance at control station NC-1 rather than an absolute increase within Diablo Cove.

Table 3-5. Significant discharge effects on upper elevation intertidal invertebrates within Diablo Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Haliotis spp.[1]	*Anthopleura elegantissima* (+)
Pista spp.	*Chthamalus fissus* (+)
Strongylocentrotus purpuratus	*Cyanoplax* spp. (+)
	Fissurella volcano (+)
	Lottia digitalis (+)
	Lottia limatula (+)
	Macclintockia scabra (+)
	Pachygrapsus crassipes (+)
	Tegula funebralis (*)
	Tetraclita rubescens (+)
	Species richness (+)
Significant Decreases	
Leptasterias spp.	*Acanthina* spp. (*)
Pollicipes polymerus	*Lottia pelta* (§)
Tectura scutum	*Nuttallina californica* (–)
	Pagurus spp. (§)
	Phragmatopoma californica (§)
	Tegula brunnea (*)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

[1] *Haliotis cracherodii* continued in low abundance between periods—the statistically significant increase was attributed to a declining control abundance.

Discharge effects were detected in fewer species in Field's Cove (16 of 25) compared to Diablo Cove (**Table 3-6**). New declines were detected in *Anthopleura elegantissima* and *Chthamalus fissus*, while *Lottia limatula* (file limpets) and *Pachygrapsus crassipes* (lined shore crab) continued to increase. *Phragmatopoma californica*, *Cyanoplax* spp. (chitons), and *Lottia digitalis* declined in Field's Cove during OpPeriod-2 following significant increases after plant start-up (Tenera 1997). As in Diablo Cove, the apparent increase in black abalone was actually due to a decline at the control, rather than an absolute increase in Field's Cove. Overall, invertebrate species richness continued to increase in Field's Cove during OpPeriod-2. Further increases in *L. limatula*, *P. crassipes*, and species richness, and further declines in *Nuttallina californica* (Nuttall's chitons) paralleled the results from Diablo Cove.

Lower elevation

Correspondence analysis of 14 taxa for the 1990–1998 period showed that the invertebrate community at the lower elevation (+0.3 m MLLW) north and south Diablo Cove HBT stations differed notably from that of the control, with the largest differences occurring in 1998 (**Figure 3-6a**). These differences primarily reflected greater abundances of *Macclintockia scabra*, *Fissurella volcano* (volcano limpet), *Chthamalus fissus*, and *Strongylocentrotus purpuratus* at Diablo Cove HBT stations (**Figure 3-6b**). Greater abundances of *S. purpuratus* and *Nuttallina californica* (**Figure 3-6b**) at Field's Cove resulted in differences in the invertebrate assemblage at this location between 1997 and 1998. Unlike the upper elevation, Field's Cove community structure at the lower elevation differed markedly from the control from 1990 through 1998.

Table 3-6. Significant discharge effects on upper elevation intertidal invertebrates within Field's Cove during OpPeriod-2.

New Effects	Continuing Effects
	Significant Increases
Tetraclita rubescens	*Lottia limatula* (+)
	Pachygrapsus crassipes (+)
	Haliotis spp. (*)[1]
	Lottia pelta (*)
	Tegula funebralis (*)
	Species richness (+)
	Significant Decreases
Acanthina spp.	*Cyanoplax* spp. (§)
Anthopleura elegantissima	*Lottia digitalis* (§)
Chthamalus fissus	*Nuttallina californica* (–)
Pollicipes polymerus	*Ocenebra* spp. (–)
	Phragmatopoma californica (§)
	Tectura scutum (–)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

[1] *Haliotis cracherodii* continued in low abundance between periods—the statistically significant increase was attributed to a declining control abundance.

ANOVA comparing OpPeriod-1 to OpPeriod-2 detected discharge effects in OpPeriod-2 for 26 of the 28 species analyzed at the lower elevation of Diablo Cove. Similar to the upper elevation Diablo Cove results, most of these were categorized as continuing, rather than new, effects (**Table 3-7**). Continuing decreases included *Leptasterias* spp. (six-rayed sea star), *H. cracherodii* (black abalone), and *Tegula brunnea* (brown turban snail), and continued increases included *Lottia limatula* and *Fissurella volcano*. Declines in *Tegula funebralis* (black turban snail), *Pista* spp. (tube-dwelling polychaete), and *C. fissus* in Diablo Cove from 1995 through 1998 followed

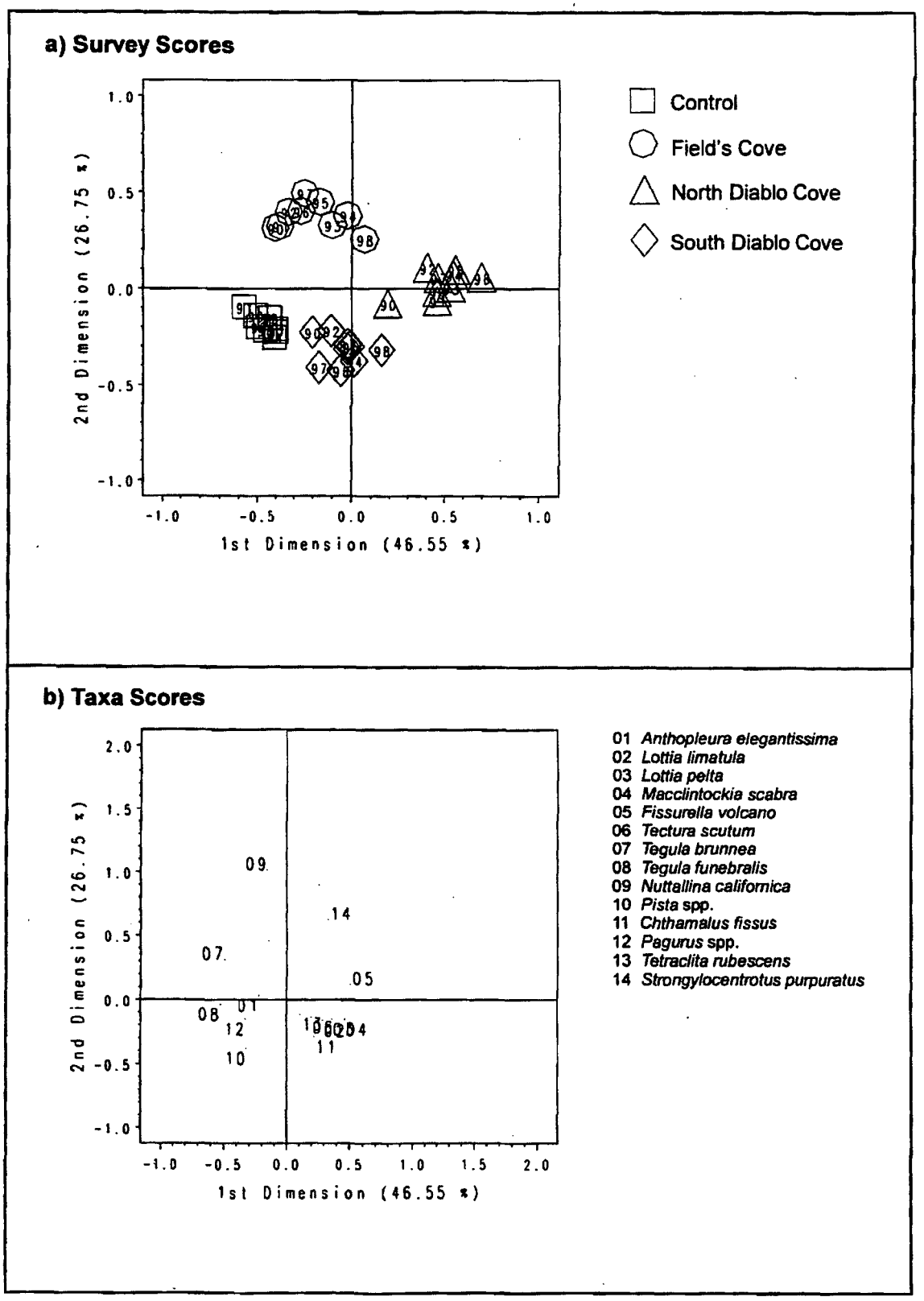


Figure 3-6. Correspondence analysis results for intertidal invertebrates sampled at the lower elevation horizontal band transects.

significant increases in these species after plant start-up (Tenera 1997). Continuing increases in *S. purpuratus* and *F. volcano* in Diablo Cove likely accounted for the increased community dissimilarity of Diablo Cove in 1998 from the control evident in the correspondence analysis. New effects included increases in *Lottia digitalis* and *Tectura scutum* (plate limpet), and a significant decrease in invertebrate species richness (**Table 3-7**).

Table 3-7. Significant discharge effects on lower elevation intertidal invertebrates within Diablo Cove during OpPeriod-2.

New Effects	Continuing Effects
	Significant Increases
Lottia digitalis	*Anthopleura elegantissima* (+)
Tectura scutum	*Epiactis prolifera* (§)
	Fissurella volcano (+)
	Lottia limatula (*)
	Lottia pelta (*)
	Nemertea unid. (§)
	Pachygrapsus crassipes (+)
	Serpulorbis squamigerus (§)
	Strongylocentrotus purpuratus (+)
	Significant Decreases
Balanus spp.	*Chthamalus fissus* (§)
Nuttallina californica	*Haliotis* spp. (*)
Pagurus spp.	*Leptasterias* spp. (*)
Serpulidae unid.	*Macclintockia scabra* (§)
Species richness	*Mopalia* spp. (–)
	Ocenebra spp. (–)
	Pista spp. (§)
	Pugettia spp.
	Tegula brunnea (–)
	Tegula funebralis (§)
	Tunicates, colonial/social (–)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

Fewer species were affected in Field's Cove than in Diablo Cove at the same elevation. Only 14 of the 28 analyzed species from the lower elevation of Field's Cove were affected by the discharge. The majority of significant effects were new in OpPeriod-2 (**Table 3-8**).

New increases in *Anthopleura elegantissima*, *Phragmatopoma californica*, and invertebrate species richness, and further increases in *Strongylocentrotus purpuratus* occurred within Field's Cove. The increase in *S. purpuratus* contributed to the similarity in community structure noted earlier between Field's and Diablo Coves.

Table 3-8. Significant discharge effects on lower elevation intertidal invertebrates within Field's Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Anthopleura elegantissima	*Lottia limatula* (*)
Balanus spp.	*Pachygrapsus crassipes* (+)
Epiactis prolifera	*Pista* spp. (*)
Nemertea unid.	*Strongylocentrotus purpuratus* (+)
Phragmatopoma californica	
Pugettia spp.	
Species richness	
Significant Decreases	
Haliotis spp.	*Lottia pelta* (*)
Serpulidae unid.	
Tegula funebralis	

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (+) further increase in previously determined effect.

3.2.3 Discussion

The relative contributions of elevated water temperature and the effects of algal grazers in maintaining open space in Diablo Cove were not investigated in the current study. However, the re-establishment of an intertidal community similar to that of the pre-operation period may been inhibited by the herbivorous invertebrate assemblage in Diablo Cove. Discharge-related reductions (-57%) in total non-crustose algal cover in Diablo Cove after plant start-up corresponded to increases (+111%) in the extent of bare rock substrate (Tenera 1997). Large increases in the abundance of algal grazing limpets (e.g., *Lottia limatula*, *L. digitalis*, and *Macclintockia scabra*), particularly in north Diablo Cove, followed the reduction of algal cover (**Figure 3-7**). The increase in limpets undoubtedly reflected an increase in crustose algal films, a preferred food of these grazers (Wara and Wright 1964; Morris et al. 1980). This community structure was largely unchanged during OpPeriod-2 and was not evident in Field's Cove.

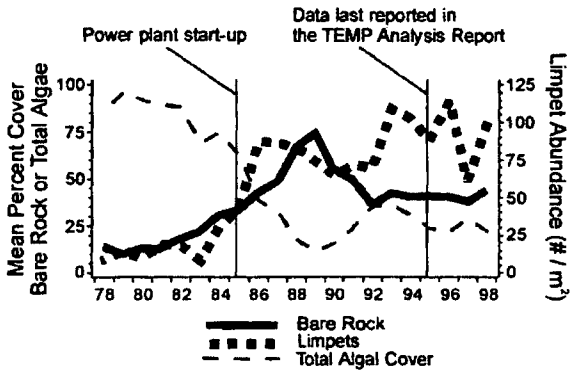


Figure 3-7. Changes in bare rock, limpets, and total algal cover (excluding crustose algae) at the north Diablo Cove upper elevation horizontal band transects.

Diablo Cove, Field's Cove, and the control sites had many species in common, but the proportions of those species were very different among areas. Operation period decreases in the abundance of the many species were noted in the current report and in Tenera (1997), yet none of these species became completely eliminated from Diablo Cove due to the discharge. Some species, including black abalone and *Leptasterias* spp. (six-rayed sea star) however, were greatly reduced in abundance and were rarely found within Diablo Cove during OpPeriod-2. Several new species were observed during the operation period as a result of the warm water environment in Diablo Cove (Tenera 1997). These species were observed during cove-wide black abalone surveys and, consequently, were not included in the community structure analyses. However, their occurrences, coupled with evidence presented in this report, demonstrate that the intertidal invertebrate community of Diablo Cove continues to vary temporally and spatially as a result of the discharge.

3.3 Intertidal Black Abalone

Haliotis cracherodii (black abalone) abundance in Diablo Cove and vicinity has been monitored periodically since 1966 when studies were conducted by the California Department of Fish and Game (Burge and Schultz 1973). Data from HBT and cove-wide intertidal surveys showed a healthy population of black abalone existed in Diablo Cove through 1987. In 1988, however, their numbers began to decline as a result of withering syndrome (WS) disease. WS was observed in other shoreline areas near Diablo Cove by early 1990. Black abalone populations have declined throughout central and southern California since the discovery of the disease in the late 1980s (Altstatt et al. 1996). The pathogen that causes WS is apparently present in healthy abalone populations (Gardner et al. 1995) and symptoms are exacerbated by environmental factors including elevated temperature (Steinbeck et al. 1992).

WS disease-related mortalities were largely responsible for the general decline in abalone abundance observed after 1990 in the area between Point Buchon and Point San Luis (Tenera 1997). WS affected all sizes of black abalone. By 1990 their abundance in Diablo Cove was reduced to less than 10% of the population that existed prior to 1988. Strong cohorts of juvenile abalone recruited into Diablo Cove each year from 1991 through 1994. As a result, the abundance of abalone below about 70 mm shell length gradually increased during this time in Diablo Cove. WS-related mortalities, however, continued to affect abalone of all sizes in study areas outside of the cove.

This section presents the results of black abalone studies at DCPP from 1995 through 1998. Declines in black abalone abundance were documented during this period—a continuation of declines reported previously (Tenera 1997).

3.3.1 Methods

This section describes the sampling methods employed and analysis approach used to determine effects from the DCPP discharge on black abalone.

Sampling Methods

We monitored black abalone abundance as part of the HBT sampling (see Section 3.2 - *Intertidal Invertebrates*). Additional information on their distribution, abundance, length-frequency, and

condition within Diablo Cove was collected using a random sampling design. Approximately 10% of the 15,500 m^2 of the Diablo Cove intertidal zone between the 0.0 m and +1.3 m levels was sampled during each survey. Transect lines up to 100 m in length were aligned along permanent markers at approximately +0.6 m MLLW in Diablo Cove. Five transects were located to the north of the discharge structure and five were located to the south (**Figure 3-8**). Random coordinates above and below the transect lines were used to position 1 m^2 quadrat sampling plots. Abalone were counted within each quadrat. Since 1991, abalone shell lengths have been estimated visually and categorized as juvenile (<25 mm), small (<50 mm), medium (51-100 mm), or large (>100 mm). Surveys were conducted in the following years:

- Once per year in 1981/82, 1983, 1984/85, 1988,
- Twice per year from 1989 through 1995, and
- Once per year from 1996 through 1998.

The abundance, size distribution, and condition of abalone were also monitored at 10 permanent stations measuring 2 m wide by approximately 10 m long. Five stations were located either in or near Diablo Cove and five stations were located at greater distances north and south of Diablo Cove (**Figure 3-8**). Stations were sampled once per year in summer from 1996 through 1998.

Analysis Methods

Data were analyzed by calculating mean abalone abundance at each transect and comparing abundances among transects. We estimated the total number of abalone present in Diablo Cove during each survey by calculating the product of the unweighted mean of the individual transect densities and the estimated 15,500 m^2 of potential black abalone habitat within Diablo Cove.

3.3.2 Results

Abalone abundance in Diablo Cove declined from 1995 through 1998 (**Table 3-9**). The 1998 survey resulted in the smallest population estimates of black abalone in Diablo Cove since the surveys first began in 1981. Abundance of juvenile abalone in Diablo Cove during the 1995 through 1998 surveys (**Table 3-10**), was lower than abundances recorded from 1991 through 1994 (Tenera 1997).

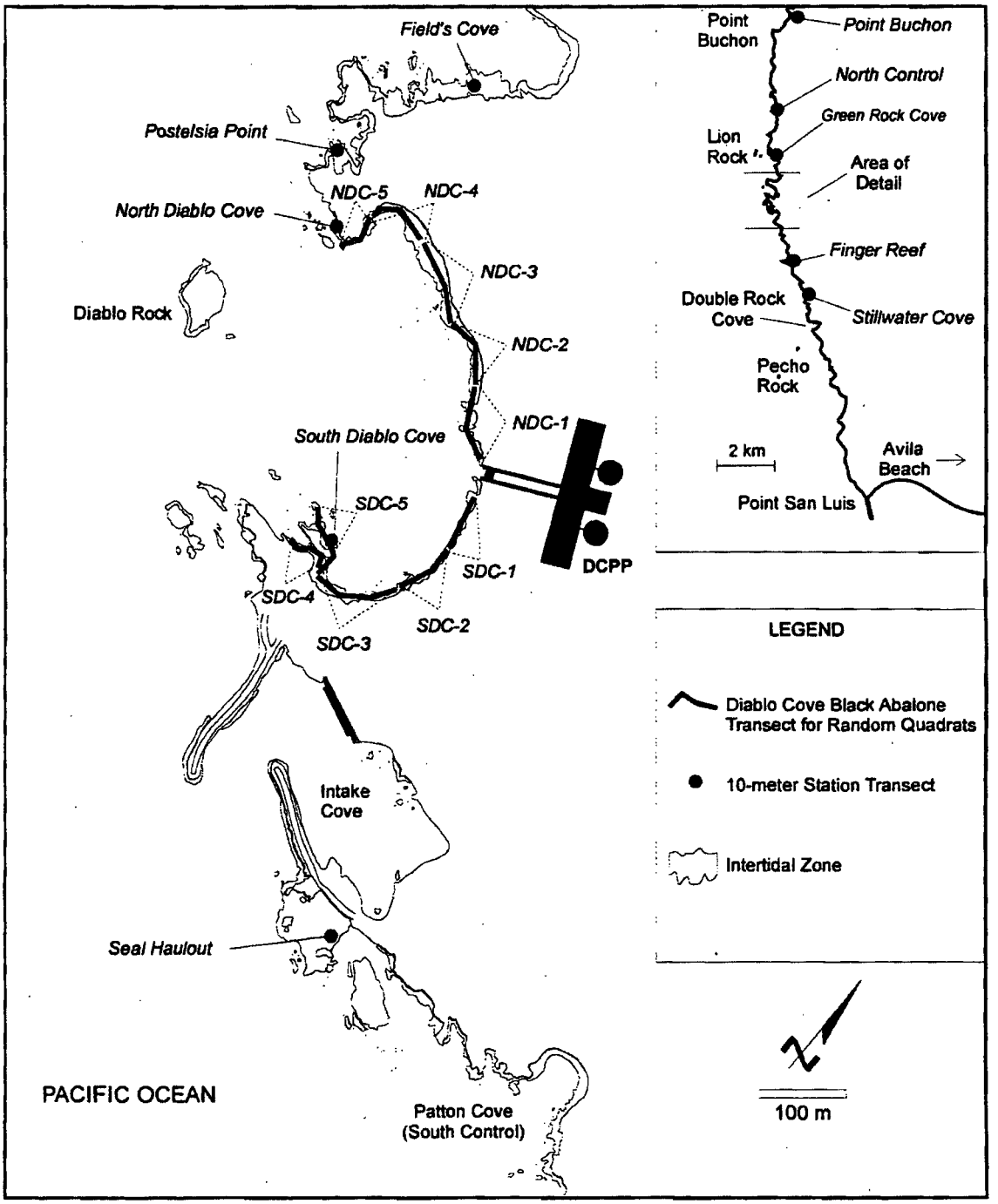


Figure 3-8. Diablo Cove transects for black abalone random quadrat sampling and 10-meter station transects.

Black abalone also continued to decline in areas outside of Diablo Cove with the rate of decline varying among sites (Tenera 1997). However, by 1998 observations appeared to show that black abalone were entirely eliminated from some areas. For example, results for the HBT survey in 1998 showed that abalone density had declined to 0.08/m² at the Field's Cove stations, and to 0.03/m² at both control and Diablo Cove stations. Similar declines also occurred at the 10 m stations (**Table 3-11**). No abalone were observed with WS in 1995, but abalone with symptoms of WS were observed within the study area in 1996, 1997, and 1998.

Table 3-9. Black abalone abundance (mean #/m²) at ten contiguous transects in Diablo Cove, 1995–1998. Surveys were completed in June through August of each year. Includes all size classes.

Transect	1995	1996	1997	1998
S1	0.00	0.00	0.01	0.00
S2	0.02	0.06	0.01	0.00
S3	0.04	0.01	0.01	0.00
S4	0.08	0.19	0.07	0.01
S5	0.05	0.36	0.24	0.12
N1	0.05	0.03	0.02	0.06
N2	0.25	0.15	0.17	0.03
N3	0.54	0.63	0.29	0.06
N4	0.09	0.07	0.09	0.12
N5	0.45	0.27	0.30	0.02
Survey mean	0.16	0.18	0.12	0.04
Total quadrats surveyed	1558	1660	1503	1470
Total abalone counted	251	274	165	61
Diablo Cove pop. est.	2492*	2651	1662	648

* includes data from summer 1995 survey only.

Table 3-10. Size frequency of black abalone at ten contiguous transects in Diablo Cove, 1995–1998.

Size range (mm)	June 1995	July 1996	July 1997	August 1998
Juvenile				
1 – 10	0	4	0	1
11 – 20	15	35	6	13
21 – 25	6	44	4	1
Total juvenile	21	83	10	15
% of grand total	8.4	30.3	6.1	24.6
Small				
26 – 30	10	31	7	3
31 – 40	50	40	21	4
41 – 50	60	32	25	5
Total small	120	103	53	12
% of grand total	47.8	37.6	32.1	19.7

(table continued)

Table 3-10 (continued). Size frequency of black abalone in Diablo Cove, 1995–1998.

Size range (mm)	June 1995	July 1996	July 1997	August 1998
Medium				
51 – 60	78	45	44	11
61 – 70	17	25	27	7
71 – 80	8	10	18	8
81 - 90	3	5	7	0
91 - 100	2	1	1	5
Total medium	108	86	97	31
% of grand total	43.0	31.4	58.8	50.8
Large				
101 - 110	1	1	3	3
111 - 120	1	1	1	0
> 120	0	0	1	0
Total large	2	2	5	3
% of grand total	0.8	0.7	3.0	4.9
Total abalone	**251**	**274**	**165**	**61**

Note: Minor differences between the size frequency data presented in this table and in Tenera (1997) are the result of corrections made to the original data. Population estimates remain unchanged.

Table 3-11. Total number of black abalone by size class at the 10 m stations, 1995–1998.

Area/Size Class	1995	1996	1997	1998		1995	1996	1997	1998
S. Diablo Cove					Stillwater Cove	n/s			
Juvenile	2	0	0	0	Juvenile		0	0	0
Small	6	9	4	0	Small		11	5	0
Medium	7	8	5	3	Medium		36	38	13
Large	0	1	0	0	Large		2	2	0
Total	15	18	9	3	**Total**		49	45	13
N. Diablo Cove					North Control				
Juvenile	0	0	0	0	Juvenile	7	2	0	0
Small	0	0	1	0	Small	11	13	4	2
Medium	0	0	0	0	Medium	21	12	12	8
Large	0	0	0	0	Large	1	0	1	1
Total			1		**Total**	40	27	17	11
Field's Cove					Field's Cove/CDF&G	n/s			
Juvenile	3	0	0	0	Juvenile		3	2	0
Small	20	8	2	0	Small		29	18	7
Medium	10	10	15	2	Medium		27	39	28
Large	0	1	1	0	Large		3	9	5
Total	33	19	18	2	**Total**		62	68	40
Postelsia Pt.					Pt. Buchon	n/s			
Juvenile	4	2	1	0	Juvenile		2	0	0
Small	8	6	6	3	Small		17	16	4
Medium	5	8	13	11	Medium		59	54	26
Large	3	0	0	0	Large		4	10	0
Total	20	16	20	14	**Total**		82	80	30
Seal Haulout					Corral	n/s	n/s		
Juvenile	0	0	0	0	Juvenile			0	0
Small	5	4	1	0	Small			5	0
Medium	14	15	17	12	Medium			73	37
Large	0	0	0	1	Large			4	1
Total	19	19	18	13	**Total**			82	38

n/s = not sampled; station had not yet been established.

3.3.3 Discussion

Between 1988 and early 1991 the number of black abalone in Diablo Cove decreased by approximately 90%. While abalone at nearby Postelsia Point also declined during this period, abalone at greater distances from the cove declined either slightly or not at all (Tenera 1997). However, from mid-1991 through 1994 black abalone abundances increased in Diablo Cove because of successive strong juvenile recruitment events. Meanwhile, decreases continued at sites outside of the cove due to WS-related mortality. Although WS continued to be the leading cause of abalone mortality in Diablo Cove from mid-1991 through 1994, strong recruitment balanced these mortalities. After the last strong recruitment event in 1994, the abalone population in Diablo Cove remained relatively constant in both size-structure and abundance through 1996.

Since 1996 black abalone abundances throughout the study area have continued to decrease. Population estimates for Diablo Cove that had been relatively stable from 1994-1996 decreased due to the absence of strong recruitment over this time period. Although much reduced in all areas, black abalone exposed to the discharge may be expected to continue to decline at a greater rate as a result of WS-related mortality.

3.4 Intertidal Fishes

The intertidal fish community in Diablo Cove and Field's Cove prior to power plant operation (Kelly et al. 1985) was similar to other central California rocky coast areas (Horn et al. 1983). It was mainly comprised of eel-like fishes that are typically found beneath shoreline cobbles, boulders, or algae during low tides. *Xiphister mucosus* (rock prickleback), *X. atropurpureus* (black prickleback), and *Cebidichthys violaceus* (monkeyface eel) were some of the more abundant species. After power plant operation began, the discharge caused declines in the abundance of most species but did not substantially alter their relative abundance (Tenera 1997). Warmer water temperatures and reduced algal cover in Diablo Cove during the operation period were probably the most important factors contributing to their declines.

This section compares OpPeriod-1 and OpPeriod-2 to determine changes in the composition of the intertidal fish fauna in Diablo Cove and Field's Cove. Size frequencies for one of the more abundant species, *Xiphister mucosus*, are also presented for OpPeriod-2.

3.4.1 Methods

This section describes the field sampling methods and type of analysis used in the intertidal fish study.

Field Methods

We sampled intertidal fishes using the vertical band transect (VBT) sampling task. At each of three stations, three transects were positioned perpendicularly to the shoreline at fixed locations. Each transect originated in the high intertidal zone (approximately +1.5 m MLLW) and terminated in the low intertidal zone (approximately -0.2 m MLLW). Transects at each station were separated by approximately 3 m. Each transect was used as a reference line to position twelve 1 m^2 permanent sampling quadrats, for a total of thirty-six 1 m^2 quadrats per station. Moveable rocks were carefully lifted and any fishes seen were captured in small hand nets. We also searched for cryptic fishes among the foliose algae. Fishes were identified to the lowest practical taxonomic level, measured, and returned to the quadrat. Newly settled juvenile fishes were not identified to the species level but were grouped into composite taxa (e.g., *Anoplarchus/*

Cebidichthys). Diablo Cove VBT stations NDC1-V and SDC2-V were sampled annually and Field's Cove station FC1-V was sampled quarterly during OpPeriod-2.

Analysis Methods

Intertidal fish data were not analyzed statistically using ANOVA because Field's Cove was not considered a valid control station since it was contacted by the thermal plume. Therefore, mean period abundances were compared qualitatively for the pre-operation period, OpPeriod-1, and OpPeriod-2 between Field's Cove (FC1-V), north Diablo Cove (NDC1-V), and south Diablo Cove (SDC2-V).

3.4.2 Results

Mean abundance per taxon and numbers of taxa per survey during OpPeriod-2 were generally greatest at the Field's Cove station as compared with the Diablo Cove stations. Thirteen taxa were found during fourteen surveys in Field's Cove (**Figure 3-9a**). We found an average of 32 fish per survey at the station during OpPeriod-2. *Xiphister mucosus* was the most abundant fish during this period with Stichaeidae/Pholididae second in abundance. This grouping was comprised of juveniles too small to be reliably identified in the field and larger individuals that could not be captured and identified to species. Most taxa in Field's Cove declined in OpPeriod-2 compared to the previous periods, except Stichaeidae/Pholididae and *Anoplarchus purpurescens* (high cockscomb).

Seven taxa were found in four surveys at the north Diablo Cove station during OpPeriod-2. Mean abundance per survey for all taxa combined was 4.3 fishes per survey **(Figure 3-9b).** In comparison, we found an average of 66.8 fishes per survey in the pre-operation period and 12.9 per survey in OpPeriod-1. The most abundant taxa at north Diablo Cove in OpPeriod-2 were Stichaeidae/Pholididae followed by *X. mucosus*. Nearly all taxa except Stichaeidae/Pholididae declined between periods.

Four surveys were completed at the south Diablo Cove station during OpPeriod-2. More fishes were observed on average at this station (22.5 per survey) than at north Diablo Cove, and the numbers of taxa found were also slightly higher (**Figure 3-9c**). *Cebidichthys violaceus*, Stichaeidae/Pholididae, and *X. mucosus* were the most abundant species at SDC-2V in

OpPeriod-2. *Cebidichthys violaceus* and Stichaeidae/Pholididae increased compared to abundances in OpPeriod-1 while *X. mucosus* and *X. atropurpureus* decreased.

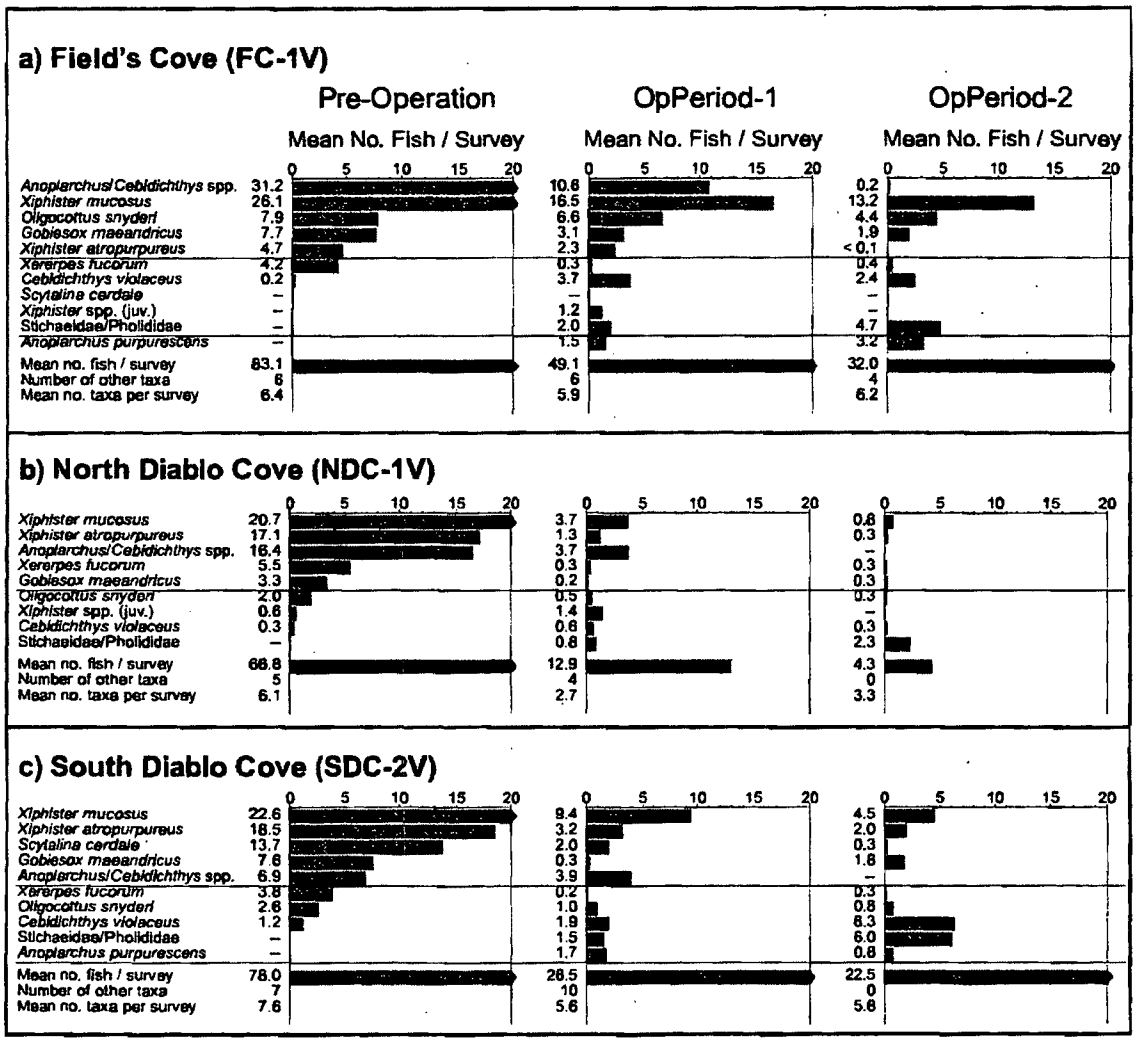


Figure 3-9. Intertidal fish abundance at the vertical band transect stations.

Xiphister mucosus was the only species abundant enough to examine trends in size frequency. At the Field's Cove station, mean sizes ranged from 56.6 mm to 133.5 mm in OpPeriod-2 (**Table 3-12**). Except for February 1998, we generally found smaller fishes in winter and larger fishes in late summer.

Table 3-12. Mean total lengths (mm) of *Xiphister mucosus* at Field's Cove and Diablo Cove stations, 1995–1998.

	Field's Cove		North Diablo Cove		South Diablo Cove	
Month-Year	mean	n	mean	n	mean	n
Jan-95	67.5	20	—	0	62.5	2
Jun-95	78.1	21	—	0	92.5	2
Jul-95	93.2	5	ns	ns	ns	ns
Nov-95	91.3	21	ns	ns	ns	ns
Jan-96	75.7	34	ns	ns	ns	ns
Jun-96	84.4	7	ns	ns	ns	ns
Jul-96	84.5	25	68.0	1	71.3	6
Dec-96	56.8	20	ns	ns	ns	ns
Jun-97	82.0	25	ns	ns	ns	ns
Sep-97	83.3	12	107.5	2	56.5	8
Dec-97	75.8	4	ns	ns	ns	ns
Feb-98	133.5	2	ns	ns	ns	ns
Jun-98	—	0	ns	ns	ns	ns
Jul-98	69.3	3	—	0	90.5	2
Nov-98	56.6	6	ns	ns	ns	ns

ns = station was not sampled.
— = station sampled, no fish measured

3.4.3 Discussion

The decreased abundance and decreased number of species in Diablo Cove were continuing effects of the discharge and were probably related to both physical and biological factors. Although the Field's Cove station was not a true control because of thermal plume contact, it was still useful as a comparison station to evaluate the magnitude of changes in intertidal fishes in Diablo Cove. The main physical factor causing reductions in Diablo Cove was probably warmer water temperatures. *X. mucosus* is a thermally sensitive species (PG&E 1982) that declined in Diablo Cove. *X. mucosus* also declined in Field's Cove but to a lesser degree. Significant losses of intertidal algal cover in Diablo Cove (see Section 3.1 - *Intertidal Algae*) also likely contributed to reductions in intertidal fishes. Algae protect fishes from desiccation during low tide and also provide a food resource, both directly and as habitat for microinvertebrates.

The fewer numbers of taxa found in Diablo Cove in OpPeriod-2 as compared to OpPeriod-1 may have resulted from the reduced sampling frequency (once per year vs. four times per year). The mean numbers of taxa per survey were similar between periods. With a single survey per year there was less opportunity to sample uncommon taxa, and it was less likely a survey would occur

within a period of maximum fish abundance. For example, *X. mucosus* abundance varied considerably between summer surveys, increasing over three-fold at the Field's Cove station between June and July 1996.

Size frequency analysis for *X. mucosus* yielded some information on growth trends for this species in Field's Cove but not in Diablo Cove. Increasing mean sizes between winter and summer surveys probably reflected the growth of individuals in annual cohorts of recruits. Because of low abundances of this species in Diablo Cove, the data were not adequate to assess possible differences in growth rates or mean sizes due to the discharge.

4.0 SUBTIDAL STUDIES

Subtidal algae, invertebrates, and fishes were sampled in several field studies in Diablo Cove, Field's Cove, and control areas. This included sampling of algae and invertebrate communities for species composition and abundance at permanent benthic stations, and identification and enumeration of fishes along permanent transects located near the benthic stations. The distribution and abundance of *Nereocystis luetkeana* (bull kelp) and *Macrocystis pyrifera* (giant kelp) in Diablo Cove were mapped in the habitat-forming kelp study. *Haliotis rufescens* (red abalone) and other macroinvertebrates were counted in Diablo Cove, Field's Cove, and South Control using a random sampling design.

4.1 Subtidal Algae

Subtidal algae have been sampled at DCPP since 1976. An earlier analysis of data collected through June 1995 detected declines in surface canopy-forming bull kelp, subsurface canopy-forming kelps, and some understory algal species in Diablo Cove as a result of the discharge (Tenera 1997). Coincident with these changes were increases in several algal species that were uncommon prior to plant start-up. The changes in the subsurface canopy-forming kelps and the algal understory were restricted to depths shallower than about 7 m in Diablo Cove. Discharge effects in *Nereocystis luetkeana* (bull kelp), detected as early deterioration of surface fronds, extended over a larger area (Field's Cove and areas northward to Lion Rock) during the 1987 warm water El Niño. *Macrocystis pyrifera* (giant kelp) surface canopies increased in abundance throughout Diablo Cove beginning in 1992.

This section describes any new or continuing effects of the power plant on subtidal algae in OpPeriod-2 using data from control, Diablo Cove, and Field's Cove benthic stations and data from habitat-forming kelp surveys. Effects are categorized as either new or continuing by comparing the results of the analyses of these data to results from OpPeriod-1 (see Section 1.1 – *Study Design and Analysis*).

4.1.1 Methods

This section describes the sampling methods employed and analysis approach used to determine effects from the DCPP discharge on subtidal algae.

Sampling Methods

The same sampling methods used for subtidal kelp counts and understory algal coverage measurements have been used since the studies began in 1976. All benthic stations (**Figure 4-1**) in OpPeriod-2 had been established before the power plant began commercial operation and were sampled at various time intervals before and after power plant start-up. The stations were established primarily on substrates of mixed bedrock and boulders with small amounts of cobble and sand. Depths ranged from -3 m to -10 m (-10 ft to -32 ft) MLLW.

Each station was circular with a radius of 3.1 m and a sampling area of 28 m^2. The center 4 m^2 area, which contained a mooring wheel, was not sampled to avoid any unnatural algal and invertebrate growths associated with the mooring. Each station was divided into four equal sections, or "arc quadrants", 7 m^2 in area.

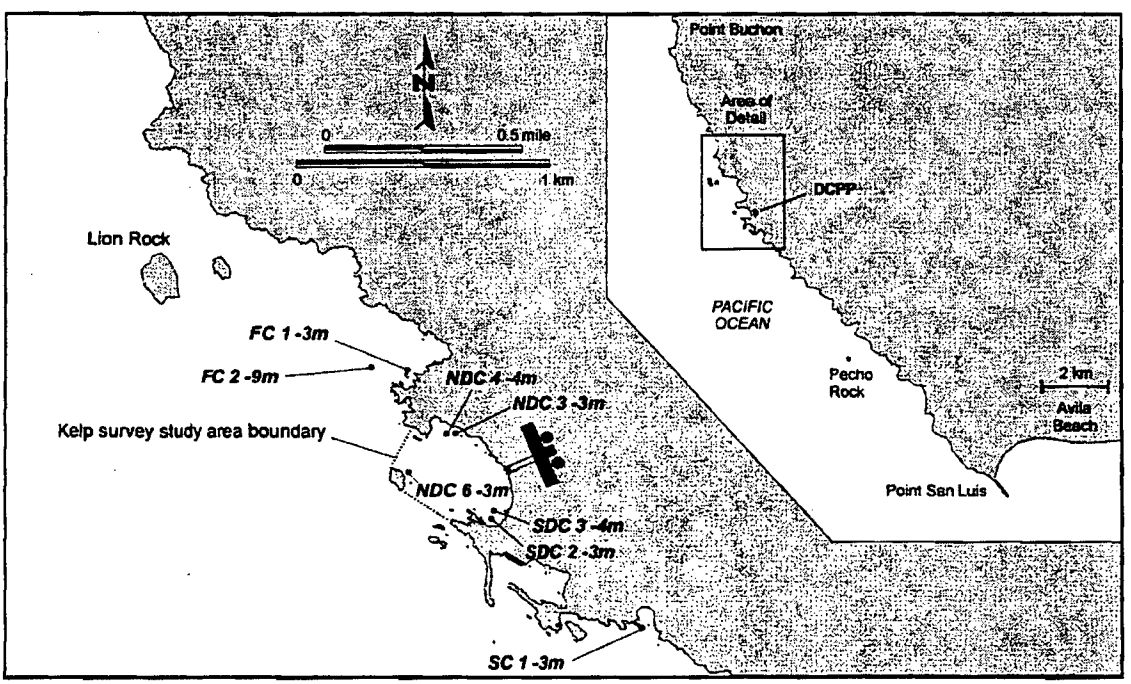


Figure 4-1. Subtidal benthic stations and habitat-forming kelp survey area in Diablo Cove.

Kelp species (brown algae of the order Laminariales and Fucales), as well as macroinvertebrates (see Section 4.2 – *Subtidal Invertebrates*) were sampled as counts of individuals using the subtidal arc quadrant (SAQ) sampling method. The subsurface canopy-forming kelps were *Pterygophora californica, Laminaria setchelli,* and *Egregia menziesii,* and the surface canopy-forming kelps were *Nereocystis luetkeana* and *Macrocystis pyrifera.* Juvenile plants of these subsurface and surface canopy-forming species (which could not be identified to the species level) were counted and recorded as "Laminariales". The kelps *Sargassum muticum* and *Cystoseira osmundacea* were also counted. *C. osmundacea* was further differentiated into those plants with only a small basal portion and larger plants with floating reproductive fronds.

Other subtidal algal species are more difficult to count because they are usually small or occur as dense clumps. These species are often collectively referred to as the algal understory as they occur beneath kelp fronds. We quantified all understory species at the stations in percent cover using a random point contact (RPC) sampling method. A line with ten points positioned at increasing intervals toward the station perimeter was attached to the center of the station and used to locate sampling loci in each quadrant. Fifty points within each quadrant, or 200 points per station, were randomly selected (using a random numbers table) before sampling. For each survey we sampled a new set of randomly selected points. The presence of all algal species, including sessile invertebrates and substrates observed directly under the points, was recorded. Percent cover was derived by dividing the number of "contacts" by the number of points sampled. Species were identified to the lowest taxonomic level practical. Unknown taxa were collected outside the sampling area, if possible, and returned to the laboratory for identification.

Maps of surface kelp canopies in Diablo Cove documented changes in kelp distribution and abundance outside the fixed benthic stations. We conducted habitat-forming kelp surveys each October from north and south Diablo Cove (**Figure 4-1**). Near the end of the annual growth cycle in October, the maximum number of bull kelp plants have reached the surface and can be counted. Sub-surface plants not counted using this method were sampled using the arc quadrant method previously described. Two observers at each point counted and mapped the extent of bull kelp plants and giant kelp canopies. The occurrence of bull kelp plants with bare bulbs, indicating early senescence in plants, was also noted when possible. An annual census total for Diablo Cove and a composite map depicting the locations of bull kelp and giant kelp were

developed from the data. Giant kelp cover in Diablo Cove was also quantified during the bull kelp surveys.

Analysis Methods

The algal taxa analyzed were those that formed 95% of the total abundance in the two operation periods at the Diablo Cove and Field's Cove stations. Kelp holdfast, kelp basal frond, and kelp sporophyll cover were included as part of the algal understory in determining the taxa that formed 95% of the total understory algal cover. Crustose taxa, bare rock cover, mean species richness (number of taxa/7 m^2), diversity, and total understory algal cover were analyzed separately. The kelp SAQ count data were analyzed instead of the kelp RPC percent cover data because they provided better estimates of kelp abundance.

The ANOVA results for changes between OpPeriods-1 and -2, by taxon, are presented in **Appendix E3**. New or continuing effects of the discharge were determined by comparing ANOVA results to the findings described in the TEMP Analysis Report. The comparisons for individual taxa and community-level indices were grouped into the categories of discharge effects described in Section 1.1. The different array of sampling stations used in the two study periods did not allow us to use a single statistical analysis to contrast changes.

Data from the Field's Cove deep station FC 2 -9m **(Figure 4-1)** were not statistically analyzed because no comparative, deep water control station existed. Data for the Field's Cove shallow station (FC 1-3m) were analyzed for this report but the station was not sampled in the pre-operation study period, and therefore there were no data to determine initial discharge effects in OpPeriod-1.

Algal species composition and abundance in the three study areas sampled in OpPeriod-2 were also analyzed for changes using correspondence analysis. The data analyzed included understory taxa that comprised 95% of the total algal abundance (excluding crustose taxa) and that occurred in at least 20% of the surveys, and kelp taxa that comprised 99% of the total kelp abundance and that occurred in at least 20% of the surveys. Data for these taxa were log(x+1) transformed to compensate for scale differences between count and coverage taxa, and then combined into annual means for 1990–1998 for the stations.

4.1.2 Results

Changes in 36 taxa were categorized as new or continuing effects of the discharge (**Tables 4-1 and 4-2**). Four other taxa (*Egregia menziesii*, *Gelidium* spp., *Farlowia/Pikea*, and *Nienburgia andersoniana*) yielded inconclusive test results and, consequently, were not categorized for discharge effects.

Results for the most abundant taxa at the Diablo Cove stations indicate that changes between OpPeriods-1 and -2 resulted in a further simplification of the algal assemblage with decreases in diversity, species richness, and total understory algal cover (**Table 4-1**). The significant decline in total understory algal cover was a new change in OpPeriod-2.

Table 4-1. Significant discharge effects on subtidal algae within Diablo Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Chrysophyta unid.	Bare rock (+)
Laminariales (juvenile)	*Callophyllis* spp. (§)
Pterosiphonia dendroidea	*Corallina officinalis* (§)
	Cystoseira osmundacea (§)
	Filamentous red algae (+)
	Gelidium robustum (*)
	Macrocystis spp. (+)
	Non-coralline crustose algae (*)
	Pterygophora californica (§)
Significant Decreases	
Mazzaella lilacina	*Ahnfeltiopsis linearis* (§)
Microcladia coulteri	Algal diversity (§)
Osmundea spp.	*Calliarthron/Bossiella* (–)
Polyneura latissima	*Chondracanthus corymbiferus* (§)
Prionitis australis	Coralline crustose algae (§)
Rhodymenia spp.	*Cryptopleura ruprechtiana* (*)
Ulva/Enteromorpha	*Cryptopleura violacea* (§)
Understory algal cover	*Desmarestia* spp. (–)
	Halymenia/Schizymenia (§)
	Nereocystis luetkeana (–)
	Prionitis spp. (§)
	Sarcodiotheca gaudichaudii (§)
	Species richness (–)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

A few taxa increased in relative abundance at the Diablo Cove stations between OpPeriod-1 and OpPeriod-2. The most conspicuous increases occurred in *Macrocystis* (**Figure 4-2**) and juvenile

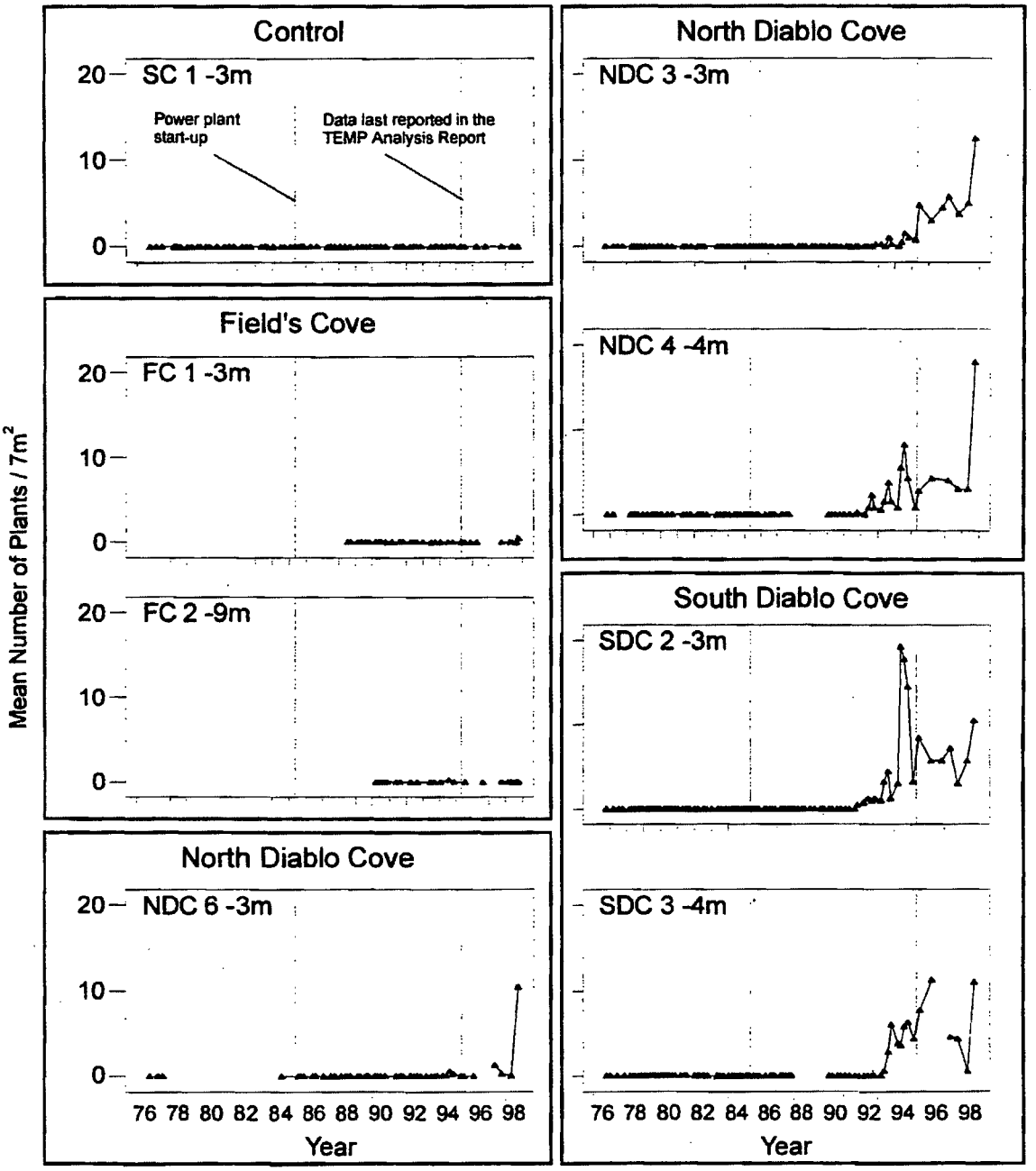


Figure 4-2. Abundance of *Macrocystis* spp. (giant kelp) at the subtidal benthic stations.

Laminariales (which were probably juvenile *Macrocystis* plants). A significant increase was also detected in *Pterygophora californica*. This increase occurred as a result of declines at the control stations being compared to low stable abundances in Diablo Cove. *Cystoseira osmundacea* (bladder-chain kelp) also increased at the Diablo Cove stations—a reversal of the previously determined effect. The plants in Diablo Cove remained in the basal frond stage and never developed the floating stipes that bear the reproductive structures. In contrast, plants at the control station developed the floating reproductive stipes.

Other changes indicative of effects of the discharge at the Diablo Cove stations were further increases in ephemeral algae. Filamentous red algae (e.g., *Polysiphonia* spp.) continued to increase in 1998. Increases in other ephemerals such as *Pterosiphonia dendroidea* (a branched filamentous red alga) and Chrysophyta (diatom chains), were new effects of the discharge in OpPeriod-2.

Taxa that decreased were mostly understory foliose red algae. *Cryptopleura violacea* was an abundant species that increased in OpPeriod-1 but decreased in OpPeriod-2 (**Figure 4-3, Table 4-1**). Decreases in several other taxa resulted in a statistically significant decrease in understory algal cover between periods.

Only new, previously undescribed effects for OpPeriod-2 (**Table 4-2**) are listed for Field's Cove because the station was not sampled in the pre-operation study period. Therefore we had no baseline data to compare discharge effects at that station to OpPeriod-1. Taxa that increased in OpPeriod-2 at the Field's Cove station were canopy-forming kelp species whereas taxa that decreased were understory red algal species. However, most of the taxa analyzed for Field's Cove had results that were inconclusive or showed no change between periods. The increases in the three kelp species at the Field's Cove station supported the observation of little or no discharge effects on benthic algae outside Diablo Cove. However, premature senescence of *Nereocystis* was observed when canopies reached the surface.

Table 4-2. Significant new discharge effects on subtidal algae within Field's Cove during OpPeriod-2.

Increases	Decreases
Laminaria setchellii	*Gelidium robustum*
Nereocystis luetkeana	*Mazzaella lilacina*
Pterygophora californica	*Polyneura latissima*
	Understory algal cover

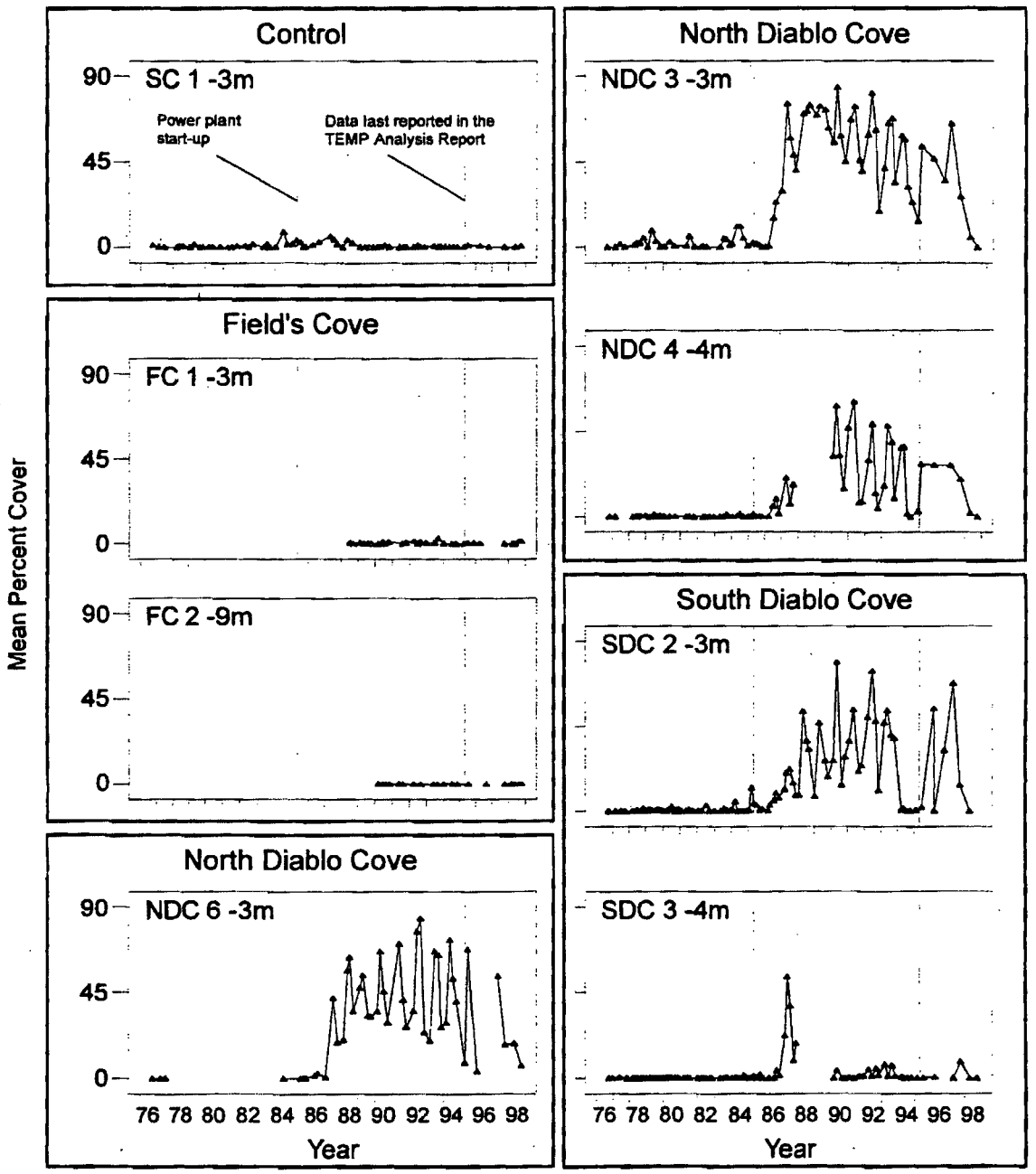


Figure 4-3. Abundance of *Cryptopleura violacea* at the subtidal benthic stations.

We continued to document low abundances of bull kelp and increased abundances of giant kelp in Diablo Cove in the yearly habitat-forming kelp surveys. Bull kelp canopy cover was negligible, but giant kelp surface canopies covered about half of Diablo Cove, except in the 1997 survey. Giant kelp fronds began deteriorating in summer 1997, presumably due to the El Niño conditions combined with the elevated discharge temperatures. The 1997 survey conducted in October documented that canopy coverage was reduced from previous years. A boat survey conducted in 1997 confirmed that while bull kelp was more abundant outside Diablo Cove, the plants were in a state of early senescence in Field's Cove and in areas northward to Lion Rock (**Figure 4-1**).

Diablo Cove, Field's Cove, and control stations remained distinct from one another in species composition and abundance during OpPeriod-2 (**Figure 4-4**). The algal composition at the stations was largely unchanged between OpPeriod-2 and OpPeriod-1. The control station was characterized by kelp taxa, while the Diablo Cove stations were characterized by Chrysophyta, *Farlowia/Pikea*, *Gelidium robustum*, and *Cryptopleura violacea*. The latter species remained abundant at the Diablo Cove stations, despite a significant decline in their abundances in OpPeriod-2 (**Table 4-1**). The Field's Cove station was mainly characterized by a red algal understory. The largest change in OpPeriod-2 revealed in **Figure 4-4** was the 1998 survey scores for the Diablo Cove and control stations that showed increases in Laminariales (juvenile). Most, if not all, of these plants at the control station were probably small *Pterygophora*, *Laminaria*, and *Nereocystis*, while plants identified as Laminariales (juvenile) at the Diablo Cove stations were probably small *Macrocystis* plants.

4.1.3 Discussion

The most important change during OpPeriod-2 in Diablo Cove was the further increase in giant kelp. This perennial alga began increasing in abundance in Diablo Cove during OpPeriod-1, with surface canopies eventually covering about half of the cove (Tenera 1997). However, the entire giant kelp population in Diablo Cove was completely lost in winter 1997/98. Higher ambient temperatures and lower nutrients during the 1997 El Niño combined with elevated discharge temperatures stressed the plants and the following winter storms completely removed the local population. Giant kelp outside of Diablo Cove was also in generally poor condition during the El Niño period but many patches of plants survived through the winter storms. Large recruitment

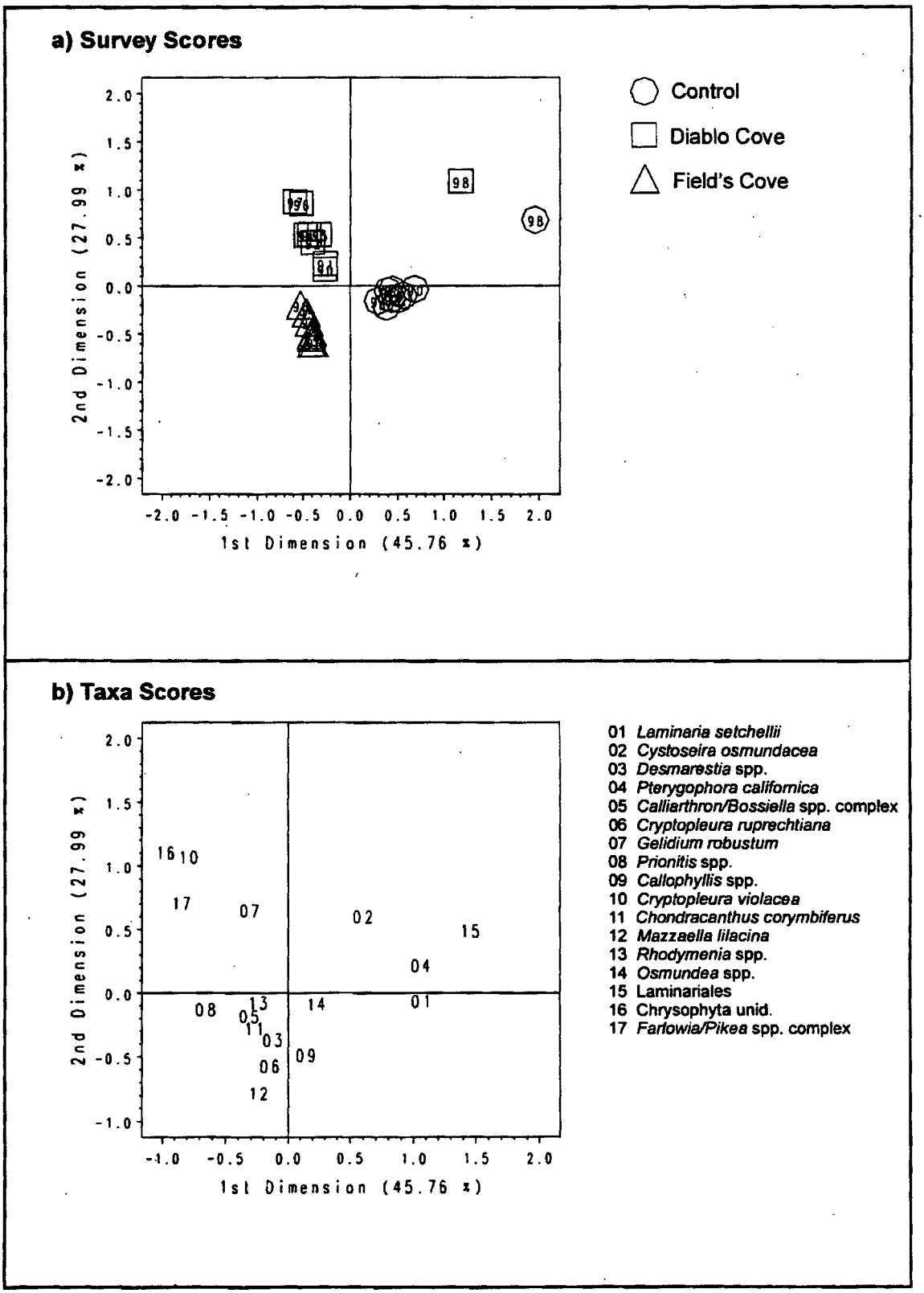


Figure 4-4. Correspondence analysis results for subtidal algae sampled at the benthic stations (SLC and SAQ methods).

was observed in spring 1998 resulting in dense adult populations becoming re-established in Diablo Cove. The quick recovery indicates the high reproductive capacity for recruitment in this species and the availability of open bare space for recruitment in Diablo Cove.

The increase in giant kelp surface canopy shaded the algal understory and was likely the cause of some of the declines in understory taxa detected in OpPeriod-2. This hypothesis is supported by declines in the understory species *Cryptopleura violacea* which had previously increased during OpPeriod-1 in the absence of giant kelp. *Farlowia/Pikea* was also abundant in OpPeriod-1 and declined substantially in 1997 and 1998. However, wide variations in abundance during OpPeriod-2 yielded inconclusive statistical test results.

The ability of the giant kelp surface canopies to modify understory species composition and abundance presents difficulties for determining the spatial extent of discharge effects using previously identified indicator species. We previously used *Cryptopleura violacea* and *Farlowia/Pikea* to delineate the spatial extent of effects to understory algae in Diablo Cove, based on observed increases in these taxa (Tenera 1997). However, new changes in these taxa suggest that they may be less useful for indicating seafloor areas of discharge effects in Diablo Cove. The subsurface canopy-forming kelps *Pterygophora californica* and *Laminaria setchellii* declined in shallow areas contacted by the discharge in OpPeriod-1 (Tenera 1997). Shading effects from giant kelp may now cause reductions in these species (and in understory species) in deeper areas of Diablo Cove not previously affected by the discharge.

Early senescence of bull kelp in Field's Cove indicated that the shallow Field's Cove station was located in a transition region of thermal effects. We found giant kelp at the Field's Cove station in 1998 for the first time in the study. Its occurrence may be the result of a larger local spore source from the increased population in Diablo Cove. (We are currently processing aerial overflight photographs of kelp using geographic information system (GIS) to determine whether discharge effects in kelp surface canopies outside Diablo Cove can be quantified using this method). Discharge effects on algal understory were of less magnitude in Field's Cove during OpPeriod-2 based on the absence of significant increases in indicator taxa such as *Cryptopleura violacea* and *Farlowia/Pikea.*

Further changes can be expected in the algal assemblages at the Diablo Cove and Field's Cove stations relative to the control station. Continuing interactions between the discharge, giant kelp,

and understory algae could likely result in further dissimilarities among stations. A strong recruitment of Laminariales plants occurred in 1998. These were mainly juvenile subsurface canopy-forming kelps at the control station and juvenile giant kelp plants at the Diablo Cove stations. This recruitment would also cause the algal assemblages inside and outside Diablo Cove to become even more dissimilar over time.

4.2 Subtidal Invertebrates

Subtidal invertebrates have been studied at DCPP using the subtidal arc quadrant (SAQ) and subtidal fixed quadrat (SFQ) methods since 1976. The subtidal invertebrate community in Diablo Cove changed between 1987 and 1994 as a result of the DCPP discharge (Tenera 1997). These changes included increases in the abundance of *Acmaea mitra* (dunce-cap limpet), several species of nudibranchs, *Diopatra ornata* (ornate tube worm), and Serpulidae (tube worms). *Strongylocentrotus purpuratus* (purple urchin) increased in abundance in Diablo Cove from 1990 through 1994. Shelled gastropods (e.g., turban snails, top snails, and limpets) generally declined in Diablo Cove after power plant start-up. Significant decreases also occurred in several sea star species, anemones, and various encrusting tunicates and sponges. Several taxa rarely or never recorded in the study area prior to power plant operation increased in abundance during plant operation in Diablo Cove. These included *Ophiactis simplex* (six-armed brittle star), *Cryptochiton stelleri* (gumboot chiton), *Aplysia californica* (brown sea hare), and *Norrisia norrisi* (Norris' top shell). Despite these changes in species abundance, mean species richness remained unchanged in Diablo Cove between OpPeriod-1 and OpPeriod-2. Multivariate analysis showed that the subtidal invertebrate community structure in Diablo Cove was still diverging from pre-operation conditions as of 1994 (Tenera 1997).

This section describes any important new or continuing effects of the power plant discharge on subtidal invertebrates through the analysis of the SAQ and SFQ data sets collected at Diablo Cove, Field's Cove, and control stations during OpPeriod-2. New or continuing effects were determined by comparing the results of this analysis to results from OpPeriod-1.

4.2.1 Methods

This section describes the sampling methods employed and analysis approach used to determine effects from the DCPP discharge on subtidal invertebrates.

Sampling Methods

The SAQ method was used to sample macroinvertebrates at eight benthic stations during the current reporting period. Five discharge stations were located within Diablo Cove, two discharge stations were located within Field's Cove, and one control station was located at South Control.

During sampling, a station was subdivided into four 7m² quadrants, and macroinvertebrates were counted within these quadrants. All individuals of select invertebrate taxa were counted regardless of their size. All other non-encrusting invertebrates were counted if they were larger than 2.5 cm (length or width). A few common species that generally occurred in numbers too high to accurately count were sampled only in the first one-third (2.33 m^2) of each quadrant. The abundance of macroinvertebrates, including red abalone, was also sampled using randomly-located subtidal stations (see Section 4.3 - *Subtidal Red Abalone*).

The SFQ method was used principally to sample small or encrusting invertebrate taxa that were not sampled effectively using the SAQ method. Four circular quadrats with an area of 0.25 m^2 were sampled at fixed locations at each subtidal station to determine the species composition and abundance of smaller, cryptic, subtidal invertebrates. Each fixed quadrat was located within an SAQ quadrant at a subtidal station, generally on bedrock or boulder substrate. Depending upon the degree of topographical relief, two quadrats were located on horizontal-aspect substrate and two quadrats were located on vertical-aspect substrate. Non-encrusting taxa were identified and counted. The coverage of encrusting taxa (e.g., colonial/social tunicates) was quantified in square inches if the total equaled or exceeded one square inch, or was recorded as "present" if coverage was less than one square inch. No minimum or maximum size limits for the invertebrates were recorded in the SFQ study.

Analysis Methods

Abundance of individual taxa was analyzed for changes between OpPeriod-1 and OpPeriod-2 using ANOVA. The invertebrate taxa analyzed were those that formed 95% of the total abundance in the two periods at the Diablo Cove and Field's Cove stations. SAQ and SFQ species lists were combined so that ANOVA principally treated subtidal invertebrates independent of sampling methods. Field's Cove station FC 2-9 (**Figure 4-1**) was not statistically analyzed because no comparative, deep water control existed.

Correspondence analysis was used to contrast patterns of change in algal assemblages among areas. The taxa that comprised the majority (95%) of the total abundance and that occurred in at least 10% of the surveys were used in analyses for each elevation. Data for these taxa were log(x+1) transformed to compensate for scale differences between counted and coverage taxa and then combined into annual means for the six stations in the following four areas:

- Control (SC-1)
- North Diablo Cove (NDC-3 and -4)
- South Diablo Cove (SDC-2 and -3)
- Field's Cove (FC-1).

During OpPeriod-2, the Diablo Cove and control benthic stations were sampled twice annually and the Field's Cove station was sampled four times annually.

Statistical results from this report were compared with statistical results from the TEMP Analysis Report to identify new or continuing effects of the discharge. The comparisons were qualitative because the analyses and study designs differed between the two reports. The TEMP Analysis Report used data from two control stations to derive differences for three north Diablo Cove stations and two south Diablo Cove stations. The analyses in this report used data from one control station to derive differences for three north Diablo Cove stations, two south Diablo Cove stations and one Field's Cove station. The comparisons for individual taxa and other data sets were grouped into three general categories described in Section 1.1 – *Study Design and Analysis.*

4.2.2 Results

Correspondence analysis of 19 taxa for 1990–1998 showed that macroinvertebrate community structure varied considerably among years in both north and south Diablo Cove, but negligibly in Field's Cove (**Figure 4-5a**) . Diablo Cove differed from other locations by the presence and abundance of *Strongylocentrotus purpuratus* (purple urchin), *Ophiothrix spiculata* (spiculate brittle star), and *Phidiana hiltoni* (Hilton's nudibranch) (**Figure 4-5b**). Most variability in Diablo Cove occurred between 1997 and 1998, reflecting further increases in the abundance of purple urchins. Consequently, the invertebrate community structure in Diablo Cove differed more from the control in 1998 than in any other year since 1990. Community structure at the control varied through time and resembled that of Field's Cove during 1998. Similarities between these two areas in 1998 were due, in part, to declines in the abundance of *Lottia instabilis* (limpet) and *Halcampa decemtentaculata* (sand anemone) at the control.

Discharge effects were detected in 46 of the 79 benthic invertebrate species analyzed within Diablo Cove, with nearly all of these categorized as continuing, rather than new, effects (**Table**

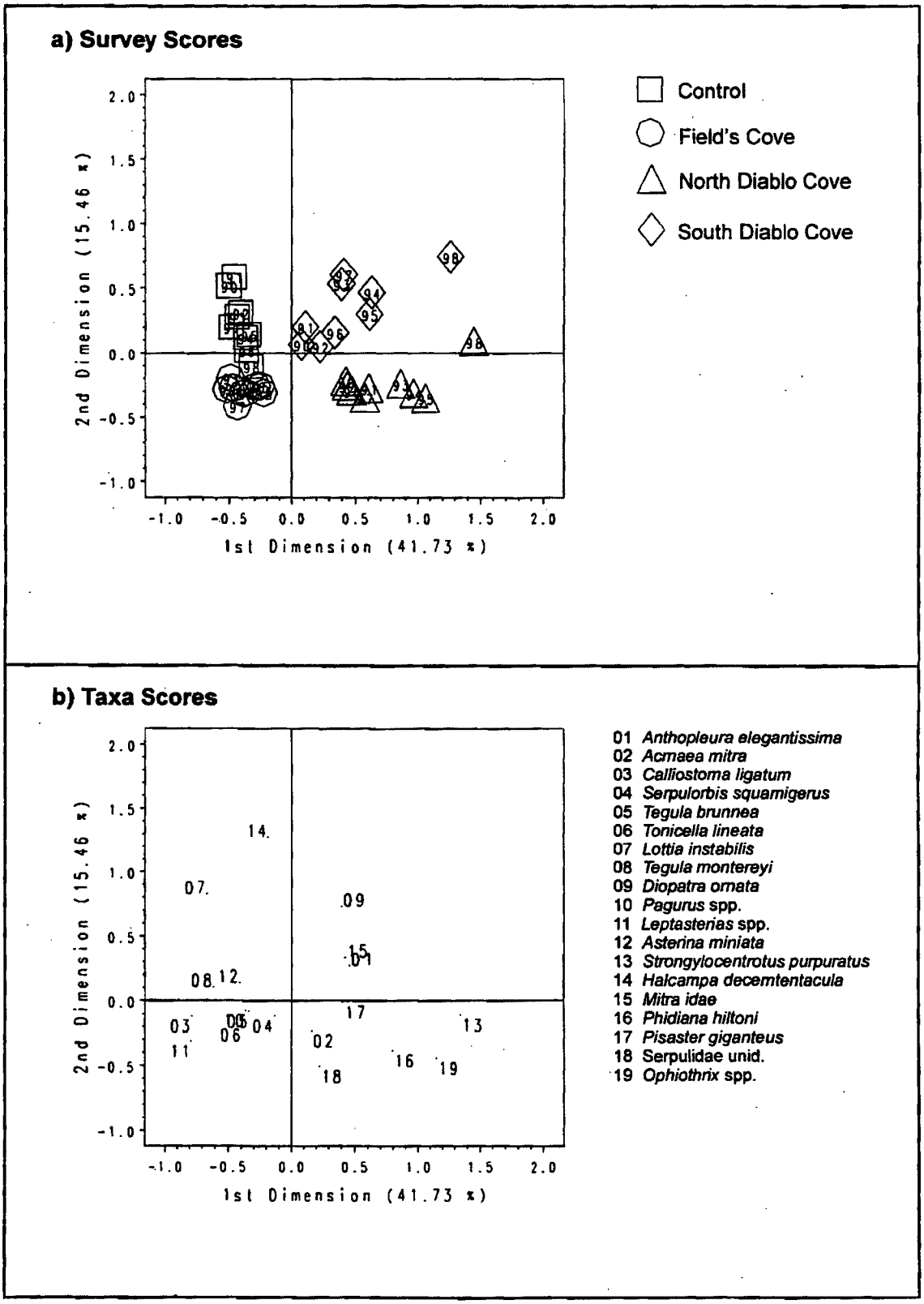


Figure 4-5. Correspondence analysis results for subtidal invertebrates sampled at the benthic stations (SAQ method).

4-3). New increases in *Alia* spp. (dove snail) and *Phragmatopoma californica* (sand-tube polychaete) were previously described within the TEMP Analysis Report (Tenera 1997).

Table 4-3. Significant discharge effects on subtidal invertebrates within Diablo Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Alia spp.	*Anthopleura elegantissima* (*)
Cryptochiton stelleri	Bryozoa unid. (encrusting) (§)
Mitra idea	*Crepidula* spp. (§)
Phragmatopoma californica	*Dendropoma* spp. (+)
Species richness (SAQ)	*Didemnum/Trididemnum* spp. (§)
	Epiactis prolifera (§)
	Ischnochitonidae (*)
	Lithopoma gibberosum (+)
	Lottia instabilis (§)[1]
	Ophiuroidea unid. (+)
	Pelecypoda unid. (boring) (*)
	Pista spp. (+)
	Pugettia spp. (§)
	Salmacina tribranchiata (§)
	Serpulidae unid. (+)
	Serpulorbis squamigerus (§)
	Strongylocentrotus purpuratus (*)
	Styela spp. (§)
	Tethya aurantia (§)
	Tetraclita rubescens (+)
	Tunicata unid. (colonial/social) (§)
	Tunicata unid. (solitary) (§)
Significant Decreases	
Amphissa spp.	*Acmaea mitra* (§)
Asterina miniata	*Balanus* spp. (–)
Diopatra ornata	*Balanus/Tetraclita* spp. (§)
Lottia ochracea	*Calliostoma ligatum* (–)
Species diversity (SFQ)	*Fissurella volcano* (§)
Species richness (SFQ)	*Henricia leviuscula* (–)
	Leptasterias spp. (–)
	Lissothuria nutriens (§)
	Ophiothrix spp. (§)
	Pagurus spp. (–)
	Pisaster giganteus (§)
	Porifera unid. (encrusting) (*)
	Sipuncula unid. (–)
	Spirorbis spp. (§)
	Tegula brunnea (–)
	Tegula montereyi (–)

Explanation of symbols: (*) continuing effect with unchanged magnitude between periods, (§) reversal in previously determined effect, (+) further increase in previously determined effect, (–) further decrease in previously determined effect.

[1] *Lottia instabilis* continued in low abundance between periods—the statistically significant increase was attributed to a declining control abundance.

Significant increases between the pre-operation period and OpPeriod-1 were detected in *Alia* spp. and *P. californica* at the -4 m and -3 m MLLW depths, respectively. *Cryptochiton stelleri* (giant gumboot chiton) increased significantly within Diablo Cove primarily at depths below -6m MLLW (Tenera 1997). *Anthopleura elegantissima* (aggregating anemone) and *Strongylocentrotus purpuratus* (**Figure 4-6**) further increased, and *Tegula brunnea* (brown turban snail), *Leptasterias* spp. (six armed sea star), and *Henricia leviuscula* (sea star) further decreased in Diablo Cove. Increases in *Epiactis prolifera* (proliferating anemone) and *Lottia instabilis* (limpet) reflected decreases at the control, rather than absolute increases in abundance in Diablo Cove. Decreases at the control occurred as a result of losses of mature laminarian kelps, particularly *Laminaria setchellii* and *Pterygophora californica*, at the single control station (SC 1-3m) during storms in 1998. Overall, species richness of smaller invertebrates (counted by the SFQ method) decreased, and species richness of larger invertebrates (counted by the SAQ method) increased in Diablo Cove between OpPeriod-1 and OpPeriod-2.

In contrast to results from Diablo Cove, discharge effects were detected in only 8 of the 79 benthic invertebrate species analyzed within Field's Cove (**Table 4-4**). These identified effects could not be categorized as new or continuing, as pre-operation data were not collected within Field's Cove. Increases in *Lithopoma gibberosa* (red turban snail), *Lottia instabilis* (limpets), and *S. purpuratus* and decreases in *Leptasterias* spp. paralleled discharge effects observed in Diablo Cove. Also similar to Diablo Cove, statistical increases in *Lottia instabilis* reflected storm-related decreases at the control, rather than absolute increases at Field's Cove. The absence of detected discharge effects at the Field's Cove benthic station explains the low amount of variability in community structure through time evident in the correspondence analysis. Overall, invertebrate species diversity increased at this location.

Table 4-4. Significant discharge effects on subtidal invertebrates within Field's Cove during OpPeriod-2.

Increases	Decreases
Hymenamphiastra cyanocrypta	*Balanus* spp.
Lithopoma gibberosa	*Cactosoma arenaria*
Lottia instabilis	*Leptasterias* spp.
Strongylocentrotus purpuratus	
Tunicata unid. (colonial/social)	
Species diversity (SAQ)	

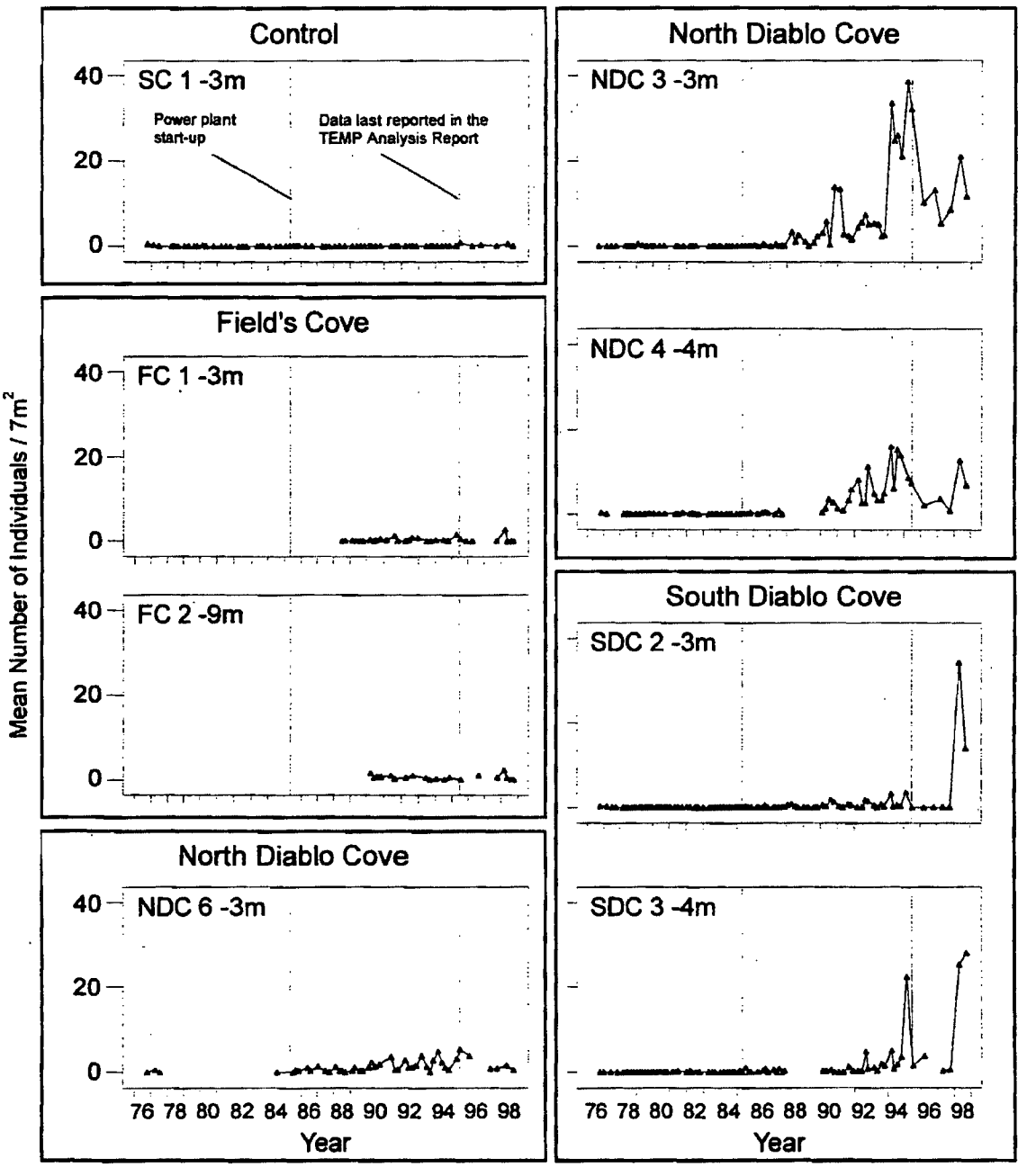


Figure 4-6. Abundance of *Strongylocentrotus purpuratus* (purple urchins) at the subtidal benthic stations.

4.2.3 Discussion

Although Field's Cove benthic station FC 1-3m is contacted by the DCPP thermal discharge (Tenera 1997), elevated water temperatures (delta-T°) do not appear to have adversely affected community composition (**Figure 4-5**) or the abundances of individual species (**Table 4-4**). Correspondence analysis (particularly 1998) and ANOVA results indicate that the invertebrate structure at the Field's Cove subtidal station did not differ substantially from the control station. Subtidal results contrast with those from the Field's Cove intertidal results, where increased temperatures in Field's Cove appeared to be correlated with observed effects of the discharge.

Predation by fishes, rather than thermal intolerance, continues to be an important effect of the discharge on kelp-dwelling snails in the subtidal zone of Diablo Cove. *Tegula brunnea* (brown turban snail), *T. montereyi* (Monterey turban snail), and *Calliostoma ligatum* (lined top snail), declined significantly within Diablo Cove as a result of the discharge (Tenera 1997). Further declines in the abundance of these kelp-dwelling snails were detected during the current monitoring period, 1995–1998. Field observations indicated, however, that declines were specific to large (>1cm) individuals, as smaller snails were often abundant at Diablo Cove benthic stations. Large, kelp-dwelling snails were, and are, fairly common at South Control. Mechanisms for these declines, proposed by Tenera (1997), included 1) differential thermal intolerance of larger snails, and 2) differential predation by fishes and otters on large snails. Heat tolerance studies conducted by PG&E from 1978 through 1980 concluded that mortality of *Tegula brunnea* would not be expected at temperatures below 23-24°C (PG&E 1982). Water temperatures in both north and south Diablo Cove infrequently exceeded this range during Op-Period 1 (see Tenera 1997, *Figure 2-11*), and the second mechanism was consequently proposed to explain declines. Divers observed sheephead "picking" *T. brunnea* from kelp canopies in Diablo Cove. Successful recruitment of *T. brunnea* into Diablo Cove was evident during OpPeriod-1 using the benthic and algal faunal studies (Tenera 1997), and from 1995 through 1998 by the presence of small individuals at SFQ stations (**Appendix D5**). Predation by fishes remains the most reasonable hypothesis explaining declines in *Tegula* and *Calliostoma* in Diablo Cove.

4.3 Subtidal Red Abalone

Haliotis rufescens (red abalone) abundance in Diablo Cove and vicinity has been monitored periodically since 1966 when studies were conducted by the California Department of Fish and Game (Burge and Schultz 1973). A healthy population of red abalone existed in Diablo Cove up until 1987, based on information from cove-wide diving surveys. In 1988, however, their numbers began to decline. We observed withering syndrome (WS) disease in several red abalone in Diablo Cove the following year, leading to the conclusion that the disease was slowly affecting the abalone population in the cove. A 1990 survey found substantial declines in Diablo Cove red abalone, particularly in the shallow portions of the cove where water temperatures were warmest (Tenera 1997). Abalone were relatively abundant at all depths in Field's Cove and South Control from 1990 to 1995 with no evidence of WS.

This section presents results of red abalone studies completed at DCPP from mid-1995 through 1998. Results presented within this section do not differ substantially from results presented in the previous TEMP Analysis Report (Tenera 1997).

4.3.1 Methods

We have counted red abalone at permanent, benthic stations using the SAQ and SFQ invertebrate sampling methods since 1976. However, abalone tended to have patchy distributions and therefore a supplementary study was designed to provide better estimates of the distribution, abundance, and size structure of the subtidal red abalone population in the study area. The red abalone study sampled randomly selected sites over a broader area and a wider range of depths than the SAQ or SFQ methods. The red abalone study included detailed search procedures for juveniles and adult abalone. We conducted red abalone surveys annually in 1984, 1986, and 1987, and twice annually after 1990.

Potential sample sites were designated as the numbered intersections of a 15 m x 15 m grid inscribed on a 1:1,600 scale bathymetric chart of Diablo Cove. We divided the cove into northern and southern halves (**Figure 4-7**). A similar number of sites, ranging from 14 to 34 per year, was randomly selected within the northern and southern areas of the cove. Between 70 and 80% of the approximately 16 ha (40 ac) area of Diablo Cove is at a depth of -6 m or less, and the

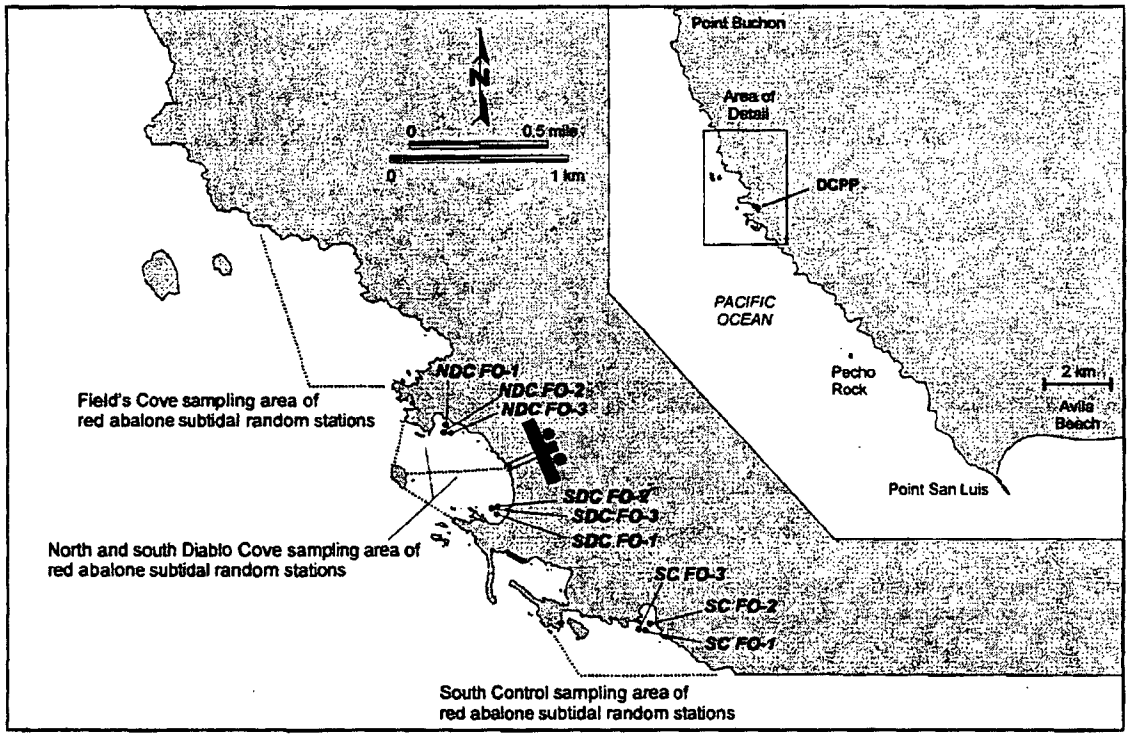


Figure 4-7. Subtidal fish observation station transects and sampling areas for red abalone random stations.

number of sites was stratified by depth to approximate this distribution. We also sampled ten sites at Field's Cove and ten sites at South Control beginning in 1991. At the time of selection, both Field's Cove and South Control were considered controls, although it is now known that the discharge plume causes occasional elevations in temperature at Field's Cove. The large area of shallow subtidal habitat present in Diablo Cove is uncommon in areas outside the cove. Therefore, selection of the sampling sites in Field's Cove and South Control was not strictly random, but based on depth, with the range of sampled depths similar to those sampled in Diablo Cove.

Chart and landmark bearings were used to locate sampling sites which were marked with temporary buoys. Two divers deployed four 4 m long lines attached to a central weight at 90 degree angles to each other. Flagging tape 3.1 m from the central weight on each line marked the outer boundary of a circular 30 m^2 sampling area. The depth of the center weight was the reference depth of the site. We recorded maximum and minimum depths, bottom relief, and substrate types (bedrock, boulder, cobble, sand).

Abalone were counted within each of the four quadrats and placed in one of four size classes based on *in situ* estimates or measurements of shell lengths: juvenile (< 25 mm), small (25-50 mm), medium (51-178 mm), and large (>178 mm shell length). Since 1991, the abundances of several taxa of larger invertebrates and kelps were estimated at the red abalone stations. We used these data to describe the spatial extent of changes in areas of Diablo Cove that were not sampled at the permanent benthic stations.

4.3.2 Results

Red abalone abundance declined in Diablo Cove and Field's Cove from 1995 through 1998 (**Table 4-5**). No abalone were observed in south Diablo Cove in 1997. Abalone abundances in South Control declined from 1995 to 1996 but recovered by 1998. The South Control abundance estimates, however, may have been affected by the low number of stations (2) sampled in 1996 as compared to the greater number of stations (8-10) sampled in the other years.

Differences in the depth distributions of the different size classes of red abalone between Diablo Cove and control areas observed previously were still present during OpPeriod-2. Juveniles (<25 mm) were found each year in Diablo Cove, generally at the shallow (<3 m) and intermediate (3-6 m) depths. Small (26-50 mm) and medium (51-178 mm) sized individuals occurred at intermediate and deeper depths. Large (>178 mm) abalone have not been seen at stations sampled in Diablo Cove since 1997. Individuals of all size classes occurred at all depths in South Control and Field's Cove from 1995 through 1998.

Red abalone are uncommon at the subtidal stations, with a total of only three individuals observed in Diablo Cove since 1995. Consequently, data collected within the red abalone study could not be statistically analyzed.

Table 4-5. Red abalone abundance (mean number/30m^2) by area, size class, and year.

Area	Size class[1]	1995	1996	1997	1998
Field's Cove					
	Juvenile	1.2	1.4	1.1	0
	Small	1.8	1.4	1.5	0.2
	Medium	1.4	1.5	1.8	2.2
	Large	0.7	0.1	0.3	0.3
	mean no. / sta.	**5.1**	**4.4**	**4.7**	**2.7**
	no. stations	10	10	10	10
North Diablo Cove					
	Juvenile	2.2	0.4	0.1	0.1
	Small	0.1	0.3	0	0.2
	Medium	0.3	0.2	0.1	0.1
	Large	0.1	0	0	0
	mean no. / sta.	**2.6**	**0.9**	**0.2**	**0.4**
	no. stations	19	19	11	19
South Diablo Cove					
	Juvenile	0.2	<0.1	0	0.2
	Small	0.2	<0.1	0	0.1
	Medium	0.5	0.3	0	0
	Large	0.2	0.2	0	0
	mean no. / sta.	**1.1**	**0.7**	**0**	**0.2**
	no. stations	21	21	6	19
South Control					
	Juvenile	1.1	1.0	0.4	0
	Small	1.1	1.0	1.1	1.0
	Medium	2.1	1.0	1.5	3.3
	Large	0.4	0	0.6	0.4
	mean no. / sta.	**4.7**	**3.0**	**3.6**	**4.7**
	no. stations	10	2	8	10

[1] Size class ranges: juvenile (<1"), small (1-2"), medium (2-7"), large (>7").

4.3.3 Discussion

The rate of red abalone abundance decline in Diablo Cove from 1995 through 1998 was substantially greater in Diablo Cove than elsewhere in the study area. No data on the potential cause of the declines were collected. Although unobserved, disease- and predation-related mortality likely occurred in red abalone within the study area. The higher rate of decline in Diablo Cove red abalone, compared to other areas, indicates that they continued to be affected in some way by the warm water discharge after 1995.

4.4 Subtidal Fishes

Fishes in the vicinity of DCPP have been counted with underwater visual censuses since 1976. After power plant start-up, fish species richness increased in north Diablo Cove and decreased in south Diablo Cove as a result of the discharge (Tenera 1997). The warmer water and broader depth gradient of temperatures attracted several fish species such as *Semicossyphus pulcher* (sheephead), *Girella nigricans* (opaleye), *Medialuna californiensis* (halfmoon), and *Paralabrax clathratus* (kelp bass) that live mainly in warmer waters south of Point Conception. Prior to power plant start-up, these species were rare in Diablo Cove. Other species attracted to the discharge were *Triacis semifasciata* (leopard shark), *Myliobatis californica* (bat ray), *Urolophus halleri* (round ray), and *Atractoscion nobilis* (white seabass). Cool-temperate fish families such as Cottidae (sculpins) and Hexagrammidae (greenlings) were generally less common in shallow areas of Diablo Cove after power plant start-up. These species still persisted below the thermocline and in fringe areas of the plume where cool and warm waters mixed. Changes in several factors other than temperature, such as algal community structure, food availability, and substrate characteristics, also likely contributed to changes in fish community composition and distribution in Diablo Cove after start-up.

Changes in algal community structure are known to affect the distribution and abundance of temperate reef fishes (Carr 1989). Cool-water kelp species (*Nereocystis luetkeana* and *Cystoseira osmundacea*) that were formerly abundant in Diablo Cove declined after power plant start-up, while giant kelp began to increase in the early 1990s. Although the composition of the algal assemblage changed, the kelp canopy continued to provide habitat for *Brachyistius frenatus* (kelp surfperch), *Paralabrax clathratus*, and juvenile *Sebastes* spp. (rockfishes) (Tenera 1997).

This section describes any important new or continuing effects of the power plant on subtidal fishes through the analysis of fish census data collected in Diablo Cove and South Control during OpPeriod-2. We categorized effects as either new or continuing by comparing the results of the analyses of these data to results from OpPeriod-1.

4.4.1 Methods

We sampled subtidal fishes using the same observation methods and basic station locations that have been in use at DCPP since 1976. We analyzed the fish data using multivariate community

analyses and ANOVA as described in Section 1.1 with some revisions specific to fish sampling methods.

Sampling Methods

We counted fishes within an array of fixed subtidal stations (**Figure 4-7**) three times in 1995 and twice in 1996, 1997, and 1998. Each fish station consisted of one midwater and one benthic transect. The benthic-sampling corridor was 2 m to either side of the line (4 m width) and 1 m above the bottom. The midwater sampling corridor was a cylinder 4 m in diameter, centered 3 m above the benthic transect. A station was sampled by deploying a weighted 50 m transect line from a boat, beginning at a permanent marker buoy and extending along a pre-determined compass course away from the buoy. Some transects crossed each other in areas where transects were positioned parallel to depth contours and perpendicular to depth contours. The area common to both transects in these areas was approximately 2%. This small overlap did not affect the analysis because numbers of fishes counted were averaged by area, and the mobility of most fishes added to the independence of transect counts.

Two divers comprised a survey team, each independently counting fishes along the benthic and midwater portions of a transect, but in opposite directions. This resulted in a more precise inspection of potential fish habitats from all angles of view than would have been possible by a single diver progressing along a transect in only one direction. Fishes were identified to species if possible, but juveniles of some species with similar appearances were combined into broader categories. The resulting survey data were the combined species counts of both divers, divided by two. This yielded an average count for each taxon per 50 m benthic or midwater transect. During each survey, the stations were usually sampled a second time within approximately one to two weeks of the initial sampling effort, unless adverse sea conditions precluded a second replicate. The areas sampled were north Diablo Cove, south Diablo Cove, and South Control.

Analysis Methods

We analyzed the data separately for the benthic and midwater transects because the fish assemblages differed substantially between these habitats. Most species were more accurately sampled by one method over the other. Replicate transects were pooled by survey and area for analysis.

ANOVA was used to analyze taxa for differences in abundances between periods. We analyzed the top 95% by cumulative abundance from each period. Because most of the observations during OpPeriod-2 were in the summer-fall months, we only analyzed surveys conducted between May and October of each year. This allowed a more balanced comparison between periods.

As with invertebrates and algae, we used correspondence analysis (CA) to contrast natural changes in fish assemblages with changes resulting from the discharge. Only the data from the benthic transects were analyzed because these data included a greater number of taxa and were generally less variable than the midwater data set. Annual means for individual taxa used in the analysis were computed from survey means for the benthic transects in Diablo Cove and South Control. Data were log(x+1) transformed prior to analysis to compensate for differences in counts among taxa.

We compared ANOVA results from this report to statistical results from the TEMP Analysis Report to identify new or continuing effects of the discharge. The comparisons were qualitative because the analysis methods differed for the two reports. Comparisons for individual taxa and other data sets were grouped into three general categories as described in Section 1.1 – *Study Design and Analysis.*

4.4.2 Results

Correspondence analysis of 15 common fish taxa sampled in Diablo Cove and the control area from 1990 through 1998 showed that each area was characterized by a unique combination of species (**Figure 4-8a and b**). *Hexagrammos decagrammus* (kelp greenling), *Sebastes mystinus* (blue rockfish), and *Oxylebius pictus* (painted greenling) were some of the species that characterized the control area, based on the dispersion of species scores in the analysis plot. The north Diablo Cove fish assemblage differed from that of the control area by the occurrence or increased abundances of species more typical of warm-temperate water conditions. These included *Semicossyphus pulcher* (sheephead), *Damalichthys vacca* (pile perch), and *Coryphopterus nicholsii* (blackeye goby). South Diablo Cove was mainly characterized by greater abundances of *Citharichthys* spp. (sanddab) and *Aulorhynchus flavidus* (tubesnout). Subtidal fish assemblages varied temporally within all areas sampled, with less variation in north Diablo Cove than either south Diablo Cove or South Control. (**Figure 4-8a**).

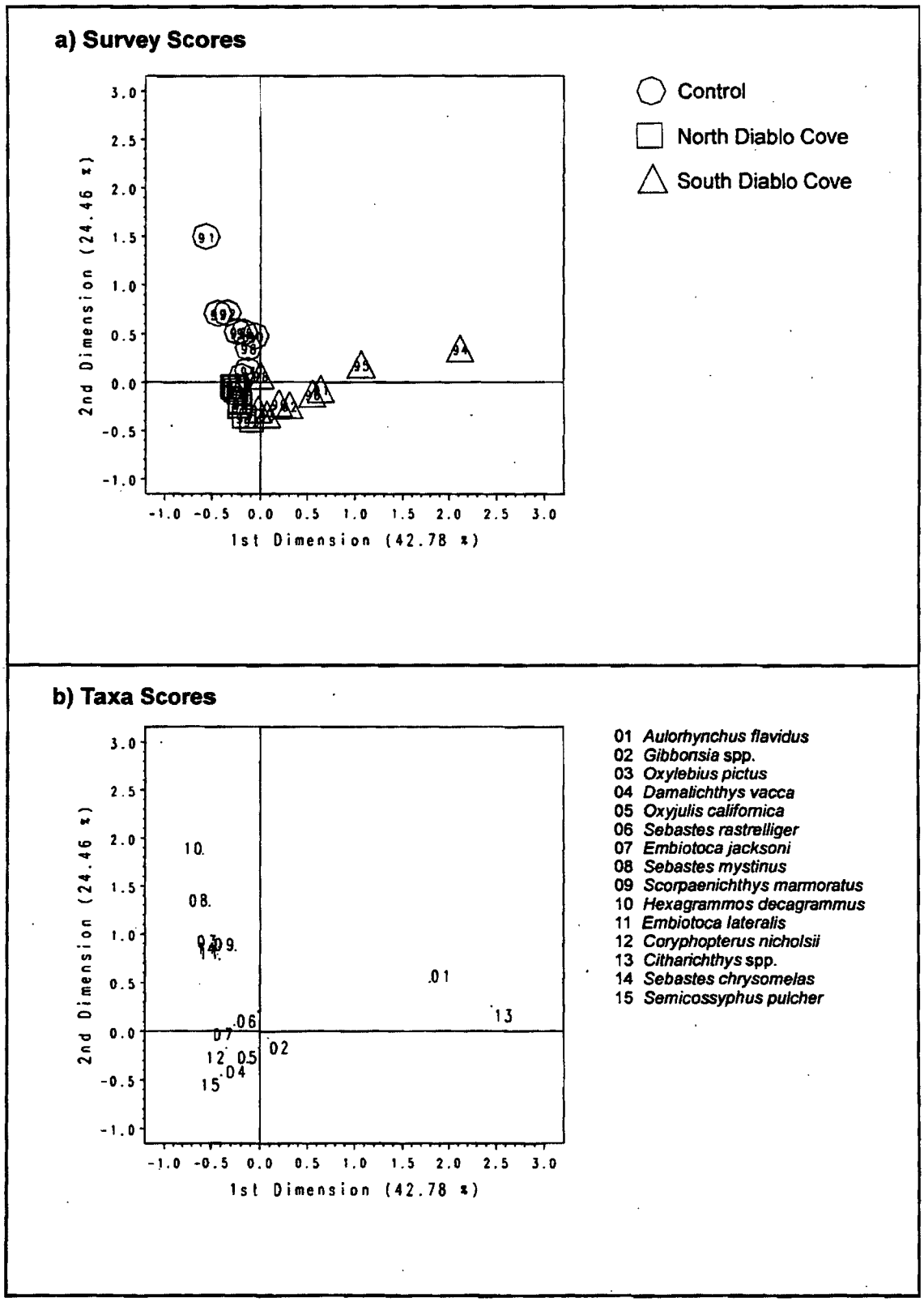


Figure 4-8. Correspondence analysis results for subtidal fishes sampled at the benthic station transects.

ANOVA tests on 44 fish taxa between OpPeriod-2 and OpPeriod-1 (**Appendix E5**) identified several significant new effects of the discharge on subtidal fishes (**Table 4-6**). Newly identified effects were detected in ten taxa, species diversity and species richness. *Brachyistius frenatus* (kelp surfperch) began to increase after power plant start-up, although not significantly, but the continuing increase in abundance was significant during OpPeriod-2 (**Figure 4-9, Table 4-6**). *Sebastes chrysomelas/ S. carnatus* (juvenile rockfishes) increased substantially only during OpPeriod-2, with especially high abundances in 1995 (**Figure 4-10**). Two measures of fish community structure—taxa diversity and species richness—also increased significantly in Diablo Cove, but only at midwater transects.

Table 4-6. Significant discharge effects on subtidal fishes within Diablo Cove during OpPeriod-2.

New Effects	Continuing Effects
Significant Increases	
Brachyistius frenatus	Atherinidae unid. (*)
Cottidae unid.	*Coryphopterus nicholsii* (N) (*)
Orthonopias triacis (N)	*Paralabrax clathratus* (*)
Pleuronichthys spp. (N)	*Sebastes serranoides* (N) (*)
Sebastes atrovirens	*Sebastes chrysomelas* (§)
Sebastes chrysomelas/S. carnatus	*Hexagrammos decagrammus* (N) (§)
Sebastes serranoides /S. flavidus (juv.)	*Oxyjulis californica* (§)
Trachurus symmetricus	*Oxylebius pictus* (§)
Taxa diversity (midwater)	Taxa diversity (benthic) (S) (§)
Taxa richness (midwater)	
Significant Decreases	
Aulorhynchus flavidus (S)	*Scorpaenichthys marmoratus* (N) (*)
Chromis punctipinnis (N)	

Explanation of symbols: (N) effects at north Diablo Cove only; (S) effects at south Diablo Cove only; (*) continuing effect cove-wide with unchanged magnitude between periods; (§) reversal in previously determined effect.

We also identified continuing effects of the discharge on fishes in Diablo Cove. Nine fish taxa that were significantly affected by the discharge during OpPeriod-1 (Tenera 1997) continued to be significantly affected in OpPeriod-2 (**Table 4-6**). For example, a long-term decline in *Scorpaenichthys marmoratus* (cabezon) was especially evident despite a brief increase in Diablo Cove at the end of OpPeriod-2 (**Figure 4-11**). Atherinidae (topsmelt), in contrast, continued to increase significantly in Diablo Cove with highest abundances generally occurring during the fall and winter months (**Figure 4-12**). High variation in topsmelt counts is evident in their wide fluctuations in abundance between surveys.

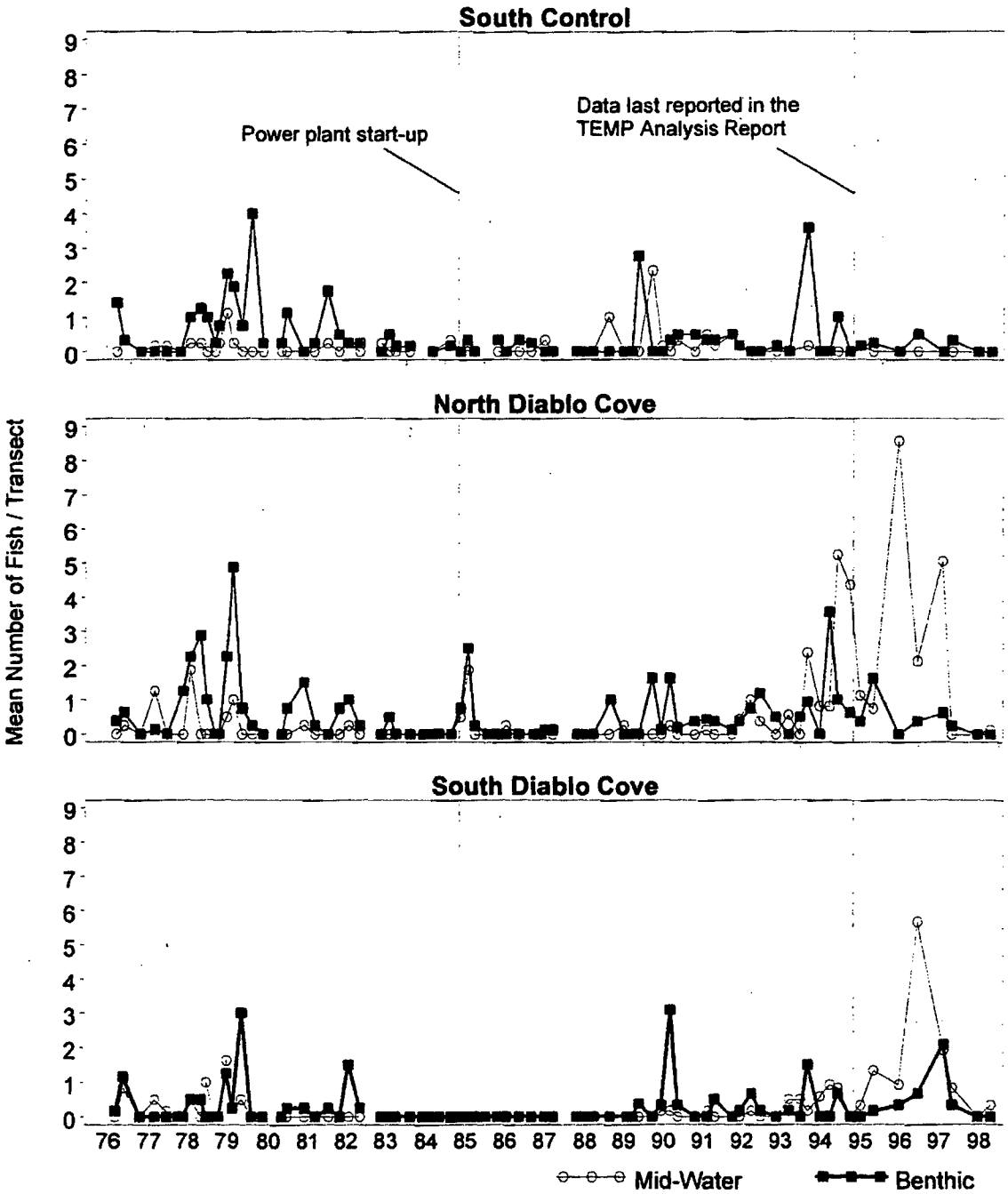


Figure 4-9. Abundance of *Brachyistius frenatus* (kelp surfperch) at the subtidal fish observation transects.

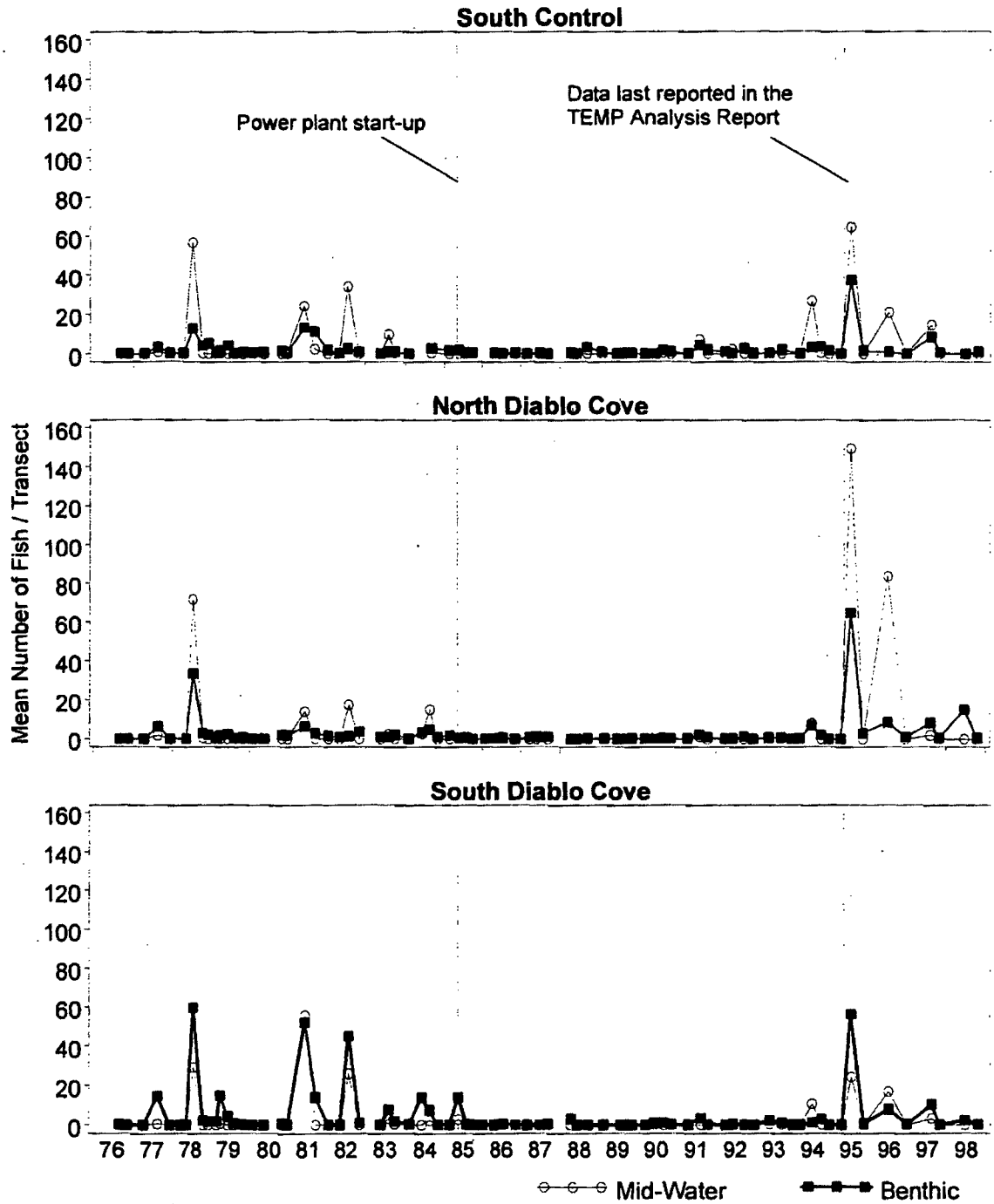


Figure 4-10. Abundance of juvenile *Sebastes chrysomelas/S. carnatus* (black-and-yellow rockfish) at the subtidal fish observation transects.

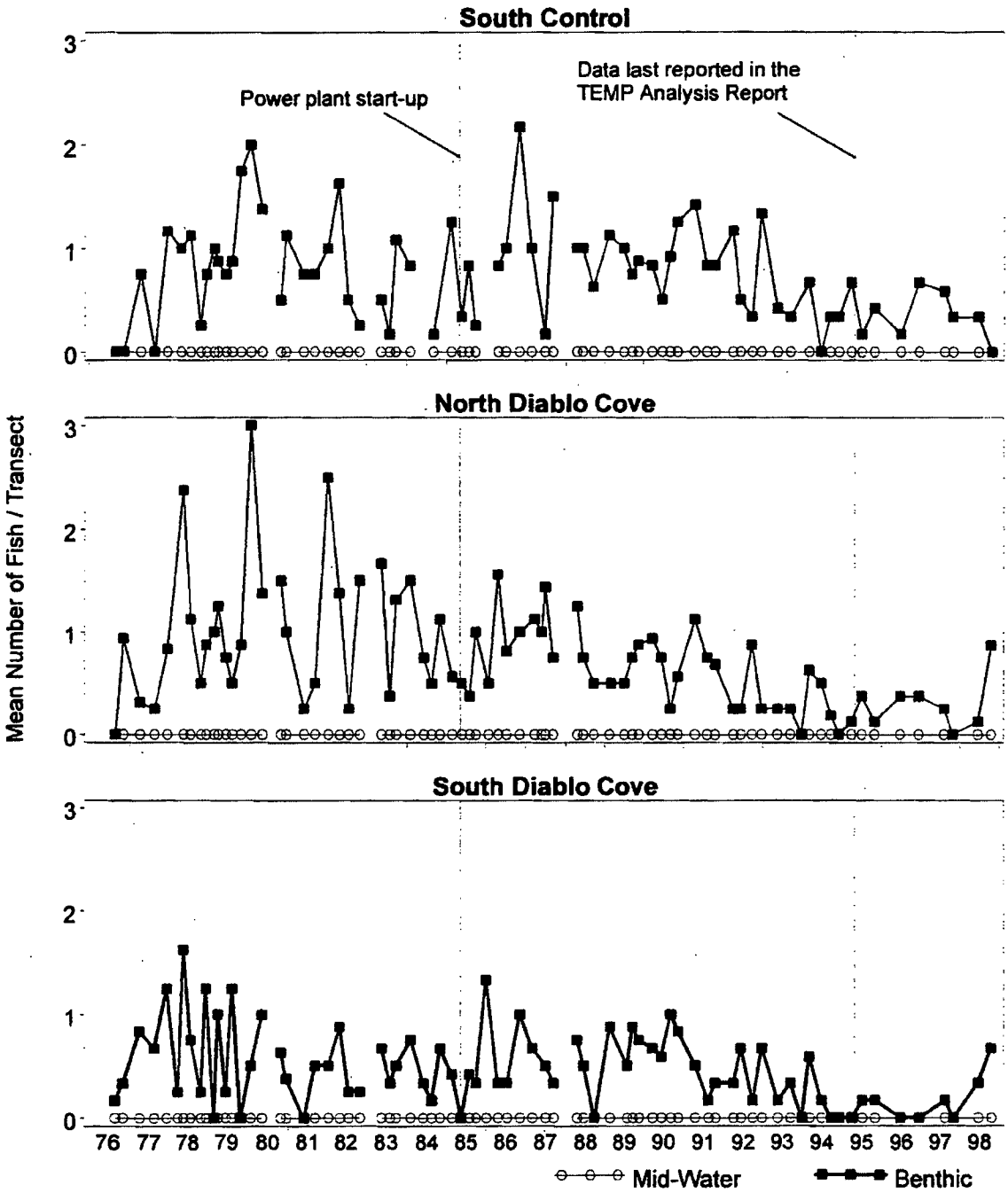


Figure 4-11. Abundance of *Scopaenichthys marmoratus* (cabezon) at the subtidal fish observation transects.

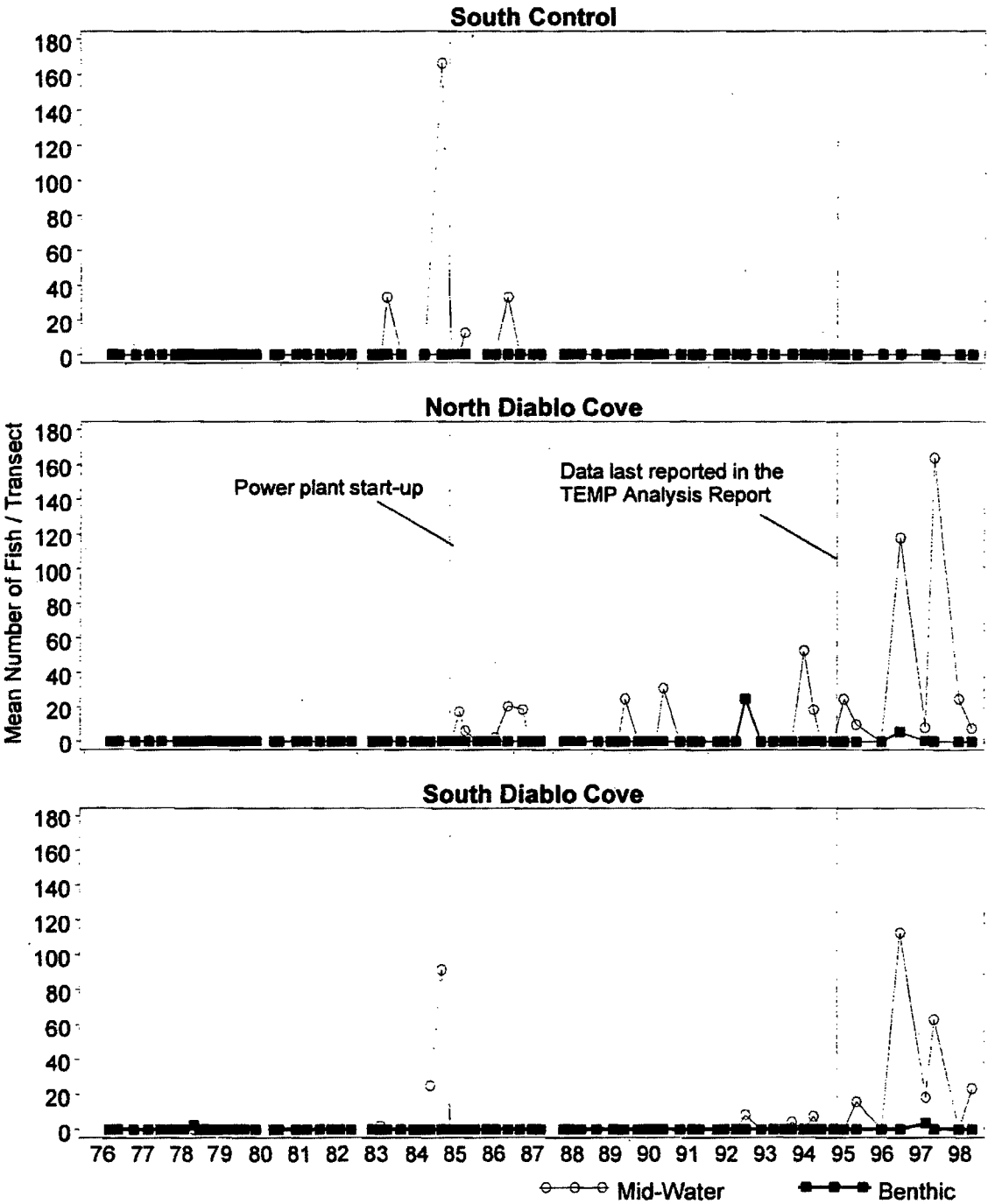


Figure 4-12. Abundance of Atherinidae (topsmelt) at the subtidal fish observation transects.

Nearly half of the continuing effects of the discharge were reversals in previously described trends. These reversals occurred in species that had declined after plant start-up but subsequently had small but significant increases relative to control populations. For example, *Sebastes chrysomelas* (black-and-yellow rockfish) declined at the control during OpPeriod-2, but increased slightly in the cove at the same time (**Figure 4-10**).

In addition to the quantitative statistical tests, qualitative observations of fishes in other areas of Diablo Cove confirmed that warm-temperate species such as *Triacis semifasciata*, *Myliobatis californica*, *Medialuna californiensis*, and *Atractoscion nobilis* continued to be present year-round. We observed these species regularly in the turbulence zone of the discharge where water temperatures were warmest.

4.4.3 Discussion

Many of the changes in the Diablo Cove fish assemblage described in Tenera (1997) were still present during OpPeriod-2. These included the increased occurrence of warm-temperate species more characteristic of southern California and bay habitats, and a reduction of cool-temperate species in shallow areas of the cove. Earlier analyses also predicted that new changes would continue as a result of variations in recruitment success and species interactions within thermally affected areas. An example of variable recruitment success was the rare occurrence of a few warm-temperate fishes such as *Hypsypops rubicunda* (garibaldi) and *Halichoeres semicinctus* (rock wrasse) in Diablo Cove that probably resulted from larval transport during the El Niño conditions in 1997. We also identified several other new changes in fish abundances that were statistically significant, although some of these were small in magnitude.

Changes in algal community structure are known to affect the distributions and abundances of some temperate reef fishes (Carr 1989). The increased abundance of giant kelp habitat in Diablo Cove during OpPeriod-2 (see Section 4.1 – *Subtidal Algae*) coincided with increased abundances of some kelp-associated fish species, such as kelp surfperch and kelp bass. The canopy structure also provided shelter for juveniles of some rockfish species (e.g., kelp, gopher, black-and-yellow) that use this type of habitat for successful recruitment to the nearshore zone. The increased diversity of midwater fishes during OpPeriod-2 may also have been related to the added structural complexity provided by the giant kelp.

Some of the relative increases of fishes in Diablo Cove were actually the result of absolute decreases in the control area. Over 80% of the fish taxa at the control had lower mean abundances in OpPeriod-2 than in OpPeriod-1. This far exceeded the 50% proportion that would be expected by chance alone. Some of the declines were in species with commercial and sportfishery value, such as *Sebastes chrysomelas* and *Hexagrammos decagrammus*. Greater fishing effort at South Control than in Diablo Cove was one factor that may have contributed to these declines. Some of the species that declined, however, were small species with no fishery value. Declines among a wide range of fishes in the southern California bight in the past decade have been attributed to an extended period of ocean warming and reduced productivity in the California current system (Holbrook et al. 1997). Our long-term data may also reflect these trends to some extent.

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APPENDIX A – Station Nomenclature

Table A-1. Intertidal horizontal band transect and temperature station names used in report and equivalent NPDES station names

Station Name Used in Report	Area	NPDES Station Name	Horizontal Band Transect	Temperature
NC 1+.3m	North Control	1+1	●	
NC 1+.9m	"	1+3	●	
NC 2+.3m	"	2+1	●	
NC 2+.6m	"	2+2		●
NC 2+.9m	"	2+3	●	
NC 3+.6m	'	3+2		●
FC 1+.3m	Field's Cove	4+1	●	
FC 1+.9m	"	4+3	●	
FC 2+.3m	"	5+1	●	
FC 2+.9m	"	5+3	●	
FC 3+.3m	"	6+1	●	
FC 3+.6m	"	6+2		●
FC 3+.9m	"	6+3	●	
NDC 2+.3m	North Diablo Cove	8+1	●	
NDC 2+.6m	"	8+2		●
NDC 2+.9m	"	8+3	●	
NDC 3+.3m	"	9+1	●	
NDC 3+.6m	"	9+2		●
NDC 3+.9m	"	9+3	●	
SDC 1+.3m	South Diablo Cove	10+1	●	
SDC 1+.6m	"	10+2	●	●
SDC 3+.3m	"	12+1	●	
SDC 3+.6m	"	12+2		●
SDC 3+.9m	"	12+3	●	
SC 1+.3m	South Control	19+1	●	
SC 1+.6m	"	19+2		●
SC 1+.9m	"	19+3	●	

Table A-2. Intertidal vertical band transect station names used in report and equivalent NPDES station names.

Station Name Used in Report	Area	NPDES Station Name
FC 1-V	Field's Cove	C
NDC 1-V	North Diablo Cove	L
SDC 2-V	South Diablo Cove	H

Table A-3. Subtidal benthic sampling, temperature, and dissolved oxygen station names used in report and equivalent NPDES station names.

Station Name Used in Report	Area	NPDES Station Name	Benthic Sampling	Temperature	Dissolved Oxygen
NC 1 -3m	North Control	1-10		●	●
FC 1 -3m	Field's Cove	22-10 = 4-10	● (22-10)	● (4-10)	● (4-10)
FC 2 -9m	"	22-30	●		
NDC 3 -3m	North Diablo Cove	9-10	●	●	●
NDC 4 -4m	"	9-15	●	●	●
NDC 6 -3m	"	6-11	●	●	●
SDC 1 -3m	South Diablo Cove	11-10		●	●
SDC 2 -3m	"	12-10	●		
SDC 3 -4m	"	10-15	●		
SDC 4 -4m	"	11-15		●	●
SC 1 -3m	South Control	19-10	●	●	●

Table A-4. Subtidal fish observation station names used in report and equivalent NPDES station names.

Station Name Used in Report	Area	NPDES Station Name
NDC FO-1	North Diablo Cove	5
NDC FO-2	"	6
NDC FO-3	"	7
NDC FO-4	"	4
SDC FO-1	South Diablo Cove	8
SDC FO-2	"	9
SDC FO-3	"	10
SC FO-1	South Control	13
SC FO-2	"	12
SC FO-3	"	14

APPENDIX B - Physical Data Summaries
(Temperature and Dissolved Oxygen)

Table	Station	Area
B1	NC 2 +.6m	North Control
B2	NC 3 +.6m	North Control
B3	SC 1 +.6m	South Control
B4	NDC 2 +.6m	North Diablo Cove
B5	NDC 3 +.6m	North Diablo Cove
B6	SDC 1 +.6m	South Diablo Cove
B7	SDC 3 +.6m	South Diablo Cove
B8	FC 3 +.6m	Field's Cove
B9	NC 1 -3m	North Control
B10	SC 1 -3m	South Control
B11	NDC 3 -3m	North Diablo Cove
B12	NDC 4 -4m	North Diablo Cove
B13	NDC 6 -3m	North Diablo Cove
B14	SDC 1 -3m	South Diablo Cove
B15	SDC 4 -4m	South Diablo Cove
B16	FC 1 -3m	Field's Cove
B17	Dissolved Oxygen	

Table B1. Monthly mean temperatures for Station NC 2+.6m from January 1995 through December 1998

Station NC 2+.6m North Control	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	13.46	13.62	13.76	11.42	12.70	–	13.53	14.09	13.41	14.55	14.68	13.68
Variance	0.18	0.15	0.94	1.28	0.27	–	0.91	0.73	0.65	0.76	0.26	0.22
N	1120	975	1062	1035	37	0	729	1236	1251	1284	1194	1193
1996												
Mean	12.68	12.77	12.61	11.45	11.85	12.24	13.31	13.67	14.59	13.67	12.96	13.00
Variance	0.90	0.65	0.52	0.64	0.88	0.77	1.03	0.57	1.56	2.49	0.40	0.55
N	1131	1010	1073	1045	1109	1122	1193	1226	1230	1279	1173	1210
1997												
Mean	13.20	11.62	11.60	11.49	12.68	13.12	14.31	16.25	16.42	16.36	17.30	16.51
Variance	0.34	0.68	1.43	0.78	2.44	0.76	1.65	1.10	0.85	1.07	0.23	0.03
N	1116	970	1060	1057	1119	1117	1208	1256	1234	1256	1199	338
1998												
Mean	–	–	–	–	–	–	–	–	–	–	–	–
Variance	–	–	–	–	–	–	–	–	–	–	–	–
N	0	0	0	0	0	0	0	0	0	0	0	0

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B2. Monthly mean temperatures for Station NC 3+.6m from January 1995 through December 1998

Station NC 3+.6m North Control	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	13.97	13.66	13.81	11.40	11.67	12.19	13.69	13.97	13.34	14.54	14.60	13.61
Variance	0.39	0.12	0.94	1.22	0.57	2.18	1.14	0.75	0.60	0.73	0.24	0.21
N	1404	1205	1287	1254	1344	1374	1472	1469	1435	1470	1394	1421
1996												
Mean	12.65	12.69	12.55	11.33	11.86	12.23	13.31	13.59	14.46	13.66	12.97	13.09
Variance	0.88	0.60	0.48	0.57	0.84	0.75	1.13	0.64	1.59	2.47	0.33	0.52
N	1441	1263	1304	1256	1329	1362	1498	1472	1411	1476	1396	1460
1997												
Mean	13.33	11.73	11.62	11.36	12.56	12.99	14.37	16.32	16.51	16.46	17.32	16.00
Variance	0.29	0.69	1.34	0.65	2.46	0.73	1.70	0.95	0.85	1.02	0.21	0.31
N	1398	1191	1322	1269	1333	1342	1515	1532	1426	1440	1394	1455
1998												
Mean	15.42	14.67	13.28	12.13	12.70	13.32	14.46	15.96	15.89	13.92	12.68	14.50
Variance	0.26	0.71	1.11	1.56	1.63	0.61	3.63	1.04	0.63	1.10	0.53	1.19
N	2226	2016	2232	2160	2231	2160	2232	2232	2160	2232	2160	228

Table B3. Monthly mean temperatures for Station SC 1+.6m from January 1995 through December 1998

Station SC 1+.6m South Control	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	13.36	13.47	13.58	10.85	10.98	11.65	13.18	13.79	13.16	14.44	14.63	13.59
Variance	0.14	0.10	0.98	1.14	0.39	1.98	1.15	0.90	0.71	0.77	0.25	0.24
N	1224	1105	1184	1145	1219	1248	1335	1350	1339	1376	1292	1291
1996												
Mean	12.58	12.63	12.22	10.95	11.31	12.00	13.00	13.28	14.40	13.59	13.03	12.93
Variance	0.94	0.48	0.65	0.76	0.95	0.84	1.11	0.50	1.46	2.20	0.29	0.39
N	1255	1126	1179	1145	1212	1238	1322	1356	1312	1365	1309	1323
1997												
Mean	13.20	11.64	11.57	10.90	11.95	12.68	13.96	15.81	16.20	16.40	17.35	16.17
Variance	0.20	0.68	1.28	0.48	2.37	0.86	1.78	1.24	0.88	0.98	0.20	0.21
N	1231	1059	1195	1162	1229	1215	1343	1386	1331	1351	1297	1319
1998												
Mean	15.44	14.72	13.25	12.05	12.52	12.84	14.36	15.91	15.81	13.78	12.52	11.22
Variance	0.22	0.71	1.29	2.00	1.95	0.83	3.71	0.85	0.55	0.90	0.70	2.96
N	2232	2016	2232	2160	2232	2160	2231	2232	2160	2231	2160	2231

Table B4. Monthly mean temperatures for Station NDC 2+.6m from January 1995 through December 1998

Station NDC 2+.6m North Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	15.53	17.44	16.72	14.43	15.17	15.36	17.52	18.76	17.43	17.94	17.44	15.57
Variance	3.55	2.22	4.63	5.03	3.16	5.81	1.97	0.85	4.00	4.82	3.26	2.17
N	1072	939	1025	1004	1066	1085	1154	1207	1216	1257	1162	1161
1996												
Mean	16.04	15.82	15.56	13.53	14.41	16.16	18.03	17.37	19.47	17.78	16.52	16.52
Variance	2.85	3.37	2.61	5.97	5.11	4.08	2.67	2.66	2.18	5.08	3.54	3.10
N	1097	972	1029	1009	1078	1094	1158	1185	1199	1248	1183	1176
1997												
Mean	16.48	14.29	15.06	14.10	16.12	16.68	18.99	20.53	19.69	19.31	19.96	18.97
Variance	2.82	3.71	3.97	6.48	6.07	4.74	4.16	2.27	2.08	3.10	2.21	2.82
N	1080	941	1013	1026	1084	1081	1163	1174	1199	1233	1170	1184
1998												
Mean	17.05	15.25	14.86	14.47	15.32	15.96	17.29	18.87	–	–	–	–
Variance	4.36	2.65	5.23	6.86	6.12	3.56	7.19	4.60	–	–	–	–
N	2192	2016	2232	2160	2231	2160	2232	815	0	0	0	0

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B5. Monthly mean temperatures for Station NDC 3+.6m from January 1995 through December 1998

Station NDC 3+.6m North Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	15.67	17.43	16.83	14.98	16.20	16.29	17.44	18.55	17.36	17.95	17.43	15.66
Variance	3.65	2.50	4.88	4.91	2.69	4.58	1.58	0.85	3.79	5.03	3.35	2.40
N	1420	1213	1293	1266	1358	1386	1478	1486	1442	1477	1404	1430
1996												
Mean	16.24	15.96	15.82	13.88	14.43	16.00	17.77	17.07	19.27	17.77	16.55	16.70
Variance	2.81	3.78	2.99	5.68	5.15	3.68	2.51	2.51	2.33	5.24	3.72	3.16
N	1448	1270	1311	1263	1338	1367	1504	1487	1419	1477	1404	1471
1997												
Mean	16.73	14.52	15.25	14.26	16.19	16.67	18.90	20.40	19.62	19.35	20.10	19.04
Variance	2.87	4.42	4.14	6.12	5.79	4.60	3.84	2.08	2.02	3.19	2.41	3.38
N	1415	1200	1334	1280	1345	1355	1524	1500	1433	1450	1402	1464
1998												
Mean	17.59	15.78	15.32	15.00	15.75	16.27	17.73	19.46	19.88	17.42	15.48	12.83
Variance	3.98	3.84	3.92	5.84	5.55	3.03	6.28	3.24	2.65	5.19	4.51	5.44
N	2232	2016	2232	2160	2232	2160	2232	2232	2160	2231	2160	2231

Table B6. Monthly mean temperatures for Station SDC 1+.6m from January 1995 through December 1998

Station SDC 1+.6m South Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	19.23	17.72	18.46	15.84	15.74	16.58	16.87	17.30	16.92	18.12	18.30	17.97
Variance	6.96	4.71	8.24	5.28	3.64	4.29	2.14	1.52	2.14	4.86	3.23	8.19
N	1449	1250	1310	1282	1380	1416	1507	1513	1464	1492	1419	1467
1996												
Mean	17.49	18.02	17.21	16.35	15.00	16.17	17.32	16.46	18.32	17.58	16.98	17.36
Variance	5.76	5.97	4.67	4.13	4.17	3.48	2.68	2.19	2.85	4.92	3.27	2.90
N	1485	1294	1333	1282	1357	1398	1524	1512	1439	1490	1433	1491
1997												
Mean	18.52	17.21	16.05	15.60	18.33	18.13	18.52	20.20	19.60	19.56	21.10	20.36
Variance	6.34	4.55	4.35	5.90	4.72	3.41	4.66	2.00	1.39	1.87	2.26	2.77
N	1465	1235	1344	1296	1365	1389	1544	1590	1461	1477	1426	1481
1998												
Mean	21.66	21.26	17.11	16.95	16.92	16.90	18.00	19.66	20.06	18.59	18.40	16.18
Variance	8.12	8.79	5.21	7.64	7.31	4.55	5.86	2.73	2.75	5.20	8.51	13.60
N	2232	2016	2232	2160	2231	2160	2232	2231	2160	2232	2160	2059

Table B7. Monthly mean temperatures for Station SDC 3+.6m from January 1995 through December 1998

Station SDC 3+.6m South Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	15.47	16.17	15.97	13.96	14.20	15.06	16.27	16.63	16.18	17.45	17.45	15.94
Variance	1.18	0.62	1.59	1.53	1.28	2.26	1.92	1.32	1.79	3.41	1.21	1.43
N	1258	1132	1214	1154	1244	1268	1357	1377	1363	1395	1313	1312
1996												
Mean	15.80	15.69	15.77	–	–	–	16.37	15.81	17.49	16.53	15.88	16.04
Variance	1.53	1.25	0.57	–	–	–	1.83	1.59	2.37	2.64	0.67	0.69
N	1296	1156	519	0	0	0	1269	1375	1339	1380	1333	1352
1997												
Mean	16.19	15.08	14.77	14.46	17.30	19.91	18.19	19.73	19.18	19.21	20.20	19.33
Variance	0.76	1.04	1.57	2.08	3.82	1.96	4.71	1.83	1.14	1.26	0.70	0.65
N	1260	1084	1223	1183	1261	1245	1364	1418	1345	1364	1312	1338
1998												
Mean	17.72	16.05	15.56	15.05	15.64	15.96	17.16	18.84	19.07	–	–	–
Variance	2.16	1.91	4.68	5.25	4.39	2.74	5.34	2.87	2.40	–	–	–
N	2232	2016	2232	2160	2231	2160	2232	2231	1256	0	0	0

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B8. Monthly mean temperatures for Station FC 3+.6m from January 1995 through December 1998

Station FC 3+.6m Field's Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	14.00	14.64	14.42	11.94	12.39	12.93	15.01	14.91	14.08	14.98	15.26	14.14
Variance	0.46	0.39	1.59	1.67	1.14	3.34	2.30	1:03	0.86	1.03	0.43	0.32
N	1120	975	1062	1035	1103	1126	1187	1236	1251	1284	1194	1193
1996												
Mean	13.58	13.54	13.19	11.50	12.11	13.04	14.38	14.42	15.64	14.72	14.07	13.70
Variance	1.16	0.88	0.71	1.08	1.12	1.14	1.40	0.62	1.84	2.84	0.78	0.95
N	1131	1010	1073	1045	1109	1122	1193	1226	1230	1279	1211	1038
1997												
Mean	–	–	13.17	11.55	12.82	13.58	15.35	17.41	17.34	17.14	17.97	16.95
Variance	–	–	0.68	1.28	2.91	1.19	2.28	1.40	1.03	1.33	0.39	0.51
N	0	0	603	1057	1119	1117	1208	1256	1234	1256	1199	1214
1998												
Mean	15.84	14.77	13.64	13.04	13.75	14.35	15.91	17.10	16.79	14.73	13.05	11.93
Variance	0.88	0.98	3.20	4.93	4.84	2.83	4.86	2.02	1.69	2.98	1.59	2.38
N	2230	2016	2232	2160	2231	2160	2232	2232	2160	2232	2160	1199

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B9. Monthly mean temperatures for Station NC 1-3m from January 1995 through December 1998

Station NC 1-3m North Control	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	13.50	13.64	13.77	11.26	11.39	11.68	12.99	13.58	13.24	14.49	14.63	13.65
Variance	0.18	0.16	1.00	1.18	0.54	1.86	0.91	0.60	0.57	0.71	0.26	0.19
N	2231	2016	2232	2160	2232	2160	2232	2232	2160	2231	2160	2232
1996												
Mean	12.66	12.78	12.65	11.35	11.61	11.87	12.82	13.21	14.52	13.65	13.06	13.08
Variance	0.91	0.61	0.51	0.62	0.75	0.71	1.00	0.52	1.84	2.41	0.37	0.52
N	2232	2088	2231	2160	2232	2159	2232	2232	2160	2232	2160	2232
1997												
Mean	13.33	11.75	11.67	11.37	12.33	12.65	13.93	16.06	16.29	16.49	17.37	16.13
Variance	0.25	0.73	1.38	0.71	2.36	0.63	1.91	1.22	0.84	1.06	0.22	0.29
N	2231	2016	2232	2148	2232	2160	2231	2232	2160	2232	2160	2232
1998												
Mean	15.54	14.77	13.29	12.07	12.51	13.07	14.33	15.84	15.90	14.02	12.74	11.96
Variance	0.15	0.60	0.52	0.89	1.09	0.40	3.70	0.86	0.53	0.69	0.23	0.40
N	2232	2016	2231	2160	2232	2160	2084	2232	2159	2232	2160	1551

Table B10. Monthly mean temperatures for Station SC 1-3m from January 1995 through December 1998

Station SC 1-3m South Control	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	13.36	13.46	13.54	10.81	10.88	11.40	12.54	13.37	13.03	14.47	14.67	13.61
Variance	0.14	0.10	1.05	1.15	0.45	1.74	1.14	0.61	0.58	0.74	0.25	0.22
N	2232	2016	2232	2160	2232	2160	2232	2232	2158	2232	2160	2232
1996												
Mean	12.66	12.81	12.42	10.99	11.21	11.70	12.70	12.95	14.38	13.59	13.16	12.99
Variance	0.88	0.49	0.70	0.74	0.94	0.75	1.01	0.51	1.63	2.20	0.29	0.35
N	2232	2088	2232	2160	2232	2159	2232	2232	2159	2232	2160	2232
1997												
Mean	13.17	11.65	11.52	10.82	11.79	12.32	13.58	15.59	16.04	16.36	–	–
Variance	0.18	0.77	1.25	0.53	2.40	0.72	2.06	1.25	0.79	1.09	–	–
N	2232	2016	2232	2159	2232	2160	2231	2232	2159	1915	0	0
1998												
Mean	15.48	14.75	12.90	–	11.92	12.56	14.20	15.87	15.82	13.99	12.72	12.00
Variance	0.09	0.57	0.39	–	0.81	0.48	3.90	0.80	0.49	0.48	0.23	0.42
N	2232	2016	982	0	1838	2160	2229	2232	2160	2232	2160	1553

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B11. Monthly mean temperatures for Station NDC 3-3m from January 1995 through December 1998

Station NDC 3-3m North Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	16.97	17.73	17.38	14.82	15.22	15.29	16.63	17.75	16.88	17.93	17.24	16.11
Variance	5.96	2.41	4.90	4.53	2.70	5.27	1.86	1.09	3.65	5.86	3.03	3.60
N	2232	2016	2232	2160	2232	2160	2232	2232	2160	2232	2160	2232
1996												
Mean	16.73	16.79	16.22	14.47	14.25	15.52	17.02	16.16	18.96	17.78	16.84	17.38
Variance	3.58	4.98	3.42	5.36	4.93	3.44	2.97	2.94	3.09	5.41	3.79	3.86
N	2232	2088	2232	2160	2230	2160	2232	1800	2160	2229	2160	2232
1997												
Mean	17.56	15.22	15.72	14.53	15.59	16.39	17.88	19.67	19.37	19.41	20.62	19.94
Variance	3.25	6.25	4.48	5.30	4.87	4.16	3.37	2.29	1.83	3.25	3.42	5.76
N	2231	2016	2232	2160	2232	2160	2232	2232	2160	2232	2159	2231
1998												
Mean	18.51	16.59	15.82	15.51	16.05	16.39	17.55	19.41	19.81	17.95	16.17	13.72
Variance	5.92	6.22	4.02	4.46	3.97	2.14	5.03	1.72	1.49	2.79	3.83	3.06
N	2232	2016	2232	2160	2232	2160	2232	2232	2160	2232	2160	2047

Table B12. Monthly mean temperatures for Station NDC 4-4m from January 1995 through December 1998

Station NDC 4-4m North Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	16.07	17.43	16.91	14.37	14.79	14.83	16.10	17.07	16.17	17.15	16.78	15.85
Variance	4.30	2.56	4.66	4.28	2.43	4.74	2.27	1.71	3.61	5.07	2.13	2.87
N	2232	2016	2232	2159	2232	2160	2232	2232	2160	2232	2159	2232
1996												
Mean	16.40	16.39	16.00	13.55	13.64	15.16	16.41	15.76	18.43	17.31	16.46	16.80
Variance	3.35	4.25	2.95	4.26	3.96	2.83	2.47	2.30	2.75	5.27	3.41	3.13
N	2231	2088	2231	2160	2232	2160	2232	2232	2160	2232	2160	2232
1997												
Mean	16.93	14.76	15.30	13.90	14.55	15.79	16.99	18.98	18.91	19.16	20.31	19.57
Variance	3.17	5.21	3.96	4.36	2.85	3.49	3.25	2.29	1.85	3.03	2.84	4.65
N	2232	2016	2231	2160	2232	2160	2232	2232	2160	2232	2160	2232
1998												
Mean	17.86	16.06	15.26	15.20	15.67	15.96	17.06	18.82	19.25	17.48	15.60	13.19
Variance	4.53	3.82	3.54	3.92	3.48	1.98	4.61	1.61	1.31	2.33	3.21	1.91
N	2232	1746	1549	2160	2232	2160	2232	2232	2160	2232	2160	1332

Table B13. Monthly mean temperatures for Station NDC 6-3m from January 1995 through December 1998

Station NDC 6-3m North Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	18.62	20.22	19.71	16.57	16.54	16.59	17.58	18.67	17.21	16.86	17.68	17.97
Variance	9.10	2.01	5.21	5.61	3.71	5.85	4.01	3.55	5.97	4.16	1.65	6.02
N	2232	2016	2232	2160	2232	2160	2232	2232	2159	2232	2160	2232
1996												
Mean	18.61	18.83	18.03	13.74	14.15	16.65	17.94	16.92	20.09	19.12	18.34	19.18
Variance	3.26	4.61	3.89	7.27	5.74	4.93	3.32	5.00	3.31	6.75	4.81	3.10
N	2232	2088	2232	2160	2232	2160	2232	2231	2160	2232	2159	2232
1997												
Mean	19.65	17.32	17.12	13.49	13.57	16.78	18.37	20.54	20.90	21.01	22.76	21.72
Variance	2.81	5.11	5.05	8.09	3.83	5.08	5.36	3.54	2.36	3.05	3.25	5.00
N	2232	2016	2231	2160	2232	2160	2232	2232	2160	2232	2160	1706
1998												
Mean	–	–	16.01	17.24	17.46	17.45	18.84	20.87	20.75	18.95	17.11	14.66
Variance	–	–	3.89	5.07	5.24	3.06	6.61	2.77	2.67	4.23	5.18	4.47
N	0	0	1907	2160	2232	2160	2232	2232	2160	2232	2160	1622

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B14. Monthly mean temperatures for Station SDC 1-3m from January 1995 through December 1998

Station SDC 1-3m South Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	16.47	16.39	16.52	14.44	14.22	14.65	14.47	–	15.15	16.48	16.93	16.61
Variance	3.04	1.89	4.14	3.80	2.87	2.91	2.43	–	2.38	4.90	3.67	4.37
N	835	2016	2232	2160	2232	2160	1191	0	900	2232	2160	2232
1996												
Mean	16.55	16.57	16.22	14.55	13.00	14.22	14.56	14.10	16.07	16.31	16.07	16.43
Variance	4.38	3.21	3.60	3.13	2.56	3.29	4.07	2.09	4.46	4.27	3.18	2.90
N	2231	2088	2142	2160	2229	2160	2232	2232	2160	2232	2160	2232
1997												
Mean	16.82	16.08	15.16	14.06	14.75	15.57	15.22	17.06	17.79	17.99	19.76	18.82
Variance	3.03	4.16	3.76	3.29	5.27	5.63	4.38	3.51	1.93	3.83	3.02	2.37
N	2232	2016	2232	2160	2232	2160	2232	2232	2160	2232	2160	2232
1998												
Mean	18.47	17.35	15.61	15.93	15.80	15.63	15.89	16.69	17.64	16.91	16.60	14.93
Variance	2.78	3.34	1.60	2.93	3.11	2.25	3.25	2.79	2.39	3.59	3.96	2.69
N	2232	1746	1906	2160	2232	2160	2232	2232	2160	2232	2160	2048

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B15. Monthly mean temperatures for Station SDC 4-4m from January 1995 through December 1998

Station SDC 4-4m South Diablo Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	16.12	15.38	15.63	13.15	12.55	13.09	12.63	13.20	13.56	15.42	15.90	16.00
Variance	3.02	2.08	4.29	4.13	2.18	2.74	1.13	1.29	2.49	3.58	2.13	3.85
N	2232	2016	2232	2160	2232	2160	2232	2231	2160	2231	2160	2232
1996												
Mean	15.39	15.78	14.88	13.42	12.23	12.38	12.73	12.91	14.46	14.81	14.71	15.32
Variance	4.51	2.96	4.48	2.40	1.75	2.21	2.25	1.11	3.54	4.40	3.03	2.81
N	2232	2088	2232	2160	2228	2160	2232	2232	2160	2232	2160	2232
1997												
Mean	16.07	15.44	13.88	12.85	12.91	13.70	13.73	15.42	16.49	18.50	20.53	19.85
Variance	3.13	4.69	4.68	2.44	3.25	5.53	2.52	1.75	2.19	2.93	1.61	2.39
N	2232	2016	2232	2160	2232	2160	2232	2232	2160	2232	2160	2232
1998												
Mean	19.01	17.35	15.04	14.24	13.70	13.57	13.92	15.09	15.84	15.12	15.44	14.65
Variance	3.16	4.38	1.63	3.33	3.14	1.83	2.91	1.48	2.20	4.38	4.87	2.21
N	2232	1746	1906	2160	2232	2160	2232	2232	2160	2232	2160	1538

Table B16. Monthly mean temperatures for Station FC 1-3m from January 1995 through December 1998

Station FC 1-3m Field's Cove	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995												
Mean	13.99	14.69	14.46	11.81	12.21	12.43	13.73	14.19	13.76	14.95	15.31	14.20
Variance	0.53	0.51	1.70	1.58	1.03	2.42	1.29	0.71	0.75	1.00	0.38	0.35
N	2232	2016	2232	2160	2232	2160	2229	2232	2159	2232	2160	2232
1996												
Mean	13.59	13.58	13.35	11.44	11.89	12.59	13.78	13.83	15.49	14.66	14.09	13.98
Variance	1.28	0.98	0.70	1.01	0.98	0.81	1.08	0.52	2.07	2.89	0.74	0.83
N	2232	2088	2230	2160	2232	2160	2232	2232	2160	2229	2160	2232
1997												
Mean	14.09	12.24	12.39	11.50	12.47	13.09	14.67	17.06	–	–	–	–
Variance	0.36	1.07	1.61	1.33	2.67	0.88	2.27	1.33	–	–	–	–
N	2231	2016	2232	2159	2232	2160	2232	2051	0	0	0	0
1998												
Mean	–	–	–	–	–	12.92	15.49	17.17	16.94	15.08	13.32	12.21
Variance	–	–	–	–	–	0.53	4.40	0.98	0.76	0.96	0.40	0.31
N	0	0	0	0	0	104	2232	2232	2160	2232	2160	2232

Note: – indicates that no temperature data were recorded for the period due to equipment failure.

Table B-17. Dissolved oxygen concentrations (mg/l) measured quarterly from August 1995 to December 1998 at Diablo Cove, Field's Cove and Control stations. Data for the third quarter of 1997 were not collected due to scheduling difficulties. Measurements obtained by laboratory titration of field-collected samples (Winkler method) prior to fourth quarter of 1996, and by *in situ* dissolved oxygen sensor from fourth quarter 1996 through fourth quarter 1998.

Station	Water column strata	Depth (m)	1995 Q3	1995 Q4	1996 Q1	1996 Q2	1996 Q3	1996 Q4	1997 Q1	1997 Q2	1997 Q3	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4
CONTROL																
NC 1 -3m	Surface	–	7.1	7.9	8.4	7.2	7.1	9.2	9.3	8.9	–	7.8	9.0	9.0	8.6	8.0
	Mid-depth	1.5	8.2	7.7	8.4	7.4	7.5	9.7	9.6	9.7	–	7.7	9.0	9.1	8.5	7.8
	Bottom	3.0	8.3	7.8	8.6	7.3	7.2	9.7	9.7	9.7	–	7.7	9.0	8.9	8.5	7.8
		Mean	**7.87**	**7.80**	**8.47**	**7.30**	**7.27**	**9.53**	**9.53**	**9.43**		**7.73**	**9.00**	**9.00**	**8.53**	**7.87**
SC 1 -3m	Surface	–	7.1	7.3	8.9	7.6	7.9	8.8	9.7	10.2	–	7.9	9.0	8.0	9.1	10.4
	Mid-depth	1.5	7.8	7.1	8.7	6.4	7.2	9.9	9.9	10.5	–	7.9	9.0	8.6	9.1	10.4
	Bottom	3.0	7.5	7.4	8.8	7.3	7.5	9.8	9.9	9.9	–	7.9	9.0	9.0	9.3	10.5
		Mean	**7.47**	**7.27**	**8.80**	**7.10**	**7.53**	**9.50**	**9.83**	**10.20**		**7.90**	**9.00**	**8.53**	**9.17**	**10.43**
FIELD'S COVE																
FC 1 -3m	Surface	–	7.7	6.8	8.2	7.0	7.2	9.1	9.5	8.3	–	7.5	8.6	8.2	8.1	9.8
	Mid-depth	1.5	7.7	6.7	8.0	7.0	6.9	9.2	8.6	8.4	–	7.5	8.6	8.3	8.2	8.7
	Bottom	3.0	7.9	6.8	8.0	6.8	6.8	9.2	8.6	8.3	–	7.4	8.5	8.4	8.1	8.8
		Mean	**7.77**	**6.77**	**8.07**	**6.93**	**6.97**	**9.17**	**8.90**	**8.33**		**7.47**	**8.57**	**8.30**	**8.13**	**9.10**
NORTH DIABLO COVE																
NDC 3 -3m	Surface	–	6.8	7.0	7.6	7.5	7.5	8.2	8.8	8.0	–	7.1	7.8	7.8	7.6	8.8
	Mid-depth	1.5	7.2	7.2	7.5	6.8	7.1	8.8	8.6	7.7	–	7.3	8.0	7.2	7.8	9.2
	Bottom	3.0	7.4	7.3	7.4	6.9	6.7	9.4	8.6	7.5	–	7.4	7.9	7.0	7.4	8.8
		Mean	**7.13**	**7.17**	**7.50**	**7.07**	**7.10**	**8.80**	**8.67**	**7.73**		**7.27**	**7.90**	**7.33**	**7.60**	**8.93**
NDC 4 -4m	Surface	–	6.5	7.1	7.3	7.3	7.5	7.4	7.8	7.9	–	7.2	7.5	7.4	7.6	7.7
	Mid-depth	2.0	7.4	6.9	7.3	6.3	6.5	8.6	8.5	7.5	–	7.4	8.0	6.9	7.7	8.3
	Bottom	4.0	7.4	6.8	7.4	6.7	6.2	9.3	8.5	7.4	–	7.5	8.0	6.8	7.4	8.3
		Mean	**7.10**	**6.93**	**7.33**	**6.77**	**6.73**	**8.43**	**8.27**	**7.60**		**7.37**	**7.83**	**7.03**	**7.57**	**8.10**
NDC 6 -3m	Surface	–	6.7	7.0	7.3	7.0	6.9	7.3	6.8	7.1	–	6.7	6.9	6.9	6.9	7.5
	Mid-depth	1.5	6.2	6.5	7.5	6.8	7.0	7.2	8.2	6.8	–	6.9	8.2	6.8	6.9	7.5
	Bottom	3.0	7.1	7.0	7.4	6.6	6.5	7.1	6.5	6.7	–	7.1	7.8	6.8	7.0	7.5
		Mean	**6.67**	**6.83**	**7.40**	**6.80**	**6.80**	**7.20**	**7.17**	**6.87**		**6.90**	**7.63**	**6.83**	**6.93**	**7.50**
SOUTH DIABLO COVE																
SDC 1 -3m	Surface	–	7.4	6.7	8.2	7.5	6.0	7.3	8.3	9.1	–	7.0	7.7	6.8	7.3	7.9
	Mid-depth	1.5	8.0	6.7	8.0	7.1	6.9	7.6	8.3	7.7	–	7.1	7.7	6.8	7.0	7.9
	Bottom	3.0	8.0	5.8	8.1	6.1	6.3	8.4	7.8	7.5	–	7.1	7.7	6.7	7.2	7.8
		Mean	**7.80**	**6.40**	**8.10**	**6.90**	**6.40**	**7.77**	**8.13**	**8.10**		**7.07**	**7.70**	**6.77**	**7.17**	**7.87**
SDC 4 -4m	Surface	–	6.9	6.7	7.8	7.5	7.7	7.8	8.0	7.2	–	7.0	7.6	7.2	7.2	7.7
	Mid-depth	2.0	7.8	6.5	7.6	7.1	6.7	7.7	7.8	7.0	–	7.0	7.6	6.6	7.3	7.8
	Bottom	4.0	7.8	5.4	7.4	4.5	5.9	7.1	7.7	7.2	–	7.3	7.0	6.0	7.1	7.1
		Mean	**7.50**	**6.20**	**7.60**	**6.37**	**6.77**	**7.53**	**7.83**	**7.13**		**7.10**	**7.40**	**6.60**	**7.20**	**7.53**

Note: The DO data summarized in this table differ from previously reported data in quarterly NPDES monitoring reports. DO concentrations from December 1996 through December 1997 that were computed from the submersible oxygen sensor data were later found to be incorrect. Most of the previously reported concentrations were considerably lower than the corrected concentrations. There were two reasons for the differences: 1) the computer software used to process the CTD data incorrectly included instrument equilibration data into the calculations of surface DO, and 2) concentrations were incorrectly reported in units of mg/kg instead of mg/l. All data have been corrected by applying a revised algorithm. The procedures controlling the DO data processing were amended and approved for use on August 8, 1998. Mr. Michael Thomas of the RWQCB was notified of the errors and of these changes on June 5, 1998. A description of the event and its resolution was also included in the 1995-1997 RWMP Report (Tenera 1998).

APPENDIX C – Annual Taxa Means by Intertidal Sampling Method

C1 Intertidal Algae – Horizontal Band Transects

C2 Intertidal Invertebrates – Horizontal Band Transects

C3 Intertidal Algae – Vertical Band Transects

C4 Intertidal Invertebrates – Vertical Band Transects

C5 Intertidal Fishes – Vertical Band Transects

APPENDIX C1 – Intertidal Algae
Horizontal Band Transects

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Control Station NC 1 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	5	6	5	6	5	4	3	6	5	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Analipus japonicus	-	+	+	<.1	0.1	0.1	<.1	<.1	0.1	<.1	+	<.1	<.1	<.1	0.1	0.2	<.1	0.2	<.1	0.3	0.2	0.3	<.1
Calliarthron/Bossiella spp.-complex	0.2	<.1	0.2	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.2	0.1	<.1	<.1	0.1
Callithamnion pikeanum	-	<.1	+	<.1	+	+	+	-	+	+	+	+	+	<.1	-	-	+	-	-	+	-	-	-
Callithamnion spp./Pleonosporium spp.	+	-	-	+	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	1.9	0.8	0.4	0.9	0.5	0.6	0.3	0.6	0.7	0.3	0.2	0.1	<.1	<.1	<.1	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.4
Chondracanthus corymbiferus (prev. Gig.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Chrysophyta unid.	-	-	+	-	-	-	-	-	<.1	-	-	+	+	+	-	-	<.1	-	-	-	-	-	-
Cladophora spp.	<.1	<.1	<.1	<.1	+	<.1	<.1	+	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	+	<.1	<.1	<.1	0.5	+
Codium setchellii (prostrate)	1.5	1.9	1.8	2.0	2.2	2.8	2.7	1.9	0.7	0.8	1.2	1.8	1.4	0.8	1.1	1.5	1.8	1.3	1.5	2.1	1.6	2.2	2.5
Corallina officinalis	0.3	0.3	+	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina vancouverlensis	1.0	1.1	1.3	1.5	1.2	1.1	0.9	0.9	0.6	0.8	0.8	0.7	0.7	0.6	0.7	0.7	1.0	0.7	0.8	0.9	1.0	1.4	1.2
Cryptopleura violacea	+	<.1	<.1	<.1	<.1	-	+	+	<.1	+	-	-	-	-	-	-	-	<.1	<.1	0.2	0.2	0.6	0.6
Cryptosiphonia woodii	1.1	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Egregia menziesii	-	-	-	-	-	-	-	-	-	+	-	<.1	-	-	-	-	-	<.1	-	-	-	-	-
Endocladia muricata	15.7	14.7	13.7	17.2	16.7	16.0	17.4	17.0	17.5	26.0	31.3	36.0	34.8	35.2	37.7	35.0	36.4	32.0	32.6	31.0	28.6	27.0	26.1
Fucaceae unid.	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Fucus gardneri	-	-	-	+	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	<.1	-	-	-	-	-	-	-	+	-	+	-	+	+	+	+	0.3	-	<.1	-	-	+	<.1
Gelidium coulteri	1.6	1.6	2.1	2.7	1.3	1.5	2.0	1.9	2.5	1.5	1.1	0.7	0.8	0.9	1.4	1.4	1.7	1.3	1.2	0.6	1.2	1.4	0.5
Gelidium pusillum	2.1	1.9	1.5	1.5	1.7	2.2	1.0	2.2	2.4	0.8	0.4	0.4	0.2	0.3	0.7	0.7	1.4	1.5	0.8	0.7	1.1	1.5	1.6
Grateloupia doryphora	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mastocarpus jardinii	2.7	1.6	1.7	2.7	2.7	2.3	2.3	2.4	1.6	0.6	0.7	1.1	1.6	1.5	1.0	1.3	1.2	1.3	1.3	1.1	1.2	1.6	1.1
Mastocarpus papillatus	16.1	24.9	26.8	23.3	26.8	21.3	26.3	27.3	25.0	12.2	12.4	13.9	18.2	20.5	18.4	25.5	21.9	26.5	27.5	27.2	25.8	23.2	25.3
Mazzaella affinis	1.0	0.7	0.9	2.1	0.8	1.3	0.8	0.8	1.7	0.5	0.5	0.4	0.9	0.4	0.6	0.5	1.6	1.0	1.8	0.6	0.9	0.8	1.7
Mazzaella flaccida	28.2	20.8	25.9	27.8	26.2	23.9	25.8	24.0	9.4	10.8	16.3	18.7	12.1	11.0	14.7	17.3	18.1	16.3	24.7	21.8	16.9	16.6	21.0
Mazzaella heterocarpa	-	<.1	<.1	0.2	0.4	0.3	0.2	0.3	<.1	<.1	0.3	0.6	0.2	0.5	0.3	0.5	0.4	1.0	0.6	0.7	0.5	0.3	1.1
Mazzaella leptorhynchos	-	<.1	+	+	+	<.1	+	<.1	0.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.1	<.1	<.1	<.1	+	0.2	0.3
Melobesia mediocris	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
Microcladia borealis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Microcladia coulteri	+	-	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neorhodomela larix	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Non-coralline crust	20.5	19.1	20.9	22.1	19.6	25.0	23.8	20.1	22.3	16.2	16.6	25.6	21.3	22.3	21.4	16.0	17.0	16.9	18.6	15.8	14.3	20.2	17.2
Osmundea spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-
Pelvetia compressa	6.4	6.0	4.5	4.8	5.5	5.0	4.9	4.5	3.7	3.4	4.6	5.0	4.5	5.2	4.5	4.9	6.8	7.8	7.9	8.7	8.7	9.7	9.0
Phyllospadix spp.	-	+	-	-	<.1	-	0.2	0.1	<.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.4	0.5	0.2
Plocamium violaceum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Porphyra spp.	1.4	3.6	1.1	2.0	0.7	0.9	0.3	0.3	2.9	2.7	1.7	0.9	0.5	0.2	0.7	0.7	<.1	0.6	0.3	0.3	0.3	1.3	0.8
Prionitis spp.	0.2	<.1	0.1	<.1	<.1	0.1	<.1	<.1	+	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.2	0.2	0.3	0.1	0.2	<.1
Rhodophyta (juv. blades)	-	-	+	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Scytosiphon spp.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Smithora naiadum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Spongomorpha/Acrosiphonia-complex	<.1	-	<.1	<.1	<.1	<.1	+	+	<.1	<.1	<.1	<.1	0.2	0.1	+	<.1	+	-	+	-	<.1	-	-
Ulva/Enteromorpha spp.	-	<.1	<.1	<.1	+	+	<.1	+	<.1	+	+	+	+	<.1	0.2	+	+	+	<.1	+	+	+	+
coralline crust	6.3	7.1	8.2	7.1	7.0	8.5	7.9	12.0	8.4	5.4	5.2	6.2	5.3	5.4	5.2	5.6	4.2	6.9	6.3	6.6	6.5	8.1	9.3
filamentous red algae-complex	-	+	-	+	+	-	+	-	+	+	-	+	-	-	+	+	+	-	-	+	-	-	+
juv. articulated coralline algae	-	-	+	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.1	<.1	<.1	+	+	<.1	0.1	0.2	<.1	<.1	0.1	0.1	<.1

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Control Station NC 1 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	5	6	5	6	5	3	3	6	5	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Analipus japonicus	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryopsis spp.	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-
Calliarthron/Bossiella spp.-complex	0.9	0.4	1.0	0.8	2.3	1.1	1.5	1.6	1.3	1.6	1.9	1.7	1.2	0.9	0.6	0.8	0.7	1.2	1.3	1.5	1.1	0.8	1.7
Callithamnion pikeanum	<.1	<.1	+	<.1	+	<.1	<.1	<.1	<.1	<.1	<.1	<.1	+	+	<.1	+	<.1	-	+	<.1	<.1	<.1	<.1
Callithamnion spp./Pleonosporium spp.	-	-	-	<.1	+	+	-	-	+	+	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Callophyllis spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Chondracanthus canaliculatus	9.7	10.6	10.8	13.2	9.2	12.6	12.9	10.2	17.0	10.5	8.5	8.1	6.3	7.4	7.7	10.3	14.9	10.1	15.2	14.6	13.5	12.3	7.3
Chondracanthus corymbiferus (prev. Gig.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	+	+	+	+	+	-	-	-
Chondracanthus harveyanus/spinosus	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Chondria decipiens	-	-	-	<.1	-	-	<.1	<.1	0.2	<.1	-	-	+	-	<.1	-	-	-	-	-	-	-	+
Chrysophyta unid.	-	-	<.1	+	+	-	-	-	0.1	<.1	+	<.1	-	+	+	-	-	0.2	-	+	-	+	-
Cladophora spp.	<.1	<.1	+	+	+	+	+	+	+	+	<.1	+	<.1	<.1	+	<.1	+	+	+	+	+	+	+
Codium setchellii (prostrate)	0.8	0.7	1.5	1.2	1.1	1.5	1.7	1.9	1.5	1.3	1.5	1.2	1.9	1.1	1.4	1.6	1.9	1.6	1.4	1.6	1.6	2.3	1.5
Colpomenia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	+	-	-
Corallina officinalis	0.3	0.3	0.1	0.3	+	0.1	<.1	<.1	<.1	0.2	0.1	<.1	<.1	+	<.1	+	+	<.1	<.1	<.1	<.1	<.1	+
Corallina vancouveriensis	0.9	1.4	2.0	1.6	1.7	1.5	1.7	2.1	2.2	2.4	3.0	3.1	2.1	1.1	0.7	0.6	0.8	0.5	0.9	0.8	1.0	1.0	0.7
Cryptopleura violacea	2.3	4.4	3.6	3.1	5.4	4.2	4.4	5.5	2.1	0.9	1.1	2.7	1.6	0.9	2.5	3.4	4.0	2.7	2.1	3.9	2.7	1.4	2.1
Cryptosiphonia woodii	<.1	-	-	<.1	<.1	+	<.1	-	<.1	<.1	<.1	+	+	-	-	+	-	+	-	-	-	-	+
Egregia menziesii	-	-	-	-	0.2	<.1	-	-	-	<.1	-	+	-	-	<.1	-	-	<.1	0.3	1.9	<.1	-	2.2
Endocladia muricata	0.5	1.6	1.5	1.3	1.9	1.7	2.4	2.1	1.9	2.7	2.3	3.6	2.9	2.9	2.9	2.5	2.2	2.1	1.9	1.9	1.4	1.4	1.1
Farlowia/Pikea spp.-complex	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fucus gardneri	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	+
Gastroclonium subarticulatum	6.1	5.0	8.0	5.5	9.7	6.0	5.1	10.4	8.8	5.7	5.1	7.5	8.1	5.5	9.1	9.6	11.3	13.1	10.0	10.8	11.6	7.5	10.9
Gelidium coulteri	4.8	9.0	7.8	4.8	8.4	7.9	6.7	8.4	7.9	7.0	9.4	10.2	8.6	9.5	10.5	7.3	5.5	5.3	5.1	6.9	5.7	4.3	6.3
Gelidium pusillum	0.5	0.8	0.4	0.6	0.5	0.6	0.3	0.4	0.7	1.0	0.3	0.5	0.7	0.7	0.8	0.6	0.4	0.7	0.7	0.3	0.1	0.8	0.2
Gelidium robustum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Grateloupia doryphora	-	+	0.1	<.1	0.2	-	-	0.2	+	+	<.1	<.1	-	-	-	-	<.1	0.1	-	<.1	-	-	0.3
Halymenia/Schizymenia spp.-complex	-	-	<.1	-	0.1	+	<.1	+	+	<.1	<.1	<.1	-	-	+	-	<.1	<.1	<.1	0.2	+	+	<.1
Hymenena spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Laminariales	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Mastocarpus jardinii	1.7	0.5	0.7	1.3	1.3	1.4	1.4	1.3	1.0	0.3	0.4	0.7	0.9	0.9	0.6	0.8	0.7	0.8	0.7	0.7	1.2	0.9	0.6
Mastocarpus papillatus	4.9	7.7	5.7	6.6	5.5	5.7	5.8	5.4	8.5	7.1	7.2	6.6	7.2	8.6	5.1	7.0	4.7	6.2	4.9	4.2	4.4	5.5	5.0
Mazzaella affinis	7.1	6.8	7.3	7.4	8.5	8.8	6.6	9.7	12.7	11.3	12.8	11.7	12.4	11.0	14.1	11.5	12.1	9.6	7.5	8.7	9.9	5.4	8.8
Mazzaella flaccida	34.1	36.2	40.9	40.7	40.3	40.2	43.8	46.2	17.5	16.1	27.8	31.7	29.2	35.1	31.3	39.1	29.3	27.6	37.9	35.7	30.7	22.8	21.4
Mazzaella heterocarpa	0.3	0.2	0.6	0.2	1.3	0.5	0.4	0.7	0.6	0.3	0.6	0.6	0.3	1.4	1.1	1.1	0.6	1.0	0.5	0.6	0.2	0.2	0.8
Mazzaella leptorhynchos	0.8	0.4	0.5	0.3	1.0	0.4	0.4	0.6	1.1	1.0	1.2	0.9	2.2	1.6	0.7	0.8	1.2	1.1	0.7	0.8	0.3	1.0	3.0
Mazzaella lilacina (prev. Irid. cord.)	<.1	0.3	-	<.1	0.4	<.1	<.1	<.1	<.1	-	-	-	-	<.1	-	<.1	-	<.1	-	<.1	-	<.1	-
Melobesia mediocris	-	-	<.1	+	+	+	+	+	+	+	+	<.1	-	+	+	+	+	+	+	+	+	+	+
Microcladia borealis	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	<.1	<.1	0.3	<.1	<.1	<.1	<.1	0.2	0.1	<.1	<.1	0.1	<.1	+	+	+	<.1	<.1	<.1	+	<.1	<.1	+
Neorhodomela larix	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	+	-	<.1	-	-	-	-
Non-coralline crust	14.6	13.1	10.3	13.5	13.6	14.6	13.5	10.6	14.5	17.8	15.1	17.4	15.1	15.7	13.1	9.0	10.2	11.0	9.3	8.6	7.5	9.6	13.2
Osmundea spp.	<.1	0.2	0.2	0.2	0.1	<.1	0.2	<.1	0.1	0.2	<.1	<.1	<.1	<.1	+	<.1	<.1	0.1	0.1	<.1	0.1	0.2	0.1
Pelvetia compressa	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Phyllospadix spp.	12.0	10.5	13.0	11.7	12.2	10.7	11.5	10.4	12.1	13.5	13.9	15.0	12.9	13.2	12.5	16.6	17.1	18.8	23.5	22.3	27.0	27.6	26.2
Polyneura latissima	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porphyra spp.	-	0.4	<.1	0.2	0.3	0.2	0.1	0.6	1.9	3.0	2.4	0.8	0.3	0.4	0.1	0.7	-	0.6	0.3	0.4	+	-	0.3
Prionitis spp.	0.2	0.3	0.8	0.9	1.0	0.4	0.2	0.6	0.5	0.4	0.3	0.4	<.1	0.1	0.1	0.5	0.3	0.3	0.5	0.6	0.9	0.4	0.8
Pterosiphonia dendroidea	<.1	<.1	<.1	0.3	<.1	0.2	0.1	<.1	0.6	<.1	<.1	0.2	+	<.1	<.1	<.1	<.1	0.7	0.2	0.6	0.5	0.2	1.4
Rhodophyta (juv. blades)	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	-	<.1	<.1	+	<.1	<.1	+	<.1	<.1	<.1	<.1	<.1	-	+	+	<.1	<.1	<.1	<.1	0.2	0.1	<.1	<.1
Smithora naiadum	<.1	-	0.3	0.7	0.3	0.9	1.0	0.2	1.1	1.1	0.4	0.9	<.1	0.7	0.6	0.1	+	+	0.2	-	0.1	0.8	-
Spongonorpha/Acrosiphonia-complex	-	-	+	+	+	+	+	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	+	+	+	+	+	+	+	+
Ulva/Enteromorpha spp.	+	+	+	0.4	<.1	<.1	0.2	+	1.0	0.9	<.1	+	<.1	<.1	<.1	0.1	0.1	0.5	0.3	<.1	<.1	0.2	-
coralline crust	5.3	6.8	5.5	4.8	7.5	6.6	5.7	7.6	5.5	6.9	4.4	5.2	4.5	3.5	5.1	3.3	3.4	5.5	3.7	3.9	3.6	5.8	7.7
filamentous red algae-complex	<.1	0.1	0.1	0.9	0.4	0.2	0.5	0.3	0.3	2.0	0.1	0.2	0.1	0.5	0.6	0.8	1.0	1.6	2.4	0.7	1.4	2.4	1.9
juv. articulated coralline algae	-	0.5	<.1	0.3	0.4	0.1	0.2	0.3	0.2	0.2	0.2	0.3	<.1	0.2	0.1	0.1	0.4	0.6	0.1	<.1	0.2	0.1	0.5

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Control Station NC 2 at +0.3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	5	6	5	6	4	3	3	6	4	6	ns	1	4	4	4	4	4	2	ns	ns	ns
% Coverage																							
Schizymenia epiphytica	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	<.1	-			
Smithora naiadum	-	-	+	0.3	0.6	0.3	0.5	0.2	0.5	1.2	0.2	0.7		+	0.4	0.3	0.2	+	0.9	-			
Soranthera ulvoidea	-	-	+	+	<.1	+	+	-	<.1	+	-	-		-	+	<.1	+	-	-	-			
Spongomorpha/Acrosiphonia-complex	<.1	-	+	<.1	<.1	0.1	<.1	0.6	1.6	0.6	0.2	<.1		-	<.1	+	+	+	+	+			
Ulva/Enteromorpha spp.	1.3	+	1.1	3.5	1.6	1.8	3.3	2.2	3.1	2.3	1.4	0.2		0.3	0.8	1.4	0.8	<.1	0.3	+			
coralline crust	3.6	3.1	4.6	4.0	4.8	4.4	3.9	3.4	5.0	4.5	3.8	3.0		4.2	3.1	2.6	3.1	2.2	3.6	3.0			
filamentous red algae-complex	-	+	<.1	<.1	<.1	<.1	0.2	+	<.1	0.3	<.1	0.1		0.1	1.2	2.3	1.5	2.3	1.8	0.6			
juv. articulated coralline algae	-	<.1	<.1	0.4	0.2	0.1	0.3	<.1	0.3	0.5	0.1	0.1		0.1	<.1	0.1	0.3	<.1	0.1	0.5			

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - Fields Cove Station FC 1 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	3	3	ns	1	4	4	4	4	4	4	4	3	4
% Coverage																							
Calliarthron/Bossiella spp.-complex	1.2	0.7							1.0	1.4	1.0	1.2		1.0	0.6	0.9	0.9	1.3	0.8	0.9	0.8	0.9	0.8
Callithamnion pikeanum	-	+							-	-	-	+		-	<.1	+	+	+	-	+	-	-	-
Callithamnion spp./Pleonosporium spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	-	+	-
Chondracanthus canaliculatus	0.7	+							+	0.2	0.3	0.3		-	+	<.1	+	+	<.1	+	+	<.1	<.1
Chondracanthus corymbiferus (prev. Gig.	-	-							-	-	-	-		-	-	-	-	<.1	-	-	-	-	-
Chondria decipiens	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Chrysophyta unid.	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Cladophora spp.	0.1	+							<.1	0.2	<.1	<.1		+	<.1	<.1	<.1	<.1	<.1	+	<.1	<.1	<.1
Corallina officinalis	0.2	<.1							-	-	+	-		-	0.1	-	+	-	-	-	+	-	-
Corallina vancouveriensis	1.4	1.7							0.9	1.5	1.0	1.2		1.0	1.1	0.6	0.7	0.3	0.2	0.3	0.7	0.5	0.5
Cryptopleura violacea	<.1	-							-	+	<.1	+		-	+	-	-	-	0.1	+	<.1	+	-
Cryptosiphonia woodii	0.6	0.9							0.5	0.7	<.1	+		+	+	<.1	<.1	0.1	<.1	0.2	0.1	0.1	<.1
Egregia menziesii	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Endocladia muricata	32.7	30.6							45.3	42.6	38.1	43.3		38.1	36.4	36.3	38.2	40.5	40.8	42.6	41.7	38.1	42.3
Fucaceae unid.	-	-							-	+	-	-		-	+	+	-	-	+	-	+	-	-
Fucus gardneri	<.1	0.2							<.1	<.1	<.1	<.1		-	+	<.1	<.1	<.1	<.1	-	<.1	+	+
Gastroclonium subarticulatum	0.1	<.1							+	0.1	-	<.1		-	-	-	+	+	<.1	-	+	<.1	-
Gelidium coulteri	5.4	2.0							1.0	3.7	3.3	2.1		1.6	0.8	0.9	1.5	2.0	2.6	2.6	2.8	1.9	1.6
Gelidium pusillum	1.1	0.3							1.1	0.1	<.1	+		<.1	0.1	+	<.1	<.1	0.3	0.1	0.4	<.1	<.1
Grateloupia doryphora	-	-							-	-	-	-		-	-	<.1	-	+	+	-	-	-	+
Hesperophycus californicus	+	-							-	-	<.1	<.1		-	0.1	<.1	<.1	+	<.1	-	<.1	<.1	0.1
Mastocarpus jardinii	-	-							-	-	-	-		0.4	-	-	-	-	-	-	-	-	+
Mastocarpus papillatus	11.9	9.9							10.8	10.9	12.1	8.8		7.2	10.2	9.8	5.2	9.9	13.2	14.5	14.9	14.1	9.2
Mazzaella affinis	1.8	0.6							+	0.3	0.2	<.1		+	+	<.1	+	+	0.1	<.1	<.1	0.2	0.2
Mazzaella flaccida	6.1	2.5							0.3	0.5	1.0	1.0		0.6	1.6	0.9	0.5	1.3	3.6	2.7	3.6	2.8	0.8
Mazzaella heterocarpa	0.4	0.5							0.3	0.2	0.1	<.1		+	<.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3	<.1
Mazzaella leptorhynchos	<.1	<.1							0.1	0.2	0.2	0.2		+	0.1	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.3
Mazzaella lilacina (prev. Irid. cord.)	<.1	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Non-coralline crust	21.5	22.9							11.8	9.7	13.5	18.1		18.8	17.5	14.4	17.7	16.5	21.1	21.3	20.6	15.3	18.5
Osmundea spp.	-	-							-	+	+	-		-	-	-	-	-	-	<.1	-	-	-
Pelvetia compressa	1.8	4.3							0.3	0.7	0.3	+		0.4	0.2	0.2	0.3	0.5	0.5	0.4	0.8	0.9	1.2
Pelvetiopsis limitata	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Phyllospadix spp.	0.9	0.4							-	-	-	+		0.3	0.5	0.4	0.7	0.7	1.0	1.4	1.4	1.1	0.4
Porphyra spp.	0.3	<.1							0.5	<.1	0.2	<.1		-	0.3	0.1	<.1	<.1	0.1	0.2	0.2	0.2	0.3
Prionitis spp.	0.2	+							-	<.1	-	+		<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
Smithora naiadum	-	-							-	-	-	-		-	+	+	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	-	-							+	<.1	-	+		-	-	-	+	-	+	-	-	-	-
Ulva/Enteromorpha spp.	-	+							+	-	+	-		-	-	-	+	-	+	+	+	+	+
coralline crust	2.4	4.5							3.2	3.4	2.6	3.3		2.0	2.4	1.8	1.9	2.2	2.0	2.2	1.6	1.6	1.2
filamentous red algae-complex	-	+							-	+	-	-		-	-	-	-	+	-	-	-	-	-
juv. articulated coralline algae	-	0.3							+	0.1	0.3	0.5		0.3	<.1	0.2	<.1	0.1	0.2	<.1	0.1	<.1	<.1

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - Fields Cove Station FC 1 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	2	1	ns	1	4	4	4	4	4	4	4	3	4
% Coverage																							
Analipus japonicus	<.1	-							-	-	-	-		-	-	-	-	-	-	-	0.1	-	-
Bryopsis spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	-	-	+
Calliarthron/Bossiella spp.-complex	1.5	1.1							0.8	0.8	2.0	0.8		1.9	1.4	1.7	1.9	5.1	4.6	3.1	2.7	4.1	3.1
Callithamnion pikeanum	0.3	0.2							+	<.1	+	<.1		+	0.1	<.1	<.1	<.1	+	<.1	<.1	0.2	<.1
Callithamnion spp./Pleonosporium spp.	<.1	+							+	-	+	-		-	-	-	+	<.1	+	<.1	+	+	+
Callophyllis spp.	-	-							-	-	-	-		-	-	-	-	-	-	+	+	-	<.1
Chondracanthus canaliculatus	4.8	3.5							11.8	7.4	3.9	2.8		0.4	0.7	1.2	1.1	2.0	5.3	10.9	12.0	12.2	14.0
Chondracanthus corymbiferus (prev. Gig.	-	-							-	-	+	<.1		-	-	-	-	0.1	<.1	<.1	<.1	0.1	0.2
Chrysophyta unid.	-	-							-	<.1	-	<.1		-	-	-	<.1	0.3	+	<.1	<.1	-	-
Cladophora spp.	<.1	+							+	+	+	+		+	<.1	<.1	<.1	<.1	+	+	<.1	+	+
Corallina officinalis	1.7	0.6							+	<.1	-	-		-	-	-	-	+	<.1	<.1	<.1	<.1	0.3
Corallina vancouveriensis	5.4	9.4							4.6	1.6	3.6	2.2		3.4	4.8	4.4	7.7	6.1	7.0	6.9	6.9	6.3	9.7
Cryptopleura ruprechtiana	-	-							-	-	-	-		-	-	-	-	-	-	+	-	<.1	-
Cryptopleura violacea	6.1	7.0							5.3	6.6	7.0	3.3		3.5	4.8	2.5	9.3	4.3	3.2	8.4	5.1	6.2	2.1
Cryptosiphonia woodii	-	-							0.2	0.1	0.4	0.6		<.1	0.3	1.0	2.0	0.6	0.4	0.1	0.2	+	<.1
Delesseriaceae (juv.)	-	-							-	-	-	-		-	-	-	-	-	-	-	+	-	-
Egregia menziesii	+	-							-	0.2	+	-		-	-	-	-	12.4	23.8	19.9	10.0	27.3	13.9
Endocladia muricata	7.3	7.3							11.6	7.8	7.2	10.8		6.4	8.0	9.8	9.1	7.4	7.1	7.6	5.8	4.4	3.8
Erythrophyllum delesserioides	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	-	-							-	-	-	-		-	-	-	-	+	+	-	-	+	+
Fucus gardneri	0.5	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	9.4	9.5							14.0	10.1	8.1	15.3		7.6	8.8	7.7	12.1	15.3	9.4	15.5	16.4	12.8	15.5
Gelidium coulteri	10.7	5.9							6.5	13.9	7.6	12.1		7.9	9.5	11.4	6.3	6.2	7.6	8.5	6.9	6.2	5.0
Gelidium pusillum	0.5	0.4							0.7	+	+	+		+	<.1	+	<.1	0.1	<.1	0.2	0.2	<.1	<.1
Grateloupia doryphora	<.1	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Halosaccion americanum	+	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-							-	-	-	0.1		-	-	+	<.1	<.1	+	<.1	-	-	<.1
Hesperophycus californicus	-	-							-	-	-	-		-	-	-	+	-	-	-	-	-	-
Laminaria setchellii	-	-							-	-	-	-		-	-	-	-	<.1	-	-	-	-	<.1
Laminariales	-	-							-	-	-	-		-	-	-	-	-	-	-	-	+	-
Mastocarpus jardinii	1.9	1.1							1.9	1.6	1.4	0.8		0.7	0.6	0.4	0.6	0.5	0.4	0.6	1.3	0.5	0.5
Mastocarpus papillatus	5.8	7.3							10.3	6.7	6.3	9.3		7.4	7.4	8.0	4.7	7.6	6.5	4.0	4.9	5.6	3.8
Mazzaella affinis	1.5	1.0							2.8	2.7	1.1	1.7		2.2	1.4	1.9	0.9	1.1	1.8	1.9	2.1	2.2	1.1
Mazzaella flaccida	25.0	18.6							36.2	28.9	25.3	40.0		11.5	21.7	20.0	14.7	8.1	11.6	12.6	15.2	13.3	11.7
Mazzaella heterocarpa	0.7	0.7							1.4	2.6	1.7	2.5		0.5	1.5	2.2	2.3	1.9	0.2	0.3	0.4	0.2	0.2
Mazzaella leptorhynchos	<.1	0.2							0.3	0.5	0.3	0.6		+	0.5	0.2	0.3	0.2	<.1	<.1	0.2	0.4	<.1
Mazzaella lilacina (prev. Irid. cord.)	-	-							-	0.6	0.1	1.7		-	-	-	-	+	-	0.1	0.5	2.2	0.9
Melobesia mediocris	-	-							+	-	-	-		-	-	+	+	+	+	+	+	+	+
Microcladia borealis	0.4	+							+	<.1	-	-		-	-	-	-	-	-	+	+	<.1	+
Microcladia coulteri	0.2	+							+	<.1	+	+		-	<.1	+	<.1	<.1	+	+	<.1	0.1	+
Neorhodomela larix	-	-							+	-	-	-		-	-	-	-	-	-	-	-	-	-
Non-coralline crust	29.9	28.6							31.4	22.4	35.8	20.6		39.7	34.4	33.0	33.8	27.8	22.7	21.1	18.9	17.9	21.2
Osmundea spp.	-	+							+	0.2	<.1	+		-	<.1	+	+	0.1	0.1	0.5	0.3	0.3	0.3
Pelvetia compressa	-	-							-	-	-	-		-	-	-	-	-	-	-	+	0.2	-
Phyllospadix spp.	1.2	1.8							2.9	2.8	2.2	4.2		3.3	2.8	3.5	4.0	5.4	6.7	8.0	8.0	4.5	7.0
Plocamium violaceum	-	-							-	-	-	-		-	-	-	-	<.1	-	-	<.1	-	-
Porphyra spp.	0.1	0.4							1.9	0.2	0.6	0.2		-	<.1	0.3	<.1	1.7	3.8	2.2	0.4	6.3	0.3
Prionitis spp.	<.1	<.1							0.2	0.4	0.1	0.2		<.1	<.1	0.2	0.3	0.3	0.4	0.8	1.1	0.5	1.1
Pterosiphonia dendroidea	-	-							+	-	-	-		-	-	-	-	-	-	-	-	-	-
Rhodophyta (juv. blades)	-	-							-	-	+	-		-	-	-	-	-	-	-	-	-	-
Rhodymenia spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	<.1	-	-
Rosenvingea floridana	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Sarcodiotheca gaudichaudii	<.1	<.1							0.3	<.1	<.1	<.1		-	-	-	-	+	<.1	0.2	0.2	+	0.1
Smithora naiadum	-	-							-	0.6	-	<.1		-	0.1	0.1	0.6	+	+	<.1	0.5	+	-
Spongomorpha/Acrosiphonia-complex	-	-							+	+	-	-		-	+	-	+	0.2	0.4	0.3	<.1	0.4	<.1
Ulva/Enteromorpha spp.	-	+							+	+	+	-		-	+	-	+	0.6	1.3	2.7	0.9	1.6	0.8
coralline crust	6.1	7.9							7.2	7.8	9.3	7.2		10.0	9.8	6.9	6.8	8.3	9.2	8.3	6.2	7.4	10.0
filamentous red algae-complex	<.1	-							+	+	+	-		-	-	-	+	-	+	<.1	<.1	<.1	<.1
juv. articulated coralline algae	-	0.9							0.8	0.3	1.9	1.2		1.5	0.4	0.7	0.8	1.8	1.2	1.0	1.0	1.4	1.3

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - Fields Cove Station FC 2 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	3	3	ns	1	4	4	4	4	4	4	4	4	4
% Coverage																							
Analipus japonicus	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	<.1	<.1							+	0.2	-	<.1		-	-	+	+	0.2	+	<.1	<.1	<.1	-
Callithamnion pikeanum	<.1	<.1							-	-	-	+		-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	<.1	-							+	<.1	+	+		-	-	+	+	-	+	+	+	<.1	+
Chondracanthus harveyanus/spinosus	-	-							-	-	-	-		-	-	-	-	-	-	-	0.3	-	-
Cladophora spp.	0.5	<.1							<.1	0.3	<.1	<.1		+	0.3	<.1	0.1	<.1	0.2	0.1	0.2	0.3	<.1
Colpomenia spp.	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Corallina officinalis	-	-							-	+	-	-		-	-	-	-	-	-	-	-	+	-
Corallina vancouveriensis	1.3	1.6							1.5	0.6	1.3	0.4		0.4	0.3	0.2	0.1	0.1	0.1	+	0.1	<.1	+
Cryptopleura violacea	0.2	0.4							-	-	-	+		-	-	0.2	-	-	+	-	+	-	-
Cryptosiphonia woodii	0.2	0.2							+	<.1	+	+		+	+	+	<.1	<.1	+	<.1	<.1	<.1	+
Endocladia muricata	35.5	41.9							46.6	45.7	44.8	44.8		39.4	37.3	37.8	47.0	46.6	46.2	40.6	43.4	41.9	38.3
Fucaceae unid.	-	-							-	-	-	+		-	-	-	+	-	+	-	+	-	-
Fucus gardneri	0.4	0.5							+	1.4	1.6	1.2		1.2	0.6	0.7	0.9	0.4	0.8	0.7	0.6	1.5	0.2
Gastroclonium subarticulatum	<.1	+							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Gelidium coulteri	1.4	0.3							0.8	2.0	0.9	0.6		<.1	0.1	<.1	0.4	0.3	0.3	0.3	0.2	0.2	<.1
Gelidium pusillum	0.3	0.5							0.1	<.1	<.1	<.1		+	+	+	<.1	+	<.1	<.1	<.1	0.1	+
Grateloupia doryphora	-	-							-	-	-	-		+	-	-	-	-	-	-	-	<.1	-
Halymenia/Schizymenia spp.-complex	-	-							-	-	-	+		-	-	-	-	-	-	-	-	-	-
Hesperophycus californicus	-	-							-	0.2	0.3	0.2		-	-	<.1	0.5	0.6	0.4	0.2	0.3	0.5	0.7
Mastocarpus jardinii	<.1	<.1							-	+	<.1	-		-	-	-	-	-	-	-	-	-	-
Mastocarpus papillatus	12.1	9.9							8.4	9.4	10.8	5.1		6.9	7.7	6.5	6.9	9.7	11.8	14.7	12.3	11.4	9.2
Mazzaella affinis	<.1	-							-	+	+	+		+	-	+	+	<.1	+	<.1	<.1	<.1	+
Mazzaella flaccida	1.9	0.8							+	0.3	<.1	0.3		0.3	0.2	0.5	0.4	0.4	0.8	1.5	2.0	0.4	0.1
Mazzaella heterocarpa	0.1	<.1							-	<.1	<.1	<.1		+	<.1	<.1	0.2	0.2	0.2	0.2	0.2	<.1	<.1
Mazzaella leptorhynchos	<.1	<.1							+	<.1	<.1	+		+	+	+	<.1	<.1	<.1	<.1	+	<.1	+
Mazzaella lilacina (prev. Irid. cord.)	-	-							-	-	-	-		-	-	-	-	-	-	-	-	-	+
Non-coralline crust	14.1	14.1							4.2	3.4	5.0	7.3		10.4	10.4	10.0	12.6	11.3	12.7	14.3	15.3	15.5	14.0
Pelvetia compressa	9.2	6.1							0.5	0.6	0.9	1.3		1.7	1.0	0.8	1.5	1.6	1.6	2.2	2.6	3.7	4.3
Phyllospadix spp.	<.1	-							<.1	0.1	0.3	0.2		-	-	-	-	-	-	-	-	-	-
Porphyra spp.	0.7	0.7							0.7	0.3	0.3	0.2		+	0.9	0.7	0.1	0.3	0.4	0.6	<.1	0.2	0.5
Prionitis spp.	0.2	0.2							<.1	0.5	0.2	0.1		0.1	<.1	<.1	<.1	0.2	<.1	<.1	<.1	+	<.1
Rhodophyta (juv. blades)	-	-							-	-	+	+		-	-	-	-	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	<.1	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	-	-							-	-	-	+		-	+	+	-	-	+	-	-	+	-
Ulva/Enteromorpha spp.	+	-							-	+	+	-		-	-	+	+	-	-	+	+	+	+
coralline crust	1.6	2.4							0.8	0.7	0.7	0.6		0.4	0.5	0.3	0.2	0.5	0.3	0.3	0.3	0.3	0.3
filamentous red algae-complex	+	-							-	-	-	-		-	-	+	-	-	-	+	<.1	+	-
juv. articulated coralline algae	-	0.2							-	<.1	<.1	<.1		+	+	<.1	+	+	<.1	+	<.1	+	<.1

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover (per 1 m squared) - Fields Cove Station FC 2 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	2	1	ns	1	4	4	4	4	4	4	4	4	4
% Coverage																							
Analipus japonicus	+	+							+	+	+	<.1		<.1	+	+	+	+	+	-	<.1	-	-
Calliarthron/Bossiella spp.-complex	3.9	3.3							4.5	2.5	3.6	2.6		4.7	4.4	6.5	5.3	9.3	7.8	5.8	6.4	8.0	6.9
Callithamnion pikeanum	<.1	0.2							+	<.1	<.1	-		-	<.1	+	-	-	-	+	+	-	-
Callithamnion spp./Pleonosporium spp.	-	-							0.2	<.1	<.1	-		-	-	+	-	+	+	<.1	+	0.1	+
Callophyllis firma	-	-							-	-	-	-		-	-	-	-	-	-	-	+	-	-
Callophyllis spp.	-	-							-	+	+	-		-	-	-	+	+	+	<.1	<.1	-	+
Chondracanthus canaliculatus	4.2	2.4							5.2	2.6	3.7	4.7		0.8	1.5	2.3	2.5	1.5	3.5	5.7	4.0	4.3	4.0
Chondracanthus corymbiferus (prev. Gig.	-	-							0.1	<.1	+	-		-	<.1	-	0.1	+	+	<.1	<.1	+	<.1
Chrysophyta unid.	-	-							-	-	-	<.1		-	-	+	+	-	+	0.3	0.1	<.1	+
Cladophora spp.	<.1	+							+	+	+	+		+	<.1	+	+	<.1	+	+	+	<.1	<.1
Corallina officinalis	0.3	0.7							<.1	<.1	<.1	-		-	+	+	0.1	<.1	+	0.1	0.1	+	0.1
Corallina vancouveriensis	12.5	16.7							14.9	6.3	8.4	7.5		9.2	9.5	6.4	8.6	10.1	9.3	9.6	12.0	11.2	12.6
Cryptopleura ruprechtiana	-	0.1							0.1	+	+	-		-	-	<.1	+	-	-	0.1	0.1	-	+
Cryptopleura violacea	6.9	4.3							3.6	4.3	4.0	3.8		1.7	3.4	3.0	7.8	3.2	3.0	4.9	5.0	3.2	1.7
Cryptosiphonia woodii	0.2	1.3							0.7	0.5	0.5	0.4		<.1	0.7	0.5	0.4	0.3	<.1	<.1	0.3	<.1	<.1
Dictyoneurum californicum	-	-							-	-	-	-		-	-	-	-	-	-	-	-	<.1	-
Egregia menziesii	-	-							4.0	5.1	0.1	-		-	-	0.6	0.4	4.0	10.5	6.6	8.1	9.8	6.1
Endocladia muricata	10.9	7.4							10.0	11.0	8.4	12.2		7.8	10.4	10.1	11.3	10.9	10.3	9.3	9.1	9.3	6.6
Erythrophyllum delesserioides	-	<.1							+	-	-	-		-	-	-	-	+	+	-	-	-	-
Gastroclonium subarticulatum	5.9	6.4							4.7	3.5	4.8	4.2		3.6	3.9	4.4	7.1	8.6	4.5	7.8	7.3	6.1	4.3
Gelidium coulteri	11.5	6.0							13.2	19.8	9.3	13.5		7.8	10.7	10.3	8.7	8.9	10.2	13.6	9.9	10.3	10.6
Gelidium pusillum	+	0.2							0.3	+	<.1	<.1		<.1	+	0.6	0.2	0.2	+	<.1	0.1	0.3	<.1
Gelidium robustum	-	-							-	-	-	-		-	-	-	-	-	-	-	+	-	-
Halicystis ovalis (=Derbesia marina)	-	-							-	-	-	-		-	-	-	-	-	-	-	+	-	-
Halymenia/Schizymenia spp.-complex	-	-							-	<.1	+	+		-	<.1	<.1	0.1	<.1	-	+	0.1	-	+
Hymenena spp.	-	<.1							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Laminaria setchellii	-	-							-	-	-	-		-	-	-	-	-	+	<.1	0.1	+	<.1
Laminariales	-	-							-	-	-	-		-	-	-	-	+	+	<.1	+	-	-
Mastocarpus jardinii	1.9	0.7							0.9	1.0	0.5	0.8		0.5	0.7	0.9	0.9	0.6	0.7	0.6	0.9	0.5	0.4
Mastocarpus papillatus	6.4	5.6							11.7	6.4	4.2	6.8		2.6	7.7	7.6	5.0	4.5	4.2	3.7	4.4	4.6	4.1
Mazzaella affinis	1.0	1.0							1.9	1.6	0.9	2.2		0.6	1.3	1.1	1.0	0.8	1.3	0.9	0.8	0.9	0.7
Mazzaella flaccida	19.1	10.5							23.4	19.0	13.5	21.0		6.5	11.5	14.5	10.3	4.9	5.6	7.3	9.5	7.9	5.3
Mazzaella heterocarpa	1.0	1.1							1.9	1.4	1.4	0.6		0.2	1.2	1.5	0.8	0.5	0.4	0.3	0.9	0.4	0.3
Mazzaella leptorhynchos	<.1	<.1							0.5	0.4	0.2	<.1		+	<.1	<.1	<.1	0.2	<.1	<.1	<.1	0.1	<.1
Mazzaella lilacina (prev. Irid. cord.)	<.1	0.9							1.2	0.7	0.3	1.1		-	<.1	<.1	0.1	0.2	<.1	0.6	0.4	0.1	0.4
Melobesia mediocris	-	-							+	+	+	-		-	-	+	-	+	+	+	+	<.1	+
Microcladia borealis	0.6	0.1							0.1	<.1	<.1	-		+	<.1	<.1	<.1	-	<.1	<.1	0.1	0.5	<.1
Microcladia coulteri	0.5	+							-	<.1	+	-		-	0.1	<.1	0.2	<.1	<.1	-	+	<.1	<.1
Nereocystis luetkeana	-	-							-	-	-	-		-	-	-	-	-	-	+	-	0.3	-
Non-coralline crust	20.1	24.3							22.3	14.6	29.1	18.1		32.6	26.7	26.5	24.7	21.6	22.6	21.0	16.3	21.3	19.8
Osmundea spp.	<.1	-							<.1	0.2	<.1	+		+	<.1	<.1	<.1	<.1	<.1	0.2	0.2	<.1	<.1
Pelvetia compressa	-	-							-	-	-	-		-	-	-	-	-	-	0.4	-	-	-
Phyllospadix spp.	1.0	1.0							2.2	3.6	3.1	2.8		3.9	3.3	2.8	4.3	6.6	7.0	8.3	9.3	6.4	6.9
Plocamium violaceum	<.1	-							-	-	-	-		-	-	-	+	<.1	-	-	-	<.1	-
Porphyra spp.	<.1	0.5							1.5	0.3	0.2	0.9		-	0.2	0.2	<.1	1.2	1.4	1.5	0.4	2.5	0.1
Prionitis spp.	1.0	1.6							1.7	1.1	1.6	1.7		1.0	1.2	1.3	1.6	1.5	1.7	1.9	2.2	1.5	2.8
Rhodymenia spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	+	-	-
Sarcodiotheca gaudichaudii	<.1	+							-	<.1	<.1	-		-	<.1	+	<.1	0.1	<.1	<.1	+	0.1	+
Smithora naiadum	-	-							+	0.5	+	0.4		-	0.4	0.2	0.7	+	<.1	-	<.1	<.1	+
Spongomorpha/Acrosiphonia-complex	-	-							+	+	<.1	+		-	<.1	-	<.1	+	<.1	0.2	0.6	0.7	<.1
Ulva/Enteromorpha spp.	+	-							+	+	+	+		-	+	-	<.1	+	0.1	<.1	<.1	0.5	0.6
coralline crust	5.2	7.7							8.6	8.0	11.5	6.6		9.0	8.3	6.9	7.6	10.2	10.1	7.6	6.7	7.6	7.4
filamentous red algae-complex	<.1	0.2							0.3	<.1	+	-		-	+	<.1	+	<.1	<.1	0.2	0.2	+	+
juv. articulated coralline algae	-	-							0.2	0.7	0.9	-		0.3	1.0	0.5	1.5	1.3	1.2	0.9	1.2	1.9	1.8

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - Fields Cove Station FC 3 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4
% Coverage																							
Ahnfeltiopsis leptophylla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
Analipus japonicus	-	-	-	-	+	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	0.4	0.8	0.2	0.3	0.7	0.3	0.4	0.6	0.3	0.3	0.1	0.2	0.1	0.3	0.2	<.1	0.1	0.4	<.1	<.1	0.2	<.1	<.1
Callithamnion pikeanum	-	<.1	+	-	+	<.1	+	+	<.1	+	-	-	-	-	+	+	+	-	+	-	+	+	-
Callithamnion spp./Pleonosporium spp.	-	-	<.1	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	1.2	0.5	0.2	0.3	0.3	0.5	0.4	0.9	1.1	0.2	<.1	<.1	<.1	+	<.1	0.1	0.2	<.1	0.2	<.1	<.1	0.2	<.1
Cladophora spp.	0.2	<.1	+	0.1	<.1	<.1	<.1	<.1	0.2	0.3	<.1	0.3	0.4	0.2	0.2	<.1	0.3	<.1	0.1	<.1	0.2	0.5	0.1
Colpomenia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Corallina officinalis	<.1	-	<.1	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina vancouveriensis	0.1	<.1	0.3	0.4	0.6	0.7	0.4	0.8	0.9	0.6	0.8	0.9	0.6	0.2	0.3	0.2	0.3	0.3	0.3	0.6	0.9	0.9	0.7
Cryptopleura violacea	-	-	<.1	-	-	+	<.1	-	+	-	-	+	-	-	+	+	+	-	-	-	-	-	-
Cryptosiphonia woodii	1.5	0.9	0.7	0.6	0.1	0.2	0.1	0.2	0.2	0.4	0.2	0.4	0.3	0.2	<.1	0.1	0.2	0.2	0.3	0.2	0.3	0.3	0.1
Egregia menziesii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-
Endocladia muricata	20.8	22.4	22.1	25.8	28.7	26.5	30.0	27.4	28.3	32.4	30.5	31.1	32.6	32.2	31.2	31.1	35.1	32.3	29.3	28.2	35.1	31.2	29.9
Farlowia/Pikea spp.-complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	+	-	-	-	-
Fucaceae unid.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-
Fucus gardneri	-	-	<.1	+	<.1	<.1	<.1	-	+	<.1	+	-	-	-	-	+	<.1	-	-	-	-	-	+
Gastroclonium subarticulatum	<.1	-	-	+	<.1	+	+	+	<.1	<.1	+	<.1	-	<.1	+	+	+	+	<.1	-	-	<.1	-
Gelidium coulteri	5.3	2.3	3.5	4.5	2.9	3.7	4.3	4.7	5.8	4.6	2.9	1.3	1.5	1.8	1.6	1.6	1.9	1.6	2.0	2.0	1.2	1.3	2.0
Gelidium pusillum	2.0	3.3	0.9	0.6	0.9	1.5	1.1	1.7	2.5	0.7	0.5	0.3	0.3	0.3	0.5	0.3	0.6	0.9	0.7	1.2	0.8	1.3	0.5
Gymnogongrus chiton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Halosaccion americanum	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hesperophycus californicus	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	+	<.1	-	-	-	<.1	<.1
Mastocarpus jardinii	0.4	0.4	0.9	0.4	0.4	0.4	0.4	0.3	<.1	<.1	+	0.1	<.1	<.1	<.1	<.1	<.1	0.1	0.3	0.2	0.2	<.1	<.1
Mastocarpus papillatus	31.3	33.3	35.8	36.4	34.8	30.7	33.3	31.5	37.4	33.2	31.0	27.8	27.2	28.5	31.4	29.4	27.4	30.1	36.1	37.4	33.4	31.6	33.0
Mazzaella affinis	0.4	0.4	0.5	0.8	0.2	0.5	0.5	0.5	0.8	0.4	0.2	0.4	0.4	0.2	<.1	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.6
Mazzaella flaccida	16.5	13.0	10.7	12.2	12.1	12.5	10.8	6.4	6.7	6.1	4.9	4.8	2.9	2.5	4.5	5.1	4.2	3.4	6.0	6.0	4.2	4.1	2.5
Mazzaella heterocarpa	0.3	0.2	0.1	0.5	0.4	0.4	0.2	0.3	0.2	0.3	0.1	0.2	0.2	0.3	<.1	0.6	0.3	0.6	0.6	0.6	0.4	0.2	0.4
Mazzaella leptorhynchos	+	<.1	<.1	<.1	<.1	<.1	+	<.1	<.1	0.1	<.1	<.1	<.1	<.1	<.1	0.1	0.1	<.1	0.2	<.1	<.1	<.1	0.2
Mazzaella lilacina (prev. Irid. cord.)	-	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Non-coralline crust	24.0	16.3	17.9	17.6	22.3	23.7	20.6	23.5	18.0	20.5	22.1	21.4	20.6	21.7	25.2	21.9	20.4	18.9	23.7	22.4	20.0	23.2	20.7
Osmundea spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Pelvetia compressa	6.1	3.1	2.1	1.2	0.5	0.5	1.2	0.4	<.1	0.3	0.4	0.9	0.9	0.7	0.9	1.8	2.4	2.1	3.5	2.7	2.0	1.3	1.5
Phyllospadix spp.	-	-	+	+	<.1	+	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
Porphyra spp.	0.2	2.1	<.1	0.2	0.2	0.1	<.1	<.1	0.2	0.4	0.1	0.1	0.2	0.1	0.2	0.2	<.1	0.2	0.1	0.4	0.1	0.2	<.1
Prionitis spp.	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.1	<.1	0.2	0.4	0.2	0.2	0.3	0.1	0.2	0.2	0.2	<.1	<.1	<.1	<.1	<.1
Pterosiphonia dendroidea	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	<.1	-	-	-	-	-
Rhodophyta (juv. blades)	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Spongomorpha/Acrosiphonia-complex	-	-	+	<.1	<.1	<.1	-	<.1	+	<.1	<.1	<.1	0.1	<.1	0.2	<.1	<.1	<.1	-	-	-	-	-
Ulva/Enteromorpha spp.	-	-	+	+	-	-	+	+	+	+	+	+	-	-	+	-	-	+	+	+	-	+	+
coralline crust	2.8	2.6	3.1	2.9	3.2	2.8	3.0	4.1	1.9	1.9	2.6	2.6	2.0	2.3	1.9	1.6	1.6	1.8	2.2	2.2	1.5	1.3	1.2
filamentous red algae-complex	-	<.1	-	-	-	+	-	<.1	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-
juv. articulated coralline algae	-	<.1	+	<.1	<.1	+	+	<.1	+	<.1	0.1	+	<.1	<.1	<.1	+	0.2	<.1	<.1	+	<.1	<.1	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - Fields Cove Station FC 3 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	5	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4
% Coverage																							
Analipus japonicus	-	-	+	<.1	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	0.1	-	-
Bryopsis spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Calliarthron/Bossiella spp.-complex	3.7	3.6	4.7	3.9	3.8	4.7	4.4	4.0	3.6	4.6	3.6	3.6	2.9	4.0	3.1	4.6	5.3	6.1	5.0	4.6	4.1	5.3	5.2
Callithamnion pikeanum	0.7	0.6	<.1	<.1	<.1	+	<.1	<.1	<.1	+	+	<.1	+	+	<.1	+	+	<.1	<.1	<.1	0.1	0.1	<.1
Callithamnion spp./Pleonosporium spp.	-	-	<.1	+	<.1	+	+	+	+	+	-	+	+	-	-	-	+	-	-	-	<.1	+	+
Callophyllis spp.	-	+	+	-	<.1	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	2.4	3.7	3.0	4.4	2.6	4.5	6.1	6.0	7.0	5.2	3.0	1.4	0.9	0.6	0.9	1.4	2.7	1.9	4.0	5.4	5.6	7.8	7.9
Chondracanthus corymbiferus (prev. Gig.	-	<.1	-	-	-	-	-	+	<.1	+	+	-	-	<.1	-	-	-	<.1	-	-	<.1	+	+
Chrysophyta unid.	-	<.1	-	<.1	-	<.1	+	<.1	<.1	+	+	<.1	-	-	+	<.1	<.1	+	0.2	<.1	0.4	<.1	0.1
Cladophora spp.	+	+	+	+	+	<.1	+	+	+	<.1	+	+	+	+	+	+	+	+	+	+	+	+	<.1
Codium setchellii (prostrate)	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colpomenia spp.	-	-	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+
Corallina officinalis	1.0	0.1	0.2	<.1	0.3	<.1	<.1	<.1	<.1	+	+	+	+	+	-	+	<.1	+	<.1	+	0.3	0.1	+
Corallina vancouveriensis	3.5	2.6	3.1	3.0	4.1	4.2	2.6	3.6	1.8	2.0	2.6	2.4	3.1	1.8	2.5	1.5	1.7	1.3	1.6	2.4	2.0	2.1	3.5
Cryptopleura ruprechtiana	-	-	0.1	-	+	+	<.1	<.1	<.1	+	+	<.1	-	-	-	-	-	-	-	-	-	-	-
Cryptopleura violacea	2.4	3.8	4.4	4.4	5.8	5.5	5.8	6.6	4.9	2.8	3.4	4.6	3.0	2.8	2.7	2.1	4.9	1.7	1.2	3.3	2.6	1.9	1.8
Cryptosiphonia woodii	0.5	0.2	0.1	<.1	0.1	0.2	0.2	0.3	0.6	0.4	0.3	0.3	0.2	0.2	0.1	0.3	0.5	0.6	0.3	0.2	0.3	<.1	0.2
Cystoseira osmundacea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Egregia menziesii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	3.1	8.7	7.4	3.2	2.0	3.5
Endocladia muricata	1.7	1.7	1.4	1.9	1.5	1.9	1.5	1.2	1.3	1.5	2.0	2.8	3.1	1.8	2.0	2.2	2.0	1.5	1.6	1.0	1.1	0.8	1.0
Erythrophyllum delesserioides	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fucus gardneri	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	11.4	13.0	16.0	13.9	17.5	12.9	10.0	19.4	12.9	9.4	11.9	19.3	15.4	6.5	12.3	14.3	22.5	21.6	15.3	18.9	18.4	17.2	16.8
Gelidium coulteri	6.7	8.9	7.1	6.1	5.9	7.0	8.2	5.7	9.0	7.4	6.7	4.7	6.2	9.4	8.4	8.1	3.8	3.5	7.7	5.3	6.6	6.8	5.2
Gelidium pusillum	<.1	0.3	<.1	0.3	0.2	0.5	0.5	0.4	0.4	<.1	0.2	0.1	0.3	<.1	0.3	<.1	0.1	0.3	0.2	0.2	0.1	0.6	0.2
Grateloupia doryphora	-	-	<.1	-	+	-	+	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	<.1	-	-	<.1
Halosaccion americanum	<.1	-	-	-	-	-	+	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	<.1	0.2	+	<.1	<.1	+	0.1	<.1	<.1	<.1	<.1	-	<.1	+	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1
Hymenena spp.	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Laminariales	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Mastocarpus jardinii	6.3	6.8	5.1	4.9	5.0	5.0	5.5	3.7	4.2	2.8	3.4	3.6	4.1	2.5	3.2	4.2	3.2	2.2	3.5	3.5	4.8	4.7	3.2
Mastocarpus papillatus	4.4	5.7	2.8	5.5	3.6	4.6	4.3	5.2	5.8	5.6	5.2	5.6	5.6	8.8	6.8	7.8	5.5	5.2	3.8	3.0	3.8	4.3	4.2
Mazzaella affinis	0.7	0.6	0.5	0.8	0.5	0.9	0.8	0.8	0.8	0.9	0.9	0.8	0.6	0.9	0.6	1.0	0.6	0.7	0.9	0.8	1.0	0.6	0.9
Mazzaella flaccida	39.8	32.8	32.6	38.7	35.6	38.3	38.1	29.6	31.5	29.6	30.4	31.7	32.6	28.6	30.4	30.6	27.3	19.4	21.9	23.8	30.2	27.4	20.2
Mazzaella heterocarpa	0.8	1.6	1.1	1.8	2.3	1.8	1.2	1.1	1.7	1.5	1.3	1.6	1.2	2.2	2.6	2.5	1.0	1.2	0.6	0.7	1.3	1.3	0.8
Mazzaella leptorhynchos	0.3	0.2	0.2	0.2	0.2	0.2	0.3	<.1	0.6	0.6	0.3	0.4	0.5	0.4	<.1	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.7
Mazzaella lilacina (prev. Irid. cord.)	-	<.1	<.1	0.4	<.1	<.1	<.1	<.1	0.1	<.1	<.1	0.5	+	-	-	-	-	0.4	-	0.4	<.1	-	0.2
Mazzaella linearis	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella rosea	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-	+	-	+	+	+	<.1	+	-	+	<.1	-	-	-	-	+	+	+	<.1	+	+	+
Microcladia borealis	<.1	<.1	<.1	<.1	<.1	<.1	+	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	+	0.2	-
Microcladia coulteri	0.2	0.5	0.3	<.1	<.1	<.1	<.1	0.2	0.2	<.1	<.1	<.1	-	<.1	+	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.2
Non-coralline crust	24.4	19.4	22.2	21.5	25.7	26.3	26.3	27.7	26.2	30.6	30.0	30.0	28.7	32.5	33.0	31.6	29.6	25.1	26.3	20.6	17.7	22.8	24.9
Osmundea spp.	<.1	0.2	0.1	0.2	0.2	0.1	0.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	+	<.1	<.1	+	+	<.1	0.1	<.1
Pelvetia compressa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Phyllospadix spp.	2.6	4.4	6.7	6.0	5.6	4.9	4.0	5.2	4.2	4.2	3.5	3.0	3.6	3.7	3.6	4.8	5.1	6.5	9.0	8.9	9.5	6.3	8.9
Plocamium cartilagineum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Plocamium violaceum	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	<.1	-
Porphyra spp.	-	0.2	+	+	<.1	0.2	+	<.1	<.1	0.6	<.1	0.2	<.1	0.4	<.1	0.1	<.1	1.1	0.8	0.5	0.1	1.5	0.3
Prionitis spp.	0.8	1.6	2.9	1.8	1.7	2.0	1.4	3.3	3.0	1.9	1.6	2.0	1.3	1.1	0.7	1.1	1.4	0.8	1.0	1.2	1.3	0.6	1.6
Pterosiphonia dendroidea	<.1	+	<.1	<.1	<.1	<.1	<.1	0.3	0.6	0.5	0.2	<.1	<.1	<.1	+	+	+	+	-	-	-	+	-
Rhodophyta (juv. blades)	-	-	-	+	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
Rhodymenia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Rosenvingea floridana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Sarcodiotheca gaudichaudii	<.1	<.1	0.2	<.1	<.1	<.1	<.1	<.1	<.1	+	<.1	0.1	<.1	+	-	-	+	<.1	<.1	<.1	<.1	0.1	<.1
Scytosiphon spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Smithora naiadum	<.1	-	+	0.5	0.3	0.4	0.2	<.1	<.1	0.2	0.2	0.4	<.1	0.4	0.3	0.4	1.1	+	0.7	<.1	1.8	1.0	<.1
Spongomorpha/Acrosiphonia-complex	-	-	-	+	<.1	<.1	-	+	+	<.1	+	+	<.1	<.1	+	-	+	0.2	0.2	1.8	0.2	+	-

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - Fields Cove Station FC 3 at +0.3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	5	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4
% Coverage																							
Ulva/Enteromorpha spp.	-	+	+	+	-	+	+	<.1	+	0.2	<.1	+	+	-	-	-	<.1	0.3	0.4	0.2	0.2	0.9	0.9
coralline crust	8.3	5.0	6.3	6.1	8.0	8.5	7.1	7.8	7.2	9.3	8.8	6.5	5.8	6.7	4.7	5.1	4.8	7.7	7.4	6.8	5.6	5.2	6.6
filamentous red algae-complex	0.6	<.1	+	<.1	-	<.1	<.1	0.1	0.2	<.1	<.1	0.1	+	<.1	-	-	-	-	-	<.1	0.8	0.4	0.4
juv. articulated coralline algae	-	1.4	0.4	0.5	1.1	0.5	0.3	0.3	0.2	0.6	0.2	0.5	<.1	0.6	0.5	0.5	0.6	0.9	1.0	0.8	0.5	1.4	1.1

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Diablo Cove Station NDC 2 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Analipus japonicus	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	0.2	0.1	0.2	0.3	0.7	0.5	0.3	0.1	<.1	0.1	<.1	<.1	<.1	<.1	-	-	+	<.1	<.1	0.2	<.1	-	0.2
Callithamnion pikeanum	<.1	<.1	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	-	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	3.5	1.4	1.5	2.2	1.3	1.5	1.6	1.0	1.1	0.6	<.1	+	-	-	-	+	0.1	0.7	1.1	<.1	<.1	0.2	+
Chrysophyta unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-
Cladophora spp.	0.5	<.1	<.1	0.3	<.1	0.1	0.1	<.1	0.2	0.2	<.1	<.1	+	+	+	<.1	<.1	+	<.1	<.1	+	+	+
Codium setchellii (prostrate)	<.1	+	<.1	0.1	0.1	0.2	0.2	0.2	0.4	0.2	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Corallina officinalis	0.2	<.1	<.1	<.1	+	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina vancouveriensis	1.0	2.6	3.1	3.9	4.8	4.8	3.5	2.6	1.7	1.5	0.8	0.3	<.1	<.1	<.1	<.1	1.0	0.5	0.4	0.1	0.2	0.2	0.3
Cryptopleura violacea	<.1	0.1	<.1	0.2	0.2	0.4	0.2	0.2	0.1	<.1	<.1	<.1	+	+	+	+	-	<.1	-	-	-	-	-
Cryptosiphonia woodii	<.1	<.1	<.1	0.1	0.3	0.2	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Cumagloia andersonii	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endocladia muricata	22.4	23.4	23.4	26.6	24.3	27.2	31.2	13.4	20.2	25.4	17.6	22.0	14.8	10.3	10.9	11.9	16.1	15.9	17.9	18.6	18.6	15.2	18.9
Fucus gardneri	7.9	7.5	4.8	4.2	6.6	6.2	5.2	1.6	0.9	2.5	0.9	+	-	-	-	<.1	-	-	-	-	-	-	-
Gastroclonium subarticulatum	-	-	-	-	-	-	-	+	-	+	+	-	-	-	+	<.1	+	<.1	<.1	+	<.1	<.1	+
Gelidium coulteri	2.1	3.2	2.5	2.6	2.4	3.5	3.1	2.1	2.7	2.7	0.4	<.1	+	<.1	<.1	1.0	2.0	1.9	1.9	3.1	2.5	2.2	1.6
Gelidium pusillum	1.2	0.8	0.8	0.6	0.6	1.0	1.1	0.9	1.9	1.0	0.1	<.1	+	+	+	0.2	1.0	3.3	2.6	0.6	0.3	0.3	0.4
Grateloupia doryphora	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	<.1	+	-
Halosaccion americanum	<.1	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Hesperophycus californicus	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Mastocarpus jardinii	0.4	0.3	0.2	0.4	0.3	0.2	0.1	<.1	0.1	<.1	+	-	-	<.1	-	-	+	-	-	-	-	-	-
Mastocarpus papillatus	26.4	28.1	35.7	33.4	32.5	26.4	25.8	21.0	18.8	10.3	7.9	6.1	1.5	0.8	1.3	2.2	4.2	7.1	4.5	5.6	6.5	8.2	2.2
Mazzaella affinis	2.8	3.2	3.1	3.5	2.3	2.6	3.7	2.0	2.9	1.5	0.2	+	+	+	-	<.1	0.6	2.6	3.0	1.4	0.6	0.6	0.6
Mazzaella flaccida	8.3	7.4	7.1	9.7	6.9	6.6	6.8	2.9	2.7	2.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Mazzaella heterocarpa	0.1	0.1	0.2	0.3	0.4	0.4	0.2	0.1	<.1	0.2	<.1	-	-	-	-	+	-	-	-	-	-	-	-
Mazzaella leptorhynchos	0.2	0.3	0.2	0.3	0.2	0.2	0.2	<.1	<.1	<.1	<.1	<.1	+	+	<.1	0.4	0.1	0.1	<.1	0.2	<.1	<.1	+
Mazzaella lilacina (prev. Irid. cord.)	-	-	<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Non-coralline crust	13.1	15.2	13.5	15.0	19.5	19.8	16.6	12.9	13.1	14.5	19.8	15.1	9.6	4.2	2.9	2.7	4.3	5.5	7.0	7.8	11.6	10.3	7.3
Osmundea spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Pelvetia compressa	4.2	3.8	4.0	4.7	5.5	6.3	7.9	7.2	7.0	6.3	4.2	2.8	1.5	0.6	0.4	0.2	0.4	<.1	-	-	-	-	-
Phyllospadix spp.	<.1	-	+	<.1	+	0.1	0.2	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porphyra spp.	3.7	2.8	1.1	0.8	0.9	0.9	0.4	1.5	6.5	1.0	0.2	<.1	+	-	<.1	0.2	<.1	2.3	0.7	<.1	-	<.1	3.0
Prionitis spp.	<.1	<.1	<.1	0.1	<.1	<.1	<.1	+	<.1	+	<.1	+	+	-	-	+	-	<.1	<.1	<.1	<.1	0.2	+
Rhodophyta (juv. blades)	-	-	+	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	-	+	+	<.1	+	<.1	<.1	<.1	<.1	+	+	-	-	-	-	-	-	+	+	-	-	-	-
Ulva/Enteromorpha spp.	0.2	+	<.1	<.1	+	+	<.1	<.1	<.1	0.2	<.1	+	-	-	+	+	2.4	1.1	+	+	-	2.0	+
coralline crust	1.7	3.0	3.3	2.9	3.9	4.2	3.3	4.2	2.8	3.5	2.3	0.8	0.6	0.4	0.7	0.6	1.2	0.9	1.6	2.3	1.2	1.2	1.9
filamentous red algae-complex	0.3	<.1	+	<.1	<.1	+	<.1	+	-	-	-	-	-	-	-	-	0.5	0.4	0.2	-	0.1	+	-
juv. articulated coralline algae	-	+	<.1	0.1	0.5	0.1	<.1	<.1	<.1	0.1	0.1	<.1	<.1	<.1	<.1	<.1	<.1	0.3	0.2	0.2	0.1	0.3	0.1

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Diablo Cove Station NDC 2 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	6	6	6	6	5	6	6	6	5	6	ns	1	4	4	4	4	4	3	2	2	2
% Coverage																							
Analipus japonicus	-	-	<.1	<.1	0.1	<.1	<.1	<.1	<.1	<.1	-	-		-	-	-	-	-	-	-	-	-	-
Antithamnion/Platythamnion spp.-complex	-	-	-	-	+	-	-	-	-	-	-	-		-	-	-	-	-	-	-	+	-	-
Bangia vermicularis	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	+
Bryopsis spp.	-	-	-	<.1	+	+	-	-	+	<.1	<.1	-		-	-	-	-	-	+	-	+	+	+
Calliarthron/Bossiella spp.-complex	0.8	0.5	1.1	1.0	1.4	0.9	1.7	1.4	0.8	1.4	1.0	0.4		0.9	0.4	0.1	0.3	1.4	1.0	1.2	1.1	0.4	3.2
Callithamnion pikeanum	<.1	+	<.1	<.1	+	+	<.1	<.1	+	+	-	-		-	-	-	-	-	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	<.1	<.1	0.1	<.1	<.1	<.1	0.2	0.2	0.1	<.1	+	-		-	-	-	-	-	+	-	-	-	-
Callophyllis flabellulata	-	-	-	-	-	-	+	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Callophyllis spp.	-	-	-	-	+	<.1	<.1	-	<.1	-	-	-		-	-	+	-	-	-	-	-	-	-
Chondracanthus canaliculatus	10.3	14.0	12.8	14.0	9.4	14.2	14.1	8.3	16.3	7.7	1.3	0.6		1.9	3.2	11.8	12.6	18.0	12.4	8.0	15.2	13.7	6.8
Chondracanthus corymbiferus (prev. Gig.	-	<.1	0.4	0.2	<.1	<.1	0.2	<.1	0.4	0.3	+	<.1		-	<.1	<.1	+	<.1	<.1	+	+	<.1	<.1
Chondracanthus harveyanus/spinosus	+	0.1	<.1	<.1	<.1	-	<.1	<.1	0.2	<.1	<.1	-		-	-	-	<.1	-	0.3	+	0.5	-	0.3
Chrysophyta unid.	-	<.1	0.2	<.1	<.1	<.1	<.1	+	0.2	0.9	0.3	<.1		-	<.1	0.6	+	-	0.1	0.3	0.2	9.0	+
Cladophora spp.	<.1	0.1	<.1	+	+	+	+	+	<.1	<.1	<.1	<.1		+	<.1	+	+	+	+	+	+	-	+
Codium setchellii (prostrate)	-	<.1	<.1	<.1	<.1	<.1	0.1	0.2	0.2	0.2	+	-		-	-	-	-	-	-	-	-	-	-
Colpomenia spp.	-	-	+	-	-	-	-	-	-	-	-	-		-	+	+	+	+	+	+	+	-	+
Colpomenia/Leathesia/Soranthera spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	+
Corallina officinalis	1.3	1.4	1.2	1.9	1.6	1.0	0.9	0.8	0.6	0.2	<.1	+		-	+	+	<.1	<.1	+	+	-	-	<.1
Corallina vancouveriensis	3.7	5.9	4.9	5.4	6.3	5.1	5.0	5.7	7.1	5.4	3.4	2.5		3.5	2.1	0.4	0.4	0.6	0.2	0.1	0.2	0.2	3.1
Cryptopleura ruprechtiana	-	<.1	+	<.1	<.1	<.1	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Cryptopleura violacea	0.8	1.4	2.2	1.4	1.4	1.7	1.4	1.6	1.9	1.2	0.8	2.0		3.6	2.5	1.7	2.4	2.0	0.7	1.2	1.7	1.8	<.1
Cryptosiphonia woodii	0.3	0.2	0.2	0.2	0.3	0.2	<.1	<.1	0.3	0.2	+	-		-	-	+	-	<.1	-	-	-	-	+
Cystoseira osmundacea	-	-	-	-	-	-	-	+	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Derbesia marina (filamentous)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	<.1	-	+	-	-
Desmarestia tabacoides	-	-	-	-	-	-	<.1	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Egregia menziesii	0.6	0.5	0.8	0.4	1.8	3.4	0.8	1.7	0.3	<.1	-	-		-	-	-	-	-	-	-	-	-	-
Endarachne/Petalonia-complex	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	+	-	-
Endocladia muricata	1.2	1.7	1.8	2.3	2.2	1.7	1.3	1.0	1.3	0.9	0.2	0.6		0.4	0.8	0.5	0.7	1.0	1.1	0.9	0.6	0.9	0.2
Farlowia/Pikea spp.-complex	-	-	-	-	+	-	-	-	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Fucus gardneri	0.2	+	+	<.1	<.1	<.1	+	-	+	+	-	-		-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	9.8	8.4	15.8	10.4	14.4	10.6	5.9	1.5	2.8	3.9	2.0	6.5		2.2	5.3	7.1	13.5	19.4	19.1	15.8	24.0	17.9	5.1
Gelidium coulteri	4.0	4.9	6.5	3.5	4.6	4.2	4.8	4.5	5.7	7.0	7.2	5.0		1.8	7.9	4.1	3.4	3.6	3.4	0.9	1.1	1.8	1.0
Gelidium pusillum	<.1	0.4	<.1	0.2	0.1	0.1	0.4	0.3	<.1	<.1	<.1	<.1		+	+	<.1	0.2	0.2	0.1	<.1	<.1	+	<.1
Gelidium robustum	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	+	-	-	<.1	-
Grateloupia doryphora	-	1.5	<.1	<.1	-	0.1	<.1	1.5	0.1	0.2	0.7	0.2		-	0.1	<.1	0.8	<.1	1.4	0.7	-	0.1	-
Halicystis ovalis (=Derbesia marina)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	+
Halosaccion americanum	0.2	<.1	+	+	<.1	0.1	0.3	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	0.4	0.4	0.5	0.2	<.1	0.1	0.2	0.2	0.2	0.1	<.1	0.2		-	-	0.1	0.4	0.7	1.1	1.0	0.3	0.2	-
Haplogloia andersonii	-	-	-	-	-	-	-	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Laminaria setchellii	-	-	-	<.1	-	+	-	<.1	<.1	+	-	-		-	-	-	-	<.1	-	-	-	-	-
Laminariales	-	-	-	-	-	-	+	-	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	0.2	-	-	-	-	-
Mastocarpus jardinii	0.6	0.8	0.7	1.1	0.8	0.5	0.4	0.3	0.2	<.1	<.1	+		-	-	+	0.1	<.1	<.1	<.1	<.1	+	-
Mastocarpus papillatus	2.1	2.4	2.6	2.1	2.0	1.9	2.2	2.3	4.3	2.3	8.2	5.6		4.2	17.6	19.5	15.2	7.9	4.9	4.5	3.6	4.5	0.4
Mazzaella affinis	6.0	5.8	4.0	5.4	2.8	3.9	5.5	4.0	4.2	3.7	2.0	0.6		0.5	2.2	3.7	2.6	3.0	5.1	3.0	3.1	3.6	0.9
Mazzaella californicum (prev. Rhod. cal.	-	-	-	-	-	-	-	<.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Mazzaella flaccida	7.7	8.5	8.0	10.3	8.1	9.0	12.2	5.7	5.8	2.7	0.5	0.2		-	<.1	-	-	-	-	-	<.1	-	-
Mazzaella heterocarpa	1.1	0.5	0.2	0.6	0.2	0.7	0.9	1.2	0.6	0.3	<.1	<.1		+	<.1	0.1	<.1	0.1	0.4	+	<.1	0.2	0.1
Mazzaella leptorhynchos	0.3	0.5	0.6	0.3	0.5	0.6	0.6	1.8	2.7	1.1	0.5	0.6		0.5	0.4	0.3	0.8	0.6	1.1	0.4	0.2	0.3	0.2
Mazzaella lilacina (prev. Irid. cord.)	0.4	0.1	0.8	0.4	1.2	0.5	0.7	0.8	0.6	0.2	-	<.1		-	<.1	-	-	<.1	-	-	-	-	-
Mazzaella rosea	-	-	-	-	-	-	+	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-	+	+	+	+	<.1	0.1	+	+	+	+		-	-	-	<.1	+	+	<.1	-	+	0.1
Microcladia borealis	-	-	-	+	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	<.1	<.1	0.6	0.2	0.2	+	0.3	0.4	0.1	<.1	+	+		-	-	+	<.1	+	+	-	-	+	-
Neorhodomela larix	-	-	-	-	-	-	-	-	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Non-coralline crust	13.7	12.9	9.7	9.7	13.6	13.9	12.8	18.1	17.7	18.2	29.5	36.5		42.7	28.0	20.7	18.2	12.8	11.2	23.5	15.9	15.5	21.3
Opuntiella californica	+	-	<.1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Osmundea spp.	0.2	0.2	0.3	<.1	0.1	0.3	<.1	0.2	0.2	0.2	0.1	0.1		0.3	0.2	0.6	0.7	0.6	0.2	0.3	0.5	0.2	+

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Diablo Cove Station NDC 2 at +0.3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	6	6	6	6	6	5	6	6	6	5	6	ns	1	4	4	4	4	4	3	2	2	2
% Coverage																							
Pelvetia compressa	-	-	-	-	-	-	-	-	-	+	-	<.1		-	-	-	-	-	-	-	-	-	-
Phaeophyta (juv.)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	<.1	-
Phyllospadix spp.	13.1	11.3	25.1	22.3	27.7	24.8	17.4	11.6	14.7	15.8	11.4	13.5		5.6	6.2	6.5	8.3	10.5	6.2	9.1	13.3	13.4	15.2
Plocamium violaceum	<.1	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Porphyra spp.	1.3	4.0	0.9	1.5	1.8	2.6	2.4	11.4	4.3	2.5	0.3	+		-	<.1	0.6	0.2	<.1	<.1	+	-	<.1	-
Prionitis spp.	0.8	1.0	2.3	1.3	1.2	0.8	0.8	1.9	0.9	0.8	0.7	0.5		1.7	1.4	0.8	2.3	3.3	3.3	1.1	3.4	2.6	3.2
Pterosiphonia dendroidea	<.1	0.1	<.1	<.1	<.1	0.2	<.1	0.2	0.6	0.2	<.1	0.2		+	+	0.2	0.5	0.8	1.0	2.7	1.5	<.1	5.2
Rhodophyta (juv. blades)	-	-	+	-	-	<.1	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	<.1	<.1	0.3	<.1	<.1	+	+	<.1	0.1	<.1	+	+		+	<.1	0.5	0.5	0.6	0.4	0.2	0.6	0.5	+
Scinaia confusa	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	<.1
Scytosiphon spp.	-	-	-	-	-	-	-	-	-	+	-	-		-	-	-	-	-	-	-	-	-	-
Smithora naiadum	-	<.1	2.7	7.0	4.9	5.5	2.4	0.3	0.3	1.0	+	0.2		-	+	-	+	+	<.1	-	-	+	+
Soranthera ulvoidea	-	-	-	-	-	-	-	-	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	0.6	0.6	0.2	0.5	0.6	+	+	<.1	<.1	+	+	+		-	<.1	-	-	+	-	+	-	-	-
Ulva/Enteromorpha spp.	9.3	10.4	1.9	8.0	2.1	2.6	7.1	1.3	3.6	0.9	<.1	+		-	3.7	3.9	4.0	3.5	1.9	2.8	0.7	11.4	0.7
coralline crust	2.3	5.3	2.9	2.8	4.1	4.3	4.5	10.6	4.6	5.2	5.2	2.9		3.2	2.1	1.1	2.3	2.7	4.9	7.0	3.8	5.0	8.8
filamentous red algae-complex	2.6	0.7	1.5	2.8	4.8	2.7	2.1	1.2	2.1	3.5	0.2	0.2		<.1	3.8	11.7	14.3	11.8	10.5	12.3	18.5	15.0	8.1
juv. articulated coralline algae	-	<.1	0.2	0.1	0.5	0.3	0.6	1.2	0.2	0.4	0.8	0.7		0.1	0.3	0.1	0.4	0.2	0.3	0.3	0.4	0.2	1.7

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Diablo Cove Station NDC 3 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	6	6	6	6	6	6	6	6	6	6	ns	1	4	4	4	4	4	3	2	2	2
% Coverage																							
Analipus japonicus	-	-	+	<.1	+	+	+	+	<.1	+	-	-		-	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	0.3	0.2	0.3	0.3	0.4	0.4	0.5	0.3	0.3	0.8	0.4	0.2		0.3	+	<.1	0.1	0.1	<.1	0.3	0.1	-	0.2
Callithamnion pikeanum	0.2	0.7	0.2	<.1	<.1	<.1	+	+	+	+	-	-		-	-	-	-	-	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	0.4	<.1	0.2	0.1	<.1	0.2	<.1	<.1	<.1	+	-	+		-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	5.1	5.2	5.2	7.6	7.1	7.6	7.5	7.7	8.2	5.8	1.4	<.1		+	<.1	0.1	0.3	1.0	0.6	0.2	+	<.1	+
Chondracanthus corymbiferus (prev. Gig.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	+	+	-	-	-	-	-	-
Chrysophyta unid.	-	-	0.2	<.1	-	<.1	+	+	<.1	<.1	-	-		-	-	2.3	1.1	0.6	0.3	0.9	0.6	0.2	<.1
Cladophora spp.	0.2	<.1	0.1	0.3	<.1	<.1	<.1	<.1	<.1	<.1	+	+		+	+	+	+	+	+	+	+	+	+
Codium fragile	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	<.1
Codium setchellii (prostrate)	-	-	-	<.1	-	+	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Colpomenia spp.	-	-	+	-	-	-	-	+	-	-	-	-		-	-	+	+	+	+	-	-	-	+
Corallina officinalis	0.2	<.1	<.1	<.1	<.1	<.1	+	<.1	<.1	+	-	-		-	-	-	-	-	-	<.1	-	-	-
Corallina vancouveriensis	6.6	7.3	7.8	6.9	8.0	8.2	7.8	5.9	3.9	3.2	1.3	0.4		-	+	+	<.1	<.1	<.1	<.1	+	+	0.6
Cryptopleura violacea	0.3	0.6	1.2	0.9	1.3	1.7	0.8	1.2	0.9	0.4	<.1	0.1		+	-	+	0.1	<.1	-	-	-	+	-
Cryptosiphonia woodii	<.1	<.1	<.1	<.1	0.1	0.2	<.1	<.1	0.1	<.1	<.1	<.1		-	-	-	-	-	-	-	-	-	-
Cumagloia andersonii	-	-	-	-	-	-	-	-	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Derbesia marina (filamentous)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	0.5	-	-	-	-
Egregia menziesii	1.0	0.6	0.2	0.2	0.3	-	-	<.1	1.4	<.1	-	-		-	-	-	-	-	-	-	-	-	-
Endocladia muricata	27.0	24.7	22.2	25.4	26.9	24.2	23.6	24.5	25.4	26.4	18.9	19.8		7.6	8.7	10.1	12.9	13.3	12.1	11.3	9.2	7.8	13.0
Fucus gardneri	0.3	0.3	0.4	0.7	0.3	+	<.1	0.4	0.1	0.2	<.1	-		-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	<.1	0.2	0.3	0.3	0.2	0.9	1.5	1.5	1.2	1.6	0.3	0.6		+	+	<.1	-	-	-	<.1	-	0.2	+
Gelidium coulteri	3.7	2.8	3.6	2.9	2.3	3.2	2.8	2.9	2.6	1.7	1.7	1.3		0.3	0.4	0.6	0.8	1.8	1.9	0.3	0.2	1.5	0.1
Gelidium pusillum	2.0	1.9	0.7	0.7	0.5	0.7	0.7	0.7	0.7	0.4	0.2	0.2		<.1	<.1	<.1	0.1	0.4	0.1	+	0.2	0.5	+
Gelidium robustum	-	-	-	-	-	-	-	-	-	-	-	-		-	-	+	-	-	-	-	-	-	-
Grateloupia doryphora	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	+	-	+	-	-	-	-
Halosaccion americanum	0.1	+	<.1	+	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	+	+	-	-	-	+	-
Hesperophycus californicus	-	-	-	-	-	-	-	-	-	<.1	-	-		-	-	-	-	-	-	-	-	-	-
Laminariales	-	-	-	-	-	-	-	-	-	-	-	-		-	-	+	-	-	-	-	-	-	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	0.3	-
Mastocarpus jardinii	5.9	3.4	3.3	4.2	4.0	2.9	2.4	2.2	1.0	1.3	0.8	0.2		-	-	<.1	<.1	<.1	<.1	-	-	-	-
Mastocarpus papillatus	14.3	18.5	13.5	13.1	11.5	12.4	11.8	11.6	13.4	9.5	10.3	6.5		4.3	6.5	7.2	5.2	5.0	2.0	0.6	0.8	4.1	0.3
Mazzaella affinis	2.1	1.7	1.3	2.4	1.6	1.6	1.6	2.0	3.3	3.4	1.7	1.0		0.6	0.2	0.7	2.4	2.6	2.2	0.4	0.1	1.2	<.1
Mazzaella flaccida	14.5	15.8	16.4	19.7	18.5	19.1	17.1	14.1	10.0	6.6	1.1	<.1		-	-	-	<.1	-	-	-	-	-	-
Mazzaella heterocarpa	<.1	0.1	0.2	0.4	0.8	0.6	0.1	0.2	0.4	<.1	<.1	<.1		-	-	+	-	<.1	+	-	-	<.1	+
Mazzaella leptorhynchos	-	-	<.1	<.1	<.1	<.1	+	<.1	0.2	0.2	<.1	<.1		-	+	+	<.1	<.1	<.1	+	-	+	-
Mazzaella lilacina (prev. Irid. cord.)	-	-	<.1	<.1	-	<.1	-	-	<.1	-	-	-		-	-	-	-	-	-	-	-	-	-
Microcladia borealis	-	<.1	+	+	<.1	+	<.1	-	<.1	-	-	-		-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	0.7	-	<.1	<.1	+	+	<.1	+	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Neorhodomela larix	-	-	+	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Non-coralline crust	19.2	16.2	20.3	19.2	22.2	23.0	21.2	23.0	18.8	23.6	27.8	28.3		22.6	27.3	22.8	21.2	22.7	22.3	23.8	25.9	23.5	28.8
Osmundea spp.	<.1	<.1	0.2	<.1	<.1	0.1	<.1	<.1	<.1	<.1	-	-		-	+	+	+	-	-	-	-	-	-
Pelvetia compressa	4.5	3.2	4.6	5.4	5.2	4.7	4.8	3.8	4.2	4.8	4.3	2.3		-	-	-	-	-	-	-	-	-	-
Phaeostrophion irregulare	-	-	-	-	-	-	-	+	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Phyllospadix spp.	-	<.1	+	<.1	+	+	+	+	<.1	-	-	+		-	-	-	-	-	-	-	-	-	-
Plocamium cartilagineum	<.1	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Plocamium violaceum	-	-	<.1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Porphyra spp.	2.8	9.1	1.0	4.2	2.4	1.6	0.2	1.0	4.7	0.9	0.6	+		-	<.1	1.0	0.6	0.7	0.4	+	+	+	+
Prionitis spp.	<.1	<.1	0.1	<.1	<.1	<.1	0.1	0.1	0.2	0.1	<.1	<.1		-	<.1	0.1	0.1	0.1	<.1	0.1	0.1	<.1	+
Pterosiphonia dendroidea	-	-	-	-	+	-	+	+	+	-	-	-		-	-	-	+	-	-	-	-	-	-
Rhodophyta (juv. blades)	-	-	-	-	-	-	-	-	-	-	-	-		-	+	-	-	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	+	-	<.1	+	+	<.1	<.1	<.1	<.1	<.1	<.1	+		-	+	+	-	+	-	-	-	-	+
Scinaia confusa	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	+
Scytosiphon spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	<.1	-	-
Spongomorpha/Acrosiphonia-complex	0.2	<.1	+	0.4	+	+	+	<.1	-	-	-	-		-	-	+	-	+	+	-	-	-	-
Ulva/Enteromorpha spp.	0.1	0.2	0.6	0.8	+	<.1	<.1	0.5	0.4	<.1	+	-		-	+	6.0	12.6	6.1	5.4	2.2	1.9	7.1	0.2
coralline crust	2.3	4.5	5.1	4.9	5.3	6.6	6.5	6.8	5.5	6.3	5.3	2.0		1.2	1.0	1.4	1.8	3.3	4.9	3.4	3.5	3.1	7.0
filamentous red algae-complex	0.2	1.0	0.1	0.2	0.1	0.1	0.1	<.1	0.1	<.1	-	+		-	<.1	2.4	5.5	3.6	2.0	<.1	<.1	4.0	0.7
juv. articulated coralline algae	-	0.3	<.1	0.1	0.5	0.2	0.1	<.1	0.4	0.4	0.1	0.3		+	<.1	+	0.4	0.2	0.3	0.2	0.2	0.2	1.8

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Diablo Cove Station NDC 3 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	5	6	6	5	6	5	4	6	6	5	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Bryopsis spp.	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+
Calliarthron/Bossiella spp.-complex	2.5	0.7	1.6	1.2	2.0	2.7	2.3	2.2	2.2	3.7	1.7	2.3	0.9	1.2	0.3	2.3	5.2	6.9	4.9	4.3	4.2	0.8	22.2
Callithamnion pikeanum	0.7	0.4	0.2	0.1	<.1	0.1	<.1	<.1	<.1	+	-	-	-	-	-	+	-	-	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	-	0.4	1.3	1.0	0.5	1.0	0.4	0.4	0.6	0.2	<.1	+	-	-	-	-	+	+	<.1	<.1	+	-	<.1
Callophyllis spp.	-	0.7	<.1	<.1	<.1	<.1	+	<.1	<.1	<.1	+	<.1	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	13.2	12.5	12.1	16.8	18.3	19.2	20.2	19.3	23.9	18.9	4.7	2.3	0.2	0.5	2.4	6.2	6.9	8.1	7.5	1.4	1.6	2.1	2.2
Chondracanthus corymbiferus (prev. Gig.	-	-	<.1	<.1	<.1	0.2	<.1	0.2	0.3	0.2	<.1	<.1	-	+	0.1	+	<.1	-	-	-	-	<.1	-
Chrysophyta unid.	-	-	<.1	<.1	<.1	+	0.1	+	<.1	<.1	+	-	-	0.6	+	2.4	0.1	0.2	<.1	5.6	+	7.6	6.8
Cladophora spp.	<.1	<.1	+	+	+	+	+	+	+	+	+	+	+	<.1	+	+	+	+	+	+	+	-	+
Codium fragile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	<.1	-	<.1	<.1	-
Codium setchellii (prostrate)	-	-	+	-	<.1	0.1	0.2	0.2	0.4	0.2	0.1	<.1	<.1	-	-	-	-	-	-	-	-	-	+
Colpomenia spp.	-	-	+	+	-	-	-	-	-	+	-	-	-	-	+	+	+	<.1	<.1	-	+	+	+
Colpomenia/Leathesia/Soranthera spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Corallina officinalis	4.8	3.3	3.9	2.7	4.1	2.8	1.9	2.8	2.1	1.4	0.2	0.1	-	<.1	+	+	0.7	<.1	<.1	-	-	-	+
Corallina vancouveriensis	6.9	11.6	8.8	9.1	11.1	8.9	6.8	8.3	6.5	6.3	8.0	2.0	6.1	1.2	2.0	1.1	1.3	4.8	1.7	1.7	1.7	0.9	6.4
Cryptopleura ruprechtiana	0.1	<.1	0.2	0.1	0.2	0.2	<.1	<.1	0.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptopleura violacea	4.5	7.4	10.7	7.1	5.9	8.7	6.9	10.7	9.2	5.0	1.7	4.2	1.7	1.2	0.7	0.6	1.6	1.2	0.5	<.1	-	0.7	-
Cryptosiphonia woodii	<.1	<.1	<.1	<.1	-	<.1	+	<.1	0.1	0.1	+	+	+	-	-	-	+	-	-	-	-	-	-
Cystoseira osmundacea	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-
Derbesia marina (filamentous)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	0.3	0.1	-	-
Desmarestia spp.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Egregia menziesii	20.8	10.5	7.0	7.4	5.4	2.3	0.6	<.1	2.0	0.9	<.1	-	-	-	-	-	-	-	-	-	-	0.1	-
Endarachne/Petalonia-complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	0.1	0.1
Endocladia muricata	0.3	0.2	0.3	0.3	0.1	0.1	0.1	-	<.1	+	-	<.1	<.1	0.1	<.1	0.2	<.1	<.1	0.1	0.1	0.2	0.2	-
Erythrophyllum delesserioides	-	-	+	+	+	<.1	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	5.5	5.8	8.8	7.2	9.2	7.7	8.6	13.9	13.2	12.6	13.5	16.4	11.6	6.7	6.9	3.5	3.8	5.2	3.1	1.1	2.0	1.5	0.3
Gelidium coulteri	10.8	9.7	11.8	7.6	7.9	9.4	8.3	5.1	6.4	7.7	14.3	13.9	11.8	11.1	13.5	14.2	15.5	14.1	8.6	2.2	2.6	6.8	4.9
Gelidium pusillum	0.3	0.7	<.1	0.4	0.1	0.2	0.3	<.1	0.1	0.2	0.4	0.1	<.1	0.2	0.5	<.1	0.3	<.1	+	<.1	<.1	+	-
Gelidium robustum	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Grateloupia doryphora	-	-	-	-	-	<.1	-	-	<.1	-	-	+	-	-	-	-	0.1	-	-	-	-	<.1	-
Halorhipis winstonii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Halosaccion americanum	0.6	0.1	<.1	<.1	+	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-	0.1	-	<.1	+	-	0.3	-	-	<.1	<.1	<.1	0.2	<.1	<.1	0.1	<.1	+	-	-	-	-
Hymenena spp.	-	-	+	-	-	<.1	<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Janczewskia gardneri	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Laminaria setchellii	-	-	<.1	-	<.1	-	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Laminariales	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	-	+	-	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	+	+	2.2	-
Mastocarpus jardinii	5.4	4.3	3.0	3.7	3.2	3.3	2.1	1.7	1.7	1.6	0.8	0.8	0.3	0.1	0.1	0.7	0.7	0.5	0.2	<.1	<.1	<.1	-
Mastocarpus papillatus	1.5	2.3	2.9	2.4	1.8	1.4	1.2	1.8	2.0	1.8	3.7	6.7	1.1	4.1	8.4	6.2	4.0	1.9	0.7	0.2	0.3	2.0	0.1
Mazzaella affinis	1.0	0.6	0.5	0.6	0.6	0.5	1.0	0.9	1.3	1.3	2.4	1.6	0.1	0.3	1.0	1.8	2.3	1.5	1.2	<.1	0.2	1.2	0.2
Mazzaella californicum (prev. Rhod. cal.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella flaccida	13.9	13.1	14.4	19.2	22.3	24.9	28.1	26.5	18.0	12.0	4.4	2.7	0.1	<.1	0.1	-	-	-	-	-	<.1	-	-
Mazzaella heterocarpa	0.7	0.2	<.1	0.3	0.6	0.6	0.3	0.3	0.3	0.3	0.2	0.4	<.1	0.1	0.1	0.2	0.1	<.1	+	-	-	0.1	+
Mazzaella leptorhynchos	<.1	-	-	-	+	+	+	0.1	+	<.1	<.1	0.2	<.1	<.1	<.1	<.1	<.1	<.1	+	+	-	<.1	-
Mazzaella lilacina (prev. Irid. cord.)	<.1	0.8	0.5	0.4	1.0	1.2	0.9	0.5	1.6	0.5	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella linearis	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella rosea	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-	0.1	+	+	<.1	<.1	0.3	<.1	+	<.1	<.1	-	-	+	-	+	-	-	-	-	-	-
Microcladia borealis	<.1	<.1	0.1	+	<.1	+	<.1	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	0.4	0.3	0.4	0.4	0.6	0.4	0.3	1.0	0.8	<.1	+	+	-	<.1	0.2	0.5	0.2	+	+	-	-	0.1	-
Nereocystis luetkeana	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nienburgia andersoniana	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-coralline crust	18.9	14.0	15.7	15.1	18.9	18.0	19.0	19.2	17.4	21.6	30.7	36.6	37.2	44.7	44.9	36.0	26.1	23.7	24.5	21.3	25.0	27.1	24.1
Osmundea spp.	0.6	0.8	0.9	0.9	1.9	1.2	0.5	1.4	1.2	0.9	0.3	0.2	<.1	<.1	<.1	0.1	0.3	0.2	<.1	-	-	+	-
Pelvetia compressa	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaeophyta (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - North Diablo Cove Station NDC 3 at +0.3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	5	6	6	5	6	5	4	6	6	5	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Phaeostrophion irregulare	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	<.1	<.1	-	-	-	-
Phyllospadix spp.	4.1	7.6	15.3	16.9	15.6	13.2	9.1	8.3	11.7	11.2	7.5	7.3	0.7	0.9	1.0	1.0	0.6	0.5	0.3	<.1	-	-	-
Plocamium violaceum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Polyneura latissima	-	-	-	-	-	-	-	<.1	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Porphyra spp.	0.4	5.4	0.5	1.9	1.2	1.2	0.3	0.6	2.2	1.4	0.3	<.1	+	<.1	<.1	1.6	+	0.1	0.1	+	-	+	+
Prionitis spp.	1.4	2.1	3.8	4.1	3.0	3.7	2.6	4.1	4.0	3.1	2.7	3.2	3.7	3.1	5.4	5.9	7.4	6.7	3.1	0.5	0.4	2.6	2.8
Pterocladia caloglossoides	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pterosiphonia dendroidea	-	-	-	-	-	-	-	+	-	<.1	<.1	-	-	-	+	-	-	+	+	-	<.1	+	+
Rhodophyta (juv. blades)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Rhodymenia spp.	-	-	-	+	-	-	-	-	<.1	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	-	<.1	0.2	<.1	<.1	<.1	<.1	0.1	0.4	0.4	0.4	0.2	0.2	<.1	0.2	<.1	0.2	0.3	<.1	+	-	+	+
Scinaia confusa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Scytosiphon spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	1.7	+	-
Smithora naiadum	0.1	-	<.1	2.2	0.8	1.3	1.0	<.1	<.1	0.8	<.1	+	-	-	+	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	2.2	0.5	<.1	1.7	+	+	0.1	+	+	+	+	-	-	<.1	+	+	-	+	+	-	-	-	-
Ulva/Enteromorpha spp.	4.0	2.1	0.3	2.4	0.4	<.1	0.5	0.5	0.9	0.3	<.1	+	+	0.5	4.1	12.8	9.2	5.1	5.2	1.8	4.9	13.7	<.1
coralline crust	4.0	4.1	5.1	5.2	6.9	8.4	8.8	8.0	10.7	9.8	12.8	6.7	6.3	4.5	3.9	6.1	7.8	9.9	11.3	10.5	10.2	6.9	12.2
filamentous red algae-complex	1.6	2.4	0.9	0.8	1.2	0.9	0.3	0.4	0.6	0.5	<.1	<.1	-	+	0.3	3.1	17.0	12.9	14.0	1.0	1.6	17.8	5.1
juv. articulated coralline algae	-	1.2	0.1	0.8	0.6	0.7	0.6	0.5	0.5	0.5	0.5	1.5	0.6	0.5	0.5	1.1	1.3	2.0	1.2	1.6	2.1	1.3	2.0

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Diablo Cove Station SDC 1 at +0.6m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	5	6	6	6	5	5	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Ahnfeltiopsis leptophylla	-	-					-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-
Analipus japonicus	-	-					-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryopsis spp.	-	<.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	2.5	2.8					4.6	1.4	+	0.1	0.3	<.1	<.1	-	+	+	+	0.1	+	<.1	<.1	+	0.2
Callithamnion pikeanum	<.1	<.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaetomorpha spp.	-	-					-	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	2.4	3.3					4.0	1.7	<.1	0.4	0.3	<.1	<.1	+	0.4	1.1	4.5	12.5	22.6	13.1	5.1	4.9	10.4
Chondracanthus corymbiferus (prev. Gig.	-	-					<.1	-	-	-	-	-	-	-	-	<.1	+	+	<.1	-	-	-	-
Chondracanthus harveyanus/spinosus	-	-					-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-
Chondria decipiens	-	-					-	-	-	-	<.1	+	-	-	-	-	-	-	-	-	-	-	-
Chrysophyta unid.	-	-					0.6	<.1	0.7	-	<.1	-	-	-	1.6	+	+	1.0	-	-	-	-	0.8
Cladophora spp.	+	+					<.1	+	+	<.1	<.1	<.1	0.2	<.1	+	+	+	+	+	+	0.1	+	+
Colpomenia spp.	-	-					+	-	+	<.1	+	-	-	-	-	-	-	+	+	-	+	-	+
Corallina officinalis	-	0.7					<.1	<.1	-	-	-	-	-	-	-	-	-	-	+	0.2	+	-	-
Corallina vancouveriensis	0.8	1.0					1.5	0.3	<.1	<.1	0.4	0.5	0.2	0.2	<.1	<.1	0.2	<.1	<.1	<.1	<.1	<.1	0.2
Cryptopleura ruprechtiana	-	-					<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptopleura violacea	-	-					0.3	<.1	-	0.1	<.1	1.4	1.0	0.4	1.1	1.5	5.5	10.2	6.6	3.6	4.1	5.6	3.0
Cryptosiphonia woodii	0.1	0.1					0.2	<.1	-	<.1	+	-	-	-	-	-	-	-	+	-	-	<.1	-
Cumagloia andersonii	-	-					-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Egregia menziesii	<.1	-					<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endocladia muricata	0.1	0.3					+	<.1	+	-	<.1	<.1	<.1	<.1	<.1	<.1	-	+	-	-	-	-	-
Farlowia/Pikea spp.-complex	-	-					-	-	-	+	<.1	+	-	-	-	-	<.1	-	-	+	-	+	-
Gastroclonium subarticulatum	<.1	0.1					0.4	<.1	-	+	<.1	<.1	-	-	<.1	0.1	1.5	3.5	8.7	11.6	9.2	6.9	2.8
Gelidium coulteri	2.2	2.5					3.2	1.1	+	0.4	0.8	2.7	3.2	3.2	6.3	10.0	15.8	15.0	11.2	7.9	12.5	5.6	13.4
Gelidium pusillum	-	<.1					0.3	<.1	+	+	<.1	+	+	0.2	<.1	0.2	0.9	1.3	0.7	0.3	+	0.6	0.8
Gelidium spp.	-	-					-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Grateloupia doryphora	<.1	-					<.1	-	<.1	0.6	0.1	<.1	<.1	-	-	-	0.1	0.6	3.9	1.2	3.2	-	-
Halicystis ovalis (=Derbesia marina)	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halosaccion americanum	0.3	+					0.3	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	0.2	-					<.1	+	<.1	<.1	<.1	+	<.1	+	<.1	<.1	<.1	0.6	0.4	0.5	+	0.3	1.0
Haplogloia andersonii	-	+					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Laminariales	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mastocarpus jardinii	0.3	0.2					0.8	<.1	-	-	<.1	<.1	-	0.2	-	0.5	0.2	0.2	<.1	+	<.1	-	+
Mastocarpus papillatus	13.4	20.7					14.5	2.1	0.7	9.5	10.6	11.0	7.2	15.1	25.2	23.8	19.1	10.6	6.0	3.9	7.0	4.1	0.9
Mazzaella affinis	0.2	0.3					0.8	0.3	<.1	<.1	0.1	0.1	0.2	<.1	0.4	0.5	0.7	1.9	3.8	2.9	2.0	1.6	4.4
Mazzaella flaccida	1.4	1.4					3.1	0.4	-	0.3	0.2	+	+	+	-	-	-	-	-	-	-	-	-
Mazzaella heterocarpa	0.6	0.7					1.8	0.1	+	<.1	<.1	0.3	<.1	0.4	0.1	<.1	<.1	0.3	<.1	<.1	+	+	1.7
Mazzaella leptorhynchos	2.6	3.7					1.7	0.4	<.1	0.8	0.1	0.5	0.3	0.4	0.3	0.2	0.9	0.8	0.5	0.5	0.7	0.3	<.1
Mazzaella lilacina (prev. Irid. cord.)	<.1	-					<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella rosea	-	-					-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Melobesia mediocris	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	0.4	-					+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Neorhodomela larix	-	-					<.1	<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Nienburgia andersoniana	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1
Non-coralline crust	21.1	20.7					24.6	7.6	9.1	14.7	22.6	28.5	33.6	38.5	36.9	41.3	32.2	20.1	20.4	25.7	34.1	28.8	27.7
Osmundea spp.	<.1	+					0.2	<.1	-	+	<.1	<.1	-	-	<.1	0.3	0.3	0.7	0.2	+	<.1	0.2	-
Pelvetia compressa	-	-					-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Phaeostrophion irregulare	-	-					-	-	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Phyllospadix spp.	0.7	0.4					2.9	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porphyra spp.	2.0	3.8					9.6	1.3	0.4	6.6	1.9	<.1	<.1	-	+	<.1	-	0.1	0.2	<.1	<.1	-	-
Prionitis spp.	1.0	0.6					1.1	0.2	<.1	1.0	2.3	2.8	1.7	2.9	3.9	4.3	3.3	3.2	3.6	4.3	2.7	4.1	3.0
Pterosiphonia dendroidea	0.2	-					0.2	0.4	<.1	<.1	<.1	-	-	-	-	<.1	0.3	0.7	0.6	0.7	1.8	1.1	1.2
Rhodophyta (juv. blades)	-	-					-	+	<.1	+	+	-	+	-	-	-	-	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	-	-					-	-	-	-	-	-	-	-	-	<.1	0.2	+	0.1	0.2	-	-	-
Smithora naiadum	-	-					0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	0.3	2.9					<.1	+	0.7	<.1	<.1	+	-	-	-	-	+	-	+	<.1	-	-	-
Ulva/Enteromorpha spp.	8.7	1.4					4.9	<.1	5.8	0.4	+	-	-	-	8.5	5.9	9.6	5.5	5.3	8.8	5.9	11.0	2.3
coralline crust	1.0	3.1					1.9	1.1	0.3	0.3	0.6	0.3	0.2	0.2	0.4	0.7	1.2	1.1	0.9	1.6	1.0	2.2	2.6
filamentous red algae-complex	<.1	0.1					0.4	0.1	-	+	-	-	-	-	-	-	2.4	7.0	3.8	3.0	3.5	0.8	1.0
juv. articulated coralline algae	-	1.5					0.3	0.2	+	<.1	<.1	0.1	+	+	<.1	<.1	<.1	+	+	<.1	+	+	0.3

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Diablo Cove Station SDC 1 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	4	5	6	6	5	4	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Ahnfeltiopsis leptophylla	-	-					+	<.1	-	-	-	-	-	-	-	-	-	<.1	+	+	-	+	-
Analipus japonicus	-	-					-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-
Bryopsis spp.	-	-					-	-	-	+	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Calliarthron/Bossiella spp.-complex	2.7	1.2					2.9	1.3	0.4	0.5	1.1	0.2	<.1	-	<.1	<.1	0.1	<.1	<.1	0.2	+	+	0.3
Callithamnion pikeanum	0.4	+					<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	-	-					<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Callophyllis spp.	-	-					-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	<.1	-
Chondracanthus canaliculatus	7.0	9.4					10.6	3.6	2.3	1.6	1.1	0.7	0.5	0.6	6.5	17.3	24.6	16.4	20.6	9.5	14.4	13.7	25.0
Chondracanthus corymbiferus (prev. Gig.	-	-					0.5	<.1	-	-	-	-	-	-	-	+	0.1	0.2	0.1	<.1	-	0.1	0.5
Chondracanthus harveyanus/spinosus	-	-					-	-	-	-	-	-	-	-	-	-	0.2	<.1	0.1	0.3	1.2	1.1	0.2
Chondria decipiens	-	-					-	-	-	-	-	-	-	-	-	-	<.1	+	+	<.1	0.4	-	<.1
Chrysophyta unid.	<.1	0.1					0.3	<.1	0.3	+	<.1	-	-	-	0.3	+	+	0.9	0.7	0.2	1.6	<.1	5.2
Cladophora spp.	+	+					+	+	+	<.1	<.1	<.1	0.2	<.1	+	+	+	+	+	+	-	<.1	-
Colpomenia spp.	-	+					+	-	<.1	<.1	+	-	-	-	-	-	-	+	+	+	-	-	0.1
Colpomenia/Leathesia/Soranthera spp.	-	-					-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina officinalis	0.2	0.9					0.6	0.3	<.1	+	0.2	-	-	-	+	+	-	-	+	+	-	-	-
Corallina vancouveriensis	0.4	1.5					0.5	0.6	0.1	0.1	0.3	0.1	<.1	-	+	<.1	<.1	+	0.2	<.1	<.1	0.1	1.1
Cryptopleura ruprechtiana	-	-					-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptopleura violacea	<.1	0.3					1.5	1.5	<.1	0.6	0.9	8.5	6.0	3.1	6.4	9.4	23.4	23.6	12.5	10.8	5.7	14.0	7.0
Cryptosiphonia woodii	<.1	0.3					0.2	<.1	+	+	+	+	-	-	-	<.1	+	-	<.1	-	-	0.2	-
Derbesia marina (filamentous)	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-
Egregia menziesii	1.2	0.7					<.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endocladia muricata	0.1	1.0					<.1	0.5	0.1	-	+	<.1	<.1	<.1	0.2	<.1	<.1	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	<.1	0.1					+	<.1	+	1.2	<.1	-	-	-	-	-	+	<.1	<.1	<.1	+	0.1	-
Fucus gardneri	<.1	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	13.3	17.2					22.4	4.6	<.1	<.1	<.1	0.3	0.2	0.3	0.8	2.8	7.4	13.1	15.9	13.3	12.2	11.1	3.5
Gelidium coulteri	2.0	4.7					2.5	1.8	0.1	1.1	3.7	8.2	9.8	13.8	13.9	12.2	8.3	3.1	2.7	1.3	3.8	1.8	7.2
Gelidium pusillum	-	-					0.2	+	<.1	<.1	+	+	<.1	<.1	0.4	0.2	0.2	0.2	0.1	-	+	0.2	+
Gelidium robustum	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	+
Grateloupia doryphora	0.2	0.3					0.6	-	0.2	1.2	0.2	0.2	0.2	<.1	<.1	<.1	0.2	0.1	3.1	0.4	2.8	-	-
Gymnogongrus chiton	-	-					-	-	-	-	-	-	-	-	-	-	+	<.1	-	-	-	-	-
Halorhipis winstonii	-	-					-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halosaccion americanum	0.5	<.1					0.2	<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	0.5	0.6					0.2	0.2	0.4	<.1	0.5	0.9	+	<.1	0.3	<.1	0.2	0.6	0.8	1.8	0.3	0.4	1.4
Hymenena spp.	-	-					-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Laminaria setchellii	0.4	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Macrocystis spp.	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-
Mastocarpus jardinii	0.1	0.2					0.4	0.3	+	+	+	+	<.1	0.3	+	0.1	<.1	<.1	+	-	-	-	-
Mastocarpus papillatus	10.2	9.6					3.8	1.8	7.2	12.9	19.5	15.3	9.9	25.6	26.2	16.6	8.0	1.6	0.5	0.1	2.0	0.1	<.1
Mazzaella affinis	0.2	0.6					1.4	0.3	0.5	<.1	0.6	1.2	0.7	0.5	2.0	1.5	1.4	1.5	2.0	0.8	1.3	1.2	2.4
Mazzaella californicum (prev. Rhod. owen	-	-					-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Mazzaella flaccida	4.2	2.5					7.7	0.8	+	0.2	0.3	<.1	-	-	-	+	<.1	-	-	-	-	-	-
Mazzaella heterocarpa	2.0	1.4					1.9	0.4	<.1	<.1	0.2	0.4	0.3	0.4	0.4	0.3	0.4	0.3	0.2	<.1	0.4	+	1.5
Mazzaella leptorhynchos	1.4	1.2					1.1	0.5	<.1	1.4	0.8	1.1	0.3	0.6	0.6	<.1	0.5	0.2	0.2	<.1	+	+	+
Mazzaella lilacina (prev. Irid. cord.)	0.7	1.1					0.3	<.1	-	-	0.2	-	-	<.1	-	-	-	-	-	-	-	-	-
Mazzaella linearis	0.6	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia borealis	<.1	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Microcladia coulteri	0.7	1.4					0.3	<.1	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-
Neorhodomela larix	1.1	1.2					0.9	2.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Nienburgia andersoniana	-	-					-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	0.4	-
Non-coralline crust	16.2	13.9					17.8	14.4	24.5	22.8	22.6	23.8	38.4	33.0	28.2	22.6	17.5	8.5	7.8	8.8	7.7	8.9	10.3
Osmundea spp.	<.1	<.1					0.1	<.1	+	0.1	0.2	0.3	<.1	0.3	0.2	0.3	0.6	0.4	0.1	0.1	+	<.1	-
Phaeostrophion irregulare	-	-					-	-	+	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Phyllospadix spp.	9.9	3.9					9.8	2.8	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porphyra spp.	2.7	1.8					3.8	0.4	1.3	0.9	0.4	0.1	<.1	-	<.1	-	-	-	+	-	-	-	-
Prionitis spp.	1.8	5.7					3.6	2.6	2.3	3.4	4.4	8.1	3.1	8.8	9.7	9.1	1.4	1.9	5.8	3.8	3.1	4.8	5.6
Pterosiphonia dendroidea	<.1	<.1					0.2	0.7	<.1	<.1	<.1	+	-	-	-	+	0.3	0.4	0.2	0.5	0.7	0.9	2.1

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Diablo Cove Station SDC 1 at +0.3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	ns	ns	ns	ns	4	5	6	6	5	4	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Rhodophyta (juv. blades)	-	-					-	-	<.1	+	<.1	-	-	-	-	-	-	-	-	-	+	-	-
Sarcodiotheca gaudichaudii	0.3	0.9					0.3	<.1	+	<.1	<.1	<.1	-	-	+	<.1	<.1	<.1	<.1	<.1	0.2	0.1	-
Scytosiphon spp.	-	-					-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Smithora naiadum	<.1	-					1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	0.3	1.5					<.1	<.1	4.6	+	<.1	<.1	+	-	-	+	+	+	-	1.7	-	-	-
Ulva/Enteromorpha spp.	9.0	8.0					3.9	<.1	3.1	1.7	+	-	-	-	5.6	2.8	1.2	1.1	8.7	11.4	15.9	8.0	1.5
coralline crust	2.4	1.8					2.3	2.7	1.7	1.0	2.1	1.6	1.2	2.0	1.3	1.7	2.3	1.2	0.9	1.9	0.7	2.0	3.7
filamentous red algae-complex	0.2	0.1					0.2	0.3	<.1	<.1	<.1	-	-	-	-	<.1	9.7	19.3	12.0	18.2	16.2	5.5	2.8
juv. articulated coralline algae	-	1.3					0.2	0.2	<.1	0.7	0.3	<.1	+	<.1	<.1	<.1	<.1	0.2	+	<.1	+	0.1	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Diablo Cove Station SDC 3 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Analipus japonicus	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryopsis spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	0.1	<.1	0.1	0.2	<.1	<.1	<.1	<.1	<.1	<.1	<.1	+	-	+	-	-	-	-	-	-	-	-	-
Callithamnion pikeanum	<.1	+	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	0.6	0.3	0.4	0.6	0.3	0.3	0.2	+	<.1	<.1	+	+	-	+	-	-	+	<.1	-	-	-	-	+
Chondria decipiens	-	-	-	-	-	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysophyta unid.	-	-	<.1	+	-	<.1	+	+	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Cladophora spp.	<.1	0.5	<.1	<.1	<.1	<.1	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Colpomenia spp.	-	-	-	+	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina officinalis	<.1	<.1	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina vancouveriensis	0.2	2.6	2.1	2.4	2.4	2.3	2.6	0.1	0.4	0.4	0.2	0.1	0.1	0.1	<.1	<.1	<.1	+	+	-	+	+	+
Cryptopleura violacea	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Cryptosiphonia woodii	<.1	<.1	<.1	0.2	0.2	0.1	0.1	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Endocladia muricata	5.6	8.7	9.8	9.8	10.3	10.6	9.3	3.1	3.2	3.3	3.3	2.6	2.6	1.4	0.9	0.7	1.0	1.0	1.5	1.3	1.4	1.0	0.2
Fucaceae unid.	-	-	<.1	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fucus gardneri	2.7	0.9	1.4	4.0	4.2	4.5	3.4	1.1	0.5	0.1	0.2	<.1	-	-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	-	-	<.1	<.1	<.1	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-
Gelidium coulteri	1.5	1.0	1.8	1.8	1.6	2.6	2.4	0.6	1.2	1.1	0.5	0.1	0.1	+	<.1	0.1	0.4	0.9	<.1	<.1	+	0.7	<.1
Gelidium pusillum	0.6	0.8	0.8	1.1	0.5	0.7	1.2	0.2	0.6	0.3	0.1	<.1	+	+	<.1	0.1	0.6	1.1	0.3	<.1	0.1	0.2	0.2
Halosaccion americanum	0.2	-	+	+	<.1	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hesperophycus californicus	0.2	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mastocarpus jardinii	-	+	<.1	<.1	<.1	0.2	<.1	<.1	<.1	<.1	+	+	-	-	-	-	-	<.1	-	-	-	-	-
Mastocarpus papillatus	15.2	16.1	16.7	21.9	19.6	20.3	23.1	2.6	6.7	10.0	8.6	9.3	3.8	3.9	2.0	1.8	8.8	17.9	11.3	7.3	8.2	16.8	3.1
Mazzaella affinis	0.3	0.6	0.7	1.2	0.8	0.5	0.9	0.2	0.1	0.2	<.1	+	+	+	-	<.1	+	<.1	+	+	-	<.1	+
Mazzaella flaccida	6.9	4.9	4.5	5.7	4.1	4.6	5.0	<.1	+	<.1	<.1	+	+	-	-	-	-	-	-	-	-	-	-
Mazzaella heterocarpa	0.2	0.4	0.4	0.2	0.3	0.4	0.4	<.1	<.1	<.1	<.1	+	+	<.1	+	+	+	+	<.1	+	-	-	-
Mazzaella leptorhynchos	<.1	<.1	0.2	0.2	0.2	0.2	0.1	<.1	<.1	<.1	<.1	+	+	+	+	<.1	+	+	+	+	-	<.1	<.1
Mazzaella lilacina (prev. Irid. cord.)	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nemalion helminthoides	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neorhodomela larix	0.1	<.1	<.1	0.2	0.2	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-coralline crust	20.4	20.3	19.5	21.6	26.1	26.1	26.1	10.6	11.9	13.2	11.3	13.7	14.5	13.3	10.9	9.4	15.5	16.9	16.3	22.9	22.8	22.9	21.6
Pelvetia compressa	0.5	<.1	0.1	0.5	0.6	1.1	2.8	2.5	2.7	3.2	2.4	2.2	1.7	1.6	1.3	0.5	-	-	-	-	-	-	-
Phyllospadix spp.	0.6	0.5	1.7	1.0	1.0	0.9	1.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polyneura latissima	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Porphyra spp.	0.2	0.4	0.2	0.6	0.2	0.3	0.1	0.3	0.2	<.1	<.1	+	+	-	-	-	-	-	-	-	-	-	-
Prionitis spp.	0.1	<.1	0.2	0.4	0.2	<.1	<.1	+	<.1	-	<.1	<.1	+	+	+	<.1	+	<.1	<.1	<.1	+	<.1	-
Rhodophyta (juv. blades)	-	-	-	-	-	+	-	<.1	<.1	+	<.1	+	-	-	+	-	-	-	-	-	-	-	-
Scytosiphon spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Smithora naiadum	-	-	<.1	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	<.1	+	0.3	0.2	<.1	0.2	<.1	<.1	<.1	+	+	+	-	-	+	-	-	-	-	-	-	-	-
Ulva/Enteromorpha spp.	0.9	0.4	0.6	2.4	<.1	0.2	<.1	+	<.1	0.2	+	-	-	-	-	-	+	+	+	+	+	-	-
coralline crust	2.4	2.8	2.3	2.3	2.8	2.1	2.2	1.0	0.9	0.3	0.4	0.6	0.3	0.2	0.2	<.1	<.1	<.1	<.1	0.1	<.1	+	0.2
filamentous red algae-complex	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
juv. articulated coralline algae	-	-	<.1	<.1	+	+	+	<.1	+	+	+	+	-	+	+	<.1	+	+	+	+	-	+	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Diablo Cove Station SDC 3 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Ahnfeltiopsis leptophylla	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Analipus japonicus	<.1	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryopsis spp.	-	<.1	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	0.1	0.1	0.2	<.1	0.3	0.3	0.3	<.1	+	+	-	-	-	<.1	+	-	<.1	+	<.1	+	-	-	+
Callithamnion pikeanum	<.1	+	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	5.7	6.3	5.1	6.8	3.9	5.0	4.0	0.2	0.4	0.2	<.1	+	+	+	<.1	0.1	1.2	3.1	3.9	1.7	0.7	1.7	0.6
Chondria decipiens	-	0.2	0.2	0.1	0.2	0.4	0.3	<.1	<.1	+	-	+	+	+	+	-	-	+	-	+	+	-	-
Chrysophyta unid.	-	<.1	0.5	<.1	-	<.1	<.1	<.1	<.1	<.1	-	-	-	-	0.1	-	-	-	-	-	+	-	-
Cladophora spp.	+	<.1	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<.1	+	+
Colpomenia spp.	-	<.1	0.1	<.1	+	0.2	<.1	+	<.1	+	-	-	-	-	-	-	-	+	+	+	+	-	+
Colpomenia/Leathesia/Soranthera spp.	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina officinalis	0.3	+	-	<.1	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Corallina vancouveriensis	<.1	0.3	0.2	0.4	0.7	0.4	0.5	0.2	<.1	<.1	<.1	<.1	+	<.1	+	<.1	<.1	+	<.1	<.1	-	<.1	<.1
Cryptopleura ruprechtiana	-	<.1	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptopleura violacea	-	+	-	+	<.1	+	<.1	-	-	+	-	<.1	-	-	<.1	<.1	+	+	+	-	-	2.0	-
Cryptosiphonia woodii	0.2	1.4	2.5	1.7	1.2	1.3	1.2	+	+	<.1	-	-	-	+	+	-	+	+	<.1	-	+	-	-
Cumagloia andersonii	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cystoseira osmundacea	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Egregia menziesii	0.2	-	0.3	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endocladia muricata	-	+	<.1	-	<.1	<.1	0.1	0.1	<.1	<.1	<.1	0.3	0.2	0.1	<.1	<.1	<.1	<.1	<.1	0.1	<.1	+	0.1
Fucaceae unid.	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fucus gardneri	5.5	3.6	0.6	3.2	6.4	4.5	1.8	<.1	1.1	0.5	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	9.3	7.8	12.7	9.4	15.0	7.1	5.1	+	+	<.1	-	+	+	-	<.1	<.1	0.4	1.2	2.2	1.9	3.9	0.7	0.2
Gelidium coulteri	0.5	2.3	2.7	1.1	2.0	2.3	3.0	0.7	0.8	0.8	1.1	0.9	0.2	0.1	0.5	0.9	0.9	0.6	1.0	0.8	0.5	0.3	0.5
Gelidium pusillum	0.3	0.4	0.3	0.5	0.6	0.6	0.6	0.1	0.2	0.1	<.1	<.1	+	+	0.1	0.2	0.6	1.4	0.8	0.8	0.7	1.0	<.1
Grateloupia doryphora	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Halosaccion americanum	<.1	+	+	+	+	+	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	<.1	<.1	<.1	<.1	<.1	<.1	-	-	-	-	+	<.1	-	-	-	-	-	-	-	-	-	-
Mastocarpus jardinii	<.1	0.2	0.2	0.2	<.1	0.3	<.1	+	+	<.1	+	-	-	+	+	+	-	<.1	<.1	+	-	<.1	-
Mastocarpus papillatus	14.3	13.1	15.3	20.2	14.8	18.6	14.8	4.6	17.7	29.9	19.2	21.1	15.9	28.7	28.1	43.7	41.6	38.4	44.1	38.1	37.6	41.5	23.4
Mazzaella affinis	3.1	3.9	3.8	3.9	2.9	4.0	5.3	0.4	1.1	0.9	0.4	0.2	0.2	+	0.1	0.5	0.6	1.8	1.7	0.7	0.3	1.4	0.7
Mazzaella flaccida	27.4	24.4	22.6	26.5	20.0	20.1	21.6	0.2	0.4	0.1	0.2	0.4	<.1	-	-	<.1	0.4	0.1	0.2	-	-	0.2	-
Mazzaella heterocarpa	1.9	1.7	2.4	1.1	1.6	1.6	1.6	<.1	<.1	0.2	0.1	0.4	<.1	0.3	0.2	0.5	<.1	<.1	0.2	0.2	+	0.1	<.1
Mazzaella leptorhynchos	0.1	0.4	0.7	0.4	0.6	0.5	0.5	<.1	0.6	0.1	0.1	0.1	0.1	<.1	<.1	<.1	0.2	0.2	0.5	0.4	0.2	0.3	0.5
Mazzaella lilacina (prev. Irid. cord.)	-	<.1	-	<.1	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella rosea	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia borealis	+	<.1	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	<.1	+	<.1	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neorhodomela larix	0.7	0.5	1.4	1.4	1.5	1.6	1.3	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-coralline crust	17.6	19.8	20.2	18.9	26.9	25.9	24.5	9.7	17.6	14.6	17.4	18.2	19.0	22.5	25.8	27.5	24.9	20.9	22.6	24.3	25.2	28.9	33.4
Osmundea spp.	-	+	<.1	<.1	<.1	<.1	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Pelvetia compressa	-	0.5	<.1	-	-	+	-	<.1	<.1	<.1	-	-	-	-	-	-	-	+	+	<.1	-	-	-
Phyllospadix spp.	<.1	<.1	<.1	<.1	0.2	0.2	<.1	-	-	<.1	-	-	-	-	-	-	-	-	+	-	-	-	-
Porphyra spp.	0.3	0.3	0.3	0.9	<.1	0.3	<.1	2.3	1.5	<.1	<.1	-	-	-	-	+	0.2	<.1	0.9	+	-	-	-
Prionitis spp.	0.4	0.2	0.1	0.1	<.1	<.1	<.1	-	<.1	-	-	-	+	-	-	-	+	+	<.1	+	-	0.1	-
Pterosiphonia dendroidea	-	+	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	+	<.1	<.1	0.1	-	-
Rhodophyta (juv. blades)	-	-	<.1	-	-	-	-	0.2	<.1	+	<.1	+	-	-	+	-	-	+	-	-	-	-	-
Sarcodiotheca gaudichaudii	-	<.1	-	-	<.1	+	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scytosiphon spp.	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Smithora naiadum	-	-	-	-	-	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soranthera ulvoidea	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	+	<.1	<.1	0.1	<.1	<.1	0.1	<.1	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-
Ulva/Enteromorpha spp.	5.8	4.1	4.4	7.1	0.7	1.2	1.1	<.1	1.8	0.3	+	-	-	-	+	+	8.4	3.7	<.1	0.9	0.5	1.1	-
coralline crust	6.0	5.4	5.6	3.7	5.0	3.4	5.4	1.1	1.1	1.3	0.6	0.6	0.4	0.3	0.3	0.3	0.3	0.7	0.7	0.7	0.7	0.9	1.0
filamentous red algae-complex	-	0.4	+	0.3	0.2	0.4	0.4	-	-	-	-	-	-	-	-	-	0.1	0.2	<.1	-	-	-	-
juv. articulated coralline algae	-	<.1	0.3	0.2	0.2	<.1	<.1	<.1	+	+	<.1	<.1	<.1	<.1	+	+	<.1	+	+	+	0.1	+	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Control Station SC 1 at +0.9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Analipus japonicus	<.1	<.1	+	+	+	+	<.1	-	<.1	<.1	<.1	<.1	<.1	+	<.1	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	-	-	-	-	+	+	-	<.1	+	-	+	-	+	-	+	<.1	<.1	<.1	<.1	<.1	0.5	+	+
Callithamnion pikeanum	<.1	0.2	<.1	<.1	<.1	<.1	<.1	+	+	+	+	+	+	<.1	+	+	+	<.1	+	+	+	+	-
Callithamnion spp./Pleonosporium spp.	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-
Chaetomorpha spp.	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus canaliculatus	0.8	0.3	<.1	<.1	0.1	<.1	0.1	0.4	0.3	0.2	0.1	<.1	<.1	<.1	0.2	0.3	0.9	0.6	0.4	0.3	0.1	0.2	0.7
Chondria decipiens	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Chrysophyta unid.	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cladophora spp.	0.2	<.1	<.1	0.2	+	<.1	<.1	+	<.1	<.1	<.1	<.1	0.1	+	<.1	<.1	+	+	<.1	+	<.1	<.1	+
Corallina officinalis	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corallina vancouveriensis	0.7	1.1	1.0	1.1	1.2	1.1	1.7	0.5	0.2	0.2	0.1	0.2	0.2	0.1	0.3	0.5	0.6	1.1	1.8	2.0	1.7	1.3	1.0
Cryptopleura violacea	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	<.1	<.1	0.2	0.2	0.1	0.1	0.4
Cryptosiphonia woodii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Cumagloia andersonii	-	<.1	+	-	+	-	+	<.1	+	+	-	-	+	-	+	-	+	-	-	-	-	-	-
Egregia menziesii	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Endocladia muricata	14.6	15.9	13.5	18.6	17.5	16.1	18.5	6.2	11.1	15.9	18.7	21.3	20.1	24.4	24.9	24.8	22.6	19.0	20.3	16.3	13.0	19.7	14.6
Fucaceae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Fucus gardneri	0.3	0.4	0.2	<.1	0.3	0.3	0.5	0.3	0.2	<.1	-	-	-	<.1	<.1	0.1	0.6	0.7	0.3	0.3	0.6	0.4	0.1
Gastroclonium subarticulatum	<.1	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	<.1	-	+	+	-	<.1	0.1
Gelidium coulteri	0.1	0.3	0.4	0.6	0.6	0.6	0.6	2.1	1.8	0.6	0.2	0.1	<.1	<.1	0.1	0.1	0.2	<.1	0.1	<.1	+	+	<.1
Gelidium pusillum	1.6	2.7	1.1	0.7	0.9	0.9	0.8	1.2	2.0	0.5	<.1	+	+	<.1	<.1	<.1	0.3	0.5	0.5	0.2	0.1	0.5	0.3
Gelidium spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halosaccion americanum	0.3	0.1	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Hesperophycus californicus	<.1	0.2	0.1	0.2	0.3	0.3	-	-	-	-	-	-	-	-	-	+	<.1	-	-	-	-	+	0.1
Mastocarpus jardinii	4.3	4.5	4.0	3.3	3.6	3.2	2.9	0.9	0.5	0.9	1.1	1.0	1.0	0.9	1.3	1.1	2.7	2.4	2.8	1.7	2.2	1.5	1.3
Mastocarpus papillatus	25.6	23.6	24.3	24.0	22.8	22.6	25.3	13.9	14.6	10.0	9.0	11.6	13.0	13.2	16.0	18.3	21.5	22.3	27.7	27.5	21.0	26.0	21.2
Mazzaella affinis	0.1	0.1	0.2	0.5	0.1	0.1	<.1	0.2	0.2	0.1	<.1	<.1	<.1	+	0.1	0.4	0.3	0.4	0.3	0.1	0.1	0.1	0.1
Mazzaella flaccida	11.1	11.0	8.5	10.0	7.3	5.4	6.6	3.3	1.8	1.5	1.2	1.4	1.2	0.7	1.5	1.6	2.6	3.2	4.3	3.2	2.0	3.0	2.9
Mazzaella heterocarpa	0.3	0.3	0.1	0.3	0.4	0.4	0.4	0.2	0.1	0.3	0.3	0.7	0.4	0.3	0.4	0.6	0.8	0.7	0.8	0.7	0.2	0.1	1.3
Mazzaella leptorhynchos	-	-	-	+	-	-	<.1	+	<.1	<.1	<.1	<.1	<.1	+	+	+	<.1	+	<.1	+	+	+	+
Nemalion helminthoides	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-coralline crust	23.4	20.5	23.3	20.8	22.8	23.9	24.6	17.9	12.8	12.6	15.5	19.4	21.7	20.1	21.7	19.8	21.0	20.7	20.6	18.4	21.2	17.9	19.7
Osmundea spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Pelvetia compressa	4.4	3.5	4.6	4.0	4.7	5.0	4.0	2.0	1.7	1.8	2.2	2.4	2.7	2.6	2.8	3.7	6.1	7.1	9.4	8.5	6.4	7.5	6.0
Phyllospadix spp.	-	+	-	+	+	+	+	-	-	+	+	-	+	-	-	-	<.1	-	-	-	+	-	-
Plocamium violaceum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Porphyra spp.	0.3	0.8	0.3	0.4	0.2	0.3	+	1.7	0.5	<.1	0.2	<.1	0.1	-	<.1	<.1	<.1	0.6	0.6	0.3	0.1	0.2	7.1
Prionitis spp.	1.1	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	+
Rhodophyta (juv. blades)	-	-	<.1	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Scytosiphon spp.	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	-	+	-	<.1	+	+	+	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-
Ulva/Enteromorpha spp.	-	+	<.1	+	+	<.1	+	0.4	<.1	+	+	+	+	-	+	+	+	+	+	+	+	+	+
coralline crust	2.4	4.1	4.7	4.1	4.7	4.1	3.5	5.0	1.2	1.1	1.4	1.4	2.1	1.0	1.3	1.4	2.6	2.7	4.5	6.3	7.3	5.8	4.8
filamentous red algae-complex	<.1	0.2	0.2	0.1	0.2	0.1	+	-	-	+	-	-	+	-	-	-	-	-	-	+	-	-	<.1
juv. articulated coralline algae	-	<.1	<.1	-	+	-	-	+	+	<.1	+	+	+	<.1	+	<.1	<.1	<.1	<.1	<.1	+	+	<.1

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Control Station SC 1 at +0.3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	6	6	6	6	6	4	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Ahnfeltiopsis leptophylla	-	+	<.1	<.1	+	<.1	<.1	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Ahnfeltiopsis linearis	-	-	-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Analipus japonicus	-	-	+	+	-	+	+	+	-	<.1	0.3	0.4	<.1	+	-	-	-	-	-	-	-	-	-
Bryopsis spp.	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Calliarthron/Bossiella spp.-complex	0.5	0.1	0.5	0.9	0.6	0.9	1.4	0.9	0.6	0.5	1.1	1.0	0.7	0.4	0.4	1.4	1.7	2.4	3.1	1.9	2.1	2.3	2.5
Callithamnion pikeanum	0.3	<.1	<.1	0.1	<.1	<.1	<.1	+	<.1	<.1	<.1	0.2	<.1	<.1	+	+	+	<.1	0.1	<.1	+	+	<.1
Callithamnion spp./Pleonosporium spp.	-	0.2	0.4	0.2	0.2	0.1	0.1	<.1	<.1	<.1	+	+	-	-	-	+	+	<.1	+	<.1	<.1	0.1	+
Callophyllis firma	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Callophyllis spp.	-	<.1	-	+	<.1	+	<.1	<.1	+	<.1	-	+	-	-	+	<.1	<.1	<.1	<.1	<.1	+	-	<.1
Chondracanthus canaliculatus	21.2	20.2	19.1	24.0	19.7	27.3	33.0	22.0	29.9	16.4	9.8	13.1	14.9	17.2	19.6	20.7	21.8	25.3	30.2	32.2	28.5	26.0	24.6
Chondracanthus corymbiferus (prev. Gig.	<.1	0.4	0.3	0.4	0.8	0.4	0.7	0.3	0.4	<.1	<.1	<.1	<.1	<.1	0.1	0.2	0.7	0.9	1.0	0.9	0.6	0.2	1.0
Chondracanthus harveyanus/spinosus	<.1	<.1	-	0.1	<.1	<.1	<.1	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysophyta unid.	-	-	<.1	+	+	<.1	+	<.1	<.1	0.1	<.1	-	+	+	<.1	+	-	-	<.1	+	-	-	-
Cladophora spp.	+	+	<.1	+	<.1	+	+	+	+	<.1	+	+	+	+	+	+	+	-	+	+	+	<.1	+
Colpomenia spp.	-	-	-	-	-	-	-	-	+	+	<.1	-	-	+	-	-	+	-	+	-	-	+	-
Corallina officinalis	1.3	1.0	1.8	1.3	1.3	0.4	0.8	0.6	0.1	<.1	<.1	<.1	0.1	<.1	0.1	<.1	0.2	0.1	0.4	0.2	<.1	-	0.1
Corallina vancouveriensis	2.4	2.6	3.4	3.5	3.7	2.6	2.5	3.0	2.0	2.6	1.5	1.7	1.4	0.6	2.6	2.2	1.2	1.1	1.4	1.8	1.3	2.5	2.2
Cryptopleura ruprechtiana	-	-	<.1	-	-	-	-	-	+	-	-	<.1	-	-	-	-	<.1	<.1	+	+	-	-	<.1
Cryptopleura violacea	0.2	0.5	0.9	0.9	1.7	1.8	2.5	1.5	0.9	0.4	0.4	0.8	0.7	0.5	1.3	1.0	1.8	1.3	1.4	2.0	1.8	0.5	2.5
Cryptosiphonia woodii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	0.1	-	-	-	-
Cystoseira osmundacea	-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Egregia menziesii	0.8	<.1	-	0.6	-	-	+	-	<.1	0.7	<.1	<.1	-	-	<.1	-	0.4	0.5	0.3	4.7	0.5	4.4	1.5
Endocladia muricata	<.1	<.1	<.1	<.1	-	-	-	+	-	<.1	<.1	0.1	0.2	0.2	0.4	0.4	0.3	0.5	0.4	0.5	0.3	0.6	0.7
Erythrophyllum delesserioides	<.1	+	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Farlowia/Pikea spp.-complex	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	+	<.1	+	-	-	-
Fucus gardneri	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gastroclonium subarticulatum	6.8	6.4	8.4	5.9	14.9	8.5	6.0	18.0	16.6	8.6	7.3	7.3	6.3	4.1	6.0	4.6	12.7	10.2	9.8	8.5	9.3	11.5	19.9
Gelidium coulteri	<.1	0.6	<.1	0.3	<.1	<.1	0.2	0.5	0.5	0.4	0.6	0.5	0.4	0.4	1.0	0.5	0.2	0.4	0.1	<.1	<.1	0.2	+
Gelidium pusillum	0.2	0.6	0.2	0.2	0.6	0.5	0.6	0.7	0.7	0.5	0.3	0.3	0.4	0.4	0.5	0.3	0.3	0.5	0.5	0.2	+	0.3	0.6
Gelidium robustum	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Gracilariopsis lemaneiformis	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Grateloupia doryphora	-	<.1	+	-	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	<.1	+	-	-	-	-
Halosaccion americanum	+	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	0.2	<.1	0.1	<.1	<.1	0.1	<.1	<.1	0.1	0.2	<.1	0.1	<.1	-	<.1	<.1	<.1	<.1	+	+	-	+	0.1
Hymenena spp.	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Laminaria setchellii	-	-	-	-	-	+	-	-	-	-	<.1	-	+	-	-	-	-	-	-	-	-	-	-
Laminariales	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Mastocarpus jardinii	0.3	0.7	0.8	0.7	1.4	0.9	0.7	1.1	1.5	1.2	0.9	1.6	2.1	2.5	1.2	1.3	1.5	1.7	1.7	1.8	1.4	1.9	1.7
Mastocarpus papillatus	1.6	2.0	2.7	2.5	2.5	3.3	2.0	2.3	7.2	4.7	7.1	12.8	11.1	5.3	4.0	3.5	2.7	2.6	2.3	1.9	2.2	3.0	2.1
Mazzaella affinis	0.1	<.1	0.1	0.2	0.3	0.1	<.1	0.3	0.4	0.7	0.7	0.5	0.4	0.3	<.1	0.2	0.3	0.3	0.5	0.2	0.3	0.3	0.6
Mazzaella californicum (prev. Rhod. cal.	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella flaccida	55.1	43.4	41.1	47.2	47.4	48.2	51.6	37.1	25.4	24.5	38.0	47.9	47.8	52.4	55.9	56.1	47.6	40.5	40.4	42.2	36.1	37.3	33.8
Mazzaella heterocarpa	0.3	0.3	0.6	0.6	1.2	1.1	0.7	0.4	1.0	1.1	2.7	2.2	1.4	1.8	1.8	1.9	1.8	1.8	2.5	1.0	1.0	0.9	1.7
Mazzaella leptorhynchos	-	-	-	<.1	+	-	+	-	<.1	<.1	0.1	0.1	0.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	<.1
Mazzaella lilacina (prev. Irid. cord.)	<.1	0.4	0.3	0.5	1.2	0.4	0.5	0.1	0.4	0.9	0.9	0.8	0.3	0.1	0.1	0.3	0.8	0.4	0.2	1.5	1.2	-	1.0
Mazzaella rosea	-	<.1	-	-	-	-	+	-	+	-	-	<.1	-	-	-	-	+	-	-	-	-	-	-
Mazzaella volans	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melobesia mediocris	-	-	-	+	-	-	+	-	+	-	-	+	-	-	-	-	+	+	+	+	+	+	+
Microcladia borealis	-	<.1	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	1.7	0.2	0.9	0.2	0.6	0.3	0.6	0.3	0.2	0.2	0.2	1.0	0.1	<.1	<.1	0.2	0.6	0.3	0.1	0.4	0.2	0.1	0.2
Nemalion helminthoides	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-coralline crust	6.2	7.1	5.9	5.8	7.3	9.9	10.2	12.8	11.6	15.7	21.1	21.2	18.8	15.2	15.1	12.6	12.2	10.2	8.9	8.6	8.9	10.3	13.4
Osmundea spp.	0.3	0.4	1.0	0.7	1.3	0.4	0.5	0.6	1.0	0.2	0.2	0.2	0.2	<.1	0.2	0.2	0.8	1.1	1.1	0.7	0.1	0.2	0.6
Pelvetia compressa	-	-	-	-	-	-	-	-	<.1	-	+	+	-	-	-	-	-	-	-	-	-	-	-
Phaeostrophion irregulare	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Phyllospadix spp.	1.5	2.0	3.6	2.8	3.7	1.8	1.4	1.6	1.2	0.7	0.1	1.0	0.4	0.3	0.2	0.1	1.2	1.3	1.7	4.1	4.9	2.5	4.9
Polyneura latissima	<.1	0.1	<.1	0.2	<.1	0.2	<.1	0.3	<.1	<.1	+	<.1	<.1	+	<.1	0.1	0.1	<.1	0.1	0.2	+	-	<.1
Porphyra spp.	-	0.1	0.5	0.2	0.9	0.3	+	1.6	<.1	2.0	3.3	1.4	1.6	0.1	0.3	0.1	-	0.4	1.0	1.2	+	-	1.5

Horizontal Band Transects - Yearly Algal Mean Cover(per 1 m squared) - South Control Station SC 1 at +0.3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	6	6	6	6	6	6	4	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Prionitis spp.	0.1	0.6	0.9	1.3	1.2	0.8	0.4	0.9	0.9	0.5	0.3	0.6	0.4	0.2	0.6	0.5	1.5	2.1	3.0	2.6	1.6	1.0	1.9
Pterosiphonia dendroidea	-	-	+	+	+	<.1	+	+	<.1	+	+	+	-	<.1	-	-	-	<.1	-	-	+	-	-
Rhodophyta (juv. blades)	-	-	<.1	-	-	-	-	<.1	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhodymenia spp.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-
Sarcodiotheca gaudichaudii	<.1	0.1	<.1	<.1	0.2	<.1	<.1	<.1	<.1	<.1	+	<.1	+	-	<.1	+	<.1	0.2	0.2	0.2	0.3	0.2	0.2
Smithora naiadum	+	-	0.5	0.5	0.2	0.6	0.2	+	<.1	<.1	-	<.1	+	+	-	+	0.3	+	<.1	0.2	+	0.3	-
Spongomorpha/Acrosiphonia-complex	<.1	+	<.1	+	-	-	-	1.1	<.1	0.4	+	-	+	+	<.1	-	+	+	0.3	<.1	-	+	-
Ulva/Enteromorpha spp.	0.7	0.4	2.7	5.5	0.7	0.8	1.1	2.1	4.2	3.5	2.2	1.1	0.5	1.2	4.1	2.7	3.2	1.2	1.0	0.5	0.2	1.1	0.2
coralline crust	16.8	12.8	12.2	10.2	11.4	12.9	13.8	17.1	11.8	15.3	11.7	7.5	7.5	8.4	8.6	8.1	10.2	8.9	10.1	12.3	14.2	11.3	13.2
filamentous red algae-complex	<.1	0.2	<.1	0.1	<.1	0.2	<.1	<.1	<.1	<.1	+	<.1	<.1	+	+	<.1	<.1	<.1	<.1	+	+	0.2	+
juv. articulated coralline algae	-	1.1	<.1	0.6	0.7	<.1	0.3	<.1	0.2	0.3	0.6	0.2	0.2	0.2	0.1	0.1	1.2	0.7	0.4	1.4	0.1	1.0	0.7

<.1 = measured but in low abundance
+ = only recorded as present

APPENDIX C2 – Intertidal Invertebrates
Horizontal Band Transects

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Control Station NC 1 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	5	6	5	6	5	4	3	6	5	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	-	-	-	<.1	-	-	-	-	0.4	<.1	0.1	0.3	-	-	0.1	<.1	<.1	-	-	0.1	-	0.1
Anthopleura elegantissima	13.2	8.3	10.3	12.5	14.4	16.1	6.9	4.7	3.8	5.9	6.9	7.8	4.7	4.3	5.6	3.4	2.7	2.5	2.8	2.1	2.1	1.8	2.0
Balanus spp.	-	+	0.2	<.1	-	0.2	<.1	0.6	-	1.4	0.4	-	-	-	-	<.1	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Epiactis prolifera	-	-	0.3	0.3	<.1	0.1	<.1	<.1	<.1	0.3	<.1	<.1	<.1	-	<.1	0.2	<.1	-	-	-	-	-	-
Fissurella volcano	0.1	<.1	<.1	<.1	0.2	0.1	<.1	0.2	0.5	0.4	0.2	-	0.1	0.1	<.1	<.1	0.4	0.3	0.5	<.1	-	0.1	0.3
Haliotis spp.	0.2	0.2	0.2	0.1	0.2	0.2	<.1	0.7	0.2	0.4	0.7	0.8	0.6	0.6	0.6	0.6	0.4	0.6	0.2	-	-	0.1	-
Hemigrapsus nudus	-	-	<.1	-	<.1	0.2	<.1	0.2	-	-	<.1	-	-	<.1	-	-	-	<.1	-	-	-	-	-
Leptasterias spp.	0.2	0.2	0.3	0.7	0.4	0.5	0.4	0.4	<.1	<.1	0.2	0.4	0.2	0.2	0.2	0.7	0.8	0.2	0.7	0.8	0.2	0.4	0.2
Lottia digitalis	-	-	-	<.1	-	0.2	-	-	-	0.5	-	-	-	0.1	-	-	-	-	0.1	-	-	0.1	-
Lottia limatula	0.3	0.2	0.5	1.3	0.9	1.6	1.2	0.6	1.3	1.5	2.0	0.8	2.3	1.6	1.3	1.7	1.2	1.3	0.3	0.4	0.8	0.8	0.4
Lottia pelta	<.1	0.3	0.6	0.8	0.4	1.1	0.6	0.3	6.6	2.1	0.7	0.2	0.2	0.1	0.3	0.4	0.3	0.3	-	-	-	-	0.3
Macclintockia scabra	1.8	1.3	6.9	5.5	8.0	16.1	11.7	15.9	130.0	132.2	96.5	25.1	11.2	14.0	14.9	7.3	1.9	2.3	0.5	0.7	0.3	0.4	2.1
Mopalia spp.	-	-	0.1	<.1	<.1	<.1	0.2	0.2	<.1	0.4	0.6	0.2	0.4	0.3	0.1	<.1	<.1	0.2	0.2	-	0.3	-	-
Nucella emarginata	<.1	+	<.1	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Nuttallina californica	0.1	0.1	-	0.3	0.3	0.5	0.8	0.6	0.3	0.2	0.8	0.2	0.3	0.2	0.6	0.9	0.8	1.0	0.4	0.4	0.3	0.9	0.9
Ocenebra spp.	-	<.1	0.2	0.8	0.8	0.4	0.3	0.4	1.5	2.5	1.6	0.7	0.5	0.2	0.9	0.4	0.7	0.8	0.3	0.2	0.1	0.2	0.4
Pachygrapsus crassipes	0.2	0.1	0.2	0.1	0.3	0.3	0.3	0.6	0.1	0.3	0.5	0.2	0.5	0.7	0.8	0.5	0.4	0.9	0.3	0.5	0.6	0.4	0.1
Pagurus spp.	6.5	6.9	16.7	14.6	19.5	22.8	17.1	15.7	12.9	13.6	11.3	12.0	10.7	14.3	25.8	38.5	29.8	27.4	23.1	27.3	27.5	11.3	8.2
Pisaster ochraceus	-	-	-	<.1	-	<.1	-	-	-	<.1	<.1	-	-	0.1	-	-	-	-	0.2	<.1	-	-	-
Pseudomelatoma torosa	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	<.1	0.1	<.1	0.2	0.3	0.2	0.2	<.1	-	<.1	<.1	<.1	-	0.1	<.1	-	-	-	<.1	0.5	0.1	0.2	-
Tectura persona	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	0.6	0.2	1.2	1.7	1.7	1.1	3.9	1.2	3.0	2.2	2.0	3.0	1.8	1.0	1.0	1.4	0.5	0.6	0.5	-	0.4	-	0.2
Tegula brunnea	0.2	-	-	0.1	<.1	<.1	0.3	<.1	-	<.1	<.1	-	-	0.2	-	0.1	<.1	-	-	-	-	0.4	-
Tegula funebralis	65.8	69.2	129.7	131.2	162.9	119.9	122.3	190.1	151.3	272.2	290.4	249.8	230.3	212.2	203.6	146.1	118.7	110.7	86.5	157.1	123.6	127.4	127.2
Tetraclita rubescens	0.2	1.9	2.0	0.4	0.6	1.9	0.7	2.6	0.7	1.3	0.5	0.1	0.3	0.3	0.7	3.3	1.5	<.1	0.2	0.3	-	0.8	-
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acmaeidae unid.	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alia spp.	-	-	+	-	-	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bittium spp.	-	-	+	-	-	-	-	+	-	+	+	-	-	-	-	+	+	-	-	-	-	-	-
Cancer spp.	-	-	+	-	-	-	<.1	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-
Cirratulidae/Terebellidae unid.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+	-	-	+	-	-	+	-
Crepidula spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cyanoplax spp.	-	-	-	-	-	<.1	+	-	-	0.3	0.3	0.1	0.2	+	0.1	-	-	-	<.1	<.1	-	-	-
Disulula sandiegensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Diodora spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-	<.1	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	-	-	-
Hemigrapsus oregonensis	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Hipponix spp.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	+	+	+	-	-	+	-
Idotea spp.	<.1	-	<.1	<.1	-	<.1	<.1	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-
Ischnochitonidae	-	-	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	-	-	+	-	-	-
Lacuna spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
Lissothuria nutriens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
Littorina spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	-	-	+	-
Lophopanopeus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Lottia asmi	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0.1	+	+
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	+	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Majidae	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Control Station NC 1 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	5	6	5	6	5	4	3	6	5	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-
Mytilus californianus	-	-	-	-	-	-	-	-	-	<.1	<.1	0.1	0.3	<.1	+	+	<.1	-	+	-	0.2	0.3	1.1
Mytilus galloprovincialis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Nemertea unid.	0.2	-	-	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.5	1.0	<.1	0.1	0.3	<.1	0.2	-	0.1
Nereididae unid.	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Only Counted if Greater than 1" (continued)																							
Nitidiscala/Opalia spp.	-	-	+	+	+	+	-	+	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Petrolisthes spp.	-	-	-	-	0.2	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	+	+	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Pollicipes polymerus	<.1	-	-	-	-	-	-	+	+	+	+	<.1	0.2	<.1	0.8	1.0	2.1	3.2	2.2	3.7	3.1	3.4	3.6
Polychaeta unid.	-	-	-	-	-	+	<.1	-	-	-	-	-	-	-	-	<.1	-	+	-	<.1	-	-	-
Pugettia spp.	-	-	<.1	<.1	-	0.2	<.1	<.1	-	-	<.1	+	-	-	-	-	-	+	<.1	<.1	-	-	-
Pycnogonida unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Serpulidae unid.	-	-	-	<.1	-	-	-	-	-	-	+	<.1	-	-	-	-	-	-	-	-	-	-	-
Serpulorbis squamigerus	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Sipuncula unid.	-	-	<.1	+	<.1	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	-	-
Tricolia spp.	-	-	-	+	-	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Triopha maculata	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Chthamalus fissus	0.2	<.1	+	<.1	<.1	0.2	0.1	0.4	<.1	0.6	0.4	+	+	+	0.1	0.1	0.1	+	+	+	+	+	+
Haliclona spp.	-	-	-	<.1	-	-	-	-	-	+	<.1	<.1	<.1	+	+	+	+	+	+	+	+	+	-
Phragmatopoma californica	-	-	<.1	+	+	+	+	+	+	<.1	+	<.1	+	+	+	+	+	0.1	+	+	+	+	+
Pista spp.	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	-	-	+	+	+	-	-
Porifera unid. (encrusting)	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-
Spirorbidae	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
tunicates, colonial/social unid.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Control Station NC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	5	6	5	6	5	3	3	6	5	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Anthopleura elegantissima	2.2	3.3	4.2	3.7	5.0	3.8	3.6	3.7	3.6	5.1	5.1	5.3	8.7	5.6	7.0	4.7	4.8	3.0	1.0	1.3	0.6	0.6	1.6
Balanus spp.	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	0.3	0.9	1.6	1.1	1.3	0.7	0.3	0.7	-	0.4	0.8	0.2	0.2	0.3	0.6	0.3	0.4	0.6	0.2	0.1	0.2	0.2	0.4
Fissurella volcano	-	0.1	0.3	<.1	0.4	0.3	0.2	0.1	1.5	0.2	<.1	0.1	-	<.1	<.1	0.3	0.5	0.4	0.5	0.2	0.3	0.2	0.9
Haliotis spp.	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	0.2	<.1	-	-	-	-	-
Hemigrapsus nudus	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	0.3	0.1	0.6	0.5	0.6	1.3	1.1	0.5	0.1	0.2	0.8	0.6	0.9	1.2	0.9	0.7	0.6	0.2	0.5	0.5	0.5	0.2	0.6
Lottia digitalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Lottia limatula	-	-	0.2	-	0.1	0.1	<.1	-	0.3	0.7	0.2	0.2	0.2	<.1	0.3	<.1	0.2	0.3	-	<.1	0.1	-	-
Lottia pelta	-	-	0.3	0.2	<.1	0.2	0.1	0.3	3.7	1.4	<.1	<.1	0.2	<.1	0.2	0.3	0.3	0.3	0.1	0.1	0.2	0.1	0.3
Macclintockia scabra	<.1	<.1	<.1	0.1	<.1	-	<.1	-	7.5	17.5	4.9	0.3	<.1	0.3	<.1	0.2	0.3	-	0.2	-	-	-	-
Mopalia spp.	-	-	0.1	0.1	<.1	<.1	0.2	-	0.2	<.1	-	<.1	0.2	<.1	0.2	<.1	0.3	0.1	<.1	-	-	0.1	0.3
Nuttallina californica	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	<.1	0.2	-	-	-	-	0.1
Ocenebra spp.	-	-	0.1	0.2	0.3	0.3	0.3	<.1	0.2	0.5	1.4	0.3	0.4	0.1	0.1	0.2	0.6	0.2	0.1	0.1	0.7	0.2	0.1
Pachygrapsus crassipes	-	<.1	<.1	-	-	-	<.1	0.1	-	0.1	<.1	0.2	0.2	0.1	0.3	0.3	0.2	0.2	0.4	<.1	0.1	-	0.1
Pagurus spp.	12.3	11.9	11.5	12.9	19.0	14.2	15.3	12.6	10.1	10.0	12.7	14.1	12.7	10.4	19.0	22.0	20.8	19.0	14.5	12.5	19.6	22.3	16.0
Pisaster ochraceus	<.1	0.1	<.1	<.1	-	<.1	-	-	0.2	<.1	-	<.1	-	-	-	<.1	-	0.1	-	<.1	-	-	+
Pseudomelatoma torosa	-	-	<.1	-	-	-	-	<.1	-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	0.1
Strongylocentrotus purpuratus	-	-	<.1	-	-	<.1	-	<.1	-	<.1	-	<.1	+	-	0.2	<.1	0.2	0.1	<.1	0.3	-	-	-
Tectura paleacea	-	-	-	+	-	+	+	-	-	-	+	-	-	-	-	+	-	+	-	-	+	-	-
Tectura scutum	0.3	0.3	0.5	0.1	0.2	0.3	0.5	0.1	3.1	1.2	1.4	0.4	-	0.2	0.1	0.7	<.1	0.3	0.3	0.1	0.1	0.1	0.3
Tegula brunnea	2.1	0.7	1.7	2.4	8.5	2.5	3.3	3.3	0.3	1.1	2.3	3.1	0.8	2.3	4.1	8.5	2.0	0.8	2.3	2.4	4.7	5.5	0.3
Tegula funebralis	48.7	40.4	40.6	71.2	98.4	52.3	20.1	62.7	28.0	82.7	86.1	109.8	97.4	62.2	83.0	38.2	40.8	36.1	24.0	31.3	31.8	30.2	99.8
Tetraclita rubescens	-	-	0.8	-	<.1	<.1	<.1	0.5	-	0.8	0.8	0.3	<.1	-	1.2	1.2	1.5	0.1	1.2	-	0.2	1.4	0.5
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	+	-	-	+	-	-	-	<.1	+	-	+	<.1	-	-	-	-	-	-	+	-	+
Acmaeidae unid.	-	<.1	+	+	+	+	+	+	+	+	+	+	0.1	+	+	+	+	+	+	+	+	+	+
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Alia spp.	-	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Amphissa spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-	-
Anthopleura artemisia	<.1	-	<.1	-	-	-	-	<.1	-	-	-	<.1	<.1	-	-	-	-	-	<.1	-	-	-	-
Anthozoa unid.	-	<.1	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Asterina miniata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1	-	-
Asteroidea unid.	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	-	+	-	+	+	-	-	+	+	+	-	-	-	-	+	-	-	-	-	-	-
Bittium spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	-
Cancer antennarius	-	-	-	-	<.1	-	<.1	-	0.1	<.1	<.1	-	-	-	-	<.1	-	<.1	-	-	-	-	-
Cancer spp.	-	-	-	-	<.1	<.1	-	+	-	-	-	-	<.1	-	0.1	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	-	<.1	-	-	-	-	+	-	+	-	-	+	-	+	+	-	-	-	+	-
Clavelina huntsmani	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	0.2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cucumaria spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Cyanoplax spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	<.1	-	-	-	-	-
Diaulula sandiegensis	-	-	-	<.1	-	-	-	-	-	-	-	+	-	<.1	-	-	-	-	-	-	0.1	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	-	+	-	-	-	-
Henricia leviuscula	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	+	+	+	+	+	-	-	-	+	+	-	+	-	-	-	-	+	-	-	-	+	-
Homalopoma spp.	-	-	-	+	+	+	+	+	-	-	-	+	-	-	-	+	+	+	+	-	-	+	-
Idotea spp.	-	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	+	<.1	-	-	-
Ischnochitonidae	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-
Lacuna spp.	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lepidozona spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	+	+	-	-	-
Liasothuria nutriens	-	-	-	-	-	-	-	-	-	+	+	+	+	<.1	+	+	+	+	+	+	+	+	+
Lithopoma gibberosum	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Control Station NC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	5	6	5	6	5	3	3	6	5	6	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Littorina spp.	-	-	-	+	-	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	-
Lottia asmi	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	+	-	+	-	<.1	+	+	-	-	-	+	-	-
Majidae	-	-	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	-	-	-	-	-	-
Megatebennus bimaculatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Mytilus californianus	-	-	-	+	+	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Nemertea unid.	-	-	0.2	0.1	0.4	0.8	0.5	0.2	0.3	0.4	0.3	0.2	0.3	0.4	0.4	0.2	0.1	0.2	0.3	-	0.5	0.1	0.2
Nereididae unid.	-	<.1	<.1	<.1	-	-	-	-	-	-	+	0.1	0.1	0.1	0.2	-	<.1	+	<.1	-	-	-	-
Nitidiscala/Opalia spp.	-	-	+	-	-	+	-	+	-	+	+	+	-	+	-	-	+	+	-	-	-	-	-
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiuroidea unid.	-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	+	-	-	-	-	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	+	+	+	+	+	-	-	<.1	+	+	+	+	-	-	<.1	+	+	+	+	-	-
Polychaeta unid.	-	-	-	-	<.1	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Pugettia spp.	0.2	0.1	0.1	0.2	0.4	0.3	0.2	0.5	0.4	0.3	0.4	0.2	<.1	<.1	0.3	0.4	0.5	0.2	0.2	0.3	0.2	0.4	0.3
Pycnogonida unid.	-	-	+	-	-	<.1	-	-	+	+	-	+	+	+	-	+	+	+	-	-	-	+	-
Pycnopodia helianthoides	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Pyura haustor	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rostanga pulchra	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	<.1	+	-	-	-	-	-	-	+	+	+	-	-	+	-	-	+	-	-	+	-	-
Serpulorbis squamigerus	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Sipuncula unid.	-	-	-	-	-	+	+	+	+	-	<.1	-	-	-	+	-	+	<.1	+	+	+	-	-
Tonicella lineata	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Tricolia spp.	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	-	+	-	-
Urticina spp.	-	<.1	-	<.1	0.1	-	-	-	-	-	<.1	<.1	0.1	0.1	<.1	0.1	0.1	<.1	<.1	-	-	-	-
tunicate, solitary unid.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
% Coverage																							
Acarnus erithacus	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Amphipod (tube)	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	-	+	+	+	-	+	+	-	-	+	+	+	+	-	+	+	+	+	+	-	+	+	-
Bryozoa, unid. (foliose)	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Chthamalus fissus	-	<.1	+	+	+	+	+	-	+	0.2	0.3	<.1	+	+	+	+	+	+	+	-	+	-	-
Dodecaceria fewkesi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-
Eurystomella bilabiata	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haliclona spp.	-	-	-	<.1	-	-	-	-	<.1	+	<.1	+	+	<.1	+	-	+	-	-	-	-	+	-
Phragmatopoma californica	<.1	-	+	+	+	+	+	-	+	<.1	<.1	+	+	<.1	+	+	+	+	+	+	+	+	+
Pista spp.	5.7	0.9	1.2	2.9	1.7	1.3	1.3	0.5	1.9	0.8	0.6	0.6	0.3	0.6	0.9	1.2	1.4	2.5	3.3	2.3	4.7	5.0	2.8
Porifera unid. (encrusting)	+	+	<.1	<.1	<.1	0.2	<.1	0.1	<.1	<.1	<.1	<.1	+	<.1	+	+	+	+	+	+	+	<.1	+
Salmacina tribranchiata	-	-	-	+	+	+	+	-	-	+	+	+	-	+	-	-	+	-	+	+	+	+	-
Spirorbidae	-	-	+	+	+	+	+	+	+	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+
tunicates, colonial/social unid.	0.2	+	<.1	0.5	0.1	0.4	<.1	+	0.1	+	<.1	<.1	<.1	<.1	+	<.1	+	<.1	+	<.1	0.5	2.0	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 1 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	3	3	ns	1	4	4	4	4	4	4	4	3	4
Counted Regardless of Size																							
Acanthina spp.	0.2	-							0.6	0.7	3.4	1.9		1.4	2.0	2.5	1.7	1.1	0.8	0.8	1.1	1.3	1.5
Anthopleura elegantissima	133.9	206.5							359.8	223.4	251.2	259.3		265.0	271.4	316.1	322.2	231.1	222.8	151.6	161.9	152.7	155.5
Anthopleura xanthogrammica	-	-							-	-	-	-		-	-	-	-	-	-	-	-	0.2	-
Conus californicus	-	-							-	-	-	-		-	-	-	-	<.1	-	-	-	-	-
Epiactis prolifera	0.2	-							-	-	<.1	-		0.2	-	-	-	-	-	-	<.1	-	-
Fissurella volcano	-	-							0.4	-	<.1	-		-	-	-	-	-	-	<.1	-	0.1	-
Haliotis spp.	1.2	1.8							0.4	0.4	0.3	0.4		-	<.1	0.1	-	<.1	-	-	<.1	-	-
Hemigrapsus nudus	-	0.1							-	0.4	<.1	-		0.2	-	-	<.1	<.1	<.1	0.1	-	0.1	0.1
Leptasterias spp.	<.1	0.1							-	-	-	0.1		-	-	-	<.1	-	-	-	0.1	<.1	-
Lottia digitalis	-	-							-	-	<.1	-		-	-	-	-	-	-	0.1	-	-	-
Lottia limatula	0.6	0.5							1.8	6.7	4.4	5.0		5.2	4.1	4.2	2.9	4.2	2.8	2.5	4.2	2.8	3.5
Lottia pelta	0.2	-							-	0.3	0.3	-		0.6	0.3	0.5	<.1	0.3	0.4	0.4	0.5	0.5	1.0
Macclintockia scabra	12.9	3.9							9.2	45.3	42.6	46.4		75.0	65.5	67.3	32.7	36.7	9.2	5.8	12.2	14.9	11.3
Mopalia spp.	<.1	-							-	0.2	0.4	0.3		-	0.5	0.2	0.1	<.1	0.2	0.9	0.1	0.2	0.2
Nucella emarginata	-	-							-	-	-	-		-	-	<.1	-	-	-	-	-	-	<.1
Nuttallina californica	-	-							0.4	0.1	<.1	0.2		-	0.4	0.2	-	0.3	-	-	<.1	-	-
Ocenebra spp.	<.1	-							6.0	0.9	2.5	4.3		1.2	3.6	3.1	2.6	2.5	1.7	1.1	1.4	1.1	0.6
Pachygrapsus crassipes	0.3	-							0.6	1.5	0.7	1.3		1.4	0.8	2.0	1.1	0.7	0.9	1.0	1.5	1.2	0.9
Pagurus spp.	33.5	53.5							23.2	23.8	26.7	39.4		32.0	29.4	33.6	34.6	44.9	29.4	41.3	62.1	20.7	19.7
Pisaster ochraceus	<.1	-							0.2	0.1	<.1	-		-	<.1	<.1	0.1	0.2	0.3	0.4	0.1	-	<.1
Strongylocentrotus purpuratus	-	0.1							0.2	0.2	0.1	0.1		-	0.1	0.1	0.2	0.2	0.3	0.4	0.3	<.1	0.2
Tectura persona	0.2	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Tectura scutum	0.6	0.6							0.6	11.1	4.6	1.9		6.6	3.7	3.2	0.6	1.5	1.3	1.9	1.3	1.3	0.7
Tegula brunnea	0.2	-							-	-	-	-		-	<.1	-	<.1	-	-	-	-	-	-
Tegula funebralis	281.2	233.5							260.4	321.5	235.7	269.7		267.6	386.6	310.7	271.2	284.6	261.0	214.5	194.7	249.9	221.3
Tetraclita rubescens	-	-							-	0.1	-	<.1		-	-	0.3	+	0.1	0.3	0.9	0.1	-	<.1
Only Counted if Greater than 1"																							
Acmaea mitra	-	-							-	-	-	+		-	-	+	-	-	-	-	-	-	-
Acmaeidae unid.	0.3	-							+	+	+	+		+	+	+	+	+	+	+	+	+	+
Aeolidia papillosa	-	-							-	-	-	-		-	<.1	-	-	<.1	-	-	-	-	-
Alia spp.	-	-							-	-	-	-		-	-	-	-	-	+	+	-	-	+
Amphissa spp.	-	-							-	-	-	-		-	-	-	-	-	-	+	-	-	-
Bittium spp.	-	-							-	-	-	-		-	-	-	-	-	-	+	+	-	-
Cirratulidae/Terebellidae unid.	-	-							-	-	-	+		-	+	+	-	<.1	-	-	+	0.1	-
Crepidula spp.	-	-							+	+	+	+		-	+	+	+	+	+	+	+	+	-
Cyanoplax spp.	-	0.1							0.6	3.0	0.1	0.7		2.0	3.1	1.8	1.8	0.9	1.0	1.1	0.8	1.2	0.7
Discurria insessa	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-							+	+	+	+		-	+	+	+	-	+	-	-	+	-
Hemigrapsus oregonensis	-	-							-	-	-	-		-	-	-	-	-	<.1	-	-	-	-
Heptacarpus spp.	-	-							-	-	-	+		-	+	+	+	+	-	+	+	-	-
Hipponix spp.	-	-							-	-	-	-		-	0.1	-	-	-	-	-	-	-	-
Homalopoma spp.	-	-							-	-	-	-		-	-	+	-	-	-	+	-	-	-
Idotea spp.	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-							-	+	<.1	+		-	+	+	+	+	+	+	+	-	-
Lacuna spp.	-	-							-	+	+	+		-	+	+	-	-	+	+	+	-	-
Lepidozona spp.	-	-							-	-	-	-		-	-	<.1	-	-	-	-	-	-	-
Littorina spp.	-	-							+	+	+	+		-	+	+	+	+	+	+	+	+	0.4
Lophopanopeus spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	+	-	-
Lottia asmi	-	-							+	+	+	+		+	+	+	<.1	+	+	+	+	+	+
Lottia ochracea	-	-							-	-	-	-		-	-	+	-	-	-	-	-	-	-
Majidae	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	+
Nemertea unid.	-	-							0.4	+	<.1	0.2		0.8	0.2	<.1	<.1	0.1	<.1	0.2	<.1	0.3	0.1
Nereididae unid.	-	-							-	-	-	-		-	<.1	<.1	-	<.1	-	-	<.1	-	-
Nitidiscala/Opalia spp.	-	-							+	-	+	+		-	+	+	+	+	-	-	-	-	+
Octopus spp.	-	-							-	-	-	-		-	-	-	-	-	-	+	-	-	-
Pelecypoda unid.	-	-							-	-	-	-		-	-	-	+	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 1 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	ns	ns	ns	ns	ns	ns	1	2	3	3	ns	1	4	4	4	4	4	4	4	3	4
Only Counted if Greater than 1" (continued)																							
Petrolisthes spp.	-	-							-	+	-	-		-	-	-	-	+	-	-	-	-	-
Polychaeta unid.	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Polynoidae	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-							-	-	<.1	-		-	-	-	+	-	-	-	-	<.1	-
Serpulidae unid.	-	-							-	+	-	-		-	+	+	<.1	<.1	+	+	<.1	-	-
Sipuncula unid.	-	-							-	0.2	-	+		-	+	+	-	+	+	+	+	+	+
Tonicella lineata	-	-							-	-	-	-		-	-	+	-	-	-	-	-	-	-
Xanthidae unid.	-	-							-	-	<.1	-		-	-	-	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Chthamalus fissus	1.0	<.1							0.1	<.1	0.4	0.8		1.5	2.0	1.4	1.4	0.4	0.2	0.6	0.4	0.4	+
Haliclona spp.	-	-							-	+	-	-		+	-	+	-	-	-	-	+	-	-
Phragmatopoma californica	-	0.1							0.3	<.1	<.1	0.1		2.4	2.0	1.2	2.0	0.9	0.3	0.1	+	0.3	<.1
Pista spp.	-	-							-	-	-	-		-	+	+	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	-							-	-	-	+		+	-	-	-	-	-	-	+	-	-
Spirorbidae	-	-							+	+	+	+		-	+	-	+	+	+	+	+	+	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	2	1	ns	1	4	4	4	4	4	4	4	3	4
Counted Regardless of Size																							
Acanthina spp.	<.1	-							-	0.1	-	-		-	-	-	0.1	-	-	-	-	-	-
Anthopleura elegantissima	5.7	9.1							4.6	5.1	9.1	8.6		8.2	9.4	14.1	18.8	10.4	9.4	10.9	10.8	7.3	4.4
Balanus spp.	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-							-	-	-	0.2		-	0.2	-	-	-	-	-	-	-	+
Epiactis prolifera	0.4	1.7							0.4	0.2	0.5	1.0		1.6	2.0	1.1	1.4	1.5	1.1	1.3	1.6	2.1	0.7
Fissurella volcano	0.3	-							0.8	1.8	2.7	0.6		1.8	1.3	1.0	1.8	3.6	3.4	0.6	1.8	2.0	5.2
Fusinus luteopictus	-	-							-	-	-	0.4		-	-	-	0.1	-	-	-	-	-	-
Haliotis spp.	4.6	8.5							1.2	0.1	0.5	0.2		1.0	0.8	0.3	0.4	0.2	<.1	0.2	0.6	-	-
Hemigrapsus nudus	<.1	-							-	-	-	-		-	-	<.1	0.2	-	-	-	-	-	-
Leptasterias spp.	0.2	-							-	0.3	0.3	2.2		0.2	1.3	0.4	0.4	0.8	0.8	0.7	1.0	0.5	<.1
Lottia digitalis	-	-							-	-	-	-		-	-	0.3	-	-	-	-	-	-	<.1
Lottia limatula	0.2	0.1							1.4	0.6	0.5	0.6		0.2	0.7	0.9	1.5	2.6	1.9	0.5	2.3	1.3	2.7
Lottia pelta	0.1	-							3.0	0.6	0.6	-		-	0.1	<.1	0.2	1.8	2.9	3.0	1.9	1.5	11.8
Macclintockia scabra	2.0	14.9							21.4	8.0	23.5	0.8		0.2	0.2	0.3	-	5.0	6.1	1.4	1.9	3.4	27.4
Mitra idae	-	-							-	-	-	-		-	-	-	-	<.1	<.1	-	<.1	<.1	-
Mopalia spp.	-	-							0.2	-	0.2	-		-	<.1	-	-	0.1	0.1	-	<.1	0.2	0.1
Nuttallina californica	0.1	1.5							3.6	3.1	6.3	2.2		3.0	3.7	3.6	4.1	3.2	4.2	5.0	4.2	3.8	3.1
Ocenebra spp.	<.1	-							1.0	0.8	1.8	2.4		0.4	0.9	0.7	1.2	0.5	0.8	0.3	0.9	0.5	0.6
Pachygrapsus crassipes	0.3	0.1							0.2	1.0	0.9	1.6		1.6	1.0	1.3	2.4	2.3	1.6	1.7	2.4	2.6	1.3
Pagurus spp.	4.8	5.9							15.8	14.3	8.8	12.8		25.6	11.4	22.2	12.0	9.8	7.9	10.9	15.2	4.8	5.0
Pisaster ochraceus	0.1	-							0.2	0.2	0.1	0.2		-	<.1	0.3	0.3	0.1	0.1	0.1	<.1	-	0.3
Pseudomelatoma torosa	-	-							0.2	0.1	-	-		-	<.1	<.1	-	-	-	<.1	<.1	+	-
Strongylocentrotus purpuratus	0.1	1.4							-	0.2	-	0.2		0.8	1.3	3.0	3.2	8.9	11.5	7.5	2.4	1.7	1.8
Tectura paleacea	-	-							-	-	-	-		-	-	-	-	-	+	+	+	-	-
Tectura scutum	1.4	0.4							3.4	2.6	6.0	1.6		1.8	0.6	0.7	0.5	2.9	1.6	0.8	1.5	0.9	1.9
Tegula brunnea	8.7	5.3							14.2	23.4	9.1	14.0		5.2	4.5	1.5	4.1	11.8	12.6	12.2	11.1	15.7	7.6
Tegula funebralis	32.1	52.0							25.0	52.9	128.3	220.2		168.8	136.8	229.9	164.9	27.4	1.8	1.2	3.2	4.3	5.3
Tetraclita rubescens	9.2	14.4							11.6	3.7	9.6	5.0		3.0	25.2	31.4	30.4	49.9	69.6	14.4	13.7	11.7	6.4
Only Counted if Greater than 1"																							
Acmaea mitra	0.2	-							0.2	0.3	0.4	-		-	+	-	0.3	<.1	0.4	0.1	<.1	+	+
Acmaeidae unid.	-	-							+	0.1	+	+		-	+	+	+	+	+	+	+	+	+
Aldisa sanguinea	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Alia spp.	-	-							+	+	+	+		-	-	+	+	+	+	+	+	+	+
Amphissa spp.	-	-							-	+	-	-		-	-	-	-	-	-	-	-	+	-
Barleeia spp.	-	-							-	+	-	-		-	+	-	-	-	-	-	-	-	+
Bittium spp.	-	-							+	+	+	-		-	-	+	-	+	+	-	+	-	+
Cancer antennarius	-	-							-	-	-	-		-	-	-	-	-	0.1	-	-	<.1	-
Chaetopteridae	-	-							-	-	-	-		-	-	-	+	+	-	-	-	-	-
Crepidula spp.	-	-							+	+	+	+		+	+	+	+	+	+	+	+	+	-
Cucumaria spp.	-	-							-	-	+	-		-	-	-	-	-	-	-	-	-	-
Cyanoplax spp.	-	-							-	+	-	-		-	-	-	-	<.1	-	-	+	<.1	+
Diodora spp.	-	-							-	-	-	-		-	-	-	-	<.1	-	-	<.1	<.1	-
Discurria insessa	-	-							-	-	-	-		-	-	-	-	-	0.3	+	+	+	+
Doriopsilla albopunctata	-	-							-	0.1	-	-		-	-	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-							-	+	+	+		-	+	-	+	+	+	-	-	+	+
Henricia leviuscula	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-							-	-	-	-		-	-	-	+	0.3	-	-	-	-	-
Hermissenda crassicornis	-	-							-	-	-	-		-	+	-	-	-	+	-	-	-	-
Homalopoma spp.	-	-							-	-	+	-		-	-	-	+	+	-	+	-	-	+
Idotea spp.	-	-							-	-	-	-		-	-	-	-	-	-	<.1	-	-	-
Ischnochitonidae	-	-							-	+	+	-		-	-	-	+	<.1	+	+	+	+	-
Lacuna spp.	-	-							+	+	+	+		+	+	+	+	+	+	+	+	+	+
Lepidozona spp.	-	-							-	0.1	-	-		-	-	-	+	-	-	+	-	-	-
Lissothuria nutriens	-	-							-	+	+	-		-	-	+	-	+	+	+	<.1	-	+
Littorina spp.	-	-							-	-	+	-		-	+	-	-	+	-	-	-	-	-
Lottia asmi	-	-							+	+	+	+		+	+	+	+	+	+	-	+	-	+

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	ns	ns	ns	ns	ns	ns	1	2	2	1	ns	1	4	4	4	4	4	4	4	3	4
Only Counted if Greater than 1" (continued)																							
Majidae	-	-							+	-	-	-		-	+	-	-	+	-	-	-	-	-
Mytilus californianus	-	-							-	-	-	-		-	+	-	-	+	-	-	-	-	-
Natantia unid.	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Nemertea unid.	-	-							0.6	0.5	0.1	1.4		-	0.1	0.3	0.4	1.5	0.8	0.7	0.6	0.9	0.3
Nereididae unid.	-	-							-	-	-	-		-	+	-	-	-	0.2	<.1	<.1	-	<.1
Nitidiscala/Opalia spp.	-	-							-	+	+	-		-	-	-	-	+	+	+	-	-	-
Octopus spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	-	-	<.1
Ophiactis simplex	-	-							-	-	-	-		-	-	-	-	-	-	-	-	+	-
Ophiothrix spp.	-	-							-	-	-	-		-	<.1	-	-	-	-	-	-	-	-
Panulirus interruptus (puerulus stage)	-	-							-	-	-	-		-	-	-	-	-	-	-	-	<.1	-
Pelecypoda unid. boring	-	-							-	-	-	-		-	+	-	-	-	+	-	-	-	-
Petrolisthes spp.	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-							-	-	-	-		-	-	-	-	<.1	-	-	-	+	<.1
Pisaster/Henricia (juv.)	-	-							-	-	-	+		-	-	+	+	<.1	+	+	+	<.1	-
Polychaeta unid.	-	-							-	0.1	-	-		-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-							-	0.6	-	+		0.4	<.1	0.1	0.2	+	0.3	<.1	0.5	0.5	<.1
Pycnogonida unid.	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Pycnopodia helianthoides	-	0.1							-	-	-	-		-	-	-	-	<.1	-	-	<.1	<.1	-
Serpulidae unid.	-	-							+	0.1	+	0.2		0.4	0.2	0.3	0.3	0.5	0.3	0.7	0.9	0.4	0.5
Serpulorbis squamigerus	-	-							-	+	0.1	0.8		-	0.3	0.2	0.4	0.2	0.2	0.4	0.3	0.1	0.4
Sipuncula unid.	-	-							-	-	-	+		-	+	<.1	<.1	+	+	+	+	+	+
Stenoplax spp.	<.1	-							-	-	0.2	0.2		-	0.3	-	<.1	-	<.1	-	-	-	-
Tonicella lineata	-	-							-	0.1	-	0.2		-	-	-	-	-	-	-	+	<.1	-
Tricolia spp.	-	-							-	+	+	-		-	-	-	-	+	+	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-							+	-	-	+		-	+	-	-	+	+	+	+	+	+
Chthamalus fissus	0.9	0.7							+	0.2	0.2	0.7		+	+	+	+	+	+	+	+	+	+
Eurystomella bilabiata	-	-							-	-	-	-		-	-	-	-	-	+	-	-	+	-
Haliclona spp.	-	-							-	-	-	-		-	-	+	-	-	-	-	-	-	-
Phragmatopoma californica	-	-							+	+	+	+		+	+	+	+	0.1	+	+	+	+	0.3
Pista spp.	-	-							+	0.3	0.2	0.1		+	<.1	0.1	0.3	0.3	0.3	1.0	1.8	0.9	1.1
Porifera unid. (encrusting)	-	-							-	<.1	+	-		-	+	-	+	-	+	+	+	+	+
Salmacina tribranchiata	-	-							-	-	-	-		-	-	-	-	-	<.1	+	-	-	+
Spirorbidae	-	-							+	0.1	+	+		+	+	+	<.1	+	+	+	+	+	+
tunicates, colonial/social unid.	<.1	-							+	0.1	+	+		+	+	+	+	+	<.1	<.1	+	0.1	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 2 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	3	3	ns	1	4	4	4	4	4	4	4	4	4
Counted Regardless of Size																							
Acanthina spp.	0.5	0.5							0.8	1.6	3.3	1.5		1.4	1.2	1.1	1.5	0.9	1.4	1.4	1.0	1.1	0.9
Anthopleura elegantissima	104.6	141.5							125.2	113.2	98.5	143.5		145.0	105.8	129.0	150.0	103.1	58.2	53.9	60.3	60.7	49.7
Balanus spp.	-	2.3							-	0.9	0.3	-		0.2	0.1	0.1	<.1	-	0.1	0.1	-	-	-
Calliostoma ligatum	-	-							-	-	-	-		-	-	-	-	<.1	-	-	-	+	-
Epiactis prolifera	-	-							-	-	-	-		-	-	-	-	-	0.1	-	-	+	-
Fissurella volcano	-	-							-	-	-	-		-	<.1	-	-	0.1	-	<.1	-	-	-
Haliotis spp.	0.6	1.2							3.2	2.3	2.0	2.8		1.0	2.1	1.5	0.5	<.1	<.1	0.3	0.1	0.3	0.2
Hemigrapsus nudus	-	-							-	0.1	-	-		0.2	-	<.1	-	<.1	-	-	<.1	<.1	-
Leptasterias spp.	-	-							-	-	-	-		-	<.1	-	-	-	-	-	-	<.1	-
Lottia digitalis	0.4	0.9							0.6	0.1	0.1	1.3		1.8	1.7	1.1	0.7	0.9	1.2	1.3	0.4	1.1	0.3
Lottia limatula	0.7	0.7							4.6	3.4	6.7	4.7		0.6	6.2	3.6	3.1	4.4	4.2	2.1	2.7	4.8	4.0
Lottia pelta	0.4	0.4							0.8	1.5	0.8	1.5		0.2	0.5	0.5	1.5	2.0	1.7	1.6	1.1	1.4	0.7
Macclintockia scabra	11.4	13.7							12.8	56.6	68.5	45.5		144.6	57.7	52.7	26.8	35.4	14.2	12.5	32.1	25.5	19.3
Nopalia spp.	-	-							-	0.1	0.3	0.3		0.2	0.4	0.1	-	<.1	-	-	<.1	0.2	<.1
Nucella emarginata	<.1	0.3							-	0.1	0.5	0.2		-	<.1	<.1	<.1	0.1	<.1	-	<.1	0.1	-
Nuttallina californica	-	-							0.6	0.2	0.5	0.7		0.2	0.3	0.3	0.2	0.3	0.3	<.1	-	-	-
Ocenebra spp.	-	-							1.0	2.2	1.9	2.8		0.6	0.8	1.0	1.4	0.9	0.7	1.0	1.1	1.1	0.2
Pachygrapsus crassipes	0.1	0.4							1.6	1.3	0.9	0.6		-	2.1	1.8	0.8	1.2	1.6	1.6	1.3	1.6	1.0
Pagurus spp.	8.0	20.8							3.4	27.6	20.7	17.3		10.6	6.8	6.9	8.8	11.9	11.7	7.3	9.8	10.3	5.9
Pisaster ochraceus	0.1	-							-	-	-	-		-	0.1	0.1	-	-	-	-	<.1	<.1	-
Strongylocentrotus purpuratus	-	0.2							-	-	-	-		-	-	-	-	-	0.1	-	<.1	<.1	-
Tectura persona	-	-							-	-	-	-		-	-	-	-	-	-	-	-	-	<.1
Tectura scutum	1.3	2.7							1.4	8.2	7.8	5.3		8.2	3.3	2.3	0.6	2.9	3.1	2.0	3.0	3.2	0.6
Tegula brunnea	-	0.1							-	-	-	<.1		-	-	-	<.1	-	-	-	-	-	-
Tegula funebralis	154.7	136.7							145.8	191.2	153.6	178.9		240.4	194.2	141.6	153.3	151.7	121.7	161.1	128.7	177.8	142.7
Tetraclita rubescens	-	-							-	-	1.1	+		-	0.2	<.1	0.3	-	-	-	-	-	-
Only Counted if Greater than 1"																							
Acmaea mitra	-	-							-	-	-	-		-	+	-	-	-	-	-	-	-	-
Acmaeidae unid.	0.3	-							+	+	+	+		+	+	<.1	+	+	+	+	+	+	+
Alloioplana californica	-	-							-	-	-	-		-	-	-	-	-	-	-	-	+	-
Amphissa spp.	-	-							-	-	-	-		-	-	-	-	-	-	+	<.1	-	-
Cirratulidae/Terebellidae unid.	-	-							-	-	-	0.2		-	+	0.3	-	+	-	+	+	+	+
Crepidula spp.	-	-							+	+	+	-		-	+	-	+	+	+	-	-	+	+
Cyanoplax spp.	-	-							0.4	2.4	1.1	2.2		0.8	3.7	2.3	1.2	1.1	1.5	1.1	0.8	0.4	1.7
Grapsidae (juv.)	-	-							+	+	+	+		-	+	+	+	+	+	+	-	-	-
Heptacarpus spp.	-	-							-	+	-	-		-	+	-	<.1	-	-	-	-	-	-
Idotea spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	-	+	-
Ischnochitonidae	-	0.5							+	+	+	+		+	+	-	+	+	+	+	+	+	+
Isopoda unid.	-	-							-	+	-	-		-	-	+	-	-	-	-	-	-	-
Lacuna spp.	-	-							-	+	+	+		-	-	+	-	-	-	+	+	-	-
Littorina spp.	-	-							+	+	+	+		+	+	+	+	+	+	+	+	+	+
Lottia asmi	-	-							+	+	+	+		+	+	+	+	+	+	+	+	+	+
Lottia gigantea	-	-							-	-	-	<.1		-	0.2	-	<.1	-	-	-	-	-	-
Lottia ochracea	-	-							-	-	-	-		-	-	+	+	-	-	-	-	-	-
Majidae	-	-							-	-	-	+		-	-	-	-	-	-	-	-	-	-
Modiolus spp.	-	-							-	-	-	-		-	-	+	-	-	-	-	-	-	-
Mytilidae	-	-							-	-	-	+		+	-	-	-	-	+	-	-	-	-
Mytilus californianus	-	-							-	+	-	-		-	<.1	-	-	+	-	-	-	-	-
Natantia unid.	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Nemertea unid.	<.1	-							-	0.9	<.1	+		-	0.2	0.1	-	+	<.1	0.2	-	0.1	-
Nereididae unid.	-	-							-	0.1	-	-		-	<.1	-	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-							-	-	+	-		-	-	+	+	+	-	-	+	+	+
Pisaster/Henricia (juv.)	-	-							-	-	-	-		-	-	-	<.1	-	-	-	-	-	-
Pollicipes polymerus	0.1	-							0.2	0.2	0.5	0.3		1.4	4.9	2.2	0.8	2.3	1.1	1.0	0.2	1.5	0.5
Polychaeta unid.	-	-							-	0.1	-	+		-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-							-	-	-	<.1		-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 2 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	ns	ns	ns	ns	ns	ns	1	2	3	3	ns	1	4	4	4	4	4	4	4	4	4
Only Counted if Greater than 1" (continued)																							
Serpulidae unid.	-	-							-	-	-	-		-	-	-	-	-	-	+	-	-	+
Sipuncula unid.	-	-							-	0.2	-	-		-	+	-	+	+	+	+	-	+	+
Spionidae unid.	-	-							-	-	+	-		-	-	-	-	-	-	-	-	-	-
Tonicella lineata	-	0.1							-	-	-	-		0.2	-	-	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-							-	-	-	-		-	-	-	+	-	-	-	-	-	-
Chthamalus fissus	0.8	0.5							+	0.3	0.5	0.7		+	+	+	<.1	+	+	+	+	+	+
Phragmatopoma californica	0.3	1.5							0.1	<.1	0.3	0.5		1.0	1.1	0.3	0.1	<.1	0.1	<.1	<.1	0.2	<.1
Spirorbidae	-	-							-	-	-	+		-	-	+	-	-	-	+	0.1	-	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 2 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	2	2	1	ns	1	4	4	4	4	4	4	4	4	4
Counted Regardless of Size																							
Acanthina spp.	-	-							-	0.1	-	-		-	-	-	-	-	<.1	-	-	-	-
Anthopleura elegantissima	29.4	45.9							23.6	20.0	14.9	26.4		27.6	40.3	44.7	46.5	31.0	26.7	21.0	22.2	12.1	10.1
Balanus spp.	<.1	-							-	2.0	0.4	-		0.8	0.5	-	0.1	-	-	-	-	-	-
Calliostoma ligatum	-	-							-	-	-	-		-	<.1	-	-	-	-	-	<.1	0.1	-
Epiactis prolifera	0.2	0.4							-	0.5	0.3	-		0.8	0.4	0.5	0.4	1.1	1.3	0.8	0.4	0.7	0.2
Fissurella volcano	0.2	0.4							4.8	1.5	3.5	1.8		3.8	2.5	1.8	2.9	2.7	2.2	1.5	1.1	5.1	3.8
Fusinus luteopictus	-	-							-	-	0.5	-		0.2	0.1	-	+	-	-	-	<.1	0.1	-
Haliotis spp.	4.6	8.6							1.4	0.9	1.3	1.6		0.6	0.7	0.2	0.3	0.2	0.3	-	-	-	<.1
Hemigrapsus nudus	0.1	-							-	-	0.4	0.2		-	-	-	<.1	-	-	-	-	-	-
Leptasterias spp.	<.1	0.3							1.2	2.0	2.4	2.8		0.4	1.2	0.9	0.6	1.1	1.2	1.1	1.3	0.9	0.1
Lottia digitalis	-	-							-	0.1	-	-		-	-	-	-	-	-	-	-	-	-
Lottia limatula	-	-							1.6	1.3	2.3	0.4		1.2	2.8	1.9	2.1	1.5	1.5	1.0	1.0	1.8	3.1
Lottia pelta	-	-							8.2	0.3	1.0	0.8		0.2	0.2	0.7	0.7	1.1	0.9	0.5	0.7	0.9	4.9
Macclintockia scabra	0.3	1.2							15.0	9.1	26.5	13.2		5.8	6.7	3.9	1.8	4.7	11.1	4.3	2.5	2.6	19.8
Mitra idae	-	-							-	-	-	-		-	-	-	-	-	<.1	-	-	-	-
Mopalia spp.	0.1	-							-	0.1	0.3	-		0.2	0.2	<.1	-	0.1	-	<.1	0.1	0.2	-
Nuttallina californica	1.1	9.3							28.2	10.4	15.9	10.0		3.2	10.1	13.6	12.9	6.1	6.1	5.9	5.5	12.4	5.8
Ocenebra spp.	0.1	-							0.4	0.6	0.2	0.8		2.0	0.9	1.0	1.1	0.5	1.1	0.4	0.4	1.1	0.2
Pachygrapsus crassipes	0.2	0.2							0.4	0.5	0.7	0.8		1.2	1.6	1.3	1.1	2.0	1.5	1.8	1.4	1.4	1.5
Pagurus spp.	7.8	16.3							18.2	17.1	16.4	18.4		15.0	19.9	17.8	21.4	13.8	14.9	25.5	24.6	16.7	7.1
Pisaster ochraceus	-	0.2							0.2	0.2	0.3	0.4		0.2	0.3	0.2	0.5	0.5	0.2	0.2	0.3	0.4	0.3
Pseudomelatoma torosa	-	-							-	-	-	-		-	<.1	<.1	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	1.2	3.8							1.4	1.6	1.7	3.4		8.6	13.0	15.6	16.4	23.8	33.7	37.9	23.5	22.4	27.0
Tectura paleacea	-	-							-	-	-	-		-	-	-	-	-	-	-	-	-	+
Tectura persona	0.2	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Tectura scutum	0.4	0.3							2.0	3.8	2.6	2.4		4.4	2.4	1.1	0.7	1.2	2.0	0.9	1.0	0.3	0.4
Tegula brunnea	0.9	2.0							6.6	5.3	5.0	0.4		2.2	5.6	4.1	8.8	10.0	9.7	5.2	3.5	6.7	6.8
Tegula funebralis	41.8	95.0							56.2	70.1	141.3	77.6		273.8	162.8	187.9	71.1	88.4	36.6	38.9	73.8	62.4	46.0
Tetraclita rubescens	9.2	16.3							9.8	14.5	7.1	14.6		1.6	20.3	14.2	16.4	21.5	51.9	4.3	9.4	5.0	3.0
Only Counted if Greater than 1"																							
Acmaea mitra	<.1	-							+	+	0.3	-		0.4	0.2	+	0.1	0.1	0.2	0.1	0.2	0.2	<.1
Acmaeidae unid.	-	-							+	0.1	+	+		+	+	+	+	+	+	+	+	+	+
Aegires albopunctatus	-	-							-	-	-	-		-	-	-	-	-	+	-	-	-	-
Aeolidia papillosa	-	-							-	-	-	-		-	-	-	-	-	<.1	-	-	-	-
Alia spp.	-	-							-	+	+	+		-	+	+	+	+	-	+	+	+	-
Amphissa spp.	-	-							-	+	-	-		+	-	-	+	+	-	-	+	+	-
Bittium spp.	-	-							-	-	+	-		-	-	-	+	+	-	-	-	-	-
Cadlina spp.	-	-							-	-	-	-		-	-	-	+	-	-	-	-	-	-
Cancer antennarius	-	0.1							-	+	-	-		-	-	-	-	-	-	-	+	-	-
Cirratulidae/Terebellidae unid.	-	-							-	+	-	-		-	+	+	-	+	-	-	<.1	+	-
Crepidula spp.	+	-							+	+	+	+		+	+	+	+	+	-	+	+	+	-
Cryptochiton stelleri	-	-							-	-	-	-		-	-	-	-	-	-	-	-	<.1	-
Cyanoplax spp.	-	-							-	0.5	-	-		-	<.1	<.1	<.1	-	<.1	0.1	<.1	-	+
Diaulula sandiegensis	-	-							-	-	-	-		-	-	-	-	-	<.1	-	-	-	-
Diopatra ornata	-	-							-	-	-	-		-	-	0.1	-	-	-	-	-	-	-
Discurria insessa	-	-							+	+	-	-		-	-	-	-	+	+	-	+	+	+
Doriopsilla albopunctata	-	-							-	-	-	-		-	-	-	-	-	-	-	-	<.1	-
Erato spp.	-	-							-	-	-	-		-	-	-	-	-	-	-	+	-	-
Grapsidae (juv.)	-	-							+	+	+	+		-	+	+	+	+	-	-	+	-	-
Halcampa decemtentacula	-	-							0.2	-	-	-		-	-	-	-	-	-	-	-	-	-
Henricia leviuscula	-	-							-	-	-	+		-	<.1	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-							-	+	+	-		-	-	+	-	-	+	-	+	-	-
Hermissenda crassicornis	-	-							-	-	-	-		-	-	+	-	-	-	-	-	-	-
Homalopoma spp.	-	-							+	+	-	-		-	+	+	+	+	-	-	+	+	-
Idotea spp.	-	-							-	-	-	-		-	-	-	-	-	-	+	-	-	-
Ischnochitonidae	-	-							+	+	+	+		-	+	-	+	-	+	+	+	+	+

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 2 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	ns	ns	ns	ns	ns	ns	1	2	2	1	ns	1	4	4	4	4	4	4	4	4	4
Only Counted if Greater than 1" (continued)																							
Isopoda unid.	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Lacuna spp.	-	-							+	+	+	+		-	+	+	+	+	+	+	+	+	+
Lepidozona spp.	-	-							-	-	-	-		+	-	-	-	-	-	-	-	-	-
Lissothuria nutriens	-	-							-	-	-	-		+	+	+	<.1	+	+	+	+	+	-
Littorina spp.	-	-							-	-	-	-		-	+	+	+	+	-	+	0.1	-	+
Lophopanopeus spp.	-	-							-	0.1	-	-		-	-	-	-	-	-	-	+	-	-
Lottia asmi	-	-							+	+	+	+		+	+	+	+	+	+	+	+	+	+
Lottia gigantea	-	-							-	-	-	-		-	-	-	-	-	-	-	-	-	+
Lottia ochracea	<.1	-							-	+	-	-		-	+	+	-	-	-	-	-	-	-
Macoma spp.	-	-							-	-	-	-		-	-	-	-	+	-	-	-	-	-
Majidae	-	-							-	+	-	+		-	-	+	+	-	-	-	-	-	<.1
Musculus pygmaeus	-	-							-	-	+	-		-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-							-	-	-	-		-	-	-	+	-	-	+	-	-	-
Mytilus californianus	0.1	-							+	+	0.4	-		-	-	-	+	+	+	+	+	+	+
Natantia unid.	-	-							-	-	-	-		-	-	-	-	+	-	-	-	-	-
Nemertea unid.	-	0.1							2.0	0.9	0.2	0.6		-	0.3	0.1	0.2	0.4	0.5	0.8	1.2	0.5	<.1
Nereididae unid.	-	-							-	-	-	-		-	0.2	0.1	<.1	<.1	0.2	<.1	0.1	<.1	+
Nitidiscala/Opalia spp.	-	-							-	+	+	-		-	-	+	<.1	+	-	+	-	+	-
Ophiothrix spp.	-	-							-	-	-	-		-	<.1	-	-	<.1	-	<.1	-	-	-
Ophiuroidea unid.	-	-							-	-	-	+		0.2	-	-	-	-	-	-	-	-	-
Orthasterias koehleri	<.1	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-							-	-	-	-		-	-	-	-	+	+	+	+	+	-
Petrolisthes spp.	-	-							-	-	-	-		-	<.1	-	-	<.1	-	-	-	-	-
Phidiana hiltoni	-	-							-	-	-	-		-	-	-	<.1	-	-	-	-	-	-
Pisaster giganteus	-	-							-	-	-	-		-	-	-	-	-	-	-	<.1	-	-
Pisaster/Henricia (juv.)	-	-							-	-	-	-		-	-	+	+	+	+	-	+	-	-
Platyhelminthes unid.	-	-							-	-	-	-		-	-	-	-	-	-	-	-	<.1	-
Pollicipes polymerus	-	-							+	+	+	-		-	-	-	-	-	+	+	-	-	-
Polychaeta unid.	-	-							-	-	-	+		-	-	-	-	-	-	-	-	-	-
Polynoidae	-	-							-	-	+	-		-	-	-	-	<.1	-	-	-	-	-
Pugettia spp.	-	-							0.2	+	+	+		0.2	0.2	<.1	+	0.2	<.1	0.1	0.3	0.6	<.1
Sabellidae	-	-							-	-	-	+		-	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	-							+	+	0.2	0.2		0.4	0.6	0.7	0.1	0.4	0.7	0.3	0.2	0.7	0.5
Serpulorbis squamigerus	-	-							-	0.4	2.2	-		1.6	1.9	1.7	1.3	2.8	2.3	3.5	1.0	2.7	1.0
Sipuncula unid.	-	-							-	0.1	0.1	0.2		+	<.1	+	0.1	+	<.1	+	+	+	+
Stenoplax spp.	-	-							-	-	-	-		-	-	-	-	-	<.1	-	-	-	-
Tonicella lineata	-	-							-	0.2	0.3	0.2		0.2	0.1	<.1	<.1	-	-	-	<.1	0.4	0.1
Tricolia spp.	-	-							-	-	-	-		+	-	-	-	-	-	-	-	+	-
Triopha catalinae (prev. T. carpenteri)	<.1	-							-	-	-	-		-	-	-	-	-	-	-	-	-	-
Triopha maculata	-	-							-	-	0.1	-		-	-	-	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-							+	+	+	-		+	+	+	-	+	+	+	+	+	-
Chthamalus fissus	+	+							+	0.3	1.0	0.7		0.1	<.1	+	+	<.1	+	+	+	+	+
Dodecaceria fewkesi	-	-							+	-	+	-		+	-	+	+	+	+	+	+	-	-
Eurystomella bilabiata	-	-							-	+	-	-		-	-	-	-	-	-	-	-	-	-
Haliclona spp.	-	-							-	-	-	-		-	-	-	-	-	-	+	-	-	-
Phragmatopoma californica	-	-							+	+	+	+		+	+	+	<.1	+	+	+	+	+	+
Pista spp.	-	-							+	+	<.1	+		+	+	<.1	0.1	<.1	+	+	<.1	<.1	+
Porifera unid. (encrusting)	-	-							+	+	+	+		+	+	+	+	+	0.1	+	+	+	+
Salmacina tribranchiata	-	-							+	-	+	+		-	-	-	+	+	-	+	+	+	-
Spirorbidae	-	-							+	+	+	+		+	+	+	<.1	+	+	+	+	+	+
tunicates, colonial/social unid.	-	-							+	+	<.1	-		+	+	+	+	+	<.1	+	+	0.2	<.1

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 3 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4
Counted Regardless of Size																							
Acanthina spp.	0.2	0.1	0.8	0.6	0.3	0.4	0.1	0.5	0.7	1.0	1.1	0.5	0.2	0.7	0.5	0.2	0.3	0.4	0.4	0.4	<.1	0.3	0.3
Anthopleura elegantissima	18.1	15.7	13.5	16.3	26.1	27.5	21.0	22.2	18.7	19.0	19.3	24.6	21.1	25.8	28.9	25.3	24.5	18.7	14.2	12.9	10.2	10.5	5.1
Anthopleura xanthogrammica	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Balanus spp.	0.2	-	0.6	-	<.1	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	-	-	<.1	-	0.1	<.1	<.1	-	-	-	-	-	-	-	<.1	-	<.1	<.1	-	-	-	-	-
Fissurella volcano	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	0.1	-	-	-	-
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Haliotis spp.	-	<.1	0.1	<.1	<.1	0.1	0.2	0.3	0.2	<.1	<.1	0.1	0.2	0.5	0.2	<.1	-	-	-	-	-	-	<.1
Hemigrapsus nudus	-	<.1	0.1	0.1	-	<.1	-	0.1	-	<.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	<.1	-	+	0.2	0.2	0.1	0.1	0.2	<.1	-	<.1	0.1	<.1	<.1	<.1	-	<.1	0.1	<.1	<.1	0.2	0.1	-
Lottia digitalis	-	<.1	0.2	<.1	0.3	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Lottia limatula	0.1	0.1	0.4	0.7	0.7	0.7	0.4	0.1	0.2	1.7	1.3	1.9	0.9	1.5	1.9	1.4	1.4	2.0	1.3	0.6	1.8	1.6	6.0
Lottia pelta	0.1	-	0.4	0.2	0.3	0.5	0.4	0.2	0.3	0.4	0.7	0.2	0.5	0.3	0.3	0.5	0.5	0.8	0.9	1.3	0.4	0.5	2.1
Macclintockia scabra	7.3	5.1	7.7	5.8	18.6	19.1	25.6	7.2	11.8	12.8	21.4	15.9	15.5	11.0	14.0	13.3	7.8	4.6	3.5	3.7	4.6	6.3	8.8
Mopalia spp.	0.1	-	0.2	0.4	0.2	<.1	<.1	0.2	<.1	<.1	<.1	<.1	0.2	0.2	<.1	-	-	<.1	-	0.1	<.1	<.1	0.2
Nucella emarginata	0.3	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Nuttallina californica	-	0.1	0.3	0.2	0.4	0.2	0.1	0.5	0.2	<.1	0.7	0.7	0.2	0.2	0.2	-	-	0.1	-	0.2	0.1	-	0.1
Ocenebra spp.	-	-	0.9	1.0	1.1	1.5	0.8	1.9	1.2	1.4	1.5	1.4	1.6	0.9	1.1	1.0	1.0	0.6	1.0	1.1	1.3	1.4	0.1
Pachygrapsus crassipes	-	0.2	0.2	0.4	0.4	0.2	0.5	0.3	0.3	0.2	0.4	0.7	0.2	0.6	0.8	1.3	0.7	1.0	0.8	0.9	1.0	0.7	0.8
Pagurus spp.	12.2	11.8	8.5	6.7	16.7	20.1	12.4	13.1	11.4	11.6	12.0	14.9	11.9	13.9	15.2	18.0	15.9	16.9	23.6	13.5	9.6	13.3	13.9
Pisaster ochraceus	<.1	-	-	-	<.1	-	<.1	<.1	-	-	<.1	0.1	-	-	-	-	<.1	0.2	0.2	0.2	<.1	0.1	<.1
Strongylocentrotus purpuratus	<.1	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	0.2	<.1	0.2	0.3	<.1	-	<.1	<.1
Tectura scutum	0.6	0.3	0.6	0.8	1.3	1.6	0.6	0.6	0.8	2.3	1.8	1.3	1.0	2.7	0.7	1.1	0.3	<.1	1.1	0.4	0.8	0.4	0.5
Tegula brunnea	-	-	<.1	-	<.1	-	-	0.2	-	-	<.1	<.1	-	-	<.1	-	<.1	-	-	-	0.1	-	<.1
Tegula funebralis	168.2	150.5	197.6	243.0	179.0	209.1	182.2	228.6	163.4	256.5	277.8	291.1	201.8	179.3	313.8	203.8	302.9	261.1	229.8	237.9	184.4	225.3	262.3
Tetraclita rubescens	-	-	0.5	<.1	<.1	0.5	0.1	<.1	-	<.1	-	<.1	-	-	-	-	<.1	0.3	<.1	<.1	-	-	<.1
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-
Acmaeidae unid.	-	-	+	+	+	+	+	+	<.1	+	+	+	+	0.1	+	+	+	+	+	+	+	0.4	+
Alia spp.	-	-	+	+	-	+	-	-	+	+	-	+	-	-	+	+	-	+	+	-	-	+	-
Amphissa spp.	-	-	+	-	-	<.1	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
Anthozoa unid.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bittium spp.	-	-	+	-	-	+	-	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-	-
Chaetopteridae	-	-	-	-	<.1	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-	+	-	-	-	-	<.1	+	-	+	0.2	+	+	+	+	-	+	-	+	-	-	+
Crangon spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cryptolithodes sitchensis	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanoplax spp.	-	-	<.1	0.2	0.1	0.3	0.3	+	-	0.4	0.2	0.7	1.0	1.0	1.8	1.3	0.3	0.8	0.5	0.7	0.5	0.5	0.1
Diaulula sandiegensis	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Discurria insessa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Grapsidae (juv.)	-	-	+	+	+	+	+	+	+	+	+	+	+	+	<.1	-	+	+	-	+	-	-	-
Heptacarpus spp.	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Homalopoma spp.	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
Idotea spp.	-	-	+	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-	<.1	0.1	<.1	<.1	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	-	-
Lacuna spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-
Lissothuria nutriens	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	+	-	-	-
Littorina spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lottia asmi	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Majidae	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilus californianus	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nemertea unid.	-	-	0.2	0.2	0.3	0.1	0.1	0.3	0.2	0.3	0.1	0.4	0.2	0.2	0.3	0.2	<.1	0.3	0.3	<.1	-	0.1	<.1
Nereididae unid.	-	-	-	<.1	<.1	<.1	-	<.1	-	-	-	-	<.1	-	<.1	<.1	-	<.1	+	-	-	-	<.1

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 3 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	3	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4
Only Counted if Greater than 1" (continued)																							
Nitidiscala/Opalia spp.	-	-	+	+	+	+	-	+	+	+	+	+	+	-	<.1	-	+	-	+	-	-	-	-
Ophiuroidea unid.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Platyhelminthes unid.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Polychaeta unid.	-	-	-	-	-	<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-	<.1	<.1	+	<.1	<.1	<.1	-	+	+	<.1	-	+	+	-	0.1	<.1	-	<.1	<.1	-	-
Rostanga pulchra	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	-	+	-	-	-	-	-	+	<.1	-	+	-	-	+	-	<.1	-	+	+	+	-	<.1
Sipuncula unid.	-	-	+	+	-	-	-	-	<.1	+	+	+	0.1	+	0.1	-	+	-	+	+	-	+	+
Spionidae unid.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tonicella lineata	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Tricolia spp.	-	-	-	+	-	-	-	-	-	-	+	-	-	-	+	+	-	+	-	-	-	-	-
% Coverage																							
Chthamalus fissus	2.3	0.4	0.1	<.1	0.1	0.2	0.6	0.6	0.3	0.5	0.4	<.1	0.1	0.1	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.2	+
Haliclona spp.	-	-	-	+	-	+	-	-	+	<.1	-	+	+	+	-	-	-	-	-	+	-	-	-
Phragmatopoma californica	-	0.1	<.1	0.2	0.2	+	<.1	<.1	<.1	<.1	0.1	0.1	0.4	0.8	0.6	0.2	0.3	0.2	0.2	0.2	0.2	0.2	<.1
Pista spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Spirorbidae	-	-	+	-	-	+	+	+	-	+	+	+	-	-	+	+	+	+	+	+	+	-	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	5	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4
Counted Regardless of Size																							
Acanthina spp.	-	-	<.1	-	<.1	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	<.1
Anthopleura elegantissima	4.8	7.2	6.8	7.3	7.5	7.8	8.3	7.1	8.7	8.5	9.5	9.8	11.8	7.5	7.7	7.2	5.8	8.0	7.5	9.3	8.2	7.9	6.4
Anthopleura xanthogrammica	-	-	-	-	-	<.1	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	<.1
Balanus spp.	-	-	1.6	0.1	0.1	-	<.1	<.1	-	0.4	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	-	<.1	-	-	<.1	<.1	-	<.1	0.1	-	<.1	<.1	-	0.1	-	-	-	-	-	+	-
Conus californicus	-	-	<.1	0.2	0.1	-	<.1	0.1	<.1	<.1	<.1	-	<.1	-	<.1	<.1	<.1	<.1	-	<.1	-	0.2	-
Epiactis prolifera	0.1	0.2	1.4	1.3	0.8	0.8	0.4	0.6	0.1	0.3	0.5	0.3	0.2	0.3	<.1	0.4	0.6	0.1	0.6	0.3	0.3	0.3	0.3
Fissurella volcano	0.4	0.4	1.8	2.8	1.6	1.8	2.3	2.2	3.4	4.0	3.6	2.8	1.6	1.3	2.0	3.3	3.5	5.6	3.9	2.2	1.5	2.7	4.6
Fusinus luteopictus	-	-	-	-	-	<.1	-	-	+	-	0.1	0.1	<.1	<.1	-	-	0.1	-	-	-	-	-	-
Haliotis spp.	2.1	4.0	3.7	3.6	3.5	2.1	1.5	1.6	1.1	1.1	1.7	1.5	2.1	2.0	1.6	1.1	0.6	0.8	0.9	0.5	0.3	0.1	-
Hemigrapsus nudus	-	<.1	<.1	-	-	<.1	-	<.1	<.1	-	<.1	<.1	<.1	-	<.1	-	-	-	-	-	-	-	-
Leptasterias spp.	0.1	<.1	0.6	0.9	0.7	0.7	0.5	0.4	0.2	0.2	0.6	1.3	0.5	0.4	0.9	0.3	0.3	0.3	0.9	0.7	0.5	0.4	0.3
Lottia digitalis	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia limatula	-	<.1	0.3	0.1	0.1	0.3	0.5	0.3	0.4	0.5	1.2	0.2	0.3	0.4	0.5	0.5	0.9	2.2	1.7	0.6	0.4	0.3	2.1
Lottia pelta	<.1	-	1.0	0.6	0.6	0.9	0.5	0.3	1.8	2.1	1.3	0.4	0.5	0.2	0.2	0.4	0.2	3.8	2.7	0.5	0.2	0.4	7.1
Macclintockia scabra	0.1	0.2	0.6	<.1	0.6	0.6	1.5	0.5	2.6	8.1	7.2	1.9	4.4	0.5	0.5	0.2	0.3	4.5	2.8	4.2	0.4	0.2	3.7
Mitra idae	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	<.1	-	-	-	0.1
Mopalia spp.	<.1	0.1	0.1	0.2	<.1	0.2	0.1	0.2	0.2	0.2	0.2	<.1	<.1	0.1	-	-	-	-	0.2	0.1	-	0.2	-
Nuttallina californica	-	0.2	1.5	1.6	1.1	1.1	0.8	1.0	0.5	0.9	0.9	0.8	0.9	0.4	0.8	0.4	0.5	0.5	0.5	0.6	0.3	1.0	<.1
Ocenebra spp.	-	-	1.0	0.2	0.6	0.4	0.2	0.4	0.9	0.6	1.5	1.8	0.6	0.6	0.9	1.1	0.6	0.4	0.9	0.6	0.5	0.6	0.1
Pachygrapsus crassipes	0.2	<.1	0.1	0.2	0.2	0.2	<.1	0.2	0.4	0.2	0.6	0.5	0.2	1.0	0.9	1.1	1.0	1.2	1.8	1.3	0.7	0.7	0.8
Pagurus spp.	5.7	9.2	10.4	12.7	21.6	23.5	17.4	17.4	19.1	15.9	15.6	13.5	11.0	17.9	18.7	18.6	13.2	9.6	16.8	22.9	19.9	22.8	8.8
Pisaster ochraceus	<.1	<.1	<.1	0.3	<.1	0.1	0.1	<.1	<.1	0.1	0.1	<.1	0.7	0.6	-	0.3	0.2	0.1	0.3	0.1	0.2	0.1	0.5
Pseudomelatoma torosa	-	-	-	-	-	<.1	-	-	<.1	0.1	<.1	0.1	0.1	<.1	0.2	-	-	-	<.1	<.1	-	-	-
Strongylocentrotus purpuratus	-	0.3	<.1	0.2	0.4	1.2	0.5	-	-	<.1	0.5	2.2	2.0	4.9	5.3	10.6	20.5	46.0	74.5	73.1	33.5	30.5	10.1
Tectura scutum	0.4	1.0	1.2	1.0	1.1	1.2	1.3	1.1	2.2	4.1	3.2	0.6	1.2	2.0	0.9	0.1	0.4	2.4	0.5	2.0	0.9	0.7	1.9
Tegula brunnea	9.3	5.2	9.7	19.1	21.6	20.7	13.7	20.2	11.4	11.2	7.9	8.4	1.7	7.7	12.7	10.0	16.2	19.9	13.1	16.5	10.7	10.8	8.7
Tegula funebralis	52.6	44.4	43.2	67.0	81.0	50.0	36.1	36.2	32.7	66.5	156.0	134.5	184.6	152.6	192.9	136.0	53.4	11.7	14.6	29.0	26.6	20.5	8.6
Tetraclita rubescens	0.5	3.6	16.6	0.3	5.1	6.0	6.3	4.0	1.8	10.2	3.0	1.3	3.1	-	24.6	33.7	26.7	43.2	73.5	40.9	8.2	6.8	2.9
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	0.2	<.1	+	0.2	<.1	<.1	0.1	0.2	<.1	0.2	0.4	0.1	<.1	<.1	0.2	0.4	0.3	0.3	0.1	0.1	<.1
Acmaeidae unid.	<.1	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<.1	+	+	+	+	+
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Alia spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Amphissa spp.	-	-	+	+	+	-	+	-	-	-	+	+	-	<.1	-	-	-	-	-	+	-	-	+
Asterina miniata	-	-	<.1	<.1	-	-	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	<.1	<.1	-
Balanophyllia elegans	-	-	+	0.2	+	+	-	-	+	+	+	-	-	-	+	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bittium spp.	-	-	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	-	-	-	-	-	-
Cancer antennarius	-	<.1	<.1	-	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	<.1	-	-	<.1	<.1
Cancer productus	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	+	-	+	+	-	-	-	-	<.1	-	+	-	-	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	<.1	-	-	+	-	+	<.1	+	+	-	-	-	-	-	-	-	+	-	-	-
Cirratulidae/Terebellidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	+	-	-	-	-	-
Clavelina huntsmani	-	-	<.1	+	+	+	+	<.1	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
Cyanoplax spp.	-	-	-	+	<.1	-	-	-	-	-	-	+	0.2	-	-	-	-	<.1	-	-	-	-	<.1
Diaulula sandiegensis	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-
Diodora spp.	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Diopatra ornata	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1
Discurria insessa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	+	+	-	+
Doriopsilla albopunctata	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Grapsidae (juv.)	-	-	+	+	+	+	+	+	<.1	+	+	+	-	+	+	+	+	-	-	+	+	-	-
Halcampa decemtentacula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Henricia leviuscula	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-	+	+	-	+	-	-	+	-
Hermissenda crassicornis	-	-	-	<.1	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
Homalopoma spp.	-	-	+	+	+	+	-	+	+	+	+	+	-	-	+	+	-	+	+	+	-	+	-
Hopkinsia rosacea	-	-	+	-	+	-	+	-	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - Fields Cove Station FC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	5	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4
Only Counted if Greater than 1" (continued)																							
Idotea spp.	-	-	<.1	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-	<.1	<.1	+	+	0.1	+	+	+	<.1	<.1	+	-	+	+	+	-	+	+	+	+	-
Lacuna spp.	-	-	+	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lepidozona spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	+	<.1	-	-	-	-	<.1	-	<.1
Lissothuria nutriens	-	-	+	+	-	+	-	+	+	+	+	+	+	+	+	<.1	+	+	+	+	+	+	+
Littorina spp.	-	-	+	-	-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-	-	+	-	-	-	-	+	-	+	-	-	-	<.1	-	-	-	-	-	-	+	-
Lottia asmi	-	-	+	+	+	+	+	+	+	+	+	+	+	<.1	+	+	+	+	+	+	+	+	+
Lottia gigantea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-
Lottia ochracea	-	-	+	-	-	-	-	-	+	+	-	-	0.2	-	+	+	+	-	+	+	-	-	<.1
Majidae	-	-	+	+	+	+	+	+	-	+	+	-	0.5	+	+	-	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilus californianus	-	-	-	<.1	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-
Natantia unid.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nemertea unid.	-	<.1	0.2	0.4	0.6	0.6	0.8	0.6	0.6	0.3	0.4	0.7	0.7	0.3	0.3	0.9	0.3	1.0	0.6	0.6	0.9	0.6	0.2
Nereididae unid.	-	-	<.1	<.1	-	-	<.1	+	-	<.1	0.1	-	<.1	<.1	0.1	-	0.1	<.1	0.1	+	<.1	0.3	-
Nitidiscala/Opalia spp.	-	-	-	+	+	+	-	-	-	-	+	-	-	+	+	-	-	-	+	-	+	-	+
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	+	-	-	-	-
Onchidella borealis	-	-	-	+	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiothrix spp.	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiuroidea unid.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	+	-	+	-	-	-	-	+	-	-	-	-	+	-	+	+	-	-	+	-
Petrolisthes spp.	<.1	<.1	0.2	<.1	<.1	-	0.2	-	<.1	<.1	-	+	0.1	-	0.1	-	-	-	-	-	+	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-
Pisaster/Henricia (juv.)	-	-	-	+	+	+	+	-	+	+	+	<.1	-	-	-	+	+	<.1	-	+	+	+	-
Platyhelminthes unid.	-	-	-	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Polychaeta unid.	-	-	-	+	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Polyplacophora unid. a	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudochama spp.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	<.1	0.4	0.6	0.3	0.2	0.7	0.4	0.2	0.1	0.2	0.2	0.2	-	+	0.1	<.1	0.3	0.5	0.5	0.5	0.5	0.3
Pycnogonida unid.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
Pycnopodia helianthoides	-	<.1	-	-	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Rostanga pulchra	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	-	0.2	0.2	0.2	0.1	0.1	0.2	<.1	0.4	0.2	0.4	0.5	0.6	0.4	0.9	0.5	0.8	1.1	0.7	0.3	0.5	0.2
Serpulorbis squamigerus	0.4	0.1	0.2	0.4	0.5	0.8	0.2	0.6	0.6	1.5	2.7	1.7	3.8	2.6	2.8	3.4	2.8	3.9	3.9	2.9	1.9	3.5	0.7
Sipuncula unid.	-	-	-	+	-	+	<.1	+	+	+	+	0.1	+	+	+	+	+	+	+	+	+	+	<.1
Stenoplax spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Tonicella lineata	-	-	<.1	0.2	<.1	-	+	0.1	<.1	<.1	0.2	0.4	0.1	0.4	<.1	-	<.1	-	+	<.1	-	0.1	<.1
Tricolia spp.	-	-	-	+	-	+	+	+	+	-	<.1	-	+	-	-	+	-	+	+	+	-	+	-
Williamia peltoides	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	+	-	-	-	-	-	-	-	-
% Coverage																							
Abiet./Sertularella/Sertularia spp.(A.S.	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	-	-	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
Bryozoa, unid. (erect)	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (foliose)	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Chthamalus fissus	+	+	+	+	+	+	+	+	+	0.5	0.4	0.2	+	+	+	+	+	+	+	+	+	+	+
Dendropoma spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dodecaceria fewkesi	-	-	-	+	-	+	-	-	-	<.1	<.1	+	-	-	+	+	+	<.1	-	+	-	-	-
Eurystomella bilabiata	-	-	-	+	+	+	-	+	-	+	+	+	-	+	-	-	-	+	-	-	-	-	-
Haliclona spp.	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	0.1	<.1	<.1	0.1	+	<.1	<.1	<.1	0.1	<.1	<.1	<.1	<.1	0.1	+	<.1	+	+	+	+	+	0.2
Pista spp.	-	0.1	0.3	0.8	0.2	0.6	0.2	0.5	0.2	0.2	0.2	0.3	0.1	+	<.1	0.8	0.4	1.3	1.2	1.7	0.9	1.9	0.9
Porifera unid. (encrusting)	-	-	+	+	+	+	+	+	+	+	+	<.1	+	+	+	+	+	+	+	+	+	<.1	+
Salmacina tribranchiata	-	-	+	+	+	+	+	-	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-
Spirorbidae	-	-	-	+	<.1	+	+	+	+	<.1	+	<.1	+	+	+	+	+	+	+	+	+	<.1	+
tunicates, colonial/social unid.	-	<.1	0.3	<.1	0.3	0.2	0.2	<.1	+	<.1	+	+	-	+	+	+	+	+	+	+	+	+	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 2 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	0.5	0.3	0.4	0.2	0.5	0.4	0.1	0.2	0.6	0.7	0.5	0.4	0.4	0.2	0.5	0.4	0.2	0.5	0.5	1.0	1.3	0.3
Anthopleura elegantissima	21.4	28.4	27.7	23.9	35.9	31.6	34.1	12.2	11.7	14.5	15.4	17.4	22.7	22.6	25.9	35.0	31.5	26.6	28.8	29.5	43.1	33.1	38.2
Balanus spp.	-	+	-	-	-	+	<.1	-	-	-	-	-	-	0.2	<.1	-	0.7	-	0.5	1.5	-	-	-
Epiactis prolifera	-	<.1	<.1	0.1	<.1	0.1	-	-	-	-	<.1	0.1	-	-	-	<.1	-	-	-	-	0.1	-	-
Fissurella volcano	-	-	-	-	0.1	0.1	0.2	<.1	-	<.1	0.2	<.1	-	-	-	0.1	0.4	2.2	1.9	0.4	0.1	0.2	2.7
Haliotis spp.	-	-	-	-	0.2	-	-	-	-	-	<.1	<.1	-	-	-	-	-	<.1	-	-	-	-	-
Hemigrapsus nudus	-	-	0.1	-	<.1	-	<.1	0.1	-	0.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	0.2	0.2	0.4	0.8	0.6	0.4	0.4	0.3	0.2	0.3	<.1	0.2	-	-	-	-	-	-	-	-	-	-	-
Lottia digitalis	0.1	3.6	0.8	0.3	0.2	0.1	0.5	-	0.3	0.6	<.1	1.3	1.1	0.7	1.4	0.5	1.9	2.9	5.9	4.3	16.3	7.2	1.5
Lottia limatula	0.2	1.0	1.4	1.2	1.3	2.3	2.6	1.7	1.7	2.9	4.0	3.3	6.3	3.5	6.5	6.6	3.1	7.0	11.6	7.6	18.8	7.8	9.4
Lottia pelta	1.2	1.4	1.4	1.0	0.4	2.2	1.3	0.4	1.9	1.3	0.9	2.5	4.2	1.9	0.6	0.2	1.4	2.5	1.6	0.7	1.6	1.0	2.1
Macclintockia scabra	11.4	17.4	16.8	30.7	16.7	43.7	41.9	9.2	60.4	64.2	95.6	113.2	155.8	130.6	85.6	140.0	118.5	172.4	161.6	134.6	207.0	86.5	135.2
Mopalia spp.	-	0.2	<.1	<.1	0.3	0.4	0.4	0.4	<.1	0.2	0.5	0.3	0.3	0.1	<.1	<.1	0.1	-	-	0.1	-	-	0.1
Nucella emarginata	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuttallina californica	0.5	2.5	2.9	4.0	4.8	5.7	5.2	5.3	5.3	3.9	5.6	3.6	2.5	0.9	0.5	0.5	0.7	0.5	0.6	0.6	0.7	0.1	0.1
Ocenebra spp.	-	0.1	1.0	0.4	0.8	0.9	0.4	0.3	0.7	0.5	1.1	1.2	0.6	1.2	1.9	0.9	2.1	0.9	0.5	0.6	1.2	1.5	0.7
Pachygrapsus crassipes	0.1	0.1	0.5	0.5	0.4	0.5	0.5	0.2	0.3	0.9	0.9	0.8	1.1	1.3	0.9	2.1	1.5	1.6	2.0	2.3	1.9	2.4	1.7
Pagurus spp.	5.8	8.0	7.5	7.3	10.8	13.3	10.9	7.9	7.7	6.7	9.7	5.0	5.5	5.9	8.0	9.9	15.2	15.2	12.5	6.1	17.9	7.4	2.4
Pisaster ochraceus	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	0.5	0.1	-	<.1	0.3	-	-
Strongylocentrotus purpuratus	0.1	-	-	-	-	0.2	-	<.1	-	-	-	<.1	0.3	0.2	0.2	0.2	0.5	0.2	0.3	0.3	-	-	-
Tectura persona	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	1.9	0.8	2.5	1.6	1.9	2.3	4.6	1.6	4.7	8.7	5.4	8.0	2.9	5.1	2.9	3.6	3.7	4.7	2.9	6.9	0.7	3.8	3.1
Tegula brunnea	<.1	<.1	-	-	<.1	<.1	<.1	-	0.1	-	-	<.1	-	<.1	-	-	-	-	-	-	-	1.8	0.1
Tegula funebralis	47.3	89.6	131.1	124.0	150.3	165.5	108.8	82.1	89.6	140.5	162.7	156.5	176.8	246.9	269.4	209.8	102.9	116.7	155.5	212.0	120.3	106.3	304.1
Tegula pulligo	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	-	-	1.1	<.1	0.3	1.3	0.8	0.9	1.1	0.1	0.3	<.1	0.4	0.2	0.2	-	0.1	2.3	2.0	1.7	0.3	0.3	-
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acmaeidae unid.	<.1	-	+	+	+	+	+	+	+	0.2	+	1.2	0.9	3.9	+	+	+	+	+	+	+	+	+
Alia spp.	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Anthozoa unid.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Asterina miniata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Barleeia spp.	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bittium spp.	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	+
Cucumaria spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Cyanoplax spp.	0.1	-	0.5	0.7	1.2	0.7	0.7	<.1	-	0.6	1.0	3.4	4.1	3.5	4.9	2.8	0.4	0.8	1.1	2.0	1.7	3.4	2.2
Diodora spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Discurria insessa	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	0.1	<.1	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	-	-	-	-	-
Henricia leviuscula	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
Homalopoma spp.	-	-	-	-	+	+	+	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-	-
Idotea spp.	-	-	+	+	+	0.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	0.3	0.4	0.5	+	0.1	+	<.1	+	+	+	<.1	+	-	+	+	-	+	-	-	+	+	-	-
Lacuna spp.	-	-	+	+	+	+	+	+	+	+	-	+	-	-	-	+	-	+	-	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Littorina spp.	-	0.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0.1	+	+	+
Lottia asmi	-	-	+	+	+	+	+	+	+	<.1	+	+	+	+	-	+	<.1	+	+	+	+	-	+
Lottia gigantea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.1	-	0.1	0.4	<.1	-	0.1	0.1
Lottia instabilis	-	-	-	-	-	-	-	<.1	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	+	-	-	-	-	-	-	-
Majidae	-	-	-	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	+	+	-	-
Mytilus californianus	-	<.1	<.1	-	-	0.1	0.1	<.1	+	-	<.1	-	-	+	+	0.1	<.1	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 2 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Natantia unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Nemertea unid.	-	-	-	0.3	0.3	0.4	<.1	0.2	-	<.1	-	-	-	-	<.1	-	-	<.1	-	-	0.1	-	-
Nereididae unid.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petrolisthes spp.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-	<.1	+	<.1	<.1	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Serpulidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.1	+	+	-	-	-
Sipuncula unid.	-	<.1	-	+	-	<.1	-	+	+	+	0.1	+	+	+	+	+	+	+	+	+	-	-	-
Spionidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Tonicella lineata	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-
Tricolia spp.	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Chthamalus fissus	0.1	<.1	<.1	+	+	+	+	+	<.1	<.1	<.1	0.2	0.6	1.8	4.2	4.1	8.2	4.2	5.1	13.6	14.6	16.6	5.5
Haliclona spp.	-	-	-	0.2	<.1	+	0.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	-	+	+	<.1	+	+	+	+	+	0.1	0.3	1.5	1.4	1.0	0.9	0.5	0.1	+	0.2	0.1	+	+
Pista spp.	-	-	+	<.1	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Porifera unid. (encrusting)	-	-	0.2	<.1	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmacina tribranchiata	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spirorbidae	-	-	-	+	+	+	<.1	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 2 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	6	6	6	6	5	6	6	6	5	6	ns	1	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	-	<.1	<.1	-	<.1	<.1	0.1	0.6	1.1	1.1	1.2		0.4	0.2	-	-	-	-	-	-	0.1	-
Anthopleura elegantissima	2.2	2.3	2.1	2.4	2.4	3.5	2.0	3.0	3.3	3.0	3.2	4.9		12.4	12.1	8.7	7.7	3.4	3.0	3.2	4.5	3.4	3.3
Anthopleura xanthogrammica	-	0.1	0.2	0.1	0.1	<.1	<.1	0.1	<.1	0.1	-	-		-	-	-	-	-	-	<.1	-	-	-
Balanus spp.	1.1	0.4	0.3	1.2	1.3	0.2	0.6	<.1	<.1	0.9	0.6	+		-	0.6	-	-	-	0.3	-	-	-	-
Calliostoma ligatum	-	-	-	-	-	-	-	-	-	-	0.1	-		-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	0.3	1.4	0.6	1.3	1.9	0.4	1.2	0.6	<.1	0.2	0.2	0.2		-	0.2	0.3	0.1	0.2	0.1	0.5	0.8	0.2	0.1
Fissurella volcano	0.5	0.9	1.6	1.4	1.2	1.3	1.0	1.0	2.9	4.6	1.4	0.9		2.0	3.6	9.6	13.4	24.6	13.5	11.6	9.7	5.0	30.1
Haliotis spp.	2.7	5.2	6.7	8.3	4.6	2.8	1.5	1.6	1.0	0.5	0.4	0.3		-	-	0.6	0.3	-	0.5	-	0.5	0.1	-
Hemigrapsus nudus	-	-	0.1	0.2	<.1	-	-	<.1	-	-	<.1	-		-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	0.1	0.1	1.1	2.1	2.1	1.5	0.5	0.4	0.1	0.6	<.1	<.1		-	-	-	-	-	-	-	-	-	-
Lottia digitalis	-	<.1	0.2	0.1	-	-	-	<.1	0.3	5.6	36.6	17.5		-	6.6	0.3	0.2	-	0.9	-	7.5	10.0	5.5
Lottia limatula	-	0.3	0.6	1.2	0.9	1.4	1.4	1.1	1.1	3.4	3.0	1.8		1.6	3.1	3.1	2.0	2.0	5.3	5.8	12.7	0.6	13.3
Lottia pelta	-	0.1	0.2	0.8	0.2	2.7	1.0	0.9	4.4	2.5	1.3	3.6		3.0	2.3	5.3	2.4	5.0	7.0	3.3	8.2	2.5	12.5
Macclintockia scabra	1.1	3.6	2.9	6.4	6.3	10.3	19.5	47.2	52.8	228.6	189.9	227.6		192.2	171.7	126.8	30.3	64.5	36.5	78.7	114.7	25.8	81.5
Mitra idae	-	-	-	-	-	-	-	-	-	-	-	-		-	<.1	-	-	-	-	-	0.1	-	-
Mopalia spp.	0.1	<.1	0.3	0.5	0.9	0.3	0.4	0.5	0.7	1.0	0.4	0.6		0.4	<.1	<.1	-	<.1	0.2	0.3	-	-	0.3
Nucella emarginata	-	-	-	-	<.1	-	-	-	<.1	<.1	-	-		-	-	-	-	-	-	-	-	-	-
Nuttallina californica	0.1	1.6	2.0	3.5	2.9	3.3	3.7	3.2	3.1	4.2	4.2	2.0		2.4	0.7	0.7	0.8	0.2	0.4	0.4	1.1	0.5	1.7
Ocenebra spp.	-	0.1	1.4	2.3	1.4	1.7	1.5	1.1	1.4	2.7	2.8	4.5		2.0	2.7	2.2	1.7	1.0	0.2	-	0.2	1.2	0.3
Pachygrapsus crassipes	<.1	<.1	<.1	0.1	<.1	<.1	-	0.1	<.1	0.4	0.3	0.5		0.6	0.8	1.4	1.1	0.8	1.7	0.9	1.1	2.0	2.6
Pagurus spp.	4.6	13.9	10.4	12.8	15.2	19.1	20.9	11.1	12.8	16.6	11.8	16.5		24.2	11.3	9.0	14.3	19.1	11.9	8.0	18.6	12.8	1.7
Pisaster ochraceus	-	<.1	<.1	<.1	<.1	-	<.1	<.1	-	-	-	-		-	<.1	0.3	0.2	0.4	0.2	<.1	0.4	0.1	0.2
Pseudomelatoma torosa	-	-	-	-	-	-	-	-	-	-	<.1	-		-	-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	-	-	-	-	<.1	0.1	-	-	-	0.1	-	+		2.0	1.4	2.5	4.5	3.8	7.2	23.3	9.6	7.2	7.4
Tectura paleacea	-	-	-	-	-	-	+	+	+	-	-	+		-	+	-	-	-	-	+	-	-	-
Tectura scutum	0.3	0.5	1.5	2.6	2.2	2.7	2.6	2.0	9.0	6.8	8.4	8.5		6.6	2.0	5.6	0.9	1.7	2.1	4.9	5.6	2.2	1.1
Tegula brunnea	1.8	1.3	6.6	4.2	10.8	8.7	7.0	5.8	4.6	7.0	2.9	3.3		1.2	2.1	0.8	9.4	4.2	3.1	1.7	5.2	1.5	0.3
Tegula funebralis	2.5	10.0	7.8	8.6	17.1	12.4	7.2	23.8	12.9	34.6	114.4	137.2		168.2	58.8	7.2	4.4	0.6	4.6	7.8	7.5	-	1.6
Tetraclita rubescens	-	3.8	13.1	9.9	11.7	24.8	16.6	19.7	14.9	19.0	14.8	5.2		24.0	27.6	87.4	46.7	65.3	55.7	96.6	95.9	55.6	28.4
Only Counted if Greater than 1"																							
Acmaea mitra	-	<.1	<.1	0.1	<.1	<.1	<.1	<.1	0.1	0.3	+	<.1		-	-	<.1	-	+	+	0.2	+	+	+
Acmaeidae unid.	0.2	-	+	+	+	+	+	+	<.1	+	+	+		+	+	+	+	+	+	+	+	+	0.1
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	-		0.2	-	0.1	-	-	-	-	-	-	-
Aeolidiacea unid. a	-	-	-	-	-	-	-	-	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Alia spp.	-	-	+	+	+	+	+	+	+	+	+	+		-	+	+	+	+	+	+	+	+	-
Amphissa spp.	-	-	-	+	-	<.1	-	-	-	-	-	-		-	-	-	+	-	-	-	-	-	-
Anthopleura artemisia	-	-	-	-	-	-	-	-	-	-	<.1	-		-	-	-	-	-	-	-	-	-	-
Anthozoa unid.	-	-	-	-	-	-	-	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.1
Asterina miniata	-	-	-	<.1	<.1	-	-	-	-	<.1	-	-		-	-	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	+	-	+	-	-	-	+	+	-	-		-	+	-	-	-	-	-	-	-	-
Bittium spp.	-	-	+	+	+	+	+	+	-	+	-	-		-	+	-	-	-	-	-	-	-	-
Cancer antennarius	-	<.1	-	<.1	-	0.1	0.2	<.1	-	<.1	<.1	-		-	-	-	-	-	-	<.1	-	-	-
Cancer spp.	-	-	+	+	<.1	<.1	-	-	<.1	+	-	-		-	+	-	-	-	<.1	-	-	-	-
Chama spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	+	-	-
Cirratulidae/Terebellidae unid.	-	-	-	-	-	-	-	-	-	-	-	-		-	<.1	-	-	-	-	-	-	-	+
Clavelina huntsmani	-	-	-	-	-	+	+	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	0.4	+	+	+	+	+	+	+	+	+	+		-	+	-	-	-	-	-	-	-	-
Cyanoplax spp.	-	-	-	0.2	-	-	+	+	-	+	0.2	1.9		+	0.7	0.4	0.4	0.2	0.8	0.3	0.7	0.3	0.8
Diodora spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	<.1	<.1	-	-	-	-	-	-
Diopatra ornata	<.1	-	<.1	0.3	0.2	0.1	0.3	<.1	<.1	0.1	<.1	0.1		-	<.1	<.1	-	<.1	-	-	0.1	0.1	-
Discurria insessa	-	-	-	-	-	+	+	+	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Flabellina trilineata	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Grapsidae (juv.)	-	<.1	<.1	+	+	-	-	+	+	+	+	+		-	+	+	+	-	-	-	-	-	-
Halcampa decemtentacula	-	-	-	0.1	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Hemigrapsus oregonensis	-	-	-	-	-	-	-	-	-	-	<.1	-		-	-	-	-	-	-	-	-	-	-
Henricia leviuscula	-	-	-	<.1	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 2 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	6	6	6	6	6	5	6	6	6	5	6	ns	1	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Heptacarpus spp.	-	0.1	<.1	<.1	+	-	-	+	-	-	-	-		-	-	-	+	-	0.2	+	-	-	-
Hermissenda crassicornis	-	-	-	-	-	-	-	-	-	<.1	-	<.1		-	-	-	+	+	+	-	+	-	0.1
Hipponix spp.	-	-	-	-	-	-	-	-	-	-	+	-		-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	-	-	-	-	-	+	-	-	-	+	-	-		-	-	-	-	-	-	-	-	-	-
Idotea spp.	-	-	<.1	-	-	+	-	<.1	-	+	-	-		-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	<.1	<.1	+	+	+	<.1	+	+	+	+	+		+	+	+	+	+	+	+	-	+	-
Isopoda unid.	-	-	-	-	+	-	-	-	-	-	+	-		-	-	-	-	-	-	-	-	-	-
Lacuna spp.	-	+	+	+	+	+	+	+	+	+	+	+		-	+	+	+	+	+	+	+	+	+
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	<.1	-		-	-	+	<.1	-	+	-	-	-	-
Lissothuria nutriens	-	-	-	-	+	+	-	-	-	+	+	+		-	-	+	-	+	+	-	-	+	+
Lithopoma gibberosum	-	-	<.1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.1
Littorina spp.	-	-	+	-	+	+	-	+	+	+	+	+		-	+	+	+	-	-	-	-	+	-
Lophopanopeus spp.	-	-	-	-	-	+	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Lottia asmi	-	-	-	-	+	+	+	+	+	+	+	+		-	-	-	-	+	+	-	+	-	-
Lottia gigantea	-	-	-	-	-	-	-	-	-	-	<.1	<.1		-	-	0.1	-	-	0.1	0.1	0.3	0.1	4.3
Lottia instabilis	-	-	-	-	-	-	-	-	-	+	-	-		-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	-	-	+	-	-	-	-	-	-	-		-	+	<.1	+	-	+	-	-	-	-
Majidae	-	-	+	+	+	+	+	+	+	+	+	-		-	+	-	-	-	-	-	-	-	-
Mytilus californianus	-	-	-	<.1	<.1	-	-	+	0.1	+	+	<.1		-	+	+	-	-	-	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	-	-	-	+		-	-	-	-	+	-	-	-	-	-
Nemertea unid.	-	<.1	-	0.3	0.5	0.7	0.4	0.7	0.5	0.1	<.1	+		-	+	0.1	-	-	-	-	-	-	-
Nereididae unid.	-	-	<.1	<.1	<.1	<.1	-	+	<.1	+	-	<.1		-	<.1	0.1	-	<.1	0.1	-	-	-	0.1
Nitidiscala/Opalia spp.	-	-	+	+	+	+	-	-	+	-	-	-		+	+	-	+	+	-	-	+	+	-
Onchidella borealis	-	-	-	-	-	-	+	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Ophiuroidea unid.	-	-	-	-	-	-	-	-	+	+	+	-		-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	-	-	-	-	-	-	-	-	-		-	+	-	-	+	+	+	+	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	-	-	0.1	-	-		-	<.1	-	0.2	<.1	0.1	-	-	-	-
Pisaster giganteus	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	<.1	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	+	+	<.1	+	+	+	+	+	-	-		-	-	-	-	-	-	-	-	-	-
Pododesmus cepio	-	-	-	-	-	-	-	-	-	-	-	-		-	-	+	-	-	-	-	-	-	+
Polychaeta unid.	-	-	-	-	-	-	-	-	+	-	-	<.1		-	-	-	-	-	-	-	-	-	-
Pugettia spp.	0.3	<.1	0.5	0.5	0.3	0.9	0.8	0.4	<.1	0.3	0.2	0.2		-	0.1	0.4	0.9	<.1	<.1	0.3	0.3	0.1	+
Pycnogonida unid.	-	-	-	-	-	-	+	-	-	-	-	+		-	-	-	-	-	+	-	+	-	-
Pycnopodia helianthoides	-	-	-	-	-	-	-	<.1	-	-	-	<.1		-	-	-	-	+	-	-	-	-	-
Serpulidae unid.	-	-	-	-	+	+	-	-	<.1	+	0.1	-		0.2	<.1	<.1	-	<.1	-	0.2	0.5	0.4	0.2
Sipuncula unid.	-	-	-	-	-	-	+	+	+	-	+	+		+	+	-	+	-	+	-	-	+	+
Stenoplax spp.	-	-	-	-	-	<.1	-	-	-	-	<.1	-		-	-	-	0.1	-	-	-	0.1	0.1	-
Tonicella lineata	0.1	-	-	+	-	<.1	-	-	<.1	<.1	<.1	<.1		-	-	-	-	-	-	-	-	-	-
Transennella spp.	-	-	-	+	+	-	-	-	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Tricolia spp.	-	-	-	+	+	+	+	+	+	-	-	+		-	-	+	+	+	-	+	-	-	-
Urticina spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.1
% Coverage																							
Abiet./Sertularella/Sertularia spp.(A.S.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	+	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	-	-	-	+	<.1	+	+	<.1	0.1	+	+	-		-	-	-	+	+	+	-	-	-	-
Bryozoa, unid. (foliose)	-	-	-	-	-	-	-	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Chthamalus fissus	+	<.1	+	+	+	+	0.2	0.2	0.2	3.4	7.7	8.6		18.2	7.3	4.6	1.3	0.5	0.3	0.3	3.5	1.9	+
Hydroida	-	-	-	-	-	-	-	+	+	-	-	-		-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	<.1	<.1	+	+	+	+	+	+	<.1	<.1	0.3		2.9	0.6	0.3	0.3	0.1	+	+	<.1	+	+
Pista spp.	1.9	0.8	1.8	7.3	8.0	7.3	3.8	2.1	4.5	4.2	0.7	0.5		0.3	0.2	0.4	0.9	1.5	<.1	+	3.1	<.1	0.2
Porifera unid. (encrusting)	-	<.1	-	0.2	<.1	<.1	0.2	<.1	0.1	<.1	+	+		-	-	-	-	+	-	-	+	-	-
Salmacina tribranchiata	-	-	-	-	-	+	-	+	+	-	-	+		-	-	-	-	+	-	-	-	-	-
Spirorbidae	-	-	-	+	+	+	+	+	<.1	+	+	+		+	+	+	+	+	+	+	+	0.3	+
tunicates, colonial/social unid.	-	0.1	0.4	0.3	0.3	0.2	0.4	<.1	0.3	0.2	+	+		-	+	+	+	+	-	+	+	-	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 3 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	6	6	6	6	6	6	6	6	6	6	ns	1	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	-	-	-	-	-	-	-	-	0.3	<.1	<.1		-	-	-	-	<.1	-	-	0.1	-	0.4
Anthopleura elegantissima	<.1	0.1	0.2	0.2	0.2	0.2	<.1	-	-	-	-	-		-	-	-	<.1	0.2	0.1	0.1	0.4	0.4	0.3
Balanus spp.	-	1.3	0.3	0.8	0.1	<.1	0.3	<.1	0.2	0.7	0.9	0.3		3.2	4.2	1.4	0.4	0.2	0.3	-	-	-	0.5
Epiactis prolifera	<.1	<.1	0.2	0.1	0.3	0.5	0.1	0.2	0.1	<.1	<.1	0.1		-	<.1	0.1	<.1	0.1	-	-	-	-	0.1
Fissurella volcano	0.4	0.3	1.0	1.0	0.8	0.9	0.9	1.0	1.4	1.2	0.9	0.8		1.4	2.0	5.0	18.0	14.7	17.7	15.3	6.6	7.4	63.4
Haliotis spp.	1.5	2.5	3.0	2.3	2.7	3.8	2.8	3.1	3.7	2.4	4.0	4.0		0.2	0.1	<.1	<.1	0.3	0.2	0.6	0.3	-	0.1
Hemigrapsus nudus	-	-	<.1	0.1	<.1	0.2	0.1	-	-	<.1	<.1	<.1		-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	0.5	0.1	0.5	1.4	1.2	0.8	0.6	0.6	0.4	0.4	0.2	0.2		-	-	-	-	-	-	-	-	-	-
Lottia digitalis	0.2	-	1.5	1.5	0.9	0.5	2.2	1.7	0.1	0.9	1.5	1.3		16.2	4.6	3.5	3.7	4.7	40.6	15.9	20.4	54.8	39.4
Lottia limatula	0.6	<.1	1.8	1.7	1.8	2.4	2.6	2.3	2.2	3.5	6.2	5.1		7.6	6.8	7.7	5.0	7.0	7.8	5.5	11.8	4.1	20.4
Lottia pelta	0.6	0.3	1.3	1.5	1.1	3.3	5.0	2.4	3.0	1.4	2.6	1.0		1.6	0.9	1.2	0.9	4.8	3.5	2.2	0.8	0.5	30.8
Macclintockia scabra	5.2	12.9	14.4	19.9	18.3	20.5	25.5	20.8	50.1	96.8	239.7	220.7		170.2	146.6	123.7	142.4	237.5	177.5	178.0	181.3	80.2	181.7
Mopalia spp.	0.1	-	0.2	0.6	0.8	0.7	0.4	0.5	0.2	0.5	0.8	0.4		0.2	0.2	-	-	<.1	-	0.1	-	-	-
Nucella emarginata	0.3	-	-	<.1	<.1	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Nuttallina californica	0.5	2.9	4.6	7.3	6.1	6.5	6.3	6.9	6.0	5.2	5.9	3.2		1.4	0.7	0.4	-	0.2	0.5	0.5	0.3	0.3	0.5
Ocenebra spp.	0.3	-	1.4	1.0	0.4	0.3	1.1	1.6	1.8	2.1	4.5	6.6		5.4	3.5	2.7	2.8	0.2	1.1	0.7	1.4	1.8	1.9
Pachygrapsus crassipes	0.1	0.5	0.4	0.3	0.7	0.5	0.7	0.3	0.5	0.6	1.1	2.0		1.2	1.4	1.0	4.1	2.7	3.8	3.9	2.7	4.8	2.4
Pagurus spp.	9.9	9.5	4.1	6.3	10.3	10.0	12.5	7.9	8.1	7.1	11.0	9.7		14.8	10.2	10.5	24.8	24.7	47.1	17.2	11.0	24.7	0.4
Pisaster ochraceus	-	-	-	-	<.1	0.1	-	<.1	-	-	-	-		-	-	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.2
Strongylocentrotus purpuratus	<.1	-	-	<.1	<.1	0.1	0.1	<.1	<.1	<.1	0.3	0.2		0.4	0.3	0.9	3.5	3.7	11.9	21.4	11.6	6.7	4.0
Tectura persona	<.1	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Tectura scutum	1.0	1.2	2.7	1.7	2.1	2.3	5.0	3.6	2.7	4.1	4.9	7.9		10.4	4.4	3.4	2.0	3.2	3.0	7.6	10.4	2.1	1.7
Tegula brunnea	0.9	1.0	1.3	2.9	3.2	4.3	4.8	3.6	2.5	1.3	0.2	-		-	0.2	0.4	3.6	0.4	-	3.3	1.2	6.4	0.3
Tegula funebralis	28.0	38.8	57.2	39.7	64.5	51.2	44.4	50.4	49.6	77.5	194.4	230.1		160.2	186.7	126.0	66.2	17.5	48.3	44.9	34.1	44.9	15.2
Tegula spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	0.1	-	-	-	-	-	-	-
Tetraclita rubescens	18.1	13.8	18.7	6.5	9.0	12.5	10.3	5.8	6.7	11.6	4.1	4.4		1.2	2.1	17.8	18.0	46.6	53.7	50.7	50.8	19.2	26.8
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	-	+	-	0.1	<.1	+	<.1	<.1	-	<.1		-	-	-	-	-	-	-	-	-	-
Acmaeidae unid.	<.1	-	+	+	+	+	+	+	+	+	+	+		+	+	0.2	+	+	+	+	+	+	+
Alia spp.	-	-	+	+	+	+	+	+	+	+	+	+		-	-	-	-	+	-	-	-	-	-
Amphissa spp.	-	-	-	-	-	-	-	-	+	-	-	+		-	-	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	-	+	-	-	-	-	+	-	-	-		-	-	-	-	+	-	-	-	-	-
Bittium spp.	-	-	-	+	-	-	-	-	+	+	-	-		-	-	-	-	-	-	-	-	-	-
Cancer antennarius	-	-	-	0.1	<.1	-	-	-	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Cancer productus	-	-	-	-	-	-	-	-	-	-	-	<.1		-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	-	-	+	+	-	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	-	-	-	-	-	-	-	-	-		-	+	-	-	-	-	-	-	-	-
Crepidula spp.	-	-	+	+	+	+	+	+	-	+	+	+		-	+	+	+	+	-	-	-	-	-
Cyanoplax spp.	-	-	-	-	<.1	<.1	<.1	0.1	0.2	+	<.1	0.2		0.4	2.7	1.2	0.4	0.1	0.5	1.3	0.7	0.8	0.5
Diodora spp.	-	-	-	<.1	-	-	-	-	-	-	-	-		-	-	-	-	-	<.1	-	-	-	-
Doriopsilla albopunctata	-	-	-	-	-	-	-	-	-	<.1	-	-		-	<.1	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-	+	+	+	+	+	+	+	+	+	+		-	+	+	+	+	+	-	-	-	-
Henricia leviuscula	-	-	-	-	-	-	-	<.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-	+	+	+	-	-	-	+	-	-	-		-	-	-	-	-	+	-	-	-	-
Homalopoma spp.	-	-	-	+	+	+	+	-	+	+	-	-		-	-	-	-	+	-	-	-	-	-
Idotea spp.	-	-	<.1	<.1	-	<.1	<.1	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-	<.1	<.1	+	+	+	+	+	+	+	+		-	-	+	+	+	+	-	-	-	-
Lacuna spp.	-	-	+	+	+	+	+	+	+	+	+	-		-	-	+	+	+	-	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	0.1	-
Leucandra heathi	-	-	-	-	-	-	-	-	-	-	-	-		-	-	+	-	-	-	-	-	-	-
Lissothuria nutriens	-	-	-	-	-	+	-	-	-	-	-	-		-	-	+	-	+	+	-	+	-	-
Littorina spp.	-	-	+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+
Lophopanopeus spp.	-	-	-	-	-	-	-	-	-	-	<.1	-		-	-	-	-	-	-	-	-	-	-
Lottia asmi	-	-	0.2	+	+	+	+	+	+	+	+	+		-	-	-	+	+	+	-	-	-	-
Lottia gigantea	<.1	-	<.1	0.1	0.1	-	-	-	<.1	-	-	<.1		-	0.1	0.4	0.6	1.2	2.3	2.9	2.9	2.5	2.8
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	-	-		-	-	0.2	-	+	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 3 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	3	6	6	6	6	6	6	6	6	6	6	ns	1	4	4	4	4	4	3	2	2	2
Majidae	-	-	-	+	+	-	-	-	-	+	-	-		-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	+	+	+	-	-
Mytilus californianus	1.7	0.1	1.0	0.7	0.5	1.2	0.7	0.4	1.3	1.6	4.0	3.6		9.0	8.2	5.9	0.2	+	+	+	0.9	2.4	+
Mytilus galloprovincialis	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Nemertea unid.	-	<.1	0.2	0.8	0.4	0.6	0.4	0.6	0.3	0.1	<.1	-		-	-	-	-	-	-	-	-	-	-
Only Counted if Greater than 1" (continued)																							
Nereididae unid.	-	-	-	-	-	-	<.1	<.1	-	<.1	-	-		-	-	<.1	-	-	-	<.1	-	-	-
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	<.1	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	+	-	-	-	-
Petrolisthes spp.	-	-	<.1	-	<.1	<.1	0.2	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	<.1	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	-	+	-	+	-	+	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	-	<.1	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Pollicipes polymerus	1.0	-	0.8	0.4	0.7	1.3	0.5	0.8	0.5	0.2	0.4	0.5		+	0.3	0.7	0.5	+	0.1	-	-	0.4	-
Polychaeta unid.	-	-	-	<.1	-	-	+	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-	0.2	0.2	0.1	0.2	0.5	0.2	0.1	+	-	-		-	-	<.1	<.1	-	<.1	-	-	0.1	-
Pycnopodia helianthoides	-	-	-	-	-	-	<.1	-	-	<.1	-	-		-	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	-	-	+	-	<.1	+	<.1	-	<.1	+	+		-	0.2	<.1	0.3	<.1	0.5	0.2	0.4	0.1	0.9
Serpulorbis squamigerus	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	<.1	-	0.1	-	-
Sipuncula unid.	-	-	-	-	-	-	+	+	-	+	+	-		-	+	-	-	+	+	-	-	+	-
Tricolia spp.	-	-	-	+	+	+	-	+	-	+	-	-		-	-	-	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-	+	+	-	+	+	-	+	+	+	-		-	-	-	+	-	+	-	-	-	-
Chthamalus fissus	<.1	<.1	0.2	0.2	0.2	0.2	0.3	0.8	0.4	1.1	3.6	4.3		14.7	19.2	19.3	21.0	12.0	17.3	17.2	17.0	16.0	11.5
Dodecaceria fewkesi	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	+	-	-	-	-	-
Halicions spp.	-	-	-	+	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	-	+	+	+	+	+	+	+	<.1	<.1	0.3		0.4	0.3	<.1	+	<.1	<.1	+	+	+	0.1
Pista spp.	-	-	-	-	+	-	+	+	<.1	+	+	+		-	-	-	+	+	+	-	+	-	-
Porifera unid. (encrusting)	-	-	-	+	+	+	<.1	<.1	+	+	+	+		-	-	-	+	+	-	-	-	-	+
Salmacina tribranchiata	-	-	-	-	-	-	-	+	+	-	+	-		-	-	-	-	-	-	-	-	+	-
Spirorbidae	-	-	+	<.1	<.1	<.1	0.2	0.4	0.2	0.2	<.1	<.1		+	+	+	+	+	+	+	+	+	+
tunicates, colonial/social unid.	-	-	-	+	+	+	<.1	+	+	+	+	+		-	-	-	+	-	-	-	-	+	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	5	6	6	5	6	5	4	6	6	5	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	-	-	-	<.1	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Anthopleura elegantissima	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	<.1	-	0.3	1.3	2.3	5.6	0.3	3.2
Balanus spp.	1.8	0.2	0.7	0.8	0.1	-	-	-	<.1	<.1	<.1	-	0.5	1.1	0.5	-	0.3	-	-	-	-	-	1.2
Calliostoma ligatum	-	-	-	-	-	-	-	-	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	<.1	-	-	-	-
Epiactis prolifera	0.2	0.4	1.9	0.9	1.4	1.4	1.4	1.5	0.9	0.3	0.5	0.2	0.2	0.2	0.2	0.3	0.4	0.3	1.0	0.5	0.1	0.2	0.3
Fissurella volcano	0.4	0.8	1.9	1.5	2.7	1.5	1.9	2.2	4.4	4.6	5.6	6.8	3.7	3.7	14.3	33.3	64.9	52.3	54.0	41.5	42.5	19.7	49.6
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Haliotis spp.	3.3	5.3	3.7	3.0	1.6	1.5	1.1	0.8	0.4	<.1	2.0	1.0	2.0	-	-	0.4	0.1	0.2	0.6	0.2	0.5	-	0.2
Hemigrapsus nudus	-	-	<.1	<.1	<.1	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	0.1	0.1	1.9	1.2	1.6	1.1	0.5	0.8	1.0	1.5	0.6	0.4	-	-	-	-	-	-	-	-	-	-	-
Lottia digitalis	-	-	<.1	-	-	-	-	-	-	-	-	-	0.1	-	0.5	0.1	-	-	-	-	3.5	0.5	-
Lottia limatula	0.1	<.1	0.1	<.1	0.1	<.1	0.3	0.1	0.5	1.2	3.7	3.5	6.6	7.3	3.7	3.5	1.3	3.0	7.8	15.4	26.6	3.3	21.8
Lottia pelta	-	<.1	0.2	0.3	0.1	0.6	0.6	0.4	0.8	0.8	2.1	2.0	7.7	3.2	4.6	3.2	2.6	5.4	14.9	4.7	14.3	1.9	121.7
Macclintockia scabra	<.1	-	<.1	0.2	<.1	-	0.3	0.4	0.1	0.5	48.5	40.5	135.9	143.9	42.0	33.1	5.8	12.5	13.6	49.7	47.2	3.1	65.9
Mitra idae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Mopalia spp.	<.1	<.1	0.2	0.3	0.6	0.3	0.4	0.3	0.4	0.4	0.6	0.7	1.2	0.3	-	<.1	<.1	0.1	-	<.1	-	0.1	-
Nucella emarginata	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-
Nuttallina californica	0.2	1.0	2.1	2.3	1.6	2.1	1.3	1.9	1.0	1.8	2.2	5.6	6.7	4.9	2.7	0.7	0.2	0.1	0.3	0.5	0.5	-	0.8
Ocenebra spp.	0.1	-	0.6	1.1	0.6	0.6	0.5	0.6	0.9	0.9	2.4	2.5	2.6	1.4	5.6	2.0	0.7	0.2	0.2	-	0.1	0.7	0.1
Pachygrapsus crassipes	<.1	<.1	-	-	-	-	<.1	-	0.1	0.2	0.8	0.5	1.4	0.9	0.8	2.1	1.6	1.5	2.4	2.9	3.4	1.9	3.2
Pagurus spp.	6.4	8.6	7.0	7.4	11.2	15.1	13.5	12.6	17.0	12.1	9.4	6.3	11.7	4.1	11.1	5.0	2.6	1.9	6.2	2.9	3.3	3.1	-
Pisaster ochraceus	-	-	0.1	+	-	<.1	-	<.1	<.1	-	-	<.1	0.2	0.1	0.4	0.8	0.6	0.5	0.7	0.6	0.6	0.7	0.1
Pseudomelatoma torosa	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	-	<.1	-	-	0.2	0.4	<.1	<.1	-	<.1	0.2	0.3	2.7	3.9	3.7	11.8	20.6	30.0	74.3	59.1	30.2	13.6	11.1
Tectura paleacea	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	1.2	0.3	1.7	0.6	1.2	1.3	2.2	0.8	0.6	1.6	4.4	6.3	10.9	11.3	3.7	2.0	0.4	1.6	2.5	28.4	15.5	3.1	0.9
Tegula brunnea	4.5	3.1	9.9	7.1	18.6	12.5	10.7	9.9	10.9	13.6	8.5	5.8	2.4	2.6	3.8	1.2	0.3	0.3	<.1	0.8	0.2	1.3	-
Tegula funebralis	1.5	3.0	2.5	1.4	3.7	5.5	3.4	4.6	4.8	7.0	110.5	135.2	189.9	60.2	29.8	2.8	<.1	-	0.1	0.1	0.1	-	0.2
Tegula montereyi	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	4.5	0.7	9.0	3.5	3.8	9.4	6.6	10.5	12.8	20.1	24.3	9.4	8.2	9.4	69.4	124.9	137.5	136.8	244.3	144.1	223.8	144.2	52.2
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	0.2	0.1	<.1	0.2	<.1	+	0.3	0.2	0.2	<.1	<.1	<.1	<.1	+	<.1	<.1	+	+	+	+	-
Acmaeidae unid.	2.0	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Aegires albopunctatus	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aeolidiella oliviae (prev. Spurilla oli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Alia spp.	-	-	+	+	+	+	+	+	+	+	+	+	-	-	+	-	+	+	+	-	-	-	-
Amphissa spp.	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Anthozoa unid.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Asterina miniata	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Bittium spp.	-	-	-	+	+	+	+	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Cactosoma arenaria	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer antennarius	-	-	<.1	-	<.1	<.1	0.1	<.1	<.1	-	-	-	-	-	-	<.1	-	-	<.1	-	-	0.1	-
Cancer spp.	<.1	-	+	+	+	+	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	+	-	+	+	-	-	-
Clavelina huntsmani	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	-	-	+	+	+	-	+	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-
Cyanoplax spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	0.3	0.3	0.5	0.5	<.1	+	0.2	0.3	+	0.1	-
Diaulula sandiegensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	<.1	-	-	0.1	-
Diodora spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.1	<.1	<.1	0.1	0.1	-	-
Discurria insessa	-	-	+	+	+	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	-	-	-	-	-	<.1	-	+	-	-	-	-	-	+	-	-	<.1	-	-	-	-	-
Elysia hedgpethi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Grapsidae (juv.)	-	-	+	+	+	-	-	+	+	+	+	+	-	-	<.1	+	+	-	+	-	-	-	-
Hemigrapsus oregonensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	5	6	6	5	6	5	4	6	6	5	6	4	4	4	4	4	4	4	3	2	2	2
Henricia leviuscula	-	-	+	-	-	-	-	0.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	-	-	-	-	-	<.1	+	-	-	-	-	-	+	-	-	-	-	-
Homalopoma spp.	-	-	+	+	+	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Idotea spp.	-	-	+	<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Only Counted if Greater than 1" (continued)																							
Ischnochitonidae	-	-	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<.1	+	+	-
Isopoda unid.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lacuna spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	+	-	-	-	-
Leucandra heathi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Lissothuria nutriens	-	-	-	+	-	-	-	-	+	<.1	+	+	-	-	+	<.1	+	+	0.1	+	+	-	-
Littorina spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+	-	+	-	-
Lophopanopeus spp.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia asmi	-	-	-	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-
Lottia gigantea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.2	0.4	1.1	-	0.1
Lottia instabilis	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	0.1	-	<.1	+	+	+	-	-
Loxorhynchus spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Majidae	-	-	+	+	+	+	+	-	+	+	+	-	-	-	+	-	-	-	-	-	-	-	-
Megatebennus bimaculatus	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-
Modiolus spp.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	+	+	-	-	-
Mytilus californianus	-	-	+	+	-	-	+	-	-	+	<.1	+	0.2	+	-	-	-	+	+	-	-	+	+
Mytilus galloprovincialis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
Nemertea unid.	-	<.1	1.0	0.6	0.7	1.1	0.6	0.7	0.4	0.5	0.3	0.1	-	-	<.1	<.1	-	-	0.1	0.3	0.3	-	-
Nereididae unid.	-	-	0.2	+	0.1	<.1	-	0.2	<.1	<.1	<.1	<.1	-	<.1	<.1	<.1	-	<.1	<.1	-	-	-	-
Nitidiscala/Opalia spp.	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuttallina spp.	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	-	-	-	-
Onchidella borealis	-	-	-	+	+	<.1	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiactis simplex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Ophiothrix spp.	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Ophiuroidea unid.	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Parastichopus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-
Paraxanthias taylori	-	-	-	-	-	-	-	-	-	-	<.1	-	+	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-
Petrolisthes spp.	-	-	-	<.1	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	-	-	0.1	-	-	-	<.1	<.1	<.1	<.1	0.1	+	-	-	0.1	-
Pisaster giganteus	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	<.1	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	<.1	0.1	<.1	+	<.1	+	+	<.1	+	+	-	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	+	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Pollicipes polymerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	-	-	+	-
Polychaeta unid.	-	-	-	-	-	+	-	0.1	+	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Polynoidae	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	<.1	<.1	0.3	0.5	0.4	0.9	0.7	0.3	0.5	0.5	0.2	<.1	-	+	0.2	0.5	-	0.2	0.2	-	-	0.2	-
Pycnogonida unid.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pycnopodia helianthoides	-	-	-	<.1	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rostanga pulchra	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Septifer bifurcatus	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	-	-	-	-	<.1	-	-	<.1	0.1	<.1	<.1	0.5	0.7	0.9	1.2	0.7	1.0	1.4	1.9	1.8	1.0	0.9
Serpulorbis squamigerus	-	-	-	-	-	-	+	-	-	-	<.1	<.1	<.1	<.1	<.1	-	+	-	0.2	0.1	0.1	-	-
Sipuncula unid.	-	-	-	-	<.1	-	+	+	+	<.1	+	+	<.1	+	+	-	-	+	+	+	-	-	-
Tonicella lineata	-	-	0.1	0.1	-	<.1	<.1	-	0.1	<.1	<.1	0.1	-	-	-	-	-	-	-	-	-	-	-
Tricolia spp.	-	-	-	+	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Trivia spp.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - North Diablo Cove Station NDC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	5	6	6	5	6	5	4	6	6	5	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Bryozoa, unid. (encrusting)	-	-	+	<.1	<.1	<.1	+	+	+	+	+	+	+	-	+	+	-	+	+	+	-	-	-
Bryozoa, unid. (foliose)	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Chthamalus fissus	-	+	+	<.1	+	+	+	+	+	+	0.2	0.6	1.9	10.2	4.9	0.9	0.5	+	+	+	+	+	+
Dendropoma spp.	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dodecaceria fewkesi	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurystomella bilabiata	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Hydroida	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	<.1	-	+	<.1	<.1	+	<.1	+	+	<.1	0.3	0.3	2.9	2.6	1.5	0.4	0.5	0.6	0.5	<.1	<.1	+	+
Pista spp.	1.0	<.1	0.2	1.1	0.3	0.7	1.1	0.2	0.3	0.6	0.3	<.1	+	+	+	+	-	+	+	-	+	-	-
Porifera unid. (encrusting)	-	-	<.1	<.1	<.1	0.2	0.2	+	<.1	<.1	+	+	+	-	+	+	+	+	+	+	-	+	-
Salmacina tribranchiata	-	-	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Spirorbidae	-	-	+	+	+	<.1	<.1	0.1	<.1	<.1	<.1	+	+	+	+	+	+	+	+	+	+	+	-
tunicates, colonial/social unid.	<.1	-	0.3	0.3	0.5	0.7	0.4	<.1	0.2	0.2	<.1	+	+	+	+	+	+	+	+	+	-	+	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 1 at +0.6m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	5	6	6	6	5	5	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	-					0.2	<.1	-	-	0.7	1.8	0.6	<.1	0.2	-	<.1	-	-	<.1	0.2	0.3	-
Anthopleura elegantissima	80.2	133.6					71.0	34.4	18.2	29.4	53.2	51.7	74.7	146.8	151.7	145.0	85.7	39.3	41.0	44.4	35.4	38.9	30.1
Balanus spp.	0.2	0.4					-	-	-	5.5	5.4	1.1	6.4	1.8	0.4	<.1	-	-	-	-	-	-	-
Epiactis prolifera	0.3	-					2.2	0.4	0.3	0.5	<.1	<.1	-	-	-	<.1	-	-	-	-	-	-	-
Fissurella volcano	-	-					-	-	<.1	<.1	<.1	0.7	0.4	0.3	-	1.8	3.0	6.2	4.5	5.4	1.4	4.4	15.5
Haliotis spp.	-	-					-	-	-	-	-	<.1	-	-	-	0.1	-	<.1	-	-	-	-	-
Hemigrapsus nudus	-	0.2					-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	-	0.2					1.0	<.1	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-
Lottia digitalis	-	0.1					0.1	-	-	-	0.2	8.2	3.5	0.6	0.4	0.3	-	-	-	-	-	-	-
Lottia limatula	0.4	-					0.2	<.1	0.1	1.1	3.4	5.0	4.7	2.1	2.7	2.9	1.4	2.8	2.5	4.1	3.0	4.3	7.5
Lottia pelta	0.2	0.1					2.1	0.7	1.4	3.2	3.6	4.8	2.6	1.2	2.4	2.2	1.0	5.6	5.4	5.9	3.5	4.0	6.0
Macclintockia scabra	3.0	4.3					5.2	0.5	0.8	22.2	119.6	184.6	106.7	24.7	3.2	3.6	0.6	4.0	8.1	8.3	4.4	15.2	9.4
Nopalia spp.	0.3	-					0.5	0.3	0.1	0.2	0.4	0.2	0.2	-	-	<.1	<.1	<.1	0.1	0.1	-	0.2	-
Nucella emarginata	-	-					-	-	-	12.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuttallina californica	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	0.1	-	-
Ocenebra spp.	-	-					0.6	0.2	<.1	-	<.1	0.1	0.6	0.2	-	-	-	-	-	-	0.2	-	0.1
Pachygrapsus crassipes	-	-					<.1	-	-	-	0.3	0.7	0.2	0.4	0.3	0.9	0.3	0.3	0.3	0.3	0.1	-	0.4
Pagurus spp.	3.5	5.6					12.5	2.3	0.5	3.6	9.0	12.3	23.6	9.7	22.2	7.1	6.9	10.3	4.0	2.7	5.0	10.4	0.9
Pisaster ochraceus	-	-					-	<.1	-	-	-	<.1	-	0.8	0.1	0.9	<.1	0.3	0.2	-	0.1	-	-
Strongylocentrotus purpuratus	-	-					<.1	-	<.1	-	<.1	-	0.2	0.2	0.5	0.4	0.4	1.3	0.2	1.7	0.5	0.2	-
Tectura persona	<.1	-					0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	2.0	0.8					6.0	1.1	2.7	6.4	17.3	11.1	7.7	4.2	1.6	3.1	0.3	0.2	2.0	3.5	0.5	0.7	1.3
Tegula brunnea	0.7	0.5					1.3	<.1	<.1	1.4	-	0.1	-	<.1	1.7	0.1	0.2	0.2	<.1	-	-	-	-
Tegula funebralis	43.9	76.8					112.0	62.8	57.8	96.4	150.8	271.3	435.6	273.7	79.1	24.3	88.6	9.9	53.2	31.3	154.7	118.5	2.9
Tetraclita rubescens	0.7	2.3					4.4	0.8	0.5	17.5	87.4	44.8	46.1	22.8	61.8	164.6	68.8	54.4	75.1	85.7	64.8	31.5	11.2
Only Counted if Greater than 1"																							
Acmaeidae unid.	0.5	-					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Aeolidia papillosa	-	-					<.1	-	-	-	-	+	-	-	-	+	-	-	+	-	-	0.1	-
Aeolidiacea unid. a	-	-					-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Alia spp.	-	-					+	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-
Amphissa spp.	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Anthopleura artemisia	<.1	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aphrodita spp.	-	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aplysia californica	-	-					-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	0.3
Barleeia spp.	-	-					+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Bittium spp.	-	-					+	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-	-
Cancer antennarius	<.1	-					-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	0.1	-
Cancer spp.	-	-					<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaetopteridae	-	-					-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-					-	-	-	-	-	-	-	-	-	<.1	<.1	+	-	-	-	+	0.1
Crangon spp.	<.1	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	-					+	+	+	+	+	+	+	+	-	-	+	-	-	+	-	-	-
Cyanoplax spp.	-	-					+	-	-	0.2	0.4	0.5	0.2	0.2	0.4	0.4	0.3	0.2	0.3	0.1	0.3	0.5	0.2
Diodora spp.	-	-					-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Diopatra ornata	-	-					-	-	-	-	-	-	-	<.1	<.1	0.1	0.1	0.2	0.1	-	-	0.1	-
Discurria insessa	-	-					-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Doridacea unid.	-	-					-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	-					-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-
Eupentacta quinquesemita	-	-					-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-					+	-	-	-	+	-	-	-	-	-	+	+	+	-	-	-	-
Hemigrapsus oregonensis	-	-					-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-					+	-	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-
Hermissenda crassicornis	-	-					<.1	-	-	-	+	+	<.1	+	-	+	+	-	+	+	-	0.2	-
Homalopoma spp.	-	-					+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Ischnochitonidae	0.1	-					+	+	+	+	+	<.1	+	<.1	+	+	+	+	+	-	+	+	-
Lacuna spp.	-	-					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 1 at +0.6m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	ns	ns	ns	ns	5	6	6	6	5	5	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1° (continued)																							
Lepidozona spp.	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Lissothuria nutriens	-	-					+	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Lithopoma gibberosum	<.1	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina spp.	-	-					+	+	+	+	+	+	+	+	+	-	+	+	-	+	-	-	-
Lottia asmi	-	-					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
Lottia gigantea	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-
Lottia instabilis	<.1	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-					-	-	-	+	-	-	+	-	+	+	-	-	+	-	-	+	-
Majidae	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-					-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	-
Mytilus californianus	-	-					-	-	-	+	0.2	0.5	<.1	0.1	-	-	-	-	+	-	+	-	-
Mytilus galloprovincialis	-	-					-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	+	-	-	+
Natantia unid.	-	-					-	-	-	-	-	<.1	-	-	-	-	-	-	+	-	-	-	-
Nemertea unid.	-	-					0.7	0.1	<.1	-	<.1	+	-	-	-	-	<.1	-	0.1	<.1	-	0.1	0.1
Nereididae unid.	-	-					<.1	-	-	-	-	-	-	+	-	-	-	<.1	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-					+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+
Octopus spp.	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	0.1	0.1
Ophiothrix spp.	-	-					-	-	-	-	-	-	-	-	+	-	-	-	<.1	<.1	-	-	-
Ophiuroidea unid.	-	-					+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Phidiana hiltoni	-	-					-	<.1	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	<.1	-					0.5	-	-	+	<.1	-	0.2	-	0.2	+	0.2	<.1	0.4	<.1	-	0.3	0.3
Pycnogonida unid.	-	-					+	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-
Pycnopodia helianthoides	-	-					+	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Septifer bifurcatus	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Serpulidae unid.	-	-					-	-	-	+	+	+	+	+	-	0.1	-	-	+	-	-	0.2	-
Serpulorbis squamigerus	-	-					-	-	-	-	-	-	-	-	-	-	-	<.1	0.1	0.2	0.6	0.5	-
Sipuncula unid.	-	-					+	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Styela spp.	-	-					-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Tricolia spp.	-	-					+	+	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-					<.1	-	-	+	<.1	-	-	-	+	-	+	+	+	-	+	+	-
Chthamalus fissus	+	0.1					+	+	+	1.1	10.7	6.9	6.6	4.7	1.2	<.1	0.1	+	+	+	2.5	4.0	1.7
Phragmatopoma californica	-	-					+	+	+	<.1	<.1	0.5	0.3	0.2	+	+	+	+	+	+	+	+	+
Pista spp.	+	-					1.4	0.1	+	+	+	+	+	+	-	+	+	0.3	1.7	2.2	2.3	2.7	0.4
Porifera unid. (encrusting)	-	-					+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Spirorbidae	-	-					+	-	-	-	+	0.1	+	+	+	+	+	+	+	+	+	+	-
tunicates, colonial/social unid.	-	-					<.1	-	-	-	+	-	-	+	-	+	-	+	+	-	-	-	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	4	5	6	6	5	4	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	-					-	<.1	<.1	0.2	0.6	0.8	0.2	0.2	<.1	-	-	-	-	-	-	0.1	-
Anthopleura elegantissima	21.4	34.6					5.3	8.5	16.8	24.6	34.4	72.6	72.0	76.6	87.5	70.6	28.2	9.9	4.9	3.7	6.4	4.0	3.8
Balanus spp.	-	-					<.1	-	<.1	1.6	5.6	11.6	6.4	1.5	1.2	0.7	-	-	<.1	<.1	0.2	-	-
Calliostoma ligatum	-	-					-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	0.9	1.3					2.6	0.8	0.3	1.0	0.4	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-
Fissurella volcano	0.2	-					<.1	-	0.2	0.1	0.4	1.8	1.3	0.1	1.3	1.6	2.2	4.6	3.3	2.6	1.4	1.7	9.9
Hemigrapsus nudus	-	-					-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	-	0.1					0.8	0.2	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia digitalis	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	0.5	-
Lottia limatula	0.3	-					0.3	<.1	0.4	2.2	3.5	1.9	2.7	1.7	1.8	1.2	0.7	1.0	2.5	2.2	1.9	1.9	5.5
Lottia pelta	0.6	-					1.5	0.4	3.7	5.3	6.1	8.4	3.3	1.1	3.5	3.6	1.7	3.4	6.1	2.9	2.7	2.6	5.0
Macclintockia scabra	1.0	2.2					1.2	1.7	3.9	24.4	152.2	200.8	159.7	21.5	3.0	4.0	2.0	1.6	4.7	4.4	13.5	4.0	3.9
Mopalia spp.	0.1	-					0.2	0.4	0.5	0.4	0.9	0.3	0.1	-	-	<.1	-	0.3	0.3	0.3	-	0.1	-
Nucella emarginata	-	-					-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuttallina californica	-	-					-	-	-	<.1	<.1	-	0.2	-	<.1	-	-	-	-	-	-	-	-
Ocenebra spp.	-	-					0.7	0.2	-	0.4	0.4	0.2	0.4	0.4	-	0.1	-	-	-	-	-	-	-
Pachygrapsus crassipes	-	-					<.1	-	<.1	-	0.2	0.2	<.1	0.2	0.3	0.3	0.2	0.3	0.4	0.6	0.3	-	0.3
Pagurus spp.	3.2	5.9					11.8	2.9	3.8	5.5	7.9	9.8	18.6	30.7	20.4	19.6	8.4	16.3	7.1	4.1	33.6	14.1	1.0
Pisaster ochraceus	-	-					-	-	-	-	<.1	-	0.1	0.5	0.2	0.2	-	<.1	0.1	-	0.1	0.1	-
Strongylocentrotus purpuratus	-	-					-	-	-	-	<.1	<.1	+	0.2	1.5	2.1	2.0	1.9	0.1	0.5	0.4	-	-
Tectura persona	0.3	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	0.9	0.6					2.2	0.9	3.9	10.6	18.3	3.6	3.8	2.2	2.3	0.7	0.6	0.9	1.4	1.1	0.2	0.5	0.8
Tegula brunnea	1.3	0.2					9.7	0.6	1.0	3.0	0.7	-	0.2	3.9	9.1	1.8	1.7	0.2	0.1	-	-	-	-
Tegula funebralis	1.4	6.3					14.2	39.2	62.4	36.6	109.0	123.6	298.0	173.5	57.4	2.7	4.6	0.4	<.1	0.8	41.0	43.9	-
Tetraclita rubescens	<.1	-					2.0	1.5	0.6	23.6	126.6	82.1	110.5	101.7	153.3	268.6	71.2	23.1	49.1	71.0	57.9	15.5	11.3
Only Counted if Greater than 1"																							
Acmaea mitra	<.1	-					<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acmaeidae unid.	0.3	-					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Aeolidia papillosa	-	-					-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-
Alia spp.	-	-					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-
Amphiodia occidentalis	-	-					-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Amphipholis spp..	-	-					-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Amphissa spp.	-	-					-	<.1	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Anisodoris nobilis	-	-					-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Anthopleura artemisia	0.1	-					-	-	-	+	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Anthozoa unid.	-	-					-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Aplysia californica	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Asterina miniata	-	-					-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-
Barleeia spp.	-	-					+	-	-	+	+	-	-	-	-	+	+	-	-	-	-	-	-
Bittium spp.	-	-					+	+	+	-	+	+	-	-	-	-	+	+	-	-	-	-	-
Cancer antennarius	-	-					<.1	-	<.1	-	<.1	-	-	-	-	<.1	-	<.1	<.1	-	-	-	0.1
Cancer spp.	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Chaetopteridae	-	-					-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-
Clavelina huntsmani	-	-					0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	-					+	+	+	+	+	+	+	+	+	-	-	+	-	-	-	-	-
Cyanoplax spp.	-	-					+	+	-	<.1	0.6	0.3	+	0.2	0.2	-	-	<.1	+	0.1	-	+	-
Diaulula sandiegensis	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Diodora spp.	-	-					-	-	-	-	-	-	-	-	-	-	-	-	+	<.1	-	-	-
Diopatra ornata	-	-					-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	-	-	-	-
Doriopsilla albopunctata	-	-					-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brato spp.	-	-					-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Flabellina trilineata	-	-					-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glans subquadrata	-	-					-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Granulina margaritula	-	-					-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-					-	-	+	-	-	+	+	-	-	-	+	-	+	+	-	-	-
Halcampa decemtentacula	-	-					-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	2	ns	ns	ns	ns	4	5	6	6	5	4	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Hemigrapsus oregonensis	-	-					-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-					-	-	-	-	+	-	-	-	-	+	-	-	-	+	-	-	-
Hermissenda crassicornis	-	-					-	-	-	+	-	-	+	-	0.1	+	+	+	+	+	+	0.1	-
Homalopoma spp.	-	-					+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Idotea spp.	-	-					-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	<.1	-					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
Isopoda unid.	-	-					-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Lacuna spp.	-	-					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
Lepidozona spp.	-	-					<.1	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Lissothuria mutriens	-	-					-	-	-	-	+	-	<.1	-	+	-	-	+	-	-	-	-	+
Lithopoma gibberosum	<.1	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina spp.	-	-					+	+	+	+	+	-	+	-	+	-	+	+	-	-	-	-	-
Lophopanopeus spp.	-	-					-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Lottia asmi	-	-					+	+	+	+	+	+	+	+	+	-	-	-	+	-	+	-	-
Lottia instabilis	-	-					-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-					-	-	-	<.1	-	+	-	+	+	+	+	-	+	-	-	-	-
Majidae	-	-					+	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Megathura crenulata	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-
Mytilidae	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Mytilus californianus	-	-					-	-	+	<.1	1.5	0.2	+	-	-	-	-	-	+	-	-	-	-
Mytilus galloprovincialis	-	-					-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-
Navanax inermis	-	-					-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	-	-	-	-
Nemertea unid.	-	-					0.5	0.9	<.1	-	+	+	-	-	-	-	-	-	-	<.1	0.3	0.1	-
Nereididae unid.	-	-					0.3	0.2	-	-	-	-	-	-	0.1	<.1	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-					-	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-
Octopus spp.	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Ophiactis simplex	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Ophiothrix spp.	-	-					-	-	-	-	-	-	-	-	<.1	-	-	0.4	0.1	0.1	0.1	-	-
Ophiuroidea unid.	-	-					+	-	-	-	-	-	-	-	-	-	+	-	+	+	-	-	+
Pelecypoda unid.	-	-					-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-					-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-					-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-					<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-					+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychaeta unid.	-	-					-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	0.2	-					0.2	+	<.1	<.1	+	-	<.1	0.2	0.4	0.6	0.1	<.1	0.3	+	0.4	0.7	1.0
Pycnogonida unid.	-	-					+	+	+	-	-	-	-	-	+	+	+	+	+	+	0.1	-	0.1
Pycnopodia helianthoides	-	-					-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Serpulidae unid.	-	-					-	-	-	+	<.1	0.3	+	0.2	+	<.1	-	+	+	+	-	0.1	+
Serpulorbis squamigerus	-	-					-	-	-	<.1	0.2	0.5	0.3	0.4	0.2	0.5	0.2	0.5	0.2	-	0.3	-	0.2
Sipuncula unid.	-	-					+	+	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
Tonicella lineata	-	-					-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Tricolia spp.	-	-					+	+	+	+	+	-	-	-	-	+	+	-	+	+	-	-	-
Williamia peltoides	-	-					-	-	-	-	-	-	-	-	<.1	+	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-					+	+	-	+	+	-	-	+	-	+	+	+	+	-	+	<.1	-
Chthamalus fissus	<.1	<.1					+	+	+	2.7	15.1	11.0	12.5	5.1	0.7	0.1	+	+	<.1	0.6	3.5	2.8	1.7
Dodecaceria fewkesi	-	-					-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Phragmatopoma californica	-	-					+	+	<.1	0.4	0.2	0.5	1.9	0.2	+	+	+	+	+	+	-	+	1.0
Pista spp.	0.1	<.1					3.0	0.9	0.1	0.1	0.1	<.1	<.1	0.1	+	0.4	1.1	7.2	16.5	22.1	21.6	19.3	1.5
Porifera unid. (encrusting)	-	-					+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spirorbidae	-	-					+	+	+	+	+	<.1	+	+	+	+	+	+	+	+	+	+	-
tunicates, colonial/social unid.	-	-					0.5	+	-	-	+	-	-	+	+	+	+	+	-	-	-	+	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 3 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	<.1	0.2	0.7	1.2	0.9	1.3	0.7	0.6	1.0	0.8	0.8	2.4	1.3	1.0	0.7	0.7	0.6	0.9	0.7	1.1	0.7	1.1	1.0
Anthopleura elegantissima	76.2	90.3	74.8	73.4	81.3	75.3	75.3	23.5	12.2	6.3	8.0	17.7	26.0	39.4	56.0	51.9	65.8	92.9	90.4	70.9	72.6	56.9	56.8
Anthopleura xanthogrammica	-	0.1	0.1	0.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Balanus spp.	0.2	+	+	0.1	<.1	<.1	0.2	-	-	0.1	<.1	<.1	<.1	0.2	-	<.1	0.1	0.1	-	-	-	-	-
Calliostoma ligatum	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma spp.	-	-	-	-	-	-	-	+	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	-	-	-	0.5	0.3	-	-	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Fissurella volcano	-	-	-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	-	0.1	-	-	-	-	-	-	-	-	-	0.2
Haliotis spp.	0.4	0.2	0.2	0.3	0.3	0.4	0.2	-	-	-	-	-	<.1	0.1	-	-	-	-	-	-	-	-	-
Hemigrapsus nudus	-	<.1	0.1	0.2	0.2	<.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.5	0.1	0.2	0.1	-	-	-	-	0.1	-
Leptasterias spp.	<.1	-	0.1	<.1	-	0.2	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia digitalis	1.6	2.5	0.6	0.5	0.7	0.7	0.6	0.3	1.1	0.8	0.7	0.4	0.6	0.5	0.4	0.5	<.1	0.2	0.2	-	0.2	0.7	0.1
Lottia limatula	1.9	1.0	1.5	2.4	1.7	1.7	1.6	1.0	0.8	2.1	2.6	4.7	3.9	6.4	4.5	5.8	2.9	5.3	2.8	4.1	2.3	3.0	5.5
Lottia pelta	0.4	0.3	0.2	0.5	0.2	1.3	2.5	1.1	0.7	1.3	0.7	0.8	1.1	1.9	1.7	1.1	0.4	<.1	<.1	0.3	0.4	0.8	0.5
Macclintockia scabra	16.8	44.2	24.2	27.1	36.0	39.3	54.3	34.3	39.5	51.5	52.6	113.2	74.4	63.2	34.1	31.4	26.4	35.4	27.4	18.2	24.2	34.1	31.9
Mitra idae	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mopalia spp.	0.1	0.1	<.1	<.1	<.1	<.1	0.2	<.1	0.1	<.1	0.1	<.1	0.1	<.1	-	-	-	<.1	-	-	0.1	-	-
Nucella emarginata	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	<.1	<.1	-	-	-	-	-	-	-
Nuttallina californica	-	-	<.1	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Ocenebra spp.	-	0.1	0.5	0.2	0.9	1.0	0.5	0.4	0.2	0.3	0.3	0.8	0.7	1.3	2.0	0.7	0.6	0.6	0.3	0.2	0.7	1.1	0.3
Pachygrapsus crassipes	<.1	<.1	0.3	0.3	0.2	0.1	0.2	0.3	<.1	0.2	0.2	0.4	0.4	1.0	0.6	1.1	0.6	0.7	0.5	0.1	0.7	0.2	0.7
Pagurus spp.	41.7	17.9	18.3	22.5	30.8	35.6	31.1	15.2	11.0	10.6	16.6	17.3	9.9	11.0	24.9	27.3	71.9	39.9	24.3	15.7	20.3	27.9	3.8
Pisaster ochraceus	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	<.1	0.1	<.1	0.6	-	-	0.2	0.4	-
Strongylocentrotus purpuratus	<.1	-	-	-	-	<.1	<.1	-	-	-	-	<.1	+	-	-	-	<.1	-	0.1	-	0.3	-	-
Tectura paleacea	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura persona	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	6.8	4.2	2.0	2.9	3.0	1.8	5.8	1.7	4.0	6.5	3.3	4.2	2.9	8.9	2.3	3.9	1.6	1.9	1.3	0.7	2.0	1.9	2.8
Tegula brunnea	-	-	<.1	0.2	<.1	<.1	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Tegula funebralis	111.7	173.7	169.9	136.9	217.5	216.1	158.7	170.3	141.5	207.7	232.3	229.9	201.2	366.7	361.4	370.8	184.6	213.6	243.1	342.9	294.2	313.3	298.8
Tegula spp.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	<.1	<.1	1.1	3.9	6.1	4.1	4.7	0.7	1.0	3.8	1.9	0.9	2.7	1.6	2.8	3.7	2.5	4.0	3.0	0.4	0.1	3.0	0.1
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	-	+	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Acmaeidae unid.	0.1	-	+	+	+	+	+	+	+	<.1	+	+	+	<.1	+	+	+	+	+	+	+	+	+
Aeolidia papillosa	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alia spp.	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphissa spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Asterina miniata	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Bittium spp.	-	-	-	+	+	+	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-
Cancer antennarius	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer productus	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	-	<.1	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-	-	+	+	-	-	+	-	-	-	+	-	+	-	+	-	<.1	+	-	-	+	-
Cirripedia unid. a	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Crangon spp.	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	-	+	+	+	+	+	<.1	+	+	+	<.1	+	+	+	+	+	+	-	+	-	-	+
Cryptochiton stelleri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Cyanoplax spp.	<.1	-	+	1.0	0.4	0.2	1.0	0.4	0.1	0.7	0.6	1.1	0.4	0.8	0.8	0.5	0.1	0.4	0.2	0.2	0.2	0.4	0.9
Diopatra ornata	-	<.1	0.1	0.1	0.3	0.3	0.4	-	-	<.1	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-
Discurria insessa	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Grapsidae (juv.)	-	-	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	-	+	-	+	-	-
Hemigrapsus oregonensis	-	-	-	<.1	<.1	0.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	0.3	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	-	-	+	+	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 3 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Idotea spp.	-	-	<.1	+	-	+	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	<.1	0.3	<.1	<.1	<.1	+	<.1	+	<.1	<.1	-	+	+	+	-	-	+	-	+	+	-	-	-
Isopoda unid.	-	-	-	-	-	-	+	+	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-
Lacuna spp.	-	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	+	+	-	-	+	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Littorina spp.	-	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lottia asmi	-	-	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	+	-	-	-	-	-	-	-
Majidae	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	+	-	-	-	-
Mytilus californianus	-	-	-	-	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.1	0.4	0.3	0.2	-	+	0.2	0.4	-	0.1	0.6
Mytilus galloprovincialis	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Nemertea unid.	-	-	-	<.1	<.1	0.2	0.1	<.1	-	<.1	-	-	-	-	<.1	<.1	+	-	-	-	-	-	-
Nereididae unid.	-	-	-	<.1	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-	+	+	+	+	+	-	+	+	-	+	-	+	+	+	+	+	+	-	-	+	+
Ophiuroidea unid.	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Petrolisthes spp.	-	-	-	-	0.1	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	+	+	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Pollicipes polymerus	-	-	-	-	-	-	-	-	-	-	+	0.2	1.2	2.9	10.3	10.8	16.7	9.2	7.4	8.1	4.7	7.7	7.4
Polychaeta unid.	-	-	+	-	+	-	-	+	-	<.1	-	-	-	-	-	-	-	+	-	-	-	-	-
Pugettia spp.	<.1	-	+	+	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pycnopodia helianthoides	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Septifer bifurcatus	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Sipuncula unid.	-	-	-	-	-	<.1	-	+	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-
Tricolia spp.	-	-	-	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chthamalus fissus	0.7	0.9	<.1	0.3	0.2	0.2	0.2	<.1	+	<.1	0.3	0.5	0.6	1.9	3.8	2.3	2.1	1.8	2.0	1.3	2.1	3.2	1.9
Dendropoma spp.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	-	<.1	+	+	+	<.1	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-
Pista spp.	-	+	+	<.1	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spirorbidae	-	-	+	+	+	+	+	+	+	<.1	+	<.1	+	-	+	+	<.1	<.1	+	+	+	<.1	+

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	-	0.1	<.1	<.1	0.1	0.1	<.1	0.1	0.2	1.7	0.9	0.5	0.5	-	-	-	-	<.1	-	0.1	-	-
Anthopleura elegantissima	4.1	2.5	1.8	2.0	2.4	2.8	3.0	1.3	1.4	1.1	1.2	2.3	4.0	9.5	21.3	24.8	16.2	8.9	5.9	9.0	7.8	10.0	7.7
Anthopleura xanthogrammica	0.1	0.2	0.3	0.3	0.2	0.3	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Balanus spp.	0.3	<.1	1.5	0.1	0.5	-	0.9	<.1	<.1	<.1	0.1	+	-	0.1	-	-	<.1	-	-	-	-	-	-
Calliostoma ligatum	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Conus californicus	0.4	<.1	1.2	0.6	0.4	0.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	-	0.4	0.3	1.3	1.0	0.3	0.3	-	-	<.1	-	-	-	<.1	-	-	-	<.1	-	<.1	-	-	0.1
Fissurella volcano	0.2	<.1	0.3	0.6	1.1	0.6	0.3	-	0.1	0.1	<.1	<.1	0.1	0.1	-	0.2	0.9	0.6	1.7	1.1	0.3	0.1	1.3
Haliotis spp.	<.1	0.1	0.3	0.2	<.1	<.1	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Hemigrapsus nudus	-	0.2	0.1	0.2	0.2	<.1	<.1	0.3	0.3	0.1	<.1	0.3	0.4	0.2	-	-	-	-	-	-	-	-	-
Leptasterias spp.	0.4	0.2	0.5	0.4	0.5	0.5	0.2	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia digitalis	-	-	-	0.2	0.1	-	-	0.2	0.1	0.3	-	<.1	0.3	-	-	0.2	-	-	-	-	-	-	-
Lottia limatula	0.3	<.1	0.5	0.6	0.6	0.6	0.5	1.3	1.2	2.4	6.3	8.0	7.2	4.5	5.5	5.4	4.9	10.4	7.4	10.2	5.3	4.8	4.3
Lottia pelta	-	-	0.1	0.2	0.2	0.3	1.5	0.5	1.6	1.5	0.6	0.9	0.9	0.1	1.0	1.2	1.5	2.4	3.4	1.6	1.2	2.3	4.5
Macclintockia scabra	0.2	1.9	4.0	3.7	2.7	4.2	21.2	10.5	57.2	84.8	118.6	111.8	112.1	69.3	40.7	73.2	16.7	28.6	21.4	17.0	19.2	19.2	59.4
Mitra idae	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mopalia spp.	<.1	<.1	<.1	0.3	<.1	<.1	0.1	0.1	<.1	-	<.1	<.1	-	-	-	-	<.1	<.1	-	<.1	0.1	0.1	-
Nassarius spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nucella emarginata	-	-	<.1	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuttallina californica	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Ocenebra spp.	<.1	0.6	0.9	2.1	1.9	1.4	0.9	0.1	0.2	0.5	0.8	1.2	1.4	3.0	1.7	1.5	1.3	0.2	0.4	0.1	0.3	1.1	0.1
Pachygrapsus crassipes	-	-	-	0.1	-	<.1	0.1	0.2	0.1	0.4	0.4	0.4	<.1	0.2	0.4	1.0	0.2	0.6	0.3	0.2	0.2	1.9	1.8
Pagurus spp.	9.9	22.8	26.5	17.5	22.1	24.0	25.5	27.6	18.1	12.9	29.2	37.4	28.2	28.2	82.4	211.9	102.6	60.6	68.5	74.7	43.9	24.5	8.5
Pisaster ochraceus	-	-	-	-	<.1	<.1	<.1	<.1	-	0.1	-	<.1	-	0.2	0.6	0.6	0.1	0.4	0.2	0.2	0.2	0.2	-
Pseudomelatoma torosa	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	<.1	-	<.1	-	0.2	0.2	0.1	-	<.1	-	<.1	-	<.1	-	<.1	-	<.1	0.3	0.5	2.5	0.8	0.7	0.4
Tectura persona	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Tectura scutum	1.8	1.3	1.8	2.1	1.5	1.7	18.2	3.1	6.1	7.1	9.7	7.8	2.5	7.2	2.0	13.9	1.4	1.7	1.7	1.7	7.1	5.3	15.9
Tegula brunnea	-	0.8	0.5	2.7	3.3	4.0	1.7	0.3	0.2	0.1	<.1	-	-	-	0.2	-	3.1	1.8	0.6	2.3	-	0.3	0.5
Tegula funebralis	22.4	49.9	47.8	37.8	130.4	82.0	98.3	104.7	125.5	194.9	383.7	291.7	380.0	390.2	260.9	48.5	59.4	82.0	248.9	81.9	140.1	277.3	358.4
Tegula pulligo	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Tegula spp.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	0.1	1.0	10.3	3.8	9.7	28.0	20.4	11.7	28.5	45.5	21.1	4.4	1.8	2.0	19.1	29.2	25.2	48.1	54.4	18.1	20.9	18.7	8.9
Only Counted if Greater than 1"																							
Acmaea mitra	<.1	<.1	+	+	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Acmaeidae unid.	0.9	-	<.1	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Aeolidia papillosa	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aeolidiacea unid. a	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Alia spp.	-	+	+	+	+	+	+	+	-	+	-	+	-	-	+	+	+	+	+	+	+	+	-
Amphissa spp.	-	-	-	+	<.1	<.1	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Anthopleura artemisia	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthozoa unid.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Asterina miniata	<.1	<.1	-	0.1	0.1	<.1	-	-	<.1	-	-	-	-	-	-	-	0.2	0.3	-	<.1	0.1	-	-
Balanus/Tetraclita spp.	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	-	+	+	+	+	-	+	-	-	-	-	-	-	-	+	-	+	-	-	-	-
Bittium spp.	-	-	+	+	+	+	+	-	+	+	+	-	-	-	-	-	+	-	-	+	-	+	-
Cancer antennarius	<.1	-	-	<.1	<.1	<.1	<.1	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-
Cancer productus	-	-	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	<.1	-	-	+	<.1	<.1	+	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Cirripedia unid. a	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clavelina huntsmani	0.6	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	-	-
Cyanoplax spp.	-	-	-	0.2	<.1	0.1	<.1	-	-	<.1	<.1	0.1	0.1	0.2	<.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	6	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Decapoda unid.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Diodora spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Diopatra ornata	-	0.6	0.6	1.1	0.9	1.1	0.5	-	<.1	<.1	<.1	-	-	+	0.1	-	-	-	0.1	<.1	0.2	0.1	0.1
Discurria insessa	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Doridacea unid.	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flabellina trilineata	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gari californica	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Grapsidae (juv.)	-	-	<.1	<.1	+	-	-	+	+	+	+	+	+	-	+	-	+	-	-	-	-	-	-
Hemigrapsus oregonensis	-	-	-	-	-	-	-	<.1	-	<.1	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	+	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hipponix spp.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	-	-	+	+	+	+	-	+	-	+	+	-	-	-	-	+	+	-	+	+	-	+	-
Hopkinsia rosacea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Idotea spp.	-	-	-	<.1	-	-	<.1	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	<.1	0.2	<.1	0.3	+	+	+	+	+	+	+	+	+	-	+	+	-	+	-	+	-	-
Isopoda unid.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
Lacuna spp.	-	+	+	+	+	+	+	-	+	+	+	+	-	-	+	+	+	+	+	<.1	+	+	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	-	-	0.1	-	-	-	-	+
Lissothuria nutriens	-	-	-	-	-	+	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Littorina spp.	-	-	-	-	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
Lottia asmi	-	-	-	+	+	+	+	+	+	+	+	+	+	+	<.1	+	-	-	+	+	-	+	0.1
Lottia instabilis	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+	<.1	-	-	-	-	+
Loxorhynchus spp.	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Majidae	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Mimulus foliatus	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilus californianus	-	-	-	-	-	0.2	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
Nemertea unid.	-	-	-	<.1	0.1	0.2	0.2	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	0.1	-	-
Nereididae unid.	-	-	-	<.1	-	+	<.1	-	<.1	+	-	-	-	-	-	<.1	-	+	-	0.1	-	-	-
Nitidiscala/Opalia spp.	-	-	-	+	+	+	+	-	+	+	-	-	-	-	+	+	+	+	+	+	-	+	-
Nudibranchia unid.	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Onchidella borealis	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-
Petrolisthes spp.	<.1	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Pollicipes polymerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Polychaeta unid.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Polyplacophora unid. a	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	<.1	<.1	0.5	1.3	0.6	0.7	0.3	-	<.1	-	-	<.1	<.1	-	-	-	-	-	<.1	-	0.1	0.1	-
Pycnogonida unid.	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Serpulidae unid.	-	-	<.1	<.1	0.2	0.1	0.2	-	-	+	+	+	-	-	+	-	-	+	+	-	+	+	+
Serpulorbis squamigerus	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	0.4	-
Sipuncula unid.	-	-	-	-	-	+	-	-	+	-	-	<.1	-	-	-	+	-	+	-	+	+	-	+
Stenoplax spp.	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tonicella lineata	-	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transennella spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tricolia spp.	-	-	-	+	-	+	+	-	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-
Urticina spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
% Coverage																							
Aglaophenia spp.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	-	-	<.1	+	<.1	<.1	+	+	<.1	+	<.1	-	+	-	+	-	+	+	+	+	-	-	-
Bryozoa, unid. (foliose)	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Diablo Cove Station SDC 3 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	6	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage (continued)																							
Chthamalus fissus	+	+	<.1	+	<.1	+	<.1	<.1	0.1	1.9	4.9	3.3	2.6	3.4	2.4	1.1	1.2	0.9	0.6	0.5	1.3	1.4	1.3
Dendropoma spp.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurystomella bilabiata	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haliclona spp.	-	-	-	-	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	+	<.1	<.1	+	+	+	+	+	+	+	<.1	0.2	0.2	+	+	+	+	+	+	+	+	+
Pista spp.	1.2	0.5	0.9	2.3	1.7	1.6	1.1	+	+	<.1	+	+	+	+	-	+	+	+	-	<.1	+	-	-
Porifera unid. (encrusting)	-	-	-	<.1	<.1	<.1	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spirorbidae	-	+	+	+	<.1	<.1	+	+	+	+	+	<.1	<.1	+	+	<.1	<.1	<.1	<.1	<.1	+	+	<.1
tunicates, colonial/social unid.	<.1	-	<.1	<.1	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Control Station SC 1 at +0.9m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Acanthina spp.	-	0.2	0.3	<.1	0.2	0.2	0.2	<.1	<.1	<.1	0.3	0.2	0.3	0.2	0.1	-	-	0.2	<.1	0.1	-	0.9	0.1
Anthopleura elegantissima	41.6	48.0	54.5	37.3	30.5	32.4	26.6	9.2	6.2	5.1	5.6	4.6	3.6	4.4	4.5	3.6	4.0	3.0	3.5	2.5	3.6	4.4	2.5
Anthopleura xanthogrammica	0.8	0.4	0.2	0.3	0.3	0.5	0.4	0.4	0.5	0.4	0.3	<.1	0.2	0.2	0.2	0.2	0.1	0.4	0.2	-	0.1	-	0.3
Balanus spp.	19.6	0.3	0.3	0.4	0.5	0.2	0.4	0.5	-	1.0	0.1	0.3	+	0.3	0.1	0.3	-	-	-	-	-	-	-
Calliostoma canaliculatum	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	-	<.1	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-
Fissurella volcano	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	-	-	-	-	-	<.1	-	0.4	-	-	-
Haliotis spp.	3.9	6.6	5.1	4.4	3.9	4.9	2.9	0.9	0.4	0.5	0.2	<.1	<.1	0.2	-	0.2	<.1	0.2	-	<.1	-	0.5	-
Hemigrapsus nudus	0.5	0.2	0.4	0.7	0.4	<.1	0.2	0.2	0.4	0.2	<.1	0.2	0.1	<.1	0.2	0.2	0.5	0.4	0.2	0.9	0.5	0.4	0.1
Leptasterias spp.	0.1	0.5	0.2	0.5	0.4	0.4	0.5	<.1	-	<.1	<.1	0.1	-	0.2	0.2	0.2	0.4	0.3	<.1	0.2	-	0.1	-
Lottia digitalis	-	10.5	1.2	5.0	1.8	0.8	0.9	0.2	0.1	0.9	-	0.1	-	-	0.3	-	0.1	<.1	-	-	0.3	1.5	-
Lottia limatula	1.2	2.1	1.9	3.1	2.0	5.2	4.6	1.3	1.5	2.5	3.7	4.5	5.5	4.7	5.0	8.3	3.9	3.6	3.8	3.9	5.4	6.7	2.8
Lottia pelta	1.1	1.4	2.6	2.6	1.9	2.5	0.7	0.3	1.1	1.1	0.7	0.7	1.7	0.3	1.1	0.6	1.5	1.0	1.3	2.3	2.6	1.5	1.1
Macclintockia scabra	27.9	95.1	66.4	79.4	76.1	100.3	87.9	44.1	109.2	189.4	125.6	99.7	100.2	73.7	55.2	39.8	17.6	23.8	12.0	6.4	17.9	45.0	22.7
Mopalia spp.	-	0.4	0.2	<.1	-	<.1	-	<.1	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	0.1	-
Nucella emarginata	<.1	-	<.1	<.1	<.1	-	<.1	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Nuttallina californica	-	0.1	0.2	<.1	-	<.1	<.1	<.1	-	<.1	0.1	<.1	-	-	<.1	-	-	<.1	-	-	-	-	0.3
Ocenebra spp.	-	<.1	0.6	0.6	0.4	0.3	0.1	0.2	<.1	0.3	0.6	0.8	1.0	0.3	0.7	0.8	0.8	0.6	1.0	0.2	0.4	1.1	1.7
Pachygrapsus crassipes	0.2	<.1	0.6	0.5	0.3	0.5	0.2	0.4	0.3	0.1	0.2	0.4	0.2	0.5	0.4	0.9	0.8	1.0	0.7	0.5	0.2	0.9	0.7
Pagurus spp.	4.9	5.5	7.7	9.1	12.2	8.5	13.3	5.3	8.1	7.1	5.4	7.4	8.7	6.8	12.5	10.2	14.2	11.1	11.0	13.3	5.6	11.6	7.5
Pisaster ochraceus	-	<.1	<.1	0.1	0.3	0.2	0.2	<.1	0.2	<.1	<.1	0.3	0.2	0.2	0.3	0.1	0.2	0.2	0.2	0.3	-	-	-
Pseudomelatoma torosa	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	<.1	-	-	-	-	-	0.1	-	-
Strongylocentrotus purpuratus	-	-	<.1	<.1	-	-	0.2	-	-	-	<.1	-	-	0.1	0.4	0.2	0.2	0.3	0.3	0.1	0.1	0.1	-
Tectura persona	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	0.6	3.1	3.6	5.0	3.4	5.1	9.2	1.3	4.8	6.2	5.9	7.4	3.8	5.2	4.8	4.5	2.9	3.2	2.6	7.1	7.8	8.1	1.2
Tegula brunnea	-	-	-	-	-	-	-	<.1	-	<.1	<.1	<.1	-	-	<.1	-	-	-	-	-	-	-	-
Tegula funebralis	69.6	141.0	98.4	186.9	184.5	184.6	142.5	142.8	163.0	162.2	264.2	293.9	276.1	250.0	234.4	248.4	142.1	100.5	90.8	123.2	127.6	78.3	207.5
Tegula pulligo	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	0.2	4.5	1.1	0.3	3.4	6.5	5.0	35.3	1.0	1.0	0.7	0.4	0.9	1.1	2.9	1.2	8.6	11.8	21.6	1.7	8.2	2.2	0.6
Only Counted if Greater than 1"																							
Acmaea mitra	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-	-	+
Acmaeidae unid.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alia spp.	-	-	+	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Asterina miniata	-	-	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barleesia spp.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Bittium spp.	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cyanoplax spp.	-	0.1	<.1	0.5	0.7	0.2	0.3	-	<.1	+	0.2	0.5	0.2	+	0.1	0.1	0.2	+	0.1	0.1	-	0.4	0.1
Diaulula sandiegensis	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Diopatra ornata	-	-	-	<.1	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discurria insessa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Grapsidae (juv.)	-	<.1	<.1	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+
Homalopoma spp.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+	-	-
Idotea spp.	<.1	-	+	0.3	0.1	0.2	-	-	-	-	-	0.1	+	<.1	<.1	<.1	-	-	-	-	+	-	-
Ischnochitonidae	0.2	-	0.2	0.1	+	<.1	+	+	+	+	+	+	-	+	+	-	-	-	+	-	+	0.1	-
Lacuna spp.	-	-	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	+	+	-	-	-	+
Lepidozona spp.	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithopoma gibberosum	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina spp.	-	+	0.3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lottia asmi	-	-	+	+	+	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lottia instabilis	-	-	-	-	-	-	-	-	-	-	+	<.1	+	-	+	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-
Majidae	-	-	-	-	-	-	+	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Control Station SC 1 at +0.9m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	4	6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Mytilus californianus	-	0.2	0.1	-	+	+	-	-	+	+	0.1	0.1	0.3	+	0.3	<.1	-	-	-	-	-	-	-
Nemertea unid.	-	-	<.1	0.2	0.1	0.2	0.4	<.1	-	0.2	<.1	0.1	0.1	0.3	0.1	0.4	<.1	-	0.2	0.1	0.1	0.1	-
Nereididae unid.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-	+	+	+	+	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Petrolisthes spp.	-	-	-	-	-	-	<.1	-	-	+	-	-	-	-	-	-	<.1	+	-	+	-	-	-
Pisaster/Henricia (juv.)	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	+	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pollicipes polymerus	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Polychaeta unid.	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	+	-	<.1	-	-	-	-	-
Serpulidae unid.	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	<.1	-	-	+	-	-
Serpulorbis squamigerus	-	-	-	-	-	-	-	0.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sipuncula unid.	-	-	-	+	+	0.1	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	0.1	-
Tricolia spp.	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Velutina velutina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
% Coverage																							
Bryozoa, unid. (encrusting)	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Chthamalus fissus	0.6	0.7	0.5	0.5	0.7	1.5	0.9	0.1	0.3	0.7	1.9	1.0	1.3	1.0	0.8	0.8	3.8	2.0	1.0	0.6	1.0	4.5	1.2
Haliclona spp.	-	-	-	<.1	<.1	<.1	<.1	-	+	+	<.1	-	-	+	-	-	-	-	+	-	-	-	-
Phragmatopoma californica	0.1	1.3	0.6	0.5	0.6	0.5	0.2	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.1	<.1	+	<.1	+	+	+	<.1	<.1
Pista spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Porifera unid. (encrusting)	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spirorbidae	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
tunicates, colonial/social unid.	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

<.1 = measured but in low abundance
+ = only recorded as present

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Control Station SC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	6	6	6	6	6	6	4	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Counted Regardless of Size																							
Anthopleura elegantissima	1.6	2.7	2.2	1.1	1.6	1.8	2.0	2.7	2.2	2.0	2.2	1.8	1.7	1.4	1.8	1.5	1.3	1.4	1.4	1.1	1.2	1.5	1.5
Anthopleura xanthogrammica	0.2	<.1	0.1	0.1	0.2	<.1	0.1	0.3	0.5	0.3	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-
Balanus spp.	4.0	0.2	1.4	0.3	0.3	-	0.1	0.1	<.1	0.4	-	0.5	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	+	<.1	-	+	-	-	<.1	-	<.1	-	-	<.1	0.2	-	-	<.1	-	<.1	+	+	-
Conus californicus	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epiactis prolifera	-	0.5	0.5	0.3	0.4	0.4	0.4	0.2	<.1	0.1	0.1	0.1	0.3	0.5	0.2	0.7	0.6	0.3	0.3	0.2	-	0.6	0.1
Fissurella volcano	1.1	1.0	1.6	1.7	1.3	1.3	1.0	0.5	1.4	4.3	2.7	1.0	0.6	0.7	1.1	1.7	2.4	1.6	0.8	0.8	0.3	1.7	1.0
Haliotis spp.	0.5	2.3	2.6	0.8	0.4	0.2	0.2	<.1	0.1	<.1	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-
Hemigrapsus nudus	-	-	0.1	-	-	-	<.1	0.1	0.1	0.1	<.1	-	-	-	-	<.1	-	-	-	-	-	0.1	-
Leptasterias spp.	-	0.2	0.5	0.5	0.7	0.7	0.2	0.4	0.1	0.2	0.3	0.3	0.2	-	0.3	0.3	0.5	1.2	0.4	0.8	0.3	0.3	-
Lottia digitalis	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
Lottia limatula	-	0.4	0.7	0.1	0.2	0.4	0.8	0.4	1.1	2.8	1.5	0.5	0.6	1.2	1.4	0.3	0.7	1.7	1.4	0.9	4.0	2.0	1.0
Lottia pelta	0.2	-	<.1	0.2	<.1	0.7	0.3	0.8	0.7	3.0	1.3	1.6	1.8	0.6	0.8	0.4	1.6	1.3	1.8	3.1	2.0	1.4	1.7
Macclintockia scabra	0.1	<.1	0.1	0.3	0.5	1.0	0.5	0.7	7.2	70.8	43.9	12.6	8.4	4.0	1.5	0.3	0.6	1.0	0.6	2.2	4.3	10.6	2.9
Mopalia spp.	<.1	<.1	0.1	0.2	-	0.1	0.1	0.1	<.1	0.1	-	<.1	-	0.2	0.2	<.1	<.1	0.1	-	0.4	0.1	0.8	0.1
Nucella emarginata	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuttallina californica	-	-	<.1	<.1	<.1	-	-	-	-	0.1	<.1	-	0.1	-	-	-	-	-	-	-	0.3	-	-
Ocenebra spp.	-	<.1	0.2	0.5	0.5	0.3	0.4	0.3	1.0	0.2	0.6	0.5	0.8	0.5	1.3	1.1	0.8	0.9	0.6	0.5	0.2	2.2	0.8
Pachygrapsus crassipes	-	-	-	<.1	-	-	-	-	-	-	<.1	-	<.1	0.1	-	0.3	-	0.4	0.1	-	-	0.6	0.1
Pagurus spp.	3.7	16.0	6.3	12.9	18.7	19.6	12.0	12.1	16.9	10.8	9.2	12.5	11.4	7.7	8.8	19.1	11.3	12.3	9.5	7.4	13.1	17.7	11.6
Pisaster ochraceus	-	0.2	<.1	-	0.2	0.1	<.1	<.1	0.2	0.1	0.2	0.1	-	<.1	<.1	-	-	<.1	<.1	-	-	0.1	0.1
Pseudomelatoma torosa	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	0.1	0.2	<.1	-	-	-	-
Strongylocentrotus purpuratus	<.1	0.2	<.1	<.1	<.1	0.1	-	-	-	<.1	-	<.1	-	+	-	0.2	+	-	-	-	-	0.1	-
Tectura paleacea	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-
Tectura persona	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura scutum	0.5	1.2	1.6	1.4	1.9	2.1	2.2	0.9	3.2	6.7	3.4	2.2	5.4	2.1	1.2	1.5	1.0	1.2	1.2	1.5	1.5	0.8	0.1
Tegula brunnea	0.2	1.9	3.5	11.2	11.7	8.3	4.1	7.1	4.2	6.6	8.7	14.1	10.1	10.5	9.8	8.7	9.8	6.9	3.3	10.0	4.5	7.4	11.0
Tegula funebralis	9.6	9.5	9.2	6.5	8.9	10.2	5.2	15.0	18.3	9.1	14.8	5.2	10.2	3.6	1.5	5.5	1.7	0.1	0.3	3.7	22.6	4.0	5.1
Tegula spp.	-	-	0.2	-	-	0.2	<.1	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	4.0	27.2	11.8	13.7	31.4	58.2	40.4	27.9	18.5	80.1	37.1	23.8	14.9	35.9	52.5	37.4	67.4	54.4	62.1	45.7	122.0	46.9	36.5
Only Counted if Greater than 1"																							
Acmaea mitra	<.1	0.4	0.2	<.1	0.4	0.2	<.1	+	<.1	0.2	0.1	0.2	<.1	<.1	<.1	-	+	<.1	0.3	+	0.2	0.2	+
Acmaeidae unid.	-	0.2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Aldisa sanguinea	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alia spp.	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Amphissa spp.	-	-	<.1	+	+	<.1	-	-	-	-	-	+	+	0.1	-	-	-	+	-	-	-	+	-
Anthopleura artemisia	1.2	-	-	0.1	<.1	<.1	-	0.2	-	0.1	0.1	<.1	-	<.1	<.1	0.1	-	-	-	-	0.1	-	-
Anthozoa unid.	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asterina miniata	0.2	0.3	0.5	0.4	0.9	0.5	0.2	0.7	-	-	<.1	<.1	-	0.1	0.3	0.3	0.2	<.1	0.2	0.1	-	0.2	0.2
Asteroidea unid.	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barleeia spp.	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bittium spp.	-	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-
Cancer antennarius	-	-	-	<.1	<.1	+	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	0.1	-
Cancer spp.	-	-	+	+	-	<.1	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaetopteridae	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	-
Cirratulidae/Terebellidae unid.	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clavelina huntsmani	-	<.1	<.1	<.1	+	<.1	-	-	-	-	-	+	<.1	+	+	-	+	0.1	-	-	-	+	-
Corynactis californica	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-
Crepidula spp.	-	+	+	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	-	+	+	-	+
Cryptolithodes sitchensis	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cucumaria spp.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Cyanoplax spp.	-	-	<.1	-	-	-	-	-	<.1	+	-	-	-	-	-	-	-	-	<.1	-	-	0.1	-
Diaulula sandiegensis	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-
Diodora spp.	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	-	+	+	-
Diopatra ornata	-	-	-	<.1	0.1	0.1	<.1	0.2	<.1	0.4	-	<.1	0.2	-	-	-	<.1	-	-	<.1	-	-	-
Discurria insessa	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Control Station SC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	6	6	6	6	6	6	4	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
Only Counted if Greater than 1" (continued)																							
Doridacea unid.	-	-	-	-	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Grapsidae (juv.)	-	-	+	+	+	+	+	-	+	+	-	+	-	-	-	-	+	+	+	-	-	-	-
Halcampa decemtentacula	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Henricia leviuscula	-	-	<.1	-	-	-	+	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	-	+	-	-	-	<.1	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	+	-	-	+	-	-	-	-	-
Hipponix spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	-	-	-	+	-	+	-	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+
Hopkinsia rosacea	-	-	+	-	<.1	-	-	+	-	-	-	-	-	-	-	-	+	<.1	-	-	-	-	-
Idotea spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	0.2	<.1	+	<.1	<.1	<.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
Lacuna spp.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Laila cockerelli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Lepidozona spp.	-	-	-	-	-	-	+	-	<.1	<.1	0.1	<.1	-	-	0.1	+	+	-	0.2	-	-	+	-
Lissothuria nutriens	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	-	+	-	+	-	+	-
Lithopoma gibberosum	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina spp.	-	-	+	-	-	+	+	-	-	+	-	-	-	-	-	+	-	+	-	+	+	-	-
Lophopanopeus spp.	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
Lottia asmi	-	+	-	-	+	-	+	+	-	+	+	+	-	-	-	-	+	-	-	+	+	+	-
Lottia instabilis	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	<.1	+	+	+	-	-	+	+	-	-	<.1	-	+	<.1	+	+	+	-	-	-	-
Majidae	-	-	-	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	-	-	-	-
Negatebennus bimaculatus	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nodiolus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Mytilus californianus	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Nemertea unid.	-	0.1	0.5	0.7	0.5	0.9	0.5	0.7	0.3	0.7	1.1	0.9	0.6	0.6	0.3	0.7	+	0.4	0.7	0.5	0.2	0.3	0.2
Nereididae unid.	-	-	+	<.1	-	<.1	0.1	-	-	-	-	<.1	-	0.1	0.2	<.1	0.2	0.1	-	<.1	-	-	+
Nitidiscala/Opalia spp.	-	-	-	-	-	+	-	-	-	+	-	-	-	-	+	-	+	+	-	-	-	-	-
Nudibranchia unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Octopus spp.	<.1	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Onchidella borealis	-	-	+	+	+	+	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Ophiuroidea unid.	-	-	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	+	-
Petrolisthes spp.	-	-	0.1	+	-	-	-	<.1	<.1	-	-	-	+	-	-	-	+	-	-	+	-	-	0.1
Phidiana hiltoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-
Pisaster/Henricia (juv.)	-	<.1	+	<.1	+	+	+	+	-	+	-	+	-	+	+	<.1	+	+	-	+	-	-	0.1
Platyhelminthes unid.	-	-	-	-	-	-	+	-	<.1	-	-	<.1	-	-	-	<.1	-	+	-	-	-	-	-
Polychaeta unid.	-	-	-	-	-	-	<.1	+	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Polyplacophora unid. a	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-	0.5	1.4	0.5	0.4	0.4	1.0	0.3	0.3	0.2	0.6	0.5	0.3	0.6	0.5	0.6	0.2	0.3	0.7	+	0.4	0.3
Pycnogonida unid.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pycnopodia helianthoides	-	-	-	-	<.1	0.1	<.1	<.1	<.1	-	-	<.1	<.1	-	<.1	0.2	-	<.1	0.1	+	-	-	-
Rostanga pulchra	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-	-
Serpulidae unid.	-	-	0.1	<.1	<.1	<.1	+	+	<.1	0.2	0.3	0.1	+	<.1	0.1	0.3	<.1	0.1	0.2	<.1	0.2	0.2	0.3
Serpulorbis squamigerus	<.1	-	<.1	-	-	<.1	-	<.1	-	<.1	<.1	<.1	<.1	<.1	0.3	0.3	-	<.1	+	<.1	-	-	-
Sipuncula unid.	-	-	-	+	-	+	<.1	-	<.1	+	-	<.1	-	+	-	-	+	-	+	-	-	+	-
Stenoplax spp.	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-
Tonicella lineata	-	-	0.2	0.5	0.3	0.1	<.1	+	0.1	<.1	-	<.1	-	-	0.2	<.1	-	+	-	0.2	-	0.1	-
Transennella spp.	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Tricolia spp.	-	-	-	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	-	+	-	-	-
snail, unid.	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Horizontal Band Transects - Yearly Invertebrate Mean Abundance (per 1 m squared) - South Control Station SC 1 at +0.3m (Based on 5 "Tegula" Count Quadrats) (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	4	6	6	6	6	6	6	4	6	6	6	6	4	4	4	4	4	4	4	3	2	2	2
% Coverage																							
Bryozoa, unid. (encrusting)	-	-	<.1	+	+	<.1	<.1	+	+	+	<.1	<.1	<.1	<.1	+	+	+	0.1	+	+	+	+	+
Bryozoa, unid. (erect)	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (foliose)	-	-	-	-	-	+	-	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-
Chthamalus fissus	+	+	<.1	+	+	+	+	+	+	0.3	0.6	0.1	<.1	+	+	+	+	+	<.1	+	+	+	+
Dendropoma spp.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurystomella bilabiata	-	-	-	+	+	-	+	-	-	-	+	+	-	+	+	+	+	+	+	-	-	-	-
Haliclona spp.	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-
Leucosolenia spp.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	<.1	2.0	5.3	3.4	2.7	0.9	1.0	0.3	0.2	0.7	1.3	2.2	2.8	5.4	5.0	2.0	1.5	0.6	0.3	0.3	0.3	1.5	0.7
Pista spp.	-	1.3	-	0.1	<.1	+	+	-	<.1	+	+	<.1	-	-	-	+	+	+	-	-	-	+	+
Porifera unid. (encrusting)	<.1	-	+	<.1	+	+	+	<.1	+	+	+	+	+	+	<.1	+	+	+	+	+	+	+	+
Salmacina tribranchiata	-	-	-	+	+	+	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-	-
Spirorbidae	-	<.1	+	+	+	+	0.1	0.1	0.1	0.3	0.2	0.2	0.1	0.1	0.4	0.3	<.1	0.4	+	+	<.1	0.5	0.3
tunicates, colonial/social unid.	-	<.1	<.1	0.3	0.1	0.2	0.5	<.1	<.1	+	<.1	0.3	0.2	0.1	0.1	0.1	+	0.2	<.1	+	+	+	+

<.1 = measured but in low abundance
+ = only recorded as present

APPENDIX C3 – Intertidal Algae
Vertical Band Transects

Vertical Band Transects - Algae Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	1	4	5	1	4	4	4	4	3	4	4	4	3	4
BEDROCK										88.9	90.3	93.9	94.4	93.1	88.9	88.2	93.8	91.7	93.1	92.4	91.0	92.6	90.3
BOSSIELLA SPP.										58.3	38.2	45.6	50.0	13.2	18.8	26.4	47.9	48.1	56.3	52.1	35.4	51.9	47.9
BOTRYOGLOSSUM FARLOWIANUM										-	1.4	0.6	-	-	-	-	-	-	-	-	0.7	-	-
BOULDER (>12")										75.0	72.2	73.3	77.8	56.3	65.3	71.5	52.1	79.6	61.1	61.1	61.1	73.1	56.9
BRYOPSIS CORTICULANS										-	-	-	-	-	-	-	-	0.9	0.7	-	-	-	1.4
CALLIARTHRON SPP.										-	--	6.7	-	-	19.4	20.8	18.1	25.9	14.6	6.9	11.1	23.1	9.0
CALLITHAMNION PIKEANUM										-	-	-	-	-	-	-	2.1	-	-	-	0.7	-	-
CALLOPHYLLIS SPP.										-	-	-	-	-	-	-	-	-	-	-	-	-	-
CENTROCERAS CLAVULATUM										-	-	-	-	-	-	-	-	-	1.4	-	-	-	1.4
CERAMIUM SPP.										-	-	-	-	-	-	-	-	-	-	1.4	2.8	-	0.7
CHONDRIA DECIPIENS										-	0.7	-	-	-	1.4	2.1	9.0	15.7	9.0	8.3	5.6	21.3	13.9
CLADOPHORA GRAMINEA										36.1	34.7	72.8	75.0	38.2	75.0	86.8	84.0	89.8	84.7	71.5	82.6	91.7	79.2
COBBLE (1/2" - 6")										63.9	88.2	82.8	83.3	47.9	68.8	75.0	70.1	64.8	83.3	70.8	76.4	96.3	63.9
CODIUM SETCHELLII										-	-	-	-	-	-	-	19.4	-	-	-	-	-	-
COLPOMENIA SPP.										-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
CORALLINA OFFICINALIS										30.6	30.6	18.3	5.6	10.4	0.7	1.4	1.4	-	2.1	0.7	-	4.6	-
CORALLINA VANCOUVERIENSIS										52.8	31.3	45.0	41.7	43.8	34.7	41.7	55.6	59.3	59.0	45.8	43.8	76.9	54.2
CORALLINE CRUST										77.8	71.5	76.7	66.7	72.2	84.0	87.5	86.8	91.7	89.6	88.2	90.3	91.7	86.1
CORRALLINA SPP. + C.B.S.										-	-	-	-	-	29.2	47.9	54.9	50.9	42.4	39.6	50.7	68.5	28.5
CRYPTOPLEURA LOBULIFERA/VIOLACEA										13.9	2.1	7.2	-	-	1.4	2.8	-	-	-	-	-	-	-
CRYPTOPLEURA VIOLACEA										13.9	2.1	5.6	-	1.4	2.8	1.4	10.4	14.8	24.3	21.5	23.6	22.2	21.5
CRYPTOSIPHONIA WOODII										41.7	26.4	37.2	41.7	31.3	45.1	43.1	59.7	67.6	75.7	68.8	69.4	66.7	61.1
CYLINDROCARPUS RUGOSUS										-	-	1.1	-	-	-	-	-	-	-	-	-	-	-
DIATOM CHAINS										-	-	-	-	-	-	0.7	-	-	0.7	0.7	-	-	-
DRIFT ALGAE										-	25.0	53.9	86.1	95.1	75.0	80.6	43.1	50.9	51.4	56.3	50.0	63.9	29.9
EGREGIA MENZIESII										-	-	-	-	-	-	-	-	-	-	-	2.1	-	-
ENDOCLADIA MURICATA										61.1	57.6	77.8	77.8	68.8	70.1	66.0	70.8	70.4	75.0	65.3	70.1	73.1	64.6
ENTEROMORPHA SPP.										-	-	0.6	-	-	1.4	-	-	-	-	-	-	-	-
ERECT CORALLINE ALGAE										-	-	-	-	2.8	12.5	-	-	-	-	-	-	-	-
FARLOWIA MOLLIS										-	-	1.7	-	-	-	1.4	1.4	-	-	0.7	0.7	-	-
FUCUS GARDNERI										-	-	-	-	-	-	0.7	-	-	-	-	0.7	-	-
GASTROCLONIUM COULTERI										38.9	27.8	33.3	25.0	15.3	16.7	14.6	17.4	21.3	24.3	40.3	33.3	35.2	37.5
GELIDIUM COULTERI										61.1	64.6	58.9	50.0	57.6	50.0	50.7	50.7	54.6	63.9	67.4	66.7	61.1	47.2
GELIDIUM PUSILLUM										58.3	64.6	50.6	47.2	23.6	37.5	38.9	46.5	39.8	29.2	29.9	37.5	64.8	39.6
GELIDIUM ROBUSTUM										-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
GELIDIUM SPP.										-	-	-	-	-	-	-	-	-	-	-	0.7	-	0.7
GIGARTINA AGARDHII										-	-	-	-	1.4	-	-	0.7	-	3.5	1.4	1.4	3.7	1.4
GIGARTINA CANALICULATA										41.7	19.4	24.4	-	9.0	6.3	9.0	9.7	12.0	13.9	25.0	25.0	21.3	12.5
GIGARTINA EXASPERATA										-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIGARTINA LEPTORHYNCHOS										38.9	51.4	70.0	58.3	61.1	61.1	68.8	72.9	79.6	74.3	75.0	71.5	80.6	74.3
GRATELOUPIA DORYPHORA										-	-	1.1	-	0.7	-	1.4	0.7	-	2.8	1.4	-	1.9	1.4
GRAVEL (1/8" - 1/2")										55.6	87.5	72.8	61.1	18.8	38.9	66.0	34.7	38.9	63.2	52.1	50.7	99.1	61.8
GYMNOGONGRUS LEPTOPHYLLUS										-	-	-	-	-	-	10.4	-	-	-	-	-	-	-
GYMNOGONGRUS SPP.										-	-	-	-	-	-	1.4	-	-	-	-	-	-	-
HALOSACCION GLANDIFORME										-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDROGEN SULFIDE										-	18.8	16.1	5.6	36.8	25.0	1.4	-	-	1.4	5.6	-	5.6	-
IRIDAEA CORDATA										-	-	0.6	-	-	-	0.7	-	-	-	-	0.7	0.9	-
IRIDAEA FLACCIDA										5.6	5.6	17.2	-	9.7	12.5	23.6	20.8	27.8	13.2	29.9	11.8	29.6	26.4
IRIDAEA HETEROCARPA										-	11.8	44.4	41.7	41.7	46.5	56.3	66.7	75.9	66.7	61.8	70.1	47.2	63.2
LAURENCIA SPECTABILIS										5.6	4.2	4.4	-	0.7	-	-	6.3	8.3	15.3	9.7	8.3	6.5	5.6
MASTOCARPUS PAPILLATUS										50.0	59.7	82.8	41.7	60.4	81.9	90.3	77.1	85.2	91.0	89.6	89.6	95.4	81.3
MELOBESIA MEDIOCRIS										-	-	-	-	-	-	-	9.0	20.4	20.8	9.0	7.6	29.6	22.2
MICROCLADIA BOREALIS										-	-	-	-	-	-	-	-	-	-	-	-	-	-
MICROCLADIA COULTERI										2.8	-	-	-	-	-	0.7	-	0.9	1.4	1.4	2.8	1.9	0.7
NEMALION HELMINTHOIDES										-	-	-	-	-	-	-	-	-	2.1	-	-	-	-
NEOAGARDHIELLA GAUDICHAUDII										-	1.4	0.6	-	-	-	-	2.1	1.9	3.5	8.3	3.5	4.6	2.8
NEOPTILOTA DENSA										-	-	-	-	-	-	-	-	-	-	-	-	-	-
NON-CORALLINE CRUST										94.4	88.9	93.3	77.8	90.3	98.6	95.8	95.1	97.2	98.6	98.6	92.4	95.4	92.4
PELVETIA FASTIGIATA										-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
PETROCELIS SPP.										-	-	-	-	-	1.4	-	-	-	-	-	-	-	-

Vertical Band Transects - Algae Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	1	4	5	1	4	4	4	4	3	4	4	4	3	4
PHYLLOSPADIX SPP.										19.4	24.3	21.7	19.4	20.8	20.1	18.8	25.0	26.9	26.4	25.7	29.2	29.6	35.4
PIKEA CALIFORNICA										-	-	0.6	-	-	-	-	-	0.9	-	-	-	0.9	-
POLYSIPHONIA SPP.										-	-	-	-	-	-	-	-	-	-	0.7	-	-	-
PORPHYRA PERFORATA										-	27.8	35.6	5.6	10.4	11.8	25.0	11.1	30.6	36.1	41.0	34.7	59.3	25.0
PORPHYRA SPP.										-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
PRIONITIS LANCEOLATA										5.6	2.8	3.3	2.8	1.4	2.1	4.2	3.5	1.9	4.2	6.9	5.6	7.4	5.6
PRIONITIS LYALLII										-	-	2.8	-	-	-	0.7	0.7	0.9	0.7	-	-	-	0.7
PTEROSIPHONIA DENDROIDEA										-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
PUDDLE UNDER ROCK										-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
RHODOGLOSSUM AFFINE										-	19.4	28.9	5.6	20.1	34.0	29.9	34.0	38.9	36.8	43.8	40.3	53.7	40.3
RHODOMELA LARIX										2.8	0.7	3.9	2.8	0.7	0.7	0.7	0.7	-	1.4	-	-	-	-
RHODYMENIA SPP.										-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
ROCK (6" - 12")										88.9	88.9	66.7	86.1	48.6	73.6	77.1	74.3	63.0	75.0	69.4	64.6	85.2	52.8
SAND (<1/8")										66.7	72.9	74.4	63.9	31.3	82.6	63.2	54.2	71.3	71.5	68.1	68.8	92.6	86.8
SCHIZYMENIA/HALYMENIA SPP.										-	-	1.7	2.8	-	-	-	-	-	3.5	1.4	-	4.6	-
SHELL FRAGMENTS										-	-	19.4	-	-	22.2	-	-	-	-	-	-	-	-
SMITHORA NAIADUM										-	-	1.1	-	6.3	4.9	-	0.7	3.7	13.2	4.2	11.8	19.4	7.6
SPONGOMORPHA COALITA										-	18.8	2.2	-	40.3	19.4	4.2	5.6	16.7	17.4	18.8	16.7	5.6	6.3
TIDEPOOL										58.3	56.3	54.4	69.4	50.7	61.8	68.8	77.1	76.9	83.3	69.4	71.5	40.7	69.4
ULVA SPP.										-	2.8	-	-	0.7	0.7	-	3.5	2.8	19.4	18.1	15.3	40.7	10.4
ULVA SPP./ENTEROMORPHA SPP.										-	-	-	-	-	-	2.1	-	-	-	-	0.7	-	1.4

Vertical Band Transects - Algae Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
ANALIPUS JAPONICUS				-	-	-	-	-		-	-	1.1	-	-	-	-	-	-	-	-	-	-	-
ANTITHAMNION SPP.				1.4	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BEDROCK				11.8	48.6	64.4	40.0	-		16.7	16.0	22.8	30.6	50.7	30.6	15.3	20.8	8.3	22.2	16.7	11.1	8.3	16.7
BOSSIELLA SPP.				40.3	48.6	42.8	49.4	27.8		36.1	20.8	13.9	13.9	2.1	3.5	6.9	7.6	7.4	2.8	6.9	2.8	2.8	5.6
BOTRYOGLOSSUM FARLOWIANUM				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOULDER (>12")				100.0	99.5	98.9	38.3	-		100.0	100.0	99.4	100.0	93.8	98.6	99.3	99.3	98.1	96.5	100.0	100.0	100.0	100.0
CALLIARTHRON SPP.				-	-	0.6	0.6	1.4		-	0.7	1.1	-	-	4.9	4.9	5.6	0.9	-	1.4	-	2.8	-
CALLITHAMNION PIKEANUM				14.6	8.8	11.7	10.0	12.5		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
CALLITHAMNION RUPICOLUM/PLEONOSPORIUM SP				-	0.5	2.8	4.4	8.3		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CALLITHAMNION SPP./PLEONOSPORIUM SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	-
CALLOPHYLLIS SPP.				0.7	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
CENTROCERAS CLAVULATUM				-	-	-	-	-		-	-	-	-	-	-	4.9	21.5	30.6	35.4	22.2	19.4	36.1	13.9
CERAMIUM SPP.				-	-	-	0.6	-		-	-	-	-	-	-	-	-	10.2	4.2	1.4	16.7	-	-
CHAETOMORPHA SPP.				-	-	-	-	2.8		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLADOPHORA GRAMINEA				13.9	23.6	4.4	0.6	9.7		13.9	15.3	26.1	13.9	31.9	61.1	45.1	31.9	25.9	48.6	37.5	66.7	50.0	77.8
COBBLE (1/2" - 6")				98.6	99.1	97.8	39.4	-		97.2	100.0	98.3	100.0	88.2	99.3	93.1	96.5	91.7	95.1	98.6	97.2	100.0	91.7
CODIUM SETCHELLII				11.8	15.3	16.1	16.7	11.1		11.1	11.1	9.4	5.6	-	-	-	-	-	1.4	2.8	-	-	-
COLPOMENIA SPP.				0.7	1.4	-	-	-		-	-	0.6	-	-	1.4	2.1	2.8	3.7	4.9	2.8	5.6	-	22.2
CORALLINA OFFICINALIS				16.0	18.5	17.2	12.2	5.6		5.6	4.9	1.7	-	0.7	0.7	1.4	1.4	1.9	-	-	2.8	5.6	25.0
CORALLINA VANCOUVERIENSIS				29.2	36.1	41.7	33.9	26.4		8.3	4.9	9.4	-	2.8	9.0	3.5	9.0	3.7	5.6	9.7	2.8	30.6	27.8
CORALLINE CRUST				97.2	97.7	96.7	98.3	98.6		97.2	99.3	99.4	88.9	98.2	94.4	99.3	100.0	97.2	96.5	98.6	88.9	100.0	91.7
CORRALLINA SPP. + C.B.S.				-	-	-	-	-		-	-	-	-	-	12.5	17.4	24.3	20.4	22.2	20.8	8.3	47.2	38.9
CRYPTOPLEURA LOBULIFERA/VIOLACEA				7.6	14.8	22.8	18.9	19.4		5.6	9.0	7.8	-	0.7	1.4	0.7	-	-	-	-	-	-	-
CRYPTOPLEURA VIOLACEA				4.9	9.7	22.8	18.9	20.8		5.6	9.0	9.4	-	1.4	6.3	6.3	11.1	12.0	6.3	2.8	13.9	36.1	5.6
CRYPTOSIPHONIA WOODII				0.7	-	-	-	4.2		2.8	4.2	5.6	5.6	2.8	5.6	1.4	1.4	1.9	0.7	-	-	-	-
CUMAGLOIA ANDERSONII				-	0.5	1.1	0.6	-		-	2.1	1.7	-	-	-	-	0.7	2.8	0.7	-	-	2.8	-
CYLINDROCARPUS RUGOSUS				-	-	-	-	-		-	-	1.7	-	-	-	-	-	-	-	-	-	-	-
DESMARESTIA LIGULATA				-	-	-	-	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
DIATOM CHAINS				-	-	-	-	-		-	-	-	-	-	-	2.1	4.2	1.9	2.8	19.4	2.8	2.8	13.9
DIATOM FILM				-	-	-	-	-		-	-	-	-	-	-	-	-	1.9	-	16.7	5.6	-	-
DRIFT ALGAE				11.1	-	40.0	-	-		-	-	13.3	-	2.1	12.5	19.4	-	-	-	-	-	16.7	-
EGREGIA MENZIESSII				-	0.5	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ENDARACHNE BINGHAMIAE/PETALONIA FASCIA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	2.8	-	-
ENDOCLADIA MURICATA				36.1	32.9	40.6	43.3	34.7		58.3	52.8	48.9	44.4	27.1	20.8	12.5	13.2	15.7	14.6	13.9	19.4	16.7	11.1
ENTEROMORPHA SPP.				-	-	-	-	2.8		-	-	-	-	-	0.7	6.3	-	3.7	-	-	-	-	-
ERECT CORALLINE ALGAE				-	-	-	-	-		-	-	-	-	-	6.9	-	-	-	-	-	-	-	-
FUCUS GARDNERI				1.4	4.2	4.4	6.1	1.4		2.8	2.8	-	-	-	-	-	-	-	-	-	2.8	-	-
GASTROCLONIUM COULTERI				41.0	41.7	38.9	39.4	36.1		33.3	27.1	25.0	13.9	13.2	12.5	16.0	33.3	43.5	45.1	43.1	27.8	52.8	27.8
GELIDIUM COULTERI				54.9	55.1	53.9	45.0	54.2		77.8	78.5	49.4	36.1	21.5	30.6	34.7	35.4	62.0	47.9	29.2	50.0	86.1	58.3
GELIDIUM PUSILLUM				64.6	68.5	67.2	74.4	72.2		77.8	78.5	50.6	36.1	20.8	36.8	50.7	72.2	65.7	58.3	47.2	58.3	94.4	30.6
GELIDIUM ROBUSTUM				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
GIGARTINA AGARDHII				68.8	59.7	62.8	65.0	48.6		33.3	47.2	37.8	11.1	12.5	10.4	13.9	23.6	39.8	36.1	33.3	30.6	22.2	25.0
GIGARTINA CANALICULATA				55.6	47.7	50.0	54.4	45.8		36.1	24.3	20.0	-	7.6	13.9	22.9	34.0	48.1	46.5	41.7	36.1	58.3	27.8
GIGARTINA EXASPERATA				7.6	8.8	7.2	7.8	9.7		5.6	1.4	1.1	-	-	1.4	0.7	5.6	1.9	4.2	1.4	2.8	8.3	-
GIGARTINA HARVEYANA				3.5	4.2	5.0	7.2	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIGARTINA LEPTORHYNCHOS				7.6	8.3	11.7	7.8	6.9		38.9	37.5	51.1	36.1	49.3	39.6	32.6	30.6	22.2	33.3	27.8	33.3	58.3	38.9
GRATELOUPIA DORYPHORA				-	-	-	-	-		-	-	2.8	-	-	1.4	0.7	2.1	2.8	2.8	-	2.8	8.3	-
GRAVEL (1/8" - 1/2")				97.2	98.6	93.3	30.6	-		88.9	94.4	99.4	88.9	86.1	97.2	88.2	91.0	84.3	97.2	95.8	91.7	100.0	94.4
GYMNOGONGRUS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALORHIPIS WINSTONII				-	-	-	-	-		-	-	-	-	-	-	1.4	-	-	-	-	-	-	-
HALOSACCION GLANDIFORME				0.7	0.9	1.1	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALYMENIA SPP.				-	-	-	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
HESPEROPHYCUS HARVEYANUS				2.8	2.3	2.2	2.2	1.4		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
HILDENBRANDIA SPP.				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDROGEN SULFIDE				-	1.4	-	-	-		-	-	-	-	-	-	-	1.4	-	0.7	-	-	-	-
HYMENENA CUNEIFOLIA				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRIDAEA CORDATA				6.3	3.2	1.7	2.8	5.6		2.8	-	0.6	-	-	1.4	1.4	-	-	-	-	-	-	-
IRIDAEA FLACCIDA				91.7	91.7	89.4	91.1	72.2		55.6	33.3	26.7	-	2.1	4.2	1.4	1.4	-	-	-	2.8	-	-
IRIDAEA HETEROCARPA				11.8	48.6	65.0	72.2	54.2		36.1	42.4	42.2	8.3	35.4	31.9	24.3	21.5	25.9	23.6	22.2	5.6	11.1	11.1
LAMINARIA DENTIGERA				0.7	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-

Vertical Band Transects - Algae Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
LAURENCIA SPECTABILIS				13.2	16.2	16.7	18.9	11.1		-	3.5	3.9	-	2.8	4.2	6.3	11.1	10.2	7.6	4.2	8.3	16.7	-
MACROCYSTIS PYRIFERA				-	-	-	-	-		-	-	-	-	-	1.4	-	-	-	-	1.4	2.8	-	-
MASTOCARPUS PAPILLATUS				90.3	94.0	94.4	91.7	90.3		94.4	93.8	98.3	77.8	84.0	88.2	83.3	84.7	93.5	98.6	90.3	94.4	97.2	86.1
MICROCLADIA BOREALIS				-	0.5	0.6	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
MICROCLADIA COULTERI				9.7	13.4	11.1	12.8	15.3		-	-	-	-	-	-	4.9	1.4	1.9	0.7	-	-	-	-
NEOAGARDHIELLA GAUDICHAUDII				9.7	13.0	12.8	12.8	9.7		8.3	4.2	5.0	-	0.7	4.2	8.3	9.7	8.3	9.0	5.6	8.3	13.9	5.6
NEOPTILOTA DENSA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
NON-CORALLINE CRUST				95.8	100.0	97.2	100.0	100.0		97.2	100.0	99.4	100.0	97.2	100.0	100.0	100.0	98.1	98.6	97.2	100.0	100.0	91.7
PELVETIA FASTIGIATA				18.8	19.0	20.0	20.0	16.7		13.9	10.4	8.3	8.3	8.3	9.0	7.6	5.6	5.6	4.9	5.6	5.6	5.6	2.8
PHAEOSTROPHION IRREGULARE				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	-
PHYLLOSPADIX SPP.				9.7	10.6	8.3	8.9	6.9		8.3	5.6	4.4	-	-	-	-	-	-	-	-	-	2.8	-
PIKEA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	-	0.7	-	0.9	-	-	-	-	-
POLYNEURA LATISSIMA				-	1.4	-	12.8	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
POLYSIPHONIA SPP.				-	-	-	-	-		-	-	-	-	-	0.7	1.4	2.1	-	-	-	-	-	-
PORPHYRA OCCIDENTALIS				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
PORPHYRA PERFORATA				16.7	7.4	7.2	8.3	30.6		-	11.1	1.7	-	-	4.2	6.9	16.0	23.1	3.5	11.1	5.6	-	2.8
PRIONITIS LANCEOLATA				9.7	14.8	12.8	9.4	13.9		2.8	6.9	15.6	2.8	4.2	9.0	9.0	17.4	22.2	22.2	15.3	16.7	33.3	11.1
PRIONITIS LYALLII				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	2.8	2.8
PTEROSIPHONIA DENDROIDEA				-	-	-	-	-		2.8	-	-	-	-	-	0.7	0.7	0.9	2.1	1.4	-	-	-
PUDDLE UNDER ROCK				-	6.0	5.0	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
RALFSIA SPP.				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
RHODOGLOSSUM AFFINE				35.4	18.1	27.2	35.6	13.9		5.6	21.5	30.0	5.6	3.5	18.8	24.3	36.8	52.8	59.0	50.0	55.6	77.8	63.9
RHODOMELA LARIX				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
RHODYMENIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	1.4	-	-	-	-
ROCK (6" - 12")				50.0	81.9	70.6	23.3	-		97.2	97.9	98.9	100.0	91.7	93.1	88.2	90.3	79.6	93.8	88.9	88.9	100.0	97.2
SAND (<1/8")				97.9	95.8	100.0	39.4	-		91.7	84.7	88.9	52.8	56.9	67.4	68.8	71.5	81.5	89.6	79.2	80.6	91.7	88.9
SCHIZYMENIA/HALYMENIA SPP.				-	0.5	-	-	1.4		-	-	1.1	-	0.7	1.4	5.6	15.3	25.0	16.0	6.9	16.7	16.7	-
SHELL FRAGMENTS				-	70.4	99.4	40.0	-		-	-	17.8	-	41.0	25.0	-	-	-	-	-	-	-	-
SMITHORA NAIADUM				4.9	4.6	3.9	3.3	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPONGOMORPHA COALITA				12.5	4.6	4.4	3.3	4.2		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
TIDEPOOL				0.7	6.5	2.2	-	-		2.8	9.7	11.7	5.6	2.1	10.4	11.1	17.4	13.9	20.8	9.7	2.8	2.8	13.9
ULVA SPP.				21.5	12.5	17.2	22.2	15.3		19.4	1.4	1.1	-	1.4	12.5	21.5	42.4	51.9	25.0	22.2	27.8	72.2	25.0
ULVA SPP./ENTEROMORPHA SPP.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	8.3	-

Vertical Band Transects - Algae Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
ANALIPUS JAPONICUS				1.4	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANISOCLADELLA PACIFICA				-	-	-	-	-		-	-	1.1	-	-	-	-	-	-	-	-	-	-	-
ANTITHAMNION/PLATYTHAMNION SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
BEDROCK				31.3	60.6	77.2	38.3	-		22.2	26.4	41.7	19.4	31.3	56.3	27.8	27.1	22.9	30.6	23.6	25.0	8.3	16.7
BOSSIELLA SPP.				40.3	45.8	37.8	39.4	15.3		8.3	9.0	6.1	11.1	0.7	4.9	8.3	8.3	2.1	9.0	2.8	-	-	-
BOTRYOGLOSSUM FARLOWIANUM				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
BOULDER (>12")				99.3	95.4	95.0	38.3	-		97.2	97.9	97.8	100.0	83.3	98.6	97.2	96.5	98.6	93.8	97.2	97.2	100.0	100.0
BRYOPSIS CORTICULANS				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CALLIARTHRON SPP.				-	-	-	-	-		-	0.7	-	-	-	7.6	4.9	7.6	2.1	3.5	-	-	2.8	-
CALLIARTHRON SPP./BOSSIELLA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
CALLITHAMNION PIKEANUM				-	0.5	1.1	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CALLOPHYLLIS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CENTROCERAS CLAVULATUM				-	-	-	-	-		-	-	-	-	-	-	-	5.6	17.4	16.0	5.6	-	-	-
CERAMIUM SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	4.2	5.6	1.4	5.6	5.6	-
CHAETOMORPHA SPP.				-	-	-	-	4.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHONDRIA DECIPIENS				-	-	-	-	-		-	-	0.6	-	-	-	-	-	0.7	-	-	-	-	-
CLADOPHORA GRAMINEA				11.8	17.1	2.8	-	9.7		5.6	0.7	13.3	25.0	2.1	31.3	11.1	12.5	9.0	16.7	30.6	8.3	11.1	63.9
COBBLE (1/2" - 6")				98.6	99.5	98.3	38.9	-		97.2	100.0	98.9	97.2	98.6	99.3	99.3	97.9	97.9	100.0	100.0	97.2	100.0	100.0
CODIUM SETCHELLII				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLPOMENIA SPP.				1.4	3.7	1.1	-	-		-	1.4	-	-	-	-	2.1	2.1	7.6	14.6	4.2	16.7	25.0	8.3
CORALLINA OFFICINALIS				4.2	5.1	5.0	6.7	2.8		-	1.4	3.3	-	0.7	-	-	2.1	0.7	1.4	-	-	-	5.6
CORALLINA VANCOUVERIENSIS				14.6	13.9	20.0	12.2	-		-	2.8	3.9	2.8	2.1	4.2	8.3	4.9	4.9	4.2	5.6	2.8	8.3	8.3
CORALLINE CRUST				86.1	88.0	86.1	88.9	77.8		77.8	88.9	91.7	77.8	64.6	84.7	88.2	86.8	91.7	89.6	93.1	72.2	72.2	91.7
CORRALLINA SPP. + C.B.S.				-	-	-	-	-		-	-	-	-	-	18.1	13.9	11.1	8.3	13.9	12.5	5.6	25.0	19.4
CRYPTOPLEURA LOBULIFERA/VIOLACEA				2.8	4.2	7.2	3.9	-		-	4.2	3.9	-	5.6	14.6	2.8	-	-	-	-	-	-	-
CRYPTOPLEURA VIOLACEA				-	5.1	7.2	2.2	-		-	4.9	4.4	-	6.9	0.7	10.4	9.0	8.3	3.5	-	5.6	55.6	2.8
CRYPTOSIPHONIA WOODII				15.3	22.2	23.9	18.9	4.2		2.8	2.1	1.1	-	-	-	0.7	0.7	-	-	-	-	-	-
CUMAGLOIA ANDERSONII				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CYLINDROCARPUS RUGOSUS				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
CYSTOSEIRA OSMUNDACEA				-	-	-	-	-		-	-	-	-	-	-	2.1	-	0.7	0.7	-	-	-	-
DIATOM CHAINS				-	-	-	-	-		-	-	-	-	-	-	0.7	-	2.1	2.1	6.9	8.3	-	8.3
DIATOM FILM				-	-	-	-	-		-	-	-	-	-	-	-	5.6	-	-	-	-	-	-
DRIFT ALGAE				17.4	2.3	56.1	-	-		-	-	13.9	-	-	31.3	16.7	-	-	-	-	-	-	-
EGREGIA MENZIESII				3.5	0.5	-	1.1	-		-	-	-	-	-	-	1.4	3.5	1.4	0.7	-	-	-	-
ENDOCLADIA MURICATA				34.0	32.4	41.7	41.7	25.0		36.1	49.3	52.8	47.2	34.0	31.9	22.9	21.5	16.0	18.1	23.6	11.1	22.2	8.3
ENTEROMORPHA SPP.				0.7	-	-	-	-		-	-	-	-	-	1.4	4.2	0.7	1.4	-	-	-	-	-
ERECT CORALLINE ALGAE				-	-	-	-	-		-	1.4	-	-	1.4	6.9	-	-	-	-	-	-	-	-
FUCALES JUV.				0.7	-	-	-	-		-	-	-	-	-	-	-	2.8	-	-	-	-	-	-
FUCUS GARDNERI				11.8	11.1	7.2	6.1	2.8		11.1	4.2	-	-	-	-	-	-	-	-	-	-	-	-
GASTROCLONIUM COULTERI				31.3	41.2	33.9	35.6	6.9		11.1	7.6	8.3	8.3	9.7	15.3	24.3	28.5	29.9	26.4	16.7	19.4	33.3	11.1
GELIDIUM COULTERI				50.7	57.9	65.0	67.2	29.2		50.0	72.9	30.6	30.6	18.1	20.1	24.3	20.1	36.8	41.0	29.2	38.9	72.2	27.8
GELIDIUM PUSILLUM				33.3	45.4	55.6	47.2	63.9		50.0	72.9	28.3	30.6	5.6	43.8	47.2	58.3	66.7	47.9	54.2	44.4	66.7	19.4
GIGARTINA AGARDHII				20.1	13.9	16.7	19.4	5.6		2.8	4.9	3.3	5.6	0.7	2.8	4.2	9.7	11.1	7.6	15.3	2.8	36.1	2.8
GIGARTINA CANALICULATA				55.6	45.8	45.0	36.1	15.3		25.0	11.1	6.7	8.3	9.0	18.8	31.3	31.3	41.0	44.4	36.1	27.8	52.8	25.0
GIGARTINA EXASPERATA				2.1	3.7	-	-	-		2.8	-	-	-	0.7	-	-	1.4	2.1	0.7	-	-	-	-
GIGARTINA HARVEYANA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIGARTINA LEPTORHYNCHOS				27.1	50.0	40.6	48.3	12.5		41.7	31.9	30.0	25.0	11.1	23.6	13.2	10.4	18.1	12.5	12.5	13.9	25.0	27.8
GRATELOUPIA DORYPHORA				-	-	-	0.6	-		-	-	-	-	-	0.7	-	1.4	-	0.7	1.4	-	-	-
GRAVEL (1/8" - 1/2")				93.1	97.2	85.0	33.3	-		94.4	100.0	96.1	97.2	84.7	91.0	91.0	88.2	91.7	92.4	83.3	75.0	97.2	97.2
GYMNOGONGRUS LEPTOPHYLLUS				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
GYMNOGONGRUS SPP.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	8.3	-
HALOSACCION GLANDIFORME				1.4	5.6	7.2	8.3	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAPLOGLOIA ANDERSONII				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HESPEROPHYCUS HARVEYANUS				2.1	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDROGEN SULFIDE				-	1.4	0.6	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
IRIDAEA CORDATA				6.9	1.9	2.8	1.7	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRIDAEA FLACCIDA				88.2	77.3	75.0	77.2	20.8		25.0	18.8	10.0	8.3	12.5	19.4	23.6	9.7	9.0	3.5	1.4	-	2.8	-
IRIDAEA HETEROCARPA				26.4	49.5	64.4	69.4	16.7		22.2	30.6	31.7	16.7	29.9	29.2	32.6	19.4	18.1	22.9	15.3	16.7	25.0	2.8
LAMINARIA DENTIGERA				-	1.4	-	0.6	1.4		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
LAMINARIALES				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	2.8	-	-

Vertical Band Transects - Algae Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
LAURENCIA BLINKSII				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
LAURENCIA SPECTABILIS				7.6	17.1	11.7	8.9	-		2.8	2.1	-	-	1.4	4.2	11.8	5.6	4.9	1.4	-	2.8	16.7	-
LEATHESIA DIFFORMIS				-	0.9	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LIVE NON-CORALLINE ALGAE				-	-	-	-	-		-	25.0	-	-	-	-	-	-	-	-	-	-	-	-
MACROCYSTIS PYRIFERA				-	-	-	-	-		-	-	-	-	-	-	0.7	-	2.1	1.4	-	-	-	-
MASTOCARPUS PAPILLATUS				95.1	94.0	95.0	91.7	68.1		100.0	96.5	96.1	69.4	97.2	96.5	93.8	95.1	97.9	99.3	95.8	97.2	97.2	100.0
MICROCLADIA BOREALIS				1.4	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MICROCLADIA COULTERI				4.2	8.3	7.2	7.2	1.4		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
NEOAGARDHIELLA GAUDICHAUDII				2.1	3.7	6.1	5.6	1.4		-	2.1	0.6	-	1.4	2.1	6.9	1.4	0.7	-	-	-	2.8	-
NEOPTILOTA DENSA				-	-	1.1	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
NON-CORALLINE CRUST				94.4	98.6	95.6	96.7	77.8		97.2	98.6	98.3	100.0	99.3	99.3	100.0	98.6	100.0	100.0	98.6	97.2	97.2	100.0
PELVETIA FASTIGIATA				11.8	10.6	9.4	10.6	8.3		11.1	14.6	12.8	8.3	9.0	6.9	6.9	4.9	2.1	3.5	-	2.8	5.6	2.8
PETROCELIS SPP.				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHAEOSTROPHION IRREGULARE				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
PHYLLOSPADIX SPP.				3.5	4.6	3.3	2.8	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIKEA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
POLYNEURA LATISSIMA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
POLYSIPHONIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	2.8	-	-	-	-	-
PORPHYRA PERFORATA				11.8	9.7	11.7	3.9	36.1		-	3.5	0.6	-	-	1.4	7.6	13.9	13.2	9.0	6.9	11.1	-	8.3
PRIONITIS LANCEOLATA				13.9	17.1	17.2	17.2	4.2		2.8	2.8	2.8	5.6	6.9	8.3	11.1	11.8	16.0	20.8	13.9	13.9	25.0	8.3
PRIONITIS LYALLII				-	1.9	2.2	-	-		-	-	-	-	0.7	0.7	1.4	2.1	0.7	0.7	-	-	-	-
PTEROSIPHONIA DENDROIDEA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
PUDDLE UNDER ROCK				-	0.5	7.2	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
RALFSIA SPP.				-	-	-	-	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
RHODOGLOSSUM AFFINE				40.3	22.7	35.6	27.2	4.2		8.3	15.3	12.2	13.9	5.6	15.3	32.6	37.5	47.9	43.8	36.1	38.9	75.0	44.4
RHODOGLOSSUM ROSEUM				-	-	-	-	-		-	-	1.1	-	-	-	-	-	-	-	-	-	-	-
RHODOMELA LARIX				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
RHODYMENIA SPP.				-	0.5	-	-	-		-	-	-	-	-	-	-	-	0.7	1.4	-	-	-	-
ROCK (6" - 12")				90.3	97.7	95.6	37.8	-		100.0	100.0	93.9	97.2	90.3	95.8	95.8	95.8	98.6	97.2	95.8	91.7	100.0	94.4
SAND (<1/8")				80.6	81.5	92.2	30.6	-		69.4	86.1	81.7	77.8	60.4	63.9	52.1	70.1	78.5	73.6	65.3	44.4	83.3	94.4
SARGASSUM MUTICUM				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	2.8	2.8	2.8
SCHIZYMENIA/HALYMENIA SPP.				-	-	0.6	1.1	1.4		-	-	0.6	-	-	0.7	0.7	0.7	2.1	0.7	-	-	2.8	-
SCYTOSIPHON LOMENTARIA				-	-	-	-	-		-	-	-	-	-	-	0.7	2.1	-	-	-	-	-	-
SCYTOSIPHON SPP.				-	-	-	-	-		-	-	-	-	-	-	-	1.4	-	-	-	-	-	-
SHELL FRAGMENTS				-	57.4	92.8	28.9	-		-	-	13.9	-	25.7	47.2	-	-	-	-	-	-	-	-
SMITHORA NAIADUM				0.7	1.4	1.1	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
SPONGOMORPHA COALITA				22.2	7.4	7.8	3.9	12.5		-	0.7	-	-	-	-	0.7	-	2.1	2.1	-	-	-	-
TIDEPOOL				0.7	6.5	12.8	-	-		-	6.9	12.8	8.3	11.1	18.1	16.7	34.7	14.6	14.6	37.5	5.6	-	11.1
ULVA SPP.				60.4	21.8	17.8	12.2	9.7		22.2	-	-	-	-	15.3	26.4	38.9	47.2	35.4	20.8	33.3	61.1	22.2
ULVA SPP./ENTEROMORPHA SPP.				-	-	-	-	-		-	-	-	-	-	3.5	-	0.7	3.5	-	-	-	-	-
UNIDENTIFIED RED ALGAE				0.7	-	-	-	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX C4 – Intertidal Invertebrates
Vertical Band Transects

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	3	4	4	4	3	4	4	4	3	4
ACANTHINA PUNCTULATA														32.4	34.7	29.2	30.6	31.5	36.8	27.1	32.6	38.9	31.9
ACMAEA MITRA														1.9	8.3	-	0.7	2.8	6.3	5.6	2.8	2.8	2.8
ACMAEIDAE UNID.														-	18.1	38.9	52.8	73.1	77.8	58.3	63.9	43.5	31.3
AEOLIDIA PAPILLOSA														1.9	1.4	2.1	1.4	-	1.4	0.7	-	0.9	-
ALDISA SANGUINEA														-	-	0.7	-	-	-	-	-	-	-
AMPHIODIA OCCIDENTALIS														-	-	0.7	-	-	-	-	-	-	-
AMPHIPHOLIS SQUAMATA														-	-	-	-	-	-	-	0.7	-	-
AMPHIPORUS IMPARISPINOSUS														-	-	-	-	-	-	-	0.7	3.7	-
AMPHISSA VERSICOLOR														-	-	-	-	-	-	-	-	2.8	2.1
ANISODORIS NOBILIS														-	-	-	1.4	-	-	-	0.7	-	-
ANTHOPLEURA ELEGANTISSIMA														98.1	68.1	94.4	95.1	98.1	95.1	93.1	89.6	93.5	84.7
ANTHOPLEURA XANTHOGRAMMICA														-	0.7	0.7	0.7	-	-	-	0.7	-	-
ARENICOLA CRISTATA														-	0.7	-	-	-	-	-	-	-	-
BALANUS SPP.														-	-	0.7	-	-	-	-	-	-	-
BARLEEIA SPP.														-	-	0.7	0.7	-	-	-	-	-	-
BITTIUM ESCHRICHTII														-	0.7	-	-	-	-	-	-	-	-
BITTIUM SPP.														-	-	-	-	3.7	-	0.7	0.7	0.9	0.7
BRYOZOA ENCRUSTING														-	-	0.7	2.1	7.4	6.3	4.9	4.2	1.9	2.8
CALLIOSTOMA LIGATUM														-	-	-	-	0.9	0.7	-	-	0.9	0.7
CANCER ANTENNARIUS														-	2.1	2.1	0.7	1.9	2.8	0.7	2.1	2.8	0.7
CANCER JORDANI														-	-	1.4	-	-	-	-	-	-	-
CANCER PRODUCTUS														-	0.7	-	-	-	-	-	-	-	0.7
CANCER SPP.														0.9	0.7	0.7	-	0.9	-	-	-	1.9	2.1
CHTHAMALUS SPP.														-	87.5	86.8	84.7	87.0	75.7	60.4	70.8	75.9	63.9
CIROLANA HARFORDI														-	1.4	0.7	-	-	-	-	2.1	0.9	4.9
CIRRATULIDAE/TEREBELLIDAE														-	-	-	-	0.9	0.7	-	-	-	0.7
CLAVELINA HUNTSMANI														-	0.7	-	-	-	-	-	-	-	-
COLLISELLA ASMI														18.5	18.8	35.4	37.5	34.3	31.9	27.8	30.6	31.5	27.8
COLLISELLA DIGITALIS														50.9	37.5	35.4	14.6	14.8	19.4	4.2	6.3	5.6	5.6
COLLISELLA INSTABILIS														-	-	-	0.7	-	-	-	-	-	-
COLLISELLA LIMATULA														66.7	56.9	73.6	54.2	66.7	45.8	56.9	50.7	70.4	49.3
COLLISELLA OCHRACEA														32.4	33.3	34.7	2.1	1.9	0.7	0.7	0.7	0.9	1.4
COLLISELLA PELTA														32.4	41.7	37.5	30.6	33.3	46.5	29.2	28.5	41.7	40.3
COLLISELLA SCABRA														91.7	90.3	88.2	77.1	79.6	66.7	59.7	61.8	71.3	72.9
COLLISELLA STRIGATELLA														5.6	5.6	3.5	0.7	-	-	-	-	-	-
CREPIDULA ADUNCA														18.5	23.6	30.6	25.7	17.6	13.9	20.1	6.9	24.1	11.8
CREPIDULA SPP.														-	-	-	-	-	2.1	-	6.3	-	-
CYANOPLAX DENTIENS														16.7	9.7	-	0.7	-	4.9	4.9	12.5	11.1	7.6
CYANOPLAX HARTWEGII														28.7	22.2	16.0	10.4	38.9	28.5	15.3	4.9	14.8	15.3
CYANOPLAX SPP.														-	-	-	2.8	-	2.1	2.1	-	1.9	-
DIAULULA SANDIEGENSIS														0.9	-	-	2.1	-	-	0.7	-	-	0.7
DIODORA ASPERA														-	-	-	-	-	-	0.7	0.7	-	-
DIOPATRA ORNATA														-	0.7	-	-	-	-	-	-	-	-
EPIACTIS PROLIFERA														9.3	13.9	22.9	19.4	23.1	22.9	22.2	6.9	16.7	21.5
EPITONIUM SPP.														-	-	-	-	-	-	-	-	-	4.2
EPITONIUM SPP./OPALIA SPP.														-	-	-	2.1	10.2	3.5	4.9	3.5	2.8	-
EPITONIUM TINCTUM														0.9	5.6	11.8	9.7	-	6.9	2.1	5.6	5.6	9.0
EURYLEPTA CALIFORNICA														-	-	-	-	-	-	-	-	-	0.7
FISSURELLA VOLCANO														2.8	-	2.1	11.1	20.4	20.8	14.6	11.8	11.1	22.2
GRAPSIDAE UNID.														-	0.7	6.3	6.3	2.8	9.7	1.4	1.4	-	-
HALICLONA SPP.														2.8	3.5	4.2	0.7	-	5.6	4.2	-	-	-
HALIOTIS CRACHERODII														-	-	-	-	-	-	-	-	-	-
HEMIGRAPSUS NUDUS														-	3.5	11.1	9.0	1.9	4.2	8.3	6.9	4.6	2.1
HEMIGRAPSUS OREGONENSIS														2.8	2.1	1.4	4.2	4.6	-	0.7	0.7	0.9	-
HENRICIA LEVIUSCULA														-	-	-	-	-	-	-	-	-	-
HEPTACARPUS PICTUS														2.8	5.6	11.1	11.1	5.6	4.2	4.9	4.9	0.9	0.7
HEPTACARPUS SPP.														-	-	-	-	-	-	-	1.4	-	2.1
HERMISSENDA CRASSICORNIS														-	-	0.7	0.7	0.9	1.4	-	0.7	1.9	0.7
HOMALOPOMA BACULUM														-	-	-	-	-	-	-	-	-	-
IDOTEA SPP.														-	-	0.7	-	-	-	-	-	-	1.4

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	3	4	4	4	3	4	4	4	3	4
IDOTEA UROTOMA														0.9	-	-	0.7	-	1.4	0.7	-	-	-
IDOTEA WOSNESENSKII														-	-	0.7	1.4	-	-	-	0.7	-	-
IRUS LAMELLIFER														-	-	-	0.7	-	-	-	-	-	-
ISCHNOCHITONOIDAE UNID.														-	2.1	0.7	6.3	3.7	15.3	11.1	11.1	-	-
LACUNA SPP.														-	2.8	4.2	18.8	15.7	11.8	18.1	22.2	25.0	10.4
LEPIDOZONA COOPERI														1.9	-	0.7	0.7	2.8	2.1	0.7	1.4	1.9	-
LEPIDOZONA MERTENSII														-	-	0.7	-	0.9	0.7	0.7	-	-	0.7
LEPIDOZONA SPP.														-	-	-	-	-	-	-	-	0.9	0.7
LEPTASTERIAS HEXACTIS														0.9	-	4.9	5.6	10.2	6.3	11.8	10.4	15.7	2.8
LEPTOSYNAPTA ALBICANS														-	0.7	-	-	-	-	-	-	-	-
LISSOTHURIA NUTRIENS														-	0.7	3.5	1.4	4.6	5.6	3.5	8.3	2.8	9.0
LITTORINA PLANAXIS														-	-	-	-	-	-	-	-	-	0.7
LITTORINA SCUTULATA														7.4	16.7	28.5	25.0	31.5	33.3	28.5	22.9	15.7	19.4
LOPHOPANOPEUS LEUCOMANUS														-	-	-	-	0.9	0.7	-	0.7	0.9	0.7
MAJIDAE														-	-	-	-	0.9	0.7	-	-	-	-
MEGATEBENNUS BIMACULATUS														-	-	-	-	0.9	-	-	-	-	-
MIMULUS FOLIATUS														-	-	-	-	-	-	-	0.7	-	-
MITRELLA CARINATA														-	2.1	9.0	10.4	8.3	4.2	11.8	11.1	15.7	4.9
MITRELLA SPP.														-	-	-	3.5	5.6	2.8	-	4.9	-	-
MOPALIA CILIATA														0.9	-	-	-	-	-	-	-	-	-
MOPALIA LIGNOSA														0.9	0.7	0.7	-	-	0.7	0.7	1.4	-	-
MOPALIA MUSCOSA														5.6	9.0	3.5	0.7	2.8	2.1	2.8	2.8	13.9	2.1
MOPALIA SPP.														-	-	-	-	-	-	-	-	0.9	-
MYTILIDAE														-	-	-	-	-	1.4	0.7	-	-	-
MYTILUS CALIFORNIANUS														1.9	3.5	4.9	2.1	0.9	-	-	-	-	-
MYTILUS EDULIS														-	-	-	1.4	-	2.8	-	-	-	-
MYTILUS SPP.														-	-	-	-	-	2.1	-	-	-	-
NEREIDAE UNID.														-	0.7	1.4	0.7	-	1.4	0.7	-	-	2.1
NEREIS GRUBEI														-	-	-	-	0.9	-	-	-	-	-
NOTOACMEA INSESSA														-	0.7	-	-	-	-	-	0.7	-	-
NOTOACMEA PALEACEA														-	-	-	0.7	2.8	-	2.8	6.3	-	2.8
NOTOACMEA SCUTUM														23.1	54.9	41.7	62.5	70.4	45.1	36.8	62.5	64.8	15.3
NOTOPLANA RUPICOLA														-	0.7	-	-	-	0.7	0.7	-	-	-
NUTTALLINA CALIFORNICA														-	-	-	-	0.9	-	-	0.7	2.8	0.7
OCENEBRA CIRCUMTEXTA														39.8	38.9	29.2	29.2	23.1	27.1	25.7	18.8	32.4	24.3
OCENEBRA FOVEOLATA														-	0.7	0.7	-	2.8	-	4.2	-	-	-
OCENEBRA INTERPOSSA														-	0.7	2.1	4.2	4.6	8.3	3.5	5.9	7.4	8.3
OCENEBRA SPP.														-	-	-	-	-	-	2.8	-	0.9	-
OPHIOTHRIX SPICULATA														-	-	-	0.7	0.9	-	-	-	-	-
OPHIUROIDEA UNID.														-	-	-	-	-	-	-	-	0.9	-
PACHYGRAPSUS CRASSIPES														7.4	6.9	13.2	13.2	11.1	6.9	11.1	11.1	19.4	13.9
PAGURUS SPP.														84.3	61.1	95.1	80.6	95.4	97.2	87.5	78.5	81.5	67.4
PARANEMERTES PEREGRINA														-	1.4	-	-	-	-	1.4	4.9	0.9	-
PATIRIA MINIATA														-	-	-	-	-	-	-	-	-	-
PETROLISTHES CINCTIPES														0.9	0.7	-	1.4	0.9	1.4	0.7	0.7	0.9	-
PHASCOLOSOMA AGASSIZII														3.7	1.4	1.4	0.7	6.5	3.5	0.7	3.5	1.9	3.5
PHIDIANA PUGNAX														-	-	0.7	7.6	7.4	1.4	2.8	2.1	4.6	8.3
PHOLIDIDAE														-	-	-	-	-	2.1	-	-	-	-
PHRAGMATOPOMA CALIFORNICA														13.0	23.6	18.8	23.6	13.9	19.4	24.3	29.9	38.0	26.4
PHYLLOCHAETOPTERUS PROLIFICA														-	-	1.4	-	-	-	-	-	-	-
PISASTER GIGANTEUS														-	-	-	0.7	-	-	-	-	-	-
PISASTER OCHRACEUS														1.9	2.1	3.5	2.8	10.2	2.1	11.1	11.1	4.6	6.9
PISASTER SPP.														-	-	0.7	-	-	-	-	-	-	-
PISASTER SPP./HENRICIA SPP.														-	-	-	3.5	-	0.7	-	1.4	-	-
PISTA ELONGATA														7.4	13.9	15.3	20.1	23.1	26.4	29.2	34.7	38.9	23.6
PORIFERA ENCRUSTING														-	5.6	9.7	9.7	8.3	11.8	13.2	13.2	6.5	2.8
PSEUDOMELATOMA TOROSA														-	-	-	0.7	-	-	-	-	2.8	8.3
PUGETTIA PRODUCTA														5.6	1.4	6.9	3.5	9.3	6.3	10.4	14.6	15.7	4.9
PUGETTIA RICHII														-	-	-	-	1.9	-	2.1	-	-	-
PUGETTIA SPP.														-	-	-	-	-	-	-	0.7	-	-

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	3	4	4	4	3	4	4	4	3	4
PYCNOGONIDA UNID.														-	-	0.7	-	0.9	0.7	-	0.7	-	2.8
PYCNOPODIA HELIANTHOIDES														-	-	-	0.7	-	-	0.7	-	-	-
ROSTANGA PULCHRA														-	-	-	-	-	-	0.7	-	-	-
SALMACINA TRIBRANCHIATA														-	-	-	-	0.9	3.5	1.4	-	1.9	-
SERPULA VERMICULARIS														1.9	-	-	-	-	-	-	0.7	-	-
SERPULIDAE UNID.														-	-	-	-	-	1.4	0.7	-	2.8	-
SERPULORBIS SQUAMIGERUS														0.9	-	0.7	-	1.9	-	0.7	-	-	0.7
SPIROBRANCHUS SPINOSUS														-	0.7	-	-	-	0.7	-	0.7	-	2.1
SPIRORBIDAE UNID.														-	3.5	8.3	17.4	23.1	36.1	26.4	25.0	27.8	11.8
STENOPLAX HEATHIANA														5.6	-	-	-	-	0.7	-	-	0.9	-
STRONGYLOCENTROTUS FRANCISCANUS														-	-	0.7	-	-	0.7	-	0.7	-	-
STRONGYLOCENTROTUS PURPURATUS														0.9	2.8	4.9	2.8	1.9	2.8	2.1	1.4	1.9	1.4
STRONGYLOCENTROTUS SPP.														-	-	-	-	-	-	0.7	-	-	-
TEGULA BRUNNEA														7.4	6.3	9.7	29.9	29.6	32.6	32.6	36.8	40.7	25.7
TEGULA FUNEBRALIS														96.3	94.4	97.2	97.9	99.1	92.4	95.1	97.9	91.7	89.6
TEGULA PULLIGO														0.9	-	-	0.7	-	-	-	-	-	-
TEREBELLIDAE UNID.														-	0.7	-	-	-	-	-	-	-	-
TETRACLITA SQUAMOSA														2.8	3.5	6.3	14.6	17.6	23.6	11.8	12.5	8.3	6.3
THENISTE PYROIDES														-	-	-	0.7	-	-	-	-	-	0.7
TONICELLA LINEATA														-	-	-	0.7	0.9	0.7	-	0.7	4.6	1.4
TRICOLIA PULLOIDES														-	-	2.1	2.1	-	-	-	2.1	-	0.7
TRICOLIA SPP.														-	-	-	-	2.8	-	-	0.7	1.9	-
TUNICATA UNID.														-	5.6	5.6	20.8	25.0	34.7	41.0	31.9	23.1	12.5

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	3	4	2	ns	ns	ns	1	4	5	1	4	3	4	4	3	4	4	4	3	4
ACANTHINA PUNCTULATA				3.7	6.9	5.6				16.7	27.1	22.2	33.3	20.1	19.4	4.9	11.1	21.3	15.3	13.2	9.0	20.4	11.8
ACMAEA MITRA				0.9	0.7	1.4				-	-	0.6	-	-	-	-	-	0.9	1.4	0.7	0.7	0.9	0.7
ACMAEIDAE UNID.				-	-	-				-	-	-	-	-	2.8	4.9	9.0	13.0	12.5	6.3	4.2	0.9	3.5
AEOLIDIA PAPILLOSA				3.7	1.4	1.4				2.8	0.7	-	-	-	-	0.7	0.7	-	-	-	-	-	-
ALLOIOPLANA CALIFORNICA				-	-	-				-	-	-	-	-	-	-	-	-	2.1	-	2.1	-	-
AMPHIODIA OCCIDENTALIS				13.0	9.0	20.8				8.3	3.5	1.7	-	-	0.9	0.7	0.7	0.9	4.2	0.7	4.2	2.8	2.8
AMPHIPHOLIS SQUAMATA				11.1	6.3	11.1				8.3	4.2	6.7	11.1	-	-	-	-	-	-	0.7	-	-	2.8
AMPHIPORUS IMPARISPINOSUS				-	-	-				-	-	-	-	-	-	-	-	0.9	-	-	2.1	0.9	-
AMPHISSA VERSICOLOR				4.6	8.3	2.8				2.8	1.4	-	-	-	-	-	-	-	-	-	-	4.6	-
ANISODORIS NOBILIS				-	0.7	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANTHOPLEURA ELEGANTISSIMA				64.8	62.5	61.1				77.8	67.4	66.7	72.2	59.0	45.4	54.2	43.1	45.4	33.3	41.7	36.1	46.3	22.2
ANTHOPLEURA XANTHOGRAMMICA				2.8	0.7	-				-	-	-	-	-	0.9	0.7	-	-	-	-	-	-	-
ARENICOLA CRISTATA				-	-	-				-	-	-	-	1.4	-	-	-	-	-	-	-	-	-
BALANUS SPP.				-	-	-				-	-	-	-	-	-	-	1.4	-	-	-	-	-	-
BETAEUS HARFORDI				-	0.7	-				-	-	-	-	-	0.9	-	-	-	-	-	-	-	-
BITTIUM ESCHRICHTII				-	-	-				-	-	-	-	-	-	-	1.4	-	-	0.7	-	-	-
BITTIUM SPP.				-	-	-				-	-	-	-	-	-	-	-	0.9	-	-	0.7	0.9	0.7
BRYOZOA ENCRUSTING				-	-	-				-	-	-	-	-	-	0.7	3.5	2.8	4.9	8.3	3.5	1.9	3.5
CALLIOSTOMA LIGATUM				-	0.7	-				2.8	-	0.6	-	-	-	-	-	-	-	-	-	-	-
CANCER ANTENNARIUS				28.7	18.8	31.9				27.8	13.2	21.1	5.6	5.6	4.6	13.2	6.3	4.6	6.3	4.9	6.9	4.6	0.7
CANCER ANTHONYI				-	-	-				-	-	-	-	-	0.9	-	-	-	-	-	-	-	-
CANCER JORDANI				13.0	1.4	-				-	0.7	1.1	-	-	-	-	-	-	-	-	-	-	-
CANCER PRODUCTUS				4.6	2.8	-				-	-	2.2	-	0.7	0.9	0.7	-	-	1.4	0.7	-	-	-
CANCER SPP.				-	-	-				-	0.7	-	-	2.1	0.9	-	0.7	0.9	-	-	2.1	-	-
CHAETOPLEURA GEMMA				0.9	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMA PELLUCIDA				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
CHTHAMALUS SPP.				-	-	-				-	-	-	-	-	3.7	2.8	11.8	2.8	0.7	2.1	-	0.9	0.7
CIROLANA HARFORDI				43.5	31.9	37.5				22.2	17.4	32.2	38.9	27.1	25.9	29.9	25.7	36.1	25.7	22.9	32.6	37.0	29.9
CIRRATULIDAE/TEREBELLIDAE				-	-	-				-	-	-	-	-	-	-	-	-	0.7	-	0.7	-	0.7
CLAVELINA HUNTSMANI				2.8	0.7	-				-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
COLLISELLA ASMI				1.9	11.8	8.3				19.4	13.2	6.7	11.1	10.4	9.3	9.0	6.3	10.2	6.9	6.9	6.9	4.6	2.1
COLLISELLA DIGITALIS				-	-	-				-	0.7	0.6	-	0.7	-	0.7	-	-	-	-	-	-	0.7
COLLISELLA LIMATULA				33.3	25.7	34.7				66.7	37.5	25.0	55.6	27.8	22.2	27.1	31.3	31.5	18.8	18.1	13.2	16.7	9.0
COLLISELLA OCHRACEA				9.3	9.0	12.5				25.0	11.8	5.6	16.7	7.6	0.9	5.6	-	0.9	0.7	0.7	-	0.9	1.4
COLLISELLA PELTA				3.7	-	1.4				11.1	3.5	2.2	-	2.1	4.6	3.5	2.8	0.9	2.1	4.2	2.1	2.8	3.5
COLLISELLA SCABRA				-	-	-				2.8	0.7	0.6	-	1.4	1.9	3.5	-	0.9	0.7	0.7	-	-	-
COLLISELLA STRIGATELLA				-	0.7	4.2				5.6	1.4	-	-	-	0.9	1.4	-	-	-	-	-	-	-
CRANGON SPP.				-	-	-				-	-	-	-	-	-	-	-	1.9	-	-	-	-	-
CREPIDULA ADUNCA				16.7	22.9	12.5				5.6	9.0	8.9	8.3	6.9	3.7	7.6	6.9	7.4	4.9	4.9	1.4	3.7	1.4
CREPIDULA SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	-	1.4	-	-
CREPIDULA SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	-	1.4	-	-
CYANOPLAX DENTIENS				16.7	4.9	4.2				8.3	3.5	2.8	-	3.5	1.9	1.4	0.7	0.9	-	1.4	0.7	0.9	1.4
CYANOPLAX HARTWEGII				-	-	1.4				-	-	-	-	1.4	-	0.7	-	1.9	2.8	0.7	1.4	-	2.1
CYANOPLAX SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	2.8	-	-	0.7
DIAULULA SANDIEGENSIS				-	-	-				-	-	-	-	-	-	-	-	-	-	-	0.7	-	-
DIODORA ASPERA				-	-	-				-	-	-	2.8	-	-	-	-	-	-	-	-	-	-
DIOPATRA ORNATA				-	-	-				-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
EPIACTIS PROLIFERA				56.5	54.2	58.3				47.2	27.1	27.8	22.2	11.1	12.0	20.8	14.6	11.1	16.0	11.8	7.6	10.2	11.1
EPILUCINA CALIFORNICA				-	-	-				-	-	-	-	-	0.9	-	-	-	-	-	-	-	-
EPITONIUM SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
EPITONIUM SPP./OPALIA SPP.				-	-	-				-	-	-	-	-	-	-	0.7	4.6	1.4	1.4	-	-	0.7
EPITONIUM TINCTUM				-	-	-				-	0.7	-	-	0.7	0.9	2.8	2.8	-	0.7	-	-	-	-
FISSURELLA VOLCANO				1.9	-	1.4				8.3	2.8	0.6	2.8	-	-	2.8	-	4.6	2.8	-	1.4	0.9	3.5
GRAPSIDAE UNID.				-	-	-				-	-	-	-	-	-	4.2	10.4	3.7	10.4	4.9	-	-	-
HALICLONA SPP.				-	-	-				-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
HALIOTIS CRACHERODII				-	1.4	-				2.8	2.1	0.6	-	-	-	-	-	-	2.1	-	-	-	-
HALIOTIS SPP.				-	-	-				2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
HALOSYDNA BREVISETOSA				-	-	1.4				-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
HEMIGRAPSUS NUDUS				43.5	43.1	45.8				16.7	39.6	44.4	50.0	43.1	24.1	42.4	34.0	31.5	25.7	27.1	26.4	25.0	14.6
HEMIGRAPSUS OREGONENSIS				15.7	24.3	26.4				25.0	24.3	28.9	33.3	29.9	14.8	31.3	22.9	38.0	20.1	17.4	6.9	13.9	4.2

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	3	4	2	ns	ns	ns	1	4	5	1	4	3	4	4	3	4	4	4	3	4
HENRICIA LEVIUSCULA				2.8	6.9	5.6				-	1.4	0.6	2.8	0.7	0.9	-	-	-	-	-	-	-	-
HEPTACARPUS PICTUS				14.8	23.6	31.9				22.2	13.9	15.0	5.6	4.9	12.0	13.2	13.2	-	1.4	2.1	0.7	0.9	0.7
HEPTACARPUS SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	-	0.7	-	-
HEPTACARPUS TAYLORI				-	0.7	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
HERMISSENDA CRASSICORNIS				13.0	-	-				-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
HOMALOPOMA BACULUM				1.9	0.7	-				-	2.1	1.7	2.8	2.8	0.9	1.4	15.3	2.8	2.8	1.4	-	0.9	1.4
HOMALOPOMA LURIDUM/LIRULARIA SUCCINCTA				4.6	2.8	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
IDOTEA SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	0.9	0.7
IDOTEA UROTOMA				22.2	11.1	15.3				-	3.5	10.0	5.6	4.9	-	2.1	-	-	0.7	2.8	0.7	2.8	-
IDOTEA WOSNESENSKII				-	-	-				-	-	-	-	-	-	-	1.4	-	-	-	-	-	-
ISCHNOCHITON RADIANS				-	-	-				2.8	0.7	0.6	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITONOIDAE UNID.				-	-	-				-	-	-	-	-	-	0.7	0.7	1.9	-	0.7	-	0.9	-
LACUNA SPP.				-	-	-				-	-	-	-	-	-	-	7.6	2.8	0.7	0.7	0.7	0.9	1.4
LAMELLARIA DIEGOENSIS				-	-	-				-	-	-	-	-	-	-	-	-	-	0.7	-	-	-
LEPIDOPLEURUS RUGATUS				0.9	-	1.4				-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA COOPERI				2.8	1.4	-				2.8	-	1.1	-	-	0.9	-	-	2.8	0.7	0.7	2.1	-	-
LEPIDOZONA MERTENSII				0.9	0.7	-				-	-	-	-	-	-	-	-	-	-	-	-	0.9	0.7
LEPIDOZONA SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
LEPTASTERIAS HEXACTIS				22.2	25.0	25.0				25.0	10.4	2.8	5.6	1.4	2.8	5.6	6.3	3.7	5.6	7.6	10.4	2.8	1.4
LEPTOSYNAPTA ALBICANS				0.9	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
LIRULARIA SUCCINCTA				-	1.4	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
LISSOTHURIA NUTRIENS				0.9	-	-				-	-	0.6	2.8	-	0.9	-	-	0.9	0.7	1.4	0.7	0.9	2.1
LITTORINA SCUTULATA				-	-	-				8.3	0.7	1.1	-	1.4	0.9	2.1	0.7	0.9	2.1	0.7	2.1	-	-
LOPHOPANOPEUS LEUCOMANUS				16.7	16.7	12.5				11.1	6.9	7.2	11.1	4.9	1.9	6.3	2.8	7.4	7.6	4.9	9.7	8.3	9.0
MAJIDAE				-	-	-				-	-	-	-	-	-	-	0.7	0.9	-	-	-	-	-
MEGATEBENNUS BIMACULATUS				0.9	-	-				-	-	-	2.8	-	-	-	-	-	0.7	-	-	-	-
MIMULUS FOLIATUS				0.9	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
MITRELLA CARINATA				19.4	9.0	-				-	-	-	-	-	-	6.9	10.4	5.6	3.5	3.5	5.6	0.9	4.9
MITRELLA SPP.				-	-	-				-	-	-	-	-	-	-	3.5	2.8	4.2	1.4	-	-	-
MOPALIA CILIATA				-	0.7	-				-	1.4	0.6	-	-	-	-	-	-	-	-	-	-	-
MOPALIA LIGNOSA				5.6	3.5	1.4				8.3	4.9	2.8	2.8	2.8	1.9	0.7	-	1.9	-	1.4	1.4	3.7	0.7
MOPALIA MUSCOSA				8.3	2.8	2.8				11.1	4.9	2.8	5.6	4.9	1.9	4.2	2.8	0.9	-	-	0.7	0.9	1.4
MOPALIA SPP.				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	1.9	-
MYTILIDAE				-	-	-				-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
MYTILUS CALIFORNIANUS				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEBALIA PUGETTENSIS				0.9	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEMERTEA UNID.				-	-	-				-	-	-	-	-	-	-	-	0.9	0.7	-	-	-	-
NEOTRYPAEA AFFINIS				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
NEREIDAE UNID.				-	-	-				-	-	-	-	4.9	7.4	4.9	9.0	9.3	6.9	2.1	3.5	0.9	0.7
NEREIS GRUBEI				-	-	-				-	-	-	-	-	-	0.7	-	4.6	-	3.5	1.4	2.8	1.4
NOTOACMEA PALEACEA				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	0.9	-
NOTOACMEA SCUTUM				3.7	1.4	4.2				2.8	2.8	-	-	1.4	8.3	10.4	20.1	15.7	4.2	6.3	10.4	7.4	1.4
NOTOPLANA RUPICOLA				29.6	23.6	38.9				66.7	31.9	38.9	30.6	34.0	10.2	27.8	27.8	40.7	38.2	14.6	29.2	19.4	11.1
NUTTALLINA CALIFORNICA				-	-	-				2.8	-	-	-	-	-	-	-	0.9	-	-	-	-	-
OCENEBRA ATROPURPUREA				0.9	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCENEBRA CIRCUMTEXTA				14.8	7.6	15.3				16.7	6.3	11.1	22.2	15.3	13.9	9.0	10.4	19.4	13.9	6.9	11.8	11.1	4.2
OCENEBRA FOVEOLATA				4.6	5.6	1.4				-	6.3	2.8	2.8	-	1.9	-	0.7	0.9	-	0.7	-	0.9	-
OCENEBRA INTERFOSSA				-	0.7	-				-	-	-	-	-	-	1.4	0.7	0.9	2.1	-	2.1	1.9	-
OCENEBRA LURIDA				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
OCENEBRA SPP.				-	-	-				-	-	-	-	-	-	-	0.7	2.8	1.4	0.7	0.7	-	-
OCTOPUS SPP.				-	-	-				2.8	-	-	-	-	-	-	-	-	1.4	-	0.7	-	-
OPHIOTHRIX SPICULATA				0.9	-	-				-	-	-	-	-	0.9	0.7	1.4	0.9	-	-	-	0.9	-
OPHIUROIDEA UNID.				-	-	-				-	-	-	-	-	-	-	0.7	-	-	-	0.7	-	0.7
PACHYGRAPSUS CRASSIPES				-	2.8	4.2				8.3	12.5	11.7	19.4	18.8	12.0	19.4	12.5	7.4	5.6	6.9	4.9	15.7	8.3
PAGURUS SPP.				45.4	67.4	75.0				86.1	57.6	53.3	86.1	77.1	45.4	65.3	54.9	70.4	52.8	49.3	45.1	61.1	16.7
PARANEMERTES PEREGRINA				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	0.9	-
PATIRIA MINIATA				0.9	0.7	-				2.8	-	-	-	-	0.9	-	7.6	-	-	-	-	-	-
PETROLISTHES CINCTIPES				38.0	37.5	40.3				30.6	31.3	26.7	27.8	29.2	7.4	23.6	27.8	39.8	46.5	36.1	28.5	23.1	14.6
PHASCOLOSOMA AGASSIZII				5.6	0.7	4.2				2.8	2.1	1.1	-	0.7	1.9	2.8	-	0.9	-	-	-	-	0.7
PHIDIANA PUGNAX				-	-	-				-	0.7	-	-	-	-	-	0.7	0.9	-	0.7	-	1.9	1.4

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station FC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	3	4	2	ns	ns	ns	1	4	5	1	4	3	4	4	3	4	4	4	3	4
PHOLIDIDAE				-	-	-				-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
PHRAGMATOPOMA CALIFORNICA				-	-	-				-	-	-	-	3.5	3.7	3.5	6.9	3.7	4.9	2.1	0.7	9.3	6.3
PISASTER OCHRACEUS				-	2.1	4.2				-	-	-	-	-	-	-	-	-	0.7	-	0.7	0.9	-
PISASTER SPP./HENRICIA SPP.				-	-	-				-	-	-	-	-	-	-	-	1.9	0.7	-	0.7	-	0.7
PISTA ELONGATA				21.3	9.7	2.8				-	0.7	1.1	-	1.4	-	5.6	4.2	1.9	3.5	2.1	9.7	9.3	8.3
PLATYHELMINTHES UNID.				-	-	-				-	-	-	-	-	-	-	-	0.9	-	-	-	8.3	-
PODODESMUS CEPIO				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
POLYCHAETA UNID.				-	-	-				-	-	-	-	-	3.7	-	4.9	-	3.5	1.4	4.9	-	-
PORIFERA ENCRUSTING				-	-	-				-	-	-	-	-	-	1.4	0.7	-	0.7	-	2.1	0.9	-
PORPHYRA PERFORATA				0.9	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSEUDONELATOMA TOROSA				-	-	1.4				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
PSEUDOSTYLOCHUS BURCHAMI				-	-	-				2.8	0.7	1.1	-	-	0.9	-	-	-	-	-	-	-	-
PUGETTIA PRODUCTA				15.7	11.8	15.3				11.1	6.3	11.1	2.8	2.8	0.9	6.3	3.5	6.5	3.5	0.7	4.9	6.5	-
PUGETTIA RICHII				1.9	1.4	-				2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
PYCNOGONIDA UNID.				-	-	-				-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
PYCNOPODIA HELIANTHOIDES				-	-	1.4				-	-	-	-	-	-	0.7	-	-	-	-	-	-	0.7
ROSTANGA PULCHRA				2.8	0.7	4.2				-	-	-	-	-	-	-	-	-	-	-	-	-	-
SALMACINA TRIBRANCHIATA				-	-	-				-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
SEARLESIA DIRA				-	3.5	1.4				2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
SERPULA VERMICULARIS				-	-	-				-	-	-	-	1.4	-	-	-	-	-	-	0.7	-	-
SERPULIDAE UNID.				-	-	-				-	-	-	-	-	-	-	-	-	-	0.7	1.4	-	4.2
SERPULORBIS SQUAMIGERUS				-	-	-				-	-	0.6	-	-	0.9	0.7	-	-	-	-	-	-	-
SMITHORA NAIADUM				-	-	-				-	-	8.9	-	-	-	-	-	-	-	-	-	-	-
SPIROBRANCHUS SPINOSUS				-	-	-				-	-	-	-	-	-	0.7	-	-	-	0.7	0.7	-	-
SPIRORBIDAE UNID.				-	-	-				-	-	-	-	-	1.9	10.4	29.9	38.9	32.6	29.2	20.8	23.1	18.1
STENOPLAX HEATHIANA				11.1	5.6	9.7				8.3	6.3	3.3	-	5.6	0.9	-	0.7	10.2	11.1	6.9	6.9	4.6	2.8
STRONGYLOCENTROTUS FRANCISCANUS				0.9	-	1.4				-	0.7	0.6	-	-	-	-	-	-	-	-	-	-	-
STRONGYLOCENTROTUS PURPURATUS				17.6	16.0	44.4				25.0	16.0	20.0	36.1	13.2	9.3	15.3	19.4	13.0	18.8	9.7	11.1	12.0	4.2
STYLOCHUS FRANCISCANUS				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
STYLOCHUS SPP.				-	-	-				-	-	-	-	-	-	-	-	1.9	-	-	-	-	-
TEALIA CRASSICORNIS				-	-	-				-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
TEGULA BRUNNEA				37.0	43.8	38.9				25.0	13.9	7.2	2.8	2.8	2.8	11.8	25.0	25.9	23.6	28.5	32.6	32.4	19.4
TEGULA FUNEBRALIS				74.1	86.1	93.1				94.4	90.3	91.7	100.0	94.4	77.8	89.6	77.8	89.8	66.0	76.4	72.2	78.7	54.9
TEGULA PULLIGO				-	0.7	-				-	-	-	-	0.7	-	0.7	-	-	-	-	-	-	-
TEREBELLIDAE UNID.				-	-	-				-	-	-	-	-	0.9	-	-	0.9	-	-	-	-	-
TETRACLITA SQUAMOSA				0.9	-	-				-	-	-	-	-	2.8	-	2.1	0.9	5.6	1.4	2.1	-	5.6
THEMISTE PYROIDES				-	-	-				-	-	-	-	-	-	0.7	-	0.9	-	-	-	-	-
TONICELLA LINEATA				1.9	-	-				2.8	-	0.6	2.8	-	0.9	0.7	-	-	-	0.7	0.7	-	-
TRANSENNELLA SPP.				-	-	-				-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
TRICOLIA PULLOIDES				-	-	-				-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
TRIOPHA MACULATA				-	0.7	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUNICATA UNID.				-	-	-				-	-	-	-	-	3.7	3.5	9.0	6.5	16.0	11.8	10.4	5.6	7.6
WILLIAMIA PELTOIDES				-	0.7	-				-	0.7	-	-	-	-	-	-	-	-	-	-	-	-

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
ACANTHINA PUNCTULATA				6.3	5.1	7.8	5.6	4.2		8.3	17.4	20.0	25.0	21.5	12.5	17.4	11.1	7.4	15.3	8.3	22.2	19.4	27.8
ACANTHINA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
ACMAEA MITRA				1.4	1.9	3.3	2.8	1.4		5.6	0.7	1.7	-	-	6.9	0.7	1.4	0.9	0.7	1.4	2.8	-	5.6
ACMAEIDAE UNID.				-	-	-	-	-		-	-	-	-	-	11.8	36.1	33.3	67.6	50.7	45.8	91.7	-	77.8
ALLOIOPLANA CALIFORNICA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMPHIODIA OCCIDENTALIS				-	-	0.6	0.6	-		-	-	-	-	-	-	-	-	-	2.1	-	-	-	-
AMPHIPHOLIS SQUAMATA				-	0.9	0.6	-	2.8		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
AMPHIPORUS IMPARISPINOSUS				-	-	-	-	-		-	-	-	-	-	-	0.7	-	1.9	1.4	-	2.8	-	-
AMPHISSA VERSICOLOR				0.7	2.3	1.7	1.1	1.4		-	-	-	-	-	-	2.8	2.8	2.8	2.1	1.4	-	-	8.3
ANISODORIS NOBILIS				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
ANTHOPLEURA ARTEMISIA				0.7	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANTHOPLEURA ELEGANTISSIMA				63.9	75.9	76.1	74.4	69.4		72.2	68.8	75.0	88.9	83.3	81.9	66.0	84.0	76.9	88.9	80.6	94.4	88.9	88.9
ANTHOPLEURA XANTHOGRAMMICA				30.6	20.8	20.6	22.2	20.8		25.0	26.4	29.4	30.6	12.5	22.9	13.9	20.8	13.0	15.3	12.5	2.8	5.6	2.8
APHRODITA SPP.				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
APLYSIA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	0.7	-	0.7	-	2.1	-	-	-	8.3
ASTRAEA GIBBEROSA				-	0.5	-	-	1.4		-	-	-	-	-	-	0.7	-	-	0.7	-	-	-	-
BALANUS SPP.				-	-	-	-	-		-	-	-	-	-	2.8	4.2	0.7	-	2.8	-	-	-	-
BASILIOCHITON HEATHII				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BASILIOCHITON LOBIUM				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BETAEUS HARFORDI				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
BITTIUM ESCHRICHTII				0.7	0.5	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
BITTIUM SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	2.8
BRYOZOA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	2.8	6.3	6.9	7.4	2.8	-	2.8	2.8	2.8
CALLIOSTOMA LIGATUM				-	-	-	1.1	4.2		2.8	-	1.1	5.6	-	-	1.4	0.7	-	-	-	-	-	-
CANCER ANTENNARIUS				0.7	-	-	-	-		-	-	-	-	-	0.7	-	-	0.9	0.7	-	2.8	-	-
CANCER JORDANI				2.8	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANCER PRODUCTUS				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2.8	-
CHAMA PELLUCIDA				-	0.5	-	-	-		-	-	-	2.8	1.4	-	-	-	-	-	-	-	-	-
CHTHAMALUS SPP.				-	-	-	-	-		-	-	-	-	-	97.2	91.0	88.2	88.9	91.7	90.3	97.2	72.2	80.6
CIROLANA HARFORDI				1.4	-	1.1	-	-		-	-	-	-	1.4	-	2.1	0.7	-	-	-	2.8	-	-
CLAVELINA HUNTSMANI				9.0	4.2	4.4	3.9	2.8		-	2.1	0.6	-	0.7	-	-	-	-	-	-	-	-	-
COLLISELLA ASMI				4.2	7.9	10.6	4.4	13.9		19.4	12.5	11.7	5.6	10.4	2.8	13.2	14.6	17.6	16.0	4.2	16.7	2.8	72.2
COLLISELLA DIGITALIS				10.4	3.2	3.3	6.7	20.8		16.7	16.7	22.2	33.3	23.6	27.8	15.3	18.1	10.2	11.1	4.2	5.6	8.3	25.0
COLLISELLA INSTABILIS				-	-	-	-	-		5.6	0.7	-	-	-	-	-	-	-	0.7	-	-	-	-
COLLISELLA LIMATULA				75.0	68.5	56.7	74.4	37.5		58.3	63.2	63.3	63.9	82.6	61.8	72.2	52.1	66.7	77.8	80.6	86.1	86.1	91.7
COLLISELLA OCHRACEA				3.5	15.7	38.3	33.9	15.3		19.4	10.4	5.6	11.1	20.8	9.0	18.8	2.1	3.7	2.8	-	-	2.8	8.3
COLLISELLA PELTA				16.7	17.6	38.9	38.9	16.7		16.7	27.8	26.7	13.9	31.3	34.7	42.4	28.5	46.3	39.6	38.9	41.7	55.6	72.2
COLLISELLA SCABRA				41.7	38.0	42.8	58.3	66.7		91.7	94.4	95.0	94.4	97.9	96.5	91.7	73.6	86.1	85.4	72.2	91.7	94.4	94.4
COLLISELLA STRIGATELLA				2.1	8.8	20.0	26.1	20.8		-	6.3	2.8	-	1.4	-	3.5	-	-	0.7	-	-	-	-
COLPOMENIA SPP.				-	-	-	-	-		88.9	-	-	-	-	-	-	-	-	-	-	-	-	-
CONUS CALIFORNICUS				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CORYNACTIS CALIFORNICA				-	0.5	-	-	-		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
CORYPHELLA TRILINEATA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	2.8	-	-
CREPIDULA ADUNCA				16.0	17.6	15.0	16.7	23.6		25.0	22.9	22.2	2.8	8.3	13.2	6.9	2.1	-	-	-	2.8	-	-
CRYPTOLITHODES SITCHENSIS				-	0.5	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CYANOPLAX DENTIENS				4.9	5.6	6.7	10.0	6.9		8.3	7.6	8.3	-	9.7	2.1	2.1	-	-	2.8	-	2.8	-	11.1
CYANOPLAX HARTWEGII				4.2	9.3	6.1	3.9	4.2		5.6	8.3	13.9	5.6	20.1	20.8	12.5	10.4	11.1	7.6	13.9	16.7	16.7	38.9
CYANOPLAX SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	5.6	-
CYCLOXANTHROPS NOVEMDENTATUS				-	-	-	-	-		-	-	-	-	-	1.4	-	-	-	-	-	-	-	-
DENDRODORIS FULVA				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
DIODORA ASPERA				-	0.5	-	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	8.3	-
DIOPATRA ORNATA				-	-	0.6	1.1	-		-	-	-	-	-	-	1.4	-	-	-	-	-	-	-
DORIOPSILLA ALBOPUNCTATA				-	1.4	-	-	-		2.8	2.8	0.6	-	-	-	-	0.7	-	0.7	1.4	-	-	-
EPIACTIS PROLIFERA				5.6	6.5	7.8	3.3	2.8		11.1	3.5	3.9	2.8	2.1	3.5	7.6	5.6	9.3	4.2	2.8	2.8	-	2.8
EPILUCINA CALIFORNICA				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
EPITONIUM SPP./OPALIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	1.9	-	2.8	-	-	-
EPITONIUM TINCTUM				-	-	0.6	-	-		-	-	-	-	-	1.4	2.8	13.2	-	0.7	-	-	-	2.8
ERATO SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
ERATO VITELLINA				-	-	-	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
EUPENTACTA QUINQUESEMITA				-	-	0.6	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
FISH EGGS				-	-	-	-	-		-	-	-	2.8	-	-	-	-	-	-	-	-	-	-
FISSURELLA VOLCANO				12.5	16.7	16.1	20.0	6.9		47.2	33.3	34.4	8.3	13.2	19.4	39.6	50.7	39.8	50.0	44.4	41.7	33.3	55.6
FUSINUS LUTEOPICTUS				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GASTROPODA EGGS				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
GRANULINA MARGARITULA				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAPSIDAE UNID.				-	-	-	-	-		-	-	-	-	-	1.4	-	4.9	2.8	0.7	1.4	-	-	-
HALCAMPA DECEMTENTACULATA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALIOTIS CRACHERODII				4.9	0.5	1.1	0.6	2.8		-	1.4	1.7	-	2.1	-	0.7	0.7	3.7	0.7	-	2.8	2.8	-
HEMIGRAPSUS NUDUS				9.7	6.0	3.9	0.6	2.8		-	0.7	1.7	-	-	-	-	1.4	-	1.4	-	-	-	-
HEMIGRAPSUS OREGONENSIS				-	-	-	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
HENRICIA LEVIUSCULA				5.6	3.7	2.8	6.1	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPTACARPUS CARINATUS				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPTACARPUS PICTUS				9.0	7.9	7.8	8.3	1.4		11.1	2.1	3.3	-	-	2.1	2.8	-	-	0.7	1.4	2.8	-	-
HEPTACARPUS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
HERMISSENDA CRASSICORNIS				0.7	-	-	0.6	-		-	-	-	-	-	0.7	-	-	-	0.7	-	-	-	-
HOMALOPOMA BACULUM				-	0.5	-	0.6	-		2.8	-	-	-	-	1.4	4.9	4.9	1.9	-	1.4	11.1	-	-
HOMALOPOMA LURIDUM/LIRULARIA SUCCINCTA				2.8	0.5	-	0.6	9.7		2.8	0.7	0.6	-	-	-	0.7	-	-	-	-	-	-	2.8
HOPKINSIA ROSACEA				-	-	1.7	0.6	1.4		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
IDOTEA SPP.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
IDOTEA UROTOMA				1.4	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
IDOTEA NOSNESSENSKII				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITON RADIANS				3.5	1.4	1.7	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITON REGULARIS				0.7	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITONOIDAE UNID.				-	-	-	-	-		-	-	-	-	-	0.7	2.1	2.8	2.8	-	-	2.8	-	-
KATHARINA TUNICATA				-	-	-	1.1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LACUNA SPP.				-	-	-	-	-		-	-	-	-	-	4.9	11.8	7.6	13.0	6.3	2.8	-	-	-
LAMELLARIA DIEGOENSIS				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LAMELLARIIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
LEPIDOZONA COOPERI				2.1	1.9	1.7	1.7	1.4		-	0.7	-	5.6	-	-	0.7	-	1.9	-	-	2.8	2.8	-
LEPIDOZONA MERTENSII				0.7	-	0.6	-	1.4		-	-	-	-	0.7	-	0.7	-	-	-	-	2.8	-	-
LEPIDOZONA SINUDENTATA				-	0.9	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
LEPTASTERIAS HEXACTIS				5.6	5.1	7.8	4.4	4.2		-	0.7	-	-	-	-	-	0.7	-	-	-	-	-	-
LEPTOSYNAPTA ALBICANS				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEUCANDRA HEATHI				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
LISSOTHURIA NUTRIENS				-	-	-	-	-		-	0.7	0.6	-	-	1.4	2.1	0.7	1.9	2.1	-	2.8	2.8	5.6
LITTORINA PLANAXIS				-	-	-	-	1.4		-	1.4	2.8	-	-	11.1	8.3	8.3	6.5	5.6	-	5.6	5.6	22.2
LITTORINA SCUTULATA				4.2	3.7	2.2	4.4	25.0		16.7	16.7	11.1	19.4	22.9	31.9	37.5	31.9	35.2	29.2	31.9	33.3	11.1	33.3
LOPHOPANOPEUS LEUCOMANUS				0.7	0.9	-	-	-		-	-	-	-	-	-	2.1	-	0.9	-	-	2.8	-	-
LOTTIA GIGANTEA				-	-	-	-	-		-	-	-	-	-	-	1.4	1.4	1.9	3.5	5.6	-	2.8	-
LOXORHYNCHUS CRISPATUS				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MEGATEBENNUS BIMACULATUS				-	0.5	-	-	-		-	-	-	-	-	-	0.7	-	0.9	-	-	-	-	-
MIMULUS FOLIATUS				2.8	0.5	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MITRA IDAE				-	-	-	-	-		-	-	-	-	-	1.4	0.7	-	-	-	-	2.8	-	-
MITRELLA CARINATA				9.7	2.3	-	-	-		-	-	-	-	0.7	7.6	5.6	5.6	8.3	3.5	-	16.7	5.6	-
MITRELLA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	2.8	1.9	0.7	2.8	-	-	-
MODIOLUS CARPENTERI				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	2.8	-	-
MODIOLUS SPP.				-	-	-	1.1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOPALIA CILIATA				-	-	-	-	-		-	0.7	0.6	-	-	-	-	-	-	-	-	-	-	-
MOPALIA LIGNOSA				2.8	2.8	1.7	2.8	2.8		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOPALIA MUSCOSA				3.5	3.2	0.6	3.3	-		16.7	7.6	4.4	5.6	1.4	2.1	-	-	0.9	0.7	-	-	-	-
MYTILIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	-	2.1	1.4	-	-	-
MYTILIMERIA NUTTALLI				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MYTILUS CALIFORNIANUS				0.7	-	-	1.1	5.6		5.6	4.9	7.8	11.1	4.9	4.9	2.8	1.4	-	0.7	2.8	2.8	-	-
MYTILUS EDULIS				-	-	-	-	-		-	-	2.2	-	-	-	-	-	0.9	-	-	-	-	-
NEMERTEA UNID.				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEREIDAE UNID.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	0.7	-	2.8	-	5.6
NEREIS GRUBEI				-	-	-	-	-		-	-	-	-	-	-	-	-	1.9	-	-	-	-	-
NOTOACMEA INSESSA				-	-	-	-	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
NOTOACMEA PALEACEA				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
NOTOACMEA SCUTUM				13.2	16.7	15.6	26.1	8.3		16.7	14.6	3.9	-	13.9	47.9	50.0	29.2	34.3	45.1	34.7	80.6	63.9	47.2
NOTOPLANA RUPICOLA				-	0.5	-	1.1	-		-	-	-	-	-	1.4	-	-	-	-	-	-	-	-
NUTTALLINA CALIFORNICA				0.7	0.9	-	-	4.2		16.7	11.1	16.7	11.1	13.9	3.5	3.5	0.7	0.9	2.8	2.8	-	5.6	5.6
OCENEBRA ATROPURPUREA				1.4	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCENEBRA CIRCUMTEXTA				22.9	23.6	16.1	19.4	27.8		36.1	45.8	44.4	52.8	52.8	54.9	50.0	45.8	21.3	25.7	12.5	19.4	27.8	25.0
OCENEBRA FOVEOLATA				1.4	2.8	1.7	-	-		8.3	3.5	0.6	-	-	-	-	-	-	-	-	-	-	-
OCENEBRA INTERFOSSA				-	-	-	-	1.4		-	-	-	-	-	0.7	-	0.7	-	-	-	-	-	-
OCENEBRA LURIDA				-	1.4	-	-	2.8		-	-	0.6	2.8	-	-	-	-	-	-	-	-	-	-
OCENEBRA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
ONCHIDELLA BOREALIS				-	-	0.6	2.2	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPHIOTHRIX SPICULATA				-	-	0.6	-	-		-	-	-	-	-	1.4	2.1	1.4	-	1.4	1.4	-	-	2.8
PACHYGRAPSUS CRASSIPES				5.6	3.2	2.2	2.2	6.9		-	4.2	10.6	5.6	19.4	26.4	34.7	36.1	32.4	52.8	47.2	75.0	44.4	66.7
PAGURUS SPP.				68.8	86.1	85.0	96.1	66.7		-	65.3	64.4	66.7	93.1	92.4	93.1	89.6	87.0	80.6	72.2	88.9	97.2	44.4
PARANEMERTES PEREGRINA				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARASTICHOPUS CALIFORNICUS				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PATIRIA MINIATA				12.5	13.0	13.3	17.2	23.6		-	-	0.6	-	1.4	2.8	2.8	4.2	1.9	1.4	2.8	-	-	2.8
PELECYPODA UNID.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
PETROLISTHES CINCTIPES				1.4	1.4	0.6	0.6	-		-	-	-	-	-	0.7	1.4	-	0.9	-	-	2.8	-	-
PHASCOLOSOMA AGASSIZII				0.7	-	-	0.6	-		-	-	-	-	0.7	0.7	3.5	-	0.9	3.5	-	2.8	-	13.9
PHIDIANA PUGNAX				-	-	-	-	-		-	-	1.1	-	0.7	0.7	2.8	1.4	1.9	-	-	-	-	-
PHOLIDIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	2.1	1.4	-	-	8.3
PHRAGMATOPOMA CALIFORNICA				-	0.5	0.6	3.3	-		8.3	0.7	3.9	11.1	50.0	52.8	45.8	47.9	38.9	54.2	54.2	52.8	50.0	47.2
PHYLLOCHAETOPTERUS PROLIFICA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	2.8
PISASTER GIGANTEUS				-	-	0.6	-	-		-	-	0.6	-	-	0.7	-	-	-	-	-	-	-	-
PISASTER OCHRACEUS				2.8	3.2	4.4	1.7	-		-	0.7	1.7	-	3.5	6.9	13.9	25.7	14.8	10.4	4.2	16.7	8.3	5.6
PISTA ELONGATA				1.4	0.5	0.6	1.1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PODODESMUS CEPIO				-	-	-	-	-		-	-	-	-	-	0.7	-	0.7	-	-	-	-	-	-
POLLICIPES POLYMERUS				-	0.5	-	-	-		-	-	1.7	-	2.1	3.5	2.8	-	0.9	1.4	-	-	-	2.8
POLYCHAETA UNID.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
PORIFERA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	1.4	-	0.7	1.9	1.4	-	-	-	-
PSEUDOMELATOMA TOROSA				-	-	-	-	-		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
PSEUDOSTYLOCHUS BURCHAMI				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PUGETTIA PRODUCTA				25.7	10.2	15.0	24.4	5.6		2.8	4.2	2.2	-	-	4.9	6.3	2.8	5.6	4.2	4.2	13.9	19.4	2.8
PUGETTIA RICHII				3.5	4.2	5.6	3.9	2.8		2.8	-	0.6	-	0.7	-	1.4	-	-	2.1	1.4	2.8	-	-
PYCNOPODIA HELIANTHOIDES				-	1.9	1.1	0.6	1.4		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
ROSTANGA PULCHRA				-	1.4	-	-	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
SALMACINA TRIBRANCHIATA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
SEARLESIA DIRA				-	-	-	-	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
SERPULA VERMICULARIS				-	-	-	-	-		-	1.4	-	2.8	11.1	1.4	1.4	0.7	4.6	2.1	1.4	2.8	-	-
SERPULIDAE UNID.				-	-	-	-	-		-	-	-	-	-	0.7	1.4	6.3	2.8	8.3	6.9	-	-	25.0
SERPULORBIS SQUAMIGERUS				2.8	1.4	-	-	-		13.9	4.2	7.2	5.6	13.2	11.8	8.3	8.3	2.8	2.1	2.8	-	2.8	5.6
SPIROBRANCHUS SPINOSUS				-	-	-	-	-		-	-	-	-	-	16.7	18.8	16.0	26.9	30.6	38.9	30.6	27.8	36.1
SPIRORBIDAE UNID.				-	-	-	-	-		-	-	-	-	-	31.9	71.5	65.3	59.3	63.2	37.5	13.9	33.3	27.8
STENOPLAX HEATHIANA				-	-	0.6	1.7	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
STRONGYLOCENTROTUS FRANCISCANUS				-	-	-	-	-		-	-	-	-	-	-	1.4	0.7	0.9	2.1	5.6	-	-	-
STRONGYLOCENTROTUS PURPURATUS				0.7	2.3	6.7	0.6	-		-	0.7	0.6	-	2.8	16.0	22.2	23.6	28.7	34.0	34.7	36.1	25.0	33.3
STRONGYLOCENTROTUS SPP.				-	-	-	-	-		-	-	-	-	-	-	1.4	-	-	-	-	-	-	-
STYELA MONTEREYENSIS				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
TEALIA CRASSICORNIS				4.9	6.0	5.6	5.0	2.8		5.6	2.1	2.2	-	-	-	-	-	-	-	-	-	-	-
TEGULA BRUNNEA				29.2	30.1	42.2	30.6	36.1		25.0	8.3	10.0	-	2.1	16.0	26.4	36.1	39.8	33.3	36.1	30.6	47.2	33.3
TEGULA FUNEBRALIS				79.9	83.8	62.8	85.0	98.6		97.2	95.8	95.6	94.4	97.9	94.4	85.4	56.9	70.4	74.3	73.6	75.0	63.9	100.0
TEGULA MONTEREYI				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
TEGULA PULLIGO				-	-	-	-	-		-	0.7	-	-	-	-	2.8	-	-	0.7	-	-	-	-
TEREBELLIDAE UNID.				-	-	-	-	-		-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	-
TETRACLITA SQUAMOSA				5.6	-	-	-	-		-	-	-	-	0.7	25.7	53.5	59.7	58.3	63.9	54.2	50.0	33.3	38.9
TONICELLA LINEATA				2.8	1.9	2.2	-	-		-	2.1	0.6	-	-	0.7	-	-	-	0.7	-	-	2.8	-
TRICOLIA PULLOIDES				-	-	-	-	-		-	-	-	-	-	2.1	3.5	1.4	-	0.7	-	-	-	-
TRICOLIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	-
TRIOPHA MACULATA				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUNICATA UNID.				-	-	-	-	-		-	-	-	-	-	2.8	2.1	4.2	5.6	9.0	1.4	2.8	11.1	-
WILLIAMIA PELTOIDES				1.4	0.5	-	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
ACANTHINA PUNCTULATA				2.1	1.4	1.7	0.6	4.2		5.6	16.7	13.3	11.1	4.9	2.8	4.9	6.9	0.9	2.1	4.2	-	5.6	13.9
ACANTHODORIS LUTEA				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
ACMAEA MITRA				2.1	2.3	1.1	1.1	2.8		-	-	0.6	-	-	0.7	1.4	0.7	-	-	-	-	-	-
ACMAEIDAE UNID.				-	-	-	-	-		-	-	-	-	-	-	0.7	3.5	0.9	4.9	8.3	-	-	25.0
AEOLIDIA PAPILLOSA				0.7	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALLOIOPLANA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
ALPHEUS DENTIPES				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
AMPHIODIA OCCIDENTALIS				4.9	9.3	6.7	10.6	6.9		-	4.2	3.9	2.8	4.2	0.7	-	2.1	1.9	4.2	1.4	2.8	2.8	11.1
AMPHIPHOLIS SQUAMATA				20.8	35.6	31.7	16.7	18.1		38.9	21.5	25.0	22.2	2.1	2.8	2.8	-	0.9	-	2.8	-	-	8.3
AMPHIPORUS IMPARISPINOSUS				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
AMPHISSA VERSICOLOR				8.3	6.0	6.1	2.8	1.4		2.8	2.8	-	-	1.4	0.7	-	4.2	3.7	3.5	5.6	-	5.6	19.4
ANISODORIS NOBILIS				-	-	-	-	-		-	-	-	-	0.7	-	-	0.7	-	-	-	-	-	-
ANTHOPLEURA ARTEMISIA				-	-	-	0.6	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
ANTHOPLEURA ELEGANTISSIMA				30.6	28.7	18.9	22.2	31.9		19.4	20.8	15.0	19.4	38.9	14.6	20.8	24.3	17.6	16.7	18.1	22.2	47.2	19.4
ANTHOPLEURA XANTHOGRAMMICA				4.9	1.9	1.1	-	-		-	0.7	1.7	-	-	0.7	1.4	2.8	2.8	2.1	2.8	-	2.8	-
APHRODITA SPP.				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
APLYSIA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	1.4	-	-	-
BALANUS SPP.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
BARLEEIA HALIOTIPHILA				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	-
BARLEEIA SPP.				-	-	-	-	-		-	-	-	-	-	-	0.7	1.4	-	-	1.4	-	-	-
BASILIOCHITON HEATHII				2.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BETAEUS HARFORDI				-	-	-	-	-		-	-	0.6	-	0.7	1.4	-	-	-	-	-	-	-	-
BITTIUM ESCHRICHTII				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
BITTIUM SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	2.8	-	-	2.8	-	-
BRYOZOA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	10.4	10.4	12.5	10.2	13.9	4.2	-	13.9	16.7
CALLIOSTOMA LIGATUM				2.1	-	0.6	1.1	-		-	0.7	0.6	-	-	0.7	0.7	-	-	-	-	-	-	-
CALLISTOCHITON PALMULATUS				-	-	-	-	-		-	-	-	-	-	-	1.4	-	-	-	-	-	-	-
CANCER ANTENNARIUS				8.3	6.5	3.3	6.1	4.2		5.6	2.1	1.7	-	0.7	0.7	17.4	-	0.9	0.7	-	8.3	-	-
CANCER JORDANI				3.5	1.9	2.8	1.7	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANCER PRODUCTUS				6.3	2.3	1.1	3.3	1.4		-	-	-	-	-	0.7	-	-	1.9	0.7	1.4	-	-	-
CANCER SPP.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	2.8	-
CHAMA PELLUCIDA				-	0.9	-	-	-		-	-	-	-	-	-	-	2.1	1.9	2.1	-	-	-	-
CHTHAMALUS SPP.				-	-	-	-	-		-	-	-	-	-	9.0	6.9	8.3	0.9	3.5	6.9	2.8	-	-
CIROLANA HARFORDI				40.3	43.5	31.1	39.4	26.4		41.7	32.6	41.1	27.8	31.9	38.9	30.6	27.8	40.7	46.5	30.6	41.7	52.8	-
CLAVELINA HUNTSMANI				3.5	1.4	1.1	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
COLLISELLA ASMI				1.4	3.2	3.9	4.4	5.6		11.1	3.5	2.8	-	6.3	2.1	4.2	2.8	5.6	0.7	4.2	-	-	-
COLLISELLA DIGITALIS				-	1.9	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLISELLA INSTABILIS				-	-	-	-	-		5.6	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLISELLA LIMATULA				49.3	45.8	38.3	35.0	13.9		47.2	47.9	42.2	50.0	57.6	44.4	40.3	23.6	29.6	29.9	36.1	33.3	33.3	63.9
COLLISELLA OCHRACEA				5.6	13.9	21.7	17.2	4.2		5.6	6.3	5.0	11.1	10.4	6.9	9.0	10.4	0.9	1.4	-	-	5.6	-
COLLISELLA PELTA				3.5	1.4	0.6	1.7	2.8		2.8	3.5	1.7	-	6.3	6.3	2.1	3.5	4.6	5.6	1.4	-	11.1	11.1
COLLISELLA SCABRA				-	0.5	0.6	-	1.4		-	1.4	1.1	-	-	2.8	0.7	0.7	1.9	-	-	-	-	5.6
COLLISELLA STRIGATELLA				0.7	0.5	2.2	-	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
CORYNACTIS CALIFORNICA				-	0.5	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CORYPHELLA TRILINEATA				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREPIDULA ADUNCA				12.5	6.9	10.6	9.4	2.8		27.8	9.0	13.3	-	2.1	3.5	-	-	-	-	-	-	-	-
CREPIDULA NUMMARIA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREPIDULA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
CRYPTOLITHODES SITCHENSIS				0.7	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CYANOPLAX DENTIENS				2.8	6.0	3.3	6.7	1.4		2.8	3.5	4.4	5.6	5.6	0.7	-	-	-	1.4	-	-	-	-
CYANOPLAX HARTWEGII				3.5	-	1.7	0.6	-		-	0.7	1.7	5.6	4.9	4.9	0.7	1.4	2.8	-	2.8	2.8	-	2.8
CYCLOXANTHROPS NOVEMDENTATUS				2.1	2.8	1.1	1.1	-		2.8	0.7	1.1	5.6	2.8	0.7	-	-	-	-	-	-	-	-
DIAULULA SANDIEGENSIS				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
DIODORA ASPERA				2.8	2.3	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
DIOPATRA ORNATA				-	0.5	0.6	1.1	-		-	-	-	-	-	-	2.1	-	-	0.7	-	-	2.8	-
DORIOPSILLA ALBOPUNCTATA				0.7	0.9	0.6	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
EPIACTIS PROLIFERA				11.8	8.8	7.8	3.9	-		2.8	2.1	3.3	-	2.1	2.1	4.2	-	-	0.7	-	-	-	2.8
EPITONIUM SPP./OPALIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	-
EPITONIUM TINCTUM				-	0.5	1.1	-	-		-	-	-	-	-	2.1	1.4	4.2	-	0.7	-	-	-	-
EUPENTACTA QUINQUESEMITA				-	-	1.1	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
EURYSTOMELLA BILABIATA				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
FISSURELLA VOLCANO				2.8	-	1.7	1.7	-		11.1	6.9	6.1	5.6	3.5	6.3	5.6	11.8	8.3	10.4	8.3	8.3	16.7	27.8
GARI CALIFORNICA				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
GLANS SUBQUADRATA				0.7	0.5	-	-	-		5.6	0.7	0.6	-	-	0.7	-	1.4	0.9	0.7	-	-	2.8	-
GRANULINA MARGARITULA				-	1.4	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAPSIDAE UNID.				-	-	-	-	-		-	-	-	-	-	6.9	-	9.7	4.6	6.9	11.1	-	-	-
HALCAMPA DECEMTENTACULATA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALIOTIS CRACHERODII				12.5	15.3	9.4	9.4	9.7		-	6.3	7.2	2.8	4.2	0.7	0.7	-	-	0.7	4.2	-	-	-
HALIOTIS RUFESCENS				-	0.5	0.6	-	4.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALOSYDNA BREVISETOSA				1.4	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAPLOGASTER CAVICAUDA				2.8	0.9	2.8	1.1	1.4		-	-	0.6	-	-	1.4	-	0.7	-	-	-	-	-	-
HAPLOGLOIA ANDERSONII				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEMIGRAPSUS NUDUS				54.9	43.5	45.0	46.7	41.7		22.2	45.8	41.1	27.8	27.1	13.2	7.6	4.9	1.9	-	-	-	-	2.8
HEMIGRAPSUS OREGONENSIS				-	0.5	-	-	-		-	0.7	1.1	-	-	0.7	1.4	-	-	-	-	-	-	-
HENRICIA LEVIUSCULA				7.6	5.1	1.1	3.3	4.2		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
HEPTACARPUS PICTUS				9.0	10.6	6.7	13.9	-		19.4	-	2.2	-	-	1.4	-	0.7	2.8	1.4	-	-	-	-
HEPTACARPUS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
HERMISSENDA CRASSICORNIS				-	0.9	-	-	-		-	-	-	-	-	-	-	-	1.9	-	-	-	5.6	-
HINNITES GIGANTEUS				-	0.5	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HIPPONIX CRANIOIDES				-	-	-	1.1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOMALOPOMA BACULUM				20.1	24.5	23.9	31.7	12.5		36.1	28.5	24.4	19.4	22.9	24.3	25.0	28.5	8.3	13.9	25.0	2.8	-	11.1
HOMALOPOMA LURIDUM/LIRULARIA SUCCINCTA				16.0	12.5	13.3	12.8	5.6		8.3	4.2	4.4	2.8	3.5	1.4	2.8	0.7	0.9	0.7	-	-	-	-
HOMALOPOMA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	6.5	-	2.8	-	-	-
HOPKINSIA ROSACEA				-	-	-	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
IDOTEA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	-
IDOTEA UROTOMA				6.3	3.7	3.3	2.2	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
IRUS LAMELLIFER				-	-	-	-	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITON RADIANS				6.9	7.9	7.2	1.7	-		-	-	1.1	-	0.7	0.7	0.7	-	-	-	-	-	-	-
ISCHNOCHITON REGULARIS				9.0	4.2	3.3	4.4	4.2		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITONOIDAE UNID.				-	-	-	-	-		-	-	-	-	-	-	2.8	3.5	0.9	1.4	1.4	2.8	-	-
KELLIA LAPEROUSII				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
LACUNA SPP.				-	-	-	-	-		-	-	-	-	-	-	5.6	2.1	6.5	2.8	1.4	5.6	-	-
LAMELLARIA DIEGOENSIS				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
LAMELLARIIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
LEPIDOPLEURUS RUGATUS				3.5	2.8	1.7	1.7	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA COOPERI				13.9	15.7	6.1	6.1	6.9		8.3	5.6	5.6	5.6	4.2	5.6	6.3	0.7	1.9	0.7	5.6	5.6	2.8	-
LEPIDOZONA MERTENSII				5.6	3.2	0.6	-	2.8		2.8	0.7	2.2	2.8	2.1	0.7	-	-	4.6	2.1	1.4	-	-	-
LEPIDOZONA RETRIPOROSA				1.4	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA SINUDENTATA				-	4.2	1.7	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	2.8	-	-	-
LEPTASTERIAS HEXACTIS				12.5	15.7	12.8	12.2	1.4		2.8	2.1	-	-	-	-	-	-	-	-	-	-	-	-
LEPTOSYNAPTA ALBICANS				0.7	1.9	6.1	8.3	2.8		2.8	0.7	1.7	-	0.7	-	2.1	-	-	-	-	-	-	-
LEUCANDRA HEATHI				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LIRULARIA SUCCINCTA				-	2.3	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LISSOTHURIA NUTRIENS				-	-	1.1	-	-		-	-	-	-	-	0.7	-	-	-	2.8	1.4	-	5.6	8.3
LITTORINA PLANAXIS				-	-	-	0.6	-		-	-	0.6	-	-	0.7	-	-	-	0.7	-	-	-	-
LITTORINA SCUTULATA				-	-	0.6	1.1	-		-	4.2	2.8	5.6	8.3	3.5	3.5	2.8	1.9	4.9	2.8	-	-	-
LOPHOPANOPEUS LEUCOMANUS				25.0	27.8	18.9	16.1	8.3		11.1	13.9	8.9	30.6	9.7	4.2	7.6	0.7	4.6	3.5	1.4	11.1	-	2.8
LUMBRINERIS SPP.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
MAJIDAE				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	0.7	-	-	-	-
MEGATEBENNUS BIMACULATUS				-	-	0.6	0.6	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
MICRURA VERRILLI				-	0.9	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MIMULUS FOLIATUS				6.3	3.2	1.7	-	-		-	0.7	-	2.8	-	-	-	-	-	-	-	-	-	-
MITRA IDAE				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
MITRELLA CARINATA				6.3	0.5	-	-	-		-	-	-	-	-	4.9	3.5	6.3	-	1.4	1.4	2.8	-	2.8
MITRELLA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	1.4	11.1	-	-	-
MODIOLUS CARPENTERI				-	-	-	-	-		-	-	-	-	-	-	0.7	-	0.9	0.7	-	-	-	2.8
MODIOLUS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
MOPALIA ACUTA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOPALIA CILIATA				0.7	1.4	-	0.6	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
MOPALIA LIGNOSA				14.6	7.4	6.1	5.0	2.8		5.6	-	2.2	-	3.5	-	-	-	-	-	1.4	-	-	-
MOPALIA LOWEI				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOPALIA MUSCOSA				8.3	2.3	1.7	6.7	1.4		5.6	9.0	7.2	8.3	4.9	0.7	1.4	-	-	2.1	1.4	-	5.6	2.8
MOPALIA SPP.				-	-	-	-	-		-	-	-	-	-	0.7	-	1.4	-	0.7	-	-	-	-
MYTILUS CALIFORNIANUS				-	0.9	0.6	0.6	-		2.8	0.7	1.7	-	0.7	3.5	1.4	-	-	0.7	1.4	-	-	-
MYTILUS EDULIS				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2.8	-
NEMERTEA UNID.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	1.4	-	-	-
NEPHTYIDAE				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
NEREIDAE UNID.				-	0.5	-	-	-		-	-	-	-	1.4	0.7	3.5	1.4	2.8	2.1	2.8	-	11.1	2.8
NEREIS GRUBEI				-	-	-	-	-		-	-	-	-	-	0.7	-	-	1.9	0.7	-	-	-	-
NORRISIA NORRISI				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
NOTOACMEA SCUTUM				2.1	2.8	3.3	0.6	1.4		11.1	7.6	1.1	-	4.9	13.2	13.9	6.9	10.2	4.9	9.7	25.0	19.4	13.9
NOTOPLANA RUPICOLA				36.8	38.9	45.6	48.9	30.6		30.6	27.8	21.1	8.3	18.1	13.2	14.6	23.6	19.4	14.6	25.0	5.6	2.8	5.6
NUTTALLINA CALIFORNICA				-	-	-	-	1.4		-	1.4	-	-	-	-	-	-	-	-	-	-	-	-
OCENEBRA ATROPURPUREA				-	3.7	2.2	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCENEBRA CIRCUMTEXTA				36.1	17.1	15.6	18.9	19.4		22.2	35.4	28.9	36.1	34.0	27.8	18.1	21.5	9.3	5.6	12.5	11.1	16.7	13.9
OCENEBRA FOVEOLATA				1.4	3.2	1.1	-	1.4		2.8	2.1	0.6	2.8	0.7	-	-	-	-	-	-	-	-	-
OCENEBRA INTERFOSSA				-	0.5	-	1.7	-		2.8	1.4	-	-	-	1.4	0.7	-	-	-	-	-	-	-
OCENEBRA LURIDA				1.4	1.4	-	1.7	-		-	0.7	1.1	-	-	-	-	-	-	-	-	-	-	-
OCTOPUS SPP.				0.7	-	-	-	-		-	-	-	-	1.4	-	0.7	0.7	0.9	1.4	2.8	-	-	-
OPALIA MONTEREYENSIS				-	-	-	-	-		-	1.4	-	-	-	-	-	-	-	-	-	-	-	-
OPHIOPLOCUS ESMARKI				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPHIOPTERIS PAPILLOSA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
OPHIOTHRIX SPICULATA				3.5	1.9	0.6	0.6	1.4		2.8	2.1	1.1	-	0.7	3.5	4.9	6.9	2.8	6.3	6.9	8.3	-	8.3
OPHIUROIDEA UNID.				-	-	-	-	-		-	-	-	-	-	-	0.7	1.4	1.9	2.1	-	-	-	2.8
PACHYCHELES RUDIS				1.4	0.9	0.6	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
PACHYGRAPSUS CRASSIPES				2.1	4.2	2.2	1.1	5.6		16.7	29.2	32.2	36.1	38.9	52.1	46.5	35.4	25.0	31.9	48.6	50.0	41.7	61.1
PAGURUS SPP.				64.6	77.3	83.3	92.2	72.2		80.6	78.5	80.6	77.8	97.2	87.5	85.4	78.5	79.6	77.1	76.4	80.6	75.0	36.1
PARACERCEIS CORDATA				1.4	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARANEMERTES PEREGRINA				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARAXANTHIAS TAYLORI				-	-	-	-	-		-	-	1.1	-	-	0.7	-	-	-	-	-	-	-	-
PATIRIA MINIATA				7.6	6.9	7.2	6.1	12.5		-	2.8	1.1	-	0.7	2.8	2.1	4.9	3.7	2.1	2.8	-	8.3	2.8
PETROLISTHES CINCTIPES				61.8	63.4	60.0	59.4	45.8		38.9	63.2	64.4	44.4	61.8	49.3	36.1	32.6	31.5	25.0	26.4	38.9	13.9	13.9
PHASCOLOSOMA AGASSIZII				4.2	4.6	7.2	6.1	5.6		2.8	6.3	2.2	-	6.3	4.9	2.1	6.9	6.5	4.9	4.2	-	5.6	13.9
PHIDIANA PUGNAX				0.7	-	-	-	-		2.8	-	-	-	-	0.7	-	-	-	-	-	-	-	-
PHOLIDIDAE				-	-	-	-	-		-	-	-	-	-	-	-	1.4	0.9	-	-	-	-	-
PHRAGMATOPOMA CALIFORNICA				-	0.5	-	-	-		2.8	-	-	-	7.6	17.4	12.5	22.2	12.0	24.3	15.3	13.9	41.7	52.8
PHYLLOCHAETOPTERUS PROLIFICA				-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	5.6
PISASTER OCHRACEUS				-	0.9	0.6	1.1	-		-	0.7	-	-	4.2	1.4	4.9	6.3	4.6	3.5	5.6	-	2.8	-
PISTA ELONGATA				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
PLATYHELMINTHES UNID.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2.8	-
PODODESMUS CEPIO				-	-	-	-	-		-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	-
POLLICIPES POLYMERUS				-	-	-	-	-		-	-	0.6	-	-	-	-	1.4	-	-	-	-	-	-
POLYCHAETA UNID.				-	-	-	-	-		-	-	-	-	-	2.1	-	11.8	0.9	2.1	4.2	-	-	-
POLYNOIDAE				-	-	-	-	-		-	-	-	-	-	-	0.7	-	0.9	-	-	-	2.8	-
PORIFERA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	0.7	-	-	-	2.8
PROTOTHACA STAMINEA				-	0.5	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSEUDOSTYLOCHUS BURCHAMI				1.4	1.9	1.1	1.1	-		2.8	5.6	3.3	-	0.7	-	1.4	0.7	-	-	-	-	-	-
PUGETTIA PRODUCTA				12.5	16.2	10.6	20.0	1.4		5.6	2.8	3.3	-	0.7	2.8	4.2	3.5	3.7	0.7	-	2.8	11.1	-
PUGETTIA RICHII				3.5	2.8	2.2	1.7	1.4		-	0.7	-	-	-	-	-	0.7	0.9	2.1	-	-	-	-
PYCNOPODIA HELIANTHOIDES				1.4	1.4	1.7	1.7	1.4		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
ROSTANGA PULCHRA				0.7	-	1.1	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEARLESIA DIRA				0.7	3.7	1.1	-	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
SERPULA VERMICULARIS				2.8	-	0.6	-	-		-	-	-	-	1.4	-	0.7	0.7	-	3.5	2.8	-	-	-
SERPULIDAE UNID.				-	-	-	-	-		-	-	-	-	-	2.1	1.4	3.5	5.6	9.7	6.9	-	-	13.9
SERPULORBIS SQUAMIGERUS				2.1	0.5	-	-	-		-	-	0.6	2.8	1.4	2.1	0.7	1.4	-	-	-	-	2.8	-
SIPUNCULA UNID.				-	-	-	-	-		-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	-
SPHAEROMATIDAE UNID.				-	-	-	-	-		-	-	-	-	-	1.4	-	-	-	-	-	-	-	-
SPIROBRANCHUS SPINOSUS				-	-	-	-	-		-	-	-	-	-	4.2	3.5	6.3	9.3	11.1	15.3	5.6	30.6	22.2
SPIRORBIDAE UNID.				-	-	-	-	-		-	-	-	-	-	48.6	72.2	73.6	70.4	73.6	66.7	44.4	52.8	61.1

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station NDC 1-V (continued)

Species	Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
	# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	3	4	2	1	1	1
STENOPLAX HEATHIANA					18.8	13.9	11.7	11.7	13.9		5.6	6.9	6.1	11.1	6.9	6.3	4.2	3.5	7.4	5.6	1.4	-	2.8	11.1
STRONGYLOCENTROTUS FRANCISCANUS					-	0.9	1.1	-	-		-	-	-	-	-	-	-	-	0.9	1.4	1.4	-	-	-
STRONGYLOCENTROTUS PURPURATUS					11.1	14.8	26.7	24.4	11.1		11.1	11.1	16.7	27.8	32.6	40.3	38.2	40.3	35.2	45.8	47.2	47.2	30.6	33.3
STRONGYLOCENTROTUS SPP.					-	-	-	-	-		-	-	-	-	-	-	2.1	-	-	-	-	-	2.8	-
STYELA MONTEREYENSIS					-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
STYLOCHUS FRANCISCANUS					-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	-
STYLOCHUS SPP.					-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	-	-	-	2.8
TEALIA CRASSICORNIS					-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
TEGULA BRUNNEA					36.1	33.3	34.4	30.6	33.3		33.3	22.2	12.8	-	9.7	15.3	28.5	50.0	36.1	34.7	41.7	44.4	50.0	30.6
TEGULA FUNEBRALIS					56.9	70.8	63.9	76.1	72.2		97.2	90.3	95.0	94.4	99.3	85.4	74.3	55.6	50.9	55.6	61.1	47.2	41.7	83.3
TEGULA MONTEREYI					-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TEGULA PULLIGO					-	1.4	0.6	0.6	1.4		-	1.4	-	-	-	0.7	1.4	2.1	2.8	0.7	1.4	-	-	-
TEREBELLIDAE UNID.					0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TETRACLITA SQUAMOSA					1.4	-	-	-	-		-	-	-	-	-	4.9	6.9	11.8	14.8	11.8	12.5	-	25.0	-
THEMISTE PYROIDES					-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2.8	-
TONICELLA LINEATA					3.5	2.3	1.1	0.6	-		2.8	-	0.6	-	-	-	0.7	-	-	-	-	-	-	-
TRICOLIA PULLOIDES					-	-	-	-	-		-	-	-	-	-	2.1	0.7	-	-	-	-	-	-	-
TRICOLIA SPP.					-	-	-	-	-		-	-	-	-	-	-	-	-	0.9	-	1.4	-	-	-
TRIOPHA MACULATA					-	0.9	1.1	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUNICATA UNID.					-	-	-	-	-		-	-	-	-	-	1.4	1.4	1.4	3.7	2.8	1.4	2.8	16.7	5.6
WILLIAMIA PELTOIDES					0.7	-	-	-	4.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
ACANTHINA PUNCTULATA				2.8	8.3	7.8	6.1	4.2		11.1	11.8	15.6	16.7	13.9	8.3	5.6	2.1	6.3	5.6	4.2	-	2.8	13.9
ACANTHINA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
ACMAEA MITRA				4.2	6.0	4.4	5.0	-		11.1	1.4	-	-	3.5	9.0	9.7	4.2	5.6	2.1	5.6	5.6	-	8.3
ACMAEIDAE UNID.				-	-	-	-	-		-	-	-	-	-	16.7	27.8	45.1	66.0	45.1	36.1	61.1	25.0	58.3
AEOLIDIA PAPILLOSA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMPHIODIA OCCIDENTALIS				-	-	-	0.6	-		-	-	0.6	-	-	0.7	-	-	0.7	1.4	-	-	-	-
AMPHIPHOLIS SQUAMATA				2.1	-	1.1	1.1	-		-	0.7	1.1	-	0.7	-	-	-	3.5	-	-	-	-	2.8
AMPHIPORUS IMPARISPINOSUS				-	-	-	-	-		-	-	-	-	-	-	-	1.4	1.4	-	-	2.8	-	-
AMPHISSA VERSICOLOR				2.1	0.9	0.6	0.6	-		-	-	-	-	0.7	0.7	-	2.8	1.4	-	1.4	-	-	-
ANTHOPLEURA ARTEMISIA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANTHOPLEURA ELEGANTISSIMA				35.4	57.9	51.7	58.3	27.8		27.8	20.8	26.1	44.4	38.2	33.3	42.4	41.0	32.6	40.3	50.0	30.6	41.7	52.8
ANTHOPLEURA XANTHOGRAMMICA				11.1	6.0	7.2	1.7	-		5.6	1.4	0.6	-	0.7	0.7	-	-	0.7	2.1	2.8	2.8	2.8	2.8
APLYSIA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	-	-	1.4	0.7	-	1.4	-	2.8	8.3
ARENICOLA CRISTATA				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
ASTRAEA GIBBEROSA				-	0.5	-	0.6	2.8		-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
BALANOPHYLLIA ELEGANS				0.7	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
BALANUS SPP.				-	-	-	-	-		-	-	-	-	-	2.8	2.1	-	-	1.4	-	-	-	-
BARLEEIA SPP.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	0.7	-	-	-	-	-
BITTIUM ESCHRICHTII				0.7	-	-	-	-		-	-	-	-	-	-	-	2.1	1.4	-	-	-	-	-
BITTIUM SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	2.1	0.7	-	-	-	-
BRYOZOA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	2.1	11.1	9.7	9.0	2.8	-	-	-	-
CACTOSOMA ARENARIA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2.8	-
CADLINA FLAVOMACULATA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CALLIOSTOMA LIGATUM				-	-	0.6	0.6	-		-	-	1.1	-	-	2.1	-	-	-	0.7	-	-	-	-
CALLIOSTOMA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	4.2	-	-	-
CALLIOSTOMA SUPRAGRANOSUM				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
CANCER ANTENNARIUS				0.7	0.9	-	-	-		-	-	-	-	-	0.7	1.4	-	-	-	-	-	-	-
CANCER JORDANI				-	-	1.7	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANCER PRODUCTUS				-	1.4	-	-	-		-	-	-	-	0.7	-	-	1.4	-	-	-	-	-	-
CANCER SPP.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	0.7	-	-	-	-	-
CHTHAMALUS SPP.				-	-	-	-	-		-	-	-	-	-	91.0	83.3	86.8	92.4	81.9	81.9	88.9	94.4	88.9
CIROLANA HARFORDI				-	-	0.6	-	-		-	-	2.8	-	1.4	-	-	0.7	-	-	-	-	-	-
CLAVELINA HUNTSMANI				4.2	2.8	6.1	3.3	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLISELLA ASMI				1.4	11.1	13.9	15.6	11.1		25.0	8.3	8.9	16.7	13.9	16.7	20.8	7.6	13.2	20.1	23.6	19.4	16.7	55.6
COLLISELLA DIGITALIS				-	1.9	1.1	3.9	2.8		13.9	5.6	6.1	8.3	10.4	4.9	6.3	3.5	1.4	2.1	-	5.6	2.8	5.6
COLLISELLA INSTABILIS				0.7	1.4	-	-	-		2.8	1.4	-	-	-	-	0.7	-	0.7	-	-	-	-	-
COLLISELLA LIMATULA				72.2	64.4	57.8	66.1	22.2		69.4	84.7	67.8	86.1	82.6	77.1	83.3	69.4	84.0	80.6	72.2	77.8	100.0	94.4
COLLISELLA OCHRACEA				6.9	15.7	33.3	32.2	9.7		16.7	13.9	12.2	16.7	38.9	25.7	20.1	9.0	6.3	1.4	-	-	5.6	-
COLLISELLA PELTA				9.0	6.0	17.2	17.8	8.3		19.4	22.2	15.6	25.0	18.1	20.1	39.6	40.3	33.3	27.1	16.7	50.0	50.0	61.1
COLLISELLA SCABRA				38.9	27.8	39.4	62.8	37.5		91.7	86.1	79.4	77.8	88.9	91.0	82.6	75.7	71.5	72.9	65.3	94.4	86.1	94.4
COLLISELLA STRIGATELLA				3.5	6.5	7.2	12.2	15.3		5.6	6.9	3.3	8.3	2.8	2.1	0.7	-	-	-	-	-	-	-
CONUS CALIFORNICUS				0.7	0.5	-	1.1	1.4		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
CORYNACTIS CALIFORNICA				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREPIDULA ADUNCA				13.2	12.0	10.0	18.3	5.6		16.7	14.6	10.0	2.8	6.3	7.6	2.8	2.1	-	-	-	2.8	-	-
CREPIDULA NUMMARIA				-	-	-	0.6	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
CYANOPLAX DENTIENS				6.9	3.7	1.7	5.0	1.4		2.8	1.4	1.1	-	4.2	-	0.7	0.7	-	0.7	-	2.8	-	-
CYANOPLAX HARTWEGII				0.7	4.2	5.0	7.8	2.8		5.6	2.8	6.1	2.8	6.9	6.3	2.1	2.1	6.9	4.9	5.6	-	8.3	16.7
CYANOPLAX SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
DENDRODORIS FULVA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
DENDRONOTUS SPP.				-	-	-	-	-		-	-	-	-	-	1.4	-	-	-	-	-	-	-	-
DENDROPOMA LITURLLA				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
DIAULULA SANDIEGENSIS				0.7	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	5.6	-
DIODORA ASPERA				-	0.5	-	-	1.4		-	0.7	-	-	-	-	-	1.4	0.7	0.7	-	-	-	-
DIOPATRA ORNATA				-	1.4	-	0.6	-		-	-	-	-	-	-	-	-	0.7	-	-	-	-	2.8
DISCODORIS HEATHI				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
DORIOPSILLA ALBOPUNCTATA				1.4	-	-	0.6	-		5.6	0.7	-	-	-	0.7	-	1.4	-	-	-	-	-	-
EPIACTIS PROLIFERA				6.9	9.7	7.8	1.1	-		5.6	0.7	0.6	-	-	1.4	1.4	0.7	0.7	2.1	1.4	-	-	-
EPILUCINA CALIFORNICA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPITONIUM TINCTUM				-	0.5	-	-	-		-	-	-	-	-	-	-	1.4	-	-	-	-	-	2.8
ERATO SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
EURYLEPTA CALIFORNICA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
FISSURELLA VOLCANO				9.0	15.7	12.8	10.9	-		11.1	6.3	5.0	11.1	7.6	13.2	17.4	13.9	28.5	33.3	23.6	5.6	8.3	19.4
GLANS SUBQUADRATA				-	-	-	-	-		-	-	0.6	-	-	0.7	-	-	-	-	-	-	-	-
GRANULINA MARGARITULA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAPSIDAE UNID.				-	-	-	-	-		-	-	-	-	-	0.7	-	2.8	2.1	1.4	1.4	-	-	-
HALCAMPA DECEMTENTACULATA				-	-	-	1.1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALICLONA SPP.				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALIOTIS CRACHERODII				-	-	-	-	-		-	-	-	-	-	0.7	1.4	-	0.7	-	-	-	-	-
HALOSYDNA BREVISETOSA				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
HEMIGRAPSUS NUDUS				0.7	2.3	4.4	4.4	2.8		-	2.8	7.2	-	2.1	2.1	6.9	3.5	2.1	-	-	2.8	-	-
HEMIGRAPSUS OREGONENSIS				0.7	0.9	-	-	-		-	-	1.1	-	-	0.7	0.7	-	-	-	-	-	-	-
HENRICIA LEVIUSCULA				2.1	0.9	2.8	3.9	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPTACARPUS PICTUS				5.6	8.3	3.9	10.6	-		5.6	2.1	5.0	-	5.6	6.9	6.3	4.9	1.4	2.8	-	-	5.6	-
HERMISSENDA CRASSICORNIS				0.7	-	0.6	-	-		-	-	0.6	-	-	1.4	2.8	-	2.1	-	-	-	-	-
HINNITES GIGANTEUS				-	-	-	-	-		-	-	-	-	-	-	-	0.7	0.7	-	-	-	-	-
HOMALOPOMA BACULUM				1.4	-	0.6	-	-		-	-	2.2	-	-	-	1.4	2.1	4.9	2.1	-	-	-	-
HOMALOPOMA LURIDUM/LIRULARIA SUCCINCTA				4.9	1.9	2.2	1.1	8.3		-	1.4	1.7	-	-	-	-	0.7	1.4	-	-	-	-	-
HOPKINSIA ROSACEA				-	0.5	-	-	-		-	-	-	-	-	-	-	1.4	0.7	-	-	-	-	-
IDOTEA UROTOMA				1.4	0.5	-	-	-		-	-	1.1	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITON RADIANS				0.7	0.5	1.1	-	-		-	0.7	-	-	1.4	-	-	-	-	-	-	-	-	-
ISCHNOCHITON REGULARIS				0.7	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
ISCHNOCHITONOIDAE UNID.				-	-	-	-	-		-	-	-	-	-	1.4	1.4	4.9	2.8	2.1	1.4	-	-	-
LACUNA SPP.				-	-	-	-	-		-	-	-	-	-	6.9	8.3	16.7	19.4	4.9	8.3	8.3	2.8	2.8
LEPIDOZONA COOPERI				2.8	0.5	1.1	1.1	1.4		-	0.7	-	-	2.1	-	3.5	0.7	2.8	0.7	1.4	5.6	2.8	-
LEPIDOZONA MERTENSII				0.7	1.4	-	-	-		-	-	-	-	1.4	-	-	-	-	0.7	-	-	-	-
LEPIDOZONA SINUDENTATA				-	0.9	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
LEPTASTERIAS HEXACTIS				9.0	6.5	5.6	3.9	-		-	0.7	-	2.8	-	-	0.7	-	-	-	-	-	-	-
LISSOTHURIA NUTRIENS				-	0.5	0.6	0.6	-		2.8	-	-	-	-	2.1	0.7	0.7	-	-	-	-	-	2.8
LITTORINA PLANAXIS				-	-	0.6	-	-		-	-	-	2.8	-	-	-	-	0.7	-	-	-	-	2.8
LITTORINA SCUTULATA				1.4	0.9	1.1	3.9	9.7		19.4	11.1	5.6	2.8	4.2	11.8	11.8	12.5	26.4	33.3	26.4	11.1	22.2	16.7
LOPHOPANOPEUS LEUCOMANUS				-	-	-	-	-		-	-	-	-	-	-	0.7	0.7	-	-	-	-	-	-
LOTTIA GIGANTEA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
MAJIDAE				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	0.7	-	-	-	-
MIMULUS FOLIATUS				-	0.5	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MITRA IDAE				0.7	-	-	-	-		-	-	-	-	-	-	-	-	2.1	0.7	-	-	-	-
MITRELLA CARINATA				5.6	1.9	-	-	-		-	-	-	-	0.7	3.5	9.0	10.4	9.0	3.5	1.4	-	-	-
MITRELLA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	5.6	2.1	1.4	-	-	-	-
MOPALIA LIGNOSA				-	0.5	1.1	-	-		-	-	-	-	0.7	0.7	-	-	-	-	-	-	-	-
MOPALIA MUSCOSA				1.4	1.9	1.1	3.9	2.8		2.8	0.7	1.1	-	1.4	0.7	2.1	2.8	0.7	2.1	1.4	-	-	-
MYTILIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
MYTILUS CALIFORNIANUS				-	-	0.6	-	-		-	0.7	0.6	-	-	-	-	-	-	-	-	-	-	-
MYTILUS EDULIS				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
NEREIDAE UNID.				0.7	-	-	-	-		-	-	-	-	-	1.4	-	0.7	0.7	-	1.4	-	-	-
NEREIS GRUBEI				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2.8	2.8
NOTOACMEA INSESSA				-	0.5	1.1	-	-		-	-	-	-	-	-	-	0.7	1.4	-	-	-	-	-
NOTOACMEA SCUTUM				8.3	11.1	12.2	11.7	4.2		25.0	21.5	3.9	2.8	11.8	33.3	52.1	38.2	38.2	37.5	22.2	75.0	72.2	61.1
NOTOPLANA RUPICOLA				-	-	-	-	-		-	-	2.8	-	-	-	-	0.7	-	-	-	-	-	-
NUCELLA EMARGINATA				-	-	-	-	1.4		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
NUTTALLINA CALIFORNICA				2.1	-	0.6	1.7	1.4		-	4.9	1.1	-	-	-	0.7	-	-	-	-	-	-	-
OCENEBRA ATROPURPUREA				-	0.9	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCENEBRA CIRCUMTEXTA				8.3	13.0	13.9	10.6	5.6		38.9	25.0	30.6	44.4	50.0	59.0	47.2	27.8	19.4	11.8	9.7	-	5.6	5.6
OCENEBRA FOVEOLATA				0.7	3.2	1.7	3.3	-		-	0.7	0.6	-	2.1	-	-	-	-	-	-	-	-	-
OCENEBRA INTERFOSSA				-	0.5	-	-	-		-	0.7	-	-	-	-	1.4	-	0.7	-	-	-	-	-
OCENEBRA LURIDA				0.7	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCTOPUS SPP.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	0.7	-	-	-	-	-
OPHIOPLOCUS ESMARKI				-	-	-	-	-		-	-	-	-	-	-	0.7	1.4	0.7	-	1.4	-	-	-
OPHIOTHRIX SPICULATA				0.7	-	-	-	-		-	-	0.6	-	0.7	1.4	2.1	3.5	4.9	3.5	2.8	2.8	2.8	8.3
OPHIUROIDEA UNID.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	0.7	-	2.8	2.8	-
PACHYGRAPSUS CRASSIPES				2.1	0.5	2.8	1.7	-		5.6	0.7	5.0	5.6	9.7	19.4	40.3	28.5	30.6	16.0	19.4	38.9	44.4	50.0

Vertical Band Transects - Surface Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
PAGURUS SPP.				77.1	88.4	87.8	92.8	69.4		75.0	70.8	75.6	75.0	93.8	93.1	96.5	90.3	86.8	97.2	93.1	94.4	94.4	33.3
PATIRIA MINIATA				4.2	5.6	10.0	4.4	4.2		2.8	0.7	0.6	2.8	2.1	9.0	13.2	13.2	19.4	4.9	1.4	5.6	2.8	-
PELECYPODA UNID.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
PETROLISTHES CINCTIPES				-	-	-	0.6	-		-	-	2.2	-	0.7	-	2.8	0.7	1.4	-	-	-	-	-
PHASCOLOSOMA AGASSIZII				0.7	-	-	-	-		-	-	-	-	-	0.7	0.7	0.7	2.1	-	2.8	2.8	-	2.8
PHIDIANA PUGNAX				-	0.9	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
PHOLIDIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	1.4	1.4	-	-	-
PHRAGMATOPOMA CALIFORNICA				-	-	0.6	1.7	-		2.8	2.1	3.9	13.9	25.0	18.8	34.0	29.9	37.5	25.0	33.3	30.6	19.4	36.1
PHYLLOCHAETOPTERUS PROLIFICA				-	-	-	-	-		-	-	-	-	-	-	-	-	2.8	0.7	-	-	-	2.8
PISASTER GIGANTEUS				-	-	-	-	-		-	-	-	2.8	-	-	0.7	-	0.7	-	-	-	-	-
PISASTER OCHRACEUS				3.5	0.9	0.6	1.1	-		-	2.1	3.9	2.8	4.9	16.7	23.6	31.9	18.1	15.3	18.1	16.7	8.3	16.7
PISTA ELONGATA				2.1	1.4	-	-	-		-	-	-	-	0.7	1.4	2.8	4.9	4.2	0.7	2.8	-	-	-
PODODESMUS CEPIO				-	-	-	-	-		-	-	-	-	-	0.7	-	0.7	-	-	-	-	-	-
POLLICIPES POLYMERUS				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
PORIFERA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	-	3.5	-	-	0.7	4.2	-	-	-
PROTOTHACA STAMINEA				-	-	-	-	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
PSEUDOMELATOMA TOROSA				0.7	-	0.6	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
PUGETTIA PRODUCTA				13.2	5.6	8.9	10.6	2.8		2.8	-	2.2	-	0.7	2.8	4.9	3.5	1.4	2.1	-	2.8	-	2.8
PUGETTIA RICHII				0.7	1.4	-	0.6	-		-	-	-	-	-	-	1.4	-	-	-	-	-	-	-
PUGETTIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
PYCNOGONIDA UNID.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	0.7	-	-	-	-
PYCNOGONUM STEARNSI				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
PYCNOPODIA HELIANTHOIDES				-	1.9	0.6	-	-		-	-	0.6	-	-	0.7	2.1	1.4	0.7	-	-	-	-	-
ROSTANGA PULCHRA				-	-	1.7	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
SEARLESIA DIRA				0.7	-	-	-	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
SERPULA VERMICULARIS				-	-	1.1	0.6	-		-	-	-	-	3.5	0.7	-	0.7	1.4	-	-	-	-	-
SERPULIDAE UNID.				-	-	-	-	-		-	-	-	-	-	0.7	1.4	2.1	0.7	4.2	5.6	5.6	-	-
SERPULORBIS SQUAMIGERUS				0.7	0.9	-	0.6	-		5.6	-	-	-	2.8	1.4	1.4	1.4	2.1	4.2	8.3	-	-	-
SPIROBRANCHUS SPINOSUS				-	-	-	-	-		-	-	-	-	-	5.6	2.8	1.4	6.9	7.6	6.9	2.8	5.6	8.3
SPIRORBIDAE UNID.				-	-	-	-	-		-	-	-	-	-	30.6	70.1	64.6	82.6	79.9	72.2	52.8	69.4	33.3
STENOPLAX HEATHIANA				-	0.5	-	0.6	-		-	-	0.6	-	-	0.7	-	-	-	-	-	-	-	-
STRONGYLOCENTROTUS FRANCISCANUS				-	0.5	-	-	-		-	-	0.6	-	-	-	-	0.7	1.4	2.8	2.8	-	-	-
STRONGYLOCENTROTUS PURPURATUS				-	1.9	5.6	0.6	-		2.8	-	1.1	-	2.8	5.6	16.0	11.1	29.2	22.9	30.6	16.7	8.3	36.1
STRONGYLOCENTROTUS SPP.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
STYELA MONTEREYENSIS				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
STYLASTERIAS FORRERI				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TEGULA BRUNNEA				20.8	27.3	21.1	28.9	9.7		16.7	9.7	8.3	5.6	10.4	17.4	20.8	27.1	29.2	25.0	30.6	19.4	41.7	22.2
TEGULA FUNEBRALIS				65.3	85.2	78.9	86.7	88.9		97.2	93.8	95.6	100.0	92.4	91.0	86.8	68.1	62.5	70.8	97.2	97.2	77.8	86.1
TEGULA MONTEREYI				-	-	-	-	-		-	0.7	-	-	-	-	-	-	1.4	-	-	-	-	-
TEGULA PULLIGO				-	-	-	-	2.8		2.8	-	-	-	7.6	-	0.7	0.7	0.7	0.7	1.4	-	-	-
TETRACLITA SQUAMOSA				5.6	1.4	-	-	-		-	-	-	2.8	4.9	26.4	77.1	66.0	70.8	63.2	65.3	58.3	66.7	44.4
TONICELLA LINEATA				2.1	1.4	1.7	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
TRICOLIA PULLOIDES				-	-	-	-	-		-	-	-	-	-	0.7	1.4	0.7	-	-	-	-	-	-
TRICOLIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	1.4	-	-	-	-	-
TRIOPHA MACULATA				-	-	1.1	-	-		-	0.7	-	-	0.7	-	0.7	-	-	0.7	-	-	-	-
TUNICATA UNID.				-	-	-	-	-		-	-	-	-	-	1.4	4.2	4.9	2.1	0.7	-	-	-	-
WILLIAMIA PELTOIDES				-	-	-	0.6	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
ACANTHINA PUNCTULATA				6.3	8.8	5.6	2.8	2.8		16.7	23.6	25.6	33.3	17.4	13.9	13.9	8.3	5.6	7.6	6.9	2.8	5.6	11.1
ACANTHINA SPIRATA				-	-	-	-	-		-	-	-	-	-	-	-	-	-	2.1	-	-	-	-
ACANTHODORIS LUTEA				-	-	-	-	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
ACMAEA MITRA				0.7	0.9	-	1.7	-		-	-	0.6	-	-	5.6	1.4	0.7	0.7	-	-	-	-	-
ACMAEIDAE UNID.				-	-	-	-	-		-	-	-	-	-	16.0	3.5	7.6	27.1	8.3	5.6	11.1	-	2.8
AEOLIDIA PAPILLOSA				-	0.9	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALLOIOPLANA CALIFORNICA				-	0.5	-	-	-		-	-	-	-	-	-	-	-	2.1	8.3	4.2	-	-	-
AMPHIODIA OCCIDENTALIS				6.9	16.2	18.9	18.3	4.2		13.9	2.8	3.9	-	4.9	2.1	4.9	3.5	7.6	7.6	-	13.9	-	-
AMPHIPHOLIS SQUAMATA				41.0	49.5	35.6	25.6	8.3		50.0	19.4	20.0	22.2	-	0.7	2.1	2.1	6.9	0.7	5.6	-	-	5.6
AMPHIPORUS IMPARISPINOSUS				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
AMPHISSA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	2.8	-	-	-	-
AMPHISSA VERSICOLOR				16.0	15.3	12.2	12.8	2.8		8.3	4.9	3.3	-	2.1	4.9	4.9	4.2	8.3	6.3	15.3	-	8.3	2.8
ANISODORIS NOBILIS				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANTHOPLEURA ARTEMISIA				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
ANTHOPLEURA ELEGANTISSIMA				6.9	13.0	8.9	8.3	5.6		-	6.9	7.2	5.6	7.6	4.2	6.3	11.8	6.9	3.5	4.2	16.7	5.6	8.3
ANTHOPLEURA XANTHOGRAMMICA				3.5	-	-	0.6	-		-	0.7	0.6	-	-	-	-	-	-	-	-	-	-	-
APHRODITA SPP.				-	0.9	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
APLYSIA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	-	-	0.7	2.8	4.2	-	-	-	2.8
ARABELLIDAE				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
ARENICOLA CRISTATA				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
BALANOPHYLLIA ELEGANS				2.1	-	-	0.6	-		-	-	0.6	-	-	-	-	-	-	-	-	-	-	-
BALANUS SPP.				-	-	-	-	-		-	-	-	-	-	2.1	-	-	-	-	-	-	-	-
BARLEEIA SPP.				-	-	-	-	-		-	-	-	-	-	1.4	0.7	-	1.4	0.7	-	-	-	-
BETAEUS HARFORDI				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
BITTIUM ESCHRICHTII				6.9	-	-	-	1.4		-	-	-	-	-	1.4	2.8	3.5	1.4	-	2.8	-	-	-
BITTIUM SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	2.1	0.7	-	-	-	-
BRACHYURAN				-	-	-	-	-		-	-	-	-	-	-	-	3.5	-	-	-	-	-	-
BRYOZOA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	16.7	14.6	21.5	13.9	6.9	5.6	-	-	-
CADLINA FLAVOMACULATA				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CADLINA MODESTA				0.7	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CALLIANASSA CALIFORNIENSIS				0.7	-	0.6	0.6	-		-	-	0.6	2.8	-	0.7	-	-	0.7	-	-	-	-	-
CALLIOSTOMA GLORIOSUM				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
CALLIOSTOMA LIGATUM				-	2.3	0.6	-	1.4		-	-	0.6	-	0.7	0.7	0.7	-	-	-	-	2.8	-	-
CALLIOSTOMA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	2.8	-	-	-
CALLISTOCHITON PALMULATUS				1.4	-	0.6	-	1.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANCER ANTENNARIUS				9.7	7.9	11.7	10.6	-		8.3	2.1	2.2	2.8	4.9	4.9	4.2	0.7	1.4	-	1.4	-	-	-
CANCER JORDANI				2.8	2.3	1.1	1.1	1.4		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
CANCER PRODUCTUS				4.9	6.0	3.9	6.1	-		-	-	-	-	-	2.1	-	-	0.7	-	-	-	-	-
CANCER SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	0.7	0.7	-	-	-	-
CAPITELLIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
CHAETOPTERUS VARIOPEDATUS				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
CHAMA PELLUCIDA				0.7	0.9	0.6	1.7	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	2.8
CHTHAMALUS SPP.				-	-	-	-	-		-	-	-	-	-	23.6	4.2	20.8	18.1	8.3	5.6	11.1	-	5.6
CIROLANA HARFORDI				51.4	63.0	56.7	62.2	19.4		50.0	27.1	32.2	25.0	59.0	57.6	77.8	72.9	78.5	67.4	59.7	72.2	75.0	33.3
CLAVELINA HUNTSMANI				6.3	2.8	6.7	4.4	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
COLLISELLA ASMI				1.4	6.5	11.7	7.8	9.7		8.3	13.9	11.7	27.8	8.3	6.9	9.0	4.2	2.8	6.3	6.9	-	-	13.9
COLLISELLA DIGITALIS				-	-	-	1.1	-		-	-	1.1	-	-	2.8	-	-	-	-	-	-	-	-
COLLISELLA INSTABILIS				-	-	0.6	-	-		-	0.7	-	-	-	-	-	-	-	-	1.4	-	-	-
COLLISELLA LIMATULA				62.5	68.5	42.2	52.8	19.4		63.9	61.8	52.8	72.2	64.6	66.0	73.6	57.6	68.8	64.6	54.2	88.9	27.8	47.2
COLLISELLA OCHRACEA				9.0	17.6	23.9	20.6	1.4		16.7	6.9	8.3	5.6	27.1	12.5	14.6	3.5	3.5	1.4	2.8	-	2.8	-
COLLISELLA PELTA				2.1	1.4	3.3	3.3	1.4		5.6	2.1	2.2	-	2.8	3.5	2.1	4.9	5.6	4.9	2.8	-	-	5.6
COLLISELLA SCABRA				1.4	0.5	1.1	4.4	1.4		-	2.1	7.8	-	1.4	-	0.7	1.4	2.1	1.4	-	2.8	-	-
COLLISELLA STRIGATELLA				-	1.4	2.2	1.7	-		5.6	0.7	1.7	-	-	0.7	0.7	-	-	-	-	-	-	-
CONUS CALIFORNICUS				0.7	0.5	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CORYNACTIS CALIFORNICA				-	0.5	-	1.7	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CORYPHELLA PRICEI				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREPIDULA ADUNCA				11.1	14.8	15.6	21.7	6.9		11.1	16.7	12.2	2.8	3.5	0.7	2.1	0.7	2.1	-	-	-	-	-
CREPIDULA NUMMARIA				0.7	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREPIDULA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
CRYPTOLITHODES SITCHENSIS				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
CYANOPLAX DENTIENS				10.4	7.9	3.9	10.6	-		8.3	2.1	2.8	-	1.4	1.4	0.7	-	0.7	-	-	-	-	-
CYANOPLAX HARTWEGII				-	-	0.6	1.1	-		-	0.7	1.1	8.3	0.7	1.4	0.7	0.7	2.1	-	1.4	2.8	2.8	-
CYCLOXANTHROPS NOVEMDENTATUS				0.7	0.5	0.6	1.1	-		-	-	-	-	2.1	-	-	-	-	-	-	-	-	-
DENDRODORIS FULVA				-	-	-	-	-		-	-	-	-	-	-	2.8	-	-	-	-	-	-	-
DIAULULA SANDIEGENSIS				-	-	0.6	-	-		-	-	-	-	0.7	-	-	-	-	0.7	-	-	-	-
DIODORA ASPERA				4.9	3.2	-	1.1	-		2.8	-	1.7	-	-	-	-	1.4	0.7	-	1.4	-	-	-
DIOPATRA ORNATA				1.4	-	-	1.7	-		-	-	-	-	-	-	-	-	1.4	0.7	-	-	-	-
DORIOPSILLA ALBOPUNCTATA				-	-	1.1	-	-		-	0.7	0.6	-	-	-	-	-	0.7	0.7	1.4	-	-	-
EPIACTIS PROLIFERA				18.1	10.2	8.3	3.9	1.4		5.6	0.7	0.6	-	0.7	4.9	1.4	-	2.8	-	-	-	-	-
EPILUCINA CALIFORNICA				-	-	1.1	-	-		-	0.7	1.1	-	0.7	-	-	-	-	-	-	-	-	-
EPITONIUM SPP./OPALIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
EPITONIUM TINCTUM				0.7	0.9	-	-	-		-	-	-	-	0.7	1.4	-	-	-	-	-	-	-	2.8
ERATO SPP.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	0.7	-	-	-	-	-
ERATO VITELLINA				-	-	-	-	-		-	-	0.6	-	0.7	-	-	-	-	-	-	-	-	-
FISSURELLA VOLCANO				3.5	3.2	1.1	6.1	2.8		8.3	2.1	2.8	13.9	7.6	4.2	11.1	5.6	12.5	21.5	4.2	-	8.3	-
FUSINUS LUTEOPICTUS				-	-	-	-	-		-	-	-	-	-	0.7	-	0.7	-	-	-	-	-	-
GASTROPODA EGGS				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
GLANS SUBQUADRATA				-	0.9	1.1	1.1	-		-	1.4	-	-	0.7	-	-	1.4	-	0.7	-	-	-	-
GLYCERIDAE				-	-	-	-	-		-	-	-	-	-	-	-	1.4	-	-	-	-	-	-
GRANULINA MARGARITULA				0.7	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAPSIDAE UNID.				-	-	-	-	-		-	-	-	-	-	11.8	0.7	11.8	9.0	6.3	8.3	11.1	-	-
HALIOTIS CRACHERODII				0.7	2.3	1.1	1.1	1.4		-	0.7	0.6	2.8	2.1	2.8	-	2.1	0.7	-	1.4	-	-	-
HALIOTIS KAMTSCHATKANA				-	0.9	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HALIOTIS RUFESCENS				-	1.4	-	-	-		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
HALOSYDNA BREVISETOSA				-	-	1.7	0.6	-		-	-	-	-	-	-	-	2.1	2.1	-	-	-	-	-
HANINOEA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	1.4	-	-	-	-
HAPLOGASTER CAVICAUDA				-	-	-	0.6	-		-	-	-	-	-	-	0.7	-	0.7	0.7	-	-	-	-
HEMIGRAPSUS NUDUS				70.8	62.0	75.6	74.4	66.7		75.0	79.2	67.2	75.0	44.4	43.8	43.1	34.0	3.5	4.9	9.7	8.3	8.3	-
HEMIGRAPSUS OREGONENSIS				10.4	25.5	18.3	20.6	5.6		11.1	15.3	7.2	5.6	12.5	6.3	9.0	7.6	2.8	13.2	1.4	-	5.6	-
HENRICIA LEVIUSCULA				1.4	1.4	1.7	3.3	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
HEPTACARPUS PICTUS				13.2	16.2	11.1	14.4	-		2.8	5.6	5.0	-	7.6	7.6	3.5	0.7	0.7	1.4	-	-	-	-
HEPTACARPUS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
HEPTACARPUS TAYLORI				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
HERMISSENDA CRASSICORNIS				1.4	-	0.6	-	-		-	-	-	-	-	2.8	-	-	-	-	-	-	2.8	-
HINNITES GIGANTEUS				-	0.5	-	-	-		-	-	-	-	0.7	-	-	-	0.7	-	-	-	-	-
HIPPONIX CRANIOIDES				-	0.5	1.1	-	-		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
HOMALOPOMA BACULUM				31.3	39.8	24.4	26.7	11.1		50.0	23.6	17.8	16.7	20.1	47.2	40.3	52.1	56.9	40.3	40.3	11.1	19.4	16.7
HOMALOPOMA LURIDUM/LIRULARIA SUCCINCTA				31.3	39.8	31.7	23.3	13.9		30.6	11.8	5.0	2.8	5.6	2.1	4.2	2.1	0.7	-	-	5.6	-	-
HOMALOPOMA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
HOPKINSIA ROSACEA				-	-	-	-	-		-	0.7	0.6	-	-	-	-	-	-	-	-	-	-	-
IDOTEA FEWKESI				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
IDOTEA RESECATA				-	-	-	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
IDOTEA SPP.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	0.7	5.6	-	-	-
IDOTEA UROTOMA				23.6	10.2	5.0	15.0	2.8		-	-	2.8	-	2.1	-	0.7	0.7	-	-	-	-	-	-
IDOTEA WOSNESENSKII				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITON RADIANS				5.6	5.1	0.6	1.1	-		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
ISCHNOCHITON REGULARIS				2.1	0.5	2.2	1.1	-		-	0.7	-	-	2.1	-	-	-	-	-	-	-	-	-
ISCHNOCHITONOIDAE UNID.				-	-	-	-	-		-	-	-	-	-	4.2	2.1	3.5	4.9	1.4	2.8	-	-	-
LACUNA SPP.				-	-	-	-	-		-	-	-	-	-	0.7	3.5	6.9	4.2	1.4	1.4	-	-	2.8
LAILA COCKERELLI				-	-	1.1	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LECYTHORHYNCHUS HILGENDORFI				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
LEPIDOPLEURUS RUGATUS				-	0.9	2.2	1.7	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA COOPERI				13.9	13.0	13.9	12.2	1.4		11.1	4.9	5.0	5.6	6.9	6.3	9.0	0.7	2.8	2.1	1.4	-	-	5.6
LEPIDOZONA MERTENSII				5.6	6.0	3.3	1.1	-		2.8	2.1	2.8	-	2.8	1.4	0.7	0.7	0.7	1.4	1.4	2.8	-	2.8
LEPIDOZONA SINUDENTATA				0.7	5.6	2.2	1.7	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDOZONA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	1.4	-	0.7	-	-	11.1	-
LEPTASTERIAS HEXACTIS				23.6	18.1	10.6	12.2	-		5.6	0.7	1.7	-	-	0.7	0.7	1.4	0.7	-	-	-	-	-
LEPTOSYNAPTA ALBICANS				4.2	6.9	1.7	2.8	-		-	0.7	1.7	-	2.8	0.7	-	-	-	-	-	-	-	-
LEUCANDRA HEATHI				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
LIRULARIA SUCCINCTA				-	3.2	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
LISSOTHURIA NUTRIENS				-	-	-	-	-		-	-	-	-	-	0.7	0.7	-	0.7	-	-	-	-	-
LITTORINA PLANAXIS				-	-	-	-	-		-	-	0.6	2.8	-	-	-	-	-	-	-	-	-	-
LITTORINA SCUTULATA				-	1.4	0.6	0.6	4.2		5.6	1.4	2.2	8.3	2.8	1.4	3.5	2.1	3.5	4.9	4.2	2.8	-	2.8
LOPHOPANOPEUS LEUCOMANUS				20.1	20.8	21.1	20.6	-		13.9	6.3	6.7	2.8	9.0	4.9	5.6	3.5	9.7	5.6	1.4	2.8	13.9	2.8
LOXORHYNCHUS CRISPATUS				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAJIDAE				-	-	-	-	-		-	-	-	-	-	-	0.7	0.7	-	-	-	-	-	-
MEGABALANUS CALIFORNICUS				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
MEGATEBENNUS BIMACULATUS				-	-	-	0.6	-		2.8	-	-	-	-	0.7	-	-	-	-	-	-	-	-
MICRURA VERRILLI				-	1.4	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MIMULUS FOLIATUS				7.6	1.9	2.2	1.1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
MITRA IDAE				-	-	-	-	-		-	0.7	-	-	-	-	-	-	2.8	0.7	1.4	-	-	2.8
MITRELLA CARINATA				11.8	6.0	-	-	-		-	-	-	-	-	4.2	10.4	6.9	8.3	11.8	34.7	2.8	5.6	2.8
MITRELLA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	7.6	18.1	6.3	-	-	-	-
MODIOLUS CARPENTERI				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
MOPALIA CILIATA				0.7	0.5	0.6	1.1	-		-	-	0.6	-	-	0.7	-	-	-	-	-	-	-	-
MOPALIA LIGNOSA				6.3	4.6	5.0	4.4	-		-	-	0.6	-	1.4	-	-	0.7	-	-	-	-	-	-
MOPALIA MUSCOSA				9.7	4.2	3.9	8.3	1.4		13.9	8.3	5.0	8.3	4.2	4.2	2.1	2.8	3.5	9.0	1.4	2.8	5.6	2.8
MOPALIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	2.8	0.7	-	-	-	-
MYTILIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	-	2.1	1.4	-	-	-
MYTILUS CALIFORNIANUS				-	-	1.1	0.6	-		-	0.7	1.1	-	0.7	2.8	-	-	0.7	-	4.2	-	2.8	-
MYTILUS EDULIS				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	2.8	-
NEMERTEA UNID.				-	-	-	-	-		-	-	-	-	-	-	-	1.4	-	-	-	-	-	-
NEREIDAE UNID.				1.4	-	-	-	-		-	-	-	-	2.1	8.3	6.3	5.6	6.3	10.4	2.8	5.6	-	25.0
NEREIS GRUBEI				-	-	-	-	-		-	-	-	-	-	0.7	0.7	-	-	1.4	-	-	25.0	-
NOTOACMEA INSESSA				-	-	-	-	-		2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTOACMEA PERSONA				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTOACMEA SCUTUM				11.1	6.5	2.2	4.4	4.2		16.7	3.5	2.2	2.8	3.5	9.7	18.8	13.9	14.6	8.3	4.2	30.6	25.0	22.2
NOTOPLANA RUPICOLA				50.7	56.0	48.9	48.9	19.4		44.4	27.8	21.7	16.7	29.2	44.4	38.2	45.8	32.6	38.9	34.7	38.9	30.6	27.8
NUTTALLINA CALIFORNICA				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	-	-	-	-	-
OCENEBRA ATROPURPUREA				2.8	1.9	0.6	1.1	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCENEBRA CIRCUMTEXTA				29.2	30.6	25.0	26.7	12.5		44.4	42.4	42.2	55.6	63.2	59.0	59.0	39.6	29.2	30.6	16.7	11.1	5.6	11.1
OCENEBRA FOVEOLATA				1.4	2.8	3.3	3.3	1.4		8.3	0.7	-	-	0.7	-	0.7	-	-	-	-	-	-	-
OCENEBRA INTERPOSSA				-	0.9	-	1.1	-		2.8	-	0.6	-	-	-	-	-	0.7	0.7	-	-	-	-
OCENEBRA LURIDA				-	0.9	2.2	0.6	-		-	-	-	2.8	-	-	-	-	0.7	-	-	-	-	-
OCENEBRA SPP.				-	-	-	-	-		-	-	-	-	-	-	1.4	-	-	-	-	-	-	-
OCTOPUS SPP.				-	0.5	0.6	0.6	-		-	-	-	-	0.7	4.9	9.0	7.6	12.5	6.9	4.2	2.8	11.1	13.9
OPHIOPLOCUS ESMARKI				-	0.5	-	0.6	-		2.8	1.4	-	-	-	0.7	7.6	8.3	6.3	6.9	2.8	2.8	-	-
OPHIOPTERIS PAPILLOSA				-	-	-	-	-		-	-	-	-	-	1.4	-	1.4	-	1.4	-	-	-	-
OPHIOTHRIX SPICULATA				2.1	4.6	3.3	2.2	-		-	-	0.6	-	2.1	6.9	6.9	9.0	11.1	6.9	5.6	-	5.6	16.7
OPHIUROIDEA UNID.				-	-	-	-	-		-	-	-	-	-	-	2.8	3.5	0.7	2.1	-	-	-	-
PACHYCHELES RUDIS				-	-	-	-	2.8		-	-	-	-	1.4	-	-	-	-	-	-	-	-	-
PACHYGRAPSUS CRASSIPES				6.3	13.4	4.4	8.3	13.9		58.3	40.3	35.0	30.6	60.4	52.1	75.0	53.5	59.7	63.9	47.2	58.3	66.7	80.6
PAGURUS SPP.				72.9	82.9	86.7	93.9	72.2		91.7	86.1	76.1	61.1	86.1	91.0	83.3	81.3	70.8	86.1	86.1	83.3	91.7	33.3
PARACERCEIS CORDATA				-	-	0.6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARANEMERTES PEREGRINA				-	0.9	0.6	0.6	-		2.8	-	-	-	-	-	-	-	2.1	0.7	-	-	-	-
PATIRIA MINIATA				10.4	12.5	11.7	12.2	6.9		2.8	4.9	2.8	5.6	7.6	12.5	18.1	20.8	18.8	9.0	6.9	8.3	11.1	-
PELECYPODA UNID.				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
PETALOCONCHUS MONTEREYENSIS				3.5	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PETROLISTHES CINCTIPES				78.5	78.7	75.6	88.9	68.1		86.1	84.7	70.0	77.8	91.7	78.5	70.1	59.7	58.3	54.9	44.4	41.7	41.7	33.3
PHASCOLOSOMA AGASSIZII				20.8	26.9	18.3	18.3	8.3		8.3	8.3	6.1	11.1	23.6	18.1	21.5	38.9	31.3	27.8	23.6	13.9	38.9	66.7
PHIDIANA PUGNAX				-	-	-	-	-		-	-	0.6	-	0.7	-	0.7	-	-	-	-	-	-	-
PHOLIDIDAE				-	-	-	-	-		-	-	-	-	-	0.7	-	1.4	0.7	0.7	-	-	-	-
PHRAGMATOPOMA CALIFORNICA				3.5	0.5	-	-	-		-	-	0.6	-	6.9	6.9	10.4	16.7	9.7	9.7	9.7	11.1	16.7	47.2
PHYLLOCHAETOPTERUS PROLIFICA				-	-	-	-	-		-	-	-	-	-	0.7	-	0.7	1.4	0.7	-	-	-	-
PISASTER GIGANTEUS				0.7	-	-	-	-		-	-	-	-	0.7	-	3.5	3.5	-	1.4	-	-	-	-
PISASTER OCHRACEUS				0.7	0.5	2.8	0.6	-		-	0.7	1.7	5.6	4.9	7.6	15.3	16.0	10.4	13.9	13.9	13.9	11.1	5.6
PISASTER SPP./HENRICIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	1.4	-	-	-	-
PISTA ELONGATA				-	0.5	-	-	-		-	-	-	-	-	0.7	1.4	1.4	1.4	2.1	-	-	-	-
PLATYHELMINTHES UNID.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
PODODESMUS CEPIO				0.7	-	-	-	-		2.8	-	-	-	-	0.7	-	-	-	-	-	-	-	-

Vertical Band Transects - Under Invertebrates Yearly Mean % Frequency of Occurrence (36 Quadrats) - Station SDC 2-V (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	5	5	2	ns	1	4	5	1	4	4	4	4	4	4	2	1	1	1
POLYCHAETA UNID.				-	-	-	-	-		-	-	-	-	-	-	1.4	9.0	3.5	5.6	1.4	8.3	-	2.8
POLYNOIDAE				-	-	-	-	-		-	-	-	-	-	-	-	2.1	-	-	-	-	-	-
PORIFERA ENCRUSTING				-	-	-	-	-		-	-	-	-	-	0.7	0.7	0.7	-	-	-	-	-	-
PRECUTHONA DIVAE				-	0.5	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROTOTHACA STAMINEA				0.7	0.5	-	-	-		-	-	-	-	0.7	-	-	0.7	-	-	-	-	-	-
PSEUDOMELATOMA TOROSA				-	0.5	-	-	1.4		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
PSEUDOSTYLOCHUS BURCHAMI				1.4	5.1	2.8	2.2	1.4		19.4	5.6	5.0	5.6	1.4	2.8	1.4	2.1	-	-	-	-	-	-
PUGETTIA PRODUCTA				29.2	19.4	17.8	26.7	-		2.8	6.9	-	-	6.3	6.3	4.9	4.2	1.4	2.8	-	5.6	-	5.6
PUGETTIA RICHII				2.8	1.4	1.1	1.1	-		2.8	-	-	-	-	-	-	-	0.7	-	-	-	-	-
PYCNOGONIDA UNID.				-	-	-	-	-		-	-	-	-	-	1.4	-	1.4	6.9	1.4	1.4	11.1	-	-
PYCNOGONUM STEARNSI				-	-	-	-	-		-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	-
PYCNOPODIA HELIANTHOIDES				2.1	0.5	3.9	1.1	-		-	-	0.6	-	-	-	2.8	2.1	1.4	1.4	-	-	-	-
ROSTANGA PULCHRA				-	0.5	0.6	-	-		-	0.7	-	-	-	-	-	-	-	-	-	-	-	-
SEARLESIA DIRA				2.1	2.8	2.2	1.1	-		-	0.7	0.6	-	-	-	-	-	-	-	-	-	-	-
SEPTIFER BIFURCATUS				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
SERPULA VERMICULARIS				-	-	0.6	-	-		-	-	-	-	2.8	0.7	-	2.1	0.7	0.7	1.4	-	-	-
SERPULIDAE UNID.				-	-	-	-	-		-	-	-	-	-	0.7	1.4	1.4	2.1	3.5	4.2	-	-	-
SERPULORBIS SQUAMIGERUS				3.5	0.5	0.6	-	-		-	-	-	-	0.7	0.7	1.4	0.7	-	0.7	-	-	-	-
SOLITARY TUNICATE				-	-	-	-	-		-	-	-	-	-	-	-	0.7	-	-	-	-	-	-
SPHAEROMATIDAE UNID.				-	-	-	-	-		-	-	-	-	-	0.7	-	-	-	-	-	-	-	-
SPIROBRANCHUS SPINOSUS				-	-	-	-	-		-	-	-	-	-	-	-	2.1	2.8	2.8	2.8	2.8	-	-
SPIRORBIDAE UNID.				-	-	-	-	-		-	-	-	-	-	43.1	85.4	82.6	81.3	78.5	61.1	58.3	80.6	63.9
STENOPLAX HEATHIANA				18.1	14.4	16.1	14.4	2.8		5.6	1.4	3.9	-	7.6	4.9	4.9	6.3	4.2	4.9	5.6	-	2.8	-
STRONGYLOCENTROTUS FRANCISCANUS				-	1.9	0.6	1.1	-		-	0.7	1.7	-	0.7	-	-	0.7	5.6	3.5	-	-	-	-
STRONGYLOCENTROTUS PURPURATUS				14.6	20.4	21.7	20.6	-		36.1	13.9	10.0	11.1	27.8	33.3	43.8	52.1	55.6	54.2	51.4	47.2	50.0	52.8
STRONGYLOCENTROTUS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.7	-	-	-	-
STYLOCHUS FRANCISCANUS				-	-	-	-	-		-	-	-	-	-	-	-	2.1	1.4	-	-	-	8.3	-
TEALIA CRASSICORNIS				-	-	-	-	-		-	0.7	0.6	-	0.7	0.7	1.4	-	-	-	-	-	-	-
TECTURA ROSACEA				-	-	-	-	-		-	-	-	-	-	-	-	-	1.4	-	-	-	-	-
TEGULA BRUNNEA				45.8	42.6	37.8	45.0	33.3		22.2	25.7	21.1	13.9	21.5	29.9	38.2	46.5	54.2	44.4	59.7	33.3	47.2	27.8
TEGULA FUNEBRALIS				47.2	71.8	75.0	83.3	88.9		94.4	89.6	94.4	94.4	93.1	82.6	75.0	58.3	61.1	54.2	76.4	69.4	63.9	88.9
TEGULA MONTEREYI				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
TEGULA PULLIGO				2.1	1.9	2.2	0.6	-		-	0.7	-	-	-	1.4	0.7	2.1	1.4	1.4	-	2.8	2.8	-
TEREBELLIDAE UNID.				-	-	-	-	-		-	-	-	-	-	-	0.7	-	-	1.4	-	-	-	-
TETRACLITA SQUAMOSA				6.3	-	-	-	-		-	-	-	-	-	9.0	21.5	25.7	16.0	21.5	27.8	22.2	41.7	13.9
THEMISTE PYROIDES				-	-	-	-	-		-	-	-	-	-	-	0.7	0.7	-	6.9	1.4	-	-	-
TONICELLA LINEATA				1.4	2.3	1.7	0.6	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRICOLIA PULLOIDES				-	-	-	-	-		-	-	-	-	-	0.7	0.7	0.7	6.3	-	-	-	-	-
TRICOLIA SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	-	-
TRIDIDEMNUM OPACUM				0.7	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIOPHA MACULATA				1.4	0.9	3.3	-	-		2.8	0.7	-	-	-	0.7	-	-	-	-	-	-	-	-
TUNICATA UNID.				-	-	-	-	-		-	-	-	-	-	2.8	2.1	6.3	1.4	1.4	-	-	-	-
WILLIAMIA PELTOIDES				-	-	-	-	-		-	0.7	-	-	-	-	0.7	-	-	-	-	-	-	-

APPENDIX C5 – Intertidal Fishes
Vertical Band Transects

Vertical Band Transects - Fish Yearly Mean Abundance (# fish per station) - Station FC 1-V (36 Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	3	4	2	ns	ns	ns	1	4	5	2	3	4	4	4	3	4	4	4	3	4
ANOPLARCHUS PURPURESCENS				-	-	-				-	-	-	-	-	-	-	4.0	2.3	3.3	6.3	4.3	3.3	0.5
ANOPLARCHUS SPP./CEBIDICHTHYS				40.3	26.5	27.0				31.0	23.8	43.2	31.5	1.3	3.0	6.8	-	-	0.5	0.3	0.5	-	-
ARTEDIUS CORALLINES				-	-	-				-	0.3	-	-	-	-	-	-	-	-	-	-	-	-
ARTEDIUS LATERALIS				-	-	0.5				-	-	-	-	-	-	-	-	-	-	-	-	-	-
ARTEDIUS SPP.				-	-	-				-	-	-	-	-	-	-	0.3	-	-	-	-	-	-
CEBIDICHTHYS VIOLACEUS				-	-	1.0				-	-	0.2	-	5.0	3.5	6.3	2.8	8.7	3.0	2.3	2.8	2.0	3.5
CLINOCOTTUS RECALVUS				0.7	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
COTTIDAE (JUV.)				-	0.8	-				-	-	-	-	-	-	1.5	1.8	0.7	1.8	0.5	1.5	0.3	-
GIBBONSIA METZI				-	-	-				-	-	-	-	-	0.3	-	-	-	-	-	-	-	-
GIBBONSIA SPP.				-	0.3	0.5				-	-	-	-	-	-	0.3	0.5	-	0.3	1.3	0.8	-	0.5
GOBIESOX MAEANDRICUS				8.7	4.3	13.0				5.0	3.5	6.4	2.5	1.0	1.0	4.3	3.5	1.0	2.0	3.3	3.5	1.7	0.3
OLIGOCOTTUS SNYDERI				8.3	7.0	9.0				10.0	6.3	16.0	14.0	4.0	4.0	1.3	2.5	5.0	5.5	4.0	7.0	4.3	3.5
OLIGOCOTTUS SPP.				0.3	-	-				-	-	-	-	-	-	-	0.3	-	0.8	-	0.8	-	-
PORICHTHYS NOTATUS				-	0.3	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-
STICHAEIDAE/PHOLIDIDAE				-	-	-				-	-	-	-	-	-	1.3	3.8	4.3	4.8	5.0	8.0	5.3	1.3
TYPHLOGOBIUS CALIFORNIENSIS				-	-	-				-	-	0.2	-	-	-	-	-	-	-	-	-	-	-
TYPHLOGOBIUS CALIFORNIENSIS				-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
XERERPES FUCORUM				9.7	2.3	-				-	1.0	0.4	-	-	-	0.8	0.3	-	0.5	1.0	0.3	-	0.3
XIPHISTER ATROPURPUREUS				4.7	4.0	6.0				3.0	1.0	4.6	4.0	1.3	0.5	4.8	3.0	0.3	-	-	-	0.3	-
XIPHISTER MUCOSUS				42.0	13.0	28.5				16.0	37.8	32.0	15.0	10.7	10.5	26.3	6.3	11.3	11.5	16.8	21.5	13.7	2.8
XIPHISTER SPP. (JUV.)				-	-	-				-	-	3.4	1.5	-	0.5	2.8	0.8	-	-	-	-	-	-

Vertical Band Transects - Fish Yearly Mean Abundance (# fish per station) - Station NDC 1-V (36 Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	4	5	2	ns	1	4	5	2	3	4	4	4	3	4	2	1	1	1
ANOPLARCHUS PURPURESCENS				-	-	-	-	-		-	-	-	-	-	-	-	-	1.3	1.0	-	-	-	-
ANOPLARCHUS SPP./CEBIDICHTHYS				24.0	15.3	11.8	19.0	7.0		17.0	14.5	17.6	4.5	1.3	-	2.3	-	-	0.3	-	-	-	-
ARTEDIUS LATERALIS				-	-	0.3	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
CEBIDICHTHYS VIOLACEUS				-	-	1.8	-	-		-	-	-	-	1.3	1.8	0.8	0.3	-	0.5	-	1.0	-	-
COTTIDAE (JUV.)				0.8	-	-	-	-		-	-	-	-	-	-	-	-	-	0.8	-	-	-	-
GIBBONSIA SPP.				-	0.5	-	2.0	-		-	-	-	-	-	-	-	-	0.3	0.3	-	-	-	-
GOBIESOX MAEANDRICUS				4.3	3.7	1.3	4.0	2.5		2.0	0.8	0.4	-	-	-	1.0	-	-	-	-	1.0	-	-
OLIGOCOTTUS SNYDERI				2.3	1.0	1.8	3.0	2.0		-	0.8	1.2	-	-	0.3	0.3	0.3	0.7	0.8	-	-	1.0	-
OXYJULIS CALIFORNICA				0.3	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
PORICHTHYS NOTATUS				-	-	-	0.2	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCYTALINA CERDALE				-	-	-	-	-		-	-	0.2	-	-	-	-	-	-	-	-	-	-	-
STICHAEIDAE/PHOLIDIDAE				-	-	-	-	-		-	-	-	-	-	-	-	-	2.3	3.5	4.0	3.0	1.0	-
XERERPES FUCORUM				7.5	3.3	8.3	4.8	4.5		2.0	0.8	0.4	-	-	-	2.0	-	-	-	-	1.0	-	-
XIPHISTER ATROPURPUREUS				19.0	16.0	24.3	11.4	16.5		6.0	0.8	0.4	-	4.0	0.8	2.3	1.3	-	0.3	3.0	-	1.0	-
XIPHISTER MUCOSUS				25.8	14.7	27.8	15.2	28.5		6.0	2.5	1.6	-	2.3	6.8	14.3	1.0	-	2.0	-	1.0	2.0	-
XIPHISTER SPP. (JUV.)				3.0	-	-	-	-		-	-	5.4	7.5	-	-	-	-	-	-	-	-	-	-

Vertical Band Transects - Fish Yearly Mean Abundance (# fish per station) - Station SDC 2-V (36 Quadrats)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Surveys	ns	ns	ns	4	6	4	5	2	ns	1	4	5	2	3	4	4	4	4	4	2	1	1	1
ANOPLARCHUS PURPURESCENS				-	-	-	-	-		-	-	-	-	-	-	0.3	7.0	5.0	1.0	-	1.0	-	2.0
ANOPLARCHUS SPP./CEBIDICHTHYS				8.0	7.8	7.0	6.4	2.5		17.0	16.5	15.0	10.0	1.3	1.0	3.0	-	-	1.8	-	-	-	-
APODICHTHYS FLAVIDUS				-	-	-	-	-		-	-	-	-	-	-	0.3	-	-	-	-	-	-	-
ARTEDIUS LATERALIS				0.3	0.3	-	-	-		-	-	-	-	-	-	0.8	-	-	-	-	-	-	-
ARTEDIUS SPP.				-	-	-	-	-		-	-	-	-	-	-	-	-	-	0.8	-	-	-	-
CEBIDICHTHYS VIOLACEUS				-	0.5	2.8	2.2	-		-	-	-	-	2.0	2.0	2.3	1.8	3.0	3.3	5.0	15.0	2.0	2.0
CHILARA TAYLORI				-	-	-	-	-		-	-	-	-	-	0.3	-	-	-	-	-	-	-	-
COTTIDAE (JUV.)				-	-	-	-	-		-	-	-	-	-	-	0.8	0.5	-	0.5	-	-	-	-
FISH EGGS				0.3	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIBBONSIA SPP.				-	0.8	0.3	1.8	-		-	-	-	-	-	-	-	0.8	-	0.3	-	-	-	-
GIRELLA NIGRICANS				-	-	-	-	-		-	-	-	-	-	-	-	-	0.3	0.3	-	-	-	-
GOBIESOX MAEANDRICUS				11.8	6.3	4.3	11.0	1.0		3.0	0.5	0.2	1.0	0.3	-	0.3	0.5	0.3	-	1.0	3.0	2.0	-
MICROMETRUS AURORA				-	-	-	-	-		-	-	-	-	-	-	-	-	0.8	-	-	-	-	-
MICROMETRUS MINIMUS				-	-	-	-	-		-	-	-	-	0.7	-	-	-	-	-	-	-	-	-
OLIGOCOTTUS SNYDERI				2.8	3.7	2.8	1.2	2.0		-	0.5	0.4	-	2.0	0.8	1.0	0.8	2.0	1.0	0.5	-	2.0	-
OLIGOCOTTUS SPP.				-	-	-	0.2	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCYTALINA CERDALE				27.3	10.5	10.3	14.6	1.0		17.0	1.8	4.8	-	1.7	0.8	3.0	3.3	0.5	0.8	0.5	-	-	-
SEBASTES SPP.				0.5	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
STICHAEIDAE/PHOLIDIDAE				-	-	-	-	-		-	-	-	-	-	-	0.5	1.5	6.5	3.3	2.0	15.0	4.0	2.0
TYPHLOGOBIUS CALIFORNIENSIS				0.3	-	0.3	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
XERERPES FUCORUM				3.8	2.0	4.5	4.4	6.5		-	1.3	-	-	0.3	-	1.0	0.3	-	0.3	-	1.0	-	-
XIPHISTER ATROPURPUREUS				21.5	20.3	14.8	18.8	13.5		5.0	3.8	3.6	5.0	4.0	0.8	3.8	8.5	1.5	0.5	3.0	2.0	-	-
XIPHISTER MUCOSUS				36.5	20.2	25.8	15.2	14.0		9.0	6.5	5.2	1.0	3.7	8.8	21.5	9.3	8.3	14.8	2.0	6.0	8.0	2.0
XIPHISTER SPP. (JUV.)				0.8	-	-	-	-		-	-	0.4	2.5	-	1.3	0.8	-	-	-	-	-	-	-

APPENDIX D – Annual Taxa Means by Subtidal Sampling Method

D1 Subtidal Algae – Subtidal Line Contact (SLC) Method

D2 Subtidal Invertebrates – Subtidal Line Contact (SLC) Method

D3 Subtidal Algae – Subtidal Arc Quadrant (SAQ) Method

D4 Subtidal Invertebrates – Subtidal Arc Quadrant (SAQ) Method

D5 Subtidal Invertebrates – Subtidal Fixed Quadrat (SFQ) Method

D6 Subtidal Fishes – 50 m Transects

APPENDIX D1 – Subtidal Algae

Subtidal Line Contact (SLC) Method

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION FC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	2	4	2	3	3	1	1	4
Coverage Based on # of Contact Points																							
Ahnfeltiopsis leptophylla													-	-	-	-	<.1	-	-	-	-	-	-
Ahnfeltiopsis linearis													<.1	<.1	<.1	0.3	<.1	<.1	<.1	<.1	2.0	0.5	0.1
Calliarthron/Bossiella spp.-complex													50.8	56.3	59.1	64.0	64.6	76.3	64.3	56.8	56.0	65.5	60.5
Callithamnion spp./Pleonosporium spp.													-	-	-	-	-	-	<.1	-	-	-	-
Callophyllis firma													<.1	<.1	<.1	<.1	<.1	<.1	-	<.1	<.1	-	-
Callophyllis flabellulata													<.1	<.1	<.1	<.1	0.1	<.1	<.1	<.1	0.5	-	<.1
Callophyllis spp.													2.8	4.1	5.3	3.3	5.5	3.0	0.8	1.3	1.0	<.1	0.4
Chondracanthus corymbiferus (prev. Gig.													31.5	26.6	29.0	28.8	28.1	38.3	31.2	23.7	26.5	21.5	20.5
Chrysophyta unid.													-	-	-	-	-	-	-	4.0	2.0	-	3.3
Corallina officinalis													0.3	0.1	<.1	<.1	0.1	<.1	<.1	<.1	<.1	<.1	<.1
Cryptopleura ruprechtiana													65.8	49.8	45.6	59.0	52.9	56.3	41.7	28.0	19.5	24.5	15.4
Cryptopleura violacea													0.3	0.1	0.5	0.3	0.8	1.8	-	0.3	-	-	0.8
Cystoseira osmundacea													-	<.1	-	<.1	<.1	-	-	-	-	0.5	-
Desmarestia spp.													-	<.1	0.1	-	-	<.1	8.3	20.3	0.5	-	14.3
Dictyoneurum californicum													<.1	<.1	0.1	<.1	<.1	<.1	<.1	0.2	<.1	-	-
Egregia menziesii													-	-	-	-	-	-	<.1	<.1	-	-	<.1
Erythrophyllum delesserioides													2.8	3.3	2.9	2.8	1.0	1.0	0.7	<.1	<.1	<.1	0.5
Farlowia/Pikea spp.-complex													0.5	0.8	0.6	0.8	1.5	3.0	1.0	1.8	6.0	<.1	1.0
Gastroclonium subarticulatum													-	-	-	0.5	-	-	<.1	-	-	-	-
Gelidium robustum													<.1	<.1	<.1	<.1	0.3	0.5	0.2	0.3	<.1	0.5	0.3
Halicystis ovalis (=Derbesia marina)													-	-	-	-	-	-	-	<.1	<.1	-	<.1
Halymenia/Schizymenia spp.-complex													0.5	0.3	0.8	<.1	1.0	<.1	0.7	1.3	4.5	-	3.4
Hymenena spp.													-	-	-	-	-	-	<.1	-	-	-	-
Laminaria setchellii													0.8	2.5	1.9	1.5	0.5	0.3	0.7	0.5	0.5	5.0	2.3
Laminariales													-	-	-	-	-	-	-	<.1	<.1	-	<.1
Macrocystis spp.													-	-	-	-	-	-	-	-	-	-	<.1
Mazzaella lilacina (prev. Irid. cord.)													31.8	20.5	20.3	16.0	10.8	8.8	5.7	2.0	3.5	1.5	2.3
Mazzaella rosea													<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	0.6
Microcladia coulteri													0.8	1.8	3.8	0.8	<.1	4.0	1.2	0.3	1.5	<.1	0.4
Neoptilota densa													-	<.1	<.1	<.1	<.1	0.5	0.3	0.2	0.5	<.1	0.1
Nereocystis luetkeana													-	-	0.1	-	-	-	<.1	0.5	0.5	0.5	1.1
Non-coralline crust													1.5	6.0	3.8	7.0	3.4	2.0	2.7	3.2	1.5	2.0	1.3
Osmundea spp.													0.3	0.6	1.1	<.1	1.4	1.0	<.1	0.3	0.5	<.1	0.1
Pikea robusta													0.5	-	-	-	-	-	-	0.2	-	-	-
Plocamium cartilagineum													-	<.1	-	-	-	-	-	-	-	-	-
Polyneura latissima													-	<.1	<.1	-	<.1	-	-	0.2	-	-	<.1
Porphyra spp.													-	-	-	-	-	-	-	-	-	-	<.1
Prionitis australis													<.1	0.1	<.1	<.1	0.9	0.3	<.1	0.5	0.5	-	<.1
Prionitis spp.													10.5	12.0	16.5	15.0	14.6	12.5	13.3	8.5	10.0	7.0	9.9
Pterocladia caloglossoides													<.1	<.1	<.1	<.1	-	<.1	<.1	-	-	-	-
Pterosiphonia dendroidea													<.1	-	-	-	-	-	-	-	-	-	<.1
Pterygophora californica													<.1	<.1	0.1	-	-	-	-	<.1	-	-	2.9
Rhodymenia spp.													4.5	3.0	4.4	8.0	7.3	4.3	3.7	4.2	14.5	2.5	5.9
Sarcodiotheca gaudichaudii													<.1	0.1	<.1	-	0.4	<.1	<.1	<.1	0.5	<.1	<.1
Scinaia confusa													<.1	-	-	-	-	-	-	-	-	-	0.1
Ulva/Enteromorpha spp.													-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	0.1
Weeksia spp.													<.1	-	-	-	-	-	-	-	-	-	-
coralline crust													55.0	56.4	56.0	64.8	54.0	52.8	42.8	39.8	55.5	35.0	47.4
filamentous red algae-complex													-	-	-	-	0.1	-	-	-	-	-	-

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION FC 2 -9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Coverage Based on # of Contact Points																							
Ahnfeltiopsis linearis															-	-	-	-	-	-	-	<.1	0.1
Amplisiphonia pacifica															-	-	-	-	-	-	-	-	<.1
Antithamnion/Platythamnion spp.-complex															<.1	-	-	-	-	-	<.1	-	0.1
Calliarthron/Bossiella spp.-complex															37.0	46.0	37.3	39.3	30.5	31.0	23.0	22.0	13.0
Callophyllis firma															0.4	<.1	<.1	0.5	<.1	<.1	-	-	<.1
Callophyllis flabellulata															1.8	3.5	0.8	3.0	1.3	<.1	1.0	<.1	0.1
Callophyllis spp.															5.3	5.3	3.0	6.8	6.3	8.5	9.0	7.0	0.6
Chondracanthus corymbiferus (prev. Gig.															7.4	7.0	4.8	6.3	8.2	3.0	5.5	9.5	3.1
Chrysophyta unid.															-	-	-	-	-	-	-	-	0.6
Corallina officinalis															-	-	-	-	-	-	-	<.1	<.1
Cryptopleura ruprechtiana															40.9	54.0	56.0	54.3	56.5	68.5	61.0	57.5	12.8
Cystoseira osmundacea															4.6	3.8	4.0	3.3	3.2	3.0	<.1	<.1	-
Desmarestia spp.															7.9	<.1	13.5	<.1	3.7	1.5	3.5	0.5	39.8
Dictyoneurum californicum															8.5	9.3	7.5	9.5	8.7	13.0	14.0	9.5	1.0
Dictyota binghamiae															1.8	1.5	<.1	1.5	1.3	0.5	0.5	<.1	1.1
Erythrophyllum delesserioides															<.1	<.1	-	<.1	<.1	-	-	-	-
Farlowia/Pikea spp.-complex															<.1	-	<.1	-	-	<.1	-	-	0.1
Fryeella gardneri															<.1	<.1	<.1	<.1	0.2	0.5	0.5	-	0.1
Gelidium robustum															0.8	<.1	<.1	-	<.1	0.5	-	<.1	<.1
Halicystis ovalis (=Derbesia marina)															<.1	-	-	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex															0.8	-	-	<.1	<.1	-	<.1	0.5	<.1
Kallymenia spp.															-	-	-	<.1	-	-	-	-	-
Laminaria setchellii															1.1	4.0	2.0	3.0	2.5	2.5	3.0	2.0	1.6
Laminariales															<.1	-	-	-	-	-	<.1	-	<.1
Mazzaella lilacina (prev. Irid. cord.)															<.1	<.1	-	<.1	-	<.1	0.5	-	<.1
Membranoptera/Branchioglossum spp.															<.1	-	-	-	-	-	-	-	-
Microcladia coulteri															<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
Neoptilota densa															0.5	0.5	0.5	0.3	0.3	1.0	1.5	1.0	0.3
Nereocystis luetkeana															-	-	-	-	-	-	<.1	-	0.8
Non-coralline crust															2.0	1.8	0.5	2.3	0.3	<.1	4.0	0.5	1.1
Opuntiella californica															0.5	1.0	0.5	2.0	1.3	0.5	0.5	1.5	0.4
Osmundea spp.															<.1	<.1	<.1	0.5	0.3	0.5	<.1	-	-
Pikea robusta															<.1	-	<.1	<.1	<.1	<.1	-	-	<.1
Plocamium cartilagineum															-	-	-	-	-	-	-	-	<.1
Polyneura latissima															12.3	16.8	5.3	32.5	13.8	28.0	22.0	5.5	20.0
Prionitis australis															-	-	-	-	<.1	-	0.5	-	0.1
Prionitis spp.															0.8	0.8	0.8	0.5	0.2	0.5	0.5	<.1	<.1
Pterosiphonia dendroidea															-	<.1	0.3	-	-	-	-	-	-
Pterygophora californica															2.6	2.5	1.5	2.0	1.7	1.5	1.5	0.5	2.4
Rhodophyta (juv. blades)															-	-	-	-	0.2	-	-	-	-
Rhodoptilum plumosum															0.1	<.1	<.1	0.3	<.1	0.5	<.1	-	0.3
Rhodymenia spp.															4.0	4.5	5.3	6.3	7.7	7.5	12.0	6.0	4.8
Sarcodiotheca gaudichaudii															-	-	-	-	<.1	-	-	-	-
Weeksia spp.															<.1	-	-	-	<.1	-	-	-	-
coralline crust															62.1	75.0	74.5	63.0	71.7	69.5	69.0	73.0	71.1
filamentous red algae-complex															-	<.1	-	<.1	-	<.1	-	-	0.1

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 3 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Coverage Based on # of Contact Points																							
Ahnfeltiopsis leptophylla	-	-	-	-	-	-	<.1	-	-	-	<.1	<.1	-	-	0.1	<.1	-	-	-	-	-	-	-
Ahnfeltiopsis linearis	-	-	-	-	-	-	-	-	-	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	1.1	1.3	0.3	-	0.3
Antithamnion/Platythamnion spp.-complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	<.1	<.1	<.1	-	-
Bryopsis spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	<.1	-	-	<.1	-	<.1	-	-
Calliarthron/Bossiella spp.-complex	61.0	47.8	52.5	53.6	49.8	54.8	58.2	38.6	44.6	46.7	43.3	41.9	29.8	29.6	35.0	35.0	29.4	26.3	22.5	15.3	18.5	20.8	18.0
Callithamnion spp./Pleonosporium spp.	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Callophyllis firma	-	-	-	-	-	-	-	<.1	-	<.1	<.1	<.1	<.1	<.1	<.1	-	<.1	-	-	-	-	-	-
Callophyllis flabellulata	-	<.1	0.3	-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	-	0.3	0.1	<.1	<.1	-	0.1	<.1	-	-	-
Callophyllis spp.	-	2.2	0.6	0.6	1.2	1.7	3.2	0.6	0.1	0.3	0.2	<.1	0.3	0.8	0.4	1.3	0.3	0.3	-	0.3	0.8	0.3	-
Chondracanthus canaliculatus	-	-	-	-	-	-	-	-	<.1	<.1	<.1	<.1	<.1	<.1	0.1	<.1	<.1	<.1	<.1	<.1	-	-	-
Chondracanthus corymbiferus (prev. Gig.	11.5	14.8	14.8	14.8	19.2	22.5	21.7	22.9	16.4	16.1	16.2	18.1	14.3	19.4	22.0	17.6	11.8	10.1	10.9	7.5	5.8	3.0	4.5
Chondracanthus harveyanus/spinosus	-	-	-	-	-	-	-	<.1	-	<.1	<.1	0.1	-	0.1	-	0.3	<.1	2.0	1.6	1.0	1.8	1.8	0.5
Chrysophyta unid.	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	1.5	2.1	0.4	0.8	11.0	2.8	13.5	7.8	11.8
Colpomenia spp.	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	<.1	<.1	<.1	<.1	<.1	<.1	-	<.1
Corallina officinalis	2.5	16.3	11.1	9.6	11.7	10.5	13.0	8.0	6.8	7.7	8.0	2.5	0.7	0.4	1.9	2.6	0.5	1.3	0.8	0.5	1.3	0.5	0.8
Corallina vancouveriensis	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptopleura ruprechtiana	-	35.8	40.8	43.0	35.3	52.7	44.5	37.3	44.9	38.7	18.5	14.3	0.2	1.3	0.1	0.1	0.1	-	-	-	-	-	-
Cryptopleura violacea	-	0.5	2.4	2.9	1.0	2.0	0.2	2.4	6.8	1.0	13.7	55.5	72.0	69.5	60.6	56.8	55.0	52.0	42.5	33.3	40.8	45.8	2.5
Cystoseira osmundacea	0.5	0.5	0.3	0.1	0.5	0.3	1.2	0.1	0.5	1.0	0.5	-	-	<.1	<.1	<.1	<.1	0.3	0.1	<.1	<.1	<.1	<.1
Delesseria decipiens	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Delesseriaceae (juv.)	39.0	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
Derbesia marina (filamentous)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	-	-	-	-
Desmarestia spp.	-	7.5	0.1	-	0.3	0.7	<.1	4.8	<.1	-	-	-	-	<.1	0.4	0.1	-	0.1	<.1	<.1	-	-	-
Dictyoneurum californicum	-	-	<.1	0.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dictyota binghamiae	-	-	-	-	-	<.1	<.1	<.1	-	-	<.1	<.1	-	-	-	-	-	-	-	-	0.3	-	<.1
Egregia menziesii	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erythrophyllum delesserioides	-	0.5	0.3	<.1	0.5	0.3	0.2	0.9	0.1	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	-	0.2	<.1	0.5	<.1	0.3	0.5	<.1	0.4	0.6	0.9	2.4	2.8	3.3	1.6	2.0	12.5	23.9	21.6	19.5	16.0	19.3	1.8
Gastroclonium subarticulatum	-	-	-	-	-	<.1	0.2	0.3	0.5	0.2	<.1	0.3	1.2	2.0	1.6	0.9	0.1	0.3	0.1	0.3	0.3	<.1	-
Gelidium coulteri	-	-	-	-	-	-	-	-	-	-	-	<.1	0.2	-	-	-	-	-	-	-	-	-	-
Gelidium pusillum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-
Gelidium robustum	-	0.2	0.4	0.3	0.7	0.3	0.3	0.1	0.3	0.1	0.4	0.3	0.5	0.6	1.6	2.8	5.4	6.3	9.1	10.3	13.8	9.0	11.3
Gelidium spp.	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Gloiosiphonia californica	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	-	<.1	-	<.1	<.1	<.1	-	-	<.1
Grateloupia doryphora	-	-	-	-	-	-	-	-	-	-	-	<.1	0.2	-	-	<.1	-	-	<.1	-	-	-	-
Halicystis ovalis (=Derbesia marina)	-	0.2	<.1	<.1	<.1	<.1	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1	<.1	-	-	-	<.1	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	0.3	0.4	-	<.1	<.1	<.1	2.5	0.1	0.2	1.5	2.6	15.7	4.3	0.6	0.8	<.1	<.1	<.1	-	<.1	0.3	-
Hymenena spp.	-	-	-	-	-	0.2	-	-	-	-	-	-	<.1	-	-	-	-	0.1	-	-	-	-	-
Laminaria setchellii	-	0.7	0.3	1.1	0.3	1.0	<.1	0.3	0.3	0.4	0.3	-	-	-	-	<.1	-	-	-	-	-	-	-
Laminariales	-	0.3	<.1	-	<.1	-	-	<.1	<.1	<.1	-	-	-	<.1	-	<.1	-	-	<.1	-	-	0.3	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	<.1	1.1	2.0	3.8	4.3	3.5
Mastocarpus papillatus	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella affinis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-
Mazzaella leptorhynchos	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Mazzaella lilacina (prev. Irid. cord.)	8.5	4.0	6.1	7.3	11.3	14.3	14.3	15.0	10.5	13.1	7.3	5.3	4.0	1.0	0.5	-	-	-	-	-	-	-	-
Mazzaella rosea	-	0.2	-	-	<.1	<.1	<.1	0.1	<.1	0.1	0.5	0.6	0.8	0.9	0.8	0.9	2.1	<.1	0.5	1.8	0.5	<.1	<.1
Melobesia mediocris	-	-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Membranoptera/Branchioglossum spp.	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	1.0	3.8	3.1	1.8	2.3	4.8	4.7	2.4	4.1	1.5	<.1	5.5	0.7	4.9	7.0	4.5	<.1	<.1	<.1	<.1	-	-	-
Neoptilota densa	0.5	0.7	0.3	<.1	0.3	0.3	0.7	0.3	0.6	0.2	<.1	0.1	-	-	-	-	-	-	-	-	-	-	-
Neoptilota hypnoides	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereocystis luetkeana	-	0.3	-	<.1	<.1	<.1	<.1	0.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nienburgia andersoniana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	0.8	2.8	7.0	4.3	7.0	2.5	2.3	0.5
Non-coralline crust	-	3.7	1.8	2.8	1.0	0.2	3.2	3.4	3.9	6.4	7.1	7.9	10.2	12.4	7.3	5.0	5.8	4.8	3.1	3.0	3.3	3.5	2.3
Opuntiella californica	-	-	-	-	-	-	-	<.1	<.1	<.1	0.1	<.1	-	-	-	-	<.1	-	-	-	-	-	-
Osmundea spp.	1.0	2.0	2.8	3.4	2.5	3.2	5.0	2.5	2.1	3.4	0.7	3.8	6.5	16.0	7.9	11.0	2.0	0.6	0.3	0.3	3.5	0.8	-
Phaeophyta (juv.)	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phycodrys spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 3 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Coverage Based on # of Contact Points (continued)																							
Phyllospadix spp.	14.0	8.7	5.0	4.6	4.7	6.5	10.3	3.1	1.6	0.9	0.3	<.1	-	-	-	-	-	-	-	-	-	-	-
Pikea robusta	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plocamium cartilagineum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-
Polyneura latissima	-	-	-	-	<.1	0.2	<.1	<.1	0.3	<.1	<.1	<.1	-	<.1	<.1	0.1	-	0.1	-	-	-	-	-
Prionitis australis	-	0.2	<.1	-	-	<.1	-	-	0.1	<.1	0.2	<.1	0.2	-	0.1	0.4	0.4	<.1	0.4	0.8	0.5	-	-
Prionitis spp.	1.0	2.0	0.6	0.9	0.5	0.5	1.7	2.3	2.4	3.1	4.7	11.1	9.2	19.0	23.1	23.5	17.8	13.4	16.6	7.0	7.5	5.5	2.8
Pterochondria woodii var. woodii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Pterocladia caloglossoides	<.1	1.8	1.6	0.3	0.5	0.5	0.8	0.1	0.1	0.3	0.2	0.1	1.7	0.6	0.3	<.1	<.1	-	-	-	-	-	-
Pterosiphonia dendroidea	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	<.1	<.1	1.1	0.6	0.5	0.5	0.5	-
Pterygophora californica	1.5	0.3	0.6	1.5	0.3	0.2	0.2	2.1	3.5	2.5	0.4	<.1	-	-	-	-	-	-	-	-	-	-	<.1
Rhodophyta (juv. blades)	-	0.2	0.1	0.4	<.1	-	-	<.1	<.1	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-
Rhodoptilum plumosum	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhodymenia spp.	-	-	-	-	<.1	<.1	0.3	0.6	0.3	0.1	0.3	0.3	0.8	4.4	3.9	4.4	4.4	5.1	7.5	7.0	6.0	3.3	1.0
Sarcodiotheca gaudichaudii	-	1.5	2.1	1.1	0.3	1.7	2.0	0.9	0.9	0.8	1.2	2.0	0.7	2.8	0.4	0.3	<.1	0.1	<.1	<.1	<.1	<.1	-
Sargassum muticum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1
Scinaia confusa	-	-	-	-	-	-	-	<.1	<.1	<.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Smithora naiadum	<.1	-	-	0.3	0.3	0.8	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ulva/Enteromorpha spp.	4.0	1.8	<.1	0.3	0.2	0.2	<.1	0.6	<.1	<.1	<.1	<.1	<.1	<.1	0.6	<.1	<.1	0.5	0.3	0.3	<.1	0.3	0.3
coralline crust	29.5	60.0	34.8	39.4	41.5	45.5	50.5	62.4	62.5	56.3	47.1	59.9	63.8	59.9	54.4	56.8	62.5	54.6	53.8	51.5	49.3	44.0	53.5
filamentous red algae-complex	-	0.2	<.1	-	0.2	<.1	-	<.1	-	<.1	<.1	<.1	<.1	-	1.4	0.1	0.6	4.0	2.3	6.8	2.8	2.0	8.8
juv. articulated coralline algae	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 4 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of Contact Points																							
Ahnfeltiopsis leptophylla	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Ahnfeltiopsis linearis	-	-	<.1	0.3	-	0.3	-	<.1	0.1	0.3	0.4	0.3			0.4	0.9	2.3	0.4	0.9	0.3	0.5	1.0	1.5
Ampliciphonia pacifica	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	<.1
Antithamnion/Platythamnion spp.-complex	-	-	-	-	-	-	-	-	-	-	<.1	-			-	<.1	0.3	<.1	<.1	<.1	-	-	-
Calliarthron/Bossiella spp.-complex	54.5	57.0	47.5	51.8	49.7	53.7	49.1	40.4	44.4	47.6	43.0	50.5			46.1	42.9	50.6	47.3	46.1	36.8	47.0	39.3	37.0
Callithamnion spp./Pleonosporium spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Callophyllis firma	-	-	-	-	-	-	-	<.1	-	-	-	<.1			-	<.1	<.1	-	-	-	-	-	-
Callophyllis flabellulata	-	<.1	<.1	0.3	<.1	0.2	0.9	<.1	0.3	0.4	0.1	1.2			0.1	0.3	<.1	<.1	<.1	<.1	<.1	<.1	<.1
Callophyllis spp.	3.0	4.5	2.9	3.2	3.5	4.2	7.9	4.3	4.3	3.2	2.1	1.7			3.0	1.4	0.3	0.6	<.1	0.8	1.0	<.1	-
Chondracanthus canaliculatus	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Chondracanthus corymbiferus (prev. Gig.	4.5	6.0	7.5	5.9	6.5	9.3	10.3	9.5	12.0	12.8	15.0	19.2			18.3	18.0	12.3	9.1	12.0	6.3	3.5	5.0	4.3
Chondracanthus harveyanus/spinosus	<.1	-	-	-	-	-	<.1	-	<.1	<.1	0.1	-			0.1	0.4	1.4	1.8	3.6	1.3	-	1.8	0.8
Chrysophyta unid.	-	-	-	<.1	-	-	-	-	-	-	-	-			<.1	0.1	3.0	0.5	5.0	0.5	6.5	6.5	6.3
Coilodesme californica	-	-	-	<.1	-	-	-	-	<.1	-	-	-			-	0.1	-	-	-	-	-	-	-
Colpomenia spp.	-	-	-	-	-	-	-	-	-	-	<.1	<.1			<.1	<.1	<.1	<.1	0.1	<.1	-	-	<.1
Corallina officinalis	-	-	0.4	0.5	0.7	<.1	0.1	0.1	0.1	0.3	0.3	0.3			0.1	0.1	0.1	0.1	<.1	<.1	-	<.1	<.1
Cryptopleura ruprechtiana	-	31.5	40.3	39.9	42.8	49.8	51.8	44.8	54.5	51.5	43.3	54.7			24.4	14.6	2.5	1.8	0.4	-	0.5	<.1	-
Cryptopleura violacea	-	-	0.1	0.4	-	-	-	0.3	0.5	0.2	4.1	14.7			34.5	30.9	24.0	28.5	18.8	15.5	27.5	23.8	1.0
Cystoseira osmundacea	8.0	7.0	5.1	5.8	9.3	10.0	13.0	8.3	9.4	11.2	8.3	8.0			0.4	0.4	2.0	0.6	0.8	1.0	1.5	0.3	0.8
Delesseriaceae (juv.)	33.0	-	0.5	0.2	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.3	-
Desmarestia spp.	-	-	0.3	-	<.1	-	-	2.5	0.3	<.1	<.1	-			2.3	0.4	-	0.1	0.4	3.5	-	<.1	<.1
Dictyoneurum californicum	6.5	5.0	7.6	6.5	6.5	7.0	6.4	6.9	6.1	5.3	0.6	-			-	-	-	-	-	-	-	-	-
Dictyota binghamiae	-	<.1	0.1	<.1	-	-	-	<.1	0.1	-	<.1	<.1			-	-	-	-	-	-	-	-	-
Egregia menziesii	-	-	0.1	<.1	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Endarachne/Petalonia-complex	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Erythrophyllum delesserioides	<.1	-	0.5	0.1	<.1	0.2	0.3	0.3	0.5	<.1	<.1	-			-	-	-	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	<.1	<.1	<.1	0.2	0.2	0.2	<.1	0.1	<.1	<.1	1.3	2.2			1.8	5.0	15.0	16.5	19.5	13.0	12.0	19.3	3.3
Fauchea laciniata	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Gastroclonium subarticulatum	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	<.1	-	0.5	-	-
Gelidium robustum	-	<.1	-	-	<.1	0.2	<.1	<.1	<.1	0.2	<.1	<.1			0.9	1.8	2.6	1.8	2.8	1.5	5.0	1.8	3.5
Gelidium spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	<.1	-
Gloiosiphonia californica	-	-	-	-	-	-	-	-	-	-	<.1	<.1			<.1	-	<.1	-	<.1	<.1	-	-	-
Halicystis ovalis (=Derbesia marina)	-	-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1			<.1	-	<.1	-	-	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-	0.1	-	0.2	-	-	0.1	<.1	<.1	0.6	0.5			0.4	0.1	<.1	0.1	<.1	0.3	-	<.1	-
Hymenena spp.	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	0.1	-	-	-	-
Laminaria setchellii	1.0	1.0	2.5	2.1	1.7	1.0	1.3	0.4	0.9	0.6	0.3	<.1			<.1	<.1	-	<.1	<.1	<.1	<.1	-	-
Laminariales	-	-	<.1	<.1	<.1	-	-	<.1	<.1	-	0.1	<.1			<.1	-	<.1	<.1	<.1	<.1	<.1	-	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	0.6	3.0	3.4	2.8	3.0	2.5	7.5
Maripelta rotata	-	-	0.1	<.1	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Mazzaella heterocarpa	-	-	<.1	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Mazzaella lilacina (prev. Irid. cord.)	2.0	0.5	0.4	0.8	0.7	0.8	0.9	0.8	2.8	1.3	2.4	3.3			0.3	0.3	-	-	-	-	-	-	-
Mazzaella rosea	-	-	-	-	-	-	-	0.3	<.1	<.1	0.1	<.1			<.1	0.1	<.1	0.1	<.1	0.5	-	0.5	<.1
Membranoptera/Branchioglossum spp.	-	-	-	-	-	<.1	-	-	-	<.1	<.1	-			-	-	-	-	-	-	-	-	-
Microcladia coulteri	0.5	0.5	0.3	0.4	0.5	1.3	0.8	0.6	1.1	0.3	0.6	1.5			1.8	4.0	<.1	<.1	<.1	<.1	-	<.1	-
Neoptilota densa	-	-	0.1	<.1	<.1	0.2	0.1	<.1	0.1	<.1	0.1	-			-	-	-	-	-	-	-	-	-
Neoptilota hypnoides	<.1	-	<.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Nereocystis luetkeana	0.5	-	<.1	<.1	<.1	<.1	<.1	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
Nienburgia andersoniana	-	-	-	-	-	-	-	-	-	-	-	-			<.1	0.4	0.3	4.3	2.0	0.8	1.0	2.0	-
Non-coralline crust	2.5	3.0	1.3	1.5	0.2	0.5	<.1	<.1	0.6	0.8	2.3	1.7			1.8	1.9	1.4	0.6	0.5	1.3	-	<.1	0.5
Opuntiella californica	1.5	<.1	-	0.3	<.1	0.3	0.3	0.3	0.3	0.3	<.1	0.2			0.1	<.1	-	-	-	-	-	-	-
Osmundea spp.	<.1	<.1	0.5	0.8	0.5	0.3	0.4	0.1	0.4	0.6	1.5	2.5			7.5	6.4	1.1	0.1	<.1	0.3	3.5	0.5	-
Phaeophyta (juv.)	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Phycodrys spp.	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Phyllospadix spp.	2.0	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pikea robusta	-	-	-	-	-	-	-	-	-	-	0.1	<.1			-	-	-	-	-	-	-	-	-
Polyneura latissima	-	1.0	3.1	0.9	1.2	1.2	1.1	2.5	2.5	0.9	0.1	0.5			0.1	0.1	<.1	0.1	<.1	<.1	-	<.1	-
Prionitis australis	1.5	2.0	0.6	-	-	0.5	0.9	0.6	0.3	0.3	-	0.5			0.8	2.0	2.3	0.8	1.0	1.8	-	0.3	0.3
Prionitis spp.	0.5	0.5	2.3	1.8	1.7	1.7	0.9	0.8	2.0	2.0	5.3	8.7			19.6	19.0	16.5	16.8	15.1	8.0	8.5	4.3	7.5

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 4 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of Contact Points (continued)																							
Pterochondria woodii var. woodii	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pterocladia caloglossoides	0.5	5.0	0.9	0.2	<.1	<.1	0.3	<.1	<.1	<.1	<.1	<.1			<.1	<.1	<.1	1.5	-	-	-	-	-
Pterosiphonia dendroidea	1.0	<.1	0.1	<.1	-	-	-	-	-	-	<.1	<.1			<.1	<.1	<.1	0.1	0.4	0.5	4.5	0.3	0.5
Pterygophora californica	2.0	-	1.6	2.8	1.8	2.3	1.4	1.3	2.8	1.9	0.5	<.1			0.1	-	-	-	-	-	-	-	<.1
Rhodophyta (juv. blades)	1.0	0.5	0.5	0.5	-	-	-	0.4	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Rhodoptilum plumosum	-	<.1	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Rhodymenia spp.	-	6.0	1.9	1.5	1.8	2.5	4.5	4.9	4.5	3.8	7.8	7.5			12.0	12.3	14.9	14.3	9.6	8.5	5.5	5.5	5.0
Sarcodiotheca gaudichaudii	-	1.5	<.1	0.1	<.1	<.1	<.1	0.1	<.1	0.2	0.1	1.2			0.4	0.1	<.1	<.1	<.1	-	-	<.1	-
Sargassum muticum	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	0.3	<.1	-	<.1	<.1
Scinaia confusa	-	-	-	-	<.1	-	-	0.4	<.1	-	<.1	-			<.1	-	<.1	<.1	<.1	-	-	-	-
Ulva/Enteromorpha spp.	1.5	-	0.1	<.1	<.1	<.1	<.1	0.8	<.1	<.1	0.1	<.1			<.1	<.1	0.1	0.1	<.1	<.1	<.1	<.1	<.1
coralline crust	52.5	60.5	67.8	65.3	61.7	60.0	62.6	52.6	68.3	56.7	67.8	70.0			63.9	61.1	51.6	47.1	45.1	50.3	58.0	39.3	34.8
filamentous red algae-complex	6.5	5.0	0.4	0.6	<.1	<.1	<.1	0.9	0.1	<.1	<.1	<.1			0.3	0.5	0.6	1.8	3.0	3.8	-	4.3	2.8

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 6 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Coverage Based on # of Contact Points																							
Ahnfeltiopsis leptophylla	-	-							-	<.1	-	-	-	-	<.1	-	0.1	-	-	-	-	-	-
Ahnfeltiopsis linearis	-	-							<.1	-	0.5	0.3	0.1	0.1	0.5	<.1	0.1	0.1	1.0	0.3	-	<.1	2.3
Antithamnion/Platythamnion spp.-complex	-	-							-	-	<.1	-	-	<.1	0.1	<.1	<.1	<.1	<.1	-	-	<.1	<.1
Bryopsis spp.	-	-							-	-	-	-	-	-	<.1	0.5	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	8.5	5.3							20.5	14.0	22.8	30.5	21.9	28.9	31.3	33.2	28.0	22.0	10.5	4.5	3.0	4.5	1.5
Callithamnion spp./Pleonosporium spp.	-	-							-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	<.1
Callophyllis firma	-	-							2.0	0.5	0.3	<.1	<.1	0.1	<.1	<.1	-	-	-	-	-	-	-
Callophyllis flabellulata	3.5	2.5							<.1	0.2	2.7	0.5	0.1	0.6	0.3	0.2	<.1	0.1	-	-	-	<.1	-
Callophyllis spp.	11.5	16.3							13.0	6.3	6.0	1.8	0.6	1.4	0.9	1.2	0.1	0.1	0.1	-	-	<.1	<.1
Chondracanthus corymbiferus (prev. Gig.	12.0	20.3							58.5	49.3	58.5	65.5	56.6	53.4	45.9	42.5	15.3	11.3	9.6	6.3	3.0	11.8	14.8
Chondracanthus harveyanus/spinosus	-	-							-	-	<.1	-	-	-	<.1	-	-	-	<.1	-	-	-	-
Chrysophyta unid.	-	-							<.1	-	<.1	-	<.1	<.1	2.4	<.1	0.1	2.5	5.4	13.0	7.5	4.8	3.5
Colpomenia spp.	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Corallina officinalis	-	-							-	-	<.1	<.1	<.1	0.1	0.1	<.1	-	<.1	-	-	-	<.1	-
Cryptopleura ruprechtiana	-	9.3							35.0	23.7	0.7	0.3	0.1	0.1	<.1	<.1	-	-	-	-	-	-	-
Cryptopleura violacea	-	-							-	-	1.5	30.3	43.8	41.5	44.0	46.0	55.0	44.3	48.4	37.8	3.5	35.5	12.3
Cystoseira osmundacea	-	-							<.1	<.1	0.3	0.8	<.1	<.1	-	-	-	-	<.1	-	<.1	-	<.1
Delesseriaceae (juv.)	17.0	7.5							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Desmarestia spp.	-	0.8							3.5	<.1	0.7	-	-	-	0.3	-	-	-	0.3	-	-	<.1	<.1
Erythrophyllum delesserioides	<.1	1.5							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	0.5	2.8							5.0	1.2	1.8	1.8	0.9	7.5	6.9	22.7	34.9	53.8	52.8	54.3	50.0	65.8	55.5
Gastroclonium subarticulatum	-	-							-	-	-	<.1	0.3	0.3	0.6	0.3	<.1	<.1	0.4	-	<.1	0.5	-
Gelidium robustum	-	<.1							-	<.1	0.5	1.3	1.8	2.4	5.1	11.5	13.9	17.3	15.0	12.3	16.5	12.8	16.0
Halicystis ovalis (=Derbesia marina)	-	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1
Halymenia/Schizymenia spp.-complex	1.0	2.3							2.5	0.8	8.0	2.8	6.0	1.0	0.5	<.1	<.1	<.1	<.1	<.1	-	<.1	0.5
Hymenena spp.	-	-							0.5	2.7	0.5	-	-	-	-	-	-	-	-	0.3	-	-	-
Laminaria setchellii	2.5	6.0							6.5	8.0	2.3	0.3	-	-	-	-	-	-	-	-	-	-	-
Laminariales	-	0.8							0.5	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Macrocystis spp.	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	1.8
Mazzaella heterocarpa	<.1	2.0							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella lilacina (prev. Irid. cord.)	5.5	1.8							8.0	5.5	6.2	2.0	0.1	<.1	-	0.2	-	-	-	-	-	-	<.1
Mazzaella rosea	-	-							<.1	<.1	2.5	1.3	0.1	0.1	<.1	<.1	<.1	-	<.1	<.1	<.1	<.1	-
Microcladia coulteri	0.5	5.3							7.5	0.5	<.1	4.5	0.8	2.5	0.3	<.1	<.1	-	-	<.1	-	-	-
Neoptilota densa	-	-							1.0	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Nereocystis luetkeana	0.5	0.3							0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Nienburgia andersoniana	-	-							-	-	-	-	-	-	-	-	<.1	1.1	0.8	-	-	0.5	1.5
Non-coralline crust	1.0	1.3							<.1	0.2	1.3	1.8	2.4	2.4	1.9	0.5	0.9	0.3	0.6	<.1	2.0	1.5	1.8
Opuntiella californica	-	<.1							-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Osmundea spp.	-	-							1.0	<.1	1.3	5.0	1.0	0.5	0.8	0.5	0.1	0.1	<.1	<.1	<.1	0.3	-
Phycodrys spp.	-	-							-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Pikea robusta	-	<.1							-	-	<.1	-	0.3	-	<.1	-	-	-	-	-	-	-	-
Polyneura latissima	-	7.0							9.0	0.3	2.0	<.1	<.1	<.1	<.1	<.1	-	<.1	<.1	-	-	-	-
Porphyra spp.	-	-							<.1	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Prionitis australis	-	<.1							-	-	<.1	-	-	-	-	<.1	0.1	0.1	-	-	-	-	-
Prionitis spp.	0.5	5.5							2.5	8.2	14.2	25.5	17.4	22.4	17.3	13.2	4.0	2.9	0.8	0.3	0.5	0.5	0.3
Pterocladia caloglossoides	-	-							-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-
Pterosiphonia baileyi	0.5	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pterosiphonia dendroidea	-	-							-	<.1	<.1	-	-	0.1	-	-	<.1	0.3	<.1	-	-	0.3	4.0
Pterygophora californica	1.5	<.1							8.0	1.8	0.7	-	-	-	<.1	-	-	-	-	-	-	-	-
Rhodophyta (juv. blades)	7.0	2.3							-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhodoptilum plumosum	-	-							-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Rhodymenia spp.	1.0	10.3							32.0	18.0	26.2	28.5	36.3	36.5	36.9	39.3	38.1	30.0	28.0	35.3	22.0	32.0	27.3
Sarcodiotheca gaudichaudii	-	-							0.5	<.1	0.5	0.5	0.5	0.9	0.8	<.1	-	-	<.1	-	-	-	-
Scinaia confusa	-	0.3							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	-	-							-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-
Ulva/Enteromorpha spp.	1.5	1.3							1.5	0.5	2.5	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.5	-	<.1	1.0
coralline crust	10.0	16.0							25.0	22.5	25.8	32.3	27.0	34.8	25.8	24.3	22.5	21.3	22.3	19.0	26.0	20.5	21.0
filamentous red algae-complex	3.0	0.5							<.1	<.1	1.7	<.1	<.1	0.9	3.1	5.2	4.9	7.5	12.8	11.3	13.0	17.0	25.8

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION SDC 2 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Coverage Based on # of Contact Points																							
Ahnfeltiopsis leptophylla	-	0.7	-	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1	<.1	0.1	0.5	<.1	-	<.1	<.1	-	-	<.1	-	<.1
Ahnfeltiopsis linearis	-	-	-	<.1	-	-	0.3	-	<.1	0.4	1.1	2.6	3.1	1.3	1.9	1.3	1.3	2.9	6.5	3.5	<.1	0.8	2.5
Amplisiphonia pacifica	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antithamnion/Platythamnion spp.-complex	-	-	-	0.3	<.1	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.3	<.1
Bryopsis spp.	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-
Calliarthron/Bossiella spp.-complex	40.5	41.2	33.4	39.3	36.4	29.4	33.1	21.5	17.6	18.5	11.0	16.8	15.9	22.3	22.3	34.6	24.4	22.5	24.8	16.5	19.5	15.5	11.0
Callithamnion pikeanum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Callithamnion spp./Pleonosporium spp.	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Callophyllis firma	-	-	-	-	-	-	-	-	<.1	<.1	<.1	0.1	<.1	-	<.1	-	-	-	-	-	-	-	-
Callophyllis flabellulata	-	<.1	0.1	0.2	<.1	<.1	<.1	<.1	<.1	<.1	0.3	<.1	0.5	0.8	0.6	1.4	0.1	0.1	<.1	<.1	<.1	<.1	-
Callophyllis spp.	0.5	1.8	0.1	0.3	0.2	0.1	<.1	<.1	<.1	0.2	0.6	0.1	1.0	1.5	0.1	2.0	0.4	0.1	0.1	-	-	<.1	-
Chondracanthus canaliculatus	-	-	-	-	-	-	-	-	-	-	-	<.1	0.1	<.1	-	-	-	<.1	<.1	-	-	-	-
Chondracanthus corymbiferus (prev. Gig.	1.0	0.2	<.1	2.3	1.8	1.1	1.8	1.5	4.9	11.2	6.5	18.7	21.9	14.9	16.8	12.0	8.3	9.5	11.5	8.8	5.8	1.8	0.8
Chondracanthus harveyanus/spinosus	-	-	-	-	<.1	<.1	0.1	0.3	0.3	0.9	0.5	2.3	7.9	1.6	7.3	4.3	0.8	5.5	7.3	10.0	6.0	2.3	<.1
Chondria decipiens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Chrysophyta unid.	-	-	-	<.1	-	-	-	-	1.3	<.1	<.1	-	-	-	0.1	0.1	0.3	2.6	3.6	0.8	0.5	1.0	21.3
Cladophora spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Coilodesme californica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Colpomenia spp.	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	<.1	<.1	<.1	0.1	<.1	-	-	<.1
Corallina officinalis	3.0	2.5	6.3	5.7	5.2	2.5	3.8	1.6	3.4	3.1	0.6	1.7	0.5	<.1	0.5	2.6	0.6	2.4	2.5	4.5	1.3	1.5	1.0
Cryptopleura ruprechtiana	-	11.3	12.4	28.3	25.9	19.6	23.6	12.3	19.0	45.8	18.9	13.8	18.1	20.9	10.3	12.1	2.5	<.1	0.1	-	-	-	-
Cryptopleura violacea	-	-	0.4	0.5	0.8	0.3	0.8	0.4	1.0	3.6	5.0	15.6	33.0	25.1	37.3	34.4	45.9	45.0	0.5	1.3	43.5	41.0	-
Cystoseira osmundacea	3.5	3.5	4.3	3.1	3.7	3.0	3.0	2.5	0.4	<.1	0.2	<.1	-	<.1	0.1	2.4	2.3	6.0	4.5	4.3	2.5	1.8	0.5
Delesseriaceae (juv.)	7.5	0.2	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-
Derbesia marina (filamentous)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-
Desmarestia spp.	1.0	7.2	31.2	6.3	15.3	12.4	11.1	46.0	17.1	6.9	-	0.1	0.4	<.1	0.8	<.1	-	<.1	0.3	-	-	<.1	<.1
Dictyoneurum californicum	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Egregia menziesii	<.1	-	-	<.1	0.2	<.1	-	-	-	-	-	-	-	-	0.1	<.1	-	0.1	-	-	-	-	-
Erythrophyllum delesserioides	-	-	-	-	-	-	<.1	0.2	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	-	<.1	0.1	0.3	<.1	0.1	0.3	<.1	0.5	1.0	1.1	1.5	1.6	2.9	0.9	1.0	4.3	6.9	1.9	0.3	9.3	8.8	<.1
Gastroclonium subarticulatum	-	-	-	-	<.1	-	<.1	<.1	-	<.1	<.1	0.1	-	0.6	1.8	1.1	0.4	0.1	0.1	-	-	-	-
Gelidium robustum	-	0.7	0.2	0.2	0.3	<.1	0.1	<.1	<.1	<.1	0.1	0.2	0.5	0.5	1.6	1.5	2.4	1.6	3.6	1.8	1.0	0.8	1.0
Gelidium spp.	-	<.1	-	-	-	-	-	-	<.1	0.2	<.1	0.1	0.1	0.1	0.1	1.1	0.9	1.9	3.9	2.8	3.5	6.0	5.8
Gracilariopsis lemaneiformis	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-
Grateloupia doryphora	-	-	-	-	-	-	-	-	-	-	-	0.1	0.3	-	-	-	-	-	-	-	-	-	-
Halicystis ovalis (=Derbesia marina)	-	-	-	<.1	<.1	<.1	-	<.1	<.1	<.1	<.1	<.1	-	-	<.1	-	-	<.1	<.1	-	-	-	-
Halymenia/Schizymenia spp.-complex	-	-	0.2	-	0.2	<.1	<.1	0.9	0.7	<.1	<.1	4.4	2.1	0.1	0.1	-	-	-	-	-	-	0.3	-
Haplogloia andersonii	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hymenena spp.	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-
Laminaria setchellii	<.1	0.3	0.5	0.8	0.3	0.6	0.4	0.3	0.3	0.2	<.1	-	-	<.1	<.1	<.1	-	-	-	-	<.1	-	-
Laminariales	-	0.7	0.2	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	<.1	<.1	<.1	<.1	-	<.1	-	<.1	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	5.4	9.1	6.8	5.3	3.8	10.8
Mazzaella liliacina (prev. Irid. cord.)	-	<.1	0.6	1.7	0.5	0.6	0.6	0.6	1.1	4.6	1.7	8.9	6.0	3.9	2.5	1.3	<.1	-	0.1	-	-	-	-
Mazzaella rosea	-	-	-	-	-	-	<.1	<.1	<.1	<.1	<.1	0.5	0.8	<.1	<.1	<.1	<.1	<.1	0.3	<.1	<.1	-	-
Melobesia mediocris	-	-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia borealis	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	-	<.1	0.1	0.8	0.3	1.0	1.6	0.3	2.2	4.3	1.3	4.6	7.0	4.4	0.3	1.5	<.1	<.1	<.1	<.1	-	-	-
Neoptilota densa	-	-	<.1	-	<.1	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Nereocystis luetkeana	-	0.3	<.1	0.4	0.3	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nienburgia andersoniana	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	2.0	3.6	6.9	1.1	3.5	11.0	14.0	<.1
Non-coralline crust	1.5	1.7	2.0	3.3	1.4	0.8	2.3	0.8	4.1	4.5	0.8	8.3	8.9	8.5	9.8	5.5	7.0	1.8	3.6	0.5	1.5	1.5	0.3
Opuntiella californica	-	-	-	-	-	-	-	<.1	-	<.1	0.1	<.1	-	-	-	-	-	-	-	-	-	-	-
Osmundea spp.	-	0.7	<.1	1.7	0.4	1.1	0.8	0.4	1.3	10.0	2.6	3.6	7.8	19.9	8.0	6.4	3.0	0.3	<.1	<.1	<.1	0.3	-
Phaeophyta (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Phaeostrophion irregulare	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phycodrys spp.	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-
Phyllospadix spp.	0.5	3.8	4.2	3.6	4.1	4.4	4.4	1.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pikea robusta	-	-	-	-	<.1	-	-	<.1	<.1	<.1	<.1	<.1	<.1	-	<.1	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION SDC 2 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Coverage Based on # of Contact Points (continued)																							
Plocamium cartilagineum	-	<.1	-	<.1	-	<.1	-	-	<.1	-	-	<.1	<.1	-	<.1	0.3	-	-	-	-	-	-	-
Polyneura latissima	-	-	0.1	<.1	<.1	<.1	<.1	0.1	<.1	<.1	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-
Porphyra spp.	-	-	-	-	<.1	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Prionitis australis	-	-	<.1	-	<.1	0.1	<.1	0.1	<.1	<.1	0.1	0.1	0.9	-	<.1	1.1	0.9	0.4	0.4	0.5	-	0.3	0.5
Prionitis spp.	1.0	0.2	0.5	0.5	0.8	0.6	1.4	1.0	2.8	3.1	6.9	6.6	16.3	19.0	23.0	22.0	13.0	10.4	19.1	13.5	12.5	4.8	10.3
Pterochondria woodii var. woodii	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pterocladia caloglossoides	-	-	-	<.1	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Pterosiphonia dendroidea	-	<.1	-	<.1	<.1	<.1	-	-	-	-	<.1	<.1	-	-	<.1	<.1	<.1	<.1	<.1	0.5	3.0	2.3	-
Pterygophora californica	6.0	4.8	2.4	3.9	1.9	1.4	2.6	1.2	1.3	1.0	0.4	<.1	<.1	-	-	<.1	0.1	<.1	-	<.1	<.1	<.1	-
Rhodophyta (juv. blades)	-	-	0.3	0.4	-	-	-	0.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhodoptilum plumosum	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Rhodymenia spp.	-	<.1	<.1	0.6	0.4	<.1	1.0	0.5	0.4	0.3	0.6	1.3	1.9	2.5	7.3	5.4	6.4	8.0	10.1	10.8	4.0	5.5	6.5
Sarcodiotheca gaudichaudii	-	-	<.1	0.3	0.3	0.3	0.8	0.1	0.9	2.2	1.2	4.9	5.3	1.8	2.3	1.0	<.1	0.1	-	0.3	<.1	<.1	-
Scinaia confusa	-	-	<.1	-	<.1	-	-	<.1	<.1	-	-	<.1	-	-	-	-	<.1	-	<.1	-	<.1	-	-
Smithora naiadum	-	-	-	<.1	-	0.6	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spongomorpha/Acrosiphonia-complex	-	-	-	-	-	-	-	-	1.0	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Ulva/Enteromorpha spp.	2.5	2.2	2.2	2.9	2.8	0.3	1.3	0.4	20.0	19.6	<.1	<.1	0.5	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
coralline crust	35.5	36.3	35.5	43.8	34.5	20.5	36.8	27.9	47.8	57.9	21.2	64.0	54.1	61.5	48.0	55.3	58.3	44.5	38.8	34.8	40.5	44.3	36.8
filamentous red algae-complex	-	-	<.1	<.1	0.2	<.1	0.3	1.0	0.3	<.1	0.1	0.1	0.1	-	-	<.1	0.1	0.5	0.9	4.3	-	-	0.5

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION SDC 3 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of Contact Points																							
Acrosorium uncinatum	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	0.5
Ahnfeltiopsis leptophylla	-	-	-	-	-	-	-	-	<.1	<.1	-	-			-	-	-	-	-	-	-	-	-
Ahnfeltiopsis linearis	-	-	-	-	-	-	-	-	-	<.1	<.1	0.1			0.1	0.1	0.1	0.6	2.0	2.3	1.5	<.1	1.8
Amplisiphonia pacifica	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	<.1	-	-	-
Antithamnion/Platythamnion spp.-complex	-	-	-	-	<.1	<.1	<.1	<.1	<.1	-	-	-			-	-	<.1	<.1	<.1	<.1	3.5	0.3	0.5
Bryopsis spp.	-	-	-	-	-	-	-	-	<.1	<.1	-	-			-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	30.5	37.2	31.5	30.0	29.5	43.7	48.2	45.8	37.3	34.1	35.4	25.6			22.8	18.4	24.8	27.6	26.5	33.8	39.0	34.3	35.5
Callophyllis firma	-	-	-	-	-	<.1	-	-	-	-	<.1	<.1			<.1	<.1	-	-	<.1	<.1	-	-	-
Callophyllis flabellulata	-	<.1	0.2	0.3	0.2	0.2	1.1	0.2	<.1	0.4	<.1	0.1			<.1	0.4	0.9	0.8	<.1	1.0	<.1	<.1	<.1
Callophyllis spp.	-	0.7	0.2	0.2	<.1	1.2	1.1	0.5	0.4	0.9	1.4	1.1			1.3	3.8	3.1	0.9	0.3	<.1	-	-	-
Chondracanthus canaliculatus	-	-	-	-	-	-	-	-	-	-	<.1	<.1			-	-	-	-	<.1	-	-	-	-
Chondracanthus corymbiferus (prev. Gig.	-	-	-	-	0.3	<.1	0.7	1.3	4.8	9.1	9.6	9.5			12.9	14.6	16.3	15.8	11.1	11.5	3.5	2.0	2.5
Chondracanthus harveyanus/spinosus	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	0.3	-	-	-	-
Chrysophyta unid.	-	10.0	-	-	-	-	-	-	3.8	-	-	-			<.1	<.1	<.1	1.1	1.0	3.5	12.0	-	1.8
Cladophora spp.	-	-	-	-	-	-	-	-	<.1	<.1	-	-			-	-	-	-	-	-	-	-	-
Clathromorphum parcum	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Coilodesme californica	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	<.1	-	-	-	-	-	-
Colpomenia spp.	-	-	-	-	-	-	-	-	<.1	<.1	-	-			-	-	<.1	-	<.1	0.3	-	-	-
Corallina officinalis	-	<.1	0.3	-	<.1	0.2	0.4	0.3	<.1	<.1	0.1	0.4			<.1	<.1	0.3	0.1	0.1	<.1	<.1	0.8	0.3
Cryptopleura ruprechtiana	-	4.7	6.0	8.3	11.3	23.8	31.0	35.5	35.2	70.3	48.1	61.7			59.9	56.0	43.4	39.9	12.6	3.5	1.0	-	-
Cryptopleura violacea	-	0.2	<.1	-	<.1	<.1	<.1	0.2	0.4	0.5	1.4	27.9			1.0	0.6	3.0	3.9	0.1	<.1	0.5	4.3	<.1
Cystoseira osmundacea	1.0	0.2	0.7	0.3	0.7	1.2	2.8	2.8	2.3	0.3	0.1	1.0			1.0	1.1	1.5	2.3	1.6	3.3	2.5	1.0	0.3
Delesseria decipiens	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Delesseriaceae (juv.)	6.0	1.3	<.1	<.1	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Desmarestia spp.	-	1.0	-	-	1.6	0.8	1.3	18.3	6.3	1.3	39.5	-			9.5	<.1	0.3	0.3	<.1	1.3	<.1	-	<.1
Dictyota binghamiae	-	<.1	<.1	<.1	0.2	<.1	0.2	-	<.1	-	<.1	0.2			<.1	<.1	-	-	-	-	-	-	<.1
Egregia menziesii	-	-	<.1	-	-	-	-	-	-	-	-	-			-	-	0.1	-	-	-	-	-	-
Erythrophyllum delesserioides	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Farlowia/Pikea spp.-complex	-	<.1	<.1	<.1	<.1	<.1	0.2	<.1	<.1	1.2	0.3	0.3			0.5	0.1	1.6	3.3	2.5	0.8	5.0	0.5	<.1
Gastroclonium subarticulatum	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Gelidium coulteri	0.5	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Gelidium robustum	-	-	<.1	-	-	-	<.1	-	<.1	<.1	<.1	<.1			0.1	<.1	0.5	0.4	0.8	0.5	1.0	1.8	1.3
Gelidium spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-
Gloiosiphonia californica	-	-	-	-	-	-	-	-	-	-	-	0.1			-	-	-	-	-	-	-	-	-
Halicystis ovalis (=Derbesia marina)	-	<.1	-	-	<.1	-	<.1	<.1	<.1	<.1	<.1	<.1			<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	-
Halymenia/Schizymenia spp.-complex	-	<.1	-	-	<.1	-	-	-	0.2	<.1	<.1	<.1			<.1	<.1	-	-	-	-	-	-	-
Hymenena spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Laminaria setchellii	-	-	0.7	0.5	0.4	0.2	0.7	1.5	0.4	0.2	<.1	0.1			0.1	0.3	1.4	0.3	0.8	0.3	0.5	<.1	-
Laminariales	-	-	<.1	-	<.1	<.1	-	-	0.3	-	0.1	-			<.1	<.1	<.1	<.1	<.1	0.3	0.5	-	<.1
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	2.3	8.3	5.0	6.0	15.8	8.3
Mazzaella lilacina (prev. Irid. cord.)	-	<.1	-	-	<.1	<.1	<.1	<.1	0.2	0.3	0.4	1.7			1.8	1.5	1.4	2.3	0.4	<.1	-	-	-
Mazzaella rosea	-	-	-	-	-	-	<.1	-	<.1	-	-	0.2			-	<.1	<.1	<.1	-	-	-	-	-
Membranoptera/Branchioglossum spp.	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1			<.1	-	-	-	-	-	-	-	-
Microcladia coulteri	-	<.1	<.1	-	-	<.1	<.1	<.1	0.3	0.7	<.1	0.1			<.1	<.1	<.1	<.1	<.1	<.1	-	-	-
Neoptilota densa	-	-	<.1	<.1	<.1	-	-	-	<.1	0.2	<.1	-			<.1	-	<.1	<.1	-	-	-	-	-
Nereocystis luetkeana	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	<.1	-	-	-	-	-
Nienburgia andersoniana	-	-	-	-	-	-	-	-	-	-	-	-			-	0.4	0.6	1.0	0.5	-	-	<.1	-
Non-coralline crust	1.0	0.8	0.5	0.4	<.1	0.2	0.4	<.1	0.5	0.3	0.3	1.6			0.4	1.6	1.6	1.1	1.4	0.5	2.0	3.5	1.8
Opuntiella californica	-	-	<.1	-	<.1	0.2	<.1	<.1	0.2	0.3	<.1	0.1			<.1	<.1	-	<.1	-	-	-	-	-
Osmundea spp.	-	0.2	-	-	<.1	<.1	0.3	<.1	0.2	1.7	2.0	2.4			0.8	2.0	2.9	1.1	<.1	-	-	-	-
Phaeophyta (juv.)	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Phaeostrophion irregulare	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Phycodrys spp.	-	-	<.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Phyllospadix spp.	1.0	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pikea robusta	-	-	-	-	<.1	-	-	<.1	<.1	<.1	<.1	-			-	-	-	-	<.1	-	-	-	-
Plocamium cartilagineum	-	-	-	-	<.1	-	<.1	-	-	-	-	<.1			-	<.1	-	<.1	-	-	-	-	-
Polyneura latissima	-	0.2	0.3	0.6	1.4	1.8	2.5	6.3	1.5	0.5	0.3	1.4			<.1	0.1	-	0.4	-	<.1	-	<.1	-
Porphyra spp.	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION SDC 3 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of Contact Points (continued)																							
Prionitis australis	-	-	-	-	-	-	<.1	-	<.1	-	<.1	-			0.6	0.6	0.1	<.1	1.4	-	-	-	-
Prionitis spp.	-	-	-	-	-	-	-	<.1	<.1	<.1	<.1	0.1			0.4	2.0	2.1	2.5	3.4	2.5	2.5	0.5	3.5
Pterocladia caloglossoides	1.0	-	<.1	<.1	<.1	0.2	<.1	<.1	<.1	<.1	<.1	<.1			<.1	-	<.1	-	-	-	-	-	-
Pterosiphonia dendroidea	-	0.7	<.1	0.3	<.1	0.2	<.1	<.1	<.1	<.1	<.1	0.2			0.1	<.1	<.1	0.1	<.1	0.3	1.5	0.5	<.1
Pterygophora californica	12.5	8.7	9.4	6.9	4.9	4.5	3.6	0.8	1.1	0.3	0.4	0.8			0.8	2.9	2.4	2.4	1.5	3.0	0.5	0.5	<.1
Rhodophyta (juv. blades)	-	0.2	-	<.1	<.1	-	-	-	<.1	-	-	-			-	-	0.1	-	-	-	-	<.1	-
Rhodoptilum plumosum	-	-	-	-	-	-	<.1	-	<.1	<.1	-	<.1			-	<.1	-	-	<.1	<.1	-	<.1	-
Rhodymenia spp.	-	0.2	<.1	0.4	0.3	<.1	0.8	1.8	0.7	<.1	0.3	0.9			2.9	1.6	6.0	7.6	10.9	11.0	10.5	5.5	7.8
Sarcodiotheca gaudichaudii	-	-	-	-	-	-	-	-	<.1	<.1	<.1	0.3			<.1	<.1	0.1	<.1	-	-	-	-	-
Scinaia confusa	-	-	-	-	-	-	-	-	<.1	-	-	<.1			<.1	<.1	<.1	<.1	-	<.1	-	-	-
Spongomorpha/Acrosiphonia-complex	-	0.2	-	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Ulva/Enteromorpha spp.	-	0.5	<.1	<.1	<.1	<.1	<.1	-	9.2	2.0	-	<.1			<.1	<.1	<.1	-	<.1	<.1	-	-	<.1
Weeksia spp.	-	-	-	-	-	<.1	<.1	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
coralline crust	53.5	61.8	73.1	67.5	73.4	72.8	72.0	72.0	69.8	76.3	79.4	86.2			78.8	75.4	75.1	69.4	62.3	53.8	52.0	60.3	55.0
filamentous red algae-complex	-	1.0	0.2	<.1	<.1	0.3	0.6	1.2	0.5	<.1	<.1	<.1			<.1	0.1	0.1	0.3	1.5	4.0	0.5	-	0.3

Subtidal Line Contact - Yearly Algal and Substrate Mean Abundance (% Cover for 7 m squared) - STATION SC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Coverage Based on # of Contact Points																							
Ahnfeltiopsis leptophylla	-	-	-	<.1	<.1	-	-	-	<.1	<.1	-	-	-	-	-	-	<.1	0.2	-	-	-	-	-
Ahnfeltiopsis linearis	-	-	-	0.1	-	-	-	-	<.1	<.1	<.1	0.3	-	<.1	<.1	-	<.1	0.2	0.3	<.1	0.5	0.5	<.1
Antithamnion/Platythamnion spp.-complex	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryopsis spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Calliarthron/Bossiella spp.-complex	68.0	64.3	58.2	62.5	56.3	63.0	70.5	32.2	37.5	44.1	34.3	42.7	35.0	40.0	41.0	47.0	45.0	46.5	45.3	34.0	48.0	48.5	35.0
Callophyllis firma	-	-	-	-	-	-	<.1	<.1	<.1	-	<.1	0.7	<.1	<.1	<.1	<.1	<.1	-	<.1	<.1	<.1	-	-
Callophyllis flabellulata	-	0.0	0.2	<.1	<.1	0.3	1.2	0.2	0.2	0.3	0.5	<.1	0.3	0.4	<.1	0.2	0.4	0.2	<.1	<.1	0.3	<.1	-
Callophyllis spp.	1.5	1.3	1.2	1.1	0.0	1.0	2.0	0.3	0.7	1.6	2.3	3.2	3.3	5.0	7.0	4.5	4.0	3.5	3.3	1.3	1.8	0.5	1.3
Chondracanthus canaliculatus	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chondracanthus corymbiferus (prev. Gig.	18.5	23.3	20.3	25.0	21.7	23.7	18.5	22.0	26.7	27.0	23.0	17.2	20.7	17.0	17.1	17.5	22.9	21.7	27.0	26.0	29.0	14.0	22.0
Chondracanthus harveyanus/spinosus	-	-	0.2	0.3	<.1	<.1	0.2	0.2	2.0	<.1	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-
Chrysophyta unid.	-	-	<.1	-	-	-	-	1.3	-	-	3.3	-	0.5	<.1	<.1	-	-	-	-	-	-	-	-
Corallina officinalis	3.0	1.5	1.2	1.3	1.5	1.2	2.2	2.3	1.2	0.0	1.0	0.2	1.0	2.0	1.9	0.0	0.9	0.7	0.5	0.5	0.3	-	<.1
Corallina vancouveriensis	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptopleura ruprechtiana	24.5	27.5	27.0	38.0	19.3	36.0	33.5	10.0	25.0	28.2	25.0	39.3	31.2	29.6	35.1	37.0	42.9	49.0	50.9	15.0	23.5	26.0	16.0
Cryptopleura violacea	1.0	-	0.3	0.4	-	0.2	0.7	0.5	3.2	1.5	1.0	3.7	1.0	-	0.3	-	0.3	0.2	-	0.5	0.3	-	0.3
Cystoseira osmundacea	-	0.5	0.2	0.3	<.1	1.2	<.1	0.2	0.2	0.4	<.1	0.7	0.7	1.4	2.9	3.7	6.5	5.0	9.0	11.3	6.5	7.5	1.5
Delesseria decipiens	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	<.1	<.1	0.2	<.1	-	-	<.1	0.3	-	<.1
Delesseriaceae (juv.)	-	5.0	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Desmarestia spp.	-	23.0	1.2	-	0.3	1.7	<.1	3.3	0.7	0.1	13.0	0.5	12.0	3.0	1.0	1.2	0.1	0.5	0.6	10.0	0.8	-	12.5
Dictyoneurum californicum	9.0	3.0	3.3	4.4	0.3	0.5	0.0	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	-	-
Egregia menziesii	-	-	-	-	-	-	-	-	-	<.1	<.1	0.2	<.1	<.1	-	-	-	-	-	-	0.3	-	0.3
Erythrophyllum delesserioides	-	-	-	<.1	<.1	-	-	<.1	0.2	-	-	<.1	0.3	0.1	<.1	<.1	<.1	-	<.1	<.1	-	-	<.1
Farlowia/Pikea spp.-complex	-	<.1	0.7	0.3	0.5	<.1	0.3	0.3	1.2	0.0	0.3	1.2	0.2	0.1	<.1	<.1	<.1	<.1	0.5	<.1	1.3	<.1	0.3
Gastroclonium subarticulatum	-	-	-	-	-	-	-	0.2	<.1	0.2	<.1	0.2	-	<.1	<.1	<.1	-	-	<.1	<.1	1.3	0.5	<.1
Gelidium robustum	-	0.3	0.2	0.3	0.2	0.2	0.3	<.1	<.1	<.1	<.1	0.2	<.1	0.6	0.4	0.0	0.9	1.2	1.5	2.0	1.5	1.0	2.5
Halicystis ovalis (=Derbesia marina)	-	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	<.1
Halymenia/Schizymenia spp.-complex	<.1	0.3	<.1	<.1	0.7	<.1	0.2	12.7	0.7	-	0.3	-	0.2	<.1	-	0.3	0.3	-	-	2.3	1.0	-	13.5
Haplogloia andersonii	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Laminaria setchellii	2.0	0.5	2.5	2.0	3.2	3.7	5.7	1.3	4.5	5.7	6.0	7.5	3.2	6.0	4.0	6.0	3.6	2.5	1.9	1.3	3.3	6.5	1.3
Laminariales	0.5	-	<.1	0.1	0.2	<.1	<.1	0.2	<.1	<.1	1.5	0.2	0.0	0.5	<.1	<.1	<.1	-	<.1	<.1	<.1	-	5.0
Mazzaella affinis	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazzaella liliacina (prev. Irid. cord.)	4.0	2.0	3.7	0.9	3.2	1.7	2.3	0.7	0.2	2.2	7.3	4.2	2.3	0.4	0.4	1.0	5.0	3.0	2.4	0.0	5.0	7.0	9.0
Mazzaella rosea	-	-	-	0.3	-	<.1	0.2	1.2	0.3	-	-	<.1	<.1	0.1	<.1	0.3	<.1	<.1	-	2.3	<.1	-	1.0
Melobesia mediocris	-	-	-	<.1	<.1	<.1	<.1	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Membranoptera/Branchioglossum spp.	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia borealis	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcladia coulteri	1.5	6.0	2.7	2.1	0.5	1.0	0.5	4.7	2.7	0.2	0.0	1.0	2.2	0.9	0.0	0.3	1.4	<.1	2.0	3.0	1.0	0.5	1.0
Neoptilota densa	-	<.1	-	<.1	<.1	0.3	<.1	-	-	<.1	<.1	<.1	<.1	-	-	0.2	-	<.1	-	<.1	<.1	-	-
Nereocystis luetkeana	-	-	0.2	0.3	<.1	0.3	<.1	<.1	-	<.1	<.1	0.2	0.0	0.3	-	<.1	<.1	<.1	<.1	0.5	0.3	<.1	2.0
Nienburgia andersoniana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	<.1	-	<.1
Non-coralline crust	0.5	0.0	1.3	0.3	1.7	<.1	1.3	1.3	1.7	0.9	1.0	0.7	2.3	2.4	1.0	1.3	1.1	1.5	0.9	1.0	0.0	<.1	0.0
Osmundea spp.	3.5	1.0	0.0	0.9	0.7	0.0	1.0	<.1	6.5	16.1	2.5	4.2	4.0	4.1	2.1	2.0	3.5	3.7	4.4	1.5	3.5	1.5	0.3
Phaeophyta (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Phyllospadix spp.	2.0	2.5	0.7	2.3	1.5	0.2	0.2	0.2	<.1	0.1	0.5	0.2	<.1	<.1	<.1	-	-	-	-	-	-	-	-
Pikea robusta	-	-	-	-	-	-	-	0.2	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Polyneura latissima	<.1	0.5	-	0.4	0.2	<.1	<.1	0.2	0.2	<.1	0.3	0.3	1.5	0.4	0.6	<.1	0.5	0.3	0.3	0.0	1.0	-	1.0
Porphyra spp.	-	-	-	-	-	-	-	0.2	-	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	9.0
Prionitis australis	-	-	-	-	-	-	<.1	0.2	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-
Prionitis spp.	<.1	0.0	1.7	1.0	1.2	1.5	1.0	2.7	2.5	2.0	1.0	6.5	3.7	3.5	1.0	1.2	0.6	1.0	1.4	1.0	1.0	1.0	2.5
Pterocladia caloglossoides	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-
Pterosiphonia dendroidea	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	<.1	-	-	-	-	-	-	-	<.1
Pterygophora californica	-	-	<.1	0.1	0.2	1.2	1.5	1.0	2.7	6.2	0.3	7.2	7.7	0.4	6.4	4.2	4.3	2.3	2.9	1.0	3.0	1.5	0.3
Rhodophyta (juv. blades)	-	-	0.2	0.1	0.2	-	0.2	0.0	0.7	-	0.3	-	0.2	<.1	-	-	-	-	-	-	-	-	-
Rhodoptilum plumosum	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-
Rhodymenia spp.	<.1	1.3	1.3	0.9	<.1	0.7	1.2	1.0	3.7	2.0	2.5	0.7	6.3	4.6	6.3	9.0	0.4	10.2	11.9	13.3	17.5	9.0	12.3
Sarcodiotheca gaudichaudii	2.0	1.3	2.0	1.1	0.3	1.2	1.0	1.0	0.7	0.2	1.3	0.7	0.3	0.0	<.1	0.3	<.1	0.3	0.3	0.5	0.3	-	0.3
Scinaia confusa	-	-	<.1	-	<.1	<.1	-	0.5	-	-	-	-	<.1	<.1	-	<.1	-	-	-	<.1	<.1	-	<.1
Smithora naiadum	-	0.3	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ulva/Enteromorpha spp.	3.5	2.5	3.2	1.4	2.7	5.3	0.3	33.3	9.0	0.2	3.0	1.7	2.3	0.9	1.1	0.7	<.1	0.2	<.1	<.1	1.0	-	4.3
coralline crust	59.5	48.3	51.0	39.4	53.0	47.3	52.2	55.5	56.5	51.5	53.0	50.2	48.3	41.0	42.0	46.7	49.0	52.5	44.5	53.0	47.0	45.5	59.0
filamentous red algae-complex	0.5	2.0	1.5	0.4	0.2	<.1	0.5	0.5	0.2	<.1	0.3	<.1	<.1	0.1	<.1	<.1	<.1	<.1	0.1	<.1	-	<.1	-

APPENDIX D2 – Subtidal Invertebrates
Subtidal Line Contact (SLC) Method

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION FC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	2	4	2	3	3	1	1	4
Coverage Based on # of Contact Points																							
Bryozoa, unid. (encrusting)													-	-	-	0.3	-	-	-	-	-	-	-
Phragmatopoma californica													-	-	-	0.3	-	-	-	-	-	-	-
Porifera unid. (encrusting)													-	0.1	0.5	0.8	0.1	-	-	-	-	-	-
Serpulorbis squamigerus													-	-	0.3	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.													-	0.5	0.4	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION FC 2 -9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Coverage Based on # of Contact Points																							
Bryozoa, unid. (encrusting)															-	-	-	-	-	-	1.0	-	-
Diopatra ornata															1.1	3.8	1.5	1.8	2.7	0.5	1.0	-	0.8
Phragmatopoma californica															5.5	2.5	2.8	-	-	1.0	0.5	0.5	1.5
Porifera unid. (encrusting)															-	1.3	-	-	-	-	0.5	-	-
Serpulorbis squamigerus															0.1	-	-	-	-	-	-	-	0.3
tunicates, colonial/social unid.															0.1	0.3	-	-	0.2	-	-	-	-

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 3 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Coverage Based on # of Contact Points																							
Bryozoa, unid. (encrusting)	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Didemnum/Trididemnum spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	-	-	-	-	-	-	-	-	1.0	0.8	-	0.2	0.1	-	-	-	-	-	-	-	-	-
Pista spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	-	-	0.1	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	-	-	-	-
Serpulorbis squamigerus	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 4 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of Contact Points																							
Abiet./Sertularella/Sertularia spp.(A.S	0.5	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Anthopleura elegantissima	1.0	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	0.5	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	0.3
Didemnum/Trididemnum spp.	-	0.5	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Diopatra ornata	-	-	-	-	-	-	-	-	-	-	-	-			-	0.1	-	-	-	-	-	-	-
Phragmatopoma californica	-	-	-	0.1	-	-	-	2.6	3.4	10.3	7.4	1.3			-	0.3	-	-	0.3	-	-	7.5	16.5
Porifera unid. (encrusting)	3.5	-	-	-	-	-	-	-	-	-	0.3	-			-	-	-	-	-	-	-	0.3	-
Serpulorbis squamigerus	-	-	-	-	-	-	-	-	-	-	0.1	-			-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	0.5	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION NDC 6 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Coverage Based on # of Contact Points																							
Abiet./Sertularella/Sertularia spp.(A.S	-	-							-	-	-	-	-	-	-	-	-	-	-	-	16.5	-	-
Acarnus erithacus	2.0	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthopleura elegantissima	-	-							-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-
Anthopleura xanthogrammica	1.0	0.3							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	-	1.0							6.0	14.7	2.7	14.0	4.0	7.5	3.1	3.3	2.5	1.1	0.8	-	-	2.0	-
Bryozoa, unid. (foliose)	-	-							1.5	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Corynactis californica	-	-							-	0.5	0.2	1.5	0.1	-	0.1	-	-	-	-	-	-	-	-
Diopatra ornata	-	-							0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eudistylia polymorpha	1.5	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroida	-	-							-	-	-	-	-	-	-	-	0.5	2.1	2.9	-	-	6.0	3.0
Phragmatopoma californica	-	-							-	20.7	18.0	11.0	5.3	3.6	0.1	-	-	-	-	-	-	-	-
Pista spp.	0.5	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychaeta unid.	-	-							-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	0.5	-							-	0.3	-	1.3	0.1	0.6	-	0.2	-	0.1	-	-	-	-	0.3
Serpulidae unid.	-	-							-	0.2	0.2	0.3	0.1	-	-	-	-	-	-	-	-	-	-
Serpulorbis squamigerus	-	-							-	0.2	0.3	0.3	0.3	-	-	-	-	-	-	-	-	-	-
Styela spp.	0.5	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	-	-							-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
bryozoan unid. a	0.5	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	-	0.3							3.0	5.2	0.3	0.3	-	-	-	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION SDC 2 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Coverage Based on # of Contact Points																							
Anthopleura elegantissima	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Didemnum/Trididemnum spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Diopatra ornata	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
Halcampa decemtentacula	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	0.5	1.3
tunicates, colonial/social unid.	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION SDC 3 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of Contact Points																							
Anthopleura elegantissima	-	0.2	-	<.1	-	-	-	-	-	-	-	0.2			-	-	-	-	-	-	-	-	-
Anthopleura xanthogrammica	-	0.2	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	-	-	-	-	-	-	-	-	-	-	0.3	-			-	-	-	-	-	-	-	-	-
Dendropoma spp.	-	0.2	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Diopatra ornata	2.0	0.3	-	0.8	-	-	-	-	-	0.2	0.1	0.2			0.1	0.4	0.4	0.4	-	0.5	1.5	2.5	0.5
Epiactis prolifera	0.5	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	-	0.2	0.4	-	-	-	-	-	<.1	-	-			0.6	0.3	-	-	-	-	-	2.3	2.8
Porifera unid. (encrusting)	-	-	-	-	-	-	-	-	-	-	0.1	-			-	0.1	-	-	-	0.3	-	-	-
Serpulidae unid.	0.5	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Styela spp.	-	<.1	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	-	0.2	0.4	<.1	-	-	-	-	-	-	0.1	-			0.1	-	-	-	-	-	-	-	-

Subtidal Line Contact - Yearly Invertebrate Mean Abundance (% Cover for 7 m squared) - STATION SC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Coverage Based on # of Contact Points																							
Anthopleura elegantissima	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	-	-	-	-	-	-	-	-	-	-	1.3	0.2	0.8	0.3	-	-	-	-	-	-	-	-	-
Dendropoma spp.	-	0.3	-	-	-	0.3	-	-	-	-	0.3	0.2	-	-	0.3	-	-	-	-	-	-	-	-
Diopatra ornata	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	0.2	-	-	-	-	-
Epiactis prolifera	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phragmatopoma californica	-	0.3	-	-	-	-	0.3	-	0.8	8.5	7.5	7.5	7.5	10.0	8.6	6.2	3.9	0.5	0.6	-	0.5	1.0	3.3
Porifera unid. (encrusting)	0.5	0.3	-	-	-	-	-	-	-	-	-	0.3	-	-	0.1	-	-	-	-	-	0.3	-	-
Serpulidae unid.	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-
Serpulorbis squamigerus	-	0.3	-	-	-	-	-	-	-	-	1.0	-	2.8	0.5	0.1	-	-	-	-	-	-	-	-
Tetraclita rubescens	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.1	-	-	-	0.1	-	-	-	-

APPENDIX D3 – Subtidal Algae

Subtidal Arc Quadrant (SAQ) Method

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION FC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	3	4	2	3	3	1	1	4
Counted Regardless of Size																							
Cystoseira osmundacea													-	<.1	-	0.2	0.1	0.1	<.1	0.2	-	0.3	-
Egregia menziesii													-	-	-	-	-	-	-	<.1	-	-	<.1
Laminaria setchellii													43.3	37.8	18.5	20.0	12.9	8.8	9.3	8.2	28.8	41.3	45.3
Laminariales													-	-	-	-	-	0.1	1.9	8.6	-	3.8	13.1
Macrocystis spp.													-	-	-	-	-	-	-	-	-	-	0.1
Nereocystis luetkeana													-	-	0.1	-	-	-	<.1	8.3	2.8	2.0	19.6
Pterygophora californica													5.9	0.9	7.7	-	-	0.1	-	1.4	-	-	18.1

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION FC 2 -9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Counted Regardless of Size																							
Cystoseira osmundacea															4.6	5.8	5.9	3.0	5.5	3.5	1.0	-	-
Laminaria setchellii															11.0	15.6	15.6	11.5	9.6	14.5	14.5	8.3	11.4
Laminariales															2.3	1.3	2.9	0.1	-	-	10.8	-	39.4
Macrocystis spp.															-	-	-	-	<.1	-	-	-	-
Nereocystis luetkeana															-	-	-	-	0.2	-	0.3	-	3.7
Pterygophora californica															22.6	19.6	16.8	12.1	17.0	12.8	8.8	8.3	12.9

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION NDC 3 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size																							
Cystoseira osmundacea	-	<.1	4.4	1.1	2.3	2.1	2.7	5.4	1.1	0.8	0.8	-	-	1.0	0.6	1.1	1.3	0.3	0.9	-	3.9	1.3	1.6
Egregia menziesii	-	-	-	-	-	-	-	0.9	0.3	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Laminaria setchellii	9.3	3.7	9.8	15.6	10.3	12.9	10.8	13.4	9.8	12.2	1.5	0.1	-	-	-	-	-	-	-	-	-	-	-
Laminariales	-	-	-	-	0.5	-	0.4	21.8	16.0	1.2	-	-	-	0.6	-	-	-	-	-	0.1	-	-	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.4	0.8	2.8	3.8	4.8	8.8
Nereocystis luetkeana	3.3	1.1	0.3	0.1	1.0	0.8	0.7	0.9	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pterygophora californica	16.3	15.2	27.9	21.6	18.3	11.1	7.2	39.6	49.3	31.5	9.1	0.6	-	0.3	-	-	-	-	-	-	-	-	0.3
Sargassum muticum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.1

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION NDC 4 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size																							
Cystoseira osmundacea	9.8	8.0	13.3	9.7	10.5	16.5	15.1	15.9	11.9	10.1	7.3	7.1			1.9	5.3	3.2	3.0	4.1	4.1	8.8	2.9	1.3
Egregia menziesii	-	-	0.3	<.1	-	-	-	-	-	-	-	-			-	0.1	-	-	-	-	-	-	-
Laminaria setchellii	15.0	15.3	15.8	18.2	17.5	17.9	16.6	11.8	4.8	5.9	3.2	0.5			0.1	<.1	0.1	<.1	<.1	0.1	0.5	-	-
Laminariales	-	-	0.2	0.2	0.7	0.4	0.3	2.8	2.4	-	0.5	-			0.4	0.2	-	0.5	0.7	3.1	0.5	-	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	0.9	1.8	4.7	1.8	4.3	3.5	10.5
Nereocystis luetkeana	0.3	-	0.9	0.5	0.3	<.1	0.3	0.5	-	-	-	-			-	-	-	-	-	-	-	-	-
Pterygophora californica	21.3	18.0	27.6	28.5	23.8	23.5	20.2	22.3	18.2	14.6	4.3	1.3			0.3	-	-	-	-	-	-	-	0.9
Sargassum muticum	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	0.2	-	-	0.1	0.1

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION NDC 6 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Counted Regardless of Size																							
Cystoseira osmundacea	0.5	0.1							4.8	2.1	2.0	2.4	0.5	0.1	-	<.1	-	-	<.1	-	0.3	-	0.5
Laminaria setchellii	94.3	86.0							174.0	96.3	31.9	2.5	0.1	-	<.1	-	-	-	-	0.3	-	-	0.3
Laminariales	-	-							96.3	44.0	-	-	-	-	-	-	-	-	-	0.3	-	0.1	-
Macrocystis spp.	-	-							-	-	-	-	-	-	-	-	-	-	0.2	-	-	0.8	5.3
Nereocystis luetkeana	0.8	0.8							3.3	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Pterygophora californica	4.0	11.1							272.0	89.9	14.8	0.1	-	-	-	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION SDC 2 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size																							
Cystoseira osmundacea	-	2.4	11.8	6.8	4.7	7.4	5.7	4.1	2.1	1.1	0.5	0.9	-	0.4	2.7	11.3	7.8	7.8	8.3	7.6	8.5	4.3	9.3
Egregia menziesii	-	-	-	0.9	0.6	0.1	-	-	-	-	-	-	-	-	0.3	0.6	-	0.1	-	-	-	-	-
Laminaria setchellii	4.0	5.6	4.9	16.3	9.2	11.4	12.8	7.8	4.8	4.8	1.9	-	<.1	-	0.1	0.4	<.1	<.1	-	-	0.1	0.4	0.1
Laminariales	2.0	-	1.2	1.2	1.0	0.6	0.5	30.8	1.0	0.1	-	-	-	-	0.3	<.1	-	<.1	-	-	0.1	-	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	1.1	2.5	13.6	5.9	5.8	5.1	8.1
Nereocystis luetkeana	0.3	1.2	1.3	4.1	1.4	<.1	<.1	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Pterygophora californica	35.8	31.1	38.1	40.2	36.7	36.0	29.1	18.8	16.0	13.9	6.2	1.3	0.2	0.1	-	0.3	<.1	-	-	-	0.3	0.1	-

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION SDC 3 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size																							
Cystoseira osmundacea	-	0.8	2.4	3.9	3.0	5.7	6.3	5.7	3.5	1.9	2.1	2.8			1.8	4.1	5.8	3.6	2.0	4.0	7.0	2.4	3.5
Egregia menziesii	-	-	0.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Laminaria setchellii	5.0	3.8	10.2	7.5	9.6	13.3	10.5	7.0	5.6	5.4	2.8	4.1			5.3	5.4	4.9	3.3	4.4	4.5	3.8	0.5	-
Laminariales	-	0.6	0.6	-	1.6	-	0.3	<.1	1.5	0.3	109.8	2.5			14.1	0.9	0.8	5.8	0.4	16.3	12.8	0.5	-
Macrocystis spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	2.3	4.8	6.0	11.3	4.4	5.8
Nereocystis luetkeana	-	<.1	-	-	-	-	0.2	-	-	-	-	-			-	0.2	-	-	-	-	-	-	-
Pterygophora californica	111.5	96.7	92.7	76.9	64.7	58.0	32.8	13.7	8.2	3.6	8.1	22.1			15.4	39.4	27.4	14.5	12.6	10.3	21.5	5.8	2.0

Subtidal Arc Quadrant - Yearly Algal Mean Abundance (per 7 m squared) - STATION SC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Counted Regardless of Size																							
Cystoseira osmundacea	-	0.1	<.1	0.2	0.9	1.3	1.0	1.2	1.0	0.9	0.4	3.3	2.4	6.6	6.0	7.0	7.4	7.0	7.4	8.3	11.0	5.0	5.0
Egregia menziesii	-	-	-	-	-	-	0.3	-	<.1	0.1	0.1	0.3	0.4	-	-	-	-	-	-	-	0.1	-	0.1
Laminaria setchellii	22.0	21.9	40.3	64.2	57.3	49.1	98.1	20.7	73.0	89.0	50.8	73.5	101.3	75.9	82.4	52.0	47.0	35.1	20.8	18.9	33.4	67.3	15.6
Laminariales	-	-	2.8	-	3.8	2.2	8.1	17.8	62.3	15.2	139.3	125.9	89.4	50.1	24.4	13.0	7.7	5.6	0.5	38.1	17.5	-	90.0
Nereocystis luetkeana	-	0.1	2.8	0.3	0.7	1.0	<.1	1.3	-	<.1	2.0	2.0	13.7	1.1	0.5	2.4	0.2	0.3	-	9.1	0.6	0.3	17.8
Pterygophora californica	-	0.4	3.3	7.8	15.7	23.7	16.6	33.1	107.9	72.1	38.5	163.6	184.0	142.1	114.9	79.3	49.9	32.6	21.0	19.6	25.5	18.5	84.9

APPENDIX D4 – Subtidal Invertebrates

Subtidal Arc Quadrant (SAQ) Method

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION FC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	3	4	2	3	3	1	1	4
Counted Regardless of Size																							
Acmaea mitra													15.4	18.4	5.8	5.3	6.6	3.8	8.3	10.8	6.0	8.3	3.0
Anisodoris nobilis													0.1	<.1	<.1	<.1	0.8	-	0.3	-	-	0.5	<.1
Anthopleura elegantissima													3.0	2.8	0.1	0.2	0.3	0.3	0.3	0.3	0.5	0.3	0.9
Asterina miniata													1.8	3.3	2.4	2.9	5.1	5.3	3.6	3.7	11.0	3.0	0.4
Calliostoma ligatum													4.5	8.6	3.6	5.5	3.4	0.8	0.5	-	-	12.0	1.1
Cancer antennarius													0.1	-	0.1	0.3	-	-	-	-	-	-	-
Diopatra ornata													0.4	0.7	0.3	0.5	0.2	-	-	-	-	0.3	0.4
Eudistylia polymorpha													0.1	<.1	-	-	-	-	-	-	-	-	-
Leptasterias spp.													1.1	0.9	3.0	1.8	1.5	0.1	0.7	<.1	-	2.0	0.6
Lithopoma gibberosum													0.1	-	-	-	-	-	-	<.1	0.3	1.0	0.4
Pagurus spp.													12.5	10.9	11.0	20.2	9.7	5.9	8.0	6.7	1.8	9.3	2.1
Pisaster giganteus													0.3	0.3	0.4	0.3	0.4	0.1	0.4	0.4	0.5	1.0	0.3
Pisaster ochraceus													0.6	<.1	0.1	<.1	-	-	-	<.1	-	-	-
Pycnopodia helianthoides													-	0.3	0.3	0.3	0.1	-	0.4	0.2	-	-	0.4
Styela spp.													0.3	0.5	<.1	<.1	-	-	-	-	-	-	0.1
Tegula brunnea													146.3	78.9	51.2	98.8	82.3	88.9	19.8	20.5	6.8	126.0	33.6
Tegula montereyi													-	1.5	0.6	5.0	2.1	-	0.3	-	-	-	-
Tethya aurantia													-	0.3	<.1	0.2	0.4	0.1	0.2	-	-	-	-
Tonicella lineata													3.4	8.6	2.6	2.3	4.7	6.4	4.8	5.3	4.5	8.3	1.5
Urticina spp.													-	-	-	<.1	-	-	-	-	-	-	-
Only Counted if Greater than 1°																							
Aeolidia papillosa													-	<.1	-	<.1	-	-	-	-	-	-	-
Anthopleura artemisia													-	-	-	<.1	<.1	-	-	-	-	-	-
Aplysia californica													-	-	-	-	-	-	-	-	-	-	<.1
Boltenia villosa													-	<.1	<.1	-	-	-	<.1	-	-	-	-
Cadlina spp.													-	-	-	-	-	-	-	-	-	-	<.1
Cancer productus													-	-	-	-	-	-	-	<.1	-	-	<.1
Cancer spp.													-	-	-	-	-	-	-	0.2	-	-	-
Clavelina huntsmani													0.8	0.3	-	-	-	-	-	-	-	-	-
Cnemidocarpa finmarkiensis													-	-	0.1	-	-	-	-	-	-	-	-
Crassedoma giganteum													-	<.1	-	-	0.1	-	-	-	-	-	-
Cryptochiton stelleri													-	-	-	-	-	-	-	<.1	0.3	-	0.5
Cryptolithodes sitchensis													-	-	<.1	<.1	-	0.1	-	<.1	0.3	-	<.1
Cucumaria spp.													-	-	<.1	-	-	-	-	-	-	-	-
Diaulula sandiegensis													0.1	-	0.1	-	<.1	-	-	-	-	-	-
Diodora spp.													-	0.1	0.3	0.3	-	-	<.1	<.1	-	-	0.4
Doridacea unid.													-	-	-	-	-	-	<.1	-	-	-	-
Doriopsilla albopunctata													0.1	0.1	0.4	0.3	0.7	0.1	-	0.2	-	-	<.1
Epiactis prolifera													-	<.1	0.8	-	-	0.9	-	-	-	-	-
Eupentacta quinquesemita													-	-	-	<.1	0.1	0.1	-	-	-	-	-
Fissurella volcano													-	0.2	0.3	0.5	0.4	0.3	0.2	0.2	-	-	-
Fusinus luteopictus													-	-	<.1	-	-	-	-	-	-	-	-
Halcampa decemtentacula													-	-	-	-	<.1	0.4	-	-	-	-	-
Haliotis spp.													-	<.1	0.1	-	<.1	0.1	-	<.1	-	-	-
Henricia leviuscula													0.3	-	0.5	0.2	0.9	1.1	0.4	0.3	-	-	0.1
Hermissenda crassicornis													0.1	0.3	0.2	-	0.2	0.6	0.4	<.1	-	-	0.3
Hopkinsia rosacea													-	-	<.1	<.1	<.1	-	0.2	-	-	-	0.3
Ischnochitonidae													-	-	-	-	<.1	-	-	-	-	-	-
Lanellariidae													-	-	-	-	<.1	-	-	-	-	-	-
Lepidozona spp.													-	-	-	-	0.1	0.1	-	-	-	-	-
Leucandra heathi													-	-	0.1	-	-	-	-	-	-	-	-
Lophopanopeus spp.													-	-	-	-	<.1	-	-	-	-	-	-
Lottia instabilis													-	0.3	0.2	0.9	-	0.1	<.1	0.3	-	-	-
Lottia ochracea													-	-	0.9	-	-	-	-	-	-	-	-
Loxorhynchus spp.													-	-	-	-	<.1	-	-	0.4	-	-	-
Megathura crenulata													-	-	-	-	-	-	-	-	-	-	<.1

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION FC 1 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	3	4	2	3	3	1	1	4
Only Counted if Greater than 1" (continued)																							
Mimulus foliatus													-	-	0.2	<.1	-	-	-	-	-	-	-
Nitra idae													0.1	0.4	0.4	0.3	1.1	0.4	0.3	0.4	0.3	0.8	0.3
Mopalia spp.													-	0.3	0.1	0.2	0.1	0.1	-	<.1	-	-	-
Ocenebra spp.													-	-	0.1	<.1	-	-	-	-	-	-	-
Octopus spp.													-	-	-	-	-	-	-	<.1	-	-	-
Ophioplocus spp.													-	-	0.1	<.1	-	-	<.1	<.1	0.3	-	-
Ophiothrix spp.													-	<.1	0.4	0.5	-	-	-	-	-	-	-
Pachycheles spp.													-	-	-	-	<.1	-	-	-	-	-	-
Paraxanthias taylori													-	-	<.1	-	<.1	0.1	-	-	-	-	-
Pelecypoda unid.													-	-	-	<.1	-	-	-	-	-	-	-
Phidiana hiltoni													-	-	-	0.4	0.1	-	0.2	-	0.3	0.3	<.1
Pisaster brevispinus													-	0.1	-	<.1	-	-	0.2	-	-	0.3	-
Pisaster/Henricia (juv.)													-	0.3	-	0.4	<.1	-	-	-	-	-	-
Pista spp.													-	-	0.8	<.1	-	-	-	-	-	-	-
Placiphorella velata													-	-	-	-	-	-	-	-	-	-	<.1
Pododesmus cepio													-	<.1	-	<.1	-	-	-	-	-	-	-
Pseudomelatoma torosa													-	0.2	<.1	<.1	<.1	0.1	-	<.1	-	-	<.1
Pugettia spp.													0.3	0.5	0.2	0.4	0.6	0.6	0.2	<.1	-	0.8	<.1
Pyura haustor													-	<.1	-	<.1	<.1	-	-	-	-	-	-
Scyra acutifrons													-	-	-	-	0.1	0.3	-	-	-	-	0.1
Serpulidae unid.													3.0	-	0.3	1.1	2.9	6.1	1.2	1.4	1.0	10.0	2.1
Serpulorbis squamigerus													6.0	4.7	4.8	3.8	6.1	5.3	1.8	1.7	0.8	4.8	1.3
Sipuncula unid.													-	-	-	-	-	0.3	-	-	-	-	-
Strongylocentrotus purpuratus													-	-	0.3	0.5	0.4	-	0.2	0.7	-	-	0.7
Tegula pulligo													-	0.3	0.2	-	-	-	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri)													-	-	-	-	-	-	-	-	-	0.5	-
tunicate, solitary unid.													-	-	-	0.2	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION FC 2 -9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Counted Regardless of Size																							
Acmaea mitra															3.6	1.1	2.3	1.5	1.3	1.5	-	0.8	1.9
Anisodoris nobilis															0.6	0.4	0.1	0.3	<.1	-	-	-	-
Anthopleura elegantissima															11.0	7.9	7.5	7.3	11.8	3.5	3.3	2.3	6.6
Asterina miniata															11.3	10.4	9.0	4.4	8.3	7.5	7.3	5.5	5.0
Calliostoma ligatum															4.5	1.9	3.8	1.1	0.5	-	2.3	2.3	1.9
Cancer antennarius															-	-	0.1	-	-	0.3	-	-	-
Diopatra ornata															47.1	57.8	69.9	33.9	58.4	36.3	41.3	43.8	32.5
Eudistylia polymorpha															0.4	1.4	1.6	0.1	-	-	0.3	-	<.1
Leptasterias spp.															0.4	0.5	1.8	1.1	0.6	-	1.0	-	<.1
Lithopoma gibberosum															1.6	0.6	0.1	0.3	-	-	-	-	0.6
Pagurus spp.															6.2	10.4	4.5	4.0	5.1	1.3	2.0	-	0.9
Pisaster giganteus															0.9	0.9	1.4	0.3	0.4	-	0.3	0.3	0.6
Pisaster ochraceus															<.1	0.4	-	-	-	-	-	0.3	-
Pycnopodia helianthoides															-	-	0.1	0.1	0.2	-	-	-	<.1
Styela spp.															13.7	12.4	6.1	3.1	4.7	4.5	7.8	6.5	2.4
Tegula brunnea															17.3	39.4	46.9	22.1	4.3	-	12.0	16.5	12.4
Tegula montereyi															0.2	4.1	6.8	0.8	-	-	-	3.8	1.7
Tethya aurantia															1.0	1.0	1.3	0.8	3.3	1.8	3.3	2.8	3.7
Tonicella lineata															2.4	1.1	2.6	1.5	2.0	-	1.5	-	1.5
Urticina spp.															0.8	0.8	0.5	0.5	0.5	0.3	0.5	0.3	0.7
Only Counted if Greater than 1"																							
Anthopleura artemisia															4.1	2.1	1.4	2.1	2.3	1.0	2.3	-	2.4
Balanus spp.															0.3	0.1	0.1	-	3.8	-	-	-	-
Boltenia villosa															2.4	2.0	1.8	1.6	2.5	0.3	0.5	-	0.5
Cadlina spp.															-	-	0.1	-	0.2	-	-	-	-
Calliostoma annulatum															0.2	0.1	0.4	-	-	-	-	-	-
Calliostoma canaliculatum															0.1	0.3	0.3	-	-	-	-	-	-
Cancer spp.															-	-	-	-	<.1	-	-	-	-
Chaetopteridae															-	0.3	-	-	-	-	-	-	-
Clavelina huntsmani															-	0.1	0.8	-	1.0	-	-	-	-
Cnemidocarpa finmarkiensis															0.4	-	0.9	0.6	<.1	0.5	-	0.3	0.1
Conus californicus															<.1	0.4	0.1	-	-	-	-	-	-
Crassedoma giganteum															0.1	0.1	-	-	0.6	-	0.3	1.0	0.2
Crepidula spp.															<.1	-	-	-	0.2	-	-	-	-
Cryptochiton stelleri															-	-	-	-	-	-	0.3	-	0.2
Cryptolithodes sitchensis															<.1	0.1	-	-	<.1	-	-	-	-
Cucumaria spp.															<.1	0.1	-	-	-	-	-	-	-
Diaulula sandiegensis															0.1	-	-	-	-	-	-	-	-
Diodora spp.															-	0.1	-	-	-	-	-	-	-
Doriopsilla albopunctata															1.1	0.5	1.3	0.9	0.5	0.3	-	0.3	0.6
Epiactis prolifera															0.7	0.4	0.6	-	-	-	-	-	-
Eupentacta quinquesemita															0.1	-	0.3	0.3	-	-	-	-	-
Henricia leviuscula															1.0	0.4	1.1	0.3	-	0.3	1.0	0.3	0.1
Hermissenda crassicornis															0.3	0.1	0.5	-	0.2	0.5	1.0	-	-
Lottia instabilis															1.8	0.3	0.9	0.5	0.2	-	-	-	-
Loxorhynchus spp.															0.1	0.1	0.6	-	<.1	-	-	-	-
Maxwellia santarosana															-	-	-	-	-	-	-	-	0.1
Mitra idae															4.0	2.5	2.9	1.8	2.0	0.8	0.8	0.3	1.8
Mopalia spp.															-	-	-	0.1	-	-	-	-	-
Natantia unid.															-	-	-	-	0.2	-	-	-	-
Ophioplocus spp.															0.3	0.5	0.4	0.4	0.9	0.5	-	-	0.3
Ophiothrix spp.															-	0.1	-	-	0.3	-	-	-	-
Orthasterias koehleri															-	-	-	-	-	-	-	0.3	-
Paracyathus stearnsii															0.2	-	-	-	-	-	-	-	-
Paraxanthias taylori															-	-	-	0.1	-	-	-	-	-
Pelecypoda unid. boring															-	-	-	-	0.3	-	-	-	-

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION FC 2 -9m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Only Counted if Greater than 1" (continued)																							
Phidiana hiltoni															<.1	-	-	-	-	-	-	-	-
Pisaster brevispinus															0.1	0.1	0.6	-	-	-	-	-	-
Pista spp.															1.8	0.1	-	-	-	-	0.8	-	-
Placiphorella velata															-	-	-	-	-	-	-	-	<.1
Platyhelminthes unid.															<.1	-	-	-	-	-	-	-	-
Pododesmus cepio															0.3	0.3	0.9	0.1	-	-	-	-	-
Pseudoceros montereyensis															-	0.1	-	-	-	-	-	-	-
Pseudomelatoma torosa															0.3	0.1	0.5	0.5	-	0.5	-	0.3	0.1
Pugettia spp.															-	-	0.1	0.3	0.2	-	-	-	<.1
Pyura haustor															2.1	0.3	1.1	0.5	0.5	0.5	-	-	0.3
Sabellidae															-	1.1	0.6	0.1	0.3	-	-	0.8	<.1
Scyra acutifrons															-	-	-	-	<.1	-	-	0.3	<.1
Serpulidae unid.															-	0.9	3.6	5.6	1.5	3.3	2.3	1.0	0.8
Serpulorbis squamigerus															16.0	3.4	44.6	6.0	11.2	10.0	7.5	6.5	3.4
Strongylocentrotus purpuratus															0.9	0.6	0.8	0.3	0.3	-	1.0	0.5	0.7
Tegula pulligo															2.6	1.5	-	0.1	0.9	-	0.5	-	-
Triopha catalinae (prev. T. carpenteri)															0.2	-	-	0.1	-	-	-	0.3	-

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION NDC 3 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size																							
Acmaea mitra	1.5	4.5	5.4	11.3	6.0	10.8	8.8	4.9	9.2	9.9	8.0	5.6	1.5	14.4	3.9	5.1	4.9	0.8	7.3	15.4	31.5	8.3	0.8
Anisodoris nobilis	-	-	0.1	0.3	0.3	0.3	0.3	-	<.1	-	0.3	-	<.1	<.1	0.2	<.1	0.2	-	-	0.3	0.4	-	0.1
Anthopleura elegantissima	-	0.3	0.5	0.8	0.9	0.7	1.4	1.2	0.3	0.8	1.0	1.1	0.4	2.2	1.8	2.3	2.5	2.2	4.8	4.6	6.4	5.0	3.3
Asterina miniata	-	0.8	2.6	1.9	3.8	5.7	5.5	4.3	0.1	<.1	0.1	0.3	-	1.1	0.2	0.5	1.2	<.1	<.1	-	-	0.1	-
Calliostoma ligatum	-	0.5	0.2	0.9	1.5	-	2.3	1.3	0.9	3.3	2.0	2.3	0.8	0.6	-	-	-	-	-	-	-	-	-
Cancer antennarius	-	-	0.1	0.1	0.3	<.1	<.1	0.1	0.1	<.1	0.1	<.1	<.1	-	<.1	-	-	-	-	-	-	-	-
Diopatra ornata	-	-	0.3	0.2	0.3	-	-	0.5	0.2	0.1	<.1	0.3	0.3	0.4	0.5	0.3	0.6	0.7	0.4	0.5	0.8	-	0.1
Eudistylia polymorpha	-	-	-	0.3	-	-	-	<.1	0.3	0.2	-	0.2	-	0.2	-	-	-	0.1	-	-	-	-	0.1
Leptasterias spp.	-	1.5	0.3	2.3	3.4	5.5	2.4	1.1	0.6	1.0	0.7	0.3	-	0.2	-	-	-	-	-	-	-	-	-
Lithopoma gibberosum	0.3	0.3	0.3	0.2	0.5	0.3	<.1	<.1	0.1	-	0.3	0.8	0.2	0.1	<.1	-	-	-	-	-	-	-	-
Pagurus spp.	-	3.8	4.9	13.7	10.9	20.7	13.8	16.7	14.2	12.2	18.4	19.6	8.6	10.5	7.4	2.6	1.1	0.4	0.4	0.6	1.5	4.3	-
Parastichopus spp.	-	-	0.1	-	-	<.1	<.1	-	<.1	-	-	<.1	-	-	-	-	-	<.1	<.1	-	-	0.3	0.1
Pisaster giganteus	-	-	0.2	-	-	-	0.3	-	<.1	-	<.1	-	0.3	0.3	0.6	1.3	1.2	0.5	0.6	0.5	1.4	1.0	0.1
Pisaster ochraceus	-	-	-	0.1	<.1	<.1	<.1	0.2	-	<.1	-	<.1	-	0.3	<.1	<.1	-	<.1	<.1	-	-	-	-
Pycnopodia helianthoides	-	0.2	0.2	0.6	0.2	0.5	0.3	0.6	0.4	0.2	0.2	0.1	0.3	<.1	0.3	0.6	0.5	0.1	0.3	0.1	-	0.1	-
Styela spp.	-	-	-	<.1	-	-	-	-	-	0.1	-	0.2	-	0.2	-	-	-	-	-	-	-	0.1	-
Tegula brunnea	6.8	18.3	28.1	53.3	56.5	70.8	54.5	43.5	53.8	92.0	88.7	93.8	128.8	36.9	3.6	2.3	14.3	0.9	3.8	14.6	23.3	17.6	-
Tegula montereyi	-	9.3	-	0.6	-	-	1.3	0.4	0.9	2.6	1.1	0.4	1.0	0.8	-	-	-	0.4	-	-	-	-	-
Tethya aurantia	-	-	<.1	<.1	<.1	-	-	<.1	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Tonicella lineata	-	0.5	5.4	10.1	13.0	5.8	5.8	10.7	5.3	7.5	4.2	4.5	2.3	4.3	1.9	0.4	0.6	0.2	0.4	-	11.3	0.8	-
Urticina spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Only Counted if Greater than 1"																							
Acmaeidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Anthopleura artemisia	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-
Anthozoa unid.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2	<.1	0.4	<.1	0.4	-	-	-	0.5
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Balanus spp.	-	-	-	0.3	-	-	-	0.3	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Boltenia villosa	-	-	<.1	0.2	-	-	-	-	-	-	<.1	-	-	<.1	-	-	<.1	0.1	0.1	-	-	-	-
Cadlina spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ceratostoma foliatum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Chama spp.	-	-	-	-	<.1	-	-	-	-	-	<.1	0.1	-	-	-	-	-	-	-	-	-	-	-
Chromodoris macfarlandi	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Clavelina huntsmani	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-
Conus californicus	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Crassedoma giganteum	-	-	-	<.1	-	-	-	-	-	0.1	<.1	0.6	0.2	0.4	<.1	0.1	<.1	-	-	-	-	-	-
Cryptolithodes sitchensis	-	<.1	-	-	-	0.2	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Cucumaria spp.	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	-	<.1	-	-	<.1	-	<.1	-	-	0.1	-	-	-	<.1	-	-	-	-	-	-	-	0.1	-
Diodora spp.	-	-	-	-	-	-	-	-	-	0.2	-	-	0.3	<.1	<.1	-	-	-	-	0.1	0.1	-	-
Doriopsilla albopunctata	-	-	0.2	0.5	0.3	-	-	-	0.2	0.5	0.4	-	<.1	0.1	0.3	0.5	<.1	0.1	0.1	0.4	0.4	0.3	0.1
Epiactis prolifera	-	1.1	-	1.4	0.7	0.6	0.5	<.1	0.3	0.9	0.7	1.0	5.0	2.0	1.9	0.1	-	0.2	-	-	-	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-
Fissurella volcano	-	-	-	-	-	-	-	-	-	-	0.1	0.5	1.3	0.3	2.4	0.4	0.3	-	0.6	-	-	-	-
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	-	-	<.1	1.0	-	<.1	0.3	-	-	-	-	-	-	-
Halcampa decemtentacula	-	-	-	0.2	-	0.2	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	0.3	-	-
Haliotis spp.	-	-	<.1	0.8	0.7	0.5	0.2	0.2	0.1	0.3	0.3	0.4	0.3	0.4	-	<.1	-	-	0.2	-	-	-	0.1
Henricia leviuscula	-	-	-	0.3	0.2	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	-	-	-	0.1	0.1	<.1	0.1	0.3	<.1	-	-	-	<.1	-	-	-	-	-
Hopkinsia rosacea	-	-	-	-	-	-	-	0.1	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-
Ischnochitonidae	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-
Leucandra heathi	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limaria hemphilli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION NDC 3 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Only Counted if Greater than 1" (continued)																							
Lissothuria nutriens	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-
Lottia instabilis	-	-	0.3	0.8	1.9	2.8	1.7	0.6	1.3	3.9	1.7	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	0.4	<.1	-	-	-	-	-	-	0.2	-	-	0.6	0.9	1.1	-	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	0.1	-	-	-
Megathura crenulata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.6
Mitra idae	-	-	0.1	0.3	<.1	-	-	0.2	<.1	0.7	0.9	0.6	0.7	0.3	0.3	0.2	-	-	-	-	0.1	-	-
Mopalia spp.	-	<.1	<.1	0.2	0.3	0.2	0.3	0.4	0.5	0.2	0.1	<.1	-	0.1	<.1	-	-	<.1	-	-	0.1	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Nassarius spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Nemertea unid.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Norrisia norrisi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Ocenebra spp.	-	-	-	-	-	-	-	-	-	<.1	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-
Octopus spp.	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-
Ophioplocus spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	0.1	<.1	0.4	<.1	-	-	-	-	-
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.5	2.7	2.3	2.8	5.0	18.9	-	5.0	0.1
Ophiuroidea unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Orthasterias koehleri	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-
Phidiana hiltoni	-	<.1	-	<.1	-	-	-	-	-	<.1	0.8	0.3	0.3	2.5	1.8	1.0	0.9	0.9	0.6	0.9	1.6	1.6	-
Phragmatopoma californica	-	-	0.4	1.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster brevispinus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	0.2	<.1	-	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pista spp.	-	<.1	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	0.1	-	-	-	-	-	-
Placiphorella velata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Pododesmus cepio	-	-	-	-	-	-	<.1	-	-	-	0.1	1.4	2.5	0.2	0.4	<.1	0.1	<.1	-	0.1	-	-	-
Pseudomelatoma torosa	-	<.1	-	-	-	0.5	0.2	0.2	<.1	0.6	0.6	0.1	0.5	0.1	<.1	-	-	-	-	-	-	-	-
Pugettia spp.	-	0.2	<.1	0.1	0.4	1.0	0.3	0.3	0.3	0.6	0.1	0.4	0.3	<.1	0.4	<.1	0.1	-	1.6	-	0.6	0.4	-
Sabellidae	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Serpulidae unid.	-	-	-	0.3	-	-	0.3	0.6	0.1	0.2	0.1	-	0.2	0.5	0.7	1.4	1.3	1.2	1.4	1.3	11.1	0.8	-
Serpulorbis squamigerus	-	-	0.2	0.3	0.3	0.5	2.7	3.9	2.0	4.9	8.0	10.1	5.7	4.6	3.3	1.8	0.9	0.7	0.6	0.1	0.6	1.9	-
Sipuncula unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Stenoplax spp.	-	-	-	-	-	-	-	-	-	-	-	0.2	-	<.1	-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	-	-	-	0.2	-	-	-	-	-	-	0.2	0.2	2.3	1.0	5.7	4.9	5.5	3.8	26.3	35.3	11.5	6.9	16.3
Tegula pulligo	-	<.1	-	-	-	-	0.3	-	-	-	0.2	0.1	<.1	-	-	-	-	-	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Williamia peltoides	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION NDC 4 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size																							
Acmaea mitra	5.3	9.8	7.1	7.4	4.3	4.3	7.9	5.3	2.8	7.9	9.6	11.5			6.8	12.4	8.8	2.8	17.6	7.1	3.0	1.1	1.9
Anisodoris nobilis	0.3	-	1.1	0.3	0.3	0.4	0.8	0.3	0.4	0.1	<.1	<.1			0.6	0.1	-	0.2	<.1	0.3	-	0.1	-
Anthopleura elegantissima	1.3	2.3	2.3	1.8	2.2	2.8	2.4	2.4	2.1	2.3	2.6	4.3			4.4	5.2	4.6	4.1	8.6	6.0	5.8	6.4	4.6
Asterina miniata	6.5	8.0	7.3	9.0	9.8	13.8	9.1	6.8	1.3	0.7	1.5	1.7			1.5	2.4	1.9	1.1	0.3	0.4	-	-	-
Calliostoma ligatum	-	1.5	1.1	4.4	3.3	3.0	2.3	4.1	2.3	2.1	5.1	5.0			-	-	-	-	0.2	-	-	-	-
Cancer antennarius	-	-	0.2	0.2	-	0.2	<.1	-	<.1	<.1	<.1	-			-	-	-	<.1	-	-	-	-	-
Diopatra ornata	-	1.0	2.7	2.2	3.5	4.3	2.4	1.2	1.2	1.3	0.7	1.3			0.4	0.8	1.6	1.7	1.1	1.5	-	0.1	0.9
Eudistylia polymorpha	0.3	-	-	-	-	-	1.1	0.7	0.3	<.1	0.3	0.6			-	<.1	0.4	-	0.2	0.1	-	0.1	-
Leptasterias spp.	0.5	2.5	<.1	0.4	0.3	0.3	1.1	1.4	0.4	0.2	0.4	0.8			-	-	-	-	-	-	-	-	-
Lithopoma gibberosum	2.0	1.5	0.4	1.1	0.8	0.3	0.4	0.4	0.4	0.2	0.8	2.2			0.1	<.1	-	-	-	0.1	-	-	-
Pagurus spp.	2.0	-	4.6	9.7	15.3	27.2	19.2	19.5	15.6	16.6	10.4	18.7			0.9	0.6	2.5	0.4	1.2	-	-	-	-
Parastichopus spp.	0.5	0.8	<.1	0.3	0.3	0.2	0.4	0.3	0.3	0.3	0.2	0.2			<.1	0.1	<.1	-	0.3	-	0.3	0.5	0.4
Pisaster giganteus	-	1.0	0.1	-	0.2	-	<.1	<.1	0.1	0.2	0.1	0.3			0.9	1.4	1.3	1.6	1.6	0.6	0.8	1.4	0.1
Pisaster ochraceus	-	-	<.1	-	<.1	0.4	0.1	0.4	0.3	-	-	<.1			-	-	<.1	-	-	-	-	-	-
Pycnopodia helianthoides	0.3	-	0.3	1.0	0.4	0.3	0.5	0.4	0.3	0.5	0.3	0.5			0.2	0.3	0.6	0.4	0.4	-	-	-	-
Styela spp.	-	-	0.4	0.2	<.1	-	0.1	<.1	0.4	0.3	0.2	0.8			-	-	-	-	-	-	0.3	0.1	-
Tegula brunnea	11.3	42.0	52.7	82.7	102.5	96.8	82.5	93.2	99.4	91.5	86.3	99.5			2.3	18.4	70.3	7.3	9.4	-	3.0	28.9	-
Tegula montereyi	-	-	-	1.1	1.0	1.3	1.5	2.8	3.2	4.6	2.4	3.5			-	-	0.2	0.2	-	-	-	-	-
Tethya aurantia	2.3	3.0	1.3	1.8	2.3	2.0	2.8	2.6	2.7	2.0	1.9	1.2			1.1	0.9	0.6	0.9	0.7	1.3	1.5	1.4	1.1
Tonicella lineata	0.8	9.8	6.2	12.6	10.3	3.5	8.8	7.3	9.2	6.3	4.7	4.3			0.9	1.5	1.3	0.2	0.8	0.8	0.8	0.8	0.4
Urticina spp.	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Only Counted if Greater than 1"																							
Anthopleura artemisia	-	-	-	0.2	-	-	-	0.1	-	0.2	-	-			0.3	<.1	0.3	0.3	<.1	-	-	-	0.1
Anthopleura xanthogrammica	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
Anthozoa unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	0.8	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	<.1	-			0.1	0.2	1.0	-	1.1	-	-	-	1.0
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	0.1	-	-	-	-	-
Balanus spp.	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Balanus/Tetraclita spp.	-	-	-	-	1.3	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Boltenia villosa	-	-	<.1	<.1	0.4	-	-	0.2	-	<.1	0.3	-			0.1	-	0.3	0.2	0.2	0.4	-	0.1	-
Cadlina spp.	-	-	-	-	-	-	-	0.1	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Cancer productus	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	-	-	<.1	-	-	-	<.1	-	-	-			-	-	-	<.1	-	-	-	-	-
Chama spp.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	-	-	-	-	-	-	-	-	<.1	0.3	0.1	0.3			0.1	-	-	-	-	-	-	-	-
Conus californicus	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	-	-	-	0.1	-	-	-
Crassedoma giganteum	-	-	<.1	-	<.1	-	0.2	0.1	0.2	<.1	0.3	0.2			-	0.1	0.1	0.1	<.1	0.1	-	-	-
Crepidula spp.	-	-	-	-	0.2	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Cryptochiton stelleri	-	-	-	-	-	-	-	-	-	<.1	<.1	0.2			-	-	-	<.1	-	-	-	-	-
Cryptolithodes sitchensis	-	-	-	-	-	-	-	<.1	<.1	-	<.1	0.3			-	-	-	-	-	-	-	-	-
Cucumaria spp.	-	-	0.1	<.1	0.6	-	-	-	-	0.5	-	-			-	-	-	-	-	0.3	-	-	-
Diaulula sandiegensis	-	0.3	-	-	0.2	<.1	-	-	-	-	-	<.1			<.1	-	-	-	<.1	-	-	-	0.1
Diodora spp.	-	-	-	-	-	-	-	-	-	<.1	<.1	-			0.1	<.1	-	-	-	0.3	-	-	-
Doriopsilla albopunctata	-	-	<.1	0.7	0.8	0.3	0.1	0.6	0.6	1.5	1.0	0.2			1.5	0.8	0.6	0.5	0.8	2.6	0.3	0.3	-
Epiactis prolifera	-	-	-	0.2	0.3	0.3	-	0.6	<.1	1.0	0.3	0.7			0.3	0.2	-	0.1	<.1	-	-	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	-	-	-	-	0.1	-			<.1	<.1	-	-	-	-	-	-	-
Fissurella volcano	-	-	-	-	-	-	-	0.1	-	-	0.2	<.1			0.8	-	0.1	<.1	0.3	-	-	-	-
Flabellina trilineata	-	-	-	-	<.1	<.1	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	<.1	0.4	0.3			-	-	-	-	-	-	-	-	-
Halcampa decemtentacula	-	-	-	0.4	0.3	-	-	0.1	0.8	0.2	-	-			0.4	-	-	-	0.3	-	-	-	-
Haliotis spp.	-	-	-	0.1	0.3	-	<.1	0.1	-	<.1	0.4	0.3			0.1	-	-	<.1	0.1	0.1	-	-	-
Henricia leviuscula	-	-	<.1	0.3	0.5	0.8	0.4	0.4	-	<.1	-	-			<.1	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	0.1	-	-	0.1	-	<.1	0.3	-	-			<.1	-	-	0.4	-	-	-	-	-
Hopkinsia rosacea	-	-	-	-	-	-	-	<.1	-	-	-	<.1			<.1	<.1	<.1	-	-	-	-	-	-
Kelletia kelletii	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	0.3	0.1	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION NDC 4 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Only Counted if Greater than 1" (continued)																							
Leucandra heathi	1.5	-	<.1	0.2	-	<.1	-	-	-	-	0.1	-			-	-	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Lottia instabilis	-	-	-	1.3	1.9	1.0	4.1	3.8	4.0	4.6	1.6	-			-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	-	-	-	-	-	-	-	0.1	-	-			<.1	<.1	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	0.2	0.2	-	0.3	-	-	-	-
Megathura crenulata	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.1	0.1
Melibe leonina	-	-	-	-	-	-	-	0.1	-	-	-	-			-	-	-	-	0.1	-	-	-	-
Mexichromis porterae	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Mitra idae	-	-	0.2	0.5	1.2	0.3	0.4	0.9	0.8	1.0	0.4	0.6			0.1	0.3	0.3	0.3	<.1	0.4	0.3	0.1	0.3
Mopalia spp.	0.3	-	<.1	0.1	-	<.1	-	<.1	-	<.1	-	<.1			<.1	<.1	-	-	<.1	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Navanax inermis	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Nitidiscala/Opalia spp.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Norrisia norrisi	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Ocenebra spp.	-	-	-	-	-	-	-	-	-	-	<.1	0.3			-	-	-	-	-	-	-	-	-
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	<.1	-	0.1	0.1	-	-	-
Ophioplocus spp.	-	-	-	-	-	<.1	-	<.1	-	<.1	<.1	-			0.2	0.1	0.5	0.3	<.1	0.3	0.3	0.8	0.1
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	-	-	-			0.3	2.8	1.4	1.9	5.3	0.5	-	-	-
Ophiuroidea unid.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Orthasterias koehleri	-	-	-	-	-	<.1	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
Paraxanthias taylori	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-	0.2	0.2	-	<.1	-	-	-	0.3	0.5	0.2			1.8	1.3	1.8	2.1	1.2	1.8	-	1.0	0.3
Phragmatopoma californica	1.3	-	7.8	24.3	7.5	-	-	10.6	-	-	-	-			-	-	-	-	-	-	-	-	-
Pisaster brevispinus	-	-	-	-	-	-	-	-	-	-	<.1	-			-	<.1	-	<.1	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	-	0.2	0.4	-	-	-	-	-	<.1	<.1			-	-	-	-	-	-	-	-	-
Pista spp.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	0.2	0.3	0.3	-	-	-	-	-
Placiphorella velata	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	<.1	-	-	-	-
Pododesmus cepio	-	-	-	-	0.2	-	-	-	-	<.1	<.1	0.5			1.0	0.8	0.3	-	-	-	-	-	-
Pseudomelatoma torosa	-	-	-	<.1	0.5	-	<.1	0.3	0.3	0.5	0.5	0.7			<.1	-	-	-	-	-	-	-	-
Pugettia spp.	-	-	0.3	0.5	0.7	0.3	0.4	0.9	0.3	0.5	0.5	0.5			<.1	-	-	<.1	0.4	-	-	-	-
Pyura haustor	-	-	-	-	-	<.1	-	0.3	0.7	0.5	0.2	-			<.1	0.1	<.1	-	-	-	-	-	-
Sabellidae	0.5	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	0.3	-
Scyra acutifrons	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.1	-
Serpulidae unid.	-	-	-	0.4	0.7	-	0.3	<.1	0.3	<.1	-	<.1			0.7	0.4	1.8	3.5	2.9	3.0	-	3.8	-
Serpulorbis squamigerus	2.8	-	1.2	1.5	3.8	0.9	4.9	5.3	13.4	6.4	17.4	12.3			3.9	1.8	3.3	0.6	1.3	1.0	-	0.5	0.6
Stenoplax spp.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	0.3	-	-	-	-	<.1	-	-	-	<.1	0.3	0.3			1.9	2.8	6.1	4.0	12.8	7.9	2.0	2.1	9.8
Tegula pulligo	-	-	-	0.3	0.3	-	0.4	0.1	-	<.1	0.8	0.4			-	-	<.1	<.1	-	-	-	-	-
Tetraclita rubescens	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	<.1	-	-	-	-	-
Triopha maculata	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION NDC 6 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Counted Regardless of Size																							
Acmaea mitra	0.8	-							1.5	9.3	1.5	2.6	10.1	6.2	-	0.3	0.9	0.2	0.9	1.1	-	0.4	0.8
Anisodoris nobilis	0.5	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Anthopleura elegantissima	20.8	10.8							10.8	21.3	27.5	32.5	25.6	41.8	50.6	56.5	26.4	15.1	13.2	10.3	16.8	4.0	4.8
Asterina miniata	38.0	15.8							11.5	14.2	25.2	25.4	19.6	20.8	39.4	39.1	33.4	0.5	0.2	0.4	0.3	-	0.5
Calliostoma ligatum	5.3	0.4							7.5	12.0	11.8	5.6	1.5	0.9	-	-	-	-	-	-	-	-	-
Cancer antennarius	0.3	0.1							-	-	-	-	<.1	-	-	-	<.1	-	<.1	-	-	0.1	-
Diopatra ornata	-	-							1.8	3.3	2.5	1.8	1.6	1.9	0.7	0.3	0.3	0.6	-	0.3	0.3	-	0.1
Eudistylia polymorpha	38.8	9.6							3.5	1.7	0.9	1.3	0.3	0.8	-	3.4	4.2	5.9	2.4	0.1	1.8	1.0	0.6
Leptasterias spp.	0.8	0.3							0.5	0.5	0.2	-	0.4	<.1	-	-	-	-	-	-	-	-	-
Lithopoma gibberosum	-	-							-	-	-	-	0.1	<.1	-	-	-	-	-	-	-	-	-
Pagurus spp.	0.5	-							9.0	5.3	7.4	7.0	3.2	2.7	0.3	0.8	-	-	-	-	-	-	-
Pisaster giganteus	0.8	0.4							0.3	2.8	1.1	2.1	1.2	2.6	3.5	1.7	1.3	1.5	1.3	1.9	0.3	0.9	0.3
Pisaster ochraceus	-	-							0.5	0.8	1.1	0.5	0.6	0.4	0.1	<.1	<.1	<.1	<.1	-	-	-	-
Pycnopodia helianthoides	0.5	0.8							0.3	0.3	0.8	0.4	0.1	0.5	0.5	0.3	<.1	0.1	0.3	-	-	-	-
Styela spp.	7.0	0.9							8.8	13.6	7.2	1.6	0.4	0.1	-	-	-	-	-	-	0.3	-	-
Tegula brunnea	7.5	4.5							38.3	37.5	40.5	44.3	32.8	18.9	0.2	-	1.5	-	-	-	-	0.4	-
Tegula montereyi	2.3	0.4							4.5	1.5	0.5	3.4	1.3	2.8	-	0.8	-	-	-	-	-	-	-
Tethya aurantia	-	0.3							1.8	-	-	-	0.3	0.1	-	-	-	-	-	-	-	-	-
Tonicella lineata	0.8	-							3.0	3.0	1.8	0.8	6.4	4.5	0.4	-	0.2	0.2	-	0.4	-	-	0.4
Urticina spp.	2.3	1.4							0.5	0.6	0.6	0.4	0.3	0.3	0.8	-	<.1	0.2	<.1	-	-	-	-
Only Counted if Greater than 1"																							
Anthopleura artemisia	0.3	0.1							-	2.3	0.7	4.0	0.9	1.7	1.8	3.0	1.0	1.0	1.3	1.3	-	-	-
Anthopleura xanthogrammica	-	0.5							-	-	0.3	0.1	-	-	-	-	-	-	-	-	0.3	-	0.1
Aplysia californica	-	-							-	-	-	-	0.4	-	-	-	<.1	-	-	-	-	-	0.1
Balanus spp.	-	-							-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Boltenia villosa	-	-							-	0.4	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Calliostoma annulatum	-	-							-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-							-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-
Ceratostoma foliatum	0.8	-							-	<.1	-	-	0.2	-	-	-	-	-	-	-	-	-	-
Chaetopteridae	-	-							-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Chromodoris macfarlandi	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	-	-							-	0.3	-	-	0.1	-	-	-	-	<.1	-	-	-	-	-
Crassedoma giganteum	0.3	-							-	0.3	0.3	0.4	-	0.2	-	-	0.3	<.1	-	-	-	-	-
Cryptochiton stelleri	-	-							-	-	-	-	-	-	-	-	-	-	0.4	-	0.8	-	-
Cryptolithodes sitchensis	-	-							-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Cucumaria spp.	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	-	-							-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Diodora spp.	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	0.1	-
Doriopsilla albopunctata	-	-							-	-	0.3	0.9	<.1	<.1	0.2	<.1	-	-	<.1	-	-	-	-
Epiactis prolifera	5.3	-							-	3.3	1.0	2.0	0.4	0.3	0.2	1.1	0.3	<.1	-	-	-	-	-
Eupentacta quinquesemita	-	-							-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-
Fissurella volcano	0.3	-							-	-	-	-	-	-	0.2	0.3	<.1	0.2	0.2	0.1	-	0.1	0.8
Flabellina iodinea	-	-							-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-
Haliotis spp.	0.8	0.5							-	-	0.3	0.1	0.1	-	-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-							0.3	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-
Ischnochitonidae	-	-							-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Lepidozona spp.	-	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Leucandra heathi	-	-							-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-							-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Lottia instabilis	-	-							3.8	3.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1
Maxwellia santarosana	-	-							-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Megathura crenulata	-	-							-	-	-	-	-	-	<.1	<.1	-	0.1	0.8	1.6	0.5	0.4	0.5
Mitra idae	-	-							0.3	<.1	0.5	0.3	0.4	<.1	-	-	-	-	-	-	-	0.1	-
Mopalia spp.	-	-							0.8	0.3	-	-	-	<.1	-	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION NDC 6 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Only Counted if Greater than 1" continued																							
Mytilus galloprovincialis	-	-							-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Natantia unid.	-	-							-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Norrisia norrisi	-	-							-	-	-	-	-	-	-	-	<.1	-	-	0.4	-	-	0.1
Octopus spp.	-	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Ophioplocus spp.	-	-							-	-	<.1	-	-	-	<.1	0.4	-	-	-	-	-	-	-
Ophiopteris papillosa	-	-							-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Ophiothrix spp.	-	-							-	-	-	1.4	-	-	1.1	-	0.7	1.0	0.1	-	-	0.3	0.1
Orthasterias koehleri	0.3	0.1							-	<.1	0.2	0.3	-	<.1	-	0.2	-	-	-	-	-	-	-
Panulirus interruptus (puerulus stage)	-	-							-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Paraxanthias taylori	-	-							-	-	-	0.1	<.1	<.1	<.1	-	-	-	-	-	0.3	-	-
Phidiana hiltoni	-	-							-	<.1	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Pisaster brevispinus	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-							-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Pista spp.	-	0.4							-	-	<.1	-	-	-	0.1	-	-	-	-	-	-	-	-
Pododesmus cepio	-	-							-	0.8	0.3	3.5	0.1	0.8	0.8	0.3	<.1	0.5	-	0.1	-	0.4	-
Pseudomelatoma torosa	-	-							-	-	-	-	0.1	<.1	-	-	-	-	-	-	-	-	-
Pugettia spp.	-	-							0.3	<.1	0.3	0.3	0.3	-	<.1	0.3	<.1	0.3	0.2	0.1	-	0.1	-
Pyura haustor	-	-							-	-	0.2	0.4	0.2	-	-	-	-	-	<.1	-	-	-	-
Sabellidae	-	-							-	-	-	-	-	-	-	0.9	-	-	-	-	-	0.1	-
Serpulidae unid.	-	-							-	0.3	0.6	0.4	0.8	0.1	0.6	1.3	1.8	4.7	1.9	-	15.5	5.0	3.0
Serpulorbis squamigerus	-	-							3.8	7.7	4.4	2.4	5.8	5.7	1.8	1.5	0.5	1.0	0.8	1.0	-	0.8	1.0
Strongylocentrotus purpuratus	-	0.3							-	0.3	0.8	0.1	0.4	0.4	1.6	1.5	1.6	1.9	2.1	4.1	3.8	0.8	1.0
Stylasterias forreri	-	0.1							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tegula pulligo	1.8	-							3.5	<.1	1.4	3.6	0.5	<.1	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	-	-							-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri	0.3	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION SDC 2 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size																							
Acmaea mitra	6.0	1.5	6.0	3.3	3.3	1.3	1.3	0.3	3.9	9.3	0.8	11.3	11.4	16.3	5.3	4.3	12.2	1.7	0.9	7.1	2.3	1.9	0.4
Anisodoris nobilis	-	-	0.4	0.3	0.8	0.2	0.2	-	0.2	0.1	0.1	-	0.3	-	<.1	<.1	-	<.1	0.1	-	-	-	0.8
Anthopleura elegantissima	0.5	0.5	1.0	1.3	1.6	1.1	1.2	0.7	1.4	0.9	1.2	3.3	1.7	0.9	1.1	1.4	1.0	1.1	1.8	0.9	1.1	1.8	1.0
Asterina miniata	3.8	2.3	3.6	3.0	3.8	5.3	4.2	1.6	0.2	0.5	0.2	1.3	0.7	1.0	0.6	0.8	2.6	1.2	0.3	0.4	0.6	0.3	0.1
Calliostoma ligatum	-	0.5	0.2	2.1	1.5	0.2	1.7	1.5	0.4	2.6	2.9	2.0	1.7	0.4	-	-	-	-	-	-	-	-	-
Cancer antennarius	0.5	-	0.3	0.4	<.1	0.1	<.1	<.1	0.1	-	<.1	0.2	-	-	-	<.1	-	-	-	-	0.1	-	-
Diopatra ornata	1.0	1.8	1.1	1.3	0.8	-	0.3	0.1	<.1	0.5	0.1	0.6	0.6	0.3	0.3	0.8	2.2	3.8	2.1	0.8	0.9	5.9	4.5
Eudistylia polymorpha	-	-	-	-	-	<.1	-	<.1	0.2	0.1	-	0.1	-	-	<.1	<.1	<.1	<.1	<.1	-	-	0.1	-
Leptasterias spp.	0.3	0.4	0.2	0.4	0.4	0.9	0.6	0.3	<.1	0.2	0.4	0.2	0.4	-	-	<.1	-	-	-	-	-	-	-
Lithopoma gibberosum	1.3	1.3	1.7	1.0	1.3	1.8	0.3	0.3	0.1	0.5	0.8	1.6	3.2	0.5	-	-	-	-	-	-	-	-	-
Pagurus spp.	7.5	5.3	8.0	14.3	11.8	19.4	10.9	15.8	13.3	11.8	20.4	30.6	62.1	24.1	11.1	1.9	2.3	0.4	<.1	0.6	0.3	0.4	-
Parastichopus spp.	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster giganteus	-	0.3	<.1	<.1	<.1	0.3	-	-	<.1	<.1	0.1	0.2	1.0	0.9	1.3	1.5	1.9	2.1	0.7	0.6	0.8	0.6	-
Pisaster ochraceus	-	-	-	-	<.1	0.3	-	-	<.1	-	-	0.2	-	<.1	-	0.2	-	0.1	-	-	-	-	-
Pycnopodia helianthoides	1.3	-	0.3	0.7	0.5	0.4	0.4	0.2	0.2	<.1	<.1	0.5	0.2	0.4	0.2	0.1	0.3	0.3	0.1	0.1	0.1	-	-
Styela spp.	0.5	<.1	<.1	0.2	0.2	-	0.1	-	<.1	0.3	-	0.6	0.4	1.0	0.7	0.3	-	-	<.1	-	0.1	0.6	0.1
Tegula brunnea	15.8	13.5	53.4	106.1	57.4	65.4	45.0	36.9	31.3	36.4	35.0	62.9	37.1	26.8	1.3	5.1	60.6	1.3	-	0.4	16.5	1.9	-
Tegula montereyi	0.8	0.5	5.6	1.8	2.1	1.1	4.1	2.1	0.8	2.3	1.4	7.7	2.1	-	-	-	-	0.2	-	-	-	-	-
Tethya aurantia	-	<.1	0.2	0.3	0.3	0.3	0.2	0.5	0.8	0.3	0.5	0.3	0.1	0.3	0.1	0.5	0.1	0.1	<.1	-	-	-	-
Tonicella lineata	1.5	0.3	1.1	3.8	4.5	4.3	2.3	0.9	1.3	4.4	1.4	2.3	5.1	4.1	1.1	0.8	0.6	-	-	-	-	-	-
Urticina spp.	-	-	-	0.2	<.1	-	-	-	-	-	-	-	-	0.4	<.1	-	<.1	-	-	-	-	-	0.1
Only Counted if Greater than 1"																							
Acanthodoris lutea	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-
Aldisa sanguinea	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Anthopleura artemisia	-	0.2	0.2	0.6	0.3	<.1	0.4	0.1	0.3	0.4	0.4	0.2	1.9	0.6	0.5	0.4	0.4	0.3	0.6	0.1	0.4	0.1	0.9
Anthozoa unid.	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	0.3	0.3	0.6	1.6	0.1	-	-	3.0
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.6	-	-	-	-	-	-	-
Aplysia vaccaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Ascidia spp.	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-
Balanophyllia elegans	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Balanus spp.	-	-	-	-	0.1	0.3	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boltenia villosa	-	-	-	<.1	-	-	-	-	-	<.1	0.3	<.1	1.1	0.2	0.3	<.1	1.1	0.4	0.3	0.1	0.3	0.3	-
Cadlina spp.	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma annulatum	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cancer productus	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Cancer spp.	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Ceratostoma foliatum	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chama spp.	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromodoris macfarlandi	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	0.1	-	-	-
Clavelina huntsmani	-	-	0.5	-	-	-	-	-	-	-	-	0.3	0.6	1.3	-	-	-	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	-	-	-	-	-	-	-	-	<.1	0.3	-	<.1	0.3	<.1	<.1	-	<.1	-	-	-	-	-	-
Conus californicus	-	<.1	0.1	<.1	<.1	0.4	<.1	<.1	-	-	<.1	<.1	0.2	-	<.1	<.1	-	<.1	-	-	-	-	-
Crangon spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Crassedoma giganteum	-	-	-	-	-	-	-	-	-	-	0.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-
Cryptochiton stelleri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.1	-	-
Cryptolithodes sitchensis	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Cucumaria spp.	-	-	-	<.1	-	-	-	0.2	-	<.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	-	<.1	-	-	-	0.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diodora spp.	-	-	-	-	<.1	-	<.1	-	-	0.1	0.1	0.1	-	<.1	<.1	-	-	-	-	-	-	-	-
Discurria insessa	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-
Doridacea unid.	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	0.2	0.3	0.6	<.1	<.1	-	<.1	0.6	1.9	0.8	0.4	0.4	0.5	0.4	0.8	0.9	0.3	0.3	0.6	-	-	-
Epiactis prolifera	0.3	0.3	-	0.7	-	-	-	-	<.1	<.1	0.1	-	0.5	0.4	<.1	-	0.1	-	-	-	-	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Fissurella volcano	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	<.1	-	<.1	-	-	-	-	-

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION SDC 2 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Only Counted if Greater than 1" (continued)																							
Flabellina trilineata	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Geitodoris heathi	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Halcampa decemtentacula	0.3	-	0.1	1.8	-	-	<.1	-	-	-	-	-	1.6	0.6	-	-	<.1	-	0.2	0.3	-	-	-
Haliotis spp.	-	-	-	-	<.1	-	<.1	-	-	0.2	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-
Henricia leviuscula	-	-	0.1	<.1	<.1	-	0.1	-	<.1	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-
Holothuroidea unid. a	-	-	-	-	<.1	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-
Hopkinsia rosacea	-	-	-	-	-	-	-	0.5	<.1	-	0.1	<.1	-	<.1	-	-	0.1	-	-	-	-	-	-
Lebbeus lagunae	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Leucandra heathi	-	-	-	3.1	<.1	-	0.3	-	<.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Leucilla nuttingi	0.3	-	-	-	0.6	0.6	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia instabilis	-	-	1.3	3.5	2.5	7.2	3.4	1.5	2.3	1.7	1.3	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	-	-	<.1	-	-	-	-	-	-	-	-	0.3	0.3	0.5	-	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	0.3	<.1	0.3	-	0.3	-	0.3
Majidae	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Megathura crenulata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Melibe leonina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.2	-	<.1	-	-	-	-
Mitra idae	1.0	<.1	1.0	1.0	0.8	<.1	0.2	0.4	0.9	1.0	0.8	1.7	1.7	1.0	0.3	0.6	0.6	0.1	0.3	0.6	0.6	0.5	0.1
Mopalia spp.	-	<.1	<.1	0.4	0.2	0.4	-	<.1	0.2	0.5	0.2	<.1	0.1	0.3	<.1	-	-	-	-	-	-	0.1	-
Nassarius spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	<.1	<.1	-	-	-	-	-
Navanax inermis	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	0.1	-	-	-	0.3
Nemertea unid.	-	-	-	<.1	-	-	0.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Norrisia norrisi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	0.5	-	-	-
Ocenebra spp.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-
Octopus spp.	-	-	-	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Olivella biplicata	-	-	-	-	-	-	-	0.2	0.2	<.1	1.2	-	-	-	-	-	-	-	-	-	-	-	-
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.1	0.6	1.1	0.9	1.6	1.4	-	-	-
Ophiuroidea unid.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
Phidiana hiltoni	-	-	-	-	-	-	-	-	<.1	<.1	-	-	0.4	1.6	1.3	0.3	0.9	<.1	<.1	0.3	0.9	0.1	0.1
Phragmatopoma californica	-	-	0.6	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster brevispinus	-	-	-	-	-	-	-	-	<.1	-	0.1	<.1	0.3	<.1	0.1	<.1	0.3	0.3	0.3	-	-	0.6	-
Pisaster/Henricia (juv.)	-	-	-	0.3	<.1	<.1	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Pista spp.	-	<.1	-	-	-	-	-	-	-	-	<.1	-	0.1	-	0.3	0.5	1.9	0.5	1.2	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Pododesmus cepio	-	-	-	-	<.1	-	-	-	-	<.1	0.1	0.1	0.2	0.6	0.3	0.4	-	-	-	-	-	-	-
Pseudomelatoma torosa	-	-	-	0.1	0.3	<.1	0.3	-	0.1	0.1	0.2	0.4	-	<.1	-	-	<.1	-	-	-	-	-	-
Pugettia spp.	0.5	<.1	0.2	1.2	0.8	0.8	1.0	0.3	0.5	0.7	0.5	0.2	0.4	0.4	0.2	0.1	0.6	<.1	0.1	0.1	0.1	-	-
Pyura haustor	-	-	-	-	-	-	-	<.1	<.1	<.1	-	0.5	0.2	<.1	-	-	-	-	-	-	-	-	-
Sabellidae	0.8	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Scyra acutifrons	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	0.1	-	-	-	-
Serpulidae unid.	-	-	-	0.4	0.3	0.4	0.4	1.0	0.1	<.1	-	0.8	-	0.1	<.1	0.8	2.8	0.4	0.6	0.6	1.1	0.4	0.1
Serpulorbis squamigerus	-	0.2	1.3	2.4	1.8	3.5	1.8	2.7	9.2	8.1	20.8	17.3	23.1	8.4	6.8	3.4	2.3	0.4	0.5	-	0.5	-	0.3
Stenoplax spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	0.3	<.1	-	-	-	-	-	-	-	<.1	0.1	-	0.4	-	0.9	0.4	0.8	0.4	1.1	1.8	-	-	24.1
Tegula pulligo	0.8	-	1.2	0.5	0.2	0.4	0.3	0.3	-	0.4	<.1	0.3	0.2	0.1	-	-	<.1	<.1	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Triopha maculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Tritonia festiva	-	-	-	-	-	0.1	<.1	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION SDC 3 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size																							
Acmaea mitra	5.3	5.8	10.7	3.3	7.0	4.5	10.5	10.8	17.1	23.9	8.4	6.3			3.2	5.6	8.4	7.5	9.9	10.1	2.3	2.3	0.4
Anisodoris nobilis	-	0.3	2.8	1.0	0.6	0.5	0.3	0.2	0.4	<.1	0.3	0.3			0.6	1.6	<.1	-	0.5	-	-	0.1	-
Anthopleura elegantissima	1.3	6.0	6.1	5.0	10.1	9.8	5.6	4.5	6.5	5.8	6.8	8.2			4.5	7.1	10.8	9.0	14.4	15.1	11.5	12.6	8.1
Asterina miniata	10.0	15.6	17.5	13.5	18.6	15.7	14.8	9.5	1.6	0.3	0.7	0.3			0.5	0.6	2.2	1.4	1.3	1.6	1.5	3.0	0.1
Calliostoma ligatum	-	1.3	3.5	4.5	3.4	1.8	3.4	3.0	3.0	8.4	9.6	5.7			0.2	0.8	-	-	-	-	-	-	-
Cancer antennarius	-	0.2	<.1	0.2	-	-	0.2	<.1	-	-	<.1	-			-	-	0.1	0.1	-	-	-	-	-
Diopatra ornata	8.3	15.1	22.4	25.8	20.7	10.6	8.3	4.6	6.3	5.5	5.8	8.6			6.9	20.7	23.7	19.4	16.3	20.6	26.0	28.5	21.5
Eudistylia polymorpha	-	0.3	-	-	0.5	0.3	0.3	0.3	0.4	0.5	-	0.3			-	0.1	-	-	-	-	-	-	-
Leptasterias spp.	-	0.4	0.5	0.1	0.3	1.0	0.4	<.1	0.1	<.1	0.1	<.1			-	<.1	0.1	-	<.1	-	-	-	-
Lithopoma gibberosum	2.5	2.2	1.5	1.4	6.8	2.8	2.6	1.2	0.5	1.0	1.3	1.1			0.3	-	-	<.1	-	-	0.3	1.6	-
Pagurus spp.	1.8	5.2	5.8	15.2	15.5	18.0	22.8	19.7	17.3	15.0	7.6	18.7			5.1	9.3	6.3	4.9	0.6	0.5	-	1.3	-
Parastichopus spp.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	0.1
Pisaster giganteus	0.5	0.2	0.4	0.3	0.3	-	<.1	<.1	<.1	<.1	-	<.1			0.6	1.9	2.4	0.9	1.7	0.9	2.3	1.0	0.5
Pisaster ochraceus	-	-	0.1	-	<.1	-	<.1	<.1	0.2	-	-	-			-	<.1	<.1	<.1	-	-	-	-	-
Pycnopodia helianthoides	-	0.8	1.0	1.3	0.8	0.6	0.3	0.4	0.3	0.2	0.3	0.4			0.4	0.2	0.4	0.4	0.2	0.4	-	0.8	-
Styela spp.	2.0	3.4	2.3	1.0	0.3	<.1	0.2	<.1	0.8	0.9	0.9	0.3			1.0	1.0	0.6	<.1	0.3	-	0.5	2.1	0.9
Tegula brunnea	18.0	67.8	68.9	96.0	79.9	72.8	80.5	41.3	34.6	22.3	44.1	107.1			7.1	33.2	24.9	0.8	4.5	18.0	3.0	5.3	-
Tegula montereyi	-	5.5	2.4	1.3	4.9	3.5	6.5	0.5	1.6	2.6	0.6	3.9			0.6	0.2	-	0.2	-	0.4	-	0.4	-
Tethya aurantia	-	0.4	0.8	1.3	1.0	1.4	1.1	0.7	1.4	0.8	1.0	0.8			0.7	0.8	1.0	1.1	0.9	0.6	0.3	1.0	-
Tonicella lineata	-	0.5	6.2	2.8	5.3	4.0	6.9	5.0	3.9	11.6	3.8	7.4			2.4	2.1	3.4	0.8	0.9	0.4	-	0.4	-
Urticina spp.	-	-	<.1	<.1	<.1	-	<.1	-	-	-	-	<.1			<.1	0.1	<.1	-	0.3	-	-	0.1	-
Only Counted if Greater than 1*																							
Aeolidiacea unid. a	-	<.1	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Aldisa sanguinea	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Anthopleura artemisia	-	0.3	0.2	0.5	<.1	<.1	0.3	-	0.6	0.1	0.3	0.3			0.3	0.8	0.3	0.5	0.6	0.1	0.5	0.4	0.5
Anthozoa unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	0.8	-	-	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	<.1	-			<.1	<.1	0.3	0.3	1.4	0.1	-	-	3.0
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	<.1	0.3	-	-	-	-	-
Aplysia vaccaria	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	0.8
Balanophyllia elegans	4.0	0.5	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Balanus spp.	0.8	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Boltenia villosa.	-	-	0.1	0.4	-	-	<.1	-	<.1	-	0.6	0.6			0.9	0.8	1.0	1.4	0.4	-	-	1.0	0.5
Brachyura unid. b (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Cactosoma arenaria	-	-	-	-	-	-	-	-	-	-	-	-			-	-	1.4	-	-	-	-	-	-
Cadlina spp.	-	<.1	-	-	<.1	<.1	-	-	-	<.1	-	-			-	-	-	<.1	<.1	-	-	0.1	-
Calliostoma annulatum	-	-	-	<.1	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Cancer productus	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Cancer spp.	-	-	-	-	-	<.1	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Ceratostoma foliatum	-	-	-	-	-	-	-	-	-	-	-	<.1			-	-	-	-	-	-	-	-	-
Chama spp.	-	-	-	-	-	-	-	-	-	-	0.1	-			-	-	-	-	-	-	-	-	-
Chromodoris macfarlandi	-	-	-	-	-	<.1	-	-	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Clausocalanus spp.	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	-	-	-	-	0.1	0.2	-	-	-	1.0	0.6	0.3			0.6	0.5	0.4	0.3	<.1	0.8	-	0.4	-
Conus californicus	-	-	-	-	-	-	-	-	-	0.2	0.4	0.2			-	-	-	-	-	-	-	-	-
Craniella arb	-	-	-	-	-	-	-	-	-	-	-	-			0.1	-	-	-	-	-	-	-	-
Crassedoma giganteum	-	-	<.1	-	-	-	-	-	<.1	0.3	0.1	0.2			<.1	0.1	<.1	-	-	-	-	-	-
Cryptochiton stelleri	-	-	-	-	-	-	-	-	-	-	-	<.1			<.1	0.2	0.8	0.4	1.5	2.1	4.3	2.0	0.1
Cryptolithodes sitchensis	-	-	-	-	-	-	-	-	<.1	<.1	-	0.1			-	0.3	-	-	-	-	-	-	-
Cucumaria spp.	-	0.4	0.3	0.2	-	0.3	-	-	0.1	0.1	<.1	-			-	-	-	-	0.2	-	0.3	-	-
Diaulula sandiegensis	-	-	-	<.1	-	-	-	-	<.1	<.1	-	-			-	-	-	-	-	-	-	-	-
Diodora spp.	-	-	<.1	-	-	-	-	-	-	0.2	0.3	<.1			-	<.1	-	<.1	-	-	-	-	-
Doriopsilla albopunctata	-	<.1	1.2	2.6	0.8	0.5	1.2	0.4	1.0	2.4	1.6	2.1			1.1	0.6	2.8	0.8	0.7	0.6	0.3	0.6	-
Epiactis prolifera	0.3	-	<.1	0.1	-	-	-	-	-	<.1	0.4	0.1			0.1	0.2	0.6	-	-	-	-	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	-	-	-	-	0.3	0.2			<.1	-	-	-	-	-	-	0.1	-
Fissurella volcano	-	-	-	-	-	-	<.1	-	<.1	<.1	0.5	-			-	<.1	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION SDC 3 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Only Counted if Greater than 1" (continued)																							
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Halcampa decemtentacula	0.3	0.5	-	0.8	-	-	1.2	0.8	0.4	1.8	-	-			-	<.1	-	3.2	0.9	-	-	-	1.3
Haliotis spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.1	-
Henricia leviuscula	-	-	0.2	-	0.1	<.1	<.1	-	-	-	-	-			<.1	-	0.2	-	<.1	0.1	-	-	-
Hermissenda crassicornis	-	-	-	0.1	0.1	-	-	-	-	-	-	-			-	-	-	-	-	0.5	-	-	-
Holothuroidea unid. a	-	-	-	0.3	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Kelletia kelletii	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	0.3	0.5	0.5
Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION SDC 3 -4m																							
Leucandra heathi	-	0.2	0.9	2.8	-	<.1	0.2	-	-	0.1	0.1	-			-	-	-	-	-	-	-	-	-
Leucilla nuttingi	1.5	1.9	0.6	-	-	0.3	-	-	-	-	0.2	-			-	-	-	-	-	-	-	-	-
Lissothuria nutriens	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Lottia instabilis	-	2.8	1.1	1.6	2.1	5.7	3.2	2.4	2.8	1.0	0.4	0.4			1.1	1.4	-	0.3	0.3	0.5	-	0.1	-
Lottia ochracea	-	-	-	-	-	-	-	-	-	0.3	-	-			<.1	<.1	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	<.1	-	-	0.3	0.3	-	0.3	-
Megathura crenulata	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.3	-
Melibe leonina	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Mimulus foliatus	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	0.2	-	<.1	0.1	-	0.3	-
Mitra idae	0.8	0.9	1.8	1.5	2.1	0.9	1.6	0.8	1.6	1.1	1.2	1.3			0.8	1.1	1.1	0.8	0.7	2.6	1.3	5.3	4.6
Mopalia spp.	-	<.1	-	-	<.1	0.2	-	-	<.1	-	0.1	-			-	-	-	<.1	-	-	-	-	-
Nassarius spp.	-	-	-	-	-	-	-	-	-	-	0.1	-			-	-	-	-	-	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Nemertea unid.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Norrisia norrisi	-	-	-	-	-	-	-	-	-	-	-	-			-	0.1	0.5	0.3	0.7	2.1	1.0	0.3	-
Ocenebra spp.	-	-	-	-	-	-	-	-	-	-	<.1	-			-	<.1	-	-	-	-	-	-	0.1
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	<.1	0.1	0.3	-	-
Ophioplocus spp.	-	-	0.1	-	<.1	-	-	<.1	-	<.1	-	-			-	-	1.6	0.4	0.2	0.5	0.3	0.4	-
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	-	<.1	-			0.3	0.2	1.0	0.3	1.2	-	-	0.8	-
Orthasterias koehleri	-	0.2	<.1	0.2	0.1	-	-	<.1	-	-	-	-			-	-	-	-	<.1	-	-	-	0.1
Paraxanthias taylori	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Pelecypoda unid. boring	-	-	-	0.2	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	<.1	0.2	<.1	0.4	<.1			0.6	0.2	0.8	0.3	0.3	0.5	-	0.1	-
Phragmatopoma californica	-	-	14.5	28.8	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pisaster brevispinus	-	-	-	-	<.1	-	-	-	-	0.1	-	<.1			-	0.3	0.3	<.1	0.7	0.5	0.3	1.3	0.3
Pisaster/Henricia (juv.)	-	-	-	0.1	-	-	<.1	-	-	-	-	-			-	-	0.1	-	-	-	-	-	-
Pista spp.	0.5	2.7	1.2	-	-	-	-	0.8	-	-	-	0.2			0.6	0.4	<.1	-	0.3	-	-	-	-
Placiphorella velata	-	-	-	-	-	-	-	-	-	-	-	-			-	0.1	<.1	-	-	-	-	0.1	0.1
Pododesmus cepio	-	-	-	-	-	-	-	-	-	<.1	0.1	1.4			0.6	0.2	-	-	-	-	-	-	-
Protothaca laciniata	0.3	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pseudomelatoma torosa	-	-	-	0.7	0.5	0.4	0.3	0.3	0.3	-	0.4	0.7			-	0.1	-	-	-	-	-	-	-
Pugettia spp.	0.3	<.1	<.1	-	0.9	0.3	0.5	0.5	0.4	0.7	0.2	0.4			0.3	0.4	0.6	0.2	-	-	-	1.4	-
Pyura haustor	-	-	-	-	0.2	<.1	0.1	<.1	0.2	0.2	0.1	0.3			0.1	<.1	-	-	0.3	0.1	-	-	-
Rictaxis punctocaelatus	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Sabellidae	0.3	-	-	<.1	-	-	-	-	-	<.1	-	-			-	0.1	-	<.1	-	0.1	0.3	-	0.8
Scyra acutifrons	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.4	-
Serpulidae unid.	0.8	-	-	2.0	-	1.0	0.3	0.4	0.2	0.4	0.2	-			<.1	0.3	0.8	1.4	0.4	1.4	0.3	1.5	0.3
Serpulorbis squamigerus	0.3	0.3	2.4	2.5	2.5	10.5	9.3	6.6	13.7	9.8	19.3	16.4			3.3	2.1	1.4	0.9	0.2	0.6	-	0.4	1.0
Sipuncula unid.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	<.1	-	-	-	-	-	-
Stenoplax spp.	-	-	-	-	-	-	-	-	-	-	-	<.1			<.1	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	-	-	-	-	-	<.1	<.1	-	-	0.2	0.3	0.3			0.3	0.4	1.5	1.2	2.8	11.9	3.8	0.4	26.6
Tegula pulligo	1.0	-	1.1	2.2	0.5	0.6	0.8	<.1	0.1	<.1	-	2.2			0.1	-	0.1	-	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	<.1	-	-	-	0.3	0.1	-
Tritonia festiva	-	-	-	-	-	0.6	<.1	-	<.1	-	-	<.1			<.1	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	0.3	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-

Subtidal Arc Quadrant - Yearly Invertebrate Mean Abundance (per 7 m squared) - STATION SC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Counted Regardless of Size																							
Acmaea mitra	3.0	2.3	3.3	7.5	3.3	4.3	4.3	1.5	12.8	6.2	2.3	2.3	6.0	0.6	0.9	-	1.7	1.8	2.3	10.1	22.9	0.8	4.1
Anisodoris nobilis	-	-	0.3	-	0.4	0.3	-	<.1	0.3	-	-	0.2	<.1	0.3	<.1	<.1	0.1	-	-	-	-	-	-
Anthopleura elegantissima	1.3	2.4	1.9	4.1	4.1	2.4	4.2	3.5	3.0	3.3	3.8	3.8	8.1	4.3	3.4	4.9	6.9	4.2	4.9	4.9	7.0	1.0	4.4
Asterina miniata	16.5	19.8	17.1	18.8	23.1	19.8	30.4	25.3	2.3	2.1	2.9	2.8	5.7	4.8	7.4	7.3	9.7	6.3	6.0	7.5	9.4	9.0	0.9
Calliostoma ligatum	-	-	-	0.2	1.3	0.8	1.5	0.3	1.0	1.1	2.6	3.5	2.5	3.4	3.4	1.3	1.1	1.0	1.1	2.3	9.0	3.0	1.1
Cancer antennarius	-	0.1	-	0.1	<.1	0.2	-	<.1	-	-	0.1	-	-	-	0.1	-	<.1	<.1	<.1	-	0.4	-	-
Diopatra ornata	-	-	<.1	0.5	1.4	1.0	2.2	0.3	3.3	2.6	3.3	6.9	6.8	5.1	2.9	2.3	1.9	1.8	1.3	4.5	3.6	2.8	1.6
Eudistylia polymorpha	-	0.1	-	-	-	0.4	<.1	<.1	<.1	0.2	-	-	<.1	0.3	-	-	0.1	-	-	-	0.1	-	-
Leptasterias spp.	2.3	0.8	0.6	1.6	0.5	3.8	3.2	0.3	0.9	0.8	1.0	0.8	1.3	0.9	0.4	1.0	0.4	0.8	0.3	0.1	0.5	-	1.0
Lithopoma gibberosum	2.0	1.0	0.4	1.3	4.1	1.1	0.9	<.1	1.3	<.1	0.4	0.5	0.7	0.4	0.1	0.2	0.2	-	<.1	0.4	0.5	0.3	0.1
Pagurus spp.	2.8	11.3	5.8	14.9	10.9	17.6	10.9	14.4	12.5	10.0	6.0	14.0	10.1	6.0	6.4	10.2	8.9	5.1	3.2	15.0	3.8	1.3	2.4
Parastichopus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-
Pisaster giganteus	-	0.3	<.1	0.1	<.1	-	-	<.1	-	0.1	0.1	0.2	-	0.2	0.2	0.2	0.6	0.6	0.3	0.1	0.6	0.5	-
Pisaster ochraceus	-	-	<.1	0.1	<.1	<.1	-	-	0.2	<.1	-	-	0.2	-	<.1	0.2	-	-	-	0.1	0.1	-	-
Pycnopodia helianthoides	1.0	0.5	1.2	0.4	0.8	0.9	0.3	0.8	0.3	0.3	0.9	0.6	0.8	0.7	0.8	0.9	0.5	0.6	0.3	0.3	0.1	0.8	0.3
Styela spp.	-	-	-	0.6	0.6	0.3	0.4	-	1.0	3.3	1.8	2.5	3.7	0.9	0.9	-	0.5	0.2	0.1	-	0.4	0.8	0.4
Tegula brunnea	8.3	21.0	20.0	76.7	58.5	78.3	56.8	24.0	67.8	75.8	57.0	67.8	44.5	42.9	64.1	104.3	97.3	101.0	70.9	104.6	102.0	60.0	115.9
Tegula montereyi	-	0.4	0.5	0.2	-	2.0	1.0	0.3	0.5	2.3	-	1.3	0.5	0.4	-	3.0	1.1	0.3	-	1.5	3.0	-	-
Tethya aurantia	-	-	0.3	-	-	-	-	-	-	<.1	-	-	0.4	-	-	-	-	-	-	-	0.1	-	-
Tonicella lineata	3.0	1.9	2.3	14.4	13.5	9.5	15.0	7.8	16.0	6.2	4.9	4.0	12.0	1.1	2.4	1.5	3.9	3.5	4.3	5.6	33.0	3.0	7.9
Urticina spp.	-	-	0.2	<.1	0.3	-	-	-	-	-	-	-	<.1	<.1	-	-	0.1	<.1	0.1	0.1	-	-	-
Only Counted if Greater than 1*																							
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Anthopleura artemisia	-	-	-	<.1	-	0.3	0.3	-	-	0.4	-	0.2	0.6	0.3	0.7	0.4	0.1	0.6	0.3	0.3	0.4	-	-
Anthopleura xanthogrammica	-	-	-	-	-	-	-	-	0.2	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Anthozoa unid.	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ascidia spp.	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Boltenia villosa	-	-	-	-	-	-	-	-	-	0.2	0.1	-	1.3	0.1	-	-	-	-	-	-	-	-	-
Cactosoma arenaria	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Cadlina spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Calliostoma annulatum	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Ceratostoma foliatum	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clavelina huntsmani	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	-	-	-	-	-	-	-	-	<.1	0.2	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-
Cryptochiton stelleri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	<.1	0.3	<.1	-	0.3	-	0.8	0.3
Cryptolithodes sitchensis	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	<.1	-	-	-	-	-
Cucumaria spp.	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
Dendronotus spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	<.1	-	-	-	<.1	-	-	-	-
Discurria insessa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Doridacea unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Doriopsilla albopunctata	-	-	0.2	0.4	0.2	<.1	0.3	<.1	<.1	0.7	1.5	0.7	0.3	0.8	0.3	0.2	0.9	0.3	0.2	-	-	-	-
Epiactis prolifera	1.3	0.1	-	<.1	-	<.1	-	<.1	-	0.3	1.5	0.6	1.8	1.6	0.9	0.8	0.6	0.3	<.1	-	-	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-
Fissurella volcano	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
Halcampa decemtentacula	-	0.9	-	1.4	0.7	-	3.1	-	0.4	1.7	-	1.5	1.3	3.1	4.1	5.2	1.6	0.3	-	-	-	-	-
Haliotis spp.	1.0	1.1	0.2	<.1	<.1	-	<.1	<.1	-	<.1	-	-	<.1	-	<.1	<.1	0.1	0.2	-	-	-	-	-
Henricia leviuscula	-	-	-	0.1	0.2	-	0.3	-	-	-	-	-	-	-	0.4	-	0.4	0.3	<.1	-	-	-	-
Heptacarpus spp.	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	0.2	-	-	0.2	-	<.1	-	-	0.2	-	0.3	0.2	0.5	-	0.2	0.2	-	-	-	-
Hopkinsia rosacea	-	0.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	<.1	0.2	0.2	<.1	-	-	-	0.3
Ischnochitonidae	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lebbeus lagunae	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Leucandra heathi	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Lottia instabilis	-	-	-	-	0.7	2.2	1.5	-	1.4	6.8	7.8	3.8	9.3	6.4	5.0	3.3	4.4	4.8	1.1	1.9	-	0.5	0.4

Subtidal Arc Quadrant - Yearly InvertebratE Mean Abundance (per 7 m squared) - STATION SC 1 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Only Counted if Greater than 1" (contniued)																							
Lottia ochracea	-	-	-	-	-	-	-	-	-	<.1	-	1.8	-	-	-	-	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	0.1	-	-	-	-
Mimulus foliatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Mitra idae	-	-	0.2	-	0.2	-	-	-	0.5	0.4	0.4	0.3	0.5	<.1	-	-	-	0.2	0.1	0.3	-	-	-
Mopalia spp.	0.3	0.1	<.1	0.4	0.3	<.1	0.3	0.3	0.5	0.3	0.4	0.2	0.7	0.2	<.1	-	<.1	0.3	<.1	0.3	0.3	0.3	0.3
Nemertea unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Ocenebra spp.	-	-	-	-	-	-	-	-	-	-	0.1	-	<.1	0.1	-	-	-	-	-	-	-	-	-
Ophiothrix spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	0.1	-	-	-	-
Orthasterias koehleri	-	-	-	0.1	-	-	-	<.1	-	-	-	<.1	-	-	<.1	-	0.1	-	-	-	0.1	-	-
Petrolisthes spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	-	-	-	-	<.1	-	0.4	-	0.5	<.1	-	-	-	-	-	-
Phragmatopoma californica	-	-	4.2	4.4	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisaster brevispinus	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-	-	0.1	0.3	0.2	-	-	-	-	0.1	-	-	0.1	<.1	-	<.1	<.1	-	-	-	-	0.5
Pista spp.	0.5	-	-	-	-	-	-	-	-	-	-	0.2	0.3	0.1	-	-	<.1	-	-	-	-	-	-
Placiphorella velata	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	0.1	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Pododesmus cepio	-	0.1	<.1	<.1	-	-	-	-	-	-	-	<.1	0.5	<.1	-	-	-	-	-	-	-	-	-
Polychaeta unid.	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Pseudomelatoma torosa	-	-	-	-	-	<.1	-	-	1.1	<.1	0.6	0.4	0.3	0.2	<.1	0.3	-	0.2	-	0.1	-	-	-
Pugettia spp.	0.8	0.1	-	0.9	0.2	0.7	0.7	0.3	<.1	0.2	-	-	0.2	-	0.3	0.4	0.4	<.1	0.2	-	-	0.3	0.3
Pyura haustor	-	-	-	-	-	-	-	-	0.6	0.3	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Sabellidae	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Serpulidae unid.	-	-	-	0.4	1.6	0.5	-	<.1	0.3	-	-	-	0.8	0.2	-	-	0.6	0.6	-	-	-	-	1.0
Serpulorbis squamigerus	-	0.5	2.1	3.2	3.7	1.6	3.5	4.3	3.9	16.9	6.5	6.3	20.5	13.0	4.3	5.5	1.3	1.8	1.5	2.1	-	-	-
Strongylocentrotus purpuratus	0.5	0.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	0.1	-	0.3
Tegula pulligo	0.3	-	<.1	0.1	-	-	-	-	<.1	-	-	-	-	<.1	-	-	<.1	0.2	-	-	-	-	-

APPENDIX D5 – Subtidal Invertebrates

Subtidal Fixed Quadrat (SFQ) Method

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION FC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	3	4	2	3	3	1	1	4
Counted Regardless of Size																							
Acmaea mitra													0.5	0.9	0.5	0.7	0.0	0.4	1.2	1.0	1.3	1.3	0.6
Acmaeid unid. a													-	<.1	-	-	-	-	-	-	-	-	-
Aeolidiella oliviae (prev. Spurilla oli													-	-	-	-	<.1	-	-	-	-	-	-
Aldisa sanguinea													-	-	-	0.2	-	-	-	-	-	-	-
Alia carinata													-	2.3	1.4	3.0	0.7	1.6	0.3	1.3	-	0.3	0.1
Alia spp.													0.4	0.4	<.1	-	1.5	-	0.3	1.3	0.0	-	-
Alpheus clamator													-	-	-	-	0.1	-	0.1	-	-	0.3	-
Amphissa spp.													0.0	1.3	0.0	1.5	0.9	1.1	0.7	1.4	0.5	6.0	1.2
Anisodoris nobilis													0.1	-	-	<.1	-	-	-	-	-	-	<.1
Anthopleura artemisia													-	<.1	-	-	-	-	-	-	-	-	-
Anthopleura elegantissima													-	<.1	-	-	-	-	-	-	-	-	0.1
Anthozoa unid.													0.0	0.1	0.7	0.2	0.2	0.1	0.6	0.2	0.3	-	0.3
Asterina miniata													-	-	0.2	<.1	<.1	-	-	0.3	0.3	0.3	<.1
Asterina miniata (juv.)													-	-	-	-	-	-	-	<.1	0.5	-	-
Balanophyllia elegans													-	0.4	<.1	0.3	0.2	0.1	<.1	-	-	-	-
Balanus spp.													-	<.1	-	-	-	-	-	-	-	-	-
Balanus/Tetraclita spp.													-	0.1	2.0	1.6	0.2	0.1	-	1.6	2.0	0.3	2.3
Barnacles (juv.)													-	-	-	-	-	-	-	1.5	-	-	-
Boltenia villosa													-	<.1	-	0.2	-	-	-	-	-	-	-
Brachyura unid. b (juv.)													0.1	-	-	-	-	-	-	-	-	-	-
Cactosoma arenaria													-	0.6	0.3	0.3	-	-	-	-	-	-	-
Cadlina flavomaculata													-	-	<.1	0.2	0.1	-	-	-	-	-	-
Cadlina luteomarginata													-	-	0.1	-	-	0.1	-	-	-	-	-
Calliostoma ligatum													1.6	0.0	1.0	0.0	0.4	-	<.1	0.3	0.3	-	0.2
Callistochiton crassicostatus													-	-	-	-	<.1	0.1	0.1	-	-	-	-
Cancer productus (juv.)													-	-	-	-	-	-	-	-	-	-	<.1
Cancer spp.													-	-	<.1	-	<.1	-	<.1	-	-	0.3	-
Chama spp.													-	-	<.1	-	-	-	-	-	-	-	-
Chromodoris macfarlandi													-	-	-	-	-	-	-	<.1	-	-	-
Cirratulidae/Terebellidae unid.													-	-	<.1	-	-	-	-	-	-	-	-
Clavularia spp.													4.9	-	1.1	2.1	1.6	3.1	2.0	-	<.1	-	0.1
Corynactis californica													-	-	-	-	-	-	-	-	-	-	<.1
Crassedoma giganteum													-	-	-	-	0.1	-	-	-	-	-	-
Crepidula spp.													0.1	-	0.1	-	<.1	-	0.2	-	-	0.5	-
Cryptochiton stelleri													-	<.1	-	<.1	-	-	-	-	-	-	<.1
Cryptolithodes sitchensis													-	-	<.1	<.1	-	0.1	-	<.1	-	-	<.1
Cucumaria spp.													-	0.3	<.1	0.6	0.4	-	-	-	0.3	-	-
Dendropoma lituella													0.3	-	-	0.0	0.0	1.0	0.2	1.0	-	-	0.3
Diaulula sandiegensis													-	<.1	<.1	-	<.1	-	-	-	-	-	<.1
Diodora aspera													-	0.2	<.1	0.4	<.1	-	0.1	<.1	-	-	-
Doridacea unid.													-	-	-	-	-	-	<.1	-	-	-	-
Doriopsilla albopunctata													-	-	<.1	0.2	<.1	0.1	<.1	<.1	-	-	-
Epiactis prolifera													0.6	0.5	0.6	1.0	0.2	0.5	0.6	-	0.3	-	1.5
Eudistylia polymorpha													-	<.1	-	-	-	-	-	-	-	-	-
Eupentacta quinquesemita													-	-	0.1	-	0.1	-	-	<.1	-	-	-
Fissurella volcano													0.3	0.7	0.5	0.9	0.6	0.3	1.6	0.6	0.0	0.5	0.6
Fusinus luteopictus													0.4	0.9	0.9	0.5	0.6	0.3	<.1	0.5	0.0	1.3	0.5
Grapsidae (juv.)													-	-	<.1	-	-	-	-	-	-	-	-
Halcampa decemtentacula													-	-	-	-	-	-	-	0.3	0.3	-	-
Haliotis rufescens													-	-	-	-	0.2	-	-	-	-	-	-
Haliotis spp. (juv.)													0.3	<.1	-	-	<.1	0.1	0.2	-	-	-	-
Henricia leviuscula													-	<.1	-	0.3	0.3	0.1	<.1	0.3	-	0.3	<.1
Hermissenda crassicornis													0.1	-	0.2	<.1	0.2	0.1	0.3	<.1	-	-	0.2
Homalopoma spp.													3.0	4.0	2.5	3.9	3.4	2.9	2.9	3.6	2.3	6.5	2.9
Hopkinsia rosacea													-	-	-	-	-	0.1	-	-	-	-	0.3
Idotea spp.													-	-	-	-	-	-	-	<.1	-	-	-
Ischnochitonidae													-	-	-	-	-	0.1	-	-	-	1.0	-
Lacuna spp.													0.1	0.6	0.1	0.0	-	-	0.2	0.3	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION FC 1 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	3	4	2	3	3	1	1	4
Counted Regardless of Size (continued)																							
Lepidozona spp.													-	-	-	-	-	-	-	<.1	-	-	-
Leptasterias spp.													1.3	1.2	1.3	2.2	1.2	1.1	1.0	1.5	-	1.0	0.6
Leucandra heathi													0.4	1.0	0.3	1.3	<.1	-	-	1.0	-	-	0.1
Leucilla nuttingi													1.0	1.2	1.2	0.3	1.8	1.0	-	-	0.8	-	0.8
Lissothuria nutriens													0.6	0.6	2.4	1.5	2.4	2.1	1.1	<.1	-	1.3	1.0
Lithopoma gibberosum													-	-	-	-	-	-	-	-	-	-	<.1
Lithopoma gibberosum (juv.)													-	-	-	-	-	-	<.1	-	-	-	<.1
Lophopanopeus spp.													0.1	0.1	0.3	<.1	0.1	0.3	-	-	-	0.3	0.1
Lottia instabilis													-	<.1	-	-	-	-	-	-	-	-	-
Lottia ochracea													0.1	0.3	0.6	0.3	0.9	-	0.4	0.3	2.8	-	0.6
Loxorhynchus spp.													-	-	-	-	-	-	<.1	-	-	-	<.1
Mimulus foliatus													-	-	-	<.1	-	-	-	<.1	-	0.3	-
Mitra idae													-	-	-	<.1	<.1	0.1	-	0.3	0.3	-	<.1
Modiolus spp.													-	-	-	-	<.1	-	0.1	-	-	-	-
Mopalia lignosa													-	-	-	-	-	-	-	-	0.3	-	-
Mopalia spp.													-	-	-	-	-	-	-	-	-	0.3	-
Natantia unid.													0.1	-	-	-	-	-	-	-	-	-	-
Nereididae unid.													0.1	-	-	-	-	0.1	0.2	-	-	-	-
Ocenebra lurida													-	0.1	-	-	-	-	-	0.3	0.3	-	<.1
Ocenebra spp.													0.8	0.2	0.3	-	-	0.1	-	-	-	-	<.1
Ophiothrix spiculata													0.9	0.5	0.2	0.3	0.3	-	0.2	0.3	-	0.3	<.1
Ophiuroidea unid.													-	-	-	-	-	-	-	<.1	-	-	-
Pagurus spp.													4.3	4.9	5.1	6.9	3.1	1.3	5.7	2.9	1.3	1.5	0.9
Paraxanthias taylori													-	-	<.1	<.1	-	-	-	-	-	0.3	-
Pelecypoda unid. boring													21.1	4.6	14.1	10.9	8.8	14.3	9.5	3.7	5.0	5.8	5.3
Petrolisthes spp.													0.1	-	-	-	<.1	0.4	-	-	-	0.3	-
Phidiana hiltoni													-	-	-	-	-	-	0.1	<.1	-	-	0.3
Phragmatopoma californica													0.4	1.8	2.1	2.7	1.6	1.3	0.9	3.2	2.5	-	5.1
Phyllochaetopterus prolifica													-	-	0.3	0.8	0.1	-	0.6	0.4	1.0	-	0.5
Pisaster giganteus													-	-	-	-	-	-	-	-	0.3	-	-
Pisaster/Henricia (juv.)													0.1	-	0.2	-	0.3	0.8	0.2	<.1	-	-	0.1
Pista spp.													0.1	-	0.1	0.5	0.6	0.5	0.2	-	0.8	0.3	0.4
Platyhelminthes unid.													-	-	-	-	-	0.1	-	-	-	-	-
Pododesmus cepio													0.1	-	-	-	<.1	-	<.1	-	-	-	-
Pseudomelatoma torosa													0.1	0.3	0.1	<.1	<.1	-	-	-	-	-	-
Pugettia producta													-	0.2	0.1	-	-	0.1	0.2	<.1	-	-	-
Pugettia richii													1.3	1.6	1.3	1.8	1.1	0.4	1.1	0.8	0.3	2.0	0.8
Pyura haustor													-	-	0.1	<.1	<.1	-	-	-	-	-	-
Sabellidae													-	-	-	<.1	-	-	-	0.5	-	-	0.1
Scyra acutifrons													-	-	-	-	-	-	-	-	-	0.3	-
Serpula vermicularis													-	-	-	-	-	-	-	0.2	0.5	-	-
Serpulidae unid.													-	-	-	-	0.1	-	0.1	-	-	-	0.1
Serpulorbis squamigerus													0.6	0.4	0.8	1.0	0.4	0.4	0.3	0.9	-	0.3	0.2
Spirobranchus spinosus													0.1	0.1	0.6	0.8	1.7	1.4	1.4	0.5	0.5	0.8	1.3
Strongylocentrotus purpuratus													-	-	-	0.4	0.4	-	0.2	0.6	-	1.5	0.3
Strongylocentrotus spp.													0.6	-	0.5	0.7	0.3	0.4	0.6	0.5	0.8	-	0.3
Styela montereyensis													-	0.1	-	-	-	-	-	-	-	-	-
Tegula brunnea													1.3	6.1	3.9	7.9	4.6	2.9	3.3	4.5	1.0	2.5	3.8
Tegula montereyi													-	<.1	-	-	0.2	-	<.1	-	-	-	-
Tegula pulligo													-	-	-	<.1	-	-	-	<.1	-	-	-
Tethya aurantia													-	-	-	-	0.1	0.1	<.1	-	-	-	-
Tetraclita rubescens													-	-	-	-	0.6	-	3.7	0.4	-	-	0.1
Themiste pyroides													6.6	2.6	5.8	2.8	4.2	3.4	2.6	2.3	2.0	-	2.0
Tonicella lineata													0.3	0.2	0.3	0.2	0.3	-	<.1	0.3	1.0	0.3	0.4
Tricolia pulloides													-	0.2	-	-	<.1	-	0.3	-	-	-	-
tunicate, solitary unid.													0.1	0.3	0.3	0.9	0.3	-	0.1	-	-	-	0.2

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION FC 1 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2	4	4	3	4	2	3	3	1	1	4
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S.													-	-	<.1	-	-	-	-	-	-	-	-
Barentsia spp.													-	-	0.6	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)													4.5	2.1	1.1	1.3	1.1	1.9	0.6	1.2	0.3	1.0	1.2
Bryozoa, unid. (erect)													-	-	-	<.1	-	-	-	-	<.1	-	-
Bryozoa, unid. (foliose)													-	-	-	-	-	-	-	<.1	-	-	-
Didemnum/Trididemnum spp.													2.4	1.4	1.6	0.8	1.0	0.4	0.6	0.3	0.5	1.0	0.4
Eurystomella bilabiata													1.6	0.9	1.3	0.3	1.3	1.3	2.5	0.5	0.8	-	0.3
Hydroida													0.4	-	<.1	-	0.1	-	-	-	-	-	-
Hymenamphiastra cyanocrypta													<.1	-	-	-	<.1	-	-	<.1	0.3	-	<.1
Microporella californica													-	-	-	-	-	-	-	-	-	0.3	-
Porifera unid. (encrusting)													6.5	3.3	5.5	2.3	2.3	1.6	1.3	1.3	2.0	5.0	1.0
Salmacina tribranchiata													7.0	2.3	1.3	1.1	1.4	0.8	0.9	0.3	0.3	-	0.2
Spirorbis spp.													1.8	0.3	0.5	0.5	0.2	<.1	0.1	<.1	<.1	0.5	<.1
tunicates, colonial/social unid.													3.6	3.9	4.0	2.3	2.9	2.3	1.8	1.5	2.3	4.8	1.5

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION FC 2 -9m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Counted Regardless of Size																							
Acanthodoris lutea															-	-	-	0.1	-	-	-	-	-
Acmaea mitra															<.1	1.0	0.4	0.3	0.5	-	-	0.3	0.3
Acmaeid unid. a															-	0.1	-	-	-	-	-	-	-
Aldisa sanguinea															<.1	-	-	-	-	-	-	-	-
Alia carinata															0.3	-	0.3	-	-	-	-	-	0.3
Alia spp.															-	0.3	0.1	-	<.1	0.3	-	-	-
Amphissa spp.															0.2	1.1	0.6	0.6	1.2	1.0	2.0	-	0.2
Anisodoris nobilis															-	-	-	-	<.1	-	-	-	-
Anthopleura artemisia															1.8	1.1	1.1	1.1	1.1	1.3	1.3	1.0	1.1
Anthopleura elegantissima															0.6	0.5	0.5	0.8	0.5	0.5	0.8	0.5	0.8
Anthozoa unid.															-	0.3	0.1	-	0.2	0.3	-	-	<.1
Asterina miniata															0.6	0.8	0.3	1.0	0.9	1.0	1.0	0.8	0.6
Asterina miniata (juv.)															-	-	-	0.1	-	-	-	-	0.1
Balanophyllia elegans															32.9	25.8	30.6	23.8	26.7	28.8	12.3	12.3	12.1
Balanus aquila															-	0.1	0.1	-	0.7	-	-	-	0.4
Balanus spp.															-	-	-	0.3	<.1	-	-	-	-
Balanus/Tetraclita spp.															0.4	-	1.4	-	1.3	-	17.5	0.8	3.4
Barnacles (juv.)															-	-	-	-	-	100.0	-	-	-
Bittium spp.															-	-	0.5	-	-	-	-	-	-
Boltenia villosa															0.5	1.4	0.3	1.0	0.5	-	0.3	0.8	0.3
Cadlina flavomaculata															<.1	-	-	-	-	-	-	-	-
Calliostoma annulatum															-	-	0.3	-	0.2	0.3	-	0.3	<.1
Calliostoma canaliculatum															<.1	-	-	0.1	0.2	-	-	0.3	-
Calliostoma gloriosum															-	-	-	-	-	-	-	0.5	-
Calliostoma ligatum															0.6	1.0	0.5	0.1	<.1	0.3	0.5	0.5	0.4
Cancer antennarius															-	-	-	-	-	-	-	-	<.1
Cancer antennarius (juv.)															-	0.3	-	-	0.2	-	-	-	-
Cancer spp.															-	-	-	-	<.1	-	-	-	-
Chelyosoma productum															1.4	0.6	0.8	0.1	0.4	0.5	0.3	-	<.1
Cirratulidae/Terebellidae unid.															<.1	0.1	-	-	0.3	0.3	-	-	-
Clavelina huntsmani															-	0.9	0.5	2.5	0.8	0.8	-	-	0.4
Cnemidocarpa finmarkiensis															0.2	0.1	-	0.1	<.1	-	0.3	0.3	<.1
Conus californicus															-	0.1	-	-	0.2	-	-	-	-
Crassedoma giganteum															0.1	0.1	0.1	0.1	0.3	-	-	-	-
Crepidula spp.															0.4	0.1	0.9	-	1.2	1.0	-	0.5	0.4
Cryptochiton stelleri															-	0.3	-	0.1	-	-	-	-	-
Cryptolithodes sitchensis															0.2	-	-	-	-	-	-	-	-
Cucumaria spp.															1.6	1.0	0.3	-	-	-	0.3	-	0.1
Dendropoma lituella															13.0	14.5	18.4	11.4	18.5	6.0	1.5	2.5	0.9
Diaulula sandiegensis															<.1	-	-	-	-	-	-	-	-
Diodora aspera															0.1	0.1	-	-	-	-	-	-	-
Diopatra ornata															2.9	2.0	1.3	2.1	0.7	0.8	3.8	2.5	1.3
Doriopsilla albopunctata															0.1	-	0.5	-	0.3	-	0.3	0.8	0.2
Epiactis prolifera															0.4	0.3	0.3	0.1	0.2	0.5	0.8	0.3	<.1
Erato vitellina															-	-	-	-	<.1	-	-	-	-
Eudistylia polymorpha															0.2	0.1	-	-	-	-	0.5	-	0.1
Eupentacta quinquesemita															<.1	0.4	-	0.4	-	-	-	-	-
Fissurella volcano															0.1	-	-	-	-	-	0.5	-	<.1
Fusinus luteopictus															-	-	0.1	-	-	-	-	0.3	0.2
Halcampa decemtentacula															0.3	0.1	-	0.1	-	-	-	-	-
Henricia leviuscula															0.2	0.1	0.6	0.1	-	-	0.8	0.3	<.1
Hermissenda crassicornis															-	0.3	0.1	0.4	-	-	-	-	<.1
Homalopoma spp.															3.4	2.5	3.3	3.3	2.6	3.3	5.0	8.5	4.9
Idotea spp.															-	-	-	-	<.1	-	-	-	-
Ischnochitonidae															0.3	-	0.6	0.3	0.5	-	-	-	<.1
Lacuna spp.															0.2	0.4	-	-	0.3	0.5	-	-	-
Laila cockerelli															<.1	0.1	-	-	<.1	-	-	0.3	-
Lepidozona spp.															-	-	0.4	-	-	-	-	0.3	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION FC 2 -9m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Counted Regardless of Size (continued)																							
Leptasterias spp.															0.2	-	0.5	-	-	-	0.3	0.5	<.1
Leucandra heathi															-	-	-	-	<.1	-	-	-	-
Leucilla nuttingi															3.3	0.4	0.9	0.4	1.6	1.3	1.3	-	0.5
Lithopoma gibberosum															-	-	0.4	-	-	-	-	-	<.1
Lithopoma gibberosum (juv.)															-	-	-	0.1	-	-	-	0.3	0.1
Lophopanopeus spp.															-	-	-	-	0.2	-	-	-	-
Lottia ochracea															0.2	0.5	0.1	0.3	-	-	-	-	-
Loxorhynchus crispatus															-	-	-	-	<.1	-	-	-	-
Maxwellia santarosana															-	-	-	-	<.1	-	-	-	<.1
Melanella thersites															-	-	-	0.1	-	-	-	-	-
Mitra idae															0.8	0.3	0.9	0.3	0.7	0.8	0.5	0.3	0.8
Mopalia spp.															0.3	-	-	-	-	-	-	-	-
Myxicola infundibulum															<.1	0.5	0.4	0.5	0.7	0.3	0.8	0.5	<.1
Nitidiscala spp.															-	0.1	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.															-	-	-	-	0.2	-	-	-	-
Ocenebra interfossa															<.1	-	-	-	-	-	-	-	-
Ocenebra lurida															-	-	-	-	-	-	-	0.3	-
Ocenebra spp.															0.1	0.1	0.5	-	0.3	0.3	-	-	<.1
Ophioplocus esmarki															0.3	-	0.1	-	<.1	-	-	-	<.1
Ophiothrix spiculata															0.7	0.1	0.1	1.0	0.3	-	-	-	-
Ophiuroidea unid.															-	-	-	-	-	-	-	-	<.1
Pagurus spp.															3.8	4.5	1.6	1.9	2.7	2.5	3.8	2.5	1.4
Paracyathus stearnsii															0.3	-	-	-	-	-	-	0.3	0.1
Pelecypoda unid. boring															0.4	1.5	1.5	0.1	0.5	-	-	0.3	1.1
Phidiana hiltoni															-	0.1	-	-	-	-	-	-	-
Phragmatopoma californica															54.6	26.9	37.9	25.1	51.2	36.3	26.0	23.0	14.8
Phyllochaetopterus prolifica															1.1	2.5	1.6	1.4	1.8	3.3	1.3	1.5	1.4
Pisaster giganteus															-	-	0.4	-	<.1	-	-	-	-
Pisaster ochraceus															-	-	-	-	0.2	-	-	-	-
Pisaster/Henricia (juv.)															0.4	0.4	0.6	0.5	0.4	0.3	-	-	0.1
Pista spp.															0.5	0.1	-	-	-	-	1.3	0.5	0.2
Pododesmus cepio															0.4	-	0.3	-	0.2	-	0.8	-	-
Pseudomelatoma torosa															0.3	0.1	0.6	0.3	0.3	-	-	-	0.4
Pugettia producta															<.1	-	-	-	-	-	-	-	-
Pugettia richii															0.4	1.0	0.4	0.1	0.2	-	-	-	-
Pyura haustor															1.3	0.8	1.5	0.8	0.8	0.8	0.3	0.5	0.6
Rostanga pulchra															0.1	-	0.3	-	-	-	-	-	-
Sabellidae															0.7	0.4	0.9	0.5	0.2	0.8	1.3	0.5	0.3
Scyra acutifrons															0.2	-	-	-	-	-	-	0.3	-
Serpula vermicularis															1.8	2.1	0.4	1.8	0.4	0.3	1.8	0.5	<.1
Serpulidae unid.															0.2	0.4	0.6	0.5	1.6	1.8	1.0	-	0.3
Serpulorbis squamigerus															6.9	6.4	8.9	5.4	5.8	7.5	4.5	1.5	2.9
Sphaeromatidae unid.															-	0.1	-	0.4	-	-	-	-	-
Spirobranchus spinosus															0.5	0.3	0.9	1.4	0.8	0.3	0.5	-	0.4
Strongylocentrotus franciscanus															-	-	-	-	-	-	0.3	-	-
Strongylocentrotus purpuratus															<.1	-	0.3	0.1	-	-	-	-	0.1
Strongylocentrotus spp.															0.3	0.9	-	0.4	0.3	0.5	0.3	-	-
Styela montereyensis															0.7	0.8	0.1	0.3	0.3	0.3	0.5	0.8	0.4
Tegula brunnea															0.4	1.0	0.9	0.3	0.3	0.3	2.8	1.0	1.3
Tegula montereyi															-	-	-	0.1	<.1	-	0.5	-	-
Tegula pulligo															0.5	0.9	0.3	0.5	0.3	-	0.5	1.3	0.3
Terebellidae unid.															-	-	-	-	-	-	-	-	<.1
Tethya aurantia															0.2	-	-	0.1	0.2	0.3	0.5	0.5	0.4
Tetraclita rubescens															-	0.1	-	1.3	1.0	-	-	-	0.1
Themiste pyroides															0.4	0.4	0.3	0.1	<.1	0.3	0.5	-	<.1
Tonicella lineata															0.9	0.5	0.3	0.5	1.0	0.3	-	-	<.1
Tricolia pulloides															0.1	-	-	0.1	-	-	-	-	-
Tricolia spp.															0.1	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION FC 2 -9m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4	2	2	2	3	1	1	1	4
Counted Regardless of Size (continued)																							
Triopha catalinae															<.1	-	-	-	-	-	-	-	-
Triopha maculata															0.1	0.1	-	-	0.2	-	-	-	-
Tritonia festiva															-	-	-	-	-	-	0.3	-	-
Trivia californiana															-	-	-	-	<.1	-	-	-	-
Urticina coriacea															0.2	-	-	-	-	-	-	-	-
Urticina lofotensis															0.1	0.3	0.3	-	<.1	-	-	-	-
Urticina spp.															-	-	-	-	-	-	-	-	<.1
tunicate, solitary unid.															0.7	1.1	0.8	0.1	0.3	0.3	0.8	0.5	0.1
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S.															<.1	-	0.4	-	<.1	<.1	<.1	-	-
Aglaophenia spp.															1.1	1.1	<.1	0.1	-	-	-	-	-
Barentsia spp.															-	-	3.8	-	-	-	-	-	-
Bryozoa, unid. (encrusting)															5.6	2.4	8.4	3.8	8.7	5.8	2.3	2.8	2.8
Bryozoa, unid. (erect)															0.1	0.3	0.4	-	<.1	<.1	<.1	0.3	<.1
Bryozoa, unid. (foliose)															0.4	0.1	0.1	0.1	<.1	<.1	<.1	-	<.1
Cliona spp.															-	-	-	-	-	-	-	-	0.2
Didemnum/Trididemnum spp.															1.2	0.5	0.8	1.8	0.6	1.5	0.8	1.5	0.2
Dodecaceria fewkesi															<.1	-	-	-	-	-	-	-	-
Eurystomella bilabiata															-	-	0.1	-	-	-	-	<.1	-
Hydroida															<.1	0.3	<.1	<.1	0.3	0.3	-	-	<.1
Hymenamphiastra cyanocrypta															1.0	1.3	1.6	0.9	1.4	0.8	<.1	1.0	0.8
Metandrocarpa taylori															-	-	-	-	1.9	-	-	-	-
Phidolopora pacifica															-	0.3	-	-	-	-	-	-	-
Porifera unid. (encrusting)															2.2	1.4	1.8	1.0	0.7	<.1	<.1	0.8	0.8
Pycnoclavella stanleyi															0.6	0.1	0.4	0.3	-	1.8	2.0	-	-
Salmacina tribranchiata															0.5	0.5	0.6	0.8	0.6	0.5	-	-	<.1
Spirorbis spp.															<.1	0.3	<.1	<.1	<.1	<.1	<.1	<.1	<.1
tunicates, colonial/social unid.															0.8	2.4	0.4	1.3	1.1	0.8	1.0	<.1	0.1

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 3 -3m

Species / Year	1976	1977	1978	1979	1980	1991	1992	1993	1994	1995	1996	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size																							
Acmaea mitra	1.0	0.6	0.7	0.6	0.5	0.6	1.0	1.4	1.5	3.3	0.7	0.3	0.5	1.0	0.9	1.4	1.6	0.7	2.6	3.0	1.9	2.0	-
Acmaeid unid. a	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	0.5	0.1	-	-	-	-	-	0.1
Aegires albopunctatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	<.1	-	0.1	-	-
Aeolidiacea unid. a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Aldisa sanguinea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Alia carinata	-	3.0	11.9	8.3	8.3	6.7	1.6	3.8	4.7	5.3	9.4	4.7	2.0	1.1	2.8	3.8	1.7	0.3	2.1	-	-	0.8	-
Alia spp.	0.5	-	-	2.8	-	<.1	1.0	0.4	1.3	1.6	1.2	0.1	-	0.2	0.3	0.2	0.8	0.3	1.4	0.1	0.5	0.3	-
Alpheus clamator	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Amphipoda unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Amphissa columbiana	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphissa spp.	-	-	-	0.8	2.2	1.3	1.1	0.8	1.8	1.7	2.6	1.4	0.6	-	0.4	0.5	<.1	0.3	0.1	-	-	0.1	-
Amphissa versicolor	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ancula pacifica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Aniseodoris nobilis	-	-	-	-	-	<.1	-	-	-	-	-	-	-	<.1	-	<.1	<.1	-	-	-	0.3	-	-
Anthopleura artemisia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Anthopleura elegantissima	-	-	-	-	-	-	-	-	-	-	-	-	0.3	0.3	0.3	0.3	0.2	<.1	0.4	0.4	0.6	0.6	0.4
Anthozoa unid.	-	0.2	0.5	0.2	<.1	-	-	-	0.1	0.6	0.3	0.4	0.3	0.3	0.1	<.1	<.1	<.1	<.1	-	0.1	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Archidoris montereyensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1	-	-	-
Asterina miniata	-	-	0.2	<.1	<.1	<.1	0.4	<.1	-	-	-	-	-	-	<.1	<.1	0.1	-	-	-	-	-	-
Asterina miniata (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Babakina festiva	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Balanophyllia elegans	-	-	-	-	-	-	-	-	-	-	<.1	0.1	-	-	<.1	-	-	-	-	-	-	-	-
Balanus aquila	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Balanus spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	0.5	<.1	-	-	<.1	0.1	-	-	-	-
Balanus/Tetraclita spp.	-	-	-	-	-	0.2	-	1.1	0.2	0.6	0.2	0.1	2.8	6.3	5.8	9.4	6.1	5.3	2.3	2.9	-	10.0	0.8
Barnacles (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	-	-	-	-	-
Bittium eschrichtii	-	-	1.1	0.5	0.5	0.3	-	<.1	-	<.1	<.1	-	-	-	0.4	-	-	<.1	-	-	-	0.1	-
Bittium spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	0.3	-	-	-	0.3	-	-	-	-
Boltenia villosa	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.2	<.1	0.1	-	-	-	-	-	-	-
Brachyura unid. b (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Cactosoma arenaria	-	-	1.9	2.5	2.9	1.7	2.3	2.2	1.2	1.1	1.4	0.6	0.3	-	<.1	<.1	-	-	-	-	-	-	-
Cadlina flavomaculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Calliostoma annulatum	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	0.2	-	0.2	-	<.1	-	-	0.2	0.3	0.3	-	-	-	-	-	-	-	-	-	-	-
Calliostoma spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Callistochiton crassicostatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Cancer antennarius	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Cancer antennarius (juv.)	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-
Cancer productus (juv.)	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	0.5	-	0.2	-	-	-	-	-	<.1	<.1	-	0.1	-	-	<.1	<.1	-	-	-	0.1	-
Chama spp.	-	-	-	-	-	-	-	-	-	-	-	0.1	<.1	-	-	-	-	-	-	-	-	-	-
Chelyosoma productum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-
Clavelina huntsmani	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	-	-
Clavularia spp.	-	-	-	-	-	-	-	1.9	0.8	0.6	0.8	-	-	-	-	-	-	-	-	-	-	-	-
Conus californicus	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Crassedoma giganteum	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	<.1	-	-	-	-	-
Crepidula spp.	-	-	-	-	-	0.2	<.1	0.4	<.1	0.1	0.6	0.5	-	-	-	-	-	-	-	-	-	-	-
Cryptochiton stelleri	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Cryptolithodes sitchensis	-	-	<.1	0.1	0.6	0.4	0.2	-	0.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Cucumaria spp.	-	0.3	-	0.2	-	-	<.1	-	-	0.1	0.1	-	0.2	0.1	0.1	-	-	-	-	-	-	-	-
Dendrodoris spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	0.2	-	-	<.1	-	-	0.1	-
Dendropoma lituella	-	-	-	-	-	-	0.9	-	<.1	0.3	0.3	-	-	-	0.5	0.2	-	-	-	-	-	0.5	0.1
Diaulula sandiegensis	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-
Diodora aspera	-	-	-	-	-	-	-	<.1	-	-	<.1	-	-	0.1	-	-	-	-	0.1	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 3 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size (continued)																							
Diopatra ornata	0.3	-	-	-	-	<.1	0.3	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-	0.1	0.1	-
Doriopsilla albopunctata	-	-	-	<.1	-	-	-	-	-	<.1	0.1	-	-	-	-	<.1	0.2	<.1	<.1	0.3	-	-	-
Epiactis prolifera	1.0	3.8	2.5	2.8	2.6	1.4	0.8	2.3	0.7	1.4	1.1	1.5	1.1	0.7	0.8	0.4	-	<.1	-	0.1	-	-	0.3
Erato vitellina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Eudistylia polymorpha	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	-	<.1	<.1	-	<.1	-	-	0.1	-	<.1	-	-	-	-	-	-	-
Fissurella volcano	-	<.1	<.1	-	<.1	-	-	-	<.1	0.8	1.4	0.4	0.8	1.6	2.4	1.2	0.5	0.5	2.4	1.9	0.9	1.6	1.8
Flabellina trilineata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Fusinus luteopictus	-	-	-	<.1	-	<.1	-	-	-	0.1	0.8	0.8	0.2	0.2	<.1	0.1	<.1	-	-	-	-	-	-
Grapsidae (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-
Halcampa decemtentacula	-	<.1	1.3	0.1	<.1	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	<.1	-	-	-	-
Haliotis rufescens	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Haliotis spp.	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haliotis spp. (juv.)	-	-	-	-	-	-	-	-	-	-	0.1	<.1	-	-	-	-	-	-	-	0.1	-	-	-
Henricia leviuscula	1.0	-	-	<.1	-	-	0.3	0.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptacarpus spp.	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	0.2	-	-	-	0.1	<.1	0.2	0.1	-	-	<.1	-	0.1	-	-	<.1	0.1	-	-	-
Hiatella arctica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Hipponix spp.	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	0.3	<.1	0.4	0.8	0.6	1.6	2.4	1.8	2.3	3.1	4.2	2.6	0.3	-	-	-	-	-	-	-	-	-	-
Hopkinsia rosacea	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Irus lamellifer	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-	0.3	0.1	0.2	0.2	0.3	0.3	0.1	0.4	0.3	0.3	0.2	0.2	0.4	0.1	0.3	<.1	0.1	-	0.1	-	-
Kellettia kelletii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Lacuna spp.	-	0.3	0.2	-	-	0.3	0.7	0.4	2.2	0.9	<.1	0.6	0.6	0.8	0.6	2.1	0.6	0.4	0.6	0.8	-	1.1	-
Lepidozona spp.	-	-	-	-	-	<.1	-	-	-	<.1	0.1	-	-	<.1	-	<.1	-	<.1	0.1	0.3	-	0.4	-
Leptasterias spp.	0.5	1.8	0.7	1.6	2.4	1.9	1.4	1.8	0.8	1.4	0.8	0.3	-	-	-	-	-	-	-	-	-	-	-
Leucandra heathi	-	-	-	-	-	-	0.3	-	-	0.3	0.1	<.1	<.1	-	0.2	-	-	-	-	-	-	-	-
Leucilla nuttingi	-	-	-	-	-	-	-	-	-	0.3	<.1	0.3	-	<.1	-	-	0.2	-	0.4	-	-	-	-
Lissothuria nutriens	-	-	0.3	0.1	0.2	<.1	<.1	0.1	0.3	0.6	0.4	0.7	0.6	2.8	1.9	0.3	0.8	0.4	1.0	0.8	0.1	0.3	0.3
Lithopoma gibberosum	-	-	-	<.1	-	<.1	-	<.1	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-	<.1	0.8	0.3	<.1	0.3	0.1	0.1	0.2	0.1	0.1	-	-	<.1	<.1	0.1	-	-	-	-	-	-
Lottia instabilis	-	-	-	0.1	-	-	-	-	-	-	0.1	-	0.8	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	0.5	0.9	0.9	0.3	1.1	1.0	1.1	2.6	3.5	2.2	1.7	1.9	1.7	1.6	2.6	1.3	1.6	1.6	0.9	1.0	0.3	0.9
Lottia spp.	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Loxorhynchus crispatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-
Majidae	-	<.1	0.3	0.5	0.2	-	0.7	-	-	0.1	-	-	-	0.1	-	-	-	-	-	-	-	0.1	-
Megabalanus californicus	-	-	-	-	-	-	-	-	-	0.1	-	-	0.2	-	-	-	-	-	-	-	-	-	-
Megatebennus bimaculatus	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	<.1	<.1	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mitra idae	-	-	-	-	-	-	-	0.1	-	0.1	0.2	0.2	-	<.1	-	-	<.1	-	-	-	-	-	-
Modiolus spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	0.1	-	0.1	-	-
Mopalia lignosa	-	-	-	-	-	<.1	-	0.1	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mopalia muscosa	-	-	-	-	-	-	<.1	-	-	-	-	-	-	0.3	0.1	-	-	-	<.1	-	-	-	-
Mopalia spp.	-	-	-	<.1	<.1	-	-	-	-	0.1	-	<.1	<.1	-	-	-	-	0.1	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Mytilus galloprovincialis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Myxicola infundibulum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-
Nemertea unid.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-
Nereididae unid.	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-
Nitidiscala spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norrisia norrisi (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Ocenebra foveolata	-	-	-	<.1	-	-	-	-	-	-	<.1	-	0.2	-	-	-	-	-	-	-	-	-	-
Ocenebra interfossa	-	-	-	-	-	-	-	-	-	-	0.2	0.2	-	-	0.1	-	-	-	-	-	-	-	-
Ocenebra lurida	-	-	0.3	0.2	0.3	0.4	0.5	0.2	0.2	0.2	0.6	0.1	-	-	-	-	-	-	-	-	-	-	-
Ocenebra spp.	-	-	<.1	0.3	-	-	<.1	-	<.1	0.2	0.2	0.3	0.3	0.2	<.1	<.1	-	-	<.1	-	-	-	-
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 3 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size (continued)																							
Ophiactis simplex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Ophioplocus esmarki	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	0.1	0.1	-	0.9	-	-	-
Ophiothrix spiculata	-	-	0.1	-	0.3	<.1	0.2	-	-	0.2	0.1	0.4	<.1	<.1	1.1	0.4	0.8	1.6	1.1	0.5	1.1	0.1	0.4
Ophiuroidea unid.	-	-	-	-	-	-	-	-	0.2	<.1	0.1	<.1	<.1	-	-	0.1	<.1	-	<.1	-	-	0.3	1.0
Pagurus spp.	-	1.6	6.1	5.4	7.8	17.4	12.0	5.6	7.1	8.2	5.6	6.2	3.4	1.7	1.9	1.4	2.8	1.9	1.0	0.8	1.9	0.4	0.1
Paraxanthias taylori	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Pelecypoda unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	<.1	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	-	1.1	4.4	1.8	2.3	2.0	3.5	5.6	4.7	6.3	7.6	7.8	12.7	13.9	13.4	5.6	12.3	10.1	8.9	3.1	1.3	28.9	6.6
Petrolisthes spp.	-	-	-	-	0.3	-	-	-	-	-	-	<.1	-	-	-	0.1	-	<.1	-	-	-	-	-
Phidiana hiltoni	-	<.1	-	-	-	-	-	-	-	0.2	0.5	0.1	<.1	0.4	0.3	0.4	0.1	0.4	0.4	0.1	0.4	0.1	-
Phragmatopoma californica	-	0.8	7.6	4.3	2.3	2.8	3.3	5.5	12.4	20.6	14.7	3.2	12.3	2.8	2.4	1.7	1.3	4.3	5.8	5.4	7.4	8.3	38.3
Phyllochaetopterus prolifica	-	-	0.1	-	0.2	-	0.4	0.2	0.8	0.6	0.5	0.4	1.3	0.5	2.5	1.0	1.1	2.1	0.9	-	-	1.9	0.1
Pisaster brevispinus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	0.8
Pisaster giganteus	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	<.1	<.1	0.1	<.1	-	0.1	-	-
Pisaster ochraceus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Pisaster/Henricia (juv.)	-	<.1	1.8	2.1	2.6	1.7	2.0	1.1	1.0	1.0	0.6	<.1	-	-	<.1	-	-	-	-	-	-	-	-
Pista spp.	-	<.1	<.1	<.1	<.1	-	-	-	0.2	0.2	<.1	-	-	-	-	-	0.1	0.4	0.1	0.1	0.6	0.5	-
Placiphorella velata	-	-	-	-	-	-	-	-	-	-	0.1	-	<.1	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Pododesmus cepio	-	-	-	-	-	-	-	-	-	<.1	0.3	1.4	1.5	1.3	0.6	0.9	0.4	-	<.1	-	0.1	-	-
Polychaeta unid.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Polyplacophora unid. a	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudomelatoma torosa	-	-	-	-	0.2	-	0.2	0.5	0.4	0.5	0.9	0.5	0.2	-	-	-	-	-	-	-	-	-	-
Pugettia producta	-	-	0.1	0.2	0.2	0.2	<.1	<.1	0.3	0.1	0.2	0.2	0.2	<.1	0.2	<.1	<.1	<.1	<.1	-	0.4	0.5	-
Pugettia richii	-	-	0.4	0.8	3.4	2.3	3.6	1.1	0.3	1.2	0.9	0.8	-	0.3	0.6	0.7	0.1	0.1	0.7	0.4	1.1	0.5	0.1
Pugettia spp.	-	<.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pycnogonida unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Pycnopodia helianthoides	-	-	0.1	<.1	<.1	0.3	0.2	-	<.1	<.1	-	<.1	-	-	-	0.1	<.1	<.1	<.1	-	-	-	-
Rostanga pulchra	-	-	-	-	-	-	<.1	0.1	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Sabellidae	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-
Serpula vermicularis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	<.1	0.4	-	-	0.1
Serpulidae unid.	-	0.3	0.8	-	-	-	-	-	<.1	-	<.1	-	0.8	0.2	0.3	-	-	0.8	0.9	-	-	0.4	0.4
Serpulorbis squamigerus	-	<.1	0.1	0.4	0.3	<.1	0.2	0.1	0.4	0.9	1.8	1.8	2.0	1.8	1.0	0.9	0.4	0.2	0.5	0.3	-	0.6	0.5
Sphaeromatidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Spirobranchus spinosus	-	-	<.1	-	0.2	-	-	0.1	0.3	0.1	<.1	0.4	0.5	1.3	0.9	0.5	0.5	1.3	2.7	1.3	1.8	1.6	2.4
Stenoplax heathiana	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	0.1	-	-	-	-	-	-
Stenoplax spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Strongylocentrotus franciscanus	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	0.6	-	-	0.1	-	-	-	-	-
Strongylocentrotus purpuratus	-	-	-	-	-	-	-	<.1	-	-	-	<.1	0.5	-	0.4	0.7	1.2	0.4	1.9	2.9	1.1	0.4	0.5
Strongylocentrotus spp.	-	-	<.1	-	<.1	-	0.3	-	-	<.1	0.9	0.6	-	0.8	0.8	-	<.1	0.4	<.1	-	0.5	-	-
Tectura paleacea	-	-	-	-	-	<.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tegula brunnea	0.5	2.3	4.2	5.5	3.0	4.4	2.9	5.6	8.6	10.6	13.6	9.8	12.5	1.9	0.6	0.3	3.0	0.6	0.4	-	0.9	0.5	-
Tegula montereyi	-	0.2	-	-	-	-	-	<.1	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Tegula pulligo	-	-	-	<.1	-	-	-	-	-	-	<.1	0.1	-	-	-	-	-	-	-	-	-	-	-
Tethya aurantia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-
Tetraclita rubescens	-	0.5	<.1	-	<.1	-	-	-	0.8	0.2	0.5	2.1	0.7	0.1	0.8	3.0	3.6	2.0	6.3	2.9	8.0	-	5.6
Themiste pyroides	-	<.1	1.1	0.5	0.5	0.5	0.7	1.6	2.1	2.2	1.9	0.9	1.6	0.7	0.4	0.3	0.3	<.1	-	-	-	0.1	0.1
Tonicella lineata	0.3	0.3	0.3	0.6	0.3	0.4	0.2	0.9	0.9	0.9	1.7	0.7	<.1	0.1	<.1	0.2	0.3	-	0.2	0.1	0.3	-	-
Tricolia pulloides	-	-	0.1	-	0.2	0.8	0.3	0.6	4.1	1.8	0.3	0.2	<.1	<.1	1.0	0.7	0.4	0.2	0.2	-	-	0.4	-
Triopha maculata	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1	-	-	-	-	-	-	-	-	-
Tritonia festiva	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Williamia peltoides	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-
Xanthidae unid.	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	<.1	-	-	-	-	-	-	-	-	-	-	0.3	0.2	0.1	-	-	0.2	-	-	0.1	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 3 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	4	4	3	3	3	4	4	5	5	4	3	4	4	4	4	4	4	2	2	2	2
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Archidistoma psamnion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
Bryozoa, unid. (encrusting)	-	0.2	<.1	0.8	0.9	1.0	0.6	1.0	0.6	1.2	1.1	1.1	0.9	3.8	0.7	0.8	0.8	0.4	<.1	<.1	0.4	0.3	0.4
Bryozoa, unid. (erect)	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Didemnum/Trididemnum spp.	0.3	0.3	-	-	<.1	<.1	-	<.1	0.1	0.3	0.2	<.1	<.1	0.4	0.4	0.9	0.3	0.4	0.6	0.1	<.1	-	-
Eurystomella bilabiata	-	-	-	-	-	-	-	-	-	0.3	0.3	0.3	1.2	0.2	0.6	<.1	<.1	-	-	-	-	0.1	-
Haliclona spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-
Hydroida	-	-	<.1	-	-	-	-	-	0.2	0.9	<.1	<.1	-	-	<.1	-	-	-	-	-	-	-	-
Leucetta losangelensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Leucosolenia spp.	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Membranipora spp.	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metandrocarpa taylori	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	0.2	-	-	0.2	-	-	-	-	-
Porifera unid. (encrusting)	-	0.2	0.1	0.9	1.3	1.0	1.1	0.9	1.1	1.1	0.6	0.9	0.8	1.4	0.2	0.5	0.6	0.9	0.3	0.4	1.1	1.4	0.8
Porifera unid. c (orange)	<.1	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Salmacina tribranchiata	-	-	<.1	0.8	0.8	1.3	0.6	1.6	1.1	1.3	0.4	0.3	<.1	0.6	0.3	0.3	<.1	<.1	<.1	0.1	0.3	-	0.3
Spirorbis spp.	-	-	<.1	0.6	0.7	1.2	0.6	0.6	0.9	1.0	1.0	1.4	1.1	0.5	0.9	0.1	0.5	0.4	<.1	<.1	0.1	0.5	0.1
epiphytic bryozoan (sq.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	-	1.2	0.3	0.8	0.7	1.0	1.2	1.4	2.3	2.2	1.4	1.0	0.8	1.9	1.1	0.9	0.4	0.3	0.5	0.1	0.5	0.1	0.4

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 4 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size																							
Acmaea mitra	0.5	0.5	0.9	0.5	0.9	0.7	1.7	0.4	1.6	2.0	0.7	0.9			1.7	2.2	1.3	1.3	3.4	4.9	1.5	0.5	1.3
Aegires albopunctatus	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Aeolidia papillosa	-	-	-	-	-	<.1	<.1	<.1	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Alia carinata	-	1.3	1.1	0.7	1.9	0.7	1.1	1.5	1.7	2.5	0.4	3.5			0.4	0.8	1.5	0.3	0.5	0.1	-	3.3	0.1
Alia spp.	-	-	-	1.2	0.8	0.3	0.1	0.5	0.2	<.1	0.6	0.3			0.8	-	0.4	0.2	0.3	0.8	0.3	-	-
Amphissa spp.	-	0.3	1.2	0.7	1.0	1.0	0.8	0.9	2.1	1.1	2.0	4.1			0.5	0.3	<.1	0.4	0.4	0.5	0.5	0.4	-
Amphissa versicolor	-	-	-	0.1	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Anisodoris nobilis	-	-	-	-	<.1	-	-	-	-	<.1	-	-			<.1	<.1	-	<.1	-	-	-	-	-
Anthopleura elegantissima	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.1	0.3	0.3	0.3	0.5			0.5	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.9
Anthozoa unid.	0.8	1.0	-	0.4	0.2	-	-	<.1	-	0.4	0.4	0.2			-	0.1	<.1	0.3	0.4	0.3	0.3	-	-
Aphrodita spp.	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	0.1	-	<.1	-	-	-	-
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	-	-			-	-	0.6	-	<.1	-	-	-	-
Archidoris montereyensis	-	-	<.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Asterina miniata	0.3	-	0.3	0.2	<.1	-	0.2	0.3	-	<.1	-	-			0.1	0.1	0.2	-	<.1	0.1	-	-	-
Balanophyllia elegans	0.3	-	0.1	0.1	0.3	0.3	0.2	0.3	0.4	0.7	0.8	0.6			0.2	0.2	0.1	0.3	-	-	-	-	-
Balanus aquila	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Balanus spp.	-	-	-	<.1	-	-	-	-	-	<.1	-	<.1			1.5	-	-	-	0.3	-	-	-	-
Balanus/Tetraclita spp.	-	-	-	-	-	<.1	0.2	<.1	-	0.2	1.1	<.1			0.5	0.6	0.9	0.4	0.6	0.9	8.5	-	0.3
Bittium eschrichtii	-	-	0.3	0.2	0.2	-	-	-	-	0.1	-	-			0.2	1.1	<.1	0.1	0.3	0.3	-	-	-
Bittium spp.	-	-	-	-	-	-	0.1	0.4	-	-	-	0.3			-	-	0.9	0.1	-	-	-	-	0.3
Boltenia villosa	-	-	-	-	-	-	<.1	0.3	-	-	<.1	<.1			-	-	0.2	<.1	-	0.1	0.3	-	0.1
Cactosoma arenaria	-	-	2.4	3.1	1.9	2.9	2.1	1.8	0.4	0.5	0.2	<.1			-	-	-	-	-	-	-	-	-
Cadlina flavomaculata	-	-	-	-	-	<.1	-	-	-	<.1	<.1	-			-	-	-	-	-	-	-	-	-
Calliostoma ligatum	0.8	-	0.1	0.3	0.4	0.3	0.3	0.3	<.1	0.5	0.5	0.5			-	<.1	-	<.1	-	-	-	-	-
Calliostoma spp.	-	-	-	-	-	-	-	-	-	<.1	-	<.1			<.1	-	-	-	-	-	-	-	-
Cancer antennarius	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Cancer antennarius (juv.)	-	-	-	-	-	-	-	-	-	<.1	<.1	-			-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	<.1	-	-	-	<.1	-	<.1	-	-	<.1			-	0.2	-	-	0.3	0.1	-	-	-
Cirratulidae/Terebellidae unid.	-	-	-	-	-	-	-	-	-	-	-	-			0.2	-	<.1	-	-	-	-	-	-
Clavelina huntsmani	-	-	-	-	-	-	-	-	-	-	-	-			0.4	1.6	-	-	<.1	-	-	-	1.3
Clavularia spp.	-	-	-	-	-	-	-	2.3	0.7	4.0	1.4	4.4			-	-	-	-	-	-	-	-	-
Cnemidocarpa finmarkionsis	-	-	<.1	-	-	-	-	-	-	0.1	0.2	-			-	-	-	-	-	-	-	-	-
Conus californicus	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Crassedoma giganteum	-	-	<.1	-	-	-	-	-	-	<.1	0.2	0.3			0.3	<.1	0.1	0.1	<.1	-	-	-	-
Crepidula spp.	-	-	0.4	-	-	1.4	0.6	0.6	0.5	0.7	1.2	0.2			<.1	-	-	-	-	-	-	-	-
Cryptolithodes sitchensis	-	-	-	<.1	0.2	0.3	0.1	0.2	0.2	0.2	<.1	<.1			-	<.1	-	-	<.1	0.1	-	-	-
Cucumaria spp.	-	-	<.1	0.3	<.1	0.3	0.4	0.3	0.4	1.1	0.4	0.4			-	-	0.1	-	-	-	-	-	-
Dendrodoris spp.	-	-	-	-	-	-	-	-	-	<.1	0.2	-			<.1	-	0.1	-	<.1	0.3	-	-	-
Dendropoma lituella	-	-	-	0.2	-	1.8	3.8	1.7	2.2	0.9	0.6	0.9			0.3	-	1.0	1.1	1.9	2.5	1.3	0.4	-
Diadumene spp.	-	-	<.1	-	-	-	-	-	-	-	-	0.3			-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	-	0.3	<.1	-	-	-	-	-	-	<.1	-	-			-	-	-	-	0.2	-	-	-	-
Diodora aspera	-	-	-	-	-	-	-	-	-	-	0.1	-			<.1	<.1	0.3	0.1	0.1	-	-	-	-
Diopatra ornata	-	-	-	-	-	-	-	0.1	-	<.1	0.1	0.3			0.1	0.1	-	0.2	-	-	-	-	-
Doriopsilla albopunctata	-	-	0.3	0.1	<.1	-	0.1	0.1	0.1	0.3	0.4	-			-	0.4	<.1	0.2	<.1	0.4	0.3	0.1	0.1
Epiactis prolifera	3.5	1.8	1.4	1.5	0.6	0.3	0.7	1.5	<.1	1.0	0.9	0.8			0.2	0.4	0.1	-	-	-	-	-	-
Eudistylia polymorpha	-	-	-	<.1	-	-	-	-	-	-	-	-			-	-	-	-	<.1	0.1	-	0.1	0.3
Eupentacta quinquesemita	-	-	-	-	0.2	-	<.1	<.1	-	<.1	0.2	<.1			-	0.1	-	-	<.1	-	-	-	0.1
Fissurella volcano	-	0.3	-	<.1	0.3	-	-	<.1	0.1	0.3	0.5	0.3			1.3	1.4	<.1	1.1	1.8	0.9	-	-	1.4
Flabellina trilineata	-	-	-	<.1	-	<.1	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Fusinus luteopictus	-	-	-	-	-	-	-	-	<.1	0.2	0.2	1.2			0.6	0.3	0.1	-	-	-	-	-	-
Grapsidae (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Halcampa decemtentacula	-	-	-	0.2	-	-	-	-	<.1	0.1	-	-			<.1	<.1	-	-	-	-	-	-	-
Haliotis rufescens	-	-	<.1	-	<.1	-	<.1	-	-	<.1	-	<.1			-	-	-	<.1	<.1	0.3	-	-	-
Haliotis spp.	-	-	-	-	<.1	-	-	<.1	<.1	<.1	-	-			-	-	-	-	-	-	-	-	-
Haliotis spp. (juv.)	-	-	-	-	-	-	-	-	-	-	0.2	-			-	<.1	-	-	0.1	-	0.3	-	-
Henricia leviuscula	-	-	0.4	<.1	0.3	0.8	0.2	0.3	<.1	<.1	-	-			-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	<.1	-	0.1	-	0.3	-	<.1			0.3	0.2	-	<.1	0.2	-	-	-	-
Hippolytidae unid.	-	-	<.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 4 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size (continued)																							
Homalopoma spp.	2.0	3.3	4.8	2.6	3.7	2.3	4.6	3.3	3.9	3.4	5.9	4.9			0.2	<.1	-	<.1	-	-	-	-	-
Idotea spp.	-	-	-	<.1	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-	<.1	0.2	0.2	0.3	-	0.2	0.2	0.2	0.1	1.0			0.2	0.2	<.1	0.7	0.3	0.5	1.3	-	-
Lacuna marmorata	-	-	0.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Lacuna spp.	-	-	-	-	0.3	0.2	0.2	0.4	0.9	1.0	0.1	0.8			1.2	0.6	0.4	0.4	1.2	0.4	0.3	-	-
Laila cockerelli	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Lebbeus lagunae	-	-	-	-	-	0.2	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	<.1	0.1	0.2	0.1	-			<.1	-	-	-	-	-	-	0.1	-
Leptasterias hexactis	0.8	0.3	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Leptasterias spp.	-	-	0.6	0.3	1.1	1.5	1.3	1.4	0.1	0.5	0.3	<.1			-	-	-	-	-	-	-	-	-
Leucandra heathi	0.5	-	-	0.2	-	0.2	0.2	-	0.2	1.0	0.8	0.8			-	-	-	-	-	-	-	-	-
Leucilla nuttingi	-	-	-	-	<.1	0.2	0.2	-	-	0.3	0.6	0.4			-	-	-	0.3	-	-	-	-	-
Lissothuria nutriens	-	-	<.1	0.3	0.3	<.1	<.1	0.4	<.1	0.3	1.3	0.9			2.2	1.9	0.4	0.3	0.7	0.3	-	-	0.6
Lithopoma gibberosum	-	0.3	0.5	0.3	0.3	-	<.1	0.1	0.2	-	<.1	0.2			-	<.1	-	-	-	-	0.5	-	-
Lithopoma gibberosum (juv.)	-	-	-	-	-	-	-	-	-	-	-	<.1			-	-	-	0.2	<.1	0.1	-	-	-
Lophopanopeus spp.	-	-	0.3	0.2	0.2	0.3	0.1	-	<.1	0.1	-	0.2			<.1	0.3	0.1	0.1	0.1	-	-	0.1	-
Lottia instabilis	-	-	0.2	-	-	-	0.2	0.3	-	-	-	-			-	-	-	-	-	-	-	-	-
Lottia ochracea	0.5	1.0	-	-	0.3	0.3	0.7	0.2	1.3	2.2	1.4	0.9			1.1	1.3	0.6	0.5	1.1	1.6	0.8	0.1	0.3
Loxorhynchus crispatus	-	-	-	-	-	-	<.1	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Loxorhynchus spp.	-	-	-	-	-	-	-	-	-	<.1	-	<.1			-	-	<.1	-	-	-	-	-	-
Majidae	-	-	<.1	0.3	0.2	-	-	0.3	-	-	-	-			-	-	-	-	-	-	-	-	-
Megabalanus californicus	-	-	-	-	-	-	-	-	-	<.1	-	-			0.3	-	-	-	-	-	-	-	-
Megathura crenulata	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	0.1	-
Micrura verrilli	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	<.1	-	<.1	<.1	<.1	-	-	-	-			-	-	0.1	-	-	-	-	-	-
Mitra idae	-	-	0.2	-	<.1	0.3	<.1	<.1	<.1	0.2	0.2	<.1			-	0.1	-	-	<.1	0.1	-	-	-
Modiolus spp.	-	-	-	-	-	-	-	-	-	-	<.1	-			<.1	-	-	-	-	-	-	-	-
Mopalia muscosa	-	-	-	-	-	-	-	-	-	-	-	-			<.1	<.1	-	<.1	-	-	-	-	-
Mopalia spp.	-	-	-	<.1	-	-	<.1	-	-	-	-	<.1			<.1	0.1	-	-	<.1	-	-	-	-
Myxicola infundibulum	-	-	-	-	-	-	-	-	-	0.4	0.1	-			-	<.1	-	-	-	-	-	-	-
Nassarius mendicus	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Nemertea unid.	-	-	<.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Nereididae unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	0.1	-	-	-
Nitidiscala spp.	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-	<.1	-	-	-	-	-	-	-	<.1	-			-	-	-	-	-	-	-	-	-
Norrisia norrisi	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Norrisia norrisi (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Ocenebra foveolata	-	-	-	-	-	<.1	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Ocenebra interfossa	-	-	<.1	-	-	-	<.1	<.1	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Ocenebra lurida	-	-	0.3	0.4	0.7	<.1	0.4	0.2	0.5	0.3	0.4	0.2			-	0.1	<.1	-	-	-	-	-	-
Ocenebra spp.	-	0.5	<.1	0.1	-	<.1	-	0.1	<.1	0.3	0.3	0.3			0.2	<.1	-	<.1	-	-	-	-	-
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Ophiactis simplex	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	4.4
Ophioplocus esmarki	-	-	<.1	0.3	0.3	-	-	<.1	-	-	-	-			-	0.1	0.2	0.2	<.1	-	0.3	0.1	0.4
Ophiothrix spiculata	-	-	-	0.4	0.3	0.2	<.1	0.3	0.1	<.1	0.6	0.9			1.1	2.3	2.0	2.8	5.0	2.8	1.0	1.0	3.9
Ophiuroidea unid.	-	-	-	-	-	-	-	0.3	-	-	-	-			0.1	-	0.1	-	-	-	-	-	0.1
Pachycheles spp.	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Pagurus spp.	1.3	-	1.9	5.4	9.1	13.7	9.9	7.1	7.5	7.9	8.1	4.8			1.3	6.6	3.3	0.9	2.9	1.1	0.5	0.8	0.8
Paracerceis cordata	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	0.4
Parastichopus parvimensis	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	0.1
Paraxanthias taylori	-	-	-	-	-	-	-	-	-	-	0.1	<.1			-	-	-	-	-	-	-	-	-
Pelecypoda unid.	-	-	<.1	-	-	-	-	-	-	-	-	-			0.2	<.1	-	<.1	<.1	0.1	-	-	-
Pelecypoda unid. boring	0.5	5.8	5.9	8.3	8.9	3.2	4.1	5.8	5.6	7.1	4.9	5.8			9.4	7.5	3.1	8.1	3.9	10.9	13.3	1.8	3.4
Petrolisthes spp.	-	-	-	<.1	-	<.1	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-	-	-	-	-	-	-	<.1	0.1	0.1	0.2			0.1	0.2	0.4	0.4	0.3	0.4	-	1.0	0.1
Phragmatopoma californica	-	0.8	16.2	35.1	19.5	13.2	19.9	66.0	55.7	131.5	57.3	8.9			1.7	3.0	2.1	6.3	6.8	13.5	40.0	35.8	71.6
Phyllochaetopterus prolifica	-	1.5	0.3	0.8	1.1	1.1	2.2	2.4	2.8	2.3	1.8	1.7			1.8	0.4	0.6	1.8	0.9	1.5	1.0	0.6	0.6
Pisaster giganteus	-	-	-	-	-	-	-	-	-	-	-	-			-	0.1	0.1	-	0.2	0.3	-	0.1	-
Pisaster spp. (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 4 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size (continued)																							
Pisaster/Henricia (juv.)	-	-	0.2	1.2	1.6	1.4	1.6	1.3	-	0.6	-	<.1			<.1	-	-	-	-	-	-	-	-
Pista spp.	-	-	0.2	0.1	-	0.3	<.1	<.1	0.1	0.1	0.1	-			-	<.1	0.3	0.2	0.3	1.8	2.8	0.8	-
Pista/Streblosoma spp.	0.3	1.0	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Placiphorella velata	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	0.3	-	-
Pododesmus cepio	-	-	-	-	-	-	-	-	-	<.1	0.3	1.2			1.3	1.1	1.3	0.1	-	-	0.3	-	-
Polynoidae	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Polyplacophora unid. a	-	-	0.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pseudomelatoma torosa	0.3	0.3	<.1	0.2	0.3	0.7	0.9	1.3	0.5	1.3	1.5	1.0			-	0.3	0.2	-	-	-	-	0.1	-
Psolus chitonoides	-	-	-	-	-	-	0.2	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pugettia producta	0.3	-	-	0.2	-	-	<.1	0.1	0.1	0.1	<.1	0.2			0.4	<.1	0.4	<.1	-	-	-	-	-
Pugettia richii	-	-	0.2	1.5	1.9	3.0	1.4	1.4	0.8	1.0	0.8	0.5			1.0	0.9	1.5	0.9	1.0	0.5	0.3	1.6	0.5
Pugettia spp.	-	-	0.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pycnopodia helianthoides	-	-	<.1	-	<.1	-	-	<.1	<.1	<.1	<.1	-			-	-	-	-	-	-	-	-	-
Pyura haustor	-	-	-	-	<.1	0.2	0.1	0.1	0.2	0.1	0.2	<.1			<.1	<.1	-	-	-	-	-	-	-
Rostanga pulchra	-	-	-	-	-	-	-	<.1	-	-	-	0.2			<.1	-	-	-	-	-	-	-	-
Sabellidae	0.3	-	-	<.1	-	-	<.1	-	-	-	0.2	<.1			0.4	<.1	-	-	0.4	-	-	-	-
Scyra acutifrons	-	-	-	-	-	-	-	-	-	-	-	-			0.2	<.1	-	<.1	-	-	-	-	-
Searlesia dira	-	0.5	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Serpula vermicularis	-	-	-	<.1	-	-	-	0.1	-	<.1	<.1	-			-	0.1	<.1	0.3	0.1	0.1	-	-	0.1
Serpulidae unid.	-	0.3	0.3	-	-	<.1	-	<.1	-	0.1	<.1	0.3			<.1	0.1	<.1	0.3	0.6	0.5	0.5	-	2.3
Serpulorbis squamigerus	0.3	-	-	0.4	0.5	0.3	0.3	0.3	0.3	0.9	1.7	2.0			1.4	1.5	1.3	1.1	0.7	0.4	0.3	0.4	0.6
Sipuncula unid.	-	0.3	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Sphaeromatidae unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	<.1	0.4	-	-	-
Spirobranchus spinosus	-	-	-	-	-	<.1	<.1	-	-	0.2	-	0.3			1.8	2.0	2.1	2.6	2.4	2.4	1.8	0.3	2.3
Strongylocentrotus franciscanus	-	-	-	-	-	-	-	-	-	-	0.3	-			-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	-	-	-	-	-	0.2	0.2	-	-	<.1	-	-			1.3	2.1	1.5	1.9	2.1	3.3	2.3	0.5	2.0
Strongylocentrotus spp.	-	-	-	-	-	0.3	<.1	-	-	0.1	0.3	0.8			1.1	1.1	0.8	0.8	1.4	0.4	-	-	-
Styela montereyensis	-	-	0.1	-	-	-	-	-	-	<.1	-	-			-	-	-	-	<.1	-	-	-	-
Tegula brunnea	1.0	5.5	4.5	3.6	3.5	3.6	3.9	6.9	7.6	6.0	5.1	8.3			0.9	1.8	3.1	0.4	0.6	0.1	-	0.8	0.1
Tegula montereyi	0.3	-	<.1	<.1	-	-	<.1	-	<.1	-	-	0.5			-	-	-	-	-	-	-	-	-
Tegula pulligo	-	-	<.1	-	-	-	-	-	-	0.2	-	0.2			-	<.1	0.1	<.1	-	-	-	-	-
Tethya aurantia	-	0.3	<.1	<.1	-	-	-	-	0.1	0.2	0.2	0.3			0.2	0.1	-	0.2	0.1	-	-	-	-
Tetraclita rubescens	-	-	0.6	-	-	-	-	-	-	-	1.7	0.2			2.3	0.6	-	1.1	0.1	1.1	-	2.4	1.5
Themiste pyroides	-	1.3	0.8	1.4	0.4	0.9	0.5	1.4	1.6	1.9	0.9	1.2			0.3	0.1	<.1	0.3	-	0.3	-	-	0.1
Tonicella lineata	0.5	0.3	0.6	0.6	0.7	0.4	0.6	0.3	1.3	0.9	1.1	0.3			0.4	0.4	0.1	0.3	0.2	0.4	0.3	-	-
Tricolia pulloides	-	-	<.1	<.1	0.3	0.6	0.3	0.6	1.6	1.8	-	1.0			1.2	0.6	0.4	<.1	0.2	-	-	-	-
Tricolia spp.	-	-	-	-	-	-	-	-	-	-	-	-			0.1	-	-	-	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	0.1	-	-	-
Triopha maculata	-	-	-	-	-	-	<.1	-	<.1	<.1	<.1	-			-	-	-	-	-	-	-	-	-
Tubulanus polymorphus	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	-	-	<.1	-	-	-	0.1	<.1	<.1	-	0.5			0.3	0.1	-	<.1	<.1	0.1	-	0.1	-
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S	-	-	<.1	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Acarnus erithacus	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	1.3	0.8	0.2	1.1	0.7	0.9	1.2	1.3	1.5	1.3	1.5	2.2			2.0	1.6	1.5	1.0	0.6	1.1	4.3	1.3	2.0
Bryozoa, unid. (erect)	-	-	-	-	-	-	-	-	-	<.1	<.1	-			-	-	-	-	-	-	-	-	-
Bryozoa, unid. (foliose)	-	-	-	-	-	-	-	<.1	-	0.2	<.1	<.1			<.1	-	-	-	-	-	-	-	-
Didemnum/Trididemnum spp.	3.8	3.0	0.9	3.5	2.2	3.1	2.6	0.7	1.1	0.8	0.6	0.8			0.5	0.3	0.6	0.9	0.3	<.1	0.3	0.5	-
Dodecaceria fewkesi	-	0.5	-	-	-	-	-	-	-	-	-	-			-	0.7	-	<.1	<.1	-	<.1	-	-
Eurystomella bilabiata	-	-	-	-	-	-	-	-	-	<.1	<.1	-			-	<.1	<.1	-	-	-	-	0.1	-
Hydroida	-	-	0.2	-	-	-	0.1	0.1	-	<.1	0.1	<.1			-	-	-	-	-	-	-	-	-
Hymenamphiastra cyanocrypta	-	-	-	-	-	-	-	-	-	<.1	0.2	<.1			1.1	1.3	0.9	1.1	0.4	1.0	2.0	1.1	-
Leucosolenia spp.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Plumularia spp.	-	0.3	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	0.5	0.5	1.0	1.5	1.7	1.6	0.5	1.1	0.8	1.3	0.8			1.9	1.6	1.2	0.9	0.9	0.4	0.5	1.1	0.9
Porifera unid. b (yellow)	0.8	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 4 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	1	4	5	3	3	4	4	4	6	4	3	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of 1" Squares (continued)																							
Porifera unid. c (orange)	0.3	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Salmacina tribranchiata	-	-	0.1	1.2	0.5	0.7	0.6	0.8	1.0	1.2	0.6	0.8			0.1	0.2	<.1	0.1	0.1	0.1	0.3	0.1	-
Spirorbis spp.	-	0.3	-	0.5	0.7	0.7	1.6	1.1	1.4	1.3	1.2	1.1			0.6	0.3	0.3	<.1	<.1	<.1	<.1	<.1	0.5
Tricellaria spp.	-	0.3	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	1.3	7.8	2.3	2.3	1.8	0.9	1.1	0.8	1.1	1.5	1.1	0.5			0.9	1.0	0.6	0.1	0.8	0.3	0.3	0.4	1.3

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 6 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Counted Regardless of Size																							
Acmaea mitra	-	-							0.8	0.3	0.5	0.1	<.1	0.4	0.1	0.5	0.3	0.3	0.5	0.5	0.8	0.1	0.1
Acmaeid unid. a	-	-							-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-
Acmaeidae unid.	-	-							-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-
Aeolidia papillosa	-	-							-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-
Aldisa sanguinea	-	-							-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-
Alia carinata	-	0.9							2.8	0.9	2.3	2.5	-	1.6	1.4	2.5	1.9	3.6	4.1	0.1	4.3	9.4	2.4
Alia spp.	0.8	-							0.8	0.6	-	-	1.5	0.2	0.3	-	2.6	0.9	-	2.9	-	1.3	-
Alpheus clamator	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphissa columbiana	-	0.1							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphissa spp.	0.3	-							-	1.6	2.5	1.4	1.2	1.0	0.5	0.4	0.7	1.0	1.9	0.9	0.5	1.3	0.3
Anisodoris nobilis	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Anthopleura artemisia	-	-							1.5	1.1	0.6	0.5	0.2	0.7	0.1	0.3	0.1	-	0.1	0.1	-	-	-
Anthopleura elegantissima	0.5	0.6							0.3	1.3	2.3	1.6	1.7	2.3	2.3	1.9	1.0	0.9	1.1	0.9	-	-	0.3
Anthozoa unid.	-	-							-	0.3	0.7	-	0.5	0.8	<.1	-	-	0.3	0.1	0.6	0.3	0.3	-
Aplysia californica egg mass	-	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	0.1
Asterina miniata	2.5	1.6							0.3	0.8	0.8	1.5	0.8	1.5	2.1	1.5	0.7	-	-	0.1	-	-	-
Asterina miniata (juv.)	-	-							-	-	-	-	0.4	-	0.2	<.1	-	0.1	-	-	-	0.1	-
Balanophyllia elegans	1.8	1.0							4.0	6.0	4.5	5.9	0.6	0.2	0.2	-	-	-	-	-	-	-	-
Balanus aquila	-	-							-	0.2	-	0.3	<.1	-	-	-	-	-	-	-	-	-	-
Balanus spp.	1.3	-							0.5	<.1	0.2	0.3	0.6	-	-	-	-	<.1	-	-	-	-	0.3
Balanus/Tetraclita spp.	-	-							2.8	<.1	-	0.3	0.6	0.5	0.3	0.4	<.1	0.3	0.1	0.4	-	-	-
Barnacles (juv.)	-	-							-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-
Bittium spp.	-	-							-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-
Boltenia villosa	-	-							0.3	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Brachyura unid. b (juv.)	-	-							-	-	-	0.3	0.1	-	<.1	-	-	-	-	-	-	-	-
Cactosoma arenaria	-	-							-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Calliostoma annulatum	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma canaliculatum	-	0.3							1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	2.0	0.6							1.0	1.6	0.8	0.6	0.2	<.1	-	-	-	-	-	0.5	-	-	-
Calliostoma spp.	-	-							0.3	-	<.1	0.3	-	<.1	-	-	-	-	<.1	-	-	-	-
Callistochiton crassicostatus	-	-							-	-	-	-	-	-	-	-	-	<.1	-	0.3	-	-	-
Cancer antennarius	-	-							-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Cancer antennarius (juv.)	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Cancer anthonyi	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Cancer productus (juv.)	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-							6.0	<.1	-	-	-	-	-	<.1	<.1	<.1	<.1	-	-	-	-
Ceratostoma foliatum	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Chama spp.	-	-							-	-	-	0.1	-	-	-	-	-	-	-	0.1	-	0.3	-
Chromodoris macfarlandi	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-							-	0.2	0.2	0.3	0.1	-	-	-	-	-	-	-	-	-	-
Clavelina huntsmani	-	1.6							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Conus californicus	-	-							-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1	-
Corynactis californica	-	0.4							7.0	25.5	16.5	14.9	5.9	8.4	9.3	0.3	-	-	-	-	-	-	-
Crassedoma giganteum	0.3	-							-	0.2	-	0.1	0.1	0.3	-	0.2	-	<.1	0.3	-	-	-	-
Crepidula spp.	-	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Cryptochiton stelleri	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	0.3	-	-
Cryptolithodes sitchensis	-	-							-	-	-	0.1	<.1	-	-	-	-	-	-	-	0.3	-	-
Cucumaria spp.	-	-							-	<.1	<.1	-	-	-	-	-	-	-	-	0.1	-	-	-
Dendropoma lituella	-	6.4							25.3	42.4	57.8	19.0	11.9	8.4	4.7	1.8	3.4	0.9	0.2	-	-	-	-
Dendropoma spp.	10.8	0.3							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diadumene spp.	-	0.9							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	-	-							-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-
Diodora aspera	-	-							-	0.2	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Diopatra ornata	-	-							-	<.1	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-
Doridacea unid.	-	0.1							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	0.3	-							0.3	<.1	-	0.1	<.1	-	-	-	-	-	<.1	-	-	-	-
Epiactis prolifera	3.0	3.6							2.0	2.9	2.8	0.5	0.3	-	-	-	-	<.1	-	-	-	-	-
Erato spp.	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 6 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Counted Regardless of Size (continued)																							
Brato vitellina	-	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Budistylia polymorpha	1.3	1.5							0.3	<.1	0.3	-	-	0.2	-	0.2	<.1	-	<.1	-	-	-	-
Bupentacta quinquesemita	-	-							0.3	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Fissurella volcano	-	-							-	-	0.3	-	0.3	0.3	0.4	0.5	<.1	0.4	0.3	1.1	0.3	0.1	-
Flabellina trilineata	-	0.1							1.0	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Fusinus luteopictus	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Grapsidae (juv.)	-	-							-	-	-	-	-	-	-	-	<.1	0.1	-	-	-	-	-
Haliotis rufescens	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Hancockia californica	-	-							-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Henricia leviuscula	-	-							0.3	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	0.1							-	0.4	0.3	0.4	<.1	-	-	<.1	-	0.1	0.1	-	-	-	0.1
Hiatella spp.	-	0.3							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	0.5	0.1							-	-	0.3	0.5	-	-	-	-	-	-	-	-	-	-	-
Hydroides elegans	-	1.1							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-							-	<.1	0.2	0.5	0.1	<.1	-	-	-	0.1	-	-	-	-	-
Isopoda unid.	-	-							-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-
Lacuna spp.	0.8	-							0.5	0.3	2.2	0.3	0.9	1.9	1.4	1.4	3.6	1.8	3.1	1.5	1.0	2.3	0.1
Laila cockerelli	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Lepidozona spp.	-	-							-	<.1	0.2	-	-	-	-	-	-	<.1	-	-	-	-	-
Leptasterias spp.	-	0.3							-	0.4	0.3	0.1	<.1	-	0.4	-	-	-	-	-	-	-	-
Leucandra heathi	-	-							0.8	1.6	1.6	0.3	<.1	-	-	-	-	-	-	0.1	-	-	-
Leucilla nuttingi	-	-							0.8	0.3	-	-	-	0.3	-	0.3	-	-	-	-	-	-	-
Limaria hemphilli	-	-							-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-
Lissothuria nutriens	-	-							-	0.2	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Lithopoma gibberosum	-	0.1							-	-	-	0.1	<.1	<.1	-	-	-	-	-	-	-	-	-
Lithopoma gibberosum (juv.)	-	-							-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-
Lophopanopeus spp.	-	-							-	-	0.2	-	<.1	<.1	-	-	<.1	-	-	0.1	-	-	-
Lottia instabilis	-	-							-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	-	1.6							0.8	0.6	1.6	0.8	0.6	0.9	-	0.7	0.2	0.4	0.1	0.8	2.0	0.5	-
Majidae	-	0.5							-	-	-	-	0.2	<.1	<.1	-	-	-	-	-	-	0.1	-
Megabalanus californicus	-	-							-	<.1	-	-	0.2	0.1	-	0.3	-	-	-	-	-	-	0.1
Megathura crenulata	-	-							-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1
Mitra idae	-	0.1							-	-	0.3	0.3	<.1	0.2	0.1	-	0.3	-	<.1	0.5	-	-	0.3
Modiolus spp.	-	-							-	-	-	-	-	<.1	-	<.1	-	<.1	-	-	-	-	-
Mopalia ciliata	-	-							-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-
Mopalia lignosa	-	-							-	<.1	0.2	-	-	<.1	-	-	-	-	-	-	-	-	-
Mopalia muscosa	-	-							-	<.1	0.2	-	-	-	-	-	<.1	-	-	-	-	-	-
Mopalia spp.	-	-							-	0.2	0.2	-	-	0.2	-	-	-	<.1	-	-	-	-	-
Mytilidae	-	-							-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Mytilus californianus	-	-							-	-	<.1	-	-	-	<.1	-	<.1	-	-	-	-	-	-
Mytilus galloprovincialis	-	-							-	-	-	-	-	0.1	-	<.1	-	-	-	-	-	-	-
Myxicola infundibulum	-	-							-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Nassarius mendicus	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Natantia unid.	-	-							-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Navanax inermis	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Nemertea unid.	-	0.1							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae unid.	-	-							-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Nitidiscala spp.	-	-							-	-	<.1	0.1	-	-	<.1	-	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-							-	-	0.3	-	-	-	-	<.1	-	-	-	-	-	-	-
Ocenebra lurida	-	-							-	-	<.1	-	0.3	-	-	-	-	-	-	-	-	-	-
Ocenebra spp.	-	-							0.3	0.3	<.1	0.1	<.1	0.1	-	0.2	-	-	-	-	-	-	-
Ophioplocus esmarki	-	-							-	-	<.1	0.1	-	-	-	-	-	-	-	-	-	-	-
Ophiothrix spiculata	-	-							-	0.2	0.3	0.4	0.9	0.3	0.5	0.8	1.1	1.3	0.5	1.1	-	0.8	0.1
Ophiuroidea unid.	-	0.1							-	-	0.3	-	0.2	-	-	-	-	<.1	0.4	-	1.5	0.5	-
Pagurus spp.	0.5	1.3							4.8	3.3	3.8	6.9	0.7	1.3	1.9	1.2	0.8	-	0.6	0.4	-	0.1	-
Paracyathus stearnsii	-	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Paraxanthias taylori	-	-							-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Pelecypoda unid.	-	-							-	-	-	-	-	-	-	-	0.3	0.2	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 6 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Counted Regardless of Size																							
Pelecypoda unid. boring	0.3	0.5							-	1.8	0.8	0.5	0.6	0.7	0.3	-	0.5	0.7	0.5	0.1	1.0	0.8	0.3
Petrolisthes spp.	-	-							-	-	-	0.1	<.1	-	-	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-							-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Phragmatopoma californica	-	22.6							48.8	108.9	91.4	53.1	16.4	9.1	2.9	1.1	0.2	0.3	0.5	0.9	-	0.1	4.3
Phragmatopoma spp.	2.0	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phyllochaetopterus prolifica	-	-							1.3	2.7	3.0	2.0	2.0	3.0	1.9	2.8	2.8	0.4	1.6	-	0.5	0.5	-
Pisaster giganteus	-	-							-	0.2	-	-	<.1	0.1	0.1	0.2	-	<.1	0.1	-	-	-	-
Pisaster ochraceus	-	-							-	<.1	-	0.1	<.1	-	-	<.1	-	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	-							0.3	<.1	-	-	0.1	-	<.1	-	-	-	-	-	-	-	-
Pista spp.	-	2.0							-	0.7	-	0.1	-	-	-	0.2	-	-	<.1	-	-	-	-
Pista/Streblosoma spp.	0.3	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-							-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Pododesmus cepio	-	-							-	2.2	2.8	4.0	1.1	2.4	3.8	1.1	1.3	2.1	-	0.4	-	0.9	-
Polychaeta unid.	-	0.1							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polynoidae	-	-							-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Pseudomelatoma torosa	-	-							0.3	-	-	0.3	-	<.1	-	-	<.1	-	-	-	-	-	-
Pugettia producta	-	0.1							-	-	<.1	0.3	0.2	0.2	<.1	-	0.1	0.1	<.1	0.1	-	0.3	0.3
Pugettia richii	-	-							0.3	0.4	0.8	1.1	0.6	0.4	0.8	0.5	<.1	0.3	0.2	0.3	0.3	0.3	0.1
Pycnogonida unid.	-	-							-	-	-	-	<.1	-	-	<.1	0.7	1.3	0.1	0.1	-	-	-
Pycnopodia helianthoides	-	0.3							-	<.1	<.1	0.1	-	-	-	<.1	-	-	<.1	-	-	-	-
Pyura haustor	-	-							0.3	0.6	-	0.3	<.1	-	-	<.1	-	<.1	-	-	-	-	-
Sabellidae	-	-							-	<.1	0.7	0.5	-	-	<.1	<.1	0.1	<.1	-	-	-	-	-
Serpula vermicularis	-	0.4							0.3	1.6	2.8	0.3	-	0.5	0.4	0.7	-	-	0.4	-	0.5	-	-
Serpulidae unid.	0.3	0.5							5.0	6.9	1.9	3.3	2.2	1.4	0.8	0.4	0.8	2.1	0.4	2.9	-	-	0.1
Serpulorbis squamigerus	-	-							1.5	2.0	1.3	0.9	0.6	0.3	0.6	<.1	0.3	0.1	0.1	-	-	-	-
Spirobranchus spinosus	-	-							-	0.4	0.7	1.3	0.8	0.8	0.5	1.8	1.9	1.3	0.8	0.3	1.3	0.4	0.3
Strongylocentrotus franciscanus	-	-							-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	-	-							-	-	<.1	0.1	0.4	<.1	0.6	0.2	-	-	<.1	0.3	-	-	-
Strongylocentrotus spp.	-	-							0.3	0.3	0.5	0.6	0.2	0.4	0.3	0.2	<.1	-	-	-	0.5	-	-
Styela montereyensis	0.5	0.5							2.3	1.0	0.3	0.4	-	-	-	-	-	-	-	-	-	-	-
Tegula brunnea	1.0	1.4							-	1.3	2.0	4.3	2.6	0.5	0.1	<.1	-	-	-	-	-	0.1	-
Tegula montereyi	-	-							-	<.1	0.2	0.4	<.1	<.1	-	-	-	-	-	-	0.3	-	-
Tegula pulligo	0.3	1.5							-	-	0.3	-	<.1	0.1	-	-	-	-	-	-	-	0.1	-
Terebellidae unid.	-	0.1							0.3	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	-	2.1							-	2.3	3.7	1.1	0.4	0.1	0.1	-	-	0.1	0.1	-	-	-	-
Themiste pyroides	-	-							-	-	-	0.1	<.1	<.1	<.1	0.2	<.1	-	-	-	-	-	-
Tonicella lineata	-	0.1							0.5	0.8	0.6	0.4	0.1	-	<.1	-	-	-	-	-	-	-	-
Tricolia pulloides	-	1.0							1.3	-	1.5	0.3	0.8	0.7	0.6	0.4	0.3	0.4	0.3	0.3	0.5	-	-
Tricolia spp.	0.5	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triopha maculata	-	-							-	0.3	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Williamia peltoides	-	-							-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	-							-	0.7	-	0.3	-	0.4	-	-	-	-	-	-	-	-	-
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S	-	-							<.1	-	-	-	<.1	-	-	-	-	-	-	0.6	<.1	-	-
Acarnus erithacus	6.3	4.9							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aglaophenia spp.	0.8	1.0							0.5	0.8	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Barentsia spp.	-	-							-	-	-	-	-	0.2	<.1	-	-	-	-	<.1	-	-	-
Bryozoa, unid. (encrusting)	10.0	11.0							10.0	14.3	5.2	9.4	9.6	5.9	5.1	7.9	7.8	7.4	1.4	0.5	0.5	1.4	0.9
Bryozoa, unid. (erect)	0.3	5.0							0.3	0.4	-	0.1	<.1	0.1	-	<.1	<.1	-	-	-	-	-	-
Bryozoa, unid. (foliose)	-	-							2.8	1.8	0.3	0.3	0.1	<.1	-	<.1	-	<.1	<.1	<.1	<.1	<.1	-
Didemnum/Trididemnum spp.	2.5	2.3							-	0.2	<.1	-	<.1	-	-	-	<.1	-	-	-	-	-	-
Distaplia spp.	-	0.9							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurystomella bilabiata	-	-							0.5	0.9	0.3	0.6	0.8	0.3	0.6	0.2	0.3	-	-	-	-	-	-
Haliclona spp.	-	-							-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-
Heteropora spp.	4.5	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroida	0.8	-							-	3.6	0.6	0.3	4.1	3.8	0.3	0.7	2.1	11.5	1.8	1.6	3.0	1.4	1.9

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION NDC 6 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	ns	ns	ns	ns	ns	ns	1	3	3	2	4	4	4	3	4	4	4	2	1	2	2
Coverage Based on # of 1" Squares (continued)																							
Leucosolenia spp.	-	-							2.5	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Obelia spp.	-	7.0							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perophora annectens	-	-							-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Phidolopora pacifica	-	-							-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Phidolopora spp.	1.0	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	0.8	0.9							0.8	1.4	0.4	0.8	0.3	0.6	0.8	1.3	0.8	1.5	0.6	0.3	0.8	0.3	0.3
Porifera unid. b (yellow)	4.0	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porifera unid. c (orange)	-	-							-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Pycnoclavella stanleyi	-	-							3.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ritterella spp.	-	6.5							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spirorbis spp.	-	-							0.3	0.9	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	-	<.1	-
Synoicum spp.	3.3	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tricellaria spp.	3.5	0.8							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubularia spp.	-	-							-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
epiphytic bryozoan (sq.)	-	-							-	-	-	-	0.6	1.5	0.7	1.1	0.8	3.5	1.4	1.4	1.3	1.1	2.0
hydroid, epiphytic	-	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
tunicates, colonial/social unid.	1.3	6.4							13.3	4.6	1.4	1.3	0.6	0.8	0.5	0.3	<.1	0.1	0.2	0.1	-	<.1	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 2 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size																							
Acanthodoris lutea	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Acmaea mitra	0.3	0.5	-	0.2	0.1	<.1	0.7	0.1	2.4	1.9	0.3	2.7	2.9	2.8	1.9	1.1	1.0	1.1	1.2	1.5	0.5	0.9	-
Acmaeid unid. a	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aldisa sanguinea	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alia carinata	-	4.9	5.0	1.9	1.7	1.6	1.0	2.6	0.5	1.4	4.0	1.5	1.3	1.8	1.1	2.4	10.4	0.9	0.3	-	4.3	0.6	-
Alia spp.	1.8	-	-	1.9	<.1	-	0.6	0.8	1.3	3.7	0.6	1.6	0.3	0.4	0.3	0.5	-	0.3	0.6	0.3	0.1	-	-
Alpheus clamator	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Amphissa spp.	2.0	-	0.2	1.0	0.5	0.3	0.6	0.4	-	0.7	0.4	0.3	-	0.5	1.4	2.1	1.6	1.4	0.6	0.4	-	-	-
Amphissa versicolor	-	2.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anisodoris nobilis	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-	-	0.1	-
Anthopleura artemisia	-	-	-	<.1	<.1	0.2	0.1	<.1	0.2	0.3	0.1	0.1	<.1	-	-	-	-	0.1	0.3	-	-	-	-
Anthopleura elegantissima	-	<.1	-	<.1	0.2	-	<.1	0.1	<.1	<.1	0.2	0.1	-	<.1	0.1	-	0.2	0.2	-	-	-	-	-
Anthozoa unid.	1.0	-	-	0.5	0.4	-	-	-	0.2	0.3	-	-	0.1	<.1	-	-	-	<.1	-	0.1	-	-	-
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	0.2	<.1	-	-	-	0.1
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.3	0.6	0.1	-	-	-	-
Asterina miniata	0.3	0.2	0.1	0.2	0.2	0.4	0.2	0.1	<.1	<.1	-	-	-	0.2	<.1	0.2	0.3	0.3	<.1	0.1	-	-	-
Balanophyllia elegans	1.0	0.4	0.2	0.4	0.6	0.1	0.3	0.5	0.5	1.3	0.3	-	<.1	0.1	0.1	<.1	-	-	-	0.3	-	-	0.4
Balanus aquila	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Balanus spp.	-	-	-	-	-	-	-	-	-	0.3	-	<.1	0.8	-	-	2.7	-	-	-	-	0.1	-	-
Balanus/Tetraclita spp.	-	-	-	-	-	-	-	-	<.1	-	0.3	0.5	4.2	4.7	10.6	2.4	3.1	0.3	<.1	0.4	0.1	2.0	-
Barnacles (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	3.1	-	-	-	-	-	-	-	-
Berthella californica	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Bittium eschrichtii	-	0.2	<.1	0.7	-	0.6	<.1	-	0.5	0.2	-	-	-	0.2	0.7	1.4	0.2	1.1	1.3	-	-	-	-
Bittium spp.	1.3	-	-	-	0.1	-	-	-	-	0.5	0.3	0.4	0.2	0.7	0.3	0.8	3.5	0.3	-	-	-	-	-
Boltenia villosa	-	-	-	-	<.1	-	-	-	-	-	-	-	0.3	0.2	-	0.1	-	-	-	0.4	0.3	0.3	-
Brachyura unid. b (juv.)	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cactosoma arenaria	-	-	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Cadlina flavomaculata	-	-	-	-	<.1	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Cadlina modesta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Calliostoma annulatum	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	0.3	<.1	<.1	<.1	<.1	-	<.1	0.2	-	0.8	<.1	-	0.1	<.1	-	-	-	-	-	-	-	-	-
Cancer antennarius	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Cancer antennarius (juv.)	-	-	-	<.1	-	<.1	<.1	<.1	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	0.1	-	-
Cancer productus (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Cancer spp.	-	-	-	0.4	<.1	<.1	<.1	<.1	-	<.1	-	-	-	0.3	0.3	<.1	-	<.1	-	-	-	-	-
Ceratostoma foliatum	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-	-	-	<.1	-	-	-	-	-	0.2	0.3	0.5	0.1	0.1	0.4	-	-	-	0.4	-	-	-
Clavelina huntsmani	-	-	-	-	-	-	-	-	0.1	-	0.4	0.5	1.1	5.0	-	0.1	0.1	-	0.2	1.1	-	-	-
Clavularia spp.	-	-	-	-	-	-	<.1	0.7	0.4	0.9	-	-	-	-	-	0.7	-	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	-	<.1	0.2	-	-	-	-	-	-	-	-	-	-	<.1	0.3	<.1	-	-	-	-	-	-	-
Conus californicus	-	<.1	0.2	0.2	<.1	0.1	-	<.1	<.1	0.2	0.3	0.1	<.1	-	-	-	<.1	-	-	-	-	-	-
Crangon spp.	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangon stylirostris	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-
Crassedoma giganteum	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-
Crepidula spp.	0.3	-	1.8	1.5	1.8	0.6	0.9	1.0	0.5	0.8	0.7	0.8	0.6	0.1	0.2	-	-	-	-	-	-	-	-
Cryptochiton stelleri	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	0.1	-	-	-
Cryptolithodes sitchensis	-	-	-	0.2	0.1	0.2	0.3	0.1	<.1	<.1	-	0.2	-	<.1	-	-	-	0.3	-	0.1	-	-	-
Cucumaria spp.	-	-	<.1	<.1	-	-	-	-	-	<.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Dendrodoris spp.	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	0.1
Dendropoma lituella	-	-	-	0.2	0.9	-	0.4	<.1	0.3	1.4	<.1	0.1	1.3	2.1	4.1	0.2	-	-	1.5	-	-	-	-
Diadumene spp.	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diodora aspera	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	<.1	-	-	<.1	-	-	-	-	-	-
Diopatra ornata	-	0.9	<.1	-	<.1	0.1	<.1	-	<.1	<.1	0.1	0.4	0.1	0.3	0.2	0.4	<.1	0.3	0.8	-	0.5	0.3	0.1
Doridacea unid.	-	-	-	<.1	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	-	0.2	<.1	<.1	-	-	-	0.2	0.3	<.1	<.1	-	<.1	-	<.1	-	-	<.1	0.3	-	0.1	-
Epiactis prolifera	0.3	0.2	0.5	0.5	0.2	0.3	0.1	0.1	0.1	<.1	-	0.2	<.1	-	0.2	-	-	-	<.1	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 2 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size (continued)																							
Erato vitellina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Eudistylia polymorpha	-	-	-	<.1	-	-	-	-	<.1	<.1	-	-	0.6	-	-	-	-	-	-	-	-	-	-
Eupentacta quinquesemita	-	-	-	-	-	-	<.1	-	-	-	<.1	<.1	-	-	<.1	<.1	-	0.1	-	-	-	0.1	-
Fissurella volcano	-	-	-	<.1	-	-	0.1	-	<.1	0.2	<.1	-	-	0.2	0.1	0.3	<.1	<.1	0.2	0.3	-	0.1	0.5
Flabellina trilineata	-	-	-	-	-	<.1	-	0.1	-	-	0.1	-	-	<.1	-	-	-	-	<.1	-	-	-	-
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Gastropoda, neopic unid. a	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glans subquadrata	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Halcampa decemtentacula	-	-	-	<.1	-	-	-	-	-	-	-	<.1	<.1	<.1	-	-	<.1	-	-	0.1	0.1	-	-
Haliotis rufescens	-	-	-	-	-	-	<.1	-	<.1	0.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Haliotis spp.	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Haliotis spp. (juv.)	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Henricia leviuscula	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	-	<.1	<.1	-	-	-	0.1	-	-	-
Hiatella arctica	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	0.2	-	-	-	-	-	-	-
Hiatella spp.	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hipponix spp.	-	-	-	-	-	-	<.1	0.4	0.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Holothuroidea unid. a	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Homalopoma spp.	0.3	0.8	0.9	0.5	1.0	0.5	0.3	0.7	1.0	2.0	1.9	3.6	3.3	2.7	0.4	<.1	0.4	-	<.1	0.3	-	-	-
Hopkinsia rosacea	-	-	<.1	<.1	-	-	-	0.2	0.5	<.1	-	0.1	0.1	-	-	-	-	<.1	-	-	-	0.1	-
Idotea spp.	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	0.2	<.1	0.2	0.2	0.2	0.3	0.4	0.8	0.9	0.1	0.4	0.4	0.3	0.2	0.8	-	0.4	0.9	0.8	0.3	-	0.1
Isopoda unid.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	0.1	-	-	-	-	-	-	-	-	-
Lacuna spp.	0.5	-	-	0.2	-	0.1	-	0.5	0.5	0.3	0.4	0.2	0.1	0.8	0.4	1.0	0.6	0.2	0.3	0.1	-	-	-
Laila cockerelli	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lamellaria diegoensis	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-
Lebbeus lagunae	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-
Leptasterias hexactis	1.3	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	-	1.3	0.6	0.4	0.5	0.4	0.4	<.1	-	<.1	0.2	0.3	0.2	-	-	-	-	-	-	-	-	-	-
Leucandra heathi	-	-	-	1.0	0.1	-	-	-	0.1	0.2	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Leucilla nuttingi	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	0.1	0.1	-	-	-	-	-
Lissothuria nutriens	0.3	-	-	<.1	<.1	-	-	<.1	-	<.1	-	-	0.2	<.1	0.3	0.4	0.3	0.3	<.1	-	-	-	-
Lithopoma gibberosum	-	0.2	0.2	<.1	<.1	0.1	<.1	-	<.1	0.4	<.1	0.2	0.4	<.1	0.1	<.1	-	-	0.3	0.1	-	-	-
Lithopoma gibberosum (juv.)	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	<.1	0.3	<.1	-	-	-	-
Lophopanopeus spp.	-	0.2	<.1	0.3	0.3	0.2	0.6	0.4	<.1	-	0.3	<.1	0.1	0.1	-	0.2	-	<.1	0.1	-	0.1	-	-
Lottia asmi	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lottia instabilis	-	-	0.7	1.1	0.8	1.6	0.8	1.2	0.6	0.5	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Lottia ochracea	0.3	0.3	1.0	1.7	0.8	0.8	0.9	0.3	2.3	2.9	0.2	2.7	2.3	2.7	1.0	1.4	0.3	0.9	0.8	0.3	0.1	-	0.3
Lottia spp.	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-
Loxorhynchus crispatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1	-
Majidae	3.3	0.8	0.5	0.2	<.1	-	0.4	0.2	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Megabalanus californicus	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Melanella thersites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-
Melibe leonina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-
Micrura verrilli	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	<.1	<.1	0.2	<.1	-	-	<.1	-	-	<.1	-	<.1	-	-	-	<.1	-	-	-	-
Mitra idae	0.3	-	0.3	0.2	0.2	<.1	0.1	0.1	0.2	<.1	0.1	0.3	0.3	<.1	<.1	-	0.3	<.1	<.1	0.1	0.1	-	0.3
Modiolus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Mopalia lignosa	-	-	-	-	-	-	-	0.3	-	-	<.1	<.1	-	0.1	-	-	-	-	-	-	-	-	-
Mopalia muscosa	-	-	-	-	-	-	0.1	-	-	<.1	-	-	-	-	-	<.1	-	0.2	0.1	0.1	-	-	-
Mopalia spp.	-	-	-	<.1	<.1	<.1	-	-	-	-	<.1	-	-	<.1	-	0.3	-	-	0.1	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Myxicola infundibulum	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	0.3	-
Nassarius mendicus	-	-	<.1	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	<.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae unid.	-	-	-	-	-	-	-	-	-	0.1	-	-	<.1	0.1	-	-	-	-	-	-	-	-	-
Nitidiscala spp.	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 2 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size (continued)																							
Nitidiscala/Opalia spp.	-	-	-	0.1	<.1	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-
Norrisia norrisi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Ocenebra circumtexta	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ocenebra foveolata	-	-	-	-	-	-	-	-	-	0.2	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-
Ocenebra interfossa	-	-	0.1	-	0.1	0.1	0.1	-	-	-	0.2	-	-	-	0.5	<.1	-	-	-	-	-	-	-
Ocenebra lurida	-	-	-	-	<.1	-	-	-	<.1	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-
Ocenebra spp.	0.3	-	0.2	0.4	<.1	0.1	<.1	0.3	0.1	0.2	0.2	-	0.1	0.2	-	0.3	-	-	-	-	-	-	-
Octopus spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-
Olivella biplicata	-	-	-	-	-	-	-	0.1	<.1	<.1	0.2	0.1	0.1	-	-	-	-	-	-	-	-	-	-
Ophioplocus esmarki	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Ophiothrix spiculata	-	-	0.1	0.1	0.2	-	0.3	-	0.2	1.0	0.2	-	0.7	<.1	0.5	3.1	1.2	2.9	4.8	2.6	0.3	1.6	4.0
Ophiuroidea unid.	-	0.3	-	-	<.1	-	<.1	-	-	-	<.1	-	0.2	0.1	-	-	-	0.5	0.6	-	-	0.5	-
Pagurus spp.	4.3	13.3	3.6	5.8	11.5	16.8	15.3	12.1	8.4	14.0	4.1	7.6	7.8	6.6	8.9	6.0	9.0	5.8	4.3	1.4	4.4	0.8	-
Pelecypoda unid.	-	-	-	-	-	-	-	-	0.2	-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-
Pelecypoda unid. boring	2.8	2.1	5.7	5.6	6.7	4.6	4.9	7.9	12.5	15.5	5.1	12.4	16.4	15.1	18.4	15.4	7.5	13.3	12.4	5.6	2.5	7.4	2.0
Phidiana hiltoni	-	-	-	<.1	-	-	-	<.1	-	-	-	-	<.1	0.4	0.3	-	0.2	-	-	0.3	0.1	0.1	-
Phragmatopoma californica	-	<.1	0.6	0.5	<.1	0.1	0.3	1.3	0.9	<.1	0.4	2.5	4.5	2.8	1.4	1.1	1.6	1.0	2.0	0.6	3.8	3.1	6.6
Phyllochaetopterus prolifica	-	0.5	2.2	2.2	3.2	0.7	1.4	2.4	2.8	3.0	0.8	4.4	6.1	9.2	6.4	9.0	3.7	2.8	2.8	1.3	0.9	1.8	2.3
Pisaster giganteus	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	0.1	0.2	<.1	<.1	-	-	0.1	-
Pisaster/Henricia (juv.)	0.3	<.1	0.2	<.1	<.1	<.1	<.1	<.1	0.1	0.2	-	0.2	-	<.1	<.1	-	<.1	-	-	-	-	-	-
Pista spp.	-	-	0.4	0.9	0.9	0.2	0.7	0.3	0.4	0.8	0.3	0.2	-	0.3	0.6	0.4	0.7	1.3	2.7	5.0	4.3	1.6	1.3
Pista/Streblosoma spp.	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	<.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Pododesmus cepio	-	-	-	-	0.1	-	0.1	0.3	1.4	1.3	0.2	0.4	0.3	1.0	1.5	0.5	<.1	0.3	0.2	-	-	-	-
Polychaeta unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-
Polynoidae	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Pseudomelatoma torosa	-	<.1	0.4	0.7	1.0	0.6	1.2	0.8	0.9	1.0	0.5	0.4	0.6	0.3	0.1	0.1	-	-	-	-	-	0.1	-
Pugettia producta	-	-	0.1	0.2	0.4	0.3	0.8	0.1	0.5	0.3	0.3	0.1	<.1	0.8	0.3	0.2	<.1	<.1	-	-	-	-	-
Pugettia richii	-	-	0.4	2.1	2.3	1.4	3.4	1.2	0.7	1.3	0.6	0.7	0.9	1.6	1.0	1.5	0.8	0.6	0.7	0.1	-	-	-
Pugettia spp.	0.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pycnogonida unid.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-
Pycnopodia helianthoides	-	-	-	0.2	0.3	-	-	<.1	-	-	-	-	-	0.1	-	<.1	-	0.1	-	-	-	0.1	-
Pyura haustor	-	-	-	<.1	<.1	-	-	-	-	0.1	-	-	0.1	0.3	<.1	<.1	-	-	-	-	-	-	-
Rictaxis punctocaelatus	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	0.3	-
Rostanga pulchra	-	-	-	-	-	-	<.1	-	0.3	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Sabellidae	0.5	<.1	0.1	-	-	-	-	-	0.5	0.6	<.1	<.1	0.3	0.3	0.6	0.2	0.1	<.1	0.3	0.6	-	0.1	-
Scyra acutifrons	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Serpula vermicularis	-	-	<.1	-	-	-	-	-	-	-	-	0.1	-	0.5	0.4	0.3	0.3	-	0.3	0.4	0.3	1.0	0.5
Serpulidae unid.	0.5	<.1	0.4	0.1	0.2	0.1	0.2	<.1	0.5	0.2	0.2	0.4	0.3	0.7	0.4	0.3	-	0.3	1.0	0.6	0.6	2.1	-
Serpulorbis squamigerus	-	<.1	<.1	0.3	0.1	0.1	0.2	0.3	0.4	1.2	1.6	1.5	1.3	1.2	1.2	1.0	1.1	0.5	0.4	0.3	0.3	0.3	0.5
Sipuncula unid.	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaeromatidae unid.	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Spirobranchus spinosus	-	-	-	<.1	-	-	-	-	-	-	-	0.2	0.6	0.7	0.4	0.6	0.6	0.7	0.4	0.5	-	0.5	0.4
Stenoplax heathiana	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	<.1	-	-	-	-
Stenoplax spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Strongylocentrotus franciscanus	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	-	-	-	-	-	-	-	-	0.1
Strongylocentrotus purpuratus	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	<.1	0.4	0.2	0.1	0.5	-	0.1	-	1.4
Strongylocentrotus spp.	-	0.2	0.3	<.1	0.2	0.1	<.1	<.1	0.3	0.3	0.1	0.6	0.3	0.5	0.6	0.4	0.3	1.0	0.2	0.8	0.3	0.1	0.1
Styela montereyensis	-	-	0.1	0.2	0.2	-	-	-	-	<.1	-	-	-	0.2	0.3	-	0.1	-	-	-	-	0.1	-
Tectura persona	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tegula brunnea	1.8	2.6	7.8	7.4	5.5	2.6	1.3	2.4	2.3	2.4	2.8	5.0	2.9	2.7	0.7	0.9	9.3	1.2	0.8	-	1.5	0.3	-
Tegula montereyi	-	-	0.2	<.1	0.3	-	-	0.1	-	-	-	0.3	0.1	<.1	-	-	-	-	-	-	-	-	-
Tegula pulligo	0.3	-	<.1	<.1	<.1	-	-	-	0.1	<.1	<.1	<.1	<.1	-	0.1	0.1	<.1	<.1	-	-	-	-	-
Terebellidae unid.	0.8	-	0.1	<.1	0.1	<.1	0.1	-	<.1	0.4	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	-	-	-	-	-	-	-	-	<.1	0.4	-	4.9	2.5	-	<.1	-	-	-	-	-	-	-	-
Themiste pyroides	-	1.8	3.4	2.2	2.2	1.7	1.9	2.6	2.2	2.0	1.7	1.2	1.4	0.8	0.8	1.3	0.4	0.1	0.4	-	-	-	-
Tonicella lineata	-	<.1	<.1	0.2	<.1	<.1	0.2	<.1	0.4	0.9	0.6	0.6	1.3	1.7	0.3	0.3	0.3	-	0.3	0.4	-	-	-
Tricolia pullcides	-	0.3	<.1	0.2	<.1	0.3	0.3	-	0.7	0.9	0.1	0.7	0.4	0.6	0.4	0.8	0.8	<.1	-	0.3	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 2 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	4	4	5	6	6	5	5	4	4	4	4	4	4	4	2	2	2	2
Counted Regardless of Size (continued)																							
Tricolia spp.	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Triopha catalinae (prev. T. carpenteri	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triopha maculata	-	-	-	-	-	<.1	-	-	-	0.4	<.1	<.1	0.3	0.1	0.1	<.1	<.1	-	-	-	-	-	-
Tritonia festiva	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	0.1	-	-	-
Tubulanus polymorphus	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubulanus sexlineatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Urticina coriacea	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urticina crassicornis	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urticina spp.	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Williamia peltoides	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.8	-	-	-	-	-	-	-	-	-
Xanthidae unid.	0.3	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	<.1	-	<.1	<.1	-	-	-	-	0.4	-	0.1	0.5	0.5	0.3	0.4	0.3	-	-	-	-	-	-
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S	8.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aglaophenia spp.	-	-	-	-	-	-	-	-	-	-	-	0.1	-	<.1	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	5.0	1.4	0.7	1.3	1.8	1.6	2.9	2.2	2.3	1.1	0.3	1.0	2.0	1.4	0.8	0.4	0.7	0.3	0.1	<.1	0.9	1.0	0.1
Bryozoa, unid. (erect)	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (foliose)	-	-	0.8	<.1	<.1	0.2	<.1	0.2	<.1	<.1	<.1	<.1	<.1	<.1	-	-	-	<.1	<.1	-	-	-	-
Chthamalus fissus	-	-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-
Didemnum/Trididemnum spp.	1.8	0.3	0.3	0.3	<.1	-	-	-	<.1	0.4	<.1	<.1	0.8	1.1	0.5	0.8	0.6	<.1	0.1	<.1	<.1	-	-
Euherdmania claviformis	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurystomella bilabiata	-	-	0.2	0.2	-	-	-	-	-	0.3	<.1	0.1	0.4	-	-	<.1	-	-	-	-	-	0.3	-
Hydroida	-	-	-	<.1	-	-	-	-	<.1	<.1	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-
Hymenamphiastra cyanocrypta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-
Leucosolenia spp.	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	0.4	0.7	0.8	0.9	0.7	0.5	0.7	0.7	0.5	0.2	0.3	0.1	0.3	0.3	<.1	0.3	<.1	<.1	<.1	<.1	0.3	<.1
Porifera unid. c (orange)	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmacina tribranchiata	-	-	-	<.1	-	-	-	-	-	-	-	-	-	<.1	-	-	<.1	-	-	-	-	0.1	-
Spirorbis spp.	-	2.1	0.4	0.5	0.4	0.4	1.1	1.4	0.6	0.3	<.1	0.4	0.7	0.9	1.3	0.3	0.4	0.3	0.1	<.1	0.4	0.4	<.1
Tricellaria spp.	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicate, colonial unid. a (white)	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicate, colonial unid. b (yellow)	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicate, colonial unid. c (orange)	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	-	1.9	1.7	2.6	2.9	1.9	2.0	1.4	1.3	1.5	0.4	0.5	0.6	0.9	0.6	0.3	0.4	0.3	0.3	<.1	0.1	0.1	0.3

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 3 -4m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size																							
Acanthodoris lutea	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	0.1	-	-	-
Acmaea mitra	1.0	1.2	0.7	0.6	1.3	1.0	2.4	1.2	3.9	3.5	1.5	2.6			1.1	1.9	1.5	3.2	1.9	2.1	1.0	0.9	0.4
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	<.1	-	-	-	-	-
Aldisa sanguinea	-	-	-	-	-	-	-	-	-	<.1	-	<.1			-	-	-	-	-	-	-	-	-
Alia carinata	-	-	0.6	<.1	0.4	0.3	0.6	1.1	0.2	3.0	0.7	2.4			0.7	0.7	<.1	1.2	0.8	-	0.3	0.1	-
Alia spp.	0.5	-	0.1	<.1	-	-	0.3	0.3	0.5	0.3	1.8	0.2			-	0.4	0.2	-	0.2	0.3	-	-	-
Alpheus clamator	-	-	-	-	-	-	-	0.2	-	-	-	-			-	-	-	-	-	-	-	-	-
Alpheus spp.	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Amphissa spp.	0.3	0.2	-	0.1	0.3	0.9	0.7	1.2	0.6	1.4	1.9	2.0			1.6	1.6	0.9	0.5	0.8	0.5	-	-	-
Amphissa versicolor	-	-	0.5	<.1	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Anisodoris nobilis	-	-	<.1	-	-	-	<.1	-	-	0.2	-	-			<.1	<.1	-	<.1	-	-	-	0.1	-
Anthopleura artemisia	-	-	-	-	-	-	-	-	-	-	-	<.1			-	-	-	<.1	0.3	0.1	0.3	-	0.3
Anthopleura elegantissima	0.3	0.4	0.6	0.4	0.6	0.5	0.4	0.4	0.4	0.5	0.5	0.7			0.9	0.6	0.4	0.8	0.8	0.9	1.3	0.5	0.5
Anthozoa unid.	-	-	0.2	1.0	4.5	-	<.1	0.3	0.2	0.3	0.6	0.3			0.3	0.5	0.2	0.6	0.9	0.9	-	0.1	0.5
Aplysia californica	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	0.1	0.4
Aplysia californica egg mass	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	1.9	-	-	-
Ascidia spp.	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Asterina miniata	0.3	0.5	0.5	0.5	0.5	0.8	0.7	0.3	<.1	-	-	-			-	<.1	0.1	<.1	-	-	-	-	-
Asterina miniata (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	<.1	-	-	-	-
Balanophyllia elegans	1.0	2.1	2.7	3.8	4.7	5.3	5.8	4.9	5.5	4.5	3.6	2.6			2.0	1.9	1.7	4.3	4.3	4.6	9.0	11.0	5.1
Balanus aquila	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Balanus spp.	-	0.2	<.1	<.1	<.1	-	<.1	-	-	-	0.1	-			-	-	-	-	0.6	-	-	-	-
Balanus/Tetraclita spp.	-	-	-	-	-	<.1	<.1	0.2	<.1	-	-	-			0.2	-	-	0.3	-	7.5	-	-	0.3
Barleeia spp.	-	<.1	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Barnacles (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	0.4	-	-	-	-
Bittium eschrichtii	-	-	0.4	-	-	0.2	0.2	-	<.1	-	-	0.3			<.1	0.1	<.1	<.1	0.2	-	-	-	-
Bittium spp.	-	<.1	-	0.2	-	-	-	0.4	-	-	-	0.1			0.4	-	-	-	-	-	-	-	-
Boltenia villosa	-	-	-	-	-	-	-	-	-	<.1	0.3	0.1			<.1	<.1	-	0.3	0.1	0.3	-	0.4	0.6
Brachyura unid. b (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	0.1	-	-	-
Cactosoma arenaria	-	0.5	1.2	0.9	0.8	0.8	0.8	0.9	0.1	0.3	0.2	0.2			-	-	-	-	-	-	-	-	-
Cadlina flavomaculata	-	-	0.1	<.1	-	-	-	-	<.1	0.1	0.1	<.1			<.1	0.1	-	<.1	<.1	-	-	-	-
Cadlina luteomarginata	-	-	-	<.1	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Cadlina modesta	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Calliostoma annulatum	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	0.3	0.5	<.1	0.3	0.7	0.2	0.3	0.3	1.0	0.8	0.7			0.1	<.1	-	-	-	-	-	-	-
Calliostoma spp.	-	-	-	-	-	-	-	-	-	-	-	0.1			-	-	-	-	-	-	-	-	-
Callistochiton crassicostatus	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	-	-	-	-	-
Cancer antennarius	-	-	-	-	-	-	-	-	<.1	<.1	-	<.1			-	-	-	0.1	-	-	-	-	-
Cancer antennarius (juv.)	-	<.1	-	-	-	-	0.1	-	-	-	-	<.1			-	-	-	-	<.1	-	-	-	-
Cancer spp.	-	-	-	-	<.1	-	-	-	<.1	<.1	-	-			0.1	<.1	-	-	0.1	-	-	-	-
Chelyosoma productum	-	-	-	-	-	-	-	-	0.1	-	-	-			-	<.1	-	-	-	-	-	-	-
Cirratulidae/Terebellidae unid.	-	-	-	-	-	-	-	0.2	-	-	<.1	-			<.1	-	0.1	-	0.2	-	-	-	-
Clavelina huntsmani	-	-	-	-	-	-	-	-	1.0	-	-	-			-	-	-	-	-	-	-	-	-
Clavularia spp.	-	-	-	-	-	-	-	4.2	0.9	1.7	2.5	5.7			0.6	1.7	0.4	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	0.3	-	0.2	-	-	-	-	-	-	-	-	<.1			-	-	<.1	-	0.2	0.4	0.3	0.1	0.3
Conus californicus	-	-	<.1	-	0.1	-	-	<.1	-	0.2	0.3	0.3			<.1	-	-	0.1	<.1	0.1	-	-	-
Corynactis californica	-	-	-	-	-	-	0.3	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Crassedoma giganteum	-	-	-	-	-	-	-	-	-	0.2	0.3	-			<.1	<.1	-	-	-	-	-	-	-
Crepidula spp.	-	-	0.3	0.4	1.0	1.3	1.2	1.2	1.1	0.4	1.1	0.3			0.1	0.1	-	0.1	-	-	-	-	-
Cryptochiton stelleri	-	-	-	-	-	-	<.1	-	-	-	-	-			-	-	-	0.2	-	0.1	-	0.1	-
Cryptolithodes sitchensis	-	-	-	-	-	<.1	-	-	<.1	-	<.1	<.1			-	-	<.1	-	<.1	-	-	-	-
Cucumaria spp.	-	0.6	1.3	1.7	1.1	1.3	0.7	0.6	0.6	1.0	0.9	0.4			0.8	0.4	-	-	<.1	0.3	0.3	-	-
Dendrodoris spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	<.1	-	-	-	-	-	0.1
Dendropoma lituella	-	-	7.9	26.3	13.9	10.1	14.3	17.5	18.5	17.6	13.3	7.7			17.4	19.3	12.4	3.8	3.5	3.6	-	0.8	-
Dendropoma spp.	1.8	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Diadumene spp.	-	-	<.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Diaulula sandiegensis	-	-	-	-	-	-	<.1	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Diodora aspera	-	-	-	<.1	-	-	-	-	<.1	0.3	-	0.2			-	-	<.1	-	0.1	-	-	-	-
Diopatra ornata	0.3	0.8	1.2	2.0	0.6	0.3	0.2	0.2	0.2	0.2	0.4	0.4			0.1	0.2	0.2	0.7	0.4	0.5	1.0	0.6	1.6

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 3 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size (continued)																							
Discurria insessa	-	<.1	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	-	0.4	0.4	<.1	<.1	0.2	<.1	0.3	0.5	0.4	0.2			0.4	0.4	0.3	0.5	0.4	0.4	-	0.1	-
Epiactis prolifera	1.3	2.7	3.1	2.4	1.7	0.9	0.5	0.3	0.2	0.2	0.6	0.1			<.1	<.1	<.1	<.1	-	0.3	-	0.1	-
Erato vitellina	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Eudistylia polymorpha	-	-	-	<.1	-	-	-	-	-	-	-	-			0.6	-	-	<.1	-	-	-	-	-
Eupentacta quinquesemita	0.3	-	-	<.1	-	0.3	<.1	-	0.1	<.1	<.1	0.2			0.1	0.1	-	-	<.1	-	-	-	0.1
Fissurella volcano	-	-	-	<.1	-	<.1	0.3	-	0.2	0.2	0.1	0.2			<.1	<.1	-	<.1	<.1	0.1	-	-	-
Flabelliderma essenbergae	-	-	-	-	-	-	-	-	-	-	-	-			0.1	-	-	-	-	-	-	-	-
Flabellina trilineata	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	-	-	<.1			-	-	0.2	<.1	-	-	-	-	-
Glans subquadrata	-	-	-	-	-	-	-	<.1	-	-	-	-			-	-	-	-	-	-	-	-	-
Halcampa decemtentacula	-	-	<.1	<.1	<.1	-	0.1	0.3	<.1	0.1	-	0.2			-	-	-	<.1	0.1	-	-	-	-
Haliotis rufescens	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Haliotis spp.	-	-	-	-	-	-	<.1	-	-	0.1	-	-			-	-	-	-	-	-	-	-	-
Haliotis spp. (juv.)	-	-	-	-	-	-	-	-	-	-	<.1	-			-	-	<.1	-	-	-	-	-	-
Henricia leviuscula	-	-	-	-	-	-	<.1	0.2	-	<.1	-	-			-	-	-	-	-	-	0.3	-	-
Heptacarpus spp.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	<.1	-	-	-	-	-	-	-
Hermissenda crassicornis	-	-	-	-	<.1	-	0.1	-	<.1	<.1	-	-			0.1	<.1	<.1	-	<.1	0.1	-	-	0.6
Homalopoma spp.	0.5	2.6	5.2	4.2	5.7	5.2	5.0	4.7	3.0	4.3	4.1	3.7			2.3	0.6	-	-	-	0.1	-	-	-
Hopkinsia rosacea	-	-	-	-	-	-	-	-	0.1	-	-	-			-	-	-	-	-	-	-	-	-
Idotea spp.	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Ischnochitonidae	-	-	-	0.2	<.1	0.2	<.1	<.1	0.4	0.3	0.1	0.1			0.2	<.1	<.1	0.2	<.1	0.1	-	-	-
Isopoda unid.	-	<.1	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Lacuna spp.	-	0.6	-	-	-	-	<.1	<.1	<.1	0.3	0.1	-			0.5	0.4	1.0	0.4	<.1	-	-	-	-
Laila cockerelli	-	-	-	-	-	-	-	-	0.1	<.1	0.2	-			<.1	-	<.1	-	-	-	-	-	-
Lebbeus lagunae	-	-	<.1	-	-	-	-	-	-	<.1	-	-			-	-	-	-	-	-	-	-	-
Lepidozona cooperi	-	-	-	-	-	-	-	-	-	-	1.0	-			-	-	-	-	-	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	<.1	-	-			-	-	<.1	-	0.2	-	-	-	-
Leptasterias spp.	-	-	0.1	0.1	-	0.2	0.1	<.1	-	-	-	-			-	<.1	-	-	<.1	-	-	-	-
Leucandra heathi	-	<.1	0.5	3.0	2.0	1.8	1.4	0.2	0.4	1.0	1.3	1.2			-	0.1	-	-	-	-	-	-	-
Leucilla nuttingi	0.5	<.1	0.4	1.4	1.8	1.3	1.7	1.1	2.1	0.8	4.0	1.4			<.1	1.1	1.0	0.4	-	-	-	-	-
Lissothuria nutriens	-	-	0.1	<.1	-	-	<.1	-	0.4	0.4	<.1	0.2			0.2	0.3	0.1	-	-	-	-	-	-
Lithopoma gibberosum	-	<.1	-	0.2	0.5	0.3	0.6	0.5	0.5	0.2	0.2	0.4			<.1	<.1	<.1	-	<.1	0.3	0.3	-	-
Lithopoma gibberosum (juv.)	-	-	-	-	-	-	-	-	-	-	-	0.3			<.1	-	-	0.1	<.1	0.1	0.3	-	-
Lophopanopeus spp.	-	-	-	-	-	0.3	0.5	<.1	<.1	0.2	0.1	0.1			0.2	-	-	-	<.1	-	-	-	-
Lottia asmi	-	-	-	<.1	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Lottia instabilis	-	0.2	1.5	0.8	0.5	0.6	0.8	-	-	-	-	0.1			<.1	0.1	-	-	<.1	-	-	-	-
Lottia ochracea	0.3	0.3	0.2	<.1	0.7	0.3	0.4	0.3	1.7	1.3	0.4	0.6			1.1	0.6	0.1	0.3	0.2	0.1	-	-	-
Loxorhynchus crispatus	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	0.1	-	-	-
Majidae	-	-	0.4	<.1	-	0.3	-	-	-	-	-	0.3			0.1	-	-	-	-	-	-	-	-
Megabalanus californicus	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	0.1	-	-	0.1	0.3	-	-
Mitra idae	-	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.5	0.3	0.3	0.3			0.1	0.2	0.2	0.1	0.4	0.6	0.5	0.3	0.8
Mopalia spp.	-	-	<.1	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Myxicola infundibulum	-	-	<.1	-	-	-	0.1	1.0	0.1	<.1	0.3	0.2			0.3	<.1	-	-	0.2	-	-	-	-
Nassarius mendicus	-	-	-	<.1	<.1	-	-	-	-	0.1	-	-			-	-	-	-	-	-	-	-	-
Natantia unid.	-	-	-	-	-	-	-	-	-	-	0.3	-			-	-	-	-	-	-	-	-	-
Nemertea unid.	-	-	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Nereididae unid.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Nitidiscala spp.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Norrisia norrisi	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	0.1	0.3	-	-
Norrisia norrisi (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Ocenebra foveolata	-	-	-	-	-	-	-	-	<.1	-	-	-			-	-	-	-	-	-	-	-	-
Ocenebra interfossa	-	-	-	-	-	<.1	-	0.2	-	<.1	-	<.1			-	<.1	-	-	-	-	-	-	-
Ocenebra lurida	-	-	-	-	-	-	0.3	<.1	0.1	-	-	<.1			0.1	<.1	-	<.1	-	-	-	-	-
Ocenebra spp.	-	-	-	-	-	-	<.1	-	-	<.1	-	0.2			0.1	-	-	-	-	-	0.3	-	-
Ophioplocus esmarki	-	-	-	<.1	<.1	-	0.1	0.2	-	-	-	<.1			-	-	-	0.2	0.1	-	0.3	-	0.1
Ophiothrix spiculata	-	-	<.1	-	-	<.1	<.1	-	-	-	0.3	0.2			1.6	1.9	1.3	0.4	0.1	0.6	-	0.3	1.0
Ophiuroidea unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 3 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Counted Regardless of Size (continued)																							
Pagurus spp.	-	3.8	2.0	3.5	4.5	10.7	11.0	10.3	6.0	8.6	8.0	5.0			5.2	2.8	4.9	4.9	4.2	5.5	0.8	1.1	0.1
Paracyathus stearnsii	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	0.3
Paraxanthias taylori	-	-	-	-	-	-	-	-	-	-	-	<.1			-	-	-	-	-	-	-	-	-
Pelecypoda unid.	-	-	-	-	-	-	-	-	<.1	-	-	-			<.1	<.1	-	-	-	-	-	-	-
Pelecypoda unid. boring	1.5	20.5	21.7	24.2	21.3	19.3	15.0	27.0	33.0	26.5	29.6	34.0			28.5	22.8	17.1	17.6	7.4	16.3	5.8	6.6	3.6
Phidiana hiltoni	-	-	-	-	-	-	-	-	<.1	<.1	0.3	<.1			0.2	-	-	-	-	-	-	0.1	0.1
Phragmatopoma californica	-	1.7	40.3	32.5	22.1	15.6	4.4	0.9	9.4	2.8	4.3	11.2			7.2	3.0	1.3	1.1	2.4	0.6	0.5	8.5	12.8
Phragmatopoma spp.	1.5	20.5	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Phyllochaetopterus prolifica	-	1.6	5.5	6.5	2.6	9.0	9.0	12.1	4.8	7.7	12.9	12.6			4.0	2.3	1.5	2.3	2.5	2.3	0.3	2.9	0.8
Pisaster brevispinus	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	-	0.1	-	-	-	-
Pisaster giganteus	-	-	-	-	-	-	-	-	-	-	-	-			-	0.1	0.1	<.1	0.2	-	0.3	-	-
Pisaster/Henricia (juv.)	-	-	0.1	-	<.1	0.2	0.2	-	-	-	<.1	-			-	<.1	-	<.1	-	-	-	-	-
Pista spp.	-	1.4	0.4	<.1	0.3	1.0	0.7	0.8	0.9	1.8	0.5	0.7			0.6	1.1	0.9	1.7	2.3	3.0	4.3	3.0	0.5
Pista/Streblosoma spp.	1.5	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Placiphorella velata	-	-	-	-	-	-	<.1	-	-	-	-	<.1			-	-	-	-	-	-	-	-	-
Platyhelminthes unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	<.1	-	-	-	-	-
Pododesmus cepio	-	0.3	-	-	<.1	-	<.1	-	0.3	0.2	0.3	0.2			-	0.2	0.3	0.1	-	-	-	-	-
Polychaeta unid.	-	0.2	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Polynoidae	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Prosthecaeus bellostriatus	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Pseudoceros montereyensis	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Pseudomelatoma torosa	-	0.2	0.9	0.8	0.5	0.6	1.8	0.8	1.2	1.1	1.3	0.9			0.6	0.3	0.6	0.3	0.3	0.3	-	-	0.1
Pugettia producta	-	-	-	-	-	<.1	0.4	-	<.1	0.3	0.3	0.1			<.1	0.2	-	-	<.1	-	-	-	-
Pugettia richii	-	-	0.3	<.1	0.7	0.8	1.7	1.5	1.3	1.8	0.4	0.2			0.8	0.8	0.4	0.1	0.8	0.5	1.0	0.9	0.8
Pugettia spp.	-	<.1	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Pycnogonida unid.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	0.1	-	-	-	-	-
Pycnopodia helianthoides	-	<.1	<.1	-	-	-	-	-	-	-	-	<.1			-	-	0.3	<.1	<.1	-	-	-	-
Pycnopodia helianthoides (juv.)	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<.1	-	-	-	-
Pyura haustor	-	0.3	0.5	0.7	0.6	0.5	0.5	0.4	0.4	0.1	0.4	0.5			0.6	0.7	0.4	0.3	0.3	-	-	-	-
Rostanga pulchra	-	-	-	-	-	-	-	-	0.2	-	-	<.1			<.1	-	-	-	-	-	-	-	-
Sabellidae	-	-	0.3	<.1	<.1	-	-	-	0.4	0.8	1.1	3.2			0.3	0.3	0.7	0.3	0.9	1.6	1.3	0.4	0.1
Serpula vermicularis	-	0.7	0.7	1.5	1.5	1.1	1.1	0.9	0.8	0.6	0.9	1.3			0.5	0.7	0.4	<.1	0.1	0.4	-	0.3	0.6
Serpulidae unid.	1.0	0.7	5.6	0.5	-	0.3	0.2	-	0.3	0.5	0.4	0.2			0.6	0.4	0.3	0.3	0.4	0.6	-	-	-
Serpulorbis squamigerus	-	-	0.3	0.4	0.4	0.6	0.6	0.6	0.6	1.0	1.2	1.5			0.8	0.8	0.4	0.3	<.1	0.6	-	0.3	0.3
Sipuncula unid.	2.3	0.4	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Spirobranchus spinosus	-	-	0.8	0.2	0.4	-	<.1	0.3	0.2	0.5	0.4	0.4			0.4	0.4	<.1	0.2	0.3	0.1	-	0.5	-
Strongylocentrotus franciscanus	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Strongylocentrotus purpuratus	-	-	-	-	-	0.2	0.3	<.1	-	-	<.1	-			-	0.3	0.2	<.1	0.9	1.0	1.8	0.4	1.6
Strongylocentrotus spp.	-	-	-	-	-	0.3	<.1	-	0.1	<.1	0.8	0.4			0.4	0.3	0.6	0.3	0.2	1.0	-	-	-
Styela montereyensis	0.5	<.1	0.2	<.1	-	-	-	-	<.1	-	<.1	-			0.2	0.3	<.1	-	0.1	-	-	-	-
Stylochus spp.	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
Tegula brunnea	1.3	3.5	5.8	4.7	3.5	4.0	3.2	2.3	1.1	1.4	2.1	3.6			0.8	1.4	2.6	0.2	1.1	0.3	-	0.9	-
Tegula montereyi	-	0.4	0.3	0.5	0.2	0.2	0.3	-	-	<.1	0.4	0.6			<.1	<.1	-	-	-	-	-	0.3	-
Tegula pulligo	-	<.1	0.2	<.1	<.1	<.1	0.2	-	<.1	<.1	0.2	0.3			<.1	<.1	0.3	-	<.1	0.1	-	-	-
Terebellidae unid.	-	-	0.2	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Tethya aurantia	-	-	-	-	-	-	-	-	-	-	-	-			-	0.1	<.1	-	-	-	-	0.3	-
Tetraclita rubescens	-	<.1	-	-	<.1	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Themiste pyroides	-	1.3	2.2	1.2	1.0	1.2	1.0	1.1	1.3	1.5	1.4	1.2			0.9	1.5	1.0	0.4	0.6	0.6	0.3	0.1	0.3
Tonicella lineata	0.3	<.1	0.6	0.3	0.4	0.4	0.3	0.7	0.9	0.5	0.5	0.8			0.6	0.2	0.1	0.1	<.1	0.3	-	-	-
Tricolia pulloides	-	-	-	-	-	-	<.1	-	0.3	0.8	-	0.4			<.1	-	0.9	-	-	0.3	-	-	-
Triopha catalinae (prev. T. carpenteri	-	-	<.1	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Triopha maculata	-	-	-	-	<.1	-	-	-	-	0.1	-	<.1			0.1	<.1	-	-	-	-	-	-	-
Tritonia festiva	-	<.1	0.1	-	<.1	<.1	-	<.1	<.1	-	<.1	-			-	-	-	<.1	-	-	-	-	-
Trivia californiana	-	-	-	-	-	-	-	-	-	-	-	-			-	<.1	-	-	-	-	-	-	-
Urticina spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	<.1	-	-	-	-	-
Williamia peltoides	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	0.4	-	<.1	<.1	-	-	-	<.1	<.1	0.4	0.5			<.1	0.2	0.1	-	0.1	-	-	0.1	-
yellow-gilled porostome	-	-	-	-	-	-	-	-	-	-	-	-			<.1	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SDC 3 -4m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	3	5	6	6	3	6	3	6	6	4	5	ns	ns	4	4	4	4	4	2	1	2	2
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S	-	-	-	-	-	0.2	<.1	-	-	-	-	<.1			-	-	-	-	-	-	-	-	-
Barentsia spp.	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	0.1	-	-	-
Bryozoa, unid. (encrusting)	0.8	0.6	0.3	0.7	0.5	1.2	0.9	1.0	1.0	0.8	1.3	1.2			1.3	0.9	0.4	0.6	0.8	0.3	0.5	0.6	0.4
Bryozoa, unid. (erect)	-	-	<.1	-	-	-	-	-	-	<.1	-	-			-	<.1	-	<.1	-	-	<.1	-	-
Bryozoa, unid. (foliose)	-	-	0.1	-	-	-	-	<.1	<.1	<.1	0.3	<.1			<.1	<.1	<.1	<.1	<.1	-	-	-	-
Chthamalus fissus	-	-	-	-	-	-	-	-	-	-	-	-			-	1.5	-	-	-	-	-	-	-
Cliona spp.	-	-	-	-	-	-	-	-	-	-	-	<.1			-	-	-	-	-	-	-	-	-
Didemnum/Trididemnum spp.	2.3	-	0.5	1.3	1.4	0.7	0.3	0.4	0.6	0.4	0.9	0.8			0.3	0.3	0.2	0.1	0.3	<.1	0.5	-	-
Dodecaceria fewkesi	-	0.5	0.4	0.1	0.9	0.9	0.9	0.5	0.4	0.7	0.6	0.5			-	-	<.1	-	-	-	-	-	-
Eurystomella bilabiata	-	-	-	-	-	-	-	-	-	-	-	0.2			-	-	-	-	-	-	-	0.3	-
Hydroida	-	1.3	0.5	-	-	-	<.1	<.1	<.1	<.1	<.1	<.1			<.1	<.1	-	-	-	-	-	-	-
Hymenamphiastra cyanocrypta	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	0.1	0.3	0.3	0.1	<.1
Leucosolenia spp.	-	-	-	<.1	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	0.2	0.2	0.7	0.8	0.8	1.9	1.5	1.7	1.4	2.3	0.8			1.5	2.0	0.8	0.3	0.3	0.1	-	1.1	-
Salmacina tribranchiata	-	-	-	-	-	-	-	-	-	-	-	-			-	-	<.1	0.1	<.1	-	-	0.5	-
Spirorbis spp.	-	-	-	<.1	0.2	<.1	1.0	0.8	0.6	0.6	0.6	0.4			0.8	0.6	0.3	<.1	0.1	<.1	<.1	<.1	<.1
Tricellaria spp.	0.3	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
epiphytic bryozoan (sq.)	-	-	-	-	-	-	-	-	-	-	-	-			-	0.2	-	-	-	-	-	-	-
tunicate, colonial unid. a (white)	2.8	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	2.8	3.4	2.5	2.1	2.3	2.4	2.3	2.5	2.3	2.6	3.1	2.2			2.0	1.6	1.4	0.4	0.6	0.8	1.0	1.1	0.1

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SC 1 -3m

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Counted Regardless of Size																							
Acmaea mitra	1.0	0.6	0.8	0.5	0.4	-	0.8	0.6	2.8	2.2	0.3	0.7	0.2	0.4	0.1	0.2	0.2	0.8	0.9	1.0	2.0	-	1.1
Acmaeid unid. a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Aeolidia papillosa	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Aldisa sanguinea	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alia carinata	-	3.9	8.6	2.7	2.3	3.8	1.4	0.7	2.3	2.7	0.8	1.4	0.8	0.9	1.4	0.2	1.6	1.4	1.1	0.3	-	1.3	-
Alia spp.	5.0	-	-	2.0	-	0.6	0.6	0.2	0.3	1.0	0.8	0.3	0.2	0.3	1.1	0.2	-	-	0.6	0.5	0.1	-	-
Alpheus spp.	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphissa spp.	-	0.1	0.6	0.8	<.1	<.1	0.7	0.5	0.5	0.8	0.4	0.8	0.2	0.6	0.4	0.4	1.4	0.5	0.8	0.5	0.9	0.5	0.1
Amphissa versicolor	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anisodoris nobilis	-	0.1	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthopleura artemisia	-	0.1	-	-	-	<.1	-	0.2	-	<.1	0.1	0.2	<.1	0.2	0.3	<.1	-	-	0.1	-	-	-	0.1
Anthopleura elegantissima	0.3	0.4	0.4	0.7	0.8	0.3	0.3	0.6	0.5	0.8	0.6	0.5	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.4	0.4	-	0.6
Anthozoa unid.	0.3	-	-	<.1	-	-	-	-	-	-	-	<.1	<.1	<.1	-	-	<.1	0.2	-	-	-	-	-
Archidoris montereyensis	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Asterina miniata	0.5	0.6	0.5	1.1	1.3	0.8	1.3	1.3	0.2	<.1	-	0.4	0.3	0.3	0.1	<.1	0.3	0.3	0.4	0.4	0.6	0.5	0.1
Asterina miniata (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.5	-
Balanophyllia elegans	0.8	1.6	0.5	0.6	1.5	0.8	0,9	0.8	0.7	1.1	-	0.2	<.1	0.9	0.6	0.6	1.0	0.8	0.4	1.4	0.5	0.3	0.8
Balanus spp.	6.3	-	-	1.4	-	-	-	-	-	<.1	-	-	-	0.3	-	-	-	-	-	-	-	-	-
Balanus/Tetraclita spp.	-	-	0.9	0.9	-	0.3	8.3	1.8	4.3	2.5	4.1	-	0.2	0.4	1.9	0.3	11.7	6.8	-	5.3	4.9	5.5	0.8
Barnacles (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9	3.1	-	7.5	-	-
Bittium eschrichtii	-	-	<.1	-	0.2	-	-	-	-	0.1	-	0.4	-	-	<.1	<.1	-	-	0.2	-	-	-	-
Bittium spp.	0.5	-	-	0.1	-	-	-	-	-	<.1	-	-	0.3	0.2	<.1	-	-	-	-	-	-	-	-
Boltenia villosa	-	-	-	-	-	-	-	-	-	-	-	<.1	0.3	-	-	-	-	-	-	-	-	-	-
Brachyura unid. b (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-
Cadlina flavomaculata	-	-	<.1	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Calliostoma canaliculatum	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calliostoma ligatum	-	-	-	<.1	0.3	-	-	<.1	<.1	0.1	0.3	0.2	-	0.3	0.5	0.2	<.1	<.1	0.4	0.1	0.3	-	0.1
Calliostoma spp.	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Cancer antennarius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Cancer antennarius (juv.)	-	-	-	-	-	-	<.1	-	<.1	0.1	-	-	-	-	0.1	<.1	-	<.1	0.1	0.1	0.3	-	-
Cancer productus (juv.)	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-
Cancer spp.	-	-	-	-	0.3	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-	0.3	-	-	-	-
Chelyosoma productum	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.1	-	-	-	0.1
Cirratulidae/Terebellidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Clavelina huntsmani	-	-	-	-	-	-	-	-	-	-	-	-	0.6	2.6	2.2	0.6	0.4	-	1.3	-	-	-	-
Clavularia spp.	-	-	-	-	-	-	<.1	-	2.2	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-
Cnemidocarpa finmarkiensis	-	-	-	-	-	-	-	-	<.1	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-
Crangon stylirostris	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula adunca	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crepidula spp.	-	-	-	-	-	-	0.2	-	0.3	1.0	-	0.7	0.8	1.6	0.4	0.4	0.4	0.3	0.4	0.6	0.8	0.5	-
Cryptochiton stelleri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Cryptolithodes sitchensis	-	-	<.1	0.5	<.1	0.3	0.2	0.3	0.3	0.4	-	0.4	0.2	-	0.2	<.1	-	<.1	0.4	0.5	0.6	-	-
Cucumaria spp.	-	0.3	-	-	<.1	<.1	0.5	<.1	-	0.1	-	<.1	-	-	0.3	0.4	0.4	-	-	-	-	-	-
Dendrodoris spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-
Dendropoma lituella	-	-	49.2	81.1	101.7	66.2	92.7	52.6	89.0	66.5	30.1	61.6	56.3	77.3	49.3	92.8	41.6	14.8	19.5	16.6	2.0	2.5	4.6
Dendropoma spp.	50.8	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diodora aspera	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diopatra ornata	-	-	-	<.1	-	<.1	0.2	-	-	0.2	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-
Doridacea unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
Doriopsilla albopunctata	-	-	-	<.1	0.2	-	-	0.2	-	0.3	0.5	0.4	0.3	0.1	-	0.2	0.1	-	-	-	-	0.3	-
Spiactis prolifera	1.0	1.3	1.4	0.3	0.3	0.4	0.3	<.1	0.2	0.7	1.1	0.8	0.8	0.6	0.4	0.8	0.7	0.2	<.1	0.4	0.3	-	0.4
Eudistylia polymorpha	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Eupentacta quinquesemita	-	-	-	<.1	-	-	<.1	-	-	-	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-
Fissurella volcano	-	0.4	-	-	-	-	<.1	-	<.1	-	0.1	-	-	<.1	-	0.2	-	-	-	-	-	-	-
Fusinus luteopictus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Gammaridea unid.	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gastropoda, neopic unid. a	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halcampa decemtentacula	0.8	-	-	0.4	0.3	0.3	<.1	0.2	0.2	0.5	-	2.0	0.8	0.6	0.8	1.0	0.6	0.2	<.1	-	0.1	-	0.1
Haliotis rufescens	-	-	-	-	-	-	-	-	-	<.1	-	-	-	<.1	-	-	-	-	-	-	-	-	-

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SC 1 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Counted Regardless of Size (continued)																							
Haliotis spp. (juv.)	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	<.1	-	-	-	-	-
Henricia leviuscula	0.5	-	0.5	<.1	-	-	-	-	-	-	-	<.1	-	0.2	0.1	-	0.4	-	-	-	0.1	0.3	0.1
Hermissenda crassicornis	-	-	-	-	-	<.1	-	-	<.1	<.1	-	<.1	-	0.4	-	-	0.1	<.1	0.1	-	-	-	-
Homalopoma spp.	-	-	-	-	-	-	0.5	-	0.2	1.1	0.5	2.8	2.7	5.4	5.9	4.2	4.1	3.9	5.2	5.9	5.8	6.0	4.1
Hopkinsia rosacea	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
Ischnochitonidae	-	-	0.2	<.1	-	<.1	0.2	0.2	0.2	0.5	-	0.3	<.1	-	0.1	-	-	<.1	-	0.4	-	-	-
Lacuna spp.	-	-	-	<.1	-	0.2	<.1	-	0.4	<.1	0.3	0.3	-	-	0.2	<.1	<.1	0.2	0.3	-	0.3	-	-
Laila cockerelli	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Lebbeus lagunae	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-
Lepidozona spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	0.1	0.1	-	-
Leptasterias hexactis	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptasterias spp.	-	3.1	4.0	2.1	3.8	4.4	2.7	1.5	1.1	0.5	0.5	1.6	0.8	0.5	0.1	0.5	1.2	0.5	0.9	0.8	1.1	2.3	0.5
Leucandra heathi	-	-	-	-	-	-	-	-	0.5	0.4	-	0.3	-	<.1	<.1	-	-	<.1	-	-	0.3	-	-
Leucilla nuttingi	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	0.6	-	-	-	-
Lissothuria nutriens	-	-	-	-	-	-	<.1	<.1	<.1	<.1	-	-	<.1	-	<.1	-	-	0.3	0.2	-	-	0.3	0.1
Lithopoma gibberosum	0.3	0.1	<.1	0.3	0.3	-	0.2	-	-	<.1	-	0.2	0.4	0.4	<.1	<.1	-	-	-	-	0.3	0.5	-
Lithopoma gibberosum (juv.)	-	-	-	-	-	-	-	-	-	-	-	0.2	0.2	0.2	-	-	0.2	-	-	0.1	-	0.5	-
Lophopanopeus spp.	-	0.6	0.7	1.9	0.4	0.8	0.8	<.1	0.4	0.3	0.3	-	0.3	<.1	0.2	0.2	0.1	0.2	0.4	0.4	0.3	-	0.4
Lottia instabilis	-	-	-	-	-	-	-	-	-	0.3	0.1	0.7	-	0.5	0.8	0.3	0.5	0.4	0.2	-	-	-	-
Lottia ochracea	0.5	0.3	0.3	0.4	0.3	0.4	<.1	0.4	1.4	0.6	0.8	0.3	0.6	0.5	0.3	<.1	0.2	1.1	0.6	0.6	1.8	-	1.4
Lottia strigatella	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Loxorhynchus crispatus	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Majidae	4.8	1.3	1.4	0.9	-	0.8	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manania spp.	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Micrura verrilli	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Mimulus foliatus	-	-	-	0.1	-	1.0	-	-	0.2	<.1	-	-	-	0.3	0.2	0.3	-	-	<.1	-	0.3	-	-
Mitra idae	-	-	-	-	-	-	-	-	<.1	0.2	-	<.1	<.1	<.1	-	-	-	0.2	<.1	0.1	-	-	0.1
Modiolus spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Mopalia lignosa	-	-	-	-	-	-	-	0.2	<.1	<.1	-	-	0.2	<.1	<.1	-	-	-	-	-	0.3	-	-
Mopalia muscosa	-	-	-	-	<.1	-	-	-	-	0.2	-	-	<.1	<.1	<.1	<.1	-	-	0.1	-	0.1	-	-
Mopalia spp.	-	0.3	<.1	-	<.1	-	-	-	-	-	-	0.2	-	-	0.2	-	-	-	-	-	0.1	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Myxicola infundibulum	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	0.1	-	-	-	-	-	-	-	-
Nereididae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1	-	-	-
Nitidiscala spp.	-	-	-	-	-	<.1	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Nitidiscala/Opalia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Ocenebra foveolata	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ocenebra interfossa	-	-	0.3	-	-	-	-	-	<.1	0.3	-	-	-	<.1	-	0.2	-	-	0.1	-	-	-	-
Ocenebra lurida	-	-	-	0.1	<.1	<.1	0.3	<.1	-	<.1	0.1	0.3	-	0.1	0.3	-	0.1	<.1	<.1	-	0.3	0.3	0.3
Ocenebra spp.	0.3	0.4	0.3	0.1	-	0.3	-	<.1	0.3	0.1	0.1	-	0.4	0.1	0.3	0.3	0.1	-	0.4	-	-	-	-
Opalia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-
Ophioplocus esmarki	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiothrix spiculata	0.3	-	0.2	0.1	0.2	<.1	0.4	-	<.1	<.1	-	<.1	-	-	-	<.1	-	-	<.1	-	0.1	-	-
Pagurus spp.	1.5	1.5	7.8	12.6	14.6	23.8	17.6	6.6	11.8	8.9	7.9	7.8	4.8	3.7	5.5	7.1	7.6	6.8	7.6	2.8	4.8	8.5	4.4
Pelecypoda unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-
Pelecypoda unid. boring	-	0.3	0.3	0.3	0.3	0.3	2.1	1.7	1.1	2.3	0.3	0.3	0.9	0.8	1.1	2.4	1.4	0.3	0.6	-	0.5	1.3	0.1
Phascolosoma agassizii	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phidiana hiltoni	-	-	-	0.2	-	-	-	-	-	0.2	-	-	-	0.2	<.1	-	-	-	-	-	0.1	0.8	-
Phragmatopoma californica	-	2.5	34.3	6.8	8.9	10.7	7.5	2.1	8.8	56.7	40.0	21.8	76.8	117.1	88.0	33.2	44.9	8.3	6.0	6.9	7.4	13.8	10.8
Phyllochaetopterus prolifica	-	-	0.3	0.6	1.3	1.8	3.3	1.3	0.9	1.9	1.0	1.1	1.3	-	1.0	0.7	1.3	1.0	1.4	0.5	-	0.8	-
Pisaster giganteus	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Pisaster/Henricia (juv.)	-	0.5	2.3	4.3	2.8	4.1	3.2	0.7	<.1	<.1	0.9	0.3	-	0.3	0.5	0.7	0.9	0.4	1.0	0.4	0.5	0.5	0.3
Pista spp.	-	0.1	<.1	0.3	<.1	0.8	1.2	<.1	0.9	1.3	0.5	0.3	-	-	-	-	0.3	<.1	0.3	0.3	0.5	-	-
Placiphorella velata	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	<.1	-	-	-	-
Pododesmus cepio	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	0.1	0.1	<.1	<.1	-	0.1	0.1	0.1	-	-
Polynoidae	-	-	-	-	<.1	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Porcellanidae unid.	0.3	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudomelatoma torosa	0.5	-	0.2	0.1	<.1	0.3	0.8	0.4	0.4	0.7	0.4	1.0	0.7	0.9	0.8	0.8	0.8	0.3	0.8	0.6	0.1	0.5	-
Pugettia producta	-	-	-	<.1	-	0.3	0.5	-	0.5	0.2	0.1	<.1	<.1	0.1	0.4	<.1	0.1	<.1	0.1	0.1	0.1	-	0.3

Subtidal Fixed Quadrat - Yearly Invertebrate Mean Abundance (per quarter meter squared) - STATION SC 1 -3m (continued)

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Surveys	1	2	3	4	3	3	3	3	3	5	2	3	3	4	4	3	4	3	4	2	2	1	2
Counted Regardless of Size (continued)																							
Pugettia richii	-	-	<.1	3.8	1.9	3.4	3.0	0.4	0.7	1.8	0.5	0.8	0.9	0.8	1.3	1.4	0.9	0.6	1.1	0.1	0.4	0.8	0.1
Pugettia spp.	1.0	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pycnogonida unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	<.1	-	-	-	-
Pycnopodia helianthoides	-	0.1	0.2	<.1	-	-	-	0.2	-	<.1	0.4	<.1	0.2	0.1	<.1	<.1	<.1	-	<.1	0.1	-	-	-
Pyura haustor	-	-	<.1	-	<.1	0.3	0.3	<.1	<.1	0.4	-	-	-	<.1	-	0.4	0.3	-	-	0.1	-	-	-
Rostanga pulchra	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	-	-	-	-	-	-
Sabellidae	-	-	-	-	-	-	-	-	-	0.5	-	-	<.1	0.3	0.1	-	0.1	-	<.1	-	-	-	-
Serpula vermicularis	-	0.1	-	-	-	-	0.2	-	-	<.1	-	-	<.1	0.5	<.1	<.1	0.3	<.1	<.1	0.3	0.4	-	-
Serpulidae unid.	5.0	1.4	0.6	0.4	0.3	<.1	0.2	-	0.5	0.3	0.1	0.2	<.1	<.1	0.1	-	-	0.8	1.2	2.1	0.4	-	-
Serpulorbis squamigerus	1.0	0.9	1.3	1.9	2.8	0.6	0.3	0.4	1.3	3.1	2.9	1.3	1.5	1.8	1.6	1.4	0.7	0.6	0.8	0.6	-	-	-
Spirobranchus spinosus	-	-	-	-	-	0.3	-	-	<.1	0.3	0.4	0.4	0.2	-	-	-	<.1	0.3	0.4	0.6	0.5	-	-
Strongylocentrotus franciscanus	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strongylocentrotus purpuratus	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-
Strongylocentrotus spp.	-	-	<.1	-	<.1	-	-	-	-	0.1	-	-	-	<.1	0.1	-	-	<.1	-	0.1	-	-	-
Styela montereyensis	-	-	-	-	-	0.2	-	-	0.3	0.1	-	-	-	-	-	-	<.1	-	-	-	0.1	-	0.1
Tectura fenestrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6
Tectura paleacea	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Tectura persona	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tegula brunnea	2.5	4.1	5.1	4.1	5.2	2.5	2.8	2.8	5.1	7.4	8.5	4.4	3.3	4.1	4.3	1.8	6.0	6.7	6.0	4.8	6.5	4.8	6.1
Tegula montereyi	-	-	-	<.1	0.2	-	-	-	-	-	-	<.1	-	-	-	-	0.1	<.1	-	-	-	-	0.1
Tegula pulligo	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-	<.1	-	-	<.1	-	0.1	-	-	-
Terebellidae unid.	-	-	-	<.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-
Tetraclita rubescens	-	5.4	2.7	2.0	9.6	2.3	7.3	1.9	1.7	3.3	-	-	-	-	1.7	2.3	7.2	6.1	8.4	-	-	-	0.8
Themiste pyroides	-	-	0.2	0.1	<.1	0.3	0.3	0.3	-	0.1	-	<.1	0.2	0.1	<.1	0.4	0.3	-	0.2	0.1	0.1	-	-
Tonicella lineata	0.5	-	<.1	1.0	0.8	0.2	0.8	1.0	1.1	0.9	1.4	0.5	0.3	0.4	0.3	0.4	0.5	<.1	0.9	0.6	1.3	0.3	0.5
Tricolia pulloides	-	0.8	-	0.4	-	0.3	-	0.5	2.6	0.4	0.1	0.5	0.3	0.3	0.6	0.4	0.1	0.2	-	0.3	-	-	-
Triopha maculata	-	-	-	-	-	-	0.2	-	0.2	<.1	0.1	<.1	<.1	-	<.1	-	-	-	<.1	-	-	-	-
Tubulanus sexlineatus	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urticina coriacea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	0.2	0.3	0.3	0.3	0.1	-	-
Xanthidae unid.	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicate, solitary unid.	-	-	0.2	0.4	0.3	-	-	-	<.1	0.4	-	0.3	0.8	0.8	0.4	0.8	0.9	-	0.4	-	-	0.3	-
Coverage Based on # of 1" Squares																							
Abiet./Sertularella/Sertularia spp.(A.S	0.3	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aglaophenia spp.	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Archidistoma spp.	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bryozoa, unid. (encrusting)	4.3	0.5	1.0	1.4	1.9	1.1	1.5	0.9	1.7	1.4	1.4	1.9	4.3	2.6	2.1	1.8	1.3	1.8	2.1	1.8	0.8	0.5	0.6
Bryozoa, unid. (erect)	-	0.1	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-
Bryozoa, unid. (foliose)	-	-	<.1	-	-	-	-	<.1	-	<.1	-	-	-	-	0.1	-	-	-	<.1	-	-	-	-
Cauloramphus spiniferum	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cliona spp.	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	0.4	-	-	-	-	-	-
Didemnum/Trididemnum spp.	1.5	-	-	<.1	0.7	<.1	<.1	-	-	<.1	0.4	0.4	0.6	0.8	1.0	1.1	0.8	0.7	0.1	0.1	-	-	-
Dodecaceria fewkesi	-	-	-	<.1	-	-	-	-	-	0.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Eurystomella bilabiata	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1	-	<.1	-	<.1	<.1	-	0.1	-	-
Hydroida	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	<.1	-	-	-	0.1	-	-	-
Hymenamphiastra cyanocrypta	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	<.1	<.1	0.3	-	-	-	-	-	-
Leucosolenia eleanor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Leucosolenia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	<.1	-	-	-	-
Obelia spp.	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porifera unid. (encrusting)	-	1.1	1.4	1.4	2.4	1.9	4.6	0.5	0.9	2.5	0.8	0.9	1.3	1.4	1.3	1.8	0.9	1.4	2.0	1.3	0.8	1.0	0.6
Porifera unid. c (orange)	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ritterella pulchra	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmacina tribranchiata	-	-	-	<.1	-	-	-	-	0.3	-	-	0.3	0.4	1.0	0.6	0.9	1.0	0.6	1.1	-	0.3	<.1	0.1
Spirorbis spp.	2.0	0.1	<.1	0.6	<.1	0.9	0.5	0.5	1.2	1.0	0.4	0.3	<.1	0.3	0.1	0.3	<.1	<.1	<.1	<.1	0.1	<.1	<.1
tunicate, colonial unid. a (white)	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicate, colonial unid. c (orange)	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tunicates, colonial/social unid.	1.0	1.3	0.8	1.3	1.3	1.8	2.7	0.2	0.3	2.0	1.6	1.1	1.2	2.1	1.0	1.1	1.3	0.9	0.8	0.4	0.5	0.3	0.4

APPENDIX D6 – Subtidal Fishes

50 m Transects

Subtidal Fish Observations - Yearly Mean Abundance (per 50 m transect) - Control Stations -Benthic

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Replicates	4	6	8	9	8	3	7	4	3	5	4	4	5	8	8	6	6	4	7	5	3	3	4
Atherinidae unid.	-	-	-	-	-	-	-	16.7	-	68.7	33.3	-	-	-	-	-	-	-	-	-	-	-	-
Aulorhynchus flavidus	0.4	-	7.1	9.4	3.7	27.5	97.4	-	-	-	18.6	0.7	0.2	19.6	-	<.1	-	0.1	19.4	12.6	37.4	-	-
Brachyistius frenatus	0.3	0.2	0.1	0.5	-	-	0.2	0.2	-	0.3	-	0.2	-	0.3	1.1	0.3	0.3	-	<.1	<.1	-	-	-
Damalichthys vacca (=Rhacochilus)	0.4	0.4	0.4	0.7	0.1	0.1	0.2	0.2	0.1	0.5	-	5.3	-	0.3	0.4	1.5	1.5	0.3	2.2	0.2	0.8	0.3	0.6
Embiotoca jacksoni	0.1	-	<.1	0.2	0.2	-	-	-	0.1	<.1	-	-	-	0.2	<.1	0.4	-	-	-	-	-	-	-
Embiotoca lateralis	0.8	2.6	0.9	1.7	0.6	0.3	0.4	0.3	0.5	0.6	-	<.1	0.2	0.1	0.1	0.5	0.2	0.3	-	0.2	-	0.3	0.3
Engraulis mordax	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-
Gibbonsia spp.	-	-	-	-	-	-	-	-	0.3	0.1	-	-	-	-	-	-	-	-	-	-	0.1	0.3	-
Heterostichus rostratus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
Hexagrammos decagrammus	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypsurus caryi	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Lethops connectens	-	-	<.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiodon elongatus	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxyjulis californica	156.4	3.7	8.3	20.2	8.6	0.8	13.7	18.0	59.8	51.5	31.8	96.0	28.4	18.0	71.5	21.3	22.8	98.3	48.4	12.9	12.1	14.1	12.4
Oxylebius pictus	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paralabrax clathratus	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phanerodon furcatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Rhacochilus toxotes	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
Sebastes atrovirens	-	-	-	<.1	-	0.3	<.1	-	-	-	-	-	-	0.1	<.1	-	-	-	0.2	0.3	0.3	-	-
Sebastes atrovirens (yoy)	-	-	-	-	-	-	0.3	-	1.3	-	-	-	-	-	0.8	0.9	-	-	6.1	-	-	0.8	0.3
Sebastes chrysomelas/S. carnatus	-	0.8	28.4	-	-	26.4	17.1	9.8	0.5	-	-	-	-	-	0.4	7.0	0.8	0.4	20.2	64.4	31.5	10.9	-
Sebastes melanops	-	<.1	-	0.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	0.4	-	-	-	0.1	-
Sebastes melanops (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	0.3	0.3	0.2	-	-	-
Sebastes mystinus	2.8	8.3	4.4	9.4	2.2	5.5	6.4	5.9	2.1	3.3	3.0	6.8	2.3	5.7	1.8	2.0	5.5	1.5	0.4	0.3	0.9	1.5	1.9
Sebastes mystinus (juv.)	17.3	35.3	14.8	20.1	4.8	1.8	<.1	-	-	4.1	1.8	3.2	1.7	-	8.3	12.4	12.0	-	-	<.1	-	-	-
Sebastes paucispinis (juv.)	-	4.1	0.4	37.9	-	62.8	-	-	-	0.3	0.2	<.1	-	-	0.1	0.6	-	-	0.1	-	-	0.1	-
Sebastes rastrelliger	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes serranoides	-	1.0	<.1	11.4	0.3	0.3	0.2	<.1	0.9	0.3	0.7	0.8	0.2	0.1	0.2	0.4	0.2	-	0.1	<.1	0.4	0.1	-
Sebastes serranoides/S. flavidus (juv.)	2.3	37.7	<.1	41.8	1.3	-	0.2	-	3.8	18.8	7.0	6.3	0.6	0.2	6.0	4.8	-	1.8	<.1	-	0.1	-	-
Sebastes spp.	-	-	0.3	-	-	0.6	-	0.6	-	2.3	7.3	0.6	1.7	0.9	0.1	-	-	-	-	-	-	-	-
Trachurus symmetricus	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
larval/post-larval fish, unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.0	-	25.0	-	-	-	-

Subtidal Fish Observations - Yearly Mean Abundance (per 50 m transect) - North Diablo Cove -Benthic

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Replicates	4	6	8	9	8	3	7	4	4	6	6	6	5	8	8	6	8	5	7	5	3	3	4
Atherinidae unid.	-	0.5	-	-	-	-	-	-	-	15.0	21.9	18.8	-	6.3	15.6	-	25.0	-	35.9	23.3	236.3	342.3	38.4
Aulorhynchus flavidus	13.8	2.3	1.2	9.7	0.3	0.5	<.1	0.7	-	0.1	-	-	-	-	0.1	-	-	<.1	4.9	2.5	20.3	7.8	-
Brachyistius frenatus	0.3	0.9	0.9	0.6	-	0.1	<.1	-	-	1.8	0.1	<.1	-	<.1	0.1	<.1	1.2	0.5	8.9	7.8	20.8	9.6	0.3
Chromis punctipinnis	4.4	-	-	-	-	-	-	-	15.1	0.1	2.4	-	-	-	0.4	0.8	0.5	0.2	0.1	<.1	-	-	-
Cymatogaster aggregata	-	-	-	-	-	-	-	0.3	-	-	-	0.1	43.8	<.1	38.8	-	-	-	-	-	-	-	-
Damalichthys vacca (=Rhacochilus)	0.4	0.7	0.3	0.4	0.1	0.4	0.4	0.2	0.8	1.8	5.5	0.8	0.4	2.8	6.8	2.3	3.1	0.5	22.3	22.3	5.0	1.8	1.5
Embiotoca jacksoni	-	-	<.1	-	<.1	-	<.1	<.1	-	-	-	-	<.1	0.1	0.9	0.3	0.8	0.2	0.6	-	-	-	0.3
Embiotoca lateralis	0.9	2.2	1.3	0.6	0.4	0.5	0.7	0.2	1.8	1.2	<.1	<.1	-	-	0.2	0.4	0.7	0.3	0.1	-	0.1	-	-
Embiotocidae	-	-	-	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Gibbonsia spp.	-	-	-	-	-	-	-	0.2	-	<.1	-	-	-	0.3	-	-	<.1	-	-	-	0.1	-	-
Girella nigricans	-	-	-	-	-	-	-	<.1	-	-	-	0.1	-	-	1.6	0.8	1.3	-	0.9	2.3	-	-	0.3
Heterostichus rostratus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
Hexagrammos decagrammus	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hyperprosopon anale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	-	-	<.1	-	-	-	-	-
Hypsurus caryi	0.1	<.1	-	-	-	-	-	-	-	0.7	-	-	-	-	<.1	-	-	-	1.0	-	-	-	-
Medialuna californiensis	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.8	0.2	0.6	2.1	0.4	-	-	1.3	0.1
Myliobatis californica	-	-	-	-	-	-	-	-	-	-	-	0.1	0.3	-	1.1	0.9	0.5	0.3	0.9	<.1	1.1	0.9	-
Oxyjulis californica	24.8	16.5	8.4	30.2	44.1	0.4	4.4	11.5	102.9	47.8	54.8	57.4	43.8	40.5	70.0	44.2	26.1	70.6	79.4	50.0	68.6	67.5	60.8
Paralabrax clathratus	-	-	-	-	-	-	-	12.6	-	-	-	-	-	-	-	-	0.1	<.1	0.4	0.9	0.3	-	1.4
Phanerodon atripes	-	-	-	-	-	-	<.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phanerodon furcatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.3	-	-	2.1	-
Phanerodon spp.	0.3	-	-	-	-	-	-	-	0.1	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhacochilus toxotes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	-	0.3	<.1	0.1	1.2	1.4	-	-
Sciaenidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
Sebastes atrovirens	-	-	-	-	-	-	-	-	0.1	-	-	-	0.2	-	<.1	-	0.1	-	0.4	0.4	1.3	8.6	0.1
Sebastes atrovirens (yoy)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	1.8	-	18.5	<.1	0.6	41.0	0.4
Sebastes chrysomelas/S. carnatus	-	2.1	35.9	-	-	10.5	8.7	3.0	17.8	0.8	<.1	0.6	-	<.1	-	1.7	-	0.7	8.0	113.8	161.3	1.9	-
Sebastes melanops (juv.)	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	0.6	-	-	-	<.1	-	-	-
Sebastes mystinus	5.6	7.6	2.7	1.7	1.8	2.6	4.1	3.8	9.9	3.3	1.3	1.4	-	0.1	0.4	2.0	0.9	1.2	0.9	0.4	1.5	-	0.6
Sebastes mystinus (juv.)	23.5	30.6	7.4	8.5	14.8	1.6	0.3	-	2.3	1.5	4.4	<.1	0.3	0.7	0.4	13.2	1.9	-	-	-	-	-	-
Sebastes paucispinis (juv.)	0.1	5.6	-	24.4	-	-	-	-	1.5	0.7	0.1	1.1	-	-	-	1.1	-	0.8	0.9	-	-	-	-
Sebastes rastrelliger	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes serranoides	0.1	0.4	0.6	7.5	-	-	0.3	0.2	0.3	<.1	0.4	0.6	-	1.1	0.4	0.4	0.2	0.3	0.3	<.1	2.3	0.4	0.5
Sebastes serranoides/S. flavidus (juv.)	12.6	33.1	-	24.4	0.9	2.0	-	-	8.5	14.7	9.8	77.7	7.8	1.9	6.9	16.0	<.1	6.4	0.7	0.4	0.8	0.9	0.4
Sebastes spp.	0.8	0.3	<.1	1.3	<.1	0.1	-	0.8	-	0.8	-	-	0.2	<.1	<.1	-	-	-	-	-	-	-	-
Semicossyphus pulcher	-	-	-	-	-	-	-	-	-	-	0.1	0.5	0.6	0.4	2.4	0.4	0.2	-	0.1	-	0.4	-	0.1
Trachurus symmetricus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8
Triakis semifasciata	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	<.1	-	-	-	<.1	<.1	0.1	0.6	0.1
larval/post-larval fish, unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	106.3	-	3.1	-	-	-	13.1

Subtidal Fish Observations - Yearly Mean Abundance (per 50 m transect) - South Diablo Cove -Benthic

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Replicates	4	6	8	9	7	3	8	4	6	6	5	5	5	8	8	6	8	5	7	5	3	3	4
Atherinidae unid.	-	-	-	-	-	-	-	2.0	18.8	34.4	-	-	-	-	-	-	3.1	-	4.4	7.9	169.3	120.6	25.8
Aulorhynchus flavidus	0.4	0.3	4.9	1.6	25.4	1.0	<.1	-	-	0.6	4.4	0.7	0.2	1.8	<.1	<.1	<.1	<.1	3.4	0.8	14.4	0.3	-
Brachyistius frenatus	1.3	0.3	0.4	0.8	-	-	-	-	-	-	-	-	-	-	0.1	<.1	<.1	0.8	1.6	0.8	9.6	4.1	0.3
Chromis punctipinnis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Cymatogaster aggregata	-	-	-	-	-	-	-	0.7	5.6	-	-	-	176.2	-	15.9	-	-	-	-	-	-	-	-
Damalichthys vacca (=Rhacochilus)	0.1	<.1	0.5	0.6	0.6	0.1	0.6	0.2	0.4	0.1	0.6	-	-	<.1	3.6	0.3	0.6	0.7	1.0	0.8	0.5	6.4	1.0
Embiotoca jacksoni	0.1	-	-	0.2	<.1	-	-	-	<.1	-	0.2	-	-	-	<.1	-	-	<.1	0.4	-	-	-	0.8
Embiotoca lateralis	0.5	-	0.7	1.3	0.1	0.4	-	0.3	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-
Embiotocidae	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-
Engraulis mordax	-	-	-	<.1	-	-	-	-	-	-	-	12.5	-	-	-	<.1	-	429.2	-	-	-	-	-
Gibbonsia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1	0.1	-
Girella nigricans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
Heterostichus rostratus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	<.1	-	-	-	-	-
Hexagrammos decagrammus	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypsurus caryi	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medialuna californiensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
Myliobatis californica	-	-	-	-	-	-	-	-	0.1	-	-	-	<.1	<.1	0.8	0.5	0.9	<.1	-	0.2	-	0.3	-
Oxyjulis californica	14.9	16.9	55.4	90.1	33.1	13.3	13.4	19.0	25.0	11.8	35.3	10.9	56.2	39.8	33.5	46.9	46.3	63.2	83.4	19.4	52.5	35.0	91.6
Paralabrax clathratus	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	0.9
Phanerodon furcatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	0.4	-	-	-	-	-	-	-
Phanerodon spp.	-	-	-	0.3	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhacochilus toxotes	0.3	<.1	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes atrovirens	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.3	1.1	-	-
Sebastes atrovirens (yoy)	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.9	0.5	30.3	1.7	2.5	6.5	0.4
Sebastes chrysomelas/S. carnatus	-	0.3	11.7	0.3	-	55.6	13.0	3.8	1.2	2.1	0.1	<.1	-	-	0.1	-	-	0.3	8.1	24.2	25.3	2.4	-
Sebastes mystinus	-	4.3	-	0.2	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes mystinus (juv.)	-	6.0	0.1	4.8	0.2	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes paucispinis (juv.)	-	5.8	-	34.8	-	0.3	-	-	0.2	0.3	0.5	-	-	-	-	0.4	-	-	-	<.1	-	-	-
Sebastes rastrelliger	-	-	0.1	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes serranoides	-	<.1	0.1	0.3	-	-	<.1	0.2	0.1	-	<.1	-	-	-	0.1	-	-	-	-	-	-	-	-
Sebastes serranoides/S. flavidus (juv.)	0.8	24.1	-	89.5	<.1	0.4	0.1	-	9.1	7.5	0.9	<.1	11.8	-	2.8	0.4	-	12.8	<.1	-	-	0.5	-
Sebastes spp.	0.3	-	0.7	9.3	1.6	-	-	2.8	-	-	0.1	-	0.3	-	-	-	-	-	-	-	-	-	-
Trachurus symmetricus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-
Triakis semifasciata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
larval/post-larval fish, unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.1	-	14.3	-	-	-	3.8

Subtidal Fish Observations - Yearly Mean Abundance (per 50 m transect) - Control Stations -Midwater

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Replicates	4	6	8	9	8	3	7	4	3	5	4	4	5	8	8	6	6	4	7	5	3	3	4
Atherinidae unid.	-	-	-	-	-	-	-	16.7	-	68.7	33.3	-	-	-	-	-	-	-	-	-	-	-	-
Aulorhynchus flavidus	0.4	-	7.1	9.4	3.7	27.5	97.4	-	-	-	18.6	0.7	0.2	19.6	-	<.1	-	0.1	19.4	12.6	37.4	-	-
Brachyistius frenatus	0.3	0.2	0.1	0.5	-	-	0.2	0.2	-	0.3	-	0.2	-	0.3	1.1	0.3	0.3	-	<.1	<.1	-	-	-
Damalichthys vacca (=Rhacochilus)	0.4	0.4	0.4	0.7	0.1	0.1	0.2	0.2	0.1	0.5	-	5.3	-	0.3	0.4	1.5	1.5	0.3	2.2	0.2	0.8	0.3	0.6
Embiotoca jacksoni	0.1	-	<.1	0.2	0.2	-	-	-	0.1	<.1	-	-	-	0.2	<.1	0.4	-	-	-	-	-	-	-
Embiotoca lateralis	0.8	2.6	0.9	1.7	0.6	0.3	0.4	0.3	0.5	0.6	-	<.1	0.2	0.1	0.1	0.5	0.2	0.3	-	0.2	-	0.3	0.3
Engraulis mordax	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-
Gibbonsia spp.	-	-	-	-	-	-	-	-	0.3	0.1	-	-	-	-	-	-	-	-	-	-	0.1	0.3	-
Heterostichus rostratus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
Hexagrammos decagrammus	-	-	-	<.1	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypsurus caryi	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Lethops connectens	-	-	<.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophiodon elongatus	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxyjulis californica	156.4	3.7	8.3	20.2	8.6	0.8	13.7	18.0	59.8	51.5	31.8	96.0	28.4	18.0	71.5	21.3	22.8	98.3	48.4	12.9	12.1	14.1	12.4
Oxylebius pictus	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paralabrax clathratus	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phanerodon furcatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-
Rhacochilus toxotes	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
Sebastes atrovirens	-	-	-	<.1	-	0.3	<.1	-	-	-	-	-	-	0.1	<.1	-	-	-	0.2	0.3	0.3	-	-
Sebastes atrovirens (yoy)	-	-	-	-	-	-	0.3	-	1.3	-	-	-	-	-	0.8	0.9	-	-	6.1	-	-	0.8	0.3
Sebastes chrysomelas/S. carnatus	-	0.8	28.4	-	-	26.4	17.1	9.8	0.5	-	-	-	-	-	0.4	7.0	0.8	0.4	20.2	64.4	31.5	10.9	-
Sebastes melanops	-	<.1	-	0.1	-	-	-	-	-	-	-	-	<.1	-	-	-	-	0.4	-	-	-	0.1	-
Sebastes melanops (juv.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	0.3	0.3	0.2	-	-	-
Sebastes mystinus	2.8	8.3	4.4	9.4	2.2	5.5	6.4	5.9	2.1	3.3	3.0	6.8	2.3	5.7	1.8	2.0	5.5	1.5	0.4	0.3	0.9	1.5	1.9
Sebastes mystinus (juv.)	17.3	35.3	14.8	20.1	4.8	1.8	<.1	-	-	4.1	1.8	3.2	1.7	-	8.3	12.4	12.0	-	-	<.1	-	-	-
Sebastes paucispinis (juv.)	-	4.1	0.4	37.9	-	62.8	-	-	-	0.3	0.2	<.1	-	-	0.1	0.6	-	-	0.1	-	-	0.1	-
Sebastes rastrelliger	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes serranoides	-	1.0	<.1	11.4	0.3	0.3	0.2	<.1	0.9	0.3	0.7	0.8	0.2	0.1	0.2	0.4	0.2	-	0.1	<.1	0.4	0.1	-
Sebastes serranoides/S. flavidus (juv.)	2.3	37.7	<.1	41.8	1.3	-	0.2	-	3.8	18.8	7.0	6.3	0.6	0.2	6.0	4.8	-	1.8	<.1	-	0.1	-	-
Sebastes spp.	-	-	0.3	-	-	0.6	-	0.6	-	2.3	7.3	0.6	1.7	0.9	0.1	-	-	-	-	-	-	-	-
Trachurus symmetricus	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
larval/post-larval fish, unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.0	-	25.0	-	-	-	-

Subtidal Fish Observations - Yearly Mean Abundance (per 50 m transect) - North Diablo Cove -Midwater

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Replicates	4	6	9	9	8	3	7	4	4	6	6	6	5	8	8	6	8	5	7	5	3	3	4
Atherinidae unid.	-	0.5	-	-	-	-	-	-	-	15.0	21.9	18.8	-	6.3	15.6	-	25.0	-	35.9	23.3	236.3	342.3	38.4
Aulorhynchus flavidus	13.8	2.3	1.2	9.7	0.3	0.5	<.1	0.7	-	0.1	-	-	-	-	0.1	-	-	<.1	4.9	2.5	20.3	7.8	-
Brachyistius frenatus	0.3	0.9	0.9	0.6	-	0.1	<.1	-	-	1.8	0.1	<.1	-	<.1	0.1	<.1	1.2	0.5	8.9	7.8	20.8	9.6	0.3
Chromis punctipinnis	4.4	-	-	-	-	-	-	-	15.1	0.1	2.4	-	-	-	0.4	0.8	0.5	0.2	0.1	<.1	-	-	-
Cymatogaster aggregata	-	-	-	-	-	-	-	0.3	-	-	-	0.1	43.8	<.1	38.8	-	-	-	-	-	-	-	-
Damalichthys vacca (=Rhacochilus)	0.4	0.7	0.3	0.4	0.1	0.4	0.4	0.2	0.8	1.8	5.5	0.8	0.4	2.8	6.8	2.3	3.1	0.5	22.3	22.3	5.0	1.8	1.5
Embiotoca jacksoni	-	-	<.1	-	<.1	-	<.1	<.1	-	-	-	-	<.1	0.1	0.9	0.3	0.8	0.2	0.6	-	-	-	0.3
Embiotoca lateralis	0.9	2.2	1.3	0.6	0.4	0.5	0.7	0.2	1.8	1.2	<.1	<.1	-	-	0.2	0.4	0.7	0.3	0.1	-	0.1	-	-
Embiotocidae	-	-	-	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Gibbonsia spp.	-	-	-	-	-	-	-	0.2	-	<.1	-	-	-	0.3	-	-	<.1	-	-	-	0.1	-	-
Girella nigricans	-	-	-	-	-	-	-	<.1	-	-	-	0.1	-	-	1.6	0.8	1.3	-	0.9	2.3	-	-	0.3
Heterostichus rostratus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
Hexagrammos decagrammus	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hyperprosopon anale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	-	-	<.1	-	-	-	-	-
Hypsurus caryi	0.1	<.1	-	-	-	-	-	-	-	0.7	-	-	-	-	<.1	-	-	-	1.0	-	-	-	-
Medialuna californiensis	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.8	0.2	0.6	2.1	0.4	-	-	1.3	0.1
Myliobatis californica	-	-	-	-	-	-	-	-	-	-	-	0.1	0.3	-	1.1	0.9	0.5	0.3	0.9	<.1	1.1	0.9	-
Oxyjulis californica	24.8	16.5	8.4	30.2	44.1	0.4	4.4	11.5	102.9	47.8	54.8	57.4	43.8	40.5	70.0	44.2	26.1	70.6	79.4	50.0	68.6	67.5	60.8
Paralabrax clathratus	-	-	-	-	-	-	-	12.6	-	-	-	-	-	-	-	-	0.1	<.1	0.4	0.9	0.3	-	1.4
Phanerodon atripes	-	-	-	-	-	-	<.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phanerodon furcatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.3	-	-	2.1	-
Phanerodon spp.	0.3	-	-	-	-	-	-	-	0.1	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhacochilus toxotes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	-	0.3	<.1	0.1	1.2	1.4	-	-
Sciaenidae unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
Sebastes atrovirens	-	-	-	-	-	-	-	-	0.1	-	-	-	0.2	-	<.1	-	0.1	-	0.4	0.4	1.3	8.6	0.1
Sebastes atrovirens (yoy)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	1.8	-	18.5	<.1	0.6	41.0	0.4
Sebastes chrysomelas/S. carnatus	-	2.1	35.9	-	-	10.5	8.7	3.0	17.8	0.8	<.1	0.6	-	<.1	-	1.7	-	0.7	8.0	113.8	161.3	1.9	-
Sebastes melanops (juv.)	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	0.6	-	-	-	<.1	-	-	-
Sebastes mystinus	5.6	7.6	2.7	1.7	1.8	2.6	4.1	3.8	9.9	3.3	1.3	1.4	-	0.1	0.4	2.0	0.9	1.2	0.9	0.4	1.5	-	0.6
Sebastes mystinus (juv.)	23.5	30.6	7.4	8.5	14.8	1.6	0.3	-	2.3	1.5	4.4	<.1	0.3	0.7	0.4	13.2	1.9	-	-	-	-	-	-
Sebastes paucispinis (juv.)	0.1	5.6	-	24.4	-	-	-	-	1.5	0.7	0.1	1.1	-	-	-	1.1	-	0.6	0.9	-	-	-	-
Sebastes rastrelliger	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes serranoides	0.1	0.4	0.6	7.5	-	-	0.3	0.2	0.3	<.1	0.4	0.6	-	1.1	0.4	0.4	0.2	0.3	0.3	<.1	2.3	0.4	0.5
Sebastes serranoides/S. flavidus (juv.)	12.6	33.1	-	24.4	0.9	2.0	-	-	8.5	14.7	9.8	77.7	7.8	1.9	6.9	16.0	<.1	6.4	0.7	0.4	0.8	0.9	0.4
Sebastes spp.	0.8	0.3	<.1	1.3	<.1	0.1	-	0.8	-	0.8	-	-	0.2	<.1	<.1	-	-	-	-	-	-	-	-
Semicossyphus pulcher	-	-	-	-	-	-	-	-	-	-	0.1	0.5	0.6	0.4	2.4	0.4	0.2	-	0.1	-	0.4	-	0.1
Trachurus symmetricus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8
Triakis semifasciata	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	<.1	-	-	-	<.1	<.1	0.1	0.6	0.1
larval/post-larval fish, unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	106.3	-	3.1	-	-	-	13.1

Subtidal Fish Observations - Yearly Mean Abundance (per 50 m transect) - South Diablo Cove -Midwater

Species / Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
# Station/Replicates	4	6	8	9	7	3	8	4	6	6	5	5	5	8	8	6	8	5	7	5	3	3	4
Atherinidae unid.	-	-	-	-	-	-	-	2.0	18.8	34.4	-	-	-	-	-	-	3.1	-	4.4	7.9	169.3	120.6	25.8
Aulorhynchus flavidus	0.4	0.3	4.9	1.6	25.4	1.0	<.1	-	-	0.6	4.4	0.7	0.2	1.8	<.1	<.1	<.1	<.1	3.4	0.8	14.4	0.3	-
Brachyistius frenatus	1.3	0.3	0.4	0.8	-	-	-	-	-	-	-	-	-	-	0.1	<.1	<.1	0.8	1.6	0.8	9.6	4.1	0.3
Chromis punctipinnis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
Cymatogaster aggregata	-	-	-	-	-	-	-	0.7	5.6	-	-	-	176.2	-	15.9	-	-	-	-	-	-	-	-
Damalichthys vacca (=Rhacochilus)	0.1	<.1	0.5	0.6	0.6	0.1	0.6	0.2	0.4	0.1	0.6	-	-	<.1	3.6	0.3	0.6	0.7	1.0	0.8	0.5	6.4	1.0
Embiotoca jacksoni	0.1	-	-	0.2	<.1	-	-	-	<.1	-	0.2	-	-	-	<.1	-	-	<.1	0.4	-	-	-	0.8
Embiotoca lateralis	0.5	-	0.7	1.3	0.1	0.4	-	0.3	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-
Embiotocidae	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-
Engraulis mordax	-	-	-	<.1	-	-	-	-	-	-	-	12.5	-	-	-	<.1	-	429.2	-	-	-	-	-
Gibbonsia spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	0.1	0.1	-
Girella nigricans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
Heterostichus rostratus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	<.1	-	-	-	-	-
Hexagrammos decagrammus	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypsurus caryi	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medialuna californiensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
Myliobatis californica	-	-	-	-	-	-	-	-	0.1	-	-	-	<.1	<.1	0.8	0.5	0.9	<.1	-	0.2	-	0.3	-
Oxyjulis californica	14.9	16.9	55.4	90.1	33.1	13.3	13.4	19.0	25.0	11.8	35.3	10.9	56.2	39.8	33.5	46.9	46.3	63.2	83.4	19.4	52.5	35.0	91.6
Paralabrax clathratus	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	0.9
Phanerodon furcatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	0.4	-	-	-	-	-	-	-
Phanerodon spp.	-	-	-	0.3	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhacochilus toxotes	0.3	<.1	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes atrovirens	-	-	-	<.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	0.3	1.1	-	-
Sebastes atrovirens (yoy)	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.9	0.5	30.3	1.7	2.5	6.5	0.4
Sebastes chrysomelas/S. carnatus	-	0.3	11.7	0.3	-	55.6	13.0	3.8	1.2	2.1	0.1	<.1	-	-	0.1	-	-	0.3	8.1	24.2	25.3	2.4	-
Sebastes mystinus	-	4.3	-	0.2	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes mystinus (juv.)	-	6.0	0.1	4.8	0.2	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes paucispinis (juv.)	-	5.8	-	34.8	-	0.3	-	-	0.2	0.3	0.5	-	-	-	-	0.4	-	-	-	<.1	-	-	-
Sebastes rastrelliger	-	-	0.1	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sebastes serranoides	-	<.1	0.1	0.3	-	-	<.1	0.2	0.1	-	<.1	-	-	-	0.1	-	-	-	-	-	-	-	-
Sebastes serranoides/S. flavidus (juv.)	0.8	24.1	-	89.5	<.1	0.4	0.1	-	9.1	7.5	0.9	<.1	11.8	-	2.8	0.4	-	12.8	<.1	-	-	0.5	-
Sebastes spp.	0.3	-	0.7	9.3	1.6	-	-	2.8	-	-	0.1	-	0.3	-	-	-	-	-	-	-	-	-	-
Trachurus symmetricus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-
Triakis semifasciata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.1	-	-	-	-	-	-	-	-
larval/post-larval fish, unid.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.1	-	14.3	-	-	-	3.8

APPENDIX E – ANOVA Test Results

E1 - Intertidal Algae

E2 - Intertidal Invertebrates

E3 - Subtidal Algae

E4 - Subtidal Invertebrates

E5 - Subtidal Fishes

APPENDIX E1 – ANOVA Test Results

Intertidal Algae

(Taxa alphabetized by +3 ft. MLLW and +1 ft. MLLW elevations)

Analysis of Variance for HBT for acov - Algal Cover

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	175.000	0.00	0.9810
SEASON	1	175.000	0.10	0.7477
STATION	6	175.000	84.01	0.0000
PERIOD*SEASON	1	175.000	0.01	0.9280
STATION*PERIOD	6	175.000	1.59	0.1518
STATION*SEASON	6	175.000	5.03	0.0001
PERIOD*STATION*SEASON	6	175.000	0.31	0.9308

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.00	0.00	0.1001	.	1.0000
STATION*PERIOD	9.56	3.45	0.7212	0.3395	0.9998

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-9.0110	6.7782	-1.329	.1854
Period in FC	8.7911	6.2353	1.410	.1603
Period in FC-S	10.1936	8.1296	1.254	.2116
Period in FC-W	7.3885	9.4564	0.781	.4357
Period in DC-S	-11.2469	9.0478	-1.243	.2155
Period in DC-W	-6.7750	10.0951	-0.671	.5030

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	17.309	0.6389	27.09	.0000	18.3659	16.2529
Period Op-2	17.341	1.1501	15.08	.0000	19.2427	15.4389
Op-1-04	9.273	1.8976	4.89	.0000	12.4113	6.1354
Op-2-04	5.344	3.3821	1.58	.1159	10.9370	-0.2484
Op-1-05	9.824	1.8976	5.18	.0000	12.9623	6.6864
Op-2-05	8.253	2.9827	2.77	.0063	13.1854	3.3208
Op-1-06	-4.326	1.5634	-2.77	.0063	-1.7412	-6.9116
Op-2-06	-7.617	2.9827	-2.55	.0115	-2.6849	-12.5494
Op-1-08	27.456	1.5318	17.92	.0000	29.9889	24.9229
Op-2-08	26.766	2.9827	8.97	.0000	31.6982	21.8336
Op-1-09	25.407	1.7944	14.16	.0000	28.3745	22.4402
Op-2-09	33.678	2.9827	11.29	.0000	38.6101	28.7455
Op-1-10	15.684	1.5634	10.03	.0000	18.2688	13.0983
Op-2-10	13.389	2.9827	4.49	.0000	18.3215	8.4569
Op-1-12	37.848	1.5318	24.71	.0000	40.3807	35.3147
Op-2-12	41.573	2.9827	13.94	.0000	46.5049	36.6403

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0314	1.3157	-0.024	.9810	2.1442	-2.2071

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	3.9291	3.8781	1.01	.3124	10.3420	-2.4838
Station 05	1.5712	3.5352	0.44	.6573	7.4171	-4.2747
Station 06	3.2907	3.3676	0.98	.3298	8.8595	-2.2780
Station 08	0.6900	3.3531	0.21	.8372	6.2347	-4.8546
Station 09	-8.2704	3.4809	-2.38	.0186	-2.5144	-14.0264
Station 10	2.2944	3.3676	0.68	.4966	7.8631	-3.2744
Station 12	-3.7250	3.3531	-1.11	.2681	1.8197	-9.2696

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	54.21	35.70	2.508	59.53	48.90	14.59	31.99	19.25	9.93
04	Op-2	6	68.41	35.76	5.481	82.50	54.32	8.43	21.66	18.49	-1.63
05	Op-1	17	53.46	29.58	2.049	57.80	49.11	15.35	30.14	20.27	10.42
05	Op-2	7	61.72	27.41	4.119	71.80	51.64	13.10	16.26	19.46	6.74
06	Op-1	26	71.34	58.28	2.918	77.35	65.33	-5.75	29.93	-2.41	-9.09
06	Op-2	7	83.01	39.12	6.499	98.92	67.11	-8.19	24.17	-0.23	-16.15
08	Op-1	26	21.57	37.14	2.027	25.75	17.40	44.02	43.20	48.74	39.29
08	Op-2	7	30.97	25.86	4.012	40.78	21.15	43.86	14.98	48.48	39.23
09	Op-1	19	27.39	52.49	3.223	34.16	20.62	40.88	55.06	47.67	34.09
09	Op-2	7	20.21	28.87	3.843	29.61	10.81	54.61	22.28	63.87	45.35
10	Op-1	25	41.05	94.59	5.650	52.71	29.39	25.20	68.04	33.14	17.26
10	Op-2	7	54.32	60.38	9.019	76.39	32.26	20.50	42.64	33.42	7.58
12	Op-1	26	9.06	24.06	1.135	11.40	6.72	56.53	49.07	61.54	51.52
12	Op-2	7	11.44	28.31	3.339	19.61	3.27	63.38	31.67	74.46	52.31

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	65.59	49.75	2.361	70.45	60.73
Op-2	7	74.82	32.84	4.879	86.76	62.89

Analysis of Variance for HBT for adiv - Algal Diversity

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.07	0.7975
SEASON	1	176.000	59.94	0.0000
STATION	6	176.000	58.11	0.0000
PERIOD*SEASON	1	176.000	2.80	0.0961
STATION*PERIOD	6	176.000	9.02	0.0000
STATION*SEASON	6	176.000	2.38	0.0308
PERIOD*STATION*SEASON	6	176.000	0.17	0.9845

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.07	0.00	0.1111	.	1.0000
STATION*PERIOD	54.10	47.49	1.0000	1.0000	0.9669

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2295	0.2418	-0.949	.3437
Period in FC	0.1452	0.2221	0.654	.5143
Period in FC-S	0.4755	0.2891	1.645	.1018
Period in FC-W	-0.1852	0.3373	-0.549	.5837
Period in DC-S	-0.0106	0.3227	-0.033	.9738
Period in DC-W	-0.4484	0.3601	-1.245	.2146

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.501	0.0227	22.03	.0000	0.5383	0.4631
Period Op-2	0.513	0.0410	12.50	.0000	0.5806	0.4449
Op-1-04	0.513	0.0677	7.58	.0000	0.6250	0.4012
Op-2-04	0.383	0.1206	3.17	.0018	0.5823	0.1834
Op-1-05	0.771	0.0677	11.40	.0000	0.8834	0.6596
Op-2-05	0.717	0.1064	6.74	.0000	0.8928	0.5410
Op-1-06	0.242	0.0546	4.43	.0000	0.3321	0.1514
Op-2-06	0.281	0.1064	2.65	.0089	0.4574	0.1056
Op-1-08	0.491	0.0546	8.99	.0000	0.5814	0.4007
Op-2-08	0.601	0.1064	5.65	.0000	0.7765	0.4247
Op-1-09	0.629	0.0640	9.83	.0000	0.7347	0.5231
Op-2-09	0.930	0.1064	8.75	.0000	1.1064	0.7546
Op-1-10	-0.006	0.0558	-0.11	.9091	0.0858	-0.0986
Op-2-10	-0.667	0.1064	-6.27	.0000	-0.4911	-0.8429
Op-1-12	0.865	0.0546	15.83	.0000	0.9554	0.7747
Op-2-12	1.344	0.1064	12.63	.0000	1.5200	1.1682

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0121	0.0469	-0.257	.7975	0.0655	-0.0896

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1303	0.1383	0.94	.3476	0.3590	-0.0985
Station 05	0.0546	0.1261	0.43	.6654	0.2631	-0.1539
Station 06	-0.0397	0.1196	-0.33	.7402	0.1580	-0.2375
Station 08	-0.1095	0.1196	-0.92	.3610	0.0882	-0.3073
Station 09	-0.3016	0.1242	-2.43	.0161	-0.0963	-0.5069
Station 10	0.6606	0.1201	5.50	.0000	0.8592	0.4620
Station 12	-0.4791	0.1196	-4.01	.0001	-0.2813	-0.6768

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.21	0.78	0.068	1.35	1.06	0.53	1.13	0.70	0.36
04	Op-2	6	1.59	0.90	0.139	1.94	1.23	0.25	1.24	0.74	-0.24
05	Op-1	17	0.95	0.95	0.061	1.08	0.82	0.79	1.09	0.96	0.62
05	Op-2	7	1.17	0.80	0.122	1.47	0.87	0.66	1.15	1.07	0.25
06	Op-1	26	1.44	0.59	0.027	1.49	1.38	0.24	0.50	0.30	0.18
06	Op-2	7	1.57	0.19	0.023	1.62	1.51	0.27	0.43	0.42	0.12
08	Op-1	26	1.19	1.58	0.079	1.35	1.02	0.49	1.28	0.63	0.36
08	Op-2	7	1.26	0.65	0.081	1.46	1.06	0.58	0.67	0.84	0.31
09	Op-1	19	1.09	1.05	0.077	1.25	0.92	0.64	1.12	0.78	0.49
09	Op-2	7	0.93	0.84	0.103	1.18	0.68	0.91	0.94	1.18	0.63
10	Op-1	25	1.69	1.98	0.115	1.93	1.45	-0.01	1.66	0.18	-0.20
10	Op-2	7	2.53	0.49	0.064	2.68	2.37	-0.69	0.83	-0.42	-0.96
12	Op-1	26	0.81	0.71	0.032	0.88	0.75	0.87	0.97	0.97	0.76
12	Op-2	7	0.52	0.75	0.089	0.74	0.30	1.32	0.93	1.60	1.04

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.68	0.74	0.038	1.76	1.60
Op-2	7	1.84	0.38	0.056	1.97	1.70

Analysis of Variance for HBT for 0003 - bare rock

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.21	0.6474
SEASON	1	176.000	3.12	0.0792
STATION	6	176.000	91.54	0.0000
PERIOD*SEASON	1	176.000	0.08	0.7720
STATION*PERIOD	6	176.000	3.51	0.0026
STATION*SEASON	6	176.000	0.69	0.6575
PERIOD*STATION*SEASON	6	176.000	0.51	0.8036

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.21	0.00	0.1351	.	1.0000
STATION*PERIOD	21.07	14.83	0.9722	0.8944	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0625	4.0681	0.015	.9878
Period in FC	-2.5939	3.7376	-0.694	.4886
Period in FC-S	-0.1101	4.8647	-0.023	.9820
Period in FC-W	-5.0778	5.6755	-0.895	.3722
Period in DC-S	-0.8181	5.4303	-0.151	.8804
Period in DC-W	0.9431	6.0589	0.156	.8765

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-12.489	0.3825	-32.65	.0000	-11.8563	-13.1214
Period Op-2	-12.127	0.6903	-17.57	.0000	-10.9858	-13.2687
Op-1-04	-9.606	1.1389	-8.43	.0000	-7.7230	-11.4896
Op-2-04	-8.789	2.0299	-4.33	.0000	-5.4325	-12.1455
Op-1-05	-17.123	1.1389	-15.03	.0000	-15.2397	-19.0063
Op-2-05	-15.864	1.7902	-8.86	.0000	-12.9042	-18.8245
Op-1-06	-1.944	0.9194	-2.11	.0359	-0.4237	-3.4641
Op-2-06	-1.426	1.7902	-0.80	.4268	1.5342	-4.3861
Op-1-08	-31.663	0.9194	-34.44	.0000	-30.1431	-33.1835
Op-2-08	-23.897	1.7902	-13.35	.0000	-20.9372	-26.8576
Op-1-09	-11.711	1.0769	-10.87	.0000	-9.9305	-13.4921
Op-2-09	-15.913	1.7902	-8.89	.0000	-12.9525	-18.8728
Op-1-10	0.723	0.9383	0.77	.4419	2.2747	-0.8284
Op-2-10	-0.447	1.7902	-0.25	.8033	2.5136	-3.4067
Op-1-12	-16.097	0.9194	-17.51	.0000	-14.5772	-17.6176
Op-2-12	-18.555	1.7902	-10.36	.0000	-15.5946	-21.5150

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3616	0.7892	-0.458	.6474	0.9434	-1.6666

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.8173	2.3276	-0.35	.7259	3.0315	-4.6661
Station 05	-1.2587	2.1218	-0.59	.5538	2.2498	-4.7671
Station 06	-0.5180	2.0124	-0.26	.7972	2.8097	-3.8456
Station 08	-7.7660	2.0124	-3.86	.0002	-4.4383	-11.0936
Station 09	4.2014	2.0891	2.01	.0458	7.6559	0.7469
Station 10	1.1697	2.0212	0.58	.5635	4.5118	-2.1724
Station 12	2.4574	2.0124	1.22	.2237	5.7851	-0.8703

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	26.75	16.11	1.040	28.96	24.55	-13.04	26.42	-9.86	-16.22
04	Op-2	6	22.60	9.31	1.337	26.04	19.17	-11.23	14.10	-6.11	-16.35
05	Op-1	17	39.14	21.94	1.496	42.31	35.97	-25.42	24.83	-22.39	-28.46
05	Op-2	7	34.00	11.04	1.272	37.11	30.89	-22.51	13.89	-18.47	-26.56
06	Op-1	26	18.09	23.68	1.181	20.52	15.66	-2.57	17.57	-0.89	-4.26
06	Op-2	7	13.33	10.07	1.352	16.64	10.03	-1.85	7.81	1.13	-4.83
08	Op-1	26	66.09	36.67	2.031	70.27	61.90	-50.57	31.70	-46.69	-54.46
08	Op-2	7	46.83	26.53	3.553	55.52	38.13	-35.34	27.01	-26.86	-43.82
09	Op-1	19	30.99	31.25	1.862	34.90	27.08	-16.84	23.23	-13.99	-19.69
09	Op-2	7	34.10	11.25	1.433	37.60	30.59	-22.61	14.65	-18.32	-26.90
10	Op-1	25	15.84	32.01	2.126	20.23	11.45	-0.44	25.69	2.63	-3.52
10	Op-2	7	12.28	17.15	2.190	17.64	6.92	-0.80	15.69	3.74	-5.34
12	Op-1	26	39.71	16.11	0.901	41.56	37.85	-24.19	31.25	-21.56	-26.82
12	Op-2	7	38.47	16.18	2.228	43.92	33.02	-26.99	13.82	-21.87	-32.11

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	15.51	20.73	0.991	17.56	13.47
Op-2	7	11.48	4.79	0.745	13.31	9.66

Analysis of Variance for HBT for 0077 - Chondracanthus canaliculatus

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	2.24	0.1363
SEASON	1	176.000	15.46	0.0001
STATION	6	176.000	38.43	0.0000
PERIOD*SEASON	1	176.000	0.05	0.8265
STATION*PERIOD	6	176.000	6.48	0.0000
STATION*SEASON	6	176.000	0.52	0.7933
PERIOD*STATION*SEASON	6	176.000	0.29	0.9421

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.24	1.21	0.4396	0.2951	0.3726
STATION*PERIOD	38.89	32.45	0.9997	0.9983	0.2418

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0535	0.3042	-0.176	.8606
Period in FC	-0.5648	0.2795	-2.020	.0449
Period in FC-S	-0.5930	0.3638	-1.630	.1049
Period in FC-W	-0.5365	0.4245	-1.264	.2079
Period in DC-S	0.0654	0.4061	0.161	.8722
Period in DC-W	-0.1724	0.4531	-0.381	.7040

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.132	0.0286	4.60	.0000	0.1788	0.0842
Period Op-2	0.220	0.0516	4.26	.0000	0.3052	0.1345
Op-1-04	0.377	0.0852	4.43	.0000	0.5180	0.2363
Op-2-04	0.550	0.1518	3.62	.0004	0.8013	0.2992
Op-1-05	0.377	0.0852	4.43	.0000	0.5180	0.2363
Op-2-05	0.521	0.1339	3.89	.0001	0.7421	0.2993
Op-1-06	0.176	0.0688	2.57	.0111	0.2901	0.0627
Op-2-06	0.424	0.1339	3.17	.0018	0.6459	0.2031
Op-1-08	0.166	0.0688	2.42	.0167	0.2799	0.0525
Op-2-08	0.326	0.1339	2.43	.0159	0.5473	0.1045
Op-1-09	0.019	0.0805	0.23	.8155	0.1520	-0.1144
Op-2-09	0.454	0.1339	3.39	.0009	0.6753	0.2325
Op-1-10	-0.497	0.0702	-7.08	.0000	-0.3808	-0.6128
Op-2-10	-1.257	0.1339	-9.39	.0000	-1.0357	-1.4785
Op-1-12	0.302	0.0688	4.39	.0000	0.4154	0.1880
Op-2-12	0.521	0.1339	3.89	.0001	0.7421	0.2993

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0883	0.0590	-1.496	.1363	0.0093	-0.1859

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1731	0.1741	-0.99	.3214	0.1147	-0.4609
Station 05	-0.1435	0.1587	-0.90	.3669	0.1188	-0.4059
Station 06	-0.2481	0.1505	-1.65	.1010	0.0008	-0.4970
Station 08	-0.1597	0.1505	-1.06	.2900	0.0891	-0.4086
Station 09	-0.4351	0.1562	-2.78	.0059	-0.1767	-0.6934
Station 10	0.7603	0.1512	5.03	.0000	1.0103	0.5104
Station 12	-0.2190	0.1505	-1.46	.1474	0.0299	-0.4679

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.00	0.000	.	.	0.20	0.69	0.31	0.10
04	Op-2	6	0.00	0.00	0.000	.	.	0.28	0.73	0.55	0.00
05	Op-1	17	0.00	0.00	0.000	.	.	0.20	0.69	0.31	0.10
05	Op-2	7	0.00	0.00	0.000	.	.	0.27	0.73	0.49	0.05
06	Op-1	26	0.05	0.21	0.013	0.08	0.02	0.10	0.56	0.16	0.05
06	Op-2	7	0.04	0.28	0.040	0.14	-0.06	0.23	0.80	0.48	-0.01
08	Op-1	26	0.12	1.53	0.066	0.25	-0.02	0.03	1.60	0.15	-0.09
08	Op-2	7	0.09	0.49	0.067	0.25	-0.08	0.18	1.01	0.48	-0.11
09	Op-1	19	0.22	0.97	0.072	0.37	0.07	-0.03	1.08	0.10	-0.16
09	Op-2	7	0.02	0.07	0.013	0.05	-0.01	0.25	0.73	0.48	0.03
10	Op-1	25	3.59	21.81	1.271	6.22	0.97	-3.44	21.87	-0.85	-6.03
10	Op-2	7	7.00	10.76	1.306	10.20	3.81	-6.73	10.66	-3.55	-9.91
12	Op-1	26	0.00	0.07	0.003	0.01	-0.00	0.15	0.69	0.22	0.07
12	Op-2	7	0.00	0.00	0.000	.	.	0.27	0.73	0.49	0.05

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.15	0.69	0.036	0.23	0.08
Op-2	7	0.27	0.73	0.091	0.49	0.05

Analysis of Variance for HBT for 0057 - coralline crust

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	39.83	0.0000
SEASON	1	176.000	16.35	0.0001
STATION	6	176.000	38.28	0.0000
PERIOD*SEASON	1	176.000	0.00	0.9602
STATION*PERIOD	6	176.000	6.22	0.0000
STATION*SEASON	6	176.000	2.73	0.0147
PERIOD*STATION*SEASON	6	176.000	0.70	0.6509

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	39.83	38.38	1.0000	1.0000	1.0000
STATION*PERIOD	37.29	30.87	0.9995	0.9975	0.8354

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2309	0.1144	-2.018	.0451
Period in FC	-0.7498	0.1051	-7.132	.0000
Period in FC-S	-0.6542	0.1368	-4.781	.0000
Period in FC-W	-0.8453	0.1596	-5.295	.0000
Period in DC-S	-0.3187	0.1527	-2.086	.0384
Period in DC-W	-0.1431	0.1704	-0.840	.4021

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.381	0.0108	35.37	.0000	0.3983	0.3627
Period Op-2	0.521	0.0194	26.81	.0000	0.5527	0.4885
Op-1-04	0.190	0.0320	5.93	.0000	0.2430	0.1371
Op-2-04	0.493	0.0571	8.63	.0000	0.5871	0.3982
Op-1-05	0.543	0.0320	16.94	.0000	0.5958	0.4898
Op-2-05	0.736	0.0504	14.62	.0000	0.8194	0.6529
Op-1-06	0.203	0.0259	7.87	.0000	0.2462	0.1607
Op-2-06	0.457	0.0504	9.08	.0000	0.5406	0.3740
Op-1-08	0.438	0.0259	16.95	.0000	0.4811	0.3955
Op-2-08	0.521	0.0504	10.35	.0000	0.6042	0.4377
Op-1-09	0.211	0.0303	6.98	.0000	0.2615	0.1613
Op-2-09	0.181	0.0504	3.59	.0004	0.2642	0.0977
Op-1-10	0.490	0.0264	18.56	.0000	0.5336	0.4463
Op-2-10	0.422	0.0504	8.39	.0000	0.5055	0.3390
Op-1-12	0.588	0.0259	22.72	.0000	0.6303	0.5448
Op-2-12	0.834	0.0504	16.56	.0000	0.9173	0.7508

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1401	0.0222	-6.311	.0000	-0.1034	-0.1768

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.3026	0.0655	-4.62	.0000	-0.1943	-0.4108
Station 05	-0.1934	0.0597	-3.24	.0014	-0.0947	-0.2920
Station 06	-0.2538	0.0566	-4.48	.0000	-0.1602	-0.3474
Station 08	-0.0826	0.0566	-1.46	.1461	0.0110	-0.1762
Station 09	0.0305	0.0588	0.52	.6047	0.1276	-0.0667
Station 10	0.0677	0.0568	1.19	.2352	0.1617	-0.0263
Station 12	-0.2465	0.0566	-4.35	.0000	-0.1529	-0.3401

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	2.42	3.75	0.268	2.99	1.85	2.00	9.51	3.14	0.86
04	Op-2	6	1.31	1.32	0.199	1.82	0.80	4.79	6.04	7.29	2.29
05	Op-1	17	0.45	0.76	0.053	0.56	0.33	3.97	8.47	5.10	2.84
05	Op-2	7	0.34	0.62	0.085	0.55	0.13	6.05	7.43	8.43	3.66
06	Op-1	26	2.12	5.07	0.226	2.58	1.65	1.89	7.78	2.56	1.21
06	Op-2	7	1.54	1.67	0.257	2.17	0.91	4.85	6.87	6.96	2.73
08	Op-1	26	0.83	4.44	0.176	1.20	0.47	3.17	5.38	3.73	2.62
08	Op-2	7	1.32	3.61	0.498	2.54	0.10	5.06	5.97	6.90	3.23
09	Op-1	19	2.36	6.60	0.424	3.26	1.47	1.89	4.27	2.48	1.31
09	Op-2	7	4.11	6.32	0.899	6.31	1.91	2.28	7.15	4.49	0.07
10	Op-1	25	0.63	3.61	0.160	0.96	0.30	3.34	6.08	3.93	2.75
10	Op-2	7	1.84	2.92	0.395	2.80	0.87	4.55	6.74	6.46	2.63
12	Op-1	26	0.23	0.83	0.051	0.34	0.13	3.77	9.34	4.60	2.95
12	Op-2	7	0.06	0.35	0.049	0.18	-0.06	6.32	7.29	8.73	3.92

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	4.01	9.62	0.400	4.83	3.18
Op-2	7	6.38	7.36	1.002	8.84	3.93

Analysis of Variance for HBT for 0115 - Cryptopleura violacea

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	97.92	0.0000
SEASON	1	176.000	6.41	0.0122
STATION	6	176.000	70.22	0.0000
PERIOD*SEASON	1	176.000	1.28	0.2602
STATION*PERIOD	6	176.000	2.70	0.0156
STATION*SEASON	6	176.000	0.04	0.9998
PERIOD*STATION*SEASON	6	176.000	0.06	0.9992

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	97.92	95.81	1.0000	1.0000	0.3238
STATION*PERIOD	16.20	10.02	0.9201	0.7421	0.5969

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.5912	0.2377	-6.695	.0000
Period in FC	-1.6024	0.2183	-7.339	.0000
Period in FC-S	-1.3911	0.2842	-4.895	.0000
Period in FC-W	-1.8136	0.3316	-5.470	.0000
Period in DC-S	-1.4379	0.3172	-4.533	.0000
Period in DC-W	-1.7445	0.3540	-4.928	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.083	0.0223	-3.73	.0003	-0.0465	-0.1204
Period Op-2	0.373	0.0403	9.25	.0000	0.4395	0.3061
Op-1-04	0.064	0.0665	0.95	.3409	0.1736	-0.0465
Op-2-04	0.591	0.1186	4.98	.0000	0.7869	0.3947
Op-1-05	0.053	0.0665	0.80	.4254	0.1632	-0.0569
Op-2-05	0.599	0.1046	5.73	.0000	0.7717	0.4259
Op-1-06	0.069	0.0537	1.29	.1986	0.1581	-0.0195
Op-2-06	0.599	0.1046	5.73	.0000	0.7717	0.4259
Op-1-08	0.069	0.0537	1.29	.1986	0.1581	-0.0195
Op-2-08	0.599	0.1046	5.73	.0000	0.7717	0.4259
Op-1-09	0.081	0.0629	1.29	.1991	0.1851	-0.0229
Op-2-09	0.599	0.1046	5.73	.0000	0.7717	0.4259
Op-1-10	-0.990	0.0548	-18.05	.0000	-0.8989	-1.0802
Op-2-10	-0.975	0.1046	-9.32	.0000	-0.8021	-1.1480
Op-1-12	0.069	0.0537	1.29	.1986	0.1581	-0.0195
Op-2-12	0.599	0.1046	5.73	.0000	0.7717	0.4259

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4562	0.0461	-9.896	.0000	-0.3800	-0.5325

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.5273	0.1360	-3.88	.0001	-0.3024	-0.7521
Station 05	-0.5456	0.1240	-4.40	.0000	-0.3407	-0.7506
Station 06	-0.5295	0.1176	-4.50	.0000	-0.3351	-0.7239
Station 08	-0.5295	0.1176	-4.50	.0000	-0.3351	-0.7239
Station 09	-0.5177	0.1220	-4.24	.0000	-0.3159	-0.7195
Station 10	-0.0145	0.1181	-0.12	.9025	0.1808	-0.2097
Station 12	-0.5295	0.1176	-4.50	.0000	-0.3351	-0.7239

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.02	0.42	0.025	0.08	-0.03	0.02	0.28	0.05	-0.01
04	Op-2	6	0.01	0.07	0.012	0.04	-0.02	0.35	0.73	0.63	0.07
05	Op-1	17	0.04	0.69	0.041	0.13	-0.05	0.00	1.01	0.10	-0.10
05	Op-2	7	0.00	0.00	0.000	.	.	0.34	0.73	0.56	0.11
06	Op-1	26	0.00	0.00	0.000	.	.	0.03	0.31	0.06	-0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.34	0.73	0.56	0.11
08	Op-1	26	0.00	0.00	0.000	.	.	0.03	0.31	0.06	-0.00
08	Op-2	7	0.00	0.00	0.000	.	.	0.34	0.73	0.56	0.11
09	Op-1	19	0.00	0.07	0.004	0.01	-0.00	0.03	0.38	0.08	-0.01
09	Op-2	7	0.00	0.00	0.000	.	.	0.34	0.73	0.56	0.11
10	Op-1	25	2.45	13.47	0.661	3.81	1.09	-2.42	13.47	-1.07	-3.77
10	Op-2	7	4.32	7.92	0.946	6.63	2.00	-3.98	7.60	-1.78	-6.18
12	Op-1	26	0.00	0.00	0.000	.	.	0.03	0.31	0.06	-0.00
12	Op-2	7	0.00	0.00	0.000	.	.	0.34	0.73	0.56	0.11

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.03	0.31	0.014	0.06	-0.00
Op-2	7	0.34	0.73	0.093	0.56	0.11

Analysis of Variance for HBT for 0070 - Endocladia muricata

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	49.13	0.0000
SEASON	1	176.000	0.47	0.4929
STATION	6	176.000	376.87	0.0000
PERIOD*SEASON	1	176.000	0.00	0.9664
STATION*PERIOD	6	176.000	1.02	0.4114
STATION*SEASON	6	176.000	0.41	0.8701
PERIOD*STATION*SEASON	6	176.000	0.44	0.8544

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	49.13	47.57	1.0000	1.0000	1.0000
STATION*PERIOD	6.14	0.07	0.5293	0.1044	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	17.0508	3.1452	5.421	.0000
Period in PC	12.8863	2.8896	4.459	.0000
Period in PC-S	10.2102	3.7611	2.715	.0073
Period in PC-W	15.5623	4.3880	3.547	.0005
Period in DC-S	19.5466	4.1984	4.656	.0000
Period in DC-W	14.5550	4.6843	3.107	.0022

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	9.022	0.2957	30.51	.0000	9.5112	8.5332
Period Op-2	4.745	0.5337	8.89	.0000	5.6280	3.8630
Op-1-04	-5.970	0.8805	-6.78	.0000	-4.5142	-7.4263
Op-2-04	-11.520	1.5694	-7.34	.0000	-8.9247	-14.1147
Op-1-05	-7.915	0.8805	-8.99	.0000	-6.4585	-9.3706
Op-2-05	-11.760	1.3841	-8.50	.0000	-9.4719	-14.0491
Op-1-06	-2.164	0.7108	-3.04	.0027	-0.9886	-3.3393
Op-2-06	-5.655	1.3841	-4.09	.0001	-3.3663	-7.9435
Op-1-08	10.167	0.7108	14.30	.0000	11.3424	8.9917
Op-2-08	2.945	1.3841	2.13	.0347	5.2339	0.6567
Op-1-09	11.848	0.8326	14.23	.0000	13.2252	10.4716
Op-2-09	9.008	1.3841	6.51	.0000	11.2964	6.7192
Op-1-10	31.928	0.7254	44.01	.0000	33.1279	30.7288
Op-2-10	27.703	1.3841	20.02	.0000	29.9918	25.4146
Op-1-12	25.260	0.7108	35.54	.0000	26.4357	24.0850
Op-2-12	22.497	1.3841	16.25	.0000	24.7856	20.2084

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	4.2767	0.6102	7.009	.0000	5.2857	3.2678

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	5.5495	1.7995	3.08	.0024	8.5251	2.5738
Station 05	3.8459	1.6404	2.34	.0202	6.5584	1.1334
Station 06	3.4909	1.5559	2.24	.0261	6.0637	0.9182
Station 08	7.2218	1.5559	4.64	.0000	9.7946	4.6490
Station 09	2.8406	1.6152	1.76	.0804	5.5114	0.1697
Station 10	4.2251	1.5626	2.70	.0075	6.8090	1.6412
Station 12	2.7633	1.5559	1.78	.0775	5.3361	0.1906

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	38.55	21.46	1.366	41.45	35.65	-9.70	24.72	-6.43	-12.97
04	Op-2	6	39.34	13.12	1.743	43.82	34.86	-18.34	11.42	-14.05	-22.64
05	Op-1	17	41.96	19.17	1.314	44.75	39.18	-13.11	24.55	-9.26	-16.97
05	Op-2	7	40.22	10.28	1.357	43.54	36.90	-18.62	4.06	-17.04	-20.19
06	Op-1	26	32.14	21.32	1.133	34.47	29.80	-3.53	20.59	-1.53	-5.53
06	Op-2	7	30.20	18.12	2.151	35.46	24.94	-8.60	17.08	-2.93	-14.26
08	Op-1	26	14.42	16.32	0.836	16.14	12.70	14.18	22.33	16.71	11.65
08	Op-2	7	17.95	8.89	1.122	20.69	15.20	3.66	16.15	8.27	-0.96
09	Op-1	19	12.55	14.31	1.038	14.74	10.37	16.17	20.17	19.14	13.19
09	Op-2	7	10.36	6.18	0.924	12.62	8.10	11.25	11.42	15.01	7.48
10	Op-1	25	0.02	0.07	0.006	0.03	0.00	28.60	15.80	30.03	27.17
10	Op-2	7	0.00	0.00	0.000	.	.	21.60	7.26	24.02	19.19
12	Op-1	26	1.60	3.06	0.164	1.93	1.26	27.01	16.28	28.45	25.56
12	Op-2	7	0.91	1.94	0.245	1.51	0.31	20.69	7.99	23.27	18.10

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	28.60	15.87	0.670	29.98	27.22
Op-2	7	21.60	7.26	0.988	24.02	19.19

Analysis of Variance for HBT for 0032 - Pucus gardneri

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	29.13	0.0000
SEASON	1	176.000	11.89	0.0007
STATION	6	176.000	14.17	0.0000
PERIOD*SEASON	1	176.000	0.02	0.9000
STATION*PERIOD	6	176.000	0.30	0.9384
STATION*SEASON	6	176.000	0.26	0.9565
PERIOD*STATION*SEASON	6	176.000	0.34	0.9165

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	29.13	27.80	0.9999	0.9998	0.2851
STATION*PERIOD	1.77	0.00	0.2175	.	0.3750

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.9928	0.2532	-3.921	.0001
Period in FC	-0.8631	0.2326	-3.710	.0003
Period in FC-S	-0.8262	0.3028	-2.729	.0070
Period in FC-W	-0.9001	0.3533	-2.548	.0117
Period in DC-S	-1.0730	0.3380	-3.175	.0018
Period in DC-W	-0.9126	0.3771	-2.420	.0165

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.059	0.0238	2.48	.0141	0.0984	0.0197
Period Op-2	0.324	0.0430	7.55	.0000	0.3952	0.2531
Op-1-04	0.190	0.0709	2.68	.0080	0.3074	0.0730
Op-2-04	0.392	0.1263	3.10	.0023	0.6004	0.1826
Op-1-05	-0.574	0.0709	-8.10	.0000	-0.4571	-0.6916
Op-2-05	-0.165	0.1114	-1.48	.1412	0.0196	-0.3489
Op-1-06	0.156	0.0572	2.73	.0069	0.2510	0.0617
Op-2-06	0.408	0.1114	3.67	.0003	0.5927	0.2242
Op-1-08	0.156	0.0572	2.73	.0069	0.2510	0.0617
Op-2-08	0.408	0.1114	3.67	.0003	0.5927	0.2242
Op-1-09	0.209	0.0670	3.12	.0021	0.3199	0.0983
Op-2-09	0.408	0.1114	3.67	.0003	0.5927	0.2242
Op-1-10	0.166	0.0584	2.84	.0050	0.2626	0.0694
Op-2-10	0.408	0.1114	3.67	.0003	0.5927	0.2242
Op-1-12	0.110	0.0572	1.92	.0570	0.2043	0.0150
Op-2-12	0.408	0.1114	3.67	.0003	0.5927	0.2242

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2651	0.0491	-5.398	.0000	-0.1839	-0.3464

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.2013	0.1449	-1.39	.1664	0.0382	-0.4409
Station 05	-0.4097	0.1321	-3.10	.0022	-0.1913	-0.6281
Station 06	-0.2521	0.1253	-2.01	.0457	-0.0450	-0.4592
Station 08	-0.2521	0.1253	-2.01	.0457	-0.0450	-0.4592
Station 09	-0.1994	0.1300	-1.53	.1270	0.0156	-0.4144
Station 10	-0.2425	0.1258	-1.93	.0555	-0.0345	-0.4505
Station 12	-0.2988	0.1253	-2.39	.0181	-0.0917	-0.5060

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.01	0.07	0.007	0.03	-0.00	0.10	0.69	0.19	0.01
04	Op-2	6	0.00	0.00	0.000	.	.	0.16	0.35	0.28	0.04
05	Op-1	17	0.75	1.67	0.127	1.02	0.48	-0.64	1.91	-0.35	-0.92
05	Op-2	7	0.59	2.29	0.302	1.32	-0.15	-0.41	2.36	0.33	-1.15
06	Op-1	26	0.00	0.00	0.000	.	.	0.07	0.62	0.13	0.02
06	Op-2	7	0.00	0.00	0.000	.	.	0.17	0.35	0.28	0.07
08	Op-1	26	0.00	0.00	0.000	.	.	0.07	0.62	0.13	0.02
08	Op-2	7	0.00	0.00	0.000	.	.	0.17	0.35	0.28	0.07
09	Op-1	19	0.00	0.00	0.000	.	.	0.10	0.62	0.18	0.02
09	Op-2	7	0.00	0.00	0.000	.	.	0.17	0.35	0.28	0.07
10	Op-1	25	0.00	0.00	0.000	.	.	0.08	0.62	0.14	0.02
10	Op-2	7	0.00	0.00	0.000	.	.	0.17	0.35	0.28	0.07
12	Op-1	26	0.02	0.14	0.008	0.03	-0.00	0.06	0.76	0.12	-0.00
12	Op-2	7	0.00	0.00	0.000	.	.	0.17	0.35	0.28	0.07

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.07	0.62	0.028	0.13	0.02
Op-2	7	0.17	0.35	0.042	0.28	0.07

Analysis of Variance for HBT for 0072 - Gastroclonium subarticulatum

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + 1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	11.96	0.0007
SEASON	1	176.000	0.07	0.7887
STATION	6	176.000	36.00	0.0000
PERIOD*SEASON	1	176.000	0.24	0.6234
STATION*PERIOD	6	176.000	15.33	0.0000
STATION*SEASON	6	176.000	0.02	1.0000
PERIOD*STATION*SEASON	6	176.000	0.07	0.9988

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	11.96	10.82	0.9641	0.9487	0.1771
STATION*PERIOD	91.98	84.94	1.0000	1.0000	0.2044

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.5988	0.1245	4.808	.0000
Period in FC	-0.0139	0.1144	-0.122	.9031
Period in FC-S	-0.0448	0.1489	-0.301	.7640
Period in FC-W	0.0169	0.1738	0.097	.9226
Period in DC-S	0.5464	0.1662	3.287	.0012
Period in DC-W	0.6511	0.1855	3.510	.0006

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.030	0.0117	-2.60	.0102	-0.0110	-0.0498
Period Op-2	-0.114	0.0211	-5.39	.0000	-0.0790	-0.1489
Op-1-04	0.001	0.0349	0.04	.9699	0.0590	-0.0563
Op-2-04	0.005	0.0621	0.08	.9325	0.1080	-0.0975
Op-1-05	0.003	0.0349	0.09	.9284	0.0608	-0.0545
Op-2-05	0.009	0.0548	0.16	.8710	0.0995	-0.0817
Op-1-06	0.001	0.0281	0.04	.9703	0.0476	-0.0455
Op-2-06	0.005	0.0548	0.10	.9235	0.0959	-0.0854
Op-1-08	0.001	0.0281	0.04	.9703	0.0476	-0.0455
Op-2-08	-0.004	0.0548	-0.08	.9398	0.0865	-0.0948
Op-1-09	-0.045	0.0330	-1.35	.1774	0.0099	-0.0992
Op-2-09	-0.010	0.0548	-0.18	.8555	0.0806	-0.1006
Op-1-10	-0.177	0.0287	-6.16	.0000	-0.1294	-0.2244
Op-2-10	-0.812	0.0548	-14.81	.0000	-0.7213	-0.9025
Op-1-12	0.002	0.0281	0.08	.9386	0.0487	-0.0444
Op-2-12	0.009	0.0548	0.16	.8710	0.0995	-0.0817

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0835	0.0242	3.458	.0007	0.1235	0.0436

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0040	0.0713	-0.06	.9558	0.1139	-0.1218
Station 05	-0.0058	0.0650	-0.09	.9293	0.1016	-0.1132
Station 06	-0.0042	0.0616	-0.07	.9455	0.0977	-0.1061
Station 08	0.0052	0.0616	0.08	.9329	0.1071	-0.0967
Station 09	-0.0347	0.0640	-0.54	.5886	0.0711	-0.1404
Station 10	0.6350	0.0619	10.26	.0000	0.7373	0.5327
Station 12	-0.0067	0.0616	-0.11	.9130	0.0951	-0.1086

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.07	0.004	0.01	-0.00	0.00	0.21	0.02	-0.02
04	Op-2	6	0.01	0.07	0.012	0.04	-0.02	0.02	0.17	0.08	-0.05
05	Op-1	17	0.00	0.00	0.000	.	.	0.01	0.14	0.03	-0.01
05	Op-2	7	0.00	0.00	0.000	.	.	0.02	0.14	0.07	-0.02
06	Op-1	26	0.00	0.07	0.003	0.01	-0.00	0.00	0.21	0.02	-0.01
06	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.01	0.17	0.07	-0.04
08	Op-1	26	0.00	0.07	0.003	0.01	-0.00	0.00	0.21	0.02	-0.01
08	Op-2	7	0.03	0.14	0.021	0.08	-0.02	-0.00	0.28	0.07	-0.08
09	Op-1	19	0.15	1.11	0.070	0.29	-0.00	-0.14	1.25	0.01	-0.29
09	Op-2	7	0.06	0.42	0.060	0.21	-0.09	-0.03	0.52	0.11	-0.18
10	Op-1	25	1.19	10.07	0.525	2.27	0.11	-1.18	10.14	-0.10	-2.27
10	Op-2	7	7.05	11.53	1.506	10.74	3.37	-7.03	11.67	-3.31	-10.75
12	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.14	0.02	-0.01
12	Op-2	7	0.00	0.00	0.000	.	.	0.02	0.14	0.07	-0.02

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.01	0.14	0.005	0.02	-0.01
Op-2	7	0.02	0.14	0.020	0.07	-0.02

Analysis of Variance for HBT for 0073 - Gelidium coulteri

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	24.27	0.0000
SEASON	1	176.000	45.26	0.0000
STATION	6	176.000	33.52	0.0000
PERIOD*SEASON	1	176.000	8.15	0.0048
STATION*PERIOD	6	176.000	4.00	0.0009
STATION*SEASON	6	176.000	1.48	0.1859
PERIOD*STATION*SEASON	6	176.000	0.36	0.9023

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	24.27	22.99	0.9994	0.9991	0.9860
STATION*PERIOD	23.97	17.70	0.9859	0.9417	0.3148

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.4193	0.3566	3.980	.0001
Period in FC	0.9664	0.3276	2.950	.0036
Period in FC-S	1.5326	0.4265	3.594	.0004
Period in FC-W	0.4002	0.4975	0.804	.4223
Period in DC-S	2.2357	0.4760	4.697	.0000
Period in DC-W	0.6028	0.5311	1.135	.2580

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.034	0.0335	1.00	.3177	0.0891	-0.0218
Period Op-2	-0.307	0.0605	-5.08	.0000	-0.2071	-0.4073
Op-1-04	-0.102	0.0998	-1.02	.3069	0.0628	-0.2674
Op-2-04	-0.649	0.1779	-3.65	.0004	-0.3545	-0.9430
Op-1-05	0.500	0.0998	5.00	.0000	0.6646	0.3344
Op-2-05	0.304	0.1569	1.94	.0541	0.5638	0.0448
Op-1-06	-0.343	0.0806	-4.26	.0000	-0.2101	-0.4767
Op-2-06	-0.568	0.1569	-3.62	.0004	-0.3087	-0.8277
Op-1-08	0.413	0.0806	5.13	.0000	0.5464	0.2799
Op-2-08	-0.608	0.1569	-3.88	.0002	-0.3487	-0.8676
Op-1-09	0.004	0.0944	0.04	.9650	0.1603	-0.1520
Op-2-09	0.087	0.1569	0.56	.5790	0.3467	-0.1723
Op-1-10	-0.800	0.0823	-9.73	.0000	-0.6644	-0.9364
Op-2-10	-1.168	0.1569	-7.44	.0000	-0.9081	-1.4271
Op-1-12	0.565	0.0806	7.01	.0000	0.6978	0.4313
Op-2-12	0.451	0.1569	2.87	.0046	0.7102	0.1912

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3408	0.0692	4.926	.0000	0.4552	0.2264

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.5464	0.2040	2.68	.0081	0.8838	0.2090
Station 05	0.1952	0.1860	1.05	.2954	0.5028	-0.1124
Station 06	0.2248	0.1764	1.27	.2043	0.5165	-0.0669
Station 08	1.0213	0.1764	5.79	.0000	1.3130	0.7296
Station 09	-0.0831	0.1831	-0.45	.6507	0.2198	-0.3859
Station 10	0.3672	0.1772	2.07	.0397	0.6601	0.0742
Station 12	0.1139	0.1764	0.65	.5194	0.4056	-0.1778

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.07	2.64	0.208	1.51	0.63	-0.44	3.33	0.05	-0.92
04	Op-2	6	2.93	4.03	0.567	4.38	1.47	-2.52	4.34	-1.02	-4.03
05	Op-1	17	0.16	0.69	0.047	0.26	0.06	0.47	1.32	0.64	0.30
05	Op-2	7	0.27	0.76	0.118	0.56	-0.02	0.18	1.46	0.60	-0.24
06	Op-1	26	1.43	3.06	0.144	1.73	1.14	-0.86	4.13	-0.51	-1.20
06	Op-2	7	1.77	1.88	0.260	2.40	1.13	-1.32	2.19	-0.57	-2.07
08	Op-1	26	0.58	4.03	0.235	1.07	0.10	-0.01	4.83	0.48	-0.50
08	Op-2	7	2.87	6.94	0.925	5.13	0.60	-2.42	7.64	-0.02	-4.82
09	Op-1	19	0.87	3.89	0.233	1.36	0.38	-0.26	4.62	0.28	-0.80
09	Op-2	7	0.59	2.78	0.378	1.51	-0.34	-0.14	2.64	0.72	-1.00
10	Op-1	25	7.01	27.64	1.439	9.98	4.04	-6.43	27.15	-3.48	-9.38
10	Op-2	7	11.14	21.46	3.518	19.75	2.53	-10.69	21.77	-2.00	-19.39
12	Op-1	26	0.15	1.46	0.062	0.28	0.02	0.43	2.15	0.60	0.26
12	Op-2	7	0.24	1.46	0.204	0.74	-0.26	0.21	1.46	0.68	-0.27

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.58	1.08	0.054	0.69	0.46
Op-2	7	0.45	0.69	0.101	0.69	0.20

Analysis of Variance for HBT for 0074 - Gelidium pusillum

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.19	0.6625
SEASON	1	176.000	18.98	0.0000
STATION	6	176.000	7.98	0.0000
PERIOD*SEASON	1	176.000	10.91	0.0012
STATION*PERIOD	6	176.000	0.58	0.7434
STATION*SEASON	6	176.000	3.85	0.0012
PERIOD*STATION*SEASON	6	176.000	0.50	0.8055

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.19	0.00	0.1320	.	0.6514
STATION*PERIOD	3.50	0.00	0.3434	.	0.2205

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3963	0.2858	-1.387	.1672
Period in FC	0.2267	0.2626	0.863	.3891
Period in PC-S	0.8571	0.3417	2.508	.0130
Period in PC-W	-0.4037	0.3987	-1.013	.3126
Period in DC-S	0.2548	0.3815	0.668	.5050
Period in DC-W	-1.0475	0.4256	-2.461	.0148

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.358	0.0269	13.33	.0000	0.4026	0.3137
Period Op-2	0.382	0.0485	7.89	.0000	0.4626	0.3022
Op-1-04	0.596	0.0800	7.45	.0000	0.7285	0.4639
Op-2-04	0.378	0.1426	2.65	.0088	0.6137	0.1421
Op-1-05	0.670	0.0800	8.37	.0000	0.8020	0.5374
Op-2-05	0.627	0.1258	4.99	.0000	0.8352	0.4193
Op-1-06	-0.017	0.0646	-0.26	.7969	0.0901	-0.1234
Op-2-06	0.017	0.1258	0.14	.8901	0.2253	-0.1905
Op-1-08	0.211	0.0646	3.27	.0013	0.3181	0.1045
Op-2-08	0.315	0.1258	2.50	.0132	0.5228	0.1069
Op-1-09	0.413	0.0757	5.46	.0000	0.5383	0.2881
Op-2-09	0.496	0.1258	3.94	.0001	0.7038	0.2879
Op-1-10	0.265	0.0659	4.03	.0001	0.3745	0.1565
Op-2-10	0.373	0.1258	2.97	.0034	0.5810	0.1651
Op-1-12	0.368	0.0646	5.70	.0000	0.4748	0.2612
Op-2-12	0.471	0.1258	3.74	.0002	0.6785	0.2626

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0242	0.0554	-0.437	.6625	0.0674	-0.1159

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2183	0.1635	1.34	.1836	0.4886	-0.0521
Station 05	0.0424	0.1490	0.28	.7762	0.2889	-0.2040
Station 06	-0.0340	0.1414	-0.24	.8100	0.1997	-0.2678
Station 08	-0.1035	0.1414	-0.73	.4649	0.1302	-0.3373
Station 09	-0.0826	0.1468	-0.56	.5741	0.1600	-0.3253
Station 10	-0.1076	0.1420	-0.76	.4495	0.1272	-0.3424
Station 12	-0.1025	0.1414	-0.73	.4692	0.1312	-0.3363

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.04	0.42	0.027	0.10	-0.02	0.51	2.53	0.84	0.19
04	Op-2	6	0.23	0.49	0.080	0.44	0.03	0.35	1.67	0.98	-0.27
05	Op-1	17	0.00	0.07	0.004	0.01	-0.00	0.55	2.26	0.86	0.25
05	Op-2	7	0.08	0.21	0.035	0.17	-0.01	0.66	1.49	1.26	0.06
06	Op-1	26	0.51	3.26	0.136	0.79	0.23	-0.09	2.81	0.12	-0.29
06	Op-2	7	0.65	1.87	0.238	1.24	0.07	0.08	1.11	0.48	-0.31
08	Op-1	26	0.65	5.83	0.292	1.25	0.05	-0.22	5.59	0.25	-0.69
08	Op-2	7	0.30	0.83	0.110	0.57	0.03	0.44	1.56	0.95	-0.06
09	Op-1	19	0.14	0.83	0.050	0.24	0.03	0.39	1.63	0.61	0.17
09	Op-2	7	0.20	0.76	0.116	0.48	-0.09	0.54	1.39	0.99	0.09
10	Op-1	25	0.44	4.86	0.220	0.90	-0.01	-0.01	3.23	0.26	-0.29
10	Op-2	7	0.40	1.53	0.236	0.97	-0.18	0.34	1.18	0.71	-0.03
12	Op-1	26	0.17	2.22	0.088	0.35	-0.01	0.25	1.18	0.37	0.14
12	Op-2	7	0.17	0.42	0.058	0.31	0.03	0.57	1.46	1.16	-0.02

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.42	2.33	0.101	0.63	0.21
Op-2	7	0.74	1.63	0.244	1.34	0.14

Analysis of Variance for HBT for 0109 - Grateloupia doryphora

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data not transformed.

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.32	0.5741
SEASON	1	176.000	2.60	0.1085
STATION	6	176.000	2.56	0.0211
PERIOD*SEASON	1	176.000	0.32	0.5741
STATION*PERIOD	6	176.000	0.32	0.9251
STATION*SEASON	6	176.000	2.56	0.0211
PERIOD*STATION*SEASON	6	176.000	0.32	0.9251

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.32	0.00	0.1529	.	0.1246
STATION*PERIOD	1.93	0.00	0.2286	.	0.1584

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.5028	0.6462	0.778	.4375
Period in FC	-0.0087	0.5937	-0.015	.9884
Period in FC-S	-0.0174	0.7727	-0.022	.9821
Period in FC-W	-0.0000	0.9015	-0.000	1.000
Period in DC-S	1.0056	0.8626	1.166	.2453
Period in DC-W	0.0000	0.9624	0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.066	0.0608	-1.08	.2802	0.0347	-0.1663
Period Op-2	-0.136	0.1096	-1.24	.2151	0.0449	-0.3177
Op-1-04	-0.017	0.1809	-0.10	.9237	0.2818	-0.3165
Op-2-04	-0.000	0.3224	-0.00	1.000	0.5332	-0.5332
Op-1-05	-0.000	0.1809	-0.00	1.000	0.2991	-0.2991
Op-2-05	-0.009	0.2844	-0.03	.9757	0.4615	-0.4789
Op-1-06	-0.000	0.1460	-0.00	1.000	0.2415	-0.2415
Op-2-06	0.000	0.2844	0.00	1.000	0.4702	-0.4702
Op-1-08	-0.000	0.1460	-0.00	1.000	0.2415	-0.2415
Op-2-08	-0.017	0.2844	-0.06	.9514	0.4528	-0.4876
Op-1-09	0.000	0.1711	0.00	1.000	0.2829	-0.2829
Op-2-09	-0.000	0.2844	-0.00	1.000	0.4702	-0.4702
Op-1-10	-0.443	0.1490	-2.97	.0033	-0.1969	-0.6898
Op-2-10	-0.929	0.2844	-3.27	.0013	-0.4586	-1.3990
Op-1-12	0.000	0.1460	0.00	1.000	0.2415	-0.2415
Op-2-12	-0.000	0.2844	-0.00	1.000	0.4702	-0.4702

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0706	0.1254	0.563	.5741	0.2779	-0.1367

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0174	0.3697	-0.05	.9626	0.5940	-0.6287
Station 05	0.0087	0.3370	0.03	.9795	0.5660	-0.5486
Station 06	-0.0000	0.3197	-0.00	1.000	0.5286	-0.5286
Station 08	0.0174	0.3197	0.05	.9567	0.5459	-0.5112
Station 09	0.0000	0.3318	0.00	1.000	0.5487	-0.5487
Station 10	0.4854	0.3210	1.51	.1323	1.0163	-0.0454
Station 12	0.0000	0.3197	0.00	1.000	0.5286	-0.5286

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.02	0.28	0.016	0.05	-0.02	-0.02	0.28	0.02	-0.05
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-2	7	0.01	0.07	0.010	0.03	-0.01	-0.01	0.07	0.01	-0.03
06	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-2	7	0.02	0.14	0.020	0.07	-0.03	-0.02	0.14	0.03	-0.07
09	Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
10	Op-1	25	0.46	8.54	0.352	1.19	-0.27	-0.46	8.54	0.27	-1.19
10	Op-2	7	1.06	6.39	0.900	3.26	-1.14	-1.06	6.39	1.14	-3.26
12	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0082 - Mastocarpus papillatus

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	11.85	0.0007
SEASON	1	176.000	7.25	0.0078
STATION	6	176.000	45.86	0.0000
PERIOD*SEASON	1	176.000	0.06	0.8063
STATION*PERIOD	6	176.000	7.01	0.0000
STATION*SEASON	6	176.000	2.54	0.0221
PERIOD*STATION*SEASON	6	176.000	1.86	0.0894

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	11.85	10.71	0.9628	0.9469	1.0000
STATION*PERIOD	42.06	35.58	0.9999	0.9993	0.8857

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-26.5389	4.9801	-5.329	.0000
Period in FC	3.2611	4.5754	0.713	.4769
Period in FC-S	7.0988	5.9553	1.192	.2349
Period in FC-W	-0.5765	6.9478	-0.083	.9340
Period in DC-S	-32.0374	6.6476	-4.819	.0000
Period in DC-W	-21.0404	7.4171	-2.837	.0051

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	8.110	0.4683	17.32	.0000	8.8843	7.3356
Period Op-2	11.435	0.8450	13.53	.0000	12.8326	10.0380
Op-1-04	8.344	1.3942	5.98	.0000	10.6496	6.0387
Op-2-04	6.990	2.4849	2.81	.0055	11.0987	2.8808
Op-1-05	10.667	1.3942	7.65	.0000	12.9723	8.3614
Op-2-05	9.529	2.1915	4.35	.0000	13.1528	5.9053
Op-1-06	-7.236	1.1254	-6.43	.0000	-5.3749	-9.0969
Op-2-06	-8.005	2.1915	-3.65	.0003	-4.3810	-11.6285
Op-1-08	15.828	1.1254	14.06	.0000	17.6895	13.9675
Op-2-08	16.659	2.1915	7.60	.0000	20.2828	13.0353
Op-1-09	12.358	1.3184	9.37	.0000	14.5384	10.1784
Op-2-09	22.900	2.1915	10.45	.0000	26.5240	19.2765
Op-1-10	4.016	1.1487	3.50	.0006	5.9154	2.1167
Op-2-10	19.174	2.1915	8.75	.0000	22.7976	15.5501
Op-1-12	12.791	1.1254	11.37	.0000	14.6524	10.9305
Op-2-12	12.800	2.1915	5.84	.0000	16.4238	9.1764

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-3.3254	0.9661	-3.442	.0007	-1.7279	-4.9229

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	1.3545	2.8493	0.48	.6351	6.0660	-3.3571
Station 05	1.1379	2.5974	0.44	.6619	5.4328	-3.1571
Station 06	0.7688	2.4636	0.31	.7554	4.8425	-3.3049
Station 08	-0.8306	2.4636	-0.34	.7364	3.2431	-4.9043
Station 09	-10.5419	2.5575	-4.12	.0001	-6.3130	-14.7708
Station 10	-15.1578	2.4743	-6.13	.0000	-11.0664	-19.2491
Station 12	-0.0087	2.4636	-0.00	.9972	4.0650	-4.0823

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	9.49	15.21	1.192	12.02	6.97	9.90	21.35	12.84	6.97
04	Op-2	6	16.96	20.69	3.325	25.50	8.41	10.09	14.31	15.59	4.60
05	Op-1	17	7.26	16.18	1.005	9.39	5.13	12.13	19.62	14.88	9.39
05	Op-2	7	13.44	20.28	3.120	21.08	5.81	12.12	10.66	15.54	8.71
06	Op-1	26	29.08	43.82	2.446	34.12	24.04	-10.74	25.76	-7.75	-13.73
06	Op-2	7	39.13	37.15	6.091	54.03	24.22	-13.56	20.56	-6.74	-20.38
08	Op-1	26	3.15	10.62	0.621	4.43	1.87	15.19	33.99	17.95	12.42
08	Op-2	7	6.41	14.17	2.148	11.67	1.15	19.16	16.18	24.78	13.54
09	Op-1	19	5.75	12.15	0.824	7.48	4.02	13.27	39.06	16.99	9.55
09	Op-2	7	1.58	5.14	0.708	3.31	-0.15	23.99	24.34	33.34	14.64
10	Op-1	25	15.32	42.57	2.234	19.93	10.71	3.50	58.65	8.10	-1.10
10	Op-2	7	3.95	12.71	1.654	8.00	-0.10	21.62	21.49	29.63	13.61
12	Op-1	26	5.64	22.64	1.063	7.83	3.45	12.69	33.09	15.90	9.49
12	Op-2	7	9.89	25.62	3.028	17.30	2.48	15.67	24.17	24.55	6.80

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	18.34	34.34	1.487	21.40	15.28
Op-2	7	25.57	24.06	3.818	34.91	16.22

Analysis of Variance for HBT for 0102 - Mazzaella affinis

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.50	0.4802
SEASON	1	176.000	27.25	0.0000
STATION	6	176.000	16.86	0.0000
PERIOD*SEASON	1	176.000	2.22	0.1383
STATION*PERIOD	6	176.000	3.51	0.0026
STATION*SEASON	6	176.000	2.50	0.0240
PERIOD*STATION*SEASON	6	176.000	0.28	0.9480

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.50	0.00	0.1830	.	0.5474
STATION*PERIOD	21.06	14.82	0.9722	0.8943	0.2932

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3783	0.3372	1.122	.2635
Period in FC	-0.0543	0.3098	-0.175	.8610
Period in FC-S	0.2181	0.4032	0.541	.5892
Period in FC-W	-0.3268	0.4704	-0.695	.4882
Period in DC-S	0.7876	0.4501	1.750	.0819
Period in DC-W	-0.0310	0.5022	-0.062	.9509

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.377	0.0317	11.89	.0000	0.4294	0.3245
Period Op-2	0.331	0.0572	5.78	.0000	0.4253	0.2361
Op-1-04	0.676	0.0944	7.16	.0000	0.8322	0.5200
Op-2-04	0.658	0.1683	3.91	.0001	0.9364	0.3799
Op-1-05	0.690	0.0944	7.31	.0000	0.8465	0.5343
Op-2-05	0.784	0.1484	5.28	.0000	1.0289	0.5382
Op-1-06	0.284	0.0762	3.72	.0003	0.4097	0.1577
Op-2-06	0.263	0.1484	1.77	.0783	0.5082	0.0174
Op-1-08	0.367	0.0762	4.81	.0000	0.4928	0.2408
Op-2-08	-0.049	0.1484	-0.33	.7427	0.1966	-0.2942
Op-1-09	-0.097	0.0893	-1.09	.2789	0.0507	-0.2446
Op-2-09	0.320	0.1484	2.16	.0325	0.5651	0.0744
Op-1-10	0.075	0.0778	0.96	.3382	0.2033	-0.0539
Op-2-10	-0.426	0.1484	-2.87	.0046	-0.1803	-0.6711
Op-1-12	0.644	0.0762	8.45	.0000	0.7700	0.5179
Op-2-12	0.765	0.1484	5.15	.0000	1.0103	0.5195

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0463	0.0654	0.707	.4802	0.1545	-0.0619

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0179	0.1929	0.09	.9260	0.3370	-0.3011
Station 05	-0.0931	0.1759	-0.53	.5970	0.1977	-0.3840
Station 06	0.0209	0.1668	0.13	.9005	0.2967	-0.2550
Station 08	0.4156	0.1668	2.49	.0137	0.6914	0.1397
Station 09	-0.4167	0.1732	-2.41	.0171	-0.1304	-0.7031
Station 10	0.5004	0.1675	2.99	.0032	0.7774	0.2234
Station 12	-0.1209	0.1668	-0.73	.4694	0.1549	-0.3968

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.07	0.004	0.01	-0.00	0.56	1.87	0.81	0.31
04	Op-2	6	0.16	0.56	0.091	0.40	-0.07	0.48	0.87	0.88	0.09
05	Op-1	17	0.00	0.00	0.000	.	.	0.57	1.81	0.82	0.32
05	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.59	0.83	0.89	0.28
06	Op-1	26	0.24	1.46	0.071	0.39	0.10	0.24	2.36	0.44	0.04
06	Op-2	7	0.41	1.11	0.163	0.81	0.01	0.19	0.80	0.43	-0.06
08	Op-1	26	0.57	5.28	0.288	1.16	-0.02	-0.09	5.73	0.45	-0.64
08	Op-2	7	0.89	2.36	0.295	1.61	0.17	-0.30	2.64	0.57	-1.16
09	Op-1	19	0.89	2.71	0.223	1.36	0.42	-0.37	2.88	0.04	-0.77
09	Op-2	7	0.55	2.29	0.322	1.33	-0.24	0.05	2.81	0.94	-0.84
10	Op-1	25	0.64	1.40	0.183	1.02	0.26	-0.15	3.30	0.17	-0.46
10	Op-2	7	2.79	6.04	0.789	4.72	0.86	-2.19	6.08	-0.24	-4.14
12	Op-1	26	0.00	0.07	0.003	0.01	-0.00	0.48	1.81	0.65	0.30
12	Op-2	7	0.02	0.14	0.020	0.07	-0.03	0.58	0.83	0.87	0.28

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.48	1.81	0.084	0.65	0.31
Op-2	7	0.60	0.83	0.119	0.89	0.30

Analysis of Variance for HBT for 1324 - Mazzaella flaccida

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.43	0.5130
SEASON	1	176.000	0.72	0.3978
STATION	6	176.000	43.22	0.0000
PERIOD*SEASON	1	176.000	0.00	0.9804
STATION*PERIOD	6	176.000	1.43	0.2064
STATION*SEASON	6	176.000	5.41	0.0000
PERIOD*STATION*SEASON	6	176.000	0.86	0.5290

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.43	0.00	0.1714	.	0.7564
STATION*PERIOD	8.57	2.47	0.6724	0.2676	0.8309

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3612	0.1552	-2.327	.0211
Period in FC	0.2230	0.1426	1.564	.1196
Period in FC-S	0.4510	0.1856	2.430	.0161
Period in FC-W	-0.0050	0.2165	-0.023	.9817
Period in DC-S	-0.5944	0.2072	-2.869	.0046
Period in DC-W	-0.1280	0.2311	-0.554	.5805

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.818	0.0146	56.09	.0000	0.8426	0.7943
Period Op-2	0.838	0.0263	31.83	.0000	0.8817	0.7946
Op-1-04	0.722	0.0434	16.62	.0000	0.7941	0.6504
Op-2-04	0.594	0.0774	7.66	.0000	0.7216	0.4655
Op-1-05	0.868	0.0434	19.98	.0000	0.9400	0.7963
Op-2-05	0.773	0.0683	11.32	.0000	0.8861	0.6603
Op-1-06	0.330	0.0351	9.40	.0000	0.3876	0.2716
Op-2-06	0.330	0.0683	4.84	.0000	0.4432	0.2174
Op-1-08	0.937	0.0351	26.72	.0000	0.9951	0.8791
Op-2-08	1.043	0.0683	15.27	.0000	1.1555	0.9296
Op-1-09	0.994	0.0411	24.19	.0000	1.0619	0.9260
Op-2-09	1.043	0.0683	15.27	.0000	1.1555	0.9296
Op-1-10	0.940	0.0358	26.25	.0000	0.9990	0.8806
Op-2-10	1.043	0.0683	15.27	.0000	1.1555	0.9296
Op-1-12	0.938	0.0351	26.75	.0000	0.9962	0.8802
Op-2-12	1.043	0.0683	15.27	.0000	1.1555	0.9296

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0197	0.0301	-0.656	.5130	0.0300	-0.0695

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1288	0.0888	1.45	.1488	0.2756	-0.0181
Station 05	0.0950	0.0809	1.17	.2421	0.2288	-0.0388
Station 06	-0.0007	0.0768	-0.01	.9924	0.1262	-0.1277
Station 08	-0.1055	0.0768	-1.37	.1713	0.0215	-0.2324
Station 09	-0.0486	0.0797	-0.61	.5429	0.0832	-0.1804
Station 10	-0.1028	0.0771	-1.33	.1842	0.0247	-0.2303
Station 12	-0.1043	0.0768	-1.36	.1759	0.0226	-0.2313

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.22	5.56	0.433	2.14	0.30	7.94	8.19	9.19	6.70
04	Op-2	6	3.66	6.67	1.136	6.58	0.74	8.56	10.49	12.17	4.96
05	Op-1	17	0.35	1.11	0.094	0.55	0.15	8.82	12.43	10.43	7.20
05	Op-2	7	1.60	6.04	0.846	3.67	-0.47	9.53	11.46	13.62	5.44
06	Op-1	26	3.94	10.83	0.623	5.22	2.65	4.56	8.51	5.51	3.62
06	Op-2	7	5.67	10.07	1.331	8.93	2.42	5.46	6.04	7.87	3.05
08	Op-1	26	0.00	0.07	0.003	0.01	-0.00	8.50	15.35	10.05	6.95
08	Op-2	7	0.00	0.00	0.000	.	.	11.13	10.94	14.89	7.37
09	Op-1	19	0.00	0.07	0.004	0.01	-0.00	9.43	13.47	11.19	7.66
09	Op-2	7	0.00	0.00	0.000	.	.	11.13	10.94	14.89	7.37
10	Op-1	25	0.00	0.00	0.000	.	.	8.60	15.35	10.20	6.99
10	Op-2	7	0.00	0.00	0.000	.	.	11.13	10.94	14.89	7.37
12	Op-1	26	0.00	0.00	0.000	.	.	8.50	15.35	10.05	6.95
12	Op-2	7	0.00	0.00	0.000	.	.	11.13	10.94	14.89	7.37

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	8.50	15.35	0.752	10.05	6.95
Op-2	7	11.13	10.94	1.536	14.89	7.37

Analysis of Variance for HBT for 0059 - non-coralline crust

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	27.27	0.0000
SEASON	1	176.000	1.09	0.2985
STATION	6	176.000	48.55	0.0000
PERIOD*SEASON	1	176.000	7.24	0.0078
STATION*PERIOD	6	176.000	3.95	0.0010
STATION*SEASON	6	176.000	6.66	0.0000
PERIOD*STATION*SEASON	6	176.000	0.06	0.9993

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	27.27	25.96	0.9998	0.9997	1.0000
STATION*PERIOD	23.72	17.45	0.9850	0.9385	0.9916

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	16.0843	3.3786	4.761	.0000
Period in FC	7.8767	3.1041	2.538	.0120
Period in FC-S	13.5226	4.0402	3.347	.0010
Period in FC-W	2.2309	4.7136	0.473	.6366
Period in DC-S	22.7812	4.5099	5.051	.0000
Period in DC-W	9.3873	5.0320	1.866	.0638

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	2.561	0.3177	8.06	.0000	3.0861	2.0354
Period Op-2	-0.862	0.5733	-1.50	.1344	0.0858	-1.8102
Op-1-04	2.856	0.9459	3.02	.0029	4.4203	1.2921
Op-2-04	-1.457	1.6858	-0.86	.3885	1.3303	-4.2450
Op-1-05	7.918	0.9459	8.37	.0000	9.4819	6.3538
Op-2-05	3.565	1.4868	2.40	.0175	6.0237	1.1068
Op-1-06	-0.452	0.7635	-0.59	.5543	0.8102	-1.7149
Op-2-06	0.337	1.4868	0.23	.8209	2.7955	-2.1214
Op-1-08	12.803	0.7635	16.77	.0000	14.0656	11.5405
Op-2-08	7.284	1.4868	4.90	.0000	9.7424	4.8255
Op-1-09	-2.775	0.8944	-3.10	.0022	-1.2962	-4.2541
Op-2-09	-4.781	1.4868	-3.22	.0016	-2.3221	-7.2390
Op-1-10	-8.019	0.7793	-10.29	.0000	-6.7301	-9.3073
Op-2-10	-7.852	1.4868	-5.28	.0000	-5.3936	-10.3105
Op-1-12	5.595	0.7635	7.33	.0000	6.8571	4.3320
Op-2-12	-3.132	1.4868	-2.11	.0366	-0.6734	-5.5903

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	3.4230	0.6554	5.222	.0000	4.5068	2.3392

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	4.3136	1.9331	2.23	.0269	7.5100	1.1171
Station 05	4.3526	1.7622	2.47	.0145	7.2664	1.4388
Station 06	-0.7894	1.6714	-0.47	.6373	1.9743	-3.5531
Station 08	5.5191	1.6714	3.30	.0012	8.2828	2.7554
Station 09	2.0054	1.7351	1.16	.2493	4.8744	-0.8637
Station 10	-0.1666	1.6786	-0.10	.9210	2.6091	-2.9423
Station 12	8.7265	1.6714	5.22	.0000	11.4902	5.9628

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	16.92	15.35	1.253	19.58	14.27	3.75	8.96	5.21	2.28
04	Op-2	6	18.47	17.15	2.433	24.73	12.22	-2.34	9.65	1.42	-6.11
05	Op-1	17	10.78	14.17	0.897	12.68	8.88	9.89	16.94	12.32	7.47
05	Op-2	7	13.23	9.24	1.179	16.12	10.35	4.30	12.43	8.73	-0.14
06	Op-1	26	22.17	35.49	2.068	26.43	17.91	-1.29	21.46	1.36	-3.94
06	Op-2	7	17.23	24.72	3.744	26.39	8.07	0.30	12.22	4.00	-3.41
08	Op-1	26	6.73	17.92	0.969	8.72	4.73	14.15	22.08	16.27	12.03
08	Op-2	7	9.26	8.13	1.122	12.00	6.51	8.27	14.86	13.40	3.15
09	Op-1	19	25.15	28.54	1.660	28.63	21.66	-4.24	23.72	-1.46	-7.03
09	Op-2	7	24.48	18.06	2.525	30.66	18.31	-6.95	16.60	-1.56	-12.35
10	Op-1	25	33.13	45.35	2.607	38.51	27.75	-12.50	41.11	-8.14	-16.85
10	Op-2	7	28.74	32.36	4.913	40.76	16.72	-11.21	19.55	-4.77	-17.65
12	Op-1	26	13.64	19.79	0.882	15.45	11.82	7.24	18.85	9.24	5.25
12	Op-2	7	22.09	12.99	1.532	25.84	18.34	-4.56	13.96	0.27	-9.39

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	20.88	18.02	1.051	23.04	18.71
Op-2	7	17.53	15.28	2.722	24.19	10.87

Analysis of Variance for HBT for 0034 - Pelvetia compressa

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	89.83	0.0000
SEASON	1	176.000	0.37	0.5415
STATION	6	176.000	3.41	0.0033
PERIOD*SEASON	1	176.000	0.06	0.8104
STATION*PERIOD	6	176.000	2.09	0.0569
STATION*SEASON	6	176.000	0.06	0.9991
PERIOD*STATION*SEASON	6	176.000	0.06	0.9991

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	89.83	87.81	1.0000	1.0000	0.5460
STATION*PERIOD	12.52	6.38	0.8352	0.5448	0.1918

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-15.9262	1.7108	-9.309	.0000
Period in FC	-6.0929	1.5718	-3.876	.0001
Period in FC-S	-5.9696	2.0458	-2.918	.0040
Period in FC-W	-6.2162	2.3867	-2.604	.0100
Period in DC-S	-16.6076	2.2836	-7.273	.0000
Period in DC-W	-15.2448	2.5479	-5.983	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	4.044	0.1609	25.14	.0000	4.3104	3.7784
Period Op-2	7.190	0.2903	24.77	.0000	7.6700	6.7100
Op-1-04	4.893	0.4790	10.22	.0000	5.6847	4.1007
Op-2-04	7.075	0.8536	8.29	.0000	8.4862	5.6631
Op-1-05	3.927	0.4790	8.20	.0000	4.7187	3.1348
Op-2-05	4.826	0.7528	6.41	.0000	6.0712	3.5816
Op-1-06	3.080	0.3866	7.97	.0000	3.7189	2.4403
Op-2-06	6.091	0.7528	8.09	.0000	7.3357	4.8460
Op-1-08	3.769	0.3866	9.75	.0000	4.4080	3.1294
Op-2-08	8.084	0.7528	10.74	.0000	9.3293	6.8397
Op-1-09	4.487	0.4529	9.91	.0000	5.2363	3.7386
Op-2-09	8.084	0.7528	10.74	.0000	9.3293	6.8397
Op-1-10	4.673	0.3946	11.84	.0000	5.3252	4.0202
Op-2-10	8.084	0.7528	10.74	.0000	9.3293	6.8397
Op-1-12	3.483	0.3866	9.01	.0000	4.1222	2.8436
Op-2-12	8.084	0.7528	10.74	.0000	9.3293	6.8397

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-3.1456	0.3319	-9.478	.0000	-2.5968	-3.6944

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-2.1820	0.9788	-2.23	.0271	-0.5634	-3.8005
Station 05	-0.8996	0.8923	-1.01	.3147	0.5758	-2.3751
Station 06	-3.0113	0.8463	-3.56	.0005	-1.6119	-4.4107
Station 08	-4.3158	0.8463	-5.10	.0000	-2.9164	-5.7152
Station 09	-3.5970	0.8786	-4.09	.0001	-2.1443	-5.0498
Station 10	-3.4118	0.8500	-4.01	.0001	-2.0063	-4.8173
Station 12	-4.6016	0.8463	-5.44	.0000	-3.2022	-6.0010

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.27	0.62	0.052	0.38	0.16	4.89	6.49	5.86	3.92
04	Op-2	6	0.98	1.04	0.165	1.41	0.56	7.13	3.78	8.57	5.69
05	Op-1	17	1.23	2.01	0.119	1.49	0.98	3.92	6.22	4.83	3.01
05	Op-2	7	3.32	3.68	0.496	4.54	2.11	4.79	6.22	6.50	3.08
06	Op-1	26	1.56	6.60	0.260	2.10	1.03	3.08	6.46	3.63	2.53
06	Op-2	7	1.96	2.29	0.338	2.79	1.14	6.15	3.16	7.09	5.21
08	Op-1	26	0.87	3.12	0.201	1.29	0.46	3.77	8.75	4.73	2.81
08	Op-2	7	0.00	0.00	0.000	.	.	8.11	2.88	9.02	7.20
09	Op-1	19	0.53	3.61	0.261	1.08	-0.02	4.48	8.85	5.68	3.28
09	Op-2	7	0.00	0.00	0.000	.	.	8.11	2.88	9.02	7.20
10	Op-1	25	0.00	0.00	0.000	.	.	4.67	6.56	5.40	3.95
10	Op-2	7	0.00	0.00	0.000	.	.	8.11	2.88	9.02	7.20
12	Op-1	26	1.16	2.71	0.176	1.52	0.80	3.48	8.37	4.47	2.49
12	Op-2	7	0.00	0.00	0.000	.	.	8.11	2.88	9.02	7.20

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	4.64	6.56	0.339	5.34	3.94
Op-2	7	8.11	2.88	0.373	9.02	7.20

Analysis of Variance for HBT for 0135 - Phyllospadix spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	6.88	0.0095
SEASON	1	176.000	0.96	0.3286
STATION	6	176.000	53.45	0.0000
PERIOD*SEASON	1	176.000	0.32	0.5716
STATION*PERIOD	6	176.000	4.50	0.0003
STATION*SEASON	6	176.000	0.13	0.9932
PERIOD*STATION*SEASON	6	176.000	0.10	0.9966

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.88	5.80	0.8334	0.7747	0.5462
STATION*PERIOD	27.00	20.70	0.9932	0.9698	0.8629

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2705	0.0720	-3.756	.0002
Period in FC	0.0140	0.0662	0.211	.8329
Period in FC-S	0.0146	0.0861	0.170	.8654
Period in FC-W	0.0133	0.1005	0.133	.8945
Period in DC-S	-0.2157	0.0962	-2.244	.0261
Period in DC-W	-0.3253	0.1073	-3.033	.0028

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.038	0.0068	5.68	.0000	0.0497	0.0273
Period Op-2	0.075	0.0122	6.15	.0000	0.0953	0.0549
Op-1-04	-0.200	0.0202	-9.92	.0000	-0.1667	-0.2334
Op-2-04	-0.358	0.0359	-9.97	.0000	-0.2988	-0.4177
Op-1-05	0.070	0.0202	3.45	.0007	0.1028	0.0362
Op-2-05	0.147	0.0317	4.65	.0000	0.1998	0.0949
Op-1-06	0.081	0.0163	4.97	.0000	0.1079	0.0540
Op-2-06	0.147	0.0317	4.65	.0000	0.1998	0.0949
Op-1-08	0.081	0.0163	4.97	.0000	0.1079	0.0540
Op-2-08	0.147	0.0317	4.65	.0000	0.1998	0.0949
Op-1-09	0.079	0.0191	4.13	.0001	0.1103	0.0472
Op-2-09	0.147	0.0317	4.65	.0000	0.1998	0.0949
Op-1-10	0.078	0.0166	4.71	.0000	0.1057	0.0507
Op-2-10	0.147	0.0317	4.65	.0000	0.1998	0.0949
Op-1-12	0.081	0.0163	4.97	.0000	0.1079	0.0540
Op-2-12	0.147	0.0317	4.65	.0000	0.1998	0.0949

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0367	0.0140	-2.623	.0095	-0.0135	-0.0598

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1582	0.0412	3.84	.0002	0.2264	0.0901
Station 05	-0.0778	0.0376	-2.07	.0397	-0.0157	-0.1400
Station 06	-0.0664	0.0356	-1.86	.0641	-0.0075	-0.1253
Station 08	-0.0664	0.0356	-1.86	.0641	-0.0075	-0.1253
Station 09	-0.0686	0.0370	-1.85	.0655	-0.0074	-0.1297
Station 10	-0.0692	0.0358	-1.93	.0549	-0.0100	-0.1283
Station 12	-0.0664	0.0356	-1.86	.0641	-0.0075	-0.1253

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.54	1.18	0.093	0.73	0.34	-0.42	1.35	-0.21	-0.63
04	Op-2	6	1.10	1.53	0.201	1.62	0.58	-0.91	1.42	-0.43	-1.40
05	Op-1	17	0.02	0.28	0.017	0.06	-0.01	0.09	0.52	0.15	0.03
05	Op-2	7	0.00	0.00	0.000	.	.	0.20	0.24	0.29	0.12
06	Op-1	26	0.00	0.00	0.000	.	.	0.11	0.28	0.14	0.08
06	Op-2	7	0.00	0.00	0.000	.	.	0.20	0.24	0.29	0.12
08	Op-1	26	0.00	0.00	0.000	.	.	0.11	0.28	0.14	0.08
08	Op-2	7	0.00	0.00	0.000	.	.	0.20	0.24	0.29	0.12
09	Op-1	19	0.00	0.00	0.000	.	.	0.10	0.28	0.14	0.07
09	Op-2	7	0.00	0.00	0.000	.	.	0.20	0.24	0.29	0.12
10	Op-1	25	0.00	0.00	0.000	.	.	0.10	0.28	0.13	0.07
10	Op-2	7	0.00	0.00	0.000	.	.	0.20	0.24	0.29	0.12
12	Op-1	26	0.00	0.00	0.000	.	.	0.11	0.28	0.14	0.08
12	Op-2	7	0.00	0.00	0.000	.	.	0.20	0.24	0.29	0.12

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.11	0.28	0.015	0.14	0.08
Op-2	7	0.20	0.24	0.034	0.29	0.12

Analysis of Variance for HBT for 0099 - Porphyra spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	7.96	0.0053
SEASON	1	176.000	93.58	0.0000
STATION	6	176.000	4.66	0.0002
PERIOD*SEASON	1	176.000	17.64	0.0000
STATION*PERIOD	6	176.000	1.15	0.3375
STATION*SEASON	6	176.000	4.70	0.0002
PERIOD*STATION*SEASON	6	176.000	1.16	0.3296

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.96	6.87	0.8780	0.8328	0.5736
STATION*PERIOD	6.88	0.80	0.5761	0.1504	0.1739

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.8671	0.2760	-3.142	.0020
Period in FC	-0.1899	0.2535	-0.749	.4550
Period in FC-S	-0.6174	0.3300	-1.871	.0630
Period in FC-W	0.2377	0.3850	0.617	.5378
Period in DC-S	-2.0137	0.3684	-5.467	.0000
Period in DC-W	0.2794	0.4110	0.680	.4976

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.220	0.0259	8.49	.0000	0.2633	0.1775
Period Op-2	0.371	0.0468	7.93	.0000	0.4488	0.2939
Op-1-04	0.238	0.0773	3.09	.0024	0.3661	0.1106
Op-2-04	0.173	0.1377	1.26	.2097	0.4010	-0.0543
Op-1-05	-0.015	0.0773	-0.20	.8425	0.1124	-0.1431
Op-2-05	0.154	0.1214	1.27	.2061	0.3549	-0.0467
Op-1-06	0.155	0.0624	2.49	.0138	0.2582	0.0520
Op-2-06	0.240	0.1214	1.98	.0492	0.4413	0.0397
Op-1-08	0.251	0.0624	4.02	.0001	0.3538	0.1476
Op-2-08	0.338	0.1214	2.78	.0060	0.5386	0.1370
Op-1-09	0.138	0.0731	1.89	.0609	0.2586	0.0170
Op-2-09	0.590	0.1214	4.86	.0000	0.7907	0.3891
Op-1-10	0.339	0.0636	5.32	.0000	0.4441	0.2336
Op-2-10	0.514	0.1214	4.23	.0000	0.7148	0.3132
Op-1-12	0.437	0.0624	7.01	.0000	0.5403	0.3341
Op-2-12	0.590	0.1214	4.86	.0000	0.7907	0.3891

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1510	0.0535	-2.821	.0053	-0.0625	-0.2395

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0650	0.1579	0.41	.6809	0.3261	-0.1960
Station 05	-0.1695	0.1439	-1.18	.2405	0.0685	-0.4075
Station 06	-0.0854	0.1365	-0.63	.5324	0.1403	-0.3111
Station 08	-0.0871	0.1365	-0.64	.5244	0.1387	-0.3128
Station 09	-0.4521	0.1417	-3.19	.0017	-0.2178	-0.6865
Station 10	-0.1752	0.1371	-1.28	.2029	0.0515	-0.4019
Station 12	-0.1527	0.1365	-1.12	.2648	0.0730	-0.3785

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.12	1.04	0.061	0.25	-0.01	0.20	1.53	0.39	0.01
04	Op-2	6	0.39	0.76	0.131	0.73	0.06	1.36	7.78	4.51	-1.79
05	Op-1	17	0.47	2.57	0.183	0.85	0.08	-0.15	2.78	0.16	-0.46
05	Op-2	7	0.55	1.94	0.292	1.26	-0.17	0.96	7.92	3.36	-1.45
06	Op-1	26	0.16	0.56	0.040	0.24	0.07	0.17	1.22	0.30	0.04
06	Op-2	7	0.30	1.32	0.177	0.73	-0.14	1.21	8.33	3.91	-1.49
08	Op-1	26	0.20	2.22	0.111	0.43	-0.03	0.13	2.64	0.34	-0.08
08	Op-2	7	0.87	6.04	0.861	2.98	-1.23	0.63	1.87	1.33	-0.07
09	Op-1	19	0.37	2.57	0.168	0.72	0.02	-0.01	3.23	0.30	-0.33
09	Op-2	7	0.00	0.00	0.000	.	.	1.50	7.92	4.17	-1.16
10	Op-1	25	0.04	0.28	0.016	0.07	0.01	0.30	1.42	0.47	0.13
10	Op-2	7	0.03	0.14	0.021	0.08	-0.02	1.47	7.92	4.15	-1.20
12	Op-1	26	0.00	0.00	0.000	.	.	0.33	1.42	0.50	0.16
12	Op-2	7	0.00	0.00	0.000	.	.	1.50	7.92	4.17	-1.16

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.33	1.42	0.082	0.50	0.16
Op-2	7	1.50	7.92	1.088	4.17	-1.16

Analysis of Variance for HBT for 0106 - Prionitis spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	3.68	0.0566
SEASON	1	176.000	28.50	0.0000
STATION	6	176.000	135.93	0.0000
PERIOD*SEASON	1	176.000	0.67	0.4137
STATION*PERIOD	6	176.000	1.52	0.1749
STATION*SEASON	6	176.000	1.20	0.3106
PERIOD*STATION*SEASON	6	176.000	0.69	0.6555

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.68	2.64	0.6053	0.4900	0.9918
STATION*PERIOD	9.10	3.00	0.6997	0.3067	0.9189

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.4813	0.1745	2.758	.0064
Period in FC	-0.0266	0.1604	-0.166	.8687
Period in FC-S	-0.0109	0.2087	-0.052	.9585
Period in FC-W	-0.0422	0.2435	-0.173	.8625
Period in DC-S	0.6598	0.2330	2.832	.0052
Period in DC-W	0.3028	0.2599	1.165	.2456

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.087	0.0164	-5.29	.0000	-0.0596	-0.1139
Period Op-2	-0.152	0.0296	-5.12	.0000	-0.1028	-0.2007
Op-1-04	0.131	0.0489	2.69	.0079	0.2121	0.0505
Op-2-04	0.066	0.0871	0.76	.4474	0.2103	-0.0777
Op-1-05	0.074	0.0489	1.52	.1311	0.1549	-0.0067
Op-2-05	0.056	0.0768	0.73	.4664	0.1831	-0.0709
Op-1-06	-0.115	0.0394	-2.91	.0041	-0.0494	-0.1798
Op-2-06	-0.005	0.0768	-0.06	.9485	0.1220	-0.1320
Op-1-08	0.249	0.0394	6.31	.0000	0.3141	0.1837
Op-2-08	0.033	0.0768	0.42	.6714	0.1596	-0.0944
Op-1-09	0.040	0.0462	0.86	.3895	0.1163	-0.0365
Op-2-09	0.014	0.0768	0.18	.8578	0.1408	-0.1132
Op-1-10	-1.174	0.0403	-29.17	.0000	-1.1078	-1.2409
Op-2-10	-1.345	0.0768	-17.51	.0000	-1.2181	-1.4721
Op-1-12	0.187	0.0394	4.75	.0000	0.2525	0.1220
Op-2-12	0.119	0.0768	1.55	.1228	0.2461	-0.0079

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0650	0.0339	1.919	.0566	0.1210	0.0090

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0650	0.0999	0.65	.5159	0.2301	-0.1001
Station 05	0.0181	0.0910	0.20	.8430	0.1686	-0.1325
Station 06	-0.1096	0.0863	-1.27	.2059	0.0332	-0.2524
Station 08	0.2163	0.0863	2.51	.0132	0.3591	0.0735
Station 09	0.0261	0.0896	0.29	.7714	0.1743	-0.1221
Station 10	0.1708	0.0867	1.97	.0505	0.3142	0.0274
Station 12	0.0682	0.0863	0.79	.4308	0.2109	-0.0746

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.04	0.14	0.010	0.06	0.02	0.05	0.24	0.09	0.02
04	Op-2	6	0.05	0.14	0.023	0.11	-0.01	-0.00	0.21	0.07	-0.07
05	Op-1	17	0.07	0.28	0.020	0.11	0.03	0.02	0.38	0.08	-0.03
05	Op-2	7	0.04	0.14	0.021	0.09	-0.01	0.01	0.21	0.08	-0.05
06	Op-1	26	0.15	0.42	0.021	0.19	0.11	-0.07	0.52	-0.01	-0.12
06	Op-2	7	0.06	0.07	0.010	0.08	0.04	-0.00	0.10	0.03	-0.04
08	Op-1	26	0.00	0.00	0.000	.	.	0.09	0.24	0.11	0.06
08	Op-2	7	0.09	0.49	0.067	0.25	-0.08	-0.03	0.52	0.13	-0.20
09	Op-1	19	0.09	0.35	0.025	0.14	0.04	0.00	0.45	0.05	-0.05
09	Op-2	7	0.07	0.28	0.040	0.17	-0.03	-0.01	0.28	0.08	-0.11
10	Op-1	25	2.96	6.74	0.315	3.61	2.31	-2.88	6.77	-2.23	-3.53
10	Op-2	7	3.59	3.54	0.462	4.72	2.46	-3.54	3.65	-2.39	-4.69
12	Op-1	26	0.02	0.07	0.006	0.03	0.01	0.07	0.28	0.09	0.04
12	Op-2	7	0.02	0.07	0.013	0.05	-0.01	0.03	0.17	0.08	-0.01

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.09	0.24	0.011	0.11	0.06
Op-2	7	0.05	0.10	0.015	0.09	0.02

Analysis of Variance for HBT for aspp - Spp. Algae

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	1.49	0.2241
SEASON	1	176.000	25.25	0.0000
STATION	6	176.000	61.23	0.0000
PERIOD*SEASON	1	176.000	1.24	0.2660
STATION*PERIOD	6	176.000	4.25	0.0005
STATION*SEASON	6	176.000	1.22	0.2981
PERIOD*STATION*SEASON	6	176.000	0.43	0.8603

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.49	0.47	0.3359	0.1782	1.0000
STATION*PERIOD	25.51	19.22	0.9903	0.9580	0.9998

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.8858	1.2322	0.719	.4732
Period in FC	1.1556	1.1321	1.021	.3088
Period in FC-S	1.3067	1.4735	0.887	.3764
Period in FC-W	1.0045	1.7191	0.584	.5598
Period in DC-S	2.6017	1.6448	1.582	.1155
Period in DC-W	-0.8301	1.8352	-0.452	.6516

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	2.883	0.1159	24.88	.0000	3.0743	2.6911
Period Op-2	2.591	0.2091	12.39	.0000	2.9368	2.2453
Op-1-04	1.977	0.3450	5.73	.0000	2.5479	1.4070
Op-2-04	0.825	0.6148	1.34	.1814	1.8417	-0.1917
Op-1-05	2.741	0.3450	7.95	.0000	3.3118	2.1709
Op-2-05	2.388	0.5422	4.40	.0000	3.2841	1.4909
Op-1-06	-0.067	0.2785	-0.24	.8093	0.3932	-0.5278
Op-2-06	0.283	0.5422	0.52	.6020	1.1800	-0.6133
Op-1-08	3.960	0.2785	14.22	.0000	4.4201	3.4992
Op-2-08	3.146	0.5422	5.80	.0000	4.0425	2.2492
Op-1-09	3.828	0.3262	11.73	.0000	4.3672	3.2884
Op-2-09	5.008	0.5422	9.24	.0000	5.9050	4.1117
Op-1-10	1.477	0.2842	5.20	.0000	1.9466	1.0066
Op-2-10	-0.888	0.5422	-1.64	.1035	0.0091	-1.7841
Op-1-12	6.263	0.2785	22.49	.0000	6.7239	5.8030
Op-2-12	7.375	0.5422	13.60	.0000	8.2716	6.4784

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2916	0.2390	1.220	.2241	0.6869	-0.1036

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	1.1524	0.7050	1.63	.1039	2.3182	-0.0133
Station 05	0.3538	0.6427	0.55	.5826	1.4165	-0.7089
Station 06	-0.3506	0.6096	-0.58	.5659	0.6573	-1.3586
Station 08	0.8138	0.6096	1.34	.1836	1.8217	-0.1942
Station 09	-1.1806	0.6328	-1.87	.0638	-0.1342	-2.2269
Station 10	2.3641	0.6122	3.86	.0002	3.3764	1.3518
Station 12	-1.1115	0.6096	-1.82	.0699	-0.1036	-2.1195

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	8.35	5.00	0.340	9.07	7.63	2.03	4.60	2.76	1.30
04	Op-2	6	9.93	4.20	0.616	11.52	8.35	0.34	6.35	2.64	-1.96
05	Op-1	17	7.57	4.30	0.283	8.17	6.97	2.81	5.05	3.54	2.07
05	Op-2	7	8.03	3.60	0.472	9.18	6.87	2.29	5.15	3.98	0.61
06	Op-1	26	9.99	2.70	0.156	10.31	9.67	-0.07	3.40	0.33	-0.47
06	Op-2	7	10.04	1.90	0.236	10.62	9.47	0.28	2.45	1.07	-0.52
08	Op-1	26	5.97	6.80	0.333	6.65	5.28	3.96	5.50	4.57	3.35
08	Op-2	7	7.26	2.40	0.281	7.94	6.57	3.06	2.45	3.96	2.17
09	Op-1	19	6.42	4.80	0.360	7.17	5.66	3.84	6.20	4.66	3.03
09	Op-2	7	5.44	2.30	0.302	6.18	4.70	4.88	3.45	5.99	3.77
10	Op-1	25	8.49	10.30	0.588	9.70	7.28	1.47	8.30	2.37	0.58
10	Op-2	7	11.31	2.80	0.349	12.17	10.46	-0.99	2.80	0.13	-2.11
12	Op-1	26	3.66	2.90	0.133	3.94	3.39	6.26	4.75	6.75	5.77
12	Op-2	7	3.06	3.10	0.405	4.05	2.07	7.26	4.35	8.63	5.90

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	9.93	3.80	0.223	10.38	9.47
Op-2	7	10.32	2.45	0.288	11.03	9.62

Analysis of Variance for HBT for 1173 - Ulva/Enteromorpha spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	4.60	0.0333
SEASON	1	176.000	26.40	0.0000
STATION	6	176.000	13.80	0.0000
PERIOD*SEASON	1	176.000	4.78	0.0302
STATION*PERIOD	6	176.000	0.94	0.4651
STATION*SEASON	6	176.000	10.65	0.0000
PERIOD*STATION*SEASON	6	176.000	0.84	0.5409

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.60	3.55	0.6890	0.5922	0.1502
STATION*PERIOD	5.66	0.00	0.4974	.	0.1368

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.0057	0.3886	2.588	.0105
Period in FC	0.1267	0.3571	0.355	.7231
Period in FC-S	0.2535	0.4647	0.545	.5862
Period in FC-W	0.0000	0.5422	0.000	1.000
Period in DC-S	2.0323	0.5188	3.917	.0001
Period in DC-W	-0.0208	0.5788	-0.036	.9714

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.138	0.0365	-3.76	.0002	-0.0772	-0.1980
Period Op-2	-0.299	0.0659	-4.54	.0000	-0.1903	-0.4084
Op-1-04	0.047	0.1088	0.43	.6693	0.2265	-0.1334
Op-2-04	-0.000	0.1939	-0.00	1.000	0.3207	-0.3207
Op-1-05	0.047	0.1088	0.43	.6693	0.2265	-0.1334
Op-2-05	-0.000	0.1710	-0.00	1.000	0.2828	-0.2828
Op-1-06	0.034	0.0878	0.38	.7023	0.1789	-0.1116
Op-2-06	-0.000	0.1710	-0.00	1.000	0.2828	-0.2828
Op-1-08	-0.050	0.0878	-0.56	.5733	0.0957	-0.1948
Op-2-08	-0.202	0.1710	-1.18	.2392	0.0808	-0.4848
Op-1-09	-0.506	0.1029	-4.92	.0000	-0.3359	-0.6762
Op-2-09	-0.786	0.1710	-4.60	.0000	-0.5031	-1.0687
Op-1-10	-0.568	0.0896	-6.34	.0000	-0.4196	-0.7161
Op-2-10	-1.108	0.1710	-6.48	.0000	-0.8249	-1.3905
Op-1-12	0.034	0.0878	0.38	.7023	0.1789	-0.1116
Op-2-12	-0.000	0.1710	-0.00	1.000	0.2828	-0.2828

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1618	0.0754	2.146	.0333	0.2864	0.0371

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0466	0.2224	0.21	.8344	0.4142	-0.3211
Station 05	0.0466	0.2027	0.23	.8186	0.3817	-0.2886
Station 06	0.0336	0.1923	0.17	.8614	0.3515	-0.2843
Station 08	0.1524	0.1923	0.79	.4290	0.4703	-0.1655
Station 09	0.2799	0.1996	1.40	.1626	0.6099	-0.0502
Station 10	0.5398	0.1931	2.80	.0058	0.8591	0.2206
Station 12	0.0336	0.1923	0.17	.8614	0.3515	-0.2843

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.00	0.000	.	.	0.02	0.31	0.06	-0.02
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	17	0.00	0.00	0.000	.	.	0.02	0.31	0.06	-0.02
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.31	0.04	-0.01
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	26	0.15	3.75	0.144	0.45	-0.14	-0.14	4.06	0.16	-0.44
08	Op-2	7	0.58	4.03	0.575	1.98	-0.83	-0.58	4.03	0.83	-1.98
09	Op-1	19	3.41	31.32	1.888	7.38	-0.55	-3.40	31.63	0.58	-7.37
09	Op-2	7	3.57	14.24	2.014	8.50	-1.36	-3.57	14.24	1.36	-8.50
10	Op-1	25	4.04	29.31	1.565	7.27	0.81	-4.02	29.31	-0.80	-7.25
10	Op-2	7	7.44	22.08	3.251	15.40	-0.52	-7.44	22.08	0.52	-15.40
12	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.31	0.04	-0.01
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.01	0.31	0.012	0.04	-0.01
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for acov - Algal Cover

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	9.34	0.0026
SEASON	1	174.000	0.19	0.6627
STATION	6	174.000	33.28	0.0000
PERIOD*SEASON	1	174.000	3.46	0.0645
STATION*PERIOD	6	174.000	2.65	0.0175
STATION*SEASON	6	174.000	3.71	0.0017
PERIOD*STATION*SEASON	6	174.000	2.11	0.0541

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	9.34	8.23	0.9192	0.8875	1.0000
STATION*PERIOD	15.90	9.71	0.9148	0.7284	0.9697

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	12.8810	14.3158	0.900	.3695
Period in FC	46.6852	13.2242	3.530	.0005
Period in FC-S	49.8994	17.1192	2.915	.0040
Period in FC-W	43.4710	20.1608	2.156	.0324
Period in DC-S	-26.5908	19.1094	-1.391	.1659
Period in DC-W	52.3528	21.3214	2.455	.0151

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	36.682	1.3604	26.96	.0000	38.9313	34.4321
Period Op-2	28.172	2.4292	11.60	.0000	32.1892	24.1552
Op-1-04	20.908	4.1241	5.07	.0000	27.7279	14.0882
Op-2-04	-2.244	7.1432	-0.31	.7538	9.5686	-14.0562
Op-1-05	26.927	4.1241	6.53	.0000	33.7468	20.1070
Op-2-05	13.266	6.2997	2.11	.0367	23.6832	2.8481
Op-1-06	16.660	3.2352	5.15	.0000	22.0104	11.3105
Op-2-06	6.788	6.2997	1.08	.2827	17.2059	-3.6292
Op-1-08	38.657	3.7898	10.20	.0000	44.9238	32.3897
Op-2-08	23.058	6.2997	3.66	.0003	33.4758	12.6407
Op-1-09	46.568	3.2352	14.39	.0000	51.9177	41.2178
Op-2-09	61.647	6.2997	9.79	.0000	72.0648	51.2297
Op-1-10	39.449	3.3019	11.95	.0000	44.9091	33.9885
Op-2-10	31.906	6.2997	5.06	.0000	42.3239	21.4888
Op-1-12	67.603	3.2352	20.90	.0000	72.9530	62.2531
Op-2-12	62.783	6.2997	9.97	.0000	73.2010	52.3660

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	8.5095	2.7842	3.056	.0026	13.1135	3.9054

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	23.1519	8.2482	2.81	.0056	36.7916	9.5121
Station 05	13.6613	7.5296	1.81	.0713	26.1126	1.2099
Station 06	9.8720	7.0819	1.39	.1651	21.5830	-1.8389
Station 08	15.5986	7.3518	2.12	.0353	27.7559	3.4412
Station 09	-15.0795	7.0819	-2.13	.0346	-3.3685	-26.7905
Station 10	7.5424	7.1126	1.06	.2904	19.3042	-4.2194
Station 12	4.8195	7.0819	0.68	.4971	16.5305	-6.8914

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	81.86	90.58	7.108	97.01	66.71	20.91	57.77	29.82	11.99
04	Op-2	6	118.64	98.69	15.637	158.84	78.44	-6.24	55.77	13.52	-25.99
05	Op-1	16	75.84	62.07	5.571	87.72	63.97	26.93	33.22	32.07	21.78
05	Op-2	7	95.32	65.41	11.285	122.93	67.71	12.66	31.41	23.66	1.65
06	Op-1	26	84.24	68.29	4.073	92.63	75.85	16.66	32.22	20.52	12.80
06	Op-2	7	101.59	65.59	10.637	127.62	75.57	6.38	20.23	14.89	-2.12
08	Op-1	19	63.25	93.74	6.499	76.90	49.59	38.81	67.11	48.37	29.26
08	Op-2	7	83.32	67.18	8.440	103.97	62.67	24.65	65.52	47.46	1.84
09	Op-1	26	54.33	84.33	4.849	64.32	44.34	46.57	72.35	53.64	39.50
09	Op-2	7	42.95	55.11	7.799	62.03	23.86	65.03	89.60	98.45	31.61
10	Op-1	25	62.06	96.28	5.480	73.37	50.75	39.34	74.03	47.02	31.66
10	Op-2	7	75.64	60.76	9.199	98.15	53.13	32.34	32.29	42.15	22.52
12	Op-1	26	33.30	76.48	3.914	41.36	25.23	67.60	69.00	75.39	59.82
12	Op-2	7	44.67	58.49	8.968	66.62	22.73	63.30	50.04	77.71	48.90

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	100.90	48.00	3.294	107.68	94.11
Op-2	7	107.98	56.07	9.518	131.26	84.69

Analysis of Variance for HBT for adiv - Algal Diversity

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.35	0.5565
SEASON	1	174.000	16.34	0.0001
STATION	6	174.000	107.06	0.0000
PERIOD*SEASON	1	174.000	1.28	0.2588
STATION*PERIOD	6	174.000	2.68	0.0162
STATION*SEASON	6	174.000	1.14	0.3412
PERIOD*STATION*SEASON	6	174.000	0.37	0.9002

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.35	0.00	0.1579	.	1.0000
STATION*PERIOD	16.10	9.92	0.9184	0.7377	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2262	0.2492	-0.908	.3653
Period in FC	0.0263	0.2302	0.114	.9092
Period in FC-S	-0.1412	0.2980	-0.474	.6363
Period in FC-W	0.1937	0.3509	0.552	.5816
Period in DC-S	-0.4431	0.3326	-1.332	.1846
Period in DC-W	-0.0093	0.3711	-0.025	.9801

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.177	0.0237	7.47	.0000	0.2160	0.1377
Period Op-2	0.205	0.0423	4.86	.0000	0.2754	0.1355
Op-1-04	-0.345	0.0718	-4.80	.0000	-0.2262	-0.4636
Op-2-04	-0.527	0.1243	-4.24	.0000	-0.3212	-0.7324
Op-1-05	-0.293	0.0718	-4.08	.0001	-0.1740	-0.4115
Op-2-05	-0.149	0.1097	-1.36	.1758	0.0323	-0.3304
Op-1-06	-0.018	0.0563	-0.32	.7473	0.0750	-0.1113
Op-2-06	-0.006	0.1097	-0.06	.9548	0.1751	-0.1876
Op-1-08	0.001	0.0660	0.02	.9858	0.1103	-0.1079
Op-2-08	0.029	0.1097	0.26	.7931	0.2101	-0.1525
Op-1-09	0.092	0.0563	1.63	.1040	0.1852	-0.0011
Op-2-09	0.519	0.1097	4.73	.0000	0.7002	0.3375
Op-1-10	0.180	0.0575	3.13	.0020	0.2751	0.0850
Op-2-10	0.041	0.1097	0.37	.7105	0.2221	-0.1406
Op-1-12	1.621	0.0563	28.78	.0000	1.7139	1.5276
Op-2-12	1.532	0.1097	13.97	.0000	1.7131	1.3504

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0286	0.0485	-0.589	.5565	0.0516	-0.1087

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1819	0.1436	1.27	.2068	0.4194	-0.0555
Station 05	-0.1437	0.1311	-1.10	.2744	0.0730	-0.3604
Station 06	-0.0119	0.1233	-0.10	.9229	0.1919	-0.2158
Station 08	-0.0276	0.1280	-0.22	.8293	0.1840	-0.2393
Station 09	-0.4268	0.1233	-3.46	.0007	-0.2230	-0.6307
Station 10	0.1393	0.1238	1.13	.2621	0.3440	-0.0654
Station 12	0.0890	0.1233	0.72	.4714	0.2928	-0.1149

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	2.69	0.47	0.036	2.76	2.61	-0.34	0.68	-0.23	-0.46
04	Op-2	6	2.97	0.40	0.052	3.11	2.84	-0.54	0.45	-0.37	-0.72
05	Op-1	16	2.64	0.42	0.036	2.71	2.56	-0.29	0.91	-0.13	-0.45
05	Op-2	7	2.62	0.60	0.077	2.81	2.43	-0.18	0.83	0.07	-0.43
06	Op-1	26	2.36	0.75	0.036	2.44	2.29	-0.02	1.06	0.08	-0.12
06	Op-2	7	2.46	0.33	0.048	2.57	2.34	-0.01	0.48	0.13	-0.15
08	Op-1	19	2.37	0.74	0.045	2.47	2.28	0.01	1.02	0.14	-0.12
08	Op-2	7	2.42	0.57	0.083	2.62	2.21	0.02	0.83	0.30	-0.25
09	Op-1	26	2.25	1.34	0.074	2.41	2.10	0.09	1.55	0.25	-0.07
09	Op-2	7	1.93	0.62	0.080	2.13	1.74	0.51	0.86	0.76	0.26
10	Op-1	25	2.16	1.13	0.058	2.28	2.04	0.18	1.11	0.30	0.05
10	Op-2	7	2.43	0.91	0.104	2.68	2.18	0.01	1.05	0.33	-0.30
12	Op-1	26	0.72	1.52	0.087	0.90	0.55	1.62	1.47	1.78	1.47
12	Op-2	7	0.90	0.82	0.100	1.15	0.66	1.54	0.76	1.80	1.28

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	2.35	0.75	0.041	2.43	2.26
Op-2	7	2.44	0.26	0.040	2.54	2.34

Analysis of Variance for HBT for 0003 - bare rock

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.83	0.3647
SEASON	1	174.000	0.33	0.5668
STATION	6	174.000	10.58	0.0000
PERIOD*SEASON	1	174.000	0.99	0.3219
STATION*PERIOD	6	174.000	0.99	0.4340
STATION*SEASON	6	174.000	0.99	0.4303
PERIOD*STATION*SEASON	6	174.000	0.82	0.5577

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.83	0.00	0.2352	.	1.0000
STATION*PERIOD	5.94	0.00	0.5156	.	0.1006

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1308	0.2656	-0.493	.6230
Period in FC	-0.1978	0.2454	-0.806	.4212
Period in FC-S	-0.1888	0.3177	-0.594	.5530
Period in FC-W	-0.2068	0.3741	-0.553	.5811
Period in DC-S	0.2195	0.3546	0.619	.5368
Period in DC-W	-0.4811	0.3956	-1.216	.2256

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.460	0.0252	-18.20	.0000	-0.4178	-0.5013
Period Op-2	-0.413	0.0451	-9.15	.0000	-0.3380	-0.4871
Op-1-04	-0.238	0.0765	-3.11	.0022	-0.1112	-0.3643
Op-2-04	-0.199	0.1326	-1.50	.1355	0.0204	-0.4180
Op-1-05	-0.477	0.0765	-6.24	.0000	-0.3507	-0.6038
Op-2-05	-0.328	0.1169	-2.81	.0056	-0.1348	-0.5214
Op-1-06	-0.107	0.0600	-1.79	.0754	-0.0081	-0.2066
Op-2-06	-0.098	0.1169	-0.84	.4048	0.0957	-0.2909
Op-1-08	-0.592	0.0703	-8.41	.0000	-0.4753	-0.7078
Op-2-08	-0.479	0.1169	-4.10	.0001	-0.2860	-0.6726
Op-1-09	-0.546	0.0600	-9.09	.0000	-0.4465	-0.6450
Op-2-09	-0.746	0.1169	-6.38	.0000	-0.5529	-0.9395
Op-1-10	-0.445	0.0613	-7.27	.0000	-0.3442	-0.5468
Op-2-10	-0.433	0.1169	-3.71	.0003	-0.2399	-0.6265
Op-1-12	-0.811	0.0600	-13.52	.0000	-0.7121	-0.9107
Op-2-12	-0.605	0.1169	-5.17	.0000	-0.4113	-0.7979

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0470	0.0517	-0.909	.3647	0.0385	-0.1324

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0390	0.1531	-0.25	.7992	0.2141	-0.2921
Station 05	-0.1491	0.1397	-1.07	.2874	0.0820	-0.3801
Station 06	-0.0097	0.1314	-0.07	.9410	0.2076	-0.2271
Station 08	-0.1122	0.1364	-0.82	.4118	0.1134	-0.3378
Station 09	0.2005	0.1314	1.53	.1290	0.4178	-0.0169
Station 10	-0.0123	0.1320	-0.09	.9258	0.2060	-0.2306
Station 12	-0.2068	0.1314	-1.57	.1175	0.0106	-0.4241

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	5.99	7.99	0.505	7.07	4.91	-2.53	5.80	-1.74	-3.31
04	Op-2	6	5.78	6.74	1.010	8.37	3.18	-2.26	8.26	0.83	-5.36
05	Op-1	16	10.50	12.99	0.935	12.50	8.51	-7.04	11.56	-5.14	-8.94
05	Op-2	7	7.87	5.83	0.768	9.75	5.99	-4.22	6.94	-1.97	-6.47
06	Op-1	26	4.74	12.08	0.556	5.88	3.59	-1.42	11.70	-0.31	-2.54
06	Op-2	7	5.27	8.47	1.289	8.42	2.11	-1.62	10.97	1.81	-5.05
08	Op-1	19	15.52	28.19	2.028	19.78	11.25	-11.99	27.67	-7.88	-16.10
08	Op-2	7	13.24	21.25	3.158	20.97	5.52	-9.59	23.47	-1.43	-17.76
09	Op-1	26	12.68	22.85	1.289	15.34	10.03	-9.37	22.50	-6.67	-12.07
09	Op-2	7	28.85	54.24	7.852	48.06	9.64	-25.20	55.28	-5.30	-45.10
10	Op-1	25	11.69	29.03	1.691	15.18	8.20	-8.46	27.74	-4.94	-11.98
10	Op-2	7	11.29	17.71	2.581	17.61	4.97	-7.64	16.67	-1.44	-13.84
12	Op-1	26	21.90	30.97	1.715	25.43	18.37	-18.59	33.44	-14.93	-22.25
12	Op-2	7	15.33	12.43	1.991	20.20	10.46	-11.68	15.00	-6.29	-17.06

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	3.31	5.21	0.259	3.85	2.78
Op-2	7	3.65	2.92	0.409	4.65	2.65

Analysis of Variance for HBT for 0049 - Calliarthron/Bossiella spp.-complex

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.25	0.6209
SEASON	1	174.000	3.56	0.0607
STATION	6	174.000	102.58	0.0000
PERIOD*SEASON	1	174.000	0.96	0.3298
STATION*PERIOD	6	174.000	1.45	0.1991
STATION*SEASON	6	174.000	1.10	0.3642
PERIOD*STATION*SEASON	6	174.000	0.51	0.8001

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.25	0.00	0.1410	.	0.9996
STATION*PERIOD	8.69	2.59	0.6784	0.2761	0.7507

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2873	0.2784	1.032	.3035
Period in FC	-0.0995	0.2572	-0.387	.6993
Period in FC-S	-0.0919	0.3329	-0.276	.7829
Period in FC-W	-0.1071	0.3921	-0.273	.7850
Period in DC-S	0.6501	0.3717	1.749	.0820
Period in DC-W	-0.0755	0.4147	-0.182	.8557

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.115	0.0265	4.34	.0000	0.1586	0.0711
Period Op-2	0.088	0.0472	1.86	.0642	0.1661	0.0099
Op-1-04	-0.249	0.0802	-3.11	.0022	-0.1164	-0.3817
Op-2-04	-0.306	0.1389	-2.20	.0291	-0.0760	-0.5355
Op-1-05	-0.688	0.0802	-8.57	.0000	-0.5551	-0.8204
Op-2-05	-0.601	0.1225	-4.91	.0000	-0.3988	-0.8040
Op-1-06	-0.563	0.0629	-8.95	.0000	-0.4593	-0.6674
Op-2-06	-0.493	0.1225	-4.03	.0001	-0.2909	-0.6961
Op-1-08	0.386	0.0737	5.24	.0000	0.5079	0.2641
Op-2-08	0.175	0.1225	1.43	.1557	0.3773	-0.0279
Op-1-09	-0.078	0.0629	-1.25	.2141	0.0256	-0.1825
Op-2-09	-0.356	0.1225	-2.90	.0042	-0.1531	-0.5583
Op-1-10	0.974	0.0642	15.16	.0000	1.0800	0.8676
Op-2-10	0.983	0.1225	8.03	.0000	1.1859	0.7806
Op-1-12	1.023	0.0629	16.25	.0000	1.1266	0.9185
Op-2-12	1.214	0.1225	9.91	.0000	1.4170	1.0118

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0268	0.0541	0.495	.6209	0.1164	-0.0627

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0567	0.1604	0.35	.7241	0.3220	-0.2086
Station 05	-0.0864	0.1464	-0.59	.5562	0.1558	-0.3285
Station 06	-0.0699	0.1377	-0.51	.6125	0.1579	-0.2976
Station 08	0.2113	0.1430	1.48	.1413	0.4477	-0.0252
Station 09	0.2773	0.1377	2.01	.0456	0.5051	0.0495
Station 10	-0.0094	0.1383	-0.07	.9459	0.2193	-0.2382
Station 12	-0.1919	0.1377	-1.39	.1654	0.0359	-0.4196

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	2.20	4.44	0.342	2.93	1.47	-0.97	2.99	-0.46	-1.47
04	Op-2	6	3.65	3.89	0.698	5.44	1.85	-1.89	4.03	-0.32	-3.45
05	Op-1	16	5.71	10.76	0.628	7.05	4.37	-4.47	9.90	-3.21	-5.74
05	Op-2	7	6.53	6.60	0.766	8.40	4.65	-4.85	4.62	-3.28	-6.42
06	Op-1	26	4.19	5.42	0.278	4.76	3.62	-2.98	5.42	-2.48	-3.48
06	Op-2	7	5.14	4.65	0.637	6.70	3.58	-3.46	3.40	-2.48	-4.44
08	Op-1	19	0.67	2.78	0.177	1.05	0.30	0.66	3.96	1.11	0.21
08	Op-2	7	1.45	5.07	0.657	3.06	-0.16	0.23	3.61	1.30	-0.83
09	Op-1	26	2.76	12.78	0.703	4.21	1.32	-1.56	10.90	-0.36	-2.76
09	Op-2	7	7.92	22.01	3.736	17.06	-1.23	-6.24	22.78	2.66	-15.13
10	Op-1	25	0.03	0.28	0.013	0.06	0.00	1.18	3.30	1.52	0.84
10	Op-2	7	0.13	0.49	0.072	0.30	-0.05	1.55	2.78	2.52	0.59
12	Op-1	26	0.01	0.28	0.011	0.03	-0.01	1.19	3.30	1.53	0.86
12	Op-2	7	0.00	0.00	0.000	.	.	1.68	2.71	2.59	0.78

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.20	3.30	0.161	1.54	0.87
Op-2	7	1.68	2.71	0.370	2.59	0.78

Analysis of Variance for HBT for 0077 - Chondracanthus canaliculatus

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.03	0.8627
SEASON	1	174.000	18.88	0.0000
STATION	6	174.000	16.64	0.0000
PERIOD*SEASON	1	174.000	5.68	0.0183
STATION*PERIOD	6	174.000	4.88	0.0001
STATION*SEASON	6	174.000	0.89	0.5018
PERIOD*STATION*SEASON	6	174.000	0.85	0.5355

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.03	0.00	0.1050	.	0.9677
STATION*PERIOD	29.28	22.94	0.9962	0.9820	0.6393

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-8.0525	3.9502	-2.038	.0430
Period in FC	7.1208	3.6490	1.951	.0526
Period in FC-S	2.2049	4.7238	0.467	.6413
Period in FC-W	12.0368	5.5630	2.164	.0319
Period in DC-S	-15.9503	5.2729	-3.025	.0029
Period in DC-W	-0.1548	5.8833	-0.026	.9790

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	11.259	0.3754	29.99	.0000	11.8801	10.6386
Period Op-2	11.392	0.6703	17.00	.0000	12.5008	10.2840
Op-1-04	14.078	1.1380	12.37	.0000	15.9595	12.1959
Op-2-04	6.228	1.9710	3.16	.0019	9.4877	2.9689
Op-1-05	13.761	1.1380	12.09	.0000	15.6427	11.8790
Op-2-05	14.512	1.7383	8.35	.0000	17.3870	11.6379
Op-1-06	12.762	0.8927	14.30	.0000	14.2380	11.2855
Op-2-06	12.739	1.7383	7.33	.0000	15.6133	9.8642
Op-1-08	7.720	1.0457	7.38	.0000	9.4490	5.9904
Op-2-08	7.901	1.7383	4.55	.0000	10.7753	5.0262
Op-1-09	10.954	0.8927	12.27	.0000	12.4298	9.4773
Op-2-09	17.337	1.7383	9.97	.0000	20.2111	14.4620
Op-1-10	5.917	0.9111	6.49	.0000	7.4238	4.4105
Op-2-10	3.100	1.7383	1.78	.0762	5.9750	0.2259
Op-1-12	13.624	0.8927	15.26	.0000	15.1007	12.1482
Op-2-12	17.930	1.7383	10.31	.0000	20.8042	15.0551

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1331	0.7682	-0.173	.8627	1.1373	-1.4035

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	7.8494	2.2760	3.45	.0007	11.6131	4.0857
Station 05	-0.7516	2.0777	-0.36	.7180	2.6842	-4.1873
Station 06	0.0230	1.9541	0.01	.9906	3.2545	-3.2084
Station 08	-0.1810	2.0286	-0.09	.9290	3.1736	-3.5357
Station 09	-6.3830	1.9541	-3.27	.0013	-3.1515	-9.6145
Station 10	2.8167	1.9626	1.44	.1530	6.0622	-0.4288
Station 12	-4.3052	1.9541	-2.20	.0289	-1.0738	-7.5367

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	2.05	8.47	0.579	3.28	0.81	14.08	14.06	16.24	11.91
04	Op-2	6	13.92	14.86	2.432	20.18	7.67	6.05	10.14	10.18	1.92
05	Op-1	16	2.37	4.31	0.340	3.09	1.64	13.76	17.50	15.82	11.70
05	Op-2	7	4.81	6.53	0.874	6.95	2.67	14.93	14.48	19.03	10.83
06	Op-1	26	1.51	4.72	0.236	2.00	1.03	12.76	15.73	14.21	11.31
06	Op-2	7	6.28	6.39	0.853	8.37	4.19	13.46	18.02	19.50	7.43
08	Op-1	19	7.56	21.60	1.558	10.84	4.29	7.71	15.42	9.93	5.49
08	Op-2	7	11.72	15.21	2.049	16.73	6.70	8.03	13.68	12.28	3.78
09	Op-1	26	3.32	11.67	0.675	4.71	1.93	10.95	12.74	12.14	9.77
09	Op-2	7	1.91	2.15	0.317	2.69	1.14	17.83	14.48	22.55	13.11
10	Op-1	25	8.51	27.29	1.794	12.22	4.81	5.97	23.92	8.61	3.33
10	Op-2	7	16.31	23.75	3.128	23.96	8.66	3.43	28.78	12.58	-5.72
12	Op-1	26	0.65	6.46	0.288	1.24	0.06	13.62	15.24	15.09	12.16
12	Op-2	7	1.24	2.71	0.349	2.09	0.39	18.50	15.80	23.40	13.60

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	14.27	18.02	0.836	15.99	12.55
Op-2	7	19.74	15.10	2.010	24.66	14.82

Analysis of Variance for HBT for 1302 - Chrysophyta unid.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	24.53	0.0000
SEASON	1	174.000	0.33	0.5643
STATION	6	174.000	6.93	0.0000
PERIOD*SEASON	1	174.000	0.01	0.9340
STATION*PERIOD	6	174.000	3.99	0.0009
STATION*SEASON	6	174.000	1.77	0.1074
PERIOD*STATION*SEASON	6	174.000	2.24	0.0417

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	24.53	23.25	0.9995	0.9992	0.1427
STATION*PERIOD	23.91	17.64	0.9857	0.9408	0.1043

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.7976	0.3323	5.410	.0000
Period in FC	0.4429	0.3069	1.443	.1508
Period in FC-S	0.6689	0.3973	1.683	.0941
Period in FC-W	0.2168	0.4679	0.463	.6436
Period in DC-S	1.5341	0.4435	3.459	.0007
Period in DC-W	2.0612	0.4949	4.165	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.057	0.0316	-1.79	.0750	-0.0043	-0.1088
Period Op-2	-0.377	0.0564	-6.68	.0000	-0.2834	-0.4699
Op-1-04	-0.001	0.0957	-0.01	.9903	0.1571	-0.1595
Op-2-04	-0.029	0.1658	-0.17	.8631	0.2455	-0.3028
Op-1-05	0.013	0.0957	0.14	.8909	0.1714	-0.1451
Op-2-05	-0.272	0.1462	-1.86	.0641	-0.0307	-0.5142
Op-1-06	-0.048	0.0751	-0.64	.5203	0.0758	-0.1725
Op-2-06	-0.178	0.1462	-1.22	.2246	0.0636	-0.4200
Op-1-08	-0.106	0.0880	-1.21	.2294	0.0394	-0.2516
Op-2-08	-0.539	0.1462	-3.69	.0003	-0.2971	-0.7806
Op-1-09	-0.147	0.0751	-1.96	.0513	-0.0232	-0.2715
Op-2-09	-1.114	0.1462	-7.62	.0000	-0.8725	-1.3561
Op-1-10	-0.097	0.0766	-1.26	.2095	0.0302	-0.2233
Op-2-10	-0.504	0.1462	-3.45	.0007	-0.2622	-0.7458
Op-1-12	-0.010	0.0751	-0.13	.8992	0.1146	-0.1337
Op-2-12	-0.000	0.1462	-0.00	1.000	0.2418	-0.2418

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3201	0.0646	4.953	.0000	0.4269	0.2132

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0275	0.1914	0.14	.8861	0.3440	-0.2891
Station 05	0.2856	0.1748	1.63	.1040	0.5746	-0.0034
Station 06	0.1298	0.1644	0.79	.4307	0.4016	-0.1420
Station 08	0.4328	0.1706	2.54	.0121	0.7149	0.1506
Station 09	0.9670	0.1644	5.88	.0000	1.2388	0.6952
Station 10	0.4074	0.1651	2.47	.0145	0.6804	0.1345
Station 12	-0.0095	0.1644	-0.06	.9538	0.2623	-0.2813

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.01	0.07	0.006	0.02	-0.00	-0.00	0.17	0.02	-0.02
04	Op-2	6	0.01	0.07	0.012	0.04	-0.02	-0.01	0.07	0.02	-0.04
05	Op-1	16	0.00	0.07	0.004	0.01	-0.00	0.00	0.17	0.02	-0.01
05	Op-2	7	0.22	1.11	0.156	0.60	-0.16	-0.22	1.11	0.16	-0.60
06	Op-1	26	0.03	0.35	0.015	0.06	-0.00	-0.02	0.45	0.01	-0.06
06	Op-2	7	0.14	0.76	0.108	0.40	-0.13	-0.14	0.76	0.13	-0.40
08	Op-1	19	0.13	1.25	0.085	0.31	-0.05	-0.12	1.35	0.06	-0.30
08	Op-2	7	2.67	17.99	2.554	8.92	-3.58	-2.67	17.99	3.58	-8.92
09	Op-1	26	0.47	9.44	0.370	1.24	-0.29	-0.47	9.55	0.30	-1.23
09	Op-2	7	4.63	14.79	2.435	10.59	-1.33	-4.63	14.79	1.33	-10.59
10	Op-1	25	0.11	1.04	0.060	0.23	-0.02	-0.10	1.15	0.02	-0.23
10	Op-2	7	1.94	10.35	1.467	5.53	-1.65	-1.94	10.35	1.65	-5.53
12	Op-1	26	0.02	0.56	0.021	0.07	-0.02	-0.01	0.49	0.02	-0.05
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.01	0.10	0.004	0.02	-0.00
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0055 - Corallina officinalis

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	7.77	0.0059
SEASON	1	174.000	21.90	0.0000
STATION	6	174.000	1.55	0.1647
PERIOD*SEASON	1	174.000	3.81	0.0526
STATION*PERIOD	6	174.000	2.14	0.0514
STATION*SEASON	6	174.000	0.50	0.8082
PERIOD*STATION*SEASON	6	174.000	0.64	0.6973

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.77	6.68	0.8710	0.8236	0.1446
STATION*PERIOD	12.82	6.68	0.8441	0.5633	0.1228

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0296	0.1775	0.167	.8679
Period in FC	0.6437	0.1639	3.927	.0001
Period in FC-S	0.4098	0.2122	1.931	.0551
Period in FC-W	0.8776	0.2499	3.512	.0006
Period in DC-S	-0.2081	0.2369	-0.878	.3810
Period in DC-W	0.2672	0.2643	1.011	.3134

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.162	0.0169	9.60	.0000	0.1898	0.1340
Period Op-2	0.066	0.0301	2.18	.0305	0.1155	0.0159
Op-1-04	0.206	0.0511	4.04	.0001	0.2910	0.1219
Op-2-04	-0.163	0.0865	-1.84	.0671	-0.0167	-0.3096
Op-1-05	0.128	0.0511	2.51	.0131	0.2128	0.0437
Op-2-05	-0.039	0.0781	-0.49	.6219	0.0906	-0.1677
Op-1-06	0.182	0.0401	4.54	.0000	0.2485	0.1159
Op-2-06	0.075	0.0781	0.96	.3388	0.2040	-0.0542
Op-1-08	0.157	0.0470	3.34	.0010	0.2344	0.0790
Op-2-08	0.118	0.0781	1.51	.1324	0.2472	-0.0111
Op-1-09	0.083	0.0401	2.07	.0399	0.1493	0.0167
Op-2-09	0.156	0.0781	2.00	.0470	0.2854	0.0271
Op-1-10	0.194	0.0409	4.75	.0000	0.2621	0.1267
Op-2-10	0.156	0.0781	2.00	.0470	0.2854	0.0271
Op-1-12	0.182	0.0401	4.54	.0000	0.2485	0.1159
Op-2-12	0.156	0.0781	2.00	.0470	0.2854	0.0271

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0962	0.0345	2.787	.0059	0.1533	0.0391

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.3697	0.1022	3.62	.0004	0.5387	0.2006
Station 05	0.1668	0.0933	1.79	.0757	0.3212	0.0125
Station 06	0.1073	0.0878	1.22	.2234	0.2525	-0.0379
Station 08	0.0386	0.0911	0.42	.6721	0.1893	-0.1121
Station 09	-0.0732	0.0878	-0.83	.4055	0.0720	-0.2184
Station 10	0.0382	0.0882	0.43	.6656	0.1840	-0.1076
Station 12	0.0260	0.0878	0.30	.7678	0.1711	-0.1192

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.00	0.07	0.004	0.01	-0.00	0.08	0.24	0.13	0.04
04	Op-2	6	0.17	0.56	0.093	0.41	-0.06	-0.13	0.52	0.10	-0.36
05	Op-1	16	0.06	0.49	0.039	0.14	-0.03	0.03	0.66	0.11	-0.05
05	Op-2	7	0.09	0.49	0.067	0.25	-0.08	-0.04	0.49	0.11	-0.20
06	Op-1	26	0.00	0.00	0.000	.	.	0.07	0.31	0.11	0.03
06	Op-2	7	0.05	0.35	0.050	0.17	-0.07	-0.00	0.45	0.14	-0.15
08	Op-1	19	0.01	0.21	0.011	0.04	-0.01	0.06	0.52	0.12	0.01
08	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.03	0.07	0.06	0.01
09	Op-1	26	0.05	0.42	0.021	0.09	0.00	0.02	0.69	0.08	-0.03
09	Op-2	7	0.00	0.00	0.000	.	.	0.04	0.10	0.08	0.01
10	Op-1	25	0.00	0.00	0.000	.	.	0.07	0.31	0.11	0.04
10	Op-2	7	0.00	0.00	0.000	.	.	0.04	0.10	0.08	0.01
12	Op-1	26	0.00	0.00	0.000	.	.	0.07	0.31	0.11	0.03
12	Op-2	7	0.00	0.00	0.000	.	.	0.04	0.10	0.08	0.01

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.07	0.31	0.018	0.11	0.03
Op-2	7	0.04	0.10	0.015	0.08	0.01

Analysis of Variance for HBT for 0056 - Corallina vancouveriensis

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.31	0.5769
SEASON	1	174.000	3.22	0.0746
STATION	6	174.000	82.25	0.0000
PERIOD*SEASON	1	174.000	0.00	0.9828
STATION*PERIOD	6	174.000	0.44	0.8482
STATION*SEASON	6	174.000	3.85	0.0012
PERIOD*STATION*SEASON	6	174.000	1.19	0.3151

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.31	0.00	0.1521	.	1.0000
STATION*PERIOD	2.67	0.00	0.2821	.	0.9446

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0231	0.1603	-0.144	.8855
Period in FC	0.1451	0.1481	0.980	.3285
Period in FC-S	0.1371	0.1917	0.715	.4753
Period in FC-W	0.1530	0.2257	0.678	.4987
Period in DC-S	-0.0105	0.2140	-0.049	.9611
Period in DC-W	-0.0358	0.2387	-0.150	.8811

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.063	0.0152	-4.11	.0001	-0.0374	-0.0878
Period Op-2	-0.080	0.0272	-2.94	.0037	-0.0350	-0.1250
Op-1-04	-0.428	0.0462	-9.28	.0000	-0.3521	-0.5049
Op-2-04	-0.438	0.0800	-5.47	.0000	-0.3055	-0.5700
Op-1-05	-0.613	0.0462	-13.28	.0000	-0.5367	-0.6895
Op-2-05	-0.708	0.0705	-10.04	.0000	-0.5916	-0.8248
Op-1-06	-0.116	0.0362	-3.22	.0016	-0.0566	-0.1764
Op-2-06	-0.157	0.0705	-2.23	.0272	-0.0405	-0.2738
Op-1-08	0.080	0.0424	1.88	.0624	0.1497	0.0094
Op-2-08	0.158	0.0705	2.25	.0260	0.2750	0.0417
Op-1-09	-0.061	0.0362	-1.68	.0939	-0.0011	-0.1209
Op-2-09	-0.071	0.0705	-1.00	.3170	0.0459	-0.1874
Op-1-10	0.342	0.0370	9.24	.0000	0.4028	0.2805
Op-2-10	0.286	0.0705	4.06	.0001	0.4026	0.1694
Op-1-12	0.360	0.0362	9.94	.0000	0.4198	0.3000
Op-2-12	0.370	0.0705	5.24	.0000	0.4862	0.2530

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0174	0.0312	0.559	.5769	0.0690	-0.0341

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0093	0.0923	0.10	.9200	0.1620	-0.1434
Station 05	0.0951	0.0843	1.13	.2608	0.2345	-0.0443
Station 06	0.0407	0.0793	0.51	.6087	0.1718	-0.0905
Station 08	-0.0788	0.0823	-0.96	.3396	0.0573	-0.2149
Station 09	0.0098	0.0793	0.12	.9020	0.1409	-0.1213
Station 10	0.0557	0.0796	0.70	.4856	0.1873	-0.0760
Station 12	-0.0097	0.0793	-0.12	.9025	0.1214	-0.1408

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	5.46	9.86	0.666	6.88	4.04	-4.15	9.69	-2.85	-5.45
04	Op-2	6	5.30	7.15	1.081	8.08	2.52	-4.04	6.81	-1.41	-6.67
05	Op-1	16	8.45	9.37	0.638	9.81	7.10	-7.14	8.54	-5.98	-8.31
05	Op-2	7	11.22	9.17	1.191	14.13	8.31	-9.83	8.37	-7.25	-12.41
06	Op-1	26	2.26	4.51	0.239	2.75	1.77	-0.69	3.96	-0.31	-1.08
06	Op-2	7	2.64	3.75	0.637	4.20	1.08	-1.25	4.13	0.19	-2.69
08	Op-1	19	1.39	5.28	0.353	2.13	0.65	0.25	5.66	0.95	-0.45
08	Op-2	7	1.05	4.72	0.645	2.63	-0.53	0.34	6.18	2.22	-1.55
09	Op-1	26	2.39	12.43	0.540	3.50	1.28	-0.82	12.33	0.20	-1.84
09	Op-2	7	2.70	12.15	1.613	6.64	-1.25	-1.31	11.35	2.31	-4.93
10	Op-1	25	0.06	0.97	0.039	0.14	-0.02	1.41	5.90	1.90	0.92
10	Op-2	7	0.37	2.08	0.287	1.07	-0.33	1.02	3.47	2.12	-0.08
12	Op-1	26	0.02	0.21	0.010	0.04	0.00	1.54	5.24	2.04	1.05
12	Op-2	7	0.02	0.07	0.013	0.05	-0.01	1.37	1.56	1.96	0.77

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.57	5.24	0.242	2.07	1.07
Op-2	7	1.39	1.56	0.243	1.98	0.79

Analysis of Variance for HBT for 0057 - coralline crust

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	1.04	0.3096
SEASON	1	174.000	6.16	0.0140
STATION	6	174.000	65.38	0.0000
PERIOD*SEASON	1	174.000	4.56	0.0340
STATION*PERIOD	6	174.000	3.00	0.0081
STATION*SEASON	6	174.000	1.36	0.2327
PERIOD*STATION*SEASON	6	174.000	0.79	0.5820

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.04	0.03	0.2683	0.1044	1.0000
STATION*PERIOD	18.02	11.81	0.9454	0.8119	0.8738

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2276	0.1406	1.618	.1074
Period in FC	-0.4226	0.1299	-3.254	.0014
Period in FC-S	-0.3376	0.1681	-2.008	.0462
Period in FC-W	-0.5076	0.1980	-2.563	.0112
Period in DC-S	0.5516	0.1877	2.939	.0037
Period in DC-W	-0.0964	0.2094	-0.460	.6457

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.214	0.0134	16.00	.0000	0.2358	0.1917
Period Op-2	0.242	0.0239	10.13	.0000	0.2811	0.2022
Op-1-04	-0.074	0.0405	-1.84	.0681	-0.0074	-0.1414
Op-2-04	0.081	0.0702	1.15	.2518	0.1967	-0.0353
Op-1-05	-0.063	0.0405	-1.55	.1231	0.0042	-0.1297
Op-2-05	0.109	0.0619	1.77	.0786	0.2118	0.0071
Op-1-06	0.032	0.0318	1.01	.3151	0.0846	-0.0205
Op-2-06	0.127	0.0619	2.06	.0410	0.2297	0.0250
Op-1-08	0.360	0.0372	9.68	.0000	0.4219	0.2988
Op-2-08	0.168	0.0619	2.72	.0073	0.2704	0.0657
Op-1-09	0.020	0.0318	0.61	.5398	0.0721	-0.0330
Op-2-09	-0.033	0.0619	-0.54	.5932	0.0692	-0.1354
Op-1-10	0.496	0.0324	15.30	.0000	0.5499	0.4426
Op-2-10	0.516	0.0619	8.34	.0000	0.6184	0.4137
Op-1-12	0.725	0.0318	22.82	.0000	0.7777	0.6726
Op-2-12	0.723	0.0619	11.68	.0000	0.8251	0.6205

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0279	0.0273	-1.019	.3096	0.0174	-0.0731

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1550	0.0810	-1.91	.0573	-0.0211	-0.2890
Station 05	-0.1722	0.0740	-2.33	.0210	-0.0499	-0.2945
Station 06	-0.0954	0.0696	-1.37	.1722	0.0197	-0.2104
Station 08	0.1923	0.0722	2.66	.0085	0.3117	0.0729
Station 09	0.0526	0.0696	0.76	.4502	0.1677	-0.0624
Station 10	-0.0198	0.0699	-0.28	.7773	0.0957	-0.1353
Station 12	0.0024	0.0696	0.03	.9725	0.1174	-0.1126

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	8.98	11.04	0.990	11.09	6.87	-1.83	14.97	0.43	-4.09
04	Op-2	6	7.62	16.74	2.519	14.09	1.14	1.15	8.65	4.32	-2.01
05	Op-1	16	8.67	11.04	0.950	10.69	6.64	-1.51	15.66	0.88	-3.90
05	Op-2	7	6.50	7.22	1.070	9.12	3.88	2.17	3.75	3.40	0.95
06	Op-1	26	6.20	7.43	0.440	7.10	5.29	0.60	10.49	1.60	-0.40
06	Op-2	7	6.14	6.04	0.797	8.09	4.19	2.53	5.76	4.59	0.47
08	Op-1	19	3.09	10.62	0.629	4.41	1.77	4.08	9.44	5.19	2.97
08	Op-2	7	5.91	10.83	1.292	9.07	2.75	2.76	7.01	4.92	0.60
09	Op-1	26	6.80	14.31	0.673	8.18	5.41	0.00	12.15	1.20	-1.20
09	Op-2	7	9.50	8.26	1.241	12.54	6.47	-0.83	10.56	2.67	-4.34
10	Op-1	25	1.56	4.86	0.230	2.03	1.08	5.24	9.37	6.17	4.31
10	Op-2	7	2.15	4.10	0.570	3.55	0.76	6.52	8.12	9.45	3.58
12	Op-1	26	0.43	1.11	0.067	0.57	0.29	6.36	9.97	7.38	5.35
12	Op-2	7	0.80	1.46	0.198	1.29	0.32	7.87	8.68	10.58	5.15

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	6.80	10.73	0.514	7.86	5.74
Op-2	7	8.67	9.86	1.275	11.79	5.55

Analysis of Variance for HBT for 0115 - Cryptopleura violacea

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	4.12	0.0438
SEASON	1	174.000	1.75	0.1871
STATION	6	174.000	35.32	0.0000
PERIOD*SEASON	1	174.000	0.10	0.7497
STATION*PERIOD	6	174.000	1.52	0.1741
STATION*SEASON	6	174.000	0.16	0.9859
PERIOD*STATION*SEASON	6	174.000	0.30	0.9359

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.12	3.08	0.6475	0.5412	1.0000
STATION*PERIOD	9.12	3.02	0.7003	0.3077	0.6529

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4690	0.2068	-2.268	.0246
Period in FC	-0.1028	0.1910	-0.538	.5912
Period in FC-S	-0.0791	0.2473	-0.320	.7495
Period in FC-W	-0.1265	0.2912	-0.434	.6645
Period in DC-S	-0.4027	0.2761	-1.459	.1464
Period in DC-W	-0.5353	0.3080	-1.738	.0840

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.101	0.0197	-5.13	.0000	-0.0684	-0.1334
Period Op-2	-0.019	0.0351	-0.55	.5853	0.0388	-0.0772
Op-1-04	-0.245	0.0596	-4.11	.0001	-0.1464	-0.3435
Op-2-04	-0.265	0.1032	-2.57	.0111	-0.0943	-0.4356
Op-1-05	-0.202	0.0596	-3.39	.0009	-0.1036	-0.3007
Op-2-05	-0.175	0.0910	-1.92	.0560	-0.0246	-0.3256
Op-1-06	-0.156	0.0467	-3.33	.0010	-0.0785	-0.2331
Op-2-06	-0.060	0.0910	-0.66	.5103	0.0905	-0.2105
Op-1-08	-0.004	0.0547	-0.06	.9487	0.0870	-0.0941
Op-2-08	0.131	0.0910	1.44	.1528	0.2812	-0.0198
Op-1-09	0.060	0.0467	1.28	.2035	0.1369	-0.0176
Op-2-09	0.401	0.0910	4.41	.0000	0.5519	0.2509
Op-1-10	-0.541	0.0477	-11.35	.0000	-0.4625	-0.6203
Op-2-10	-0.530	0.0910	-5.82	.0000	-0.3793	-0.6803
Op-1-12	0.382	0.0467	8.18	.0000	0.4594	0.3048
Op-2-12	0.364	0.0910	3.99	.0001	0.5140	0.2130

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0817	0.0402	-2.031	.0438	-0.0152	-0.1482

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0201	0.1192	0.17	.8666	0.2171	-0.1770
Station 05	-0.0271	0.1088	-0.25	.8037	0.1528	-0.2069
Station 06	-0.0958	0.1023	-0.94	.3504	0.0734	-0.2650
Station 08	-0.1342	0.1062	-1.26	.2080	0.0414	-0.3098
Station 09	-0.3418	0.1023	-3.34	.0010	-0.1726	-0.5109
Station 10	-0.0116	0.1028	-0.11	.9105	0.1583	-0.1815
Station 12	0.0186	0.1023	0.18	.8562	0.1877	-0.1506

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	4.31	9.72	0.716	5.84	2.79	-2.52	8.12	-1.22	-3.82
04	Op-2	6	5.73	6.67	1.106	8.57	2.89	-3.39	7.64	-0.28	-6.49
05	Op-1	16	3.49	8.89	0.475	4.50	2.47	-1.69	5.94	-1.00	-2.38
05	Op-2	7	3.87	6.18	0.791	5.80	1.93	-1.79	5.21	-0.07	-3.52
06	Op-1	26	2.86	6.81	0.329	3.53	2.18	-1.28	6.56	-0.64	-1.91
06	Op-2	7	2.56	4.03	0.582	3.98	1.14	-0.48	3.40	0.62	-1.58
08	Op-1	19	1.92	5.14	0.338	2.63	1.21	-0.13	5.07	0.56	-0.82
08	Op-2	7	1.36	2.50	0.386	2.30	0.42	0.72	3.40	2.03	-0.59
09	Op-1	26	1.41	4.51	0.261	1.95	0.87	0.17	5.94	0.75	-0.41
09	Op-2	7	0.20	1.32	0.187	0.66	-0.26	1.88	3.33	3.06	0.70
10	Op-1	25	9.41	31.87	1.564	12.64	6.19	-7.84	28.26	-4.84	-10.83
10	Op-2	7	10.61	17.99	2.555	16.86	4.35	-8.53	15.97	-2.50	-14.55
12	Op-1	26	0.00	0.07	0.003	0.01	-0.00	1.58	4.86	1.99	1.16
12	Op-2	7	0.59	4.10	0.585	2.02	-0.85	1.49	6.11	3.41	-0.43

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.58	4.86	0.202	2.00	1.16
Op-2	7	2.08	2.99	0.390	3.03	1.12

Analysis of Variance for HBT for 0069 - Cryptosiphonia woodii

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	8.45	0.0041
SEASON	1	174.000	5.16	0.0243
STATION	6	174.000	19.24	0.0000
PERIOD*SEASON	1	174.000	16.65	0.0001
STATION*PERIOD	6	174.000	4.40	0.0004
STATION*SEASON	6	174.000	2.09	0.0573
PERIOD*STATION*SEASON	6	174.000	1.74	0.1137

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	8.45	7.35	0.8944	0.8545	0.9201
STATION*PERIOD	26.40	20.10	0.9922	0.9654	0.8179

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1825	0.1802	1.013	.3125
Period in FC	-0.8954	0.1664	-5.380	.0000
Period in FC-S	-1.6760	0.2154	-7.780	.0000
Period in FC-W	-0.1148	0.2537	-0.452	.6516
Period in DC-S	-0.0376	0.2405	-0.156	.8759
Period in DC-W	0.4026	0.2683	1.501	.1353

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.220	0.0171	-12.85	.0000	-0.1918	-0.2484
Period Op-2	-0.118	0.0306	-3.87	.0002	-0.0677	-0.1688
Op-1-04	-0.696	0.0519	-13.41	.0000	-0.6104	-0.7820
Op-2-04	-0.248	0.0899	-2.76	.0065	-0.0991	-0.3965
Op-1-05	-0.477	0.0519	-9.20	.0000	-0.3916	-0.5633
Op-2-05	-0.214	0.0793	-2.70	.0076	-0.0829	-0.3451
Op-1-06	-0.430	0.0407	-10.57	.0000	-0.3631	-0.4978
Op-2-06	-0.247	0.0793	-3.12	.0021	-0.1159	-0.3781
Op-1-08	0.024	0.0477	0.51	.6088	0.1033	-0.0544
Op-2-08	0.000	0.0793	0.00	1.000	0.1311	-0.1311
Op-1-09	0.019	0.0407	0.46	.6447	0.0861	-0.0485
Op-2-09	0.000	0.0793	0.00	1.000	0.1311	-0.1311
Op-1-10	0.002	0.0416	0.04	.9700	0.0703	-0.0671
Op-2-10	-0.119	0.0793	-1.50	.1356	0.0122	-0.2500
Op-1-12	0.019	0.0407	0.46	.6447	0.0861	-0.0485
Op-2-12	-0.000	0.0793	-0.00	1.000	0.1311	-0.1311

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1018	0.0350	-2.907	.0041	-0.0439	-0.1598

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.4484	0.1038	-4.32	.0000	-0.2768	-0.6201
Station 05	-0.2635	0.0948	-2.78	.0060	-0.1068	-0.4202
Station 06	-0.1835	0.0891	-2.06	.0410	-0.0361	-0.3309
Station 08	0.0245	0.0925	0.26	.7919	0.1774	-0.1285
Station 09	0.0188	0.0891	0.21	.8331	0.1662	-0.1286
Station 10	0.1204	0.0895	1.35	.1802	0.2685	-0.0276
Station 12	0.0188	0.0891	0.21	.8331	0.1662	-0.1286

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.62	1.87	0.144	0.92	0.31	-0.60	1.94	-0.29	-0.92
04	Op-2	6	0.12	0.49	0.077	0.31	-0.08	-0.12	0.49	0.08	-0.31
05	Op-1	16	0.43	2.50	0.158	0.76	0.09	-0.41	2.71	-0.07	-0.76
05	Op-2	7	0.11	0.42	0.064	0.27	-0.05	-0.11	0.42	0.05	-0.27
06	Op-1	26	0.23	0.83	0.040	0.31	0.15	-0.22	0.83	-0.15	-0.30
06	Op-2	7	0.11	0.42	0.058	0.25	-0.03	-0.11	0.42	0.03	-0.25
08	Op-1	19	0.00	0.00	0.000	.	.	0.01	0.21	0.03	-0.01
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.21	0.02	-0.01
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
10	Op-1	25	0.01	0.21	0.008	0.03	-0.01	0.00	0.42	0.02	-0.02
10	Op-2	7	0.06	0.42	0.060	0.21	-0.09	-0.06	0.42	0.09	-0.21
12	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.21	0.02	-0.01
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.01	0.21	0.008	0.02	-0.01
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0031 - Egregia menziesii

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	4.37	0.0379
SEASON	1	174.000	36.40	0.0000
STATION	6	174.000	32.61	0.0000
PERIOD*SEASON	1	174.000	22.15	0.0000
STATION*PERIOD	6	174.000	10.52	0.0000
STATION*SEASON	6	174.000	2.97	0.0088
PERIOD*STATION*SEASON	6	174.000	1.79	0.1029

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.37	3.32	0.6696	0.5682	0.1818
STATION*PERIOD	63.15	56.42	1.0000	1.0000	0.1422

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.6729	0.3865	-6.916	.0000
Period in FC	1.5725	0.3570	4.405	.0000
Period in FC-S	1.3178	0.4621	2.852	.0049
Period in FC-W	1.8273	0.5442	3.357	.0010
Period in DC-S	-4.8940	0.5159	-9.487	.0000
Period in DC-W	-0.4517	0.5756	-0.785	.4337

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.047	0.0367	-1.28	.2040	0.0139	-0.1076
Period Op-2	0.110	0.0656	1.68	.0942	0.2188	0.0019
Op-1-04	-0.339	0.1113	-3.05	.0027	-0.1553	-0.5235
Op-2-04	-1.251	0.1928	-6.49	.0000	-0.9320	-1.5697
Op-1-05	-0.398	0.1113	-3.57	.0005	-0.2137	-0.5819
Op-2-05	-0.810	0.1701	-4.76	.0000	-0.5284	-1.0908
Op-1-06	-0.199	0.0873	-2.28	.0237	-0.0549	-0.3437
Op-2-06	-0.449	0.1701	-2.64	.0091	-0.1674	-0.7298
Op-1-08	0.195	0.1023	1.91	.0582	0.3643	0.0259
Op-2-08	0.836	0.1701	4.91	.0000	1.1169	0.5545
Op-1-09	0.139	0.0873	1.59	.1141	0.2831	-0.0057
Op-2-09	0.775	0.1701	4.55	.0000	1.0558	0.4933
Op-1-10	0.136	0.0891	1.53	.1280	0.2837	-0.0111
Op-2-10	0.836	0.1701	4.91	.0000	1.1169	0.5545
Op-1-12	0.139	0.0873	1.59	.1141	0.2831	-0.0057
Op-2-12	0.836	0.1701	4.91	.0000	1.1169	0.5545

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1572	0.0752	-2.091	.0379	-0.0329	-0.2815

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.9114	0.2227	4.09	.0001	1.2796	0.5432
Station 05	0.4118	0.2033	2.03	.0443	0.7479	0.0757
Station 06	0.2493	0.1912	1.30	.1939	0.5655	-0.0668
Station 08	-0.6406	0.1985	-3.23	.0015	-0.3124	-0.9688
Station 09	-0.6359	0.1912	-3.33	.0011	-0.3197	-0.9520
Station 10	-0.6994	0.1920	-3.64	.0004	-0.3819	-1.0169
Station 12	-0.6970	0.1912	-3.65	.0004	-0.3809	-1.0131

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	4.75	33.54	2.439	9.95	-0.45	-4.59	32.71	0.46°	-9.65
04	Op-2	6	24.12	51.11	7.691	43.89	4.35	-21.24	46.84	-3.90	-38.57
05	Op-1	16	2.20	17.99	1.160	4.67	-0.27	-2.05	17.05	0.28	-4.38
05	Op-2	7	10.72	27.85	3.780	19.97	1.47	-8.25	23.51	0.15	-16.65
06	Op-1	26	1.12	18.26	0.713	2.59	-0.35	-1.02	17.33	0.36	-2.40
06	Op-2	7	6.24	19.86	2.599	12.60	-0.12	-3.76	11.22	-0.01	-7.52
08	Op-1	19	0.00	0.00	0.000	.	.	0.13	1.01	0.27	-0.01
08	Op-2	7	0.00	0.00	0.000	.	.	2.48	8.72	5.53	-0.58
09	Op-1	26	0.00	0.00	0.000	.	.	0.10	1.01	0.20	-0.01
09	Op-2	7	0.03	0.21	0.030	0.10	-0.04	2.45	8.72	5.49	-0.60
10	Op-1	25	0.00	0.00	0.000	.	.	0.10	1.01	0.20	-0.01
10	Op-2	7	0.00	0.00	0.000	.	.	2.48	8.72	5.53	-0.58
12	Op-1	26	0.00	0.00	0.000	.	.	0.10	1.01	0.20	-0.01
12	Op-2	7	0.00	0.00	0.000	.	.	2.48	8.72	5.53	-0.58

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.10	1.01	0.050	0.20	-0.01
Op-2	7	2.48	8.72	1.250	5.53	-0.58

Analysis of Variance for HBT for 0070 - Endocladia muricata

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	7.80	0.0058
SEASON	1	174.000	11.95	0.0007
STATION	6	174.000	341.12	0.0000
PERIOD*SEASON	1	174.000	26.92	0.0000
STATION*PERIOD	6	174.000	4.48	0.0003
STATION*SEASON	6	174.000	0.55	0.7733
PERIOD*STATION*SEASON	6	174.000	0.68	0.6688

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.80	6.71	0.8723	0.8252	1.0000
STATION*PERIOD	26.87	20.56	0.9930	0.9688	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.5421	0.1074	5.045	.0000
Period in FC	-0.1336	0.0993	-1.346	.1801
Period in FC-S	-0.5837	0.1285	-4.543	.0000
Period in FC-W	0.3166	0.1513	2.092	.0379
Period in DC-S	0.2334	0.1434	1.627	.1055
Period in DC-W	0.8508	0.1600	5.316	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.051	0.0102	5.03	.0000	0.0682	0.0345
Period Op-2	-0.007	0.0182	-0.38	.7011	0.0231	-0.0372
Op-1-04	-0.637	0.0310	-20.58	.0000	-0.5857	-0.6881
Op-2-04	-0.589	0.0536	-10.99	.0000	-0.5008	-0.6781
Op-1-05	-0.740	0.0310	-23.91	.0000	-0.6889	-0.7913
Op-2-05	-0.793	0.0473	-16.78	.0000	-0.7153	-0.8716
Op-1-06	-0.104	0.0243	-4.27	.0000	-0.0636	-0.1439
Op-2-06	0.036	0.0473	0.75	.4519	0.1138	-0.0425
Op-1-08	0.248	0.0284	8.70	.0000	0.2946	0.2006
Op-2-08	0.123	0.0473	2.60	.0100	0.2013	0.0449
Op-1-09	0.540	0.0243	22.24	.0000	0.5802	0.4999
Op-2-09	0.343	0.0473	7.26	.0000	0.4217	0.2653
Op-1-10	0.551	0.0248	22.23	.0000	0.5919	0.5099
Op-2-10	0.444	0.0473	9.38	.0000	0.5218	0.3654
Op-1-12	0.502	0.0243	20.66	.0000	0.5418	0.4615
Op-2-12	0.388	0.0473	8.21	.0000	0.4662	0.3098

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0584	0.0209	2.793	.0058	0.0929	0.0238

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0475	0.0619	-0.77	.4440	0.0549	-0.1499
Station 05	0.0533	0.0565	0.94	.3466	0.1468	-0.0401
Station 06	-0.1394	0.0532	-2.62	.0095	-0.0515	-0.2273
Station 08	0.1245	0.0552	2.26	.0253	0.2158	0.0333
Station 09	0.1966	0.0532	3.70	.0003	0.2845	0.1087
Station 10	0.1074	0.0534	2.01	.0459	0.1956	0.0191
Station 12	0.1136	0.0532	2.14	.0339	0.2015	0.0257

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	8.12	5.83	0.455	9.09	7.15	-6.64	6.32	-5.68	-7.60
04	Op-2	6	4.79	4.17	0.653	6.47	3.11	-3.83	3.99	-2.15	-5.52
05	Op-1	16	10.30	4.65	0.327	10.99	9.60	-8.82	5.42	-8.10	-9.53
05	Op-2	7	8.22	3.47	0.475	9.39	7.06	-7.27	3.61	-6.02	-8.51
06	Op-1	26	2.21	5.07	0.208	2.64	1.78	-0.68	4.34	-0.28	-1.08
06	Op-2	7	0.79	0.90	0.131	1.11	0.47	0.16	1.46	0.67	-0.34
08	Op-1	19	0.70	1.67	0.107	0.92	0.47	0.83	2.50	1.16	0.49
08	Op-2	7	0.59	0.76	0.109	0.85	0.32	0.37	1.15	0.74	0.01
09	Op-1	26	0.09	0.49	0.026	0.14	0.04	1.44	1.35	1.59	1.29
09	Op-2	7	0.14	0.28	0.050	0.26	0.02	0.82	0.97	1.14	0.50
10	Op-1	25	0.07	0.42	0.021	0.11	0.03	1.45	1.08	1.57	1.33
10	Op-2	7	0.00	0.00	0.000	.	.	0.96	0.80	1.24	0.67
12	Op-1	26	0.15	0.56	0.029	0.21	0.09	1.38	0.90	1.51	1.26
12	Op-2	7	0.08	0.21	0.038	0.17	-0.01	0.88	0.94	1.17	0.59

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.53	1.08	0.060	1.66	1.41
Op-2	7	0.96	0.80	0.117	1.24	0.67

Analysis of Variance for HBT for 1300 - filamentous red algae-complex

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	2.89	0.0908
SEASON	1	174.000	5.47	0.0205
STATION	6	174.000	28.82	0.0000
PERIOD*SEASON	1	174.000	4.05	0.0458
STATION*PERIOD	6	174.000	3.07	0.0071
STATION*SEASON	6	174.000	0.93	0.4763
PERIOD*STATION*SEASON	6	174.000	0.48	0.8252

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.89	1.86	0.5200	0.3885	0.2685
STATION*PERIOD	18.39	12.18	0.9496	0.8242	0.1711

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.2847	0.4875	2.635	.0092
Period in FC	-0.1560	0.4503	-0.346	.7295
Period in FC-S	0.6393	0.5830	1.097	.2744
Period in FC-W	-0.9512	0.6866	-1.385	.1677
Period in DC-S	1.8248	0.6508	2.804	.0056
Period in DC-W	0.7446	0.7261	1.025	.3066

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.198	0.0463	4.27	.0000	0.2746	0.1214
Period Op-2	0.037	0.0827	0.44	.6574	0.1735	-0.1000
Op-1-04	0.667	0.1404	4.75	.0000	0.8993	0.4348
Op-2-04	0.702	0.2433	2.89	.0044	1.1047	0.3002
Op-1-05	0.622	0.1404	4.43	.0000	0.8544	0.3899
Op-2-05	0.826	0.2145	3.85	.0002	1.1811	0.4716
Op-1-06	0.475	0.1102	4.31	.0000	0.6572	0.2928
Op-2-06	0.391	0.2145	1.82	.0698	0.7462	0.0367
Op-1-08	-0.665	0.1291	-5.16	.0000	-0.4520	-0.8789
Op-2-08	-1.144	0.2145	-5.33	.0000	-0.7891	-1.4986
Op-1-09	-0.208	0.1102	-1.89	.0606	-0.0259	-0.3902
Op-2-09	-0.614	0.2145	-2.86	.0047	-0.2595	-0.9690
Op-1-10	0.006	0.1124	0.05	.9572	0.1920	-0.1799
Op-2-10	-0.812	0.2145	-3.79	.0002	-0.4577	-1.1672
Op-1-12	0.489	0.1102	4.44	.0000	0.6714	0.3070
Op-2-12	0.908	0.2145	4.23	.0000	1.2624	0.5529

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1612	0.0948	1.701	.0908	0.3180	0.0045

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0354	0.2809	-0.13	.8999	0.4291	-0.4999
Station 05	-0.2042	0.2564	-0.80	.4270	0.2199	-0.6282
Station 06	0.0836	0.2412	0.35	.7294	0.4824	-0.3152
Station 08	0.4784	0.2504	1.91	.0577	0.8924	0.0644
Station 09	0.4062	0.2412	1.68	.0939	0.8050	0.0074
Station 10	0.8185	0.2422	3.38	.0009	1.2190	0.4180
Station 12	-0.4185	0.2412	-1.74	.0845	-0.0196	-0.8173

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.00	0.00	0.000	.	.	0.54	1.77	0.80	0.27
04	Op-2	6	0.05	0.14	0.029	0.12	-0.03	0.60	1.35	1.19	0.02
05	Op-1	16	0.02	0.21	0.013	0.05	-0.01	0.52	1.77	0.78	0.26
05	Op-2	7	0.05	0.35	0.050	0.17	-0.07	0.82	1.98	1.54	0.11
06	Op-1	26	0.02	0.28	0.012	0.05	-0.00	0.36	1.94	0.55	0.17
06	Op-2	7	0.62	2.50	0.348	1.47	-0.24	0.26	3.30	1.36	-0.84
08	Op-1	19	6.69	20.62	1.573	9.99	3.38	-6.22	20.00	-3.05	-9.40
08	Op-2	7	14.92	20.42	2.866	21.93	7.91	-14.05	21.08	-6.97	-21.13
09	Op-1	26	3.69	21.87	1.325	6.42	0.96	-3.31	21.39	-0.71	-5.92
09	Op-2	7	7.23	26.81	3.536	15.88	-1.42	-6.36	27.36	2.45	-15.17
10	Op-1	25	3.15	21.32	1.290	5.81	0.49	-2.76	21.15	-0.21	-5.31
10	Op-2	7	9.30	26.94	3.510	17.89	0.71	-8.42	26.77	0.31	-17.15
12	Op-1	26	0.02	0.56	0.021	0.07	-0.02	0.36	1.70	0.53	0.18
12	Op-2	7	0.00	0.00	0.000	.	.	0.87	1.98	1.58	0.16

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.38	1.77	0.087	0.56	0.20
Op-2	7	0.87	1.98	0.289	1.58	0.16

Analysis of Variance for HBT for 0032 - Fucus gardneri

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.80	0.3726
SEASON	1	174.000	0.80	0.3726
STATION	6	174.000	0.10	0.9965
PERIOD*SEASON	1	174.000	0.80	0.3726
STATION*PERIOD	6	174.000	0.10	0.9965
STATION*SEASON	6	174.000	0.10	0.9965
PERIOD*STATION*SEASON	6	174.000	0.10	0.9965

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.80	0.00	0.2309	.	0.1000
STATION*PERIOD	0.59	0.00	0.1366	.	0.1000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0017	0.0019	0.913	.3626
Period in FC	0.0006	0.0017	0.329	.7423
Period in FC-S	0.0011	0.0022	0.509	.6115
Period in FC-W	0.0000	0.0026	0.000	1.000
Period in DC-S	0.0034	0.0025	1.368	.1732
Period in DC-W	0.0000	0.0028	0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.000	0.0002	1.83	.0690	0.0006	0.0000
Period Op-2	-0.000	0.0003	-0.00	1.000	0.0005	-0.0005
Op-1-04	0.000	0.0005	0.00	1.000	0.0009	-0.0009
Op-2-04	-0.000	0.0009	-0.00	1.000	0.0015	-0.0015
Op-1-05	-0.000	0.0005	-0.00	1.000	0.0009	-0.0009
Op-2-05	-0.000	0.0008	-0.00	1.000	0.0014	-0.0014
Op-1-06	0.001	0.0004	1.35	.1800	0.0013	-0.0001
Op-2-06	-0.000	0.0008	-0.00	1.000	0.0014	-0.0014
Op-1-08	0.000	0.0005	0.00	1.000	0.0008	-0.0008
Op-2-08	-0.000	0.0008	-0.00	1.000	0.0014	-0.0014
Op-1-09	0.001	0.0004	1.35	.1800	0.0013	-0.0001
Op-2-09	-0.000	0.0008	-0.00	1.000	0.0014	-0.0014
Op-1-10	0.001	0.0004	1.32	.1889	0.0013	-0.0001
Op-2-10	-0.000	0.0008	-0.00	1.000	0.0014	-0.0014
Op-1-12	0.001	0.0004	1.35	.1800	0.0013	-0.0001
Op-2-12	-0.000	0.0008	-0.00	1.000	0.0014	-0.0014

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0003	0.0004	0.894	.3726	0.0009	-0.0003

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0000	0.0011	0.00	1.000	0.0018	-0.0018
Station 05	0.0000	0.0010	0.00	1.000	0.0016	-0.0016
Station 06	0.0006	0.0009	0.62	.5393	0.0021	-0.0010
Station 08	0.0000	0.0010	0.00	1.000	0.0016	-0.0016
Station 09	0.0006	0.0009	0.62	.5393	0.0021	-0.0010
Station 10	0.0006	0.0009	0.61	.5411	0.0021	-0.0010
Station 12	0.0006	0.0009	0.62	.5393	0.0021	-0.0010

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
10	Op-1	25	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
10	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
12	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.00	0.03	0.001	0.00	-0.00
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0072 - Gastroclonium subarticulatum

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	2.02	0.1566
SEASON	1	174.000	65.81	0.0000
STATION	6	174.000	27.34	0.0000
PERIOD*SEASON	1	174.000	0.46	0.4982
STATION*PERIOD	6	174.000	5.57	0.0000
STATION*SEASON	6	174.000	1.02	0.4126
PERIOD*STATION*SEASON	6	174.000	0.67	0.6710

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.02	1.00	0.4110	0.2625	1.0000
STATION*PERIOD	33.40	27.02	0.9987	0.9933	0.9604

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-6.6409	4.0113	-1.656	.0996
Period in FC	-1.1277	3.7055	-0.304	.7612
Period in FC-S	4.4878	4.7968	0.936	.3508
Period in FC-W	-6.7432	5.6491	-1.194	.2342
Period in DC-S	-8.5497	5.3545	-1.597	.1121
Period in DC-W	-4.7321	5.9743	-0.792	.4294

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.904	0.3812	2.37	.0188	1.5346	0.2739
Period Op-2	2.014	0.6807	2.96	.0035	3.1397	0.8885
Op-1-04	-1.287	1.1556	-1.11	.2670	0.6240	-3.1978
Op-2-04	-1.766	2.0015	-0.88	.3787	1.5434	-5.0763
Op-1-05	3.683	1.1556	3.19	.0017	5.5937	1.7718
Op-2-05	5.025	1.7652	2.85	.0050	7.9436	2.1056
Op-1-06	-6.954	0.9065	-7.67	.0000	-5.4547	-8.4529
Op-2-06	-6.688	1.7652	-3.79	.0002	-3.7694	-9.6074
Op-1-08	-0.575	1.0619	-0.54	.5891	1.1814	-2.3307
Op-2-08	-4.191	1.7652	-2.37	.0187	-1.2722	-7.1103
Op-1-09	-0.365	0.9065	-0.40	.6880	1.1345	-1.8636
Op-2-09	10.230	1.7652	5.80	.0000	13.1490	7.3110
Op-1-10	4.545	0.9252	4.91	.0000	6.0749	3.0150
Op-2-10	1.622	1.7652	0.92	.3595	4.5408	-1.2972
Op-1-12	7.282	0.9065	8.03	.0000	8.7814	5.7833
Op-2-12	9.868	1.7652	5.59	.0000	12.7874	6.9493

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-1.1098	0.7801	-1.423	.1566	0.1803	-2.3999

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.4796	2.3112	0.21	.8359	4.3015	-3.3423
Station 05	-1.3419	2.1098	-0.64	.5256	2.1470	-4.8308
Station 06	-0.2654	1.9844	-0.13	.8937	3.0160	-3.5469
Station 08	3.6166	2.0600	1.76	.0809	7.0231	0.2101
Station 09	-10.5946	1.9844	-5.34	.0000	-7.3132	-13.8761
Station 10	2.9231	1.9930	1.47	.1443	6.2188	-0.3726
Station 12	-2.5860	1.9844	-1.30	.1942	0.6954	-5.8675

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	9.87	14.44	0.947	11.89	7.86	-1.29	17.47	1.10	-3.67
04	Op-2	6	15.17	10.21	1.674	19.48	10.87	-3.30	19.13	4.57	-11.18
05	Op-1	16	4.90	9.86	0.592	6.17	3.64	3.68	9.72	5.15	2.22
05	Op-2	7	6.61	6.18	0.779	8.51	4.70	4.61	13.99	8.90	0.31
06	Op-1	26	14.69	21.74	1.087	16.93	12.45	-6.95	17.01	-5.22	-8.69
06	Op-2	7	18.56	13.33	1.626	22.54	14.58	-7.35	16.77	-1.82	-12.88
08	Op-1	19	8.81	26.53	1.604	12.18	5.44	-0.28	24.72	3.19	-3.75
08	Op-2	7	16.03	23.40	3.198	23.86	8.21	-4.82	34.37	5.79	-15.42
09	Op-1	26	8.10	19.72	1.035	10.24	5.97	-0.36	24.83	2.42	-3.15
09	Op-2	7	1.29	2.50	0.365	2.18	0.40	9.93	13.47	14.28	5.57
10	Op-1	25	3.18	15.76	0.934	5.11	1.26	4.43	18.06	6.21	2.66
10	Op-2	7	10.16	17.43	2.389	16.00	4.31	1.06	22.26	9.16	-7.05
12	Op-1	26	0.46	3.75	0.211	0.89	0.02	7.28	10.56	8.43	6.13
12	Op-2	7	1.55	4.79	0.666	3.18	-0.08	9.67	13.54	13.99	5.34

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	7.74	11.94	0.599	8.97	6.51
Op-2	7	11.22	12.33	1.587	15.10	7.33

Analysis of Variance for HBT for 0073 - Gelidium coulteri

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.99	0.3219
SEASON	1	174.000	105.42	0.0000
STATION	6	174.000	41.45	0.0000
PERIOD*SEASON	1	174.000	0.37	0.5436
STATION*PERIOD	6	174.000	5.25	0.0001
STATION*SEASON	6	174.000	3.66	0.0019
PERIOD*STATION*SEASON	6	174.000	1.09	0.3695

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.99	0.00	0.2603	.	1.0000
STATION*PERIOD	31.52	25.16	0.9978	0.9894	0.6228

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5652	0.1702	-3.321	.0011
Period in FC	0.3350	0.1572	2.131	.0345
Period in FC-S	0.5139	0.2035	2.526	.0124
Period in FC-W	0.1561	0.2397	0.651	.5157
Period in DC-S	-0.6031	0.2272	-2.655	.0087
Period in DC-W	-0.5272	0.2534	-2.080	.0390

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.069	0.0162	-4.27	.0000	-0.0423	-0.0958
Period Op-2	-0.036	0.0289	-1.25	.2115	0.0115	-0.0840
Op-1-04	-0.224	0.0490	-4.56	.0000	-0.1425	-0.3046
Op-2-04	-0.277	0.0849	-3.26	.0013	-0.1362	-0.4170
Op-1-05	-0.267	0.0490	-5.45	.0000	-0.1861	-0.3482
Op-2-05	-0.380	0.0749	-5.08	.0000	-0.2564	-0.5041
Op-1-06	-0.086	0.0385	-2.22	.0274	-0.0220	-0.1491
Op-2-06	-0.254	0.0749	-3.40	.0008	-0.1306	-0.3782
Op-1-08	0.048	0.0450	1.06	.2913	0.1222	-0.0268
Op-2-08	0.279	0.0749	3.73	.0003	0.4033	0.1556
Op-1-09	-0.309	0.0385	-8.04	.0000	-0.2457	-0.3729
Op-2-09	-0.064	0.0749	-0.85	.3967	0.0602	-0.1875
Op-1-10	-0.191	0.0393	-4.86	.0000	-0.1258	-0.2556
Op-2-10	0.049	0.0749	0.65	.5155	0.1726	-0.0750
Op-1-12	0.545	0.0385	14.17	.0000	0.6086	0.4814
Op-2-12	0.393	0.0749	5.25	.0000	0.5170	0.2693

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0329	0.0331	-0.993	.3219	0.0219	-0.0876

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0531	0.0980	0.54	.5889	0.2152	-0.1091
Station 05	0.1131	0.0895	1.26	.2081	0.2611	-0.0349
Station 06	0.1688	0.0842	2.01	.0464	0.3081	0.0296
Station 08	-0.2318	0.0874	-2.65	.0087	-0.0873	-0.3763
Station 09	-0.2457	0.0842	-2.92	.0040	-0.1065	-0.3849
Station 10	-0.2395	0.0845	-2.83	.0052	-0.0997	-0.3793
Station 12	0.1518	0.0842	1.80	.0730	0.2911	0.0126

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	8.45	15.69	1.164	10.93	5.97	-4.26	13.99	-2.01	-6.52
04	Op-2	6	8.38	13.12	1.957	13.41	3.35	-5.47	11.08	-1.13	-9.81
05	Op-1	16	9.77	18.33	1.465	12.89	6.65	-5.59	16.46	-2.71	-8.46
05	Op-2	7	11.97	19.86	3.216	19.84	4.11	-9.12	17.81	-1.80	-16.44
06	Op-1	26	6.61	14.72	0.811	8.28	4.94	-2.16	16.32	-0.58	-3.74
06	Op-2	7	6.91	10.42	1.422	10.40	3.43	-4.06	8.26	-0.99	-7.12
08	Op-1	19	4.92	16.25	1.068	7.16	2.68	-0.58	16.91	1.53	-2.70
08	Op-2	7	1.35	3.33	0.469	2.50	0.20	1.51	4.69	3.05	-0.04
09	Op-1	26	13.05	29.31	1.859	16.88	9.22	-8.61	30.94	-4.83	-12.38
09	Op-2	7	4.63	10.14	1.435	8.15	1.12	-1.78	9.58	1.45	-5.00
10	Op-1	25	10.06	24.17	1.502	13.16	6.96	-5.68	23.99	-2.76	-8.59
10	Op-2	7	4.14	13.19	1.797	8.53	-0.26	-1.28	11.53	2.46	-5.02
12	Op-1	26	0.59	2.01	0.112	0.82	0.36	3.85	6.32	4.48	3.23
12	Op-2	7	0.57	1.25	0.152	0.94	0.19	2.29	3.02	3.23	1.35

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	4.44	6.04	0.263	4.99	3.90
Op-2	7	2.86	3.44	0.424	3.89	1.82

Analysis of Variance for HBT for 0109 - Grateloupia doryphora

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.70	0.4033
SEASON	1	174.000	1.04	0.3104
STATION	6	174.000	3.69	0.0018
PERIOD*SEASON	1	174.000	1.45	0.2298
STATION*PERIOD	6	174.000	0.22	0.9693
STATION*SEASON	6	174.000	2.80	0.0125
PERIOD*STATION*SEASON	6	174.000	0.40	0.8802

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.70	0.00	0.2155	.	0.1571
STATION*PERIOD	1.33	0.00	0.1864	.	0.1440

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0457	0.2453	-0.186	.8525
Period in FC	-0.2341	0.2266	-1.033	.3030
Period in FC-S	-0.4162	0.2933	-1.419	.1578
Period in FC-W	-0.0521	0.3455	-0.151	.8804
Period in DC-S	-0.2660	0.3274	-0.813	.4176
Period in DC-W	0.1747	0.3653	0.478	.6332

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.021	0.0233	-0.91	.3654	0.0174	-0.0597
Period Op-2	0.019	0.0416	0.45	.6518	0.0876	-0.0500
Op-1-04	0.047	0.0707	0.66	.5109	0.1634	-0.0703
Op-2-04	0.110	0.1224	0.90	.3703	0.3123	-0.0925
Op-1-05	0.047	0.0707	0.66	.5109	0.1634	-0.0703
Op-2-05	0.110	0.1079	1.02	.3098	0.2884	-0.0686
Op-1-06	0.003	0.0554	0.05	.9624	0.0943	-0.0891
Op-2-06	0.110	0.1079	1.02	.3098	0.2884	-0.0686
Op-1-08	-0.135	0.0649	-2.08	.0394	-0.0274	-0.2422
Op-2-08	-0.137	0.1079	-1.27	.2054	0.0413	-0.3157
Op-1-09	0.034	0.0554	0.61	.5449	0.1253	-0.0580
Op-2-09	0.072	0.1079	0.66	.5070	0.2503	-0.1067
Op-1-10	-0.176	0.0566	-3.12	.0021	-0.0827	-0.2698
Op-2-10	-0.243	0.1079	-2.25	.0259	-0.0641	-0.4211
Op-1-12	0.034	0.0554	0.61	.5449	0.1253	-0.0580
Op-2-12	0.110	0.1079	1.02	.3098	0.2884	-0.0686

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0400	0.0477	-0.838	.4033	0.0389	-0.1189

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0634	0.1413	-0.45	.6543	0.1703	-0.2971
Station 05	-0.0634	0.1290	-0.49	.6238	0.1500	-0.2767
Station 06	-0.1073	0.1213	-0.88	.3777	0.0933	-0.3080
Station 08	0.0024	0.1260	0.02	.9847	0.2107	-0.2059
Station 09	-0.0381	0.1213	-0.31	.7536	0.1625	-0.2388
Station 10	0.0664	0.1219	0.54	.5868	0.2679	-0.1352
Station 12	-0.0763	0.1213	-0.63	.5302	0.1243	-0.2770

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.00	0.00	0.000	.	.	0.02	0.31	0.06	-0.02
04	Op-2	6	0.00	0.00	0.000	.	.	0.07	0.35	0.22	-0.08
05	Op-1	16	0.00	0.00	0.000	.	.	0.02	0.31	0.06	-0.02
05	Op-2	7	0.00	0.00	0.000	.	.	0.06	0.35	0.18	-0.06
06	Op-1	26	0.01	0.28	0.011	0.04	-0.01	0.00	0.56	0.03	-0.03
06	Op-2	7	0.00	0.00	0.000	.	.	0.06	0.35	0.18	-0.06
08	Op-1	19	0.10	0.56	0.041	0.18	0.01	-0.07	0.87	0.02	-0.17
08	Op-2	7	0.32	2.01	0.284	1.01	-0.38	-0.26	2.29	0.45	-0.96
09	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.31	0.04	-0.01
09	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.05	0.42	0.18	-0.08
10	Op-1	25	0.20	2.85	0.116	0.44	-0.04	-0.19	3.16	0.06	-0.43
10	Op-2	7	0.96	5.69	0.802	2.93	-1.00	-0.90	6.04	1.09	-2.89
12	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.31	0.04	-0.01
12	Op-2	7	0.00	0.00	0.000	.	.	0.06	0.35	0.18	-0.06

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.01	0.31	0.012	0.04	-0.01
Op-2	7	0.06	0.35	0.049	0.18	-0.06

Analysis of Variance for HBT for 0167 - juv. articulated coralline algae

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	3.01	0.0846
SEASON	1	174.000	0.87	0.3519
STATION	6	174.000	18.08	0.0000
PERIOD*SEASON	1	174.000	1.45	0.2297
STATION*PERIOD	6	174.000	0.95	0.4601
STATION*SEASON	6	174.000	1.89	0.0857
PERIOD*STATION*SEASON	6	174.000	1.64	0.1382

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.01	1.97	0.5334	0.4042	0.9829
STATION*PERIOD	5.71	0.00	0.5002	.	0.5911

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0431	0.1282	0.336	.7373
Period in FC	0.2597	0.1185	2.192	.0297
Period in FC-S	-0.0154	0.1534	-0.100	.9204
Period in FC-W	0.5348	0.1806	2.961	.0035
Period in DC-S	0.1077	0.1712	0.629	.5300
Period in DC-W	-0.0216	0.1910	-0.113	.9103

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.033	0.0122	-2.67	.0083	-0.0124	-0.0527
Period Op-2	-0.076	0.0218	-3.48	.0006	-0.0398	-0.1118
Op-1-04	-0.169	0.0369	-4.57	.0000	-0.1076	-0.2298
Op-2-04	-0.187	0.0640	-2.92	.0040	-0.0810	-0.2926
Op-1-05	-0.114	0.0369	-3.09	.0023	-0.0531	-0.1753
Op-2-05	-0.247	0.0564	-4.38	.0000	-0.1540	-0.3406
Op-1-06	-0.045	0.0290	-1.56	.1201	0.0027	-0.0932
Op-2-06	-0.154	0.0564	-2.73	.0071	-0.0605	-0.2471
Op-1-08	0.024	0.0340	0.72	.4741	0.0805	-0.0318
Op-2-08	-0.042	0.0564	-0.75	.4559	0.0512	-0.1355
Op-1-09	-0.152	0.0290	-5.25	.0000	-0.1042	-0.2001
Op-2-09	-0.188	0.0564	-3.32	.0011	-0.0942	-0.2808
Op-1-10	0.113	0.0296	3.82	.0002	0.1621	0.0642
Op-2-10	0.139	0.0564	2.46	.0147	0.2324	0.0457
Op-1-12	0.115	0.0290	3.97	.0001	0.1630	0.0671
Op-2-12	0.148	0.0564	2.62	.0095	0.2412	0.0546

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0433	0.0249	1.734	.0846	0.0845	0.0020

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0181	0.0739	0.25	.8065	0.1403	-0.1041
Station 05	0.1331	0.0675	1.97	.0501	0.2446	0.0215
Station 06	0.1085	0.0634	1.71	.0889	0.2134	0.0036
Station 08	0.0665	0.0659	1.01	.3138	0.1754	-0.0424
Station 09	0.0354	0.0634	0.56	.5780	0.1403	-0.0696
Station 10	-0.0259	0.0637	-0.41	.6845	0.0794	-0.1313
Station 12	-0.0329	0.0634	-0.52	.6050	0.0720	-0.1378

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	1.22	4.79	0.273	1.80	0.64	-0.73	4.13	-0.25	-1.21
04	Op-2	6	1.10	1.18	0.204	1.62	0.58	-0.68	1.22	-0.17	-1.20
05	Op-1	16	0.94	2.43	0.195	1.36	0.53	-0.45	2.95	-0.03	-0.88
05	Op-2	7	1.69	3.33	0.514	2.94	0.43	-1.24	2.95	-0.19	-2.28
06	Op-1	26	0.52	1.53	0.087	0.70	0.34	-0.13	2.88	0.12	-0.39
06	Op-2	7	1.16	3.12	0.434	2.22	0.10	-0.71	2.64	0.19	-1.61
08	Op-1	19	0.37	1.74	0.108	0.60	0.14	0.10	2.99	0.44	-0.23
08	Op-2	7	0.69	1.67	0.283	1.39	0.00	-0.24	1.98	0.42	-0.90
09	Op-1	26	1.07	2.78	0.184	1.45	0.69	-0.68	2.64	-0.39	-0.97
09	Op-2	7	1.59	4.03	0.544	2.92	0.26	-1.14	4.72	0.36	-2.63
10	Op-1	25	0.02	0.14	0.008	0.03	0.00	0.37	2.57	0.61	0.13
10	Op-2	7	0.05	0.21	0.033	0.13	-0.03	0.40	0.80	0.66	0.15
12	Op-1	26	0.01	0.14	0.007	0.03	-0.00	0.38	2.43	0.60	0.16
12	Op-2	7	0.03	0.14	0.021	0.08	-0.02	0.42	0.94	0.72	0.12

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.39	2.50	0.111	0.62	0.16
Op-2	7	0.45	0.80	0.109	0.72	0.18

Analysis of Variance for HBT for 0076 - Mastocarpus jardinii

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	1.57	0.2123
SEASON	1	174.000	11.20	0.0010
STATION	6	174.000	134.63	0.0000
PERIOD*SEASON	1	174.000	8.49	0.0040
STATION*PERIOD	6	174.000	2.50	0.0239
STATION*SEASON	6	174.000	1.48	0.1872
PERIOD*STATION*SEASON	6	174.000	0.62	0.7144

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.57	0.55	0.3472	0.1908	1.0000
STATION*PERIOD	15.02	8.84	0.8982	0.6865	0.9999

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2080	0.0832	-2.500	.0134
Period in FC	0.0662	0.0769	0.861	.3903
Period in FC-S	-0.0986	0.0995	-0.991	.3229
Period in FC-W	0.2310	0.1172	1.972	.0502
Period in DC-S	-0.3733	0.1111	-3.361	.0010
Period in DC-W	-0.0427	0.1239	-0.345	.7308

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.162	0.0079	20.50	.0000	0.1752	0.1490
Period Op-2	0.182	0.0141	12.92	.0000	0.2057	0.1590
Op-1-04	0.138	0.0240	5.75	.0000	0.1775	0.0982
Op-2-04	0.102	0.0415	2.47	.0146	0.1711	0.0338
Op-1-05	0.089	0.0240	3.70	.0003	0.1283	0.0490
Op-2-05	0.136	0.0366	3.70	.0003	0.1961	0.0750
Op-1-06	-0.283	0.0188	-15.05	.0000	-0.2520	-0.3142
Op-2-06	-0.361	0.0366	-9.85	.0000	-0.3003	-0.4214
Op-1-08	0.311	0.0220	14.12	.0000	0.3474	0.2746
Op-2-08	0.348	0.0366	9.51	.0000	0.4087	0.2876
Op-1-09	0.213	0.0188	11.33	.0000	0.2441	0.1819
Op-2-09	0.344	0.0366	9.41	.0000	0.4050	0.2839
Op-1-10	0.323	0.0192	16.84	.0000	0.3548	0.2914
Op-2-10	0.355	0.0366	9.70	.0000	0.4157	0.2946
Op-1-12	0.344	0.0188	18.31	.0000	0.3753	0.3132
Op-2-12	0.352	0.0366	9.60	.0000	0.4121	0.2910

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0203	0.0162	-1.252	.2123	0.0065	-0.0470

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0354	0.0479	0.74	.4616	0.1147	-0.0439
Station 05	-0.0469	0.0438	-1.07	.2853	0.0255	-0.1193
Station 06	0.0777	0.0412	1.89	.0606	0.1458	0.0097
Station 08	-0.0371	0.0427	-0.87	.3861	0.0335	-0.1078
Station 09	-0.1315	0.0412	-3.19	.0017	-0.0634	-0.1996
Station 10	-0.0321	0.0413	-0.78	.4390	0.0363	-0.1004
Station 12	-0.0073	0.0412	-0.18	.8597	0.0608	-0.0754

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.50	0.63	0.048	0.61	0.40	0.56	1.25	0.70	0.41
04	Op-2	6	0.71	0.83	0.121	1.02	0.40	0.63	1.25	1.17	0.09
05	Op-1	16	0.70	1.11	0.089	0.89	0.51	0.36	1.49	0.57	0.15
05	Op-2	7	0.73	1.25	0.155	1.11	0.35	0.62	0.90	0.96	0.27
06	Op-1	26	3.44	5.28	0.249	3.96	2.93	-2.19	5.52	-1.70	-2.68
06	Op-2	7	4.38	3.47	0.475	5.55	3.22	-3.04	2.74	-2.12	-3.96
08	Op-1	19	0.03	0.14	0.012	0.05	0.00	1.09	0.97	1.22	0.96
08	Op-2	7	0.02	0.14	0.020	0.07	-0.03	1.33	0.97	1.70	0.96
09	Op-1	26	0.42	1.81	0.094	0.62	0.23	0.83	2.36	1.08	0.58
09	Op-2	7	0.03	0.14	0.021	0.08	-0.02	1.32	0.97	1.69	0.95
10	Op-1	25	0.07	1.11	0.045	0.16	-0.03	1.19	1.67	1.38	1.01
10	Op-2	7	0.00	0.00	0.000	.	.	1.35	1.11	1.74	0.95
12	Op-1	26	0.01	0.07	0.004	0.01	-0.00	1.25	1.32	1.41	1.09
12	Op-2	7	0.01	0.07	0.010	0.03	-0.01	1.34	1.11	1.73	0.95

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.25	1.32	0.078	1.41	1.09
Op-2	7	1.35	1.11	0.161	1.74	0.95

Analysis of Variance for HBT for 0082 - Mastocarpus papillatus

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	18.66	0.0000
SEASON	1	174.000	3.40	0.0668
STATION	6	174.000	24.41	0.0000
PERIOD*SEASON	1	174.000	0.01	0.9112
STATION*PERIOD	6	174.000	7.34	0.0000
STATION*SEASON	6	174.000	1.05	0.3972
PERIOD*STATION*SEASON	6	174.000	0.55	0.7714

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	18.66	17.45	0.9961	0.9941	1.0000
STATION*PERIOD	44.01	37.50	0.9999	0.9996	0.1031

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.9474	0.3704	-5.257	.0000
Period in FC	-0.2313	0.3422	-0.676	.5000
Period in FC-S	-0.1084	0.4430	-0.245	.8070
Period in FC-W	-0.3542	0.5217	-0.679	.4981
Period in DC-S	-2.1266	0.4945	-4.301	.0000
Period in DC-W	-1.7682	0.5517	-3.205	.0016

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.122	0.0352	-3.46	.0007	-0.0635	-0.1799
Period Op-2	0.190	0.0629	3.01	.0030	0.2934	0.0856
Op-1-04	-0.177	0.1067	-1.66	.0989	-0.0006	-0.3535
Op-2-04	-0.143	0.1848	-0.77	.4406	0.1628	-0.4485
Op-1-05	-0.069	0.1067	-0.64	.5204	0.1077	-0.2452
Op-2-05	0.107	0.1630	0.66	.5120	0.3767	-0.1625
Op-1-06	0.007	0.0837	0.08	.9356	0.1452	-0.1317
Op-2-06	0.028	0.1630	0.17	.8636	0.2976	-0.2415
Op-1-08	-0.204	0.0981	-2.08	.0394	-0.0414	-0.3657
Op-2-08	0.288	0.1630	1.77	.0785	0.5580	0.0189
Op-1-09	0.313	0.0837	3.74	.0003	0.4512	0.1743
Op-2-09	0.882	0.1630	5.41	.0000	1.1520	0.6129
Op-1-10	-0.106	0.0854	-1.23	.2185	0.0358	-0.2468
Op-2-10	1.111	0.1630	6.82	.0000	1.3806	0.8414
Op-1-12	-0.617	0.0837	-7.37	.0000	-0.4785	-0.7553
Op-2-12	-0.948	0.1630	-5.81	.0000	-0.6781	-1.2172

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3112	0.0720	-4.320	.0000	-0.1921	-0.4304

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0342	0.2134	-0.16	.8729	0.3188	-0.3871
Station 05	-0.1758	0.1948	-0.90	.3681	0.1464	-0.4980
Station 06	-0.0213	0.1832	-0.12	.9078	0.2818	-0.3243
Station 08	-0.4920	0.1902	-2.59	.0105	-0.1774	-0.8066
Station 09	-0.5697	0.1832	-3.11	.0022	-0.2666	-0.8727
Station 10	-1.2165	0.1840	-6.61	.0000	-0.9122	-1.5208
Station 12	0.3308	0.1832	1.80	.0728	0.6338	0.0277

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	6.87	7.78	0.670	8.30	5.44	-1.94	12.26	-0.20	-3.67
04	Op-2	6	4.49	4.58	0.741	6.40	2.59	-0.86	4.76	1.06	-2.79
05	Op-1	16	6.28	11.53	1.078	8.58	3.99	-1.35	18.23	0.96	-3.66
05	Op-2	7	4.04	7.85	1.114	6.76	1.31	-0.21	7.12	1.98	-2.41
06	Op-1	26	6.20	12.57	0.606	7.45	4.95	0.25	16.39	1.90	-1.40
06	Op-2	7	4.01	6.74	0.989	6.43	1.59	-0.18	6.22	1.73	-2.10
08	Op-1	19	12.15	28.19	2.141	16.64	7.65	-6.55	27.67	-2.05	-11.05
08	Op-2	7	3.05	7.36	1.007	5.51	0.58	0.78	9.34	3.55	-1.99
09	Op-1	26	4.75	13.82	0.876	6.55	2.94	1.70	21.32	3.61	-0.22
09	Op-2	7	0.72	2.78	0.378	1.65	-0.20	3.10	5.17	4.94	1.26
10	Op-1	25	15.07	46.87	2.701	20.64	9.49	-8.66	43.30	-3.52	-13.80
10	Op-2	7	0.65	3.96	0.552	2.01	-0.70	3.17	5.66	5.09	1.25
12	Op-1	26	28.21	53.82	3.073	34.54	21.88	-21.77	62.60	-14.93	-28.60
12	Op-2	7	37.42	46.74	7.877	56.70	18.15	-33.60	44.27	-15.00	-52.20

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	6.44	15.14	0.756	8.00	4.89
Op-2	7	3.82	5.07	0.651	5.42	2.23

Analysis of Variance for HBT for 0102 - Mazzaella affinis

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	31.83	0.0000
SEASON	1	174.000	0.79	0.3756
STATION	6	174.000	3.03	0.0076
PERIOD*SEASON	1	174.000	0.23	0.6322
STATION*PERIOD	6	174.000	0.19	0.9787
STATION*SEASON	6	174.000	0.21	0.9737
PERIOD*STATION*SEASON	6	174.000	0.24	0.9633

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	31.83	30.46	1.0000	0.9999	0.8512
STATION*PERIOD	1.15	0.00	0.1741	.	0.2361

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	7.1297	1.6318	4.369	.0000
Period in FC	5.4031	1.5073	3.585	.0004
Period in FC-S	4.7576	1.9513	2.438	.0158
Period in FC-W	6.0486	2.2980	2.632	.0092
Period in DC-S	6.7101	2.1781	3.081	.0024
Period in DC-W	7.5492	2.4303	3.106	.0022

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	4.780	0.1551	30.83	.0000	5.0366	4.5238
Period Op-2	2.990	0.2769	10.80	.0000	3.4477	2.5320
Op-1-04	4.599	0.4701	9.78	.0000	5.3759	3.8212
Op-2-04	2.370	0.8142	2.91	.0041	3.7162	1.0234
Op-1-05	4.785	0.4701	10.18	.0000	5.5625	4.0078
Op-2-05	3.383	0.7181	4.71	.0000	4.5699	2.1951
Op-1-06	5.337	0.3688	14.47	.0000	5.9463	4.7267
Op-2-06	3.565	0.7181	4.96	.0000	4.7522	2.3774
Op-1-08	3.414	0.4320	7.90	.0000	4.1283	2.6996
Op-2-08	1.565	0.7181	2.18	.0306	2.7528	0.3780
Op-1-09	5.027	0.3688	13.63	.0000	5.6365	4.4169
Op-2-09	3.796	0.7181	5.29	.0000	4.9837	2.6089
Op-1-10	4.694	0.3764	12.47	.0000	5.3168	4.0720
Op-2-10	2.827	0.7181	3.94	.0001	4.0144	1.6396
Op-1-12	5.606	0.3688	15.20	.0000	6.2161	4.9965
Op-2-12	3.423	0.7181	4.77	.0000	4.6104	2.2356

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	1.7904	0.3173	5.642	.0000	2.3152	1.2656

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	2.2287	0.9402	2.37	.0189	3.7834	0.6740
Station 05	1.4026	0.8582	1.63	.1040	2.8219	-0.0166
Station 06	1.7717	0.8072	2.19	.0295	3.1066	0.4369
Station 08	1.8486	0.8380	2.21	.0287	3.2343	0.4629
Station 09	1.2304	0.8072	1.52	.1293	2.5653	-0.1044
Station 10	1.8674	0.8107	2.30	.0224	3.2081	0.5268
Station 12	2.1833	0.8072	2.70	.0075	3.5181	0.8484

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	1.36	2.15	0.167	1.71	1.00	4.60	5.73	5.55	3.65
04	Op-2	6	2.06	2.50	0.370	3.01	1.11	2.45	5.17	4.24	0.67
05	Op-1	16	1.17	2.57	0.187	1.57	0.77	4.79	6.08	5.75	3.82
05	Op-2	7	0.93	1.04	0.161	1.33	0.54	3.40	3.44	4.41	2.40
06	Op-1	26	0.65	1.39	0.064	0.78	0.52	5.34	5.45	6.02	4.66
06	Op-2	7	0.74	1.67	0.195	1.22	0.27	3.59	3.65	4.63	2.56
08	Op-1	19	2.45	5.83	0.434	3.36	1.54	3.43	9.41	4.69	2.18
08	Op-2	7	2.74	3.47	0.502	3.97	1.51	1.60	5.38	3.53	-0.34
09	Op-1	26	0.96	2.92	0.155	1.28	0.64	5.03	6.11	5.76	4.30
09	Op-2	7	0.48	1.87	0.247	1.08	-0.13	3.86	5.59	5.57	2.15
10	Op-1	25	1.30	2.92	0.168	1.64	0.95	4.70	6.22	5.40	3.99
10	Op-2	7	1.46	2.50	0.353	2.32	0.60	2.88	4.62	4.35	1.41
12	Op-1	26	0.38	2.43	0.120	0.63	0.13	5.61	6.35	6.36	4.86
12	Op-2	7	0.92	2.29	0.343	1.76	0.08	3.41	5.87	5.06	1.77

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	5.99	5.66	0.326	6.66	5.31
Op-2	7	4.34	3.72	0.487	5.53	3.14

Analysis of Variance for HBT for 1324 - Mazzaella flaccida

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	6.84	0.0097
SEASON	1	174.000	30.54	0.0000
STATION	6	174.000	446.66	0.0000
PERIOD*SEASON	1	174.000	8.88	0.0033
STATION*PERIOD	6	174.000	1.19	0.3113
STATION*SEASON	6	174.000	27.43	0.0000
PERIOD*STATION*SEASON	6	174.000	0.31	0.9321

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.84	5.76	0.8314	0.7720	1.0000
STATION*PERIOD	7.17	1.09	0.5936	0.1695	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3908	0.1104	3.539	.0005
Period in FC	0.0022	0.1020	0.022	.9825
Period in FC-S	-0.1467	0.1320	-1.111	.2683
Period in FC-W	0.1511	0.1555	0.972	.3324
Period in DC-S	0.0919	0.1474	0.623	.5339
Period in DC-W	0.6898	0.1645	4.194	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	1.057	0.0105	100.78	.0000	1.0748	1.0401
Period Op-2	1.001	0.0187	53.44	.0000	1.0323	0.9703
Op-1-04	0.450	0.0318	14.16	.0000	0.5029	0.3977
Op-2-04	0.462	0.0551	8.38	.0000	0.5528	0.3706
Op-1-05	0.630	0.0318	19.81	.0000	0.6827	0.5775
Op-2-05	0.658	0.0486	13.54	.0000	0.7384	0.5777
Op-1-06	0.160	0.0250	6.42	.0000	0.2016	0.1190
Op-2-06	0.119	0.0486	2.44	.0156	0.1990	0.0383
Op-1-08	1.567	0.0292	53.60	.0000	1.6153	1.5186
Op-2-08	1.445	0.0486	29.74	.0000	1.5252	1.3645
Op-1-09	1.482	0.0250	59.40	.0000	1.5236	1.4410
Op-2-09	1.445	0.0486	29.74	.0000	1.5252	1.3645
Op-1-10	1.574	0.0255	61.81	.0000	1.6164	1.5322
Op-2-10	1.449	0.0486	29.81	.0000	1.5289	1.3682
Op-1-12	1.538	0.0250	61.63	.0000	1.5792	1.4967
Op-2-12	1.432	0.0486	29.48	.0000	1.5127	1.3520

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0562	0.0215	2.615	.0097	0.0917	0.0206

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0114	0.0636	-0.18	.8579	0.0938	-0.1166
Station 05	-0.0280	0.0581	-0.48	.6308	0.0681	-0.1240
Station 06	0.0416	0.0546	0.76	.4472	0.1319	-0.0487
Station 08	0.1221	0.0567	2.15	.0327	0.2158	0.0283
Station 09	0.0374	0.0546	0.68	.4943	0.1277	-0.0529
Station 10	0.1257	0.0549	2.29	.0231	0.2165	0.0350
Station 12	0.1056	0.0546	1.93	.0548	0.1959	0.0153

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	17.83	37.78	3.509	25.31	10.35	22.20	24.79	25.95	18.45
04	Op-2	6	14.21	22.08	3.531	23.29	5.14	21.53	17.57	29.73	13.32
05	Op-1	16	10.69	21.74	2.020	14.99	6.38	29.35	31.35	34.25	24.44
05	Op-2	7	8.36	17.01	2.527	14.55	2.18	24.63	23.13	33.85	15.41
06	Op-1	26	28.54	40.69	2.682	34.06	23.02	11.32	26.25	14.20	8.43
06	Op-2	7	25.09	36.04	5.192	37.79	12.39	7.91	16.53	14.20	1.61
08	Op-1	19	0.02	0.14	0.009	0.04	-0.00	38.96	47.99	46.55	31.37
08	Op-2	7	0.01	0.07	0.010	0.03	-0.01	32.99	35.35	47.95	18.03
09	Op-1	26	0.50	5.00	0.257	1.03	-0.03	39.36	48.40	45.49	33.23
09	Op-2	7	0.01	0.07	0.010	0.03	-0.01	32.99	35.35	47.95	18.03
10	Op-1	25	0.01	0.14	0.006	0.02	-0.00	40.40	48.47	46.75	34.05
10	Op-2	7	0.00	0.00	0.000	.	.	33.00	35.42	47.97	18.03
12	Op-1	26	0.13	1.53	0.063	0.26	-0.00	39.73	48.47	45.91	33.56
12	Op-2	7	0.05	0.35	0.050	0.17	-0.07	32.95	35.42	47.88	18.01

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	39.86	48.47	3.010	46.06	33.66
Op-2	7	33.00	35.42	6.118	47.97	18.03

Analysis of Variance for HBT for 0090 - Mazzaella heterocarpa

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	1.34	0.2482
SEASON	1	174.000	2.16	0.1431
STATION	6	174.000	11.00	0.0000
PERIOD*SEASON	1	174.000	20.01	0.0000
STATION*PERIOD	6	174.000	2.51	0.0233
STATION*SEASON	6	174.000	3.98	0.0009
PERIOD*STATION*SEASON	6	174.000	1.68	0.1284

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.34	0.33	0.3144	0.1546	0.9892
STATION*PERIOD	15.09	8.91	0.8996	0.6901	0.5493

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.4902	0.1686	2.907	.0041
Period in FC	-0.2241	0.1558	-1.439	.1520
Period in FC-S	-0.9450	0.2017	-4.686	.0000
Period in FC-W	0.4967	0.2375	2.092	.0379
Period in DC-S	0.1842	0.2251	0.818	.4143
Period in DC-W	0.7961	0.2512	3.170	.0018

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.281	0.0160	17.55	.0000	0.3077	0.2547
Period Op-2	0.243	0.0286	8.50	.0000	0.2905	0.1959
Op-1-04	0.092	0.0486	1.90	.0590	0.1727	0.0120
Op-2-04	0.252	0.0841	2.99	.0032	0.3911	0.1128
Op-1-05	0.197	0.0486	4.05	.0001	0.2770	0.1163
Op-2-05	0.109	0.0742	1.47	.1425	0.2320	-0.0134
Op-1-06	-0.036	0.0381	-0.94	.3470	0.0271	-0.0990
Op-2-06	0.116	0.0742	1.56	.1199	0.2387	-0.0067
Op-1-08	0.487	0.0446	10.92	.0000	0.5611	0.4135
Op-2-08	0.292	0.0742	3.93	.0001	0.4143	0.1688
Op-1-09	0.440	0.0381	11.54	.0000	0.5027	0.3767
Op-2-09	0.354	0.0742	4.77	.0000	0.4765	0.2311
Op-1-10	0.377	0.0389	9.69	.0000	0.4414	0.3128
Op-2-10	0.227	0.0742	3.06	.0025	0.3501	0.1047
Op-1-12	0.411	0.0381	10.79	.0000	0.4742	0.3482
Op-2-12	0.352	0.0742	4.75	.0000	0.4750	0.2296

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0380	0.0328	1.159	.2482	0.0922	-0.0162

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1596	0.0972	-1.64	.1023	0.0011	-0.3203
Station 05	0.0873	0.0887	0.98	.3261	0.2340	-0.0593
Station 06	-0.1519	0.0834	-1.82	.0703	-0.0140	-0.2899
Station 08	0.1957	0.0866	2.26	.0250	0.3389	0.0525
Station 09	0.0859	0.0834	1.03	.3045	0.2239	-0.0520
Station 10	0.1496	0.0838	1.79	.0758	0.2882	0.0111
Station 12	0.0589	0.0834	0.71	.4814	0.1968	-0.0791

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	1.64	5.35	0.451	2.61	0.68	-0.27	5.49	0.60	-1.14
04	Op-2	6	0.19	0.42	0.061	0.34	0.03	0.75	1.49	1.38	0.12
05	Op-1	16	0.94	3.19	0.266	1.51	0.38	0.43	2.36	0.88	-0.02
05	Op-2	7	0.53	1.11	0.136	0.86	0.19	0.37	1.74	0.93	-0.20
06	Op-1	26	1.73	3.75	0.262	2.27	1.19	-0.39	3.37	0.02	-0.80
06	Op-2	7	0.53	1.11	0.168	0.94	0.11	0.37	2.74	1.23	-0.50
08	Op-1	19	0.12	1.25	0.068	0.27	-0.02	1.27	2.64	1.59	0.95
08	Op-2	7	0.12	0.49	0.072	0.30	-0.06	0.77	1.98	1.46	0.08
09	Op-1	26	0.16	1.04	0.054	0.27	0.05	1.18	2.08	1.40	0.97
09	Op-2	7	0.04	0.21	0.030	0.11	-0.03	0.85	1.91	1.49	0.22
10	Op-1	25	0.31	1.53	0.090	0.49	0.12	1.03	2.01	1.25	0.82
10	Op-2	7	0.53	2.92	0.413	1.54	-0.48	0.37	2.29	1.01	-0.27
12	Op-1	26	0.23	1.53	0.076	0.39	0.07	1.12	2.01	1.34	0.90
12	Op-2	7	0.04	0.14	0.021	0.09	-0.01	0.85	1.84	1.46	0.25

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.35	2.71	0.128	1.61	1.08
Op-2	7	0.89	1.91	0.247	1.50	0.29

Analysis of Variance for HBT for 0081 - Mazzaella leptorhynchos

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.72	0.3981
SEASON	1	174.000	27.53	0.0000
STATION	6	174.000	3.70	0.0017
PERIOD*SEASON	1	174.000	12.93	0.0004
STATION*PERIOD	6	174.000	2.42	0.0287
STATION*SEASON	6	174.000	0.53	0.7821
PERIOD*STATION*SEASON	6	174.000	0.85	0.5338

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.72	0.00	0.2179	.	0.8269
STATION*PERIOD	14.50	8.34	0.8872	0.6601	0.2773

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1600	0.1597	-1.002	.3176
Period in FC	-0.0241	0.1475	-0.163	.8705
Period in FC-S	-0.4594	0.1909	-2.406	.0172
Period in FC-W	0.4113	0.2249	1.829	.0691
Period in DC-S	-0.5063	0.2131	-2.375	.0186
Period in DC-W	0.1862	0.2378	0.783	.4346

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.160	0.0152	10.58	.0000	0.1856	0.1354
Period Op-2	0.187	0.0271	6.89	.0000	0.2316	0.1420
Op-1-04	0.129	0.0460	2.80	.0056	0.2050	0.0529
Op-2-04	0.196	0.0797	2.46	.0150	0.3274	0.0639
Op-1-05	0.232	0.0460	5.05	.0000	0.3083	0.1562
Op-2-05	0.249	0.0703	3.55	.0005	0.3656	0.1332
Op-1-06	0.124	0.0361	3.43	.0007	0.1836	0.0642
Op-2-06	0.064	0.0703	0.91	.3626	0.1803	-0.0521
Op-1-08	-0.003	0.0423	-0.07	.9467	0.0671	-0.0727
Op-2-08	0.148	0.0703	2.10	.0372	0.2637	0.0313
Op-1-09	0.292	0.0361	8.08	.0000	0.3512	0.2318
Op-2-09	0.293	0.0703	4.16	.0000	0.4087	0.1763
Op-1-10	0.102	0.0368	2.78	.0060	0.1633	0.0415
Op-2-10	0.289	0.0703	4.11	.0001	0.4048	0.1724
Op-1-12	0.247	0.0361	6.86	.0000	0.3070	0.1877
Op-2-12	0.070	0.0703	0.99	.3220	0.1860	-0.0464

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0263	0.0311	-0.847	.3981	0.0250	-0.0777

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0667	0.0920	-0.73	.4694	0.0854	-0.2188
Station 05	-0.0171	0.0840	-0.20	.8385	0.1217	-0.1560
Station 06	0.0598	0.0790	0.76	.4503	0.1904	-0.0709
Station 08	-0.1504	0.0820	-1.83	.0684	-0.0148	-0.2859
Station 09	-0.0010	0.0790	-0.01	.9900	0.1296	-0.1316
Station 10	-0.1863	0.0793	-2.35	.0200	-0.0551	-0.3174
Station 12	0.1776	0.0790	2.25	.0258	0.3082	0.0470

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.23	1.11	0.079	0.40	0.06	0.21	1.42	0.42	0.01
04	Op-2	6	0.10	0.21	0.030	0.18	0.03	0.67	2.78	1.75	-0.41
05	Op-1	16	0.04	0.14	0.013	0.07	0.01	0.40	1.04	0.53	0.27
05	Op-2	7	0.07	0.14	0.021	0.12	0.02	0.65	2.57	1.48	-0.17
06	Op-1	26	0.32	0.83	0.051	0.43	0.22	0.32	2.22	0.51	0.12
06	Op-2	7	0.52	2.08	0.277	1.19	-0.16	0.21	0.97	0.57	-0.15
08	Op-1	19	0.52	1.46	0.097	0.72	0.32	-0.05	1.77	0.16	-0.25
08	Op-2	7	0.22	0.62	0.086	0.43	0.01	0.51	2.92	1.43	-0.42
09	Op-1	26	0.04	0.21	0.010	0.06	0.02	0.60	1.77	0.81	0.39
09	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.71	2.64	1.57	-0.15
10	Op-1	25	0.38	1.87	0.088	0.56	0.20	0.23	3.06	0.51	-0.05
10	Op-2	7	0.02	0.14	0.020	0.07	-0.03	0.70	2.64	1.56	-0.16
12	Op-1	26	0.11	0.90	0.040	0.20	0.03	0.52	2.29	0.75	0.30
12	Op-2	7	0.40	0.69	0.107	0.66	0.14	0.33	2.29	1.05	-0.39

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.64	1.77	0.102	0.85	0.43
Op-2	7	0.72	2.64	0.350	1.58	-0.13

Analysis of Variance for HBT for 0147 - Mazzaella lilacina

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	1.50	0.2230
SEASON	1	174.000	77.91	0.0000
STATION	6	174.000	4.41	0.0004
PERIOD*SEASON	1	174.000	0.12	0.7244
STATION*PERIOD	6	174.000	1.30	0.2598
STATION*SEASON	6	174.000	2.71	0.0152
PERIOD*STATION*SEASON	6	174.000	1.66	0.1332

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.50	0.48	0.3369	0.1793	0.1349
STATION*PERIOD	7.80	1.71	0.6304	0.2127	0.1160

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2429	0.2714	-0.895	.3720
Period in FC	0.6947	0.2507	2.771	.0062
Period in FC-S	1.1642	0.3245	3.587	.0004
Period in FC-W	0.2252	0.3822	0.589	.5565
Period in DC-S	-0.8429	0.3622	-2.327	.0211
Period in DC-W	0.3571	0.4042	0.883	.3782

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.285	0.0258	11.05	.0000	0.3276	0.2423
Period Op-2	0.220	0.0460	4.79	.0000	0.2966	0.1443
Op-1-04	0.248	0.0782	3.17	.0018	0.3768	0.1183
Op-2-04	-0.082	0.1354	-0.61	.5457	0.1419	-0.3059
Op-1-05	0.124	0.0782	1.59	.1132	0.2537	-0.0048
Op-2-05	-0.098	0.1194	-0.82	.4139	0.0997	-0.2953
Op-1-06	0.296	0.0613	4.83	.0000	0.3975	0.1947
Op-2-06	0.153	0.1194	1.28	.2012	0.3507	-0.0443
Op-1-08	0.318	0.0718	4.42	.0000	0.4364	0.1988
Op-2-08	0.392	0.1194	3.29	.0012	0.5899	0.1949
Op-1-09	0.338	0.0613	5.51	.0000	0.4394	0.2366
Op-2-09	0.392	0.1194	3.29	.0012	0.5899	0.1949
Op-1-10	0.333	0.0626	5.32	.0000	0.4365	0.2295
Op-2-10	0.392	0.1194	3.29	.0012	0.5899	0.1949
Op-1-12	0.338	0.0613	5.51	.0000	0.4394	0.2366
Op-2-12	0.392	0.1194	3.29	.0012	0.5899	0.1949

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0645	0.0528	1.223	.2230	0.1518	-0.0227

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.3295	0.1564	2.11	.0365	0.5881	0.0710
Station 05	0.2222	0.1427	1.56	.1213	0.4583	-0.0138
Station 06	0.1429	0.1342	1.06	.2886	0.3649	-0.0791
Station 08	-0.0748	0.1394	-0.54	.5924	0.1557	-0.3052
Station 09	-0.0544	0.1342	-0.40	.6860	0.1676	-0.2764
Station 10	-0.0594	0.1348	-0.44	.6600	0.1635	-0.2824
Station 12	-0.0544	0.1342	-0.40	.6860	0.1676	-0.2764

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.11	1.74	0.109	0.34	-0.12	0.11	1.60	0.29	-0.08
04	Op-2	6	1.32	5.69	0.917	3.68	-1.04	-0.84	6.87	1.72	-3.41
05	Op-1	16	0.14	1.11	0.075	0.30	-0.02	0.08	0.66	0.17	-0.01
05	Op-2	7	0.68	2.22	0.341	1.52	-0.15	-0.28	1.77	0.29	-0.85
06	Op-1	26	0.03	0.63	0.024	0.08	-0.02	0.17	1.18	0.29	0.06
06	Op-2	7	0.26	1.60	0.224	0.81	-0.29	0.15	2.05	0.79	-0.49
08	Op-1	19	0.01	0.14	0.009	0.03	-0.00	0.21	0.87	0.35	0.07
08	Op-2	7	0.00	0.00	0.000	.	.	0.41	1.22	0.89	-0.08
09	Op-1	26	0.00	0.00	0.000	.	.	0.20	0.94	0.31	0.09
09	Op-2	7	0.00	0.00	0.000	.	.	0.41	1.22	0.89	-0.08
10	Op-1	25	0.00	0.07	0.003	0.01	-0.00	0.21	0.94	0.32	0.10
10	Op-2	7	0.00	0.00	0.000	.	.	0.41	1.22	0.89	-0.08
12	Op-1	26	0.00	0.00	0.000	.	.	0.20	0.94	0.31	0.09
12	Op-2	7	0.00	0.00	0.000	.	.	0.41	1.22	0.89	-0.08

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.20	0.94	0.052	0.31	0.09
Op-2	7	0.41	1.22	0.199	0.89	-0.08

Analysis of Variance for HBT for 0103 - Neorhodomela larix

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	2.20	0.1396
SEASON	1	174.000	2.20	0.1396
STATION	6	174.000	0.02	1.0000
PERIOD*SEASON	1	174.000	2.20	0.1396
STATION*PERIOD	6	174.000	0.02	1.0000
STATION*SEASON	6	174.000	0.02	1.0000
PERIOD*STATION*SEASON	6	174.000	0.02	1.0000

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.20	1.18	0.4347	0.2895	0.1000
STATION*PERIOD	0.11	0.00	0.1067	.	0.1000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0025	0.0025	1.033	.3032
Period in FC	0.0024	0.0023	1.069	.2866
Period in FC-S	0.0048	0.0029	1.652	.1004
Period in FC-W	-0.0000	0.0035	-0.000	1.000
Period in DC-S	0.0051	0.0033	1.547	.1236
Period in DC-W	-0.0000	0.0037	-0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.001	0.0002	3.04	.0028	0.0011	0.0003
Period Op-2	0.000	0.0004	0.00	1.000	0.0007	-0.0007
Op-1-04	0.001	0.0007	1.31	.1917	0.0021	-0.0002
Op-2-04	0.000	0.0012	0.00	1.000	0.0020	-0.0020
Op-1-05	0.001	0.0007	1.31	.1917	0.0021	-0.0002
Op-2-05	0.000	0.0011	0.00	1.000	0.0018	-0.0018
Op-1-06	0.001	0.0006	1.03	.3053	0.0015	-0.0003
Op-2-06	0.000	0.0011	0.00	1.000	0.0018	-0.0018
Op-1-08	0.001	0.0006	1.27	.2066	0.0019	-0.0003
Op-2-08	-0.000	0.0011	-0.00	1.000	0.0018	-0.0018
Op-1-09	0.001	0.0006	1.03	.3053	0.0015	-0.0003
Op-2-09	0.000	0.0011	0.00	1.000	0.0018	-0.0018
Op-1-10	0.001	0.0006	1.01	.3152	0.0015	-0.0004
Op-2-10	0.000	0.0011	0.00	1.000	0.0018	-0.0018
Op-1-12	0.001	0.0006	1.03	.3053	0.0015	-0.0003
Op-2-12	-0.000	0.0011	-0.00	1.000	0.0018	-0.0018

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0007	0.0005	1.484	.1396	0.0015	-0.0001

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0009	0.0014	0.66	.5131	0.0033	-0.0014
Station 05	0.0009	0.0013	0.72	.4738	0.0031	-0.0012
Station 06	0.0006	0.0012	0.47	.6392	0.0026	-0.0014
Station 08	0.0008	0.0013	0.65	.5143	0.0029	-0.0013
Station 09	0.0006	0.0012	0.47	.6392	0.0026	-0.0014
Station 10	0.0006	0.0012	0.47	.6406	0.0026	-0.0014
Station 12	0.0006	0.0012	0.47	.6392	0.0026	-0.0014

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.00	0.00	0.000	.	.	0.00	0.03	0.01	-0.00
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	16	0.00	0.00	0.000	.	.	0.00	0.03	0.01	-0.00
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	19	0.00	0.00	0.000	.	.	0.00	0.03	0.01	-0.00
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
10	Op-1	25	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
10	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
12	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.03	0.00	-0.00
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.00	0.03	0.001	0.00	-0.00
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0059 - non-coralline crust

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	3.05	0.0827
SEASON	1	174.000	9.08	0.0030
STATION	6	174.000	11.04	0.0000
PERIOD*SEASON	1	174.000	0.81	0.3687
STATION*PERIOD	6	174.000	5.17	0.0001
STATION*SEASON	6	174.000	0.93	0.4748
PERIOD*STATION*SEASON	6	174.000	0.43	0.8605

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.05	2.01	0.5377	0.4093	1.0000
STATION*PERIOD	31.00	24.64	0.9975	0.9880	0.1038

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0711	0.1246	-0.571	.5688
Period in FC	-0.2249	0.1151	-1.954	.0523
Period in FC-S	-0.3841	0.1490	-2.578	.0108
Period in FC-W	-0.0657	0.1755	-0.374	.7085
Period in DC-S	-0.0648	0.1663	-0.390	.6973
Period in DC-W	-0.0775	0.1856	-0.418	.6768

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.275	0.0118	-23.25	.0000	-0.2557	-0.2949
Period Op-2	-0.233	0.0211	-11.02	.0000	-0.1980	-0.2680
Op-1-04	-0.381	0.0359	-10.61	.0000	-0.3213	-0.4400
Op-2-04	-0.253	0.0622	-4.08	.0001	-0.1505	-0.3561
Op-1-05	-0.278	0.0359	-7.74	.0000	-0.2186	-0.3373
Op-2-05	-0.230	0.0548	-4.19	.0000	-0.1390	-0.3203
Op-1-06	-0.314	0.0282	-11.14	.0000	-0.2671	-0.3602
Op-2-06	-0.264	0.0548	-4.82	.0000	-0.1736	-0.3550
Op-1-08	-0.200	0.0330	-6.05	.0000	-0.1450	-0.2541
Op-2-08	-0.196	0.0548	-3.57	.0005	-0.1051	-0.2865
Op-1-09	-0.374	0.0282	-13.28	.0000	-0.3273	-0.4204
Op-2-09	-0.347	0.0548	-6.34	.0000	-0.2567	-0.4380
Op-1-10	-0.178	0.0287	-6.18	.0000	-0.1301	-0.2251
Op-2-10	0.078	0.0548	1.41	.1591	0.1682	-0.0131
Op-1-12	-0.204	0.0282	-7.24	.0000	-0.1572	-0.2503
Op-2-12	-0.418	0.0548	-7.63	.0000	-0.3274	-0.5087

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0423	0.0242	-1.745	.0827	-0.0022	-0.0824

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1273	0.0718	-1.77	.0779	-0.0086	-0.2460
Station 05	-0.0482	0.0655	-0.74	.4625	0.0601	-0.1566
Station 06	-0.0493	0.0616	-0.80	.4245	0.0526	-0.1512
Station 08	-0.0038	0.0640	-0.06	.9529	0.1020	-0.1096
Station 09	-0.0265	0.0616	-0.43	.6674	0.0754	-0.1284
Station 10	-0.2552	0.0619	-4.12	.0001	-0.1528	-0.3575
Station 12	0.2143	0.0616	3.48	.0006	0.3163	0.1124

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	31.44	37.64	2.727	37.25	25.63	-19.02	31.81	-14.73	-23.30
04	Op-2	6	17.05	19.38	3.459	25.94	8.16	-7.82	12.60	-2.50	-13.14
05	Op-1	16	25.22	28.19	2.543	30.64	19.80	-12.80	22.36	-8.93	-16.66
05	Op-2	7	18.32	24.58	3.990	28.09	8.56	-8.39	16.84	-1.67	-15.11
06	Op-1	26	30.32	32.85	2.017	34.47	26.16	-16.04	25.69	-13.06	-19.01
06	Op-2	7	19.86	27.99	4.237	30.23	9.49	-9.93	19.62	-3.01	-16.85
08	Op-1	19	25.69	45.07	3.338	32.70	18.68	-11.87	35.00	-7.08	-16.65
08	Op-2	7	16.29	19.17	2.946	23.50	9.08	-6.36	10.80	-2.45	-10.26
09	Op-1	26	36.21	47.85	2.647	41.66	30.76	-21.93	39.48	-17.56	-26.30
09	Op-2	7	23.54	27.29	3.988	33.30	13.78	-13.61	23.99	-5.81	-21.42
10	Op-1	25	24.65	50.28	3.044	30.93	18.37	-10.72	37.50	-6.08	-15.36
10	Op-2	7	8.24	9.51	1.581	12.11	4.38	1.69	4.20	3.00	0.37
12	Op-1	26	23.03	30.42	1.545	26.21	19.85	-8.75	35.21	-5.36	-12.13
12	Op-2	7	27.26	26.39	3.919	36.85	17.67	-17.33	18.02	-11.15	-23.51

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	14.28	18.61	1.103	16.55	12.01
Op-2	7	9.93	10.17	1.574	13.78	6.08

Analysis of Variance for HBT for 0135 - Phyllospadix spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	113.18	0.0000
SEASON	1	174.000	9.07	0.0030
STATION	6	174.000	152.14	0.0000
PERIOD*SEASON	1	174.000	0.87	0.3518
STATION*PERIOD	6	174.000	12.23	0.0000
STATION*SEASON	6	174.000	2.52	0.0231
PERIOD*STATION*SEASON	6	174.000	0.35	0.9111

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	113.18	110.88	1.0000	1.0000	1.0000
STATION*PERIOD	73.37	66.53	1.0000	1.0000	0.9958

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-28.6734	2.4743	-11.59	.0000
Period in FC	-7.1620	2.2856	-3.134	.0020
Period in FC-S	-7.1502	2.9588	-2.417	.0167
Period in FC-W	-7.1738	3.4845	-2.059	.0410
Period in DC-S	-31.8299	3.3028	-9.637	.0000
Period in DC-W	-25.5169	3.6851	-6.924	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	8.056	0.2351	34.26	.0000	8.4451	7.6675
Period Op-2	13.176	0.4198	31.38	.0000	13.8699	12.4814
Op-1-04	5.059	0.7128	7.10	.0000	6.2375	3.8801
Op-2-04	8.630	1.2346	6.99	.0000	10.6713	6.5882
Op-1-05	5.018	0.7128	7.04	.0000	6.1971	3.8397
Op-2-05	7.001	1.0888	6.43	.0000	8.8017	5.2007
Op-1-06	4.227	0.5592	7.56	.0000	5.1520	3.3027
Op-2-06	5.836	1.0888	5.36	.0000	7.6362	4.0352
Op-1-08	0.185	0.6550	0.28	.7780	1.2681	-0.8982
Op-2-08	1.504	1.0888	1.38	.1690	3.3042	-0.2968
Op-1-09	9.810	0.5592	17.54	.0000	10.7348	8.8855
Op-2-09	23.086	1.0888	21.20	.0000	24.8869	21.2859
Op-1-10	16.072	0.5707	28.16	.0000	17.0157	15.1283
Op-2-10	23.086	1.0888	21.20	.0000	24.8869	21.2859
Op-1-12	16.022	0.5592	28.65	.0000	16.9469	15.0976
Op-2-12	23.086	1.0888	21.20	.0000	24.8869	21.2859

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-5.1193	0.4812	-10.64	.0000	-4.3236	-5.9151

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-3.5709	1.4256	-2.50	.0132	-1.2135	-5.9283
Station 05	-1.9828	1.3014	-1.52	.1294	0.1692	-4.1348
Station 06	-1.6083	1.2240	-1.31	.1906	0.4158	-3.6323
Station 08	-1.3187	1.2706	-1.04	.3008	0.7825	-3.4199
Station 09	-13.2762	1.2240	-10.85	.0000	-11.2521	-15.3002
Station 10	-7.0144	1.2293	-5.71	.0000	-4.9816	-9.0472
Station 12	-7.0641	1.2240	-5.77	.0000	-5.0401	-9.0882

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	3.99	5.35	0.389	4.82	3.16	4.10	5.03	4.76	3.43
04	Op-2	6	6.54	4.72	0.823	8.66	4.42	9.05	3.54	10.39	7.71
05	Op-1	16	4.06	5.07	0.432	4.98	3.14	4.03	5.38	4.87	3.20
05	Op-2	7	7.97	6.11	0.811	9.95	5.98	7.51	5.66	9.34	5.69
06	Op-1	26	4.38	7.99	0.406	5.21	3.54	3.35	5.80	4.01	2.69
06	Op-2	7	9.15	6.67	0.963	11.50	6.79	6.33	6.28	8.45	4.22
08	Op-1	19	8.17	19.51	1.077	10.44	5.91	-0.02	22.08	2.57	-2.61
08	Op-2	7	14.45	14.86	1.916	19.14	9.77	1.03	10.80	4.85	-2.80
09	Op-1	26	1.66	11.25	0.517	2.72	0.59	6.07	15.14	7.48	4.66
09	Op-2	7	0.00	0.00	0.000	.	.	15.48	4.06	16.63	14.33
10	Op-1	25	0.00	0.00	0.000	.	.	7.76	7.95	8.61	6.91
10	Op-2	7	0.00	0.00	0.000	.	.	15.48	4.06	16.63	14.33
12	Op-1	26	0.00	0.00	0.000	.	.	7.73	7.95	8.54	6.91
12	Op-2	7	0.00	0.00	0.000	.	.	15.48	4.06	16.63	14.33

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	7.73	7.95	0.396	8.54	6.91
Op-2	7	15.48	4.06	0.470	16.63	14.33

Analysis of Variance for HBT for 0099 - Porphyra spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	5.82	0.0169
SEASON	1	174.000	7.45	0.0070
STATION	6	174.000	3.73	0.0016
PERIOD*SEASON	1	174.000	1.18	0.2793
STATION*PERIOD	6	174.000	0.52	0.7953
STATION*SEASON	6	174.000	4.05	0.0008
PERIOD*STATION*SEASON	6	174.000	0.45	0.8414

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.82	4.75	0.7757	0.7007	0.2972
STATION*PERIOD	3.10	0.00	0.3138	.	0.1208

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3316	0.4365	0.760	.4484
Period in FC	1.1015	0.4032	2.732	.0069
Period in FC-S	1.8175	0.5219	3.482	.0006
Period in FC-W	0.3856	0.6147	0.627	.5313
Period in DC-S	0.2606	0.5826	0.447	.6552
Period in DC-W	0.4027	0.6501	0.619	.5365

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.275	0.0415	6.62	.0000	0.3431	0.2060
Period Op-2	0.070	0.0741	0.94	.3472	0.1923	-0.0527
Op-1-04	0.100	0.1257	0.80	.4261	0.3082	-0.1076
Op-2-04	-0.297	0.2178	-1.37	.1739	0.0628	-0.6575
Op-1-05	0.074	0.1257	0.59	.5592	0.2815	-0.1344
Op-2-05	-0.279	0.1921	-1.45	.1477	0.0383	-0.5970
Op-1-06	0.213	0.0986	2.16	.0325	0.3757	0.0495
Op-2-06	-0.138	0.1921	-0.72	.4722	0.1792	-0.4560
Op-1-08	0.274	0.1155	2.37	.0187	0.4653	0.0832
Op-2-08	0.279	0.1921	1.45	.1475	0.5971	-0.0382
Op-1-09	0.338	0.0986	3.43	.0008	0.5015	0.1753
Op-2-09	0.308	0.1921	1.60	.1105	0.6257	-0.0095
Op-1-10	0.466	0.1007	4.63	.0000	0.6324	0.2994
Op-2-10	0.308	0.1921	1.60	.1105	0.6257	-0.0095
Op-1-12	0.457	0.0986	4.63	.0000	0.6199	0.2937
Op-2-12	0.308	0.1921	1.60	.1105	0.6257	-0.0095

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2047	0.0849	2.412	.0169	0.3451	0.0644

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.3977	0.2515	1.58	.1156	0.8125	-0.0182
Station 05	0.3529	0.2296	1.54	.1260	0.7325	-0.0267
Station 06	0.3510	0.2159	1.63	.1059	0.7080	-0.0061
Station 08	-0.0052	0.2241	-0.02	.9814	0.3654	-0.3759
Station 09	0.0303	0.2159	0.14	.8884	0.3874	-0.3267
Station 10	0.1578	0.2169	0.73	.4678	0.5164	-0.2008
Station 12	0.1487	0.2159	0.69	.4918	0.5058	-0.2083

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.96	10.00	0.646	2.34	-0.41	-0.47	11.87	0.87	-1.82
04	Op-2	6	1.76	5.62	0.988	4.30	-0.78	-1.22	7.12	1.42	-3.86
05	Op-1	16	0.50	3.96	0.253	1.04	-0.04	-0.01	5.14	0.53	-0.54
05	Op-2	7	1.34	4.24	0.720	3.10	-0.42	-0.88	5.52	0.87	-2.62
06	Op-1	26	0.24	1.32	0.082	0.41	0.07	0.34	3.06	0.66	0.02
06	Op-2	7	0.60	2.85	0.388	1.54	-0.35	-0.13	4.20	1.09	-1.35
08	Op-1	19	0.18	1.60	0.090	0.36	-0.01	0.37	3.47	0.79	-0.06
08	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.45	1.84	1.19	-0.29
09	Op-1	26	0.28	4.31	0.180	0.65	-0.10	0.31	6.70	0.80	-0.18
09	Op-2	7	0.00	0.00	0.000	.	.	0.46	1.77	1.19	-0.27
10	Op-1	25	0.02	0.28	0.012	0.05	-0.00	0.58	2.64	0.92	0.24
10	Op-2	7	0.00	0.00	0.000	.	.	0.46	1.77	1.19	-0.27
12	Op-1	26	0.05	0.83	0.035	0.12	-0.02	0.53	3.33	0.88	0.19
12	Op-2	7	0.00	0.00	0.000	.	.	0.46	1.77	1.19	-0.27

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.58	2.92	0.165	0.92	0.24
Op-2	7	0.46	1.77	0.300	1.19	-0.27

Analysis of Variance for HBT for 0106 - Prionitis spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	7.03	0.0088
SEASON	1	174.000	5.39	0.0214
STATION	6	174.000	29.97	0.0000
PERIOD*SEASON	1	174.000	0.72	0.3976
STATION*PERIOD	6	174.000	4.83	0.0001
STATION*SEASON	6	174.000	1.27	0.2749
PERIOD*STATION*SEASON	6	174.000	0.24	0.9645

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.03	5.95	0.8404	0.7837	0.9997
STATION*PERIOD	29.00	22.67	0.9959	0.9808	0.8624

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-11.2093	2.8744	-3.900	.0001
Period in FC	0.8345	2.6552	0.314	.7537
Period in FC-S	0.4835	3.4373	0.141	.8883
Period in FC-W	1.1856	4.0480	0.293	.7700
Period in DC-S	-14.1766	3.8369	-3.695	.0003
Period in DC-W	-8.2419	4.2810	-1.925	.0558

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-2.272	0.2731	-8.32	.0000	-1.8199	-2.7233
Period Op-2	-0.789	0.4877	-1.62	.1073	0.0171	-1.5961
Op-1-04	2.755	0.8281	3.33	.0011	4.1239	1.3853
Op-2-04	0.193	1.4343	0.13	.8930	2.5650	-2.1786
Op-1-05	-1.856	0.8281	-2.24	.0263	-0.4863	-3.2249
Op-2-05	-1.915	1.2649	-1.51	.1319	0.1769	-4.0065
Op-1-06	-1.845	0.6496	-2.84	.0050	-0.7710	-2.9194
Op-2-06	-0.059	1.2649	-0.05	.9628	2.0326	-2.1508
Op-1-08	-2.077	0.7609	-2.73	.0070	-0.8186	-3.3353
Op-2-08	-3.358	1.2649	-2.66	.0087	-1.2666	-5.4500
Op-1-09	-7.549	0.6496	-11.62	.0000	-6.4750	-8.6234
Op-2-09	-0.363	1.2649	-0.29	.7743	1.7283	-2.4551
Op-1-10	-9.412	0.6630	-14.20	.0000	-8.3161	-10.5088
Op-2-10	-5.667	1.2649	-4.48	.0000	-3.5748	-7.7582
Op-1-12	4.084	0.6496	6.29	.0000	5.1578	3.0094
Op-2-12	5.643	1.2649	4.46	.0000	7.7342	3.5508

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-1.4821	0.5590	-2.651	.0088	-0.5577	-2.4065

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	2.5614	1.6561	1.55	.1238	5.3001	-0.1773
Station 05	0.0592	1.5118	0.04	.9688	2.5593	-2.4408
Station 06	-1.7861	1.4219	-1.26	.2108	0.5653	-4.1375
Station 08	1.2814	1.4761	0.87	.3866	3.7224	-1.1596
Station 09	-7.1858	1.4219	-5.05	.0000	-4.8344	-9.5372
Station 10	-3.7459	1.4281	-2.62	.0095	-1.3843	-6.1075
Station 12	-1.5589	1.4219	-1.10	.2744	0.7925	-3.9103

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.22	0.76	0.067	0.36	0.08	0.59	1.74	0.84	0.34
04	Op-2	6	1.02	1.18	0.174	1.46	0.57	0.09	0.52	0.29	-0.11
05	Op-1	16	1.40	2.01	0.142	1.71	1.10	-0.59	1.77	-0.27	-0.90
05	Op-2	7	2.01	2.99	0.405	3.01	1.02	-0.89	2.57	-0.09	-1.69
06	Op-1	26	1.15	2.85	0.118	1.40	0.91	-0.52	3.12	-0.20	-0.85
06	Op-2	7	1.14	1.60	0.198	1.63	0.66	-0.02	1.11	0.32	-0.36
08	Op-1	19	1.67	5.56	0.354	2.42	0.93	-0.90	5.59	-0.25	-1.54
08	Op-2	7	2.71	3.75	0.447	3.80	1.61	-1.59	3.61	-0.42	-2.76
09	Op-1	26	4.33	7.36	0.387	5.13	3.54	-3.70	7.71	-2.90	-4.51
09	Op-2	7	1.67	3.96	0.580	3.09	0.25	-0.55	5.00	1.11	-2.20
10	Op-1	25	6.54	15.21	0.973	8.55	4.54	-5.90	15.94	-3.80	-8.00
10	Op-2	7	4.43	6.81	0.849	6.51	2.36	-3.31	6.67	-1.33	-5.30
12	Op-1	26	0.00	0.07	0.003	0.01	-0.00	0.63	2.22	0.85	0.40
12	Op-2	7	0.03	0.21	0.030	0.10	-0.04	1.09	1.60	1.57	0.61

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.63	2.29	0.112	0.86	0.40
Op-2	7	1.12	1.39	0.169	1.53	0.71

Analysis of Variance for HBT for 0110 - Smithora naiadum

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	1.87	0.1737
SEASON	1	174.000	10.44	0.0015
STATION	6	174.000	4.58	0.0002
PERIOD*SEASON	1	174.000	1.75	0.1871
STATION*PERIOD	6	174.000	0.77	0.5973
STATION*SEASON	6	174.000	4.44	0.0003
PERIOD*STATION*SEASON	6	174.000	0.81	0.5604

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.87	0.84	0.3895	0.2381	0.2338
STATION*PERIOD	4.60	0.00	0.4231	.	0.1655

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1829	0.3118	-0.586	.5583
Period in PC	-0.3970	0.2880	-1.378	.1699
Period in PC-S	-0.7764	0.3729	-2.082	.0388
Period in PC-W	-0.0176	0.4391	-0.040	.9680
Period in DC-S	-0.3657	0.4162	-0.879	.3808
Period in DC-W	-0.0000	0.4644	-0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.055	0.0296	1.87	.0637	0.1043	0.0063
Period Op-2	0.138	0.0529	2.61	.0098	0.2256	0.0506
Op-1-04	-0.068	0.0898	-0.76	.4472	0.0801	-0.2170
Op-2-04	0.089	0.1556	0.57	.5688	0.3461	-0.1685
Op-1-05	-0.206	0.0898	-2.29	.0233	-0.0571	-0.3542
Op-2-05	0.144	0.1372	1.05	.2956	0.3708	-0.0830
Op-1-06	-0.135	0.0705	-1.92	.0571	-0.0184	-0.2515
Op-2-06	-0.245	0.1372	-1.78	.0762	-0.0178	-0.4717
Op-1-08	0.187	0.0825	2.27	.0246	0.3236	0.0506
Op-2-08	0.245	0.1372	1.78	.0762	0.4716	0.0178
Op-1-09	0.203	0.0705	2.88	.0045	0.3195	0.0864
Op-2-09	0.245	0.1372	1.78	.0762	0.4716	0.0178
Op-1-10	0.203	0.0719	2.82	.0053	0.3219	0.0840
Op-2-10	0.245	0.1372	1.78	.0762	0.4716	0.0178
Op-1-12	0.203	0.0705	2.88	.0045	0.3195	0.0864
Op-2-12	0.245	0.1372	1.78	.0762	0.4716	0.0178

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0828	0.0606	-1.366	.1737	0.0174	-0.1831

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1573	0.1797	-0.88	.3826	0.1398	-0.4543
Station 05	-0.3495	0.1640	-2.13	.0345	-0.0783	-0.6207
Station 06	0.1098	0.1542	0.71	.4775	0.3649	-0.1453
Station 08	-0.0576	0.1601	-0.36	.7196	0.2072	-0.3224
Station 09	-0.0418	0.1542	-0.27	.7869	0.2133	-0.2968
Station 10	-0.0418	0.1549	-0.27	.7878	0.2144	-0.2979
Station 12	-0.0418	0.1542	-0.27	.7869	0.2133	-0.2968

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.20	2.22	0.137	0.49	-0.09	-0.09	3.23	0.24	-0.42
04	Op-2	6	0.28	1.67	0.278	0.99	-0.44	-0.03	2.64	0.86	-0.93
05	Op-1	16	0.37	2.92	0.187	0.77	-0.03	-0.26	3.09	0.13	-0.65
05	Op-2	7	0.05	0.28	0.039	0.15	-0.05	0.16	1.18	0.53	-0.21
06	Op-1	26	0.42	4.31	0.184	0.80	0.04	-0.24	4.65	0.11	-0.59
06	Op-2	7	1.53	6.60	1.004	3.98	-0.93	-1.32	6.56	1.00	-3.64
08	Op-1	19	0.01	0.14	0.007	0.02	-0.01	0.16	1.35	0.36	-0.03
08	Op-2	7	0.00	0.00	0.000	.	.	0.21	1.08	0.57	-0.16
09	Op-1	26	0.00	0.00	0.000	.	.	0.18	1.49	0.36	0.01
09	Op-2	7	0.00	0.00	0.000	.	.	0.21	1.08	0.57	-0.16
10	Op-1	25	0.00	0.00	0.000	.	.	0.19	1.49	0.37	0.01
10	Op-2	7	0.00	0.00	0.000	.	.	0.21	1.08	0.57	-0.16
12	Op-1	26	0.00	0.00	0.000	.	.	0.18	1.49	0.36	0.01
12	Op-2	7	0.00	0.00	0.000	.	.	0.21	1.08	0.57	-0.16

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.18	1.49	0.086	0.36	0.01
Op-2	7	0.21	1.08	0.150	0.57	-0.16

Analysis of Variance for HBT for aspp - Spp. Algae

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.42	0.5185
SEASON	1	174.000	0.61	0.4343
STATION	6	174.000	66.32	0.0000
PERIOD*SEASON	1	174.000	0.41	0.5208
STATION*PERIOD	6	174.000	5.14	0.0001
STATION*SEASON	6	174.000	1.74	0.1136
PERIOD*STATION*SEASON	6	174.000	0.74	0.6183

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.42	0.00	0.1696	.	1.0000
STATION*PERIOD	30.83	24.48	0.9974	0.9875	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.7471	1.4583	-1.198	.2325
Period in PC	3.0314	1.3471	2.250	.0257
Period in PC-S	3.6596	1.7439	2.099	.0373
Period in PC-W	2.4032	2.0537	1.170	.2435
Period in DC-S	-1.0979	1.9466	-0.564	.5735
Period in DC-W	-2.3963	2.1720	-1.103	.2714

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	3.511	0.1386	25.33	.0000	3.7400	3.2817
Period Op-2	3.327	0.2475	13.45	.0000	3.7366	2.9182
Op-1-04	1.441	0.4201	3.43	.0008	2.1354	0.7459
Op-2-04	-1.100	0.7277	-1.51	.1324	0.1033	-2.3033
Op-1-05	2.009	0.4201	4.78	.0000	2.7041	1.3146
Op-2-05	1.383	0.6417	2.16	.0325	2.4445	0.3221
Op-1-06	0.848	0.3296	2.57	.0109	1.3931	0.3031
Op-2-06	0.983	0.6417	1.53	.1273	2.0445	-0.0779
Op-1-08	2.795	0.3861	7.24	.0000	3.4331	2.1563
Op-2-08	3.021	0.6417	4.71	.0000	4.0820	1.9596
Op-1-09	3.344	0.3296	10.15	.0000	3.8892	2.7992
Op-2-09	6.438	0.6417	10.03	.0000	7.4987	5.3763
Op-1-10	4.533	0.3364	13.48	.0000	5.0894	3.9769
Op-2-10	3.992	0.6417	6.22	.0000	5.0529	2.9305
Op-1-12	9.606	0.3296	29.15	.0000	10.1508	9.0608
Op-2-12	8.575	0.6417	13.36	.0000	9.6362	7.5138

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1835	0.2836	0.647	.5185	0.6525	-0.2855

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	2.5406	0.8402	3.02	.0029	3.9301	1.1512
Station 05	0.6260	0.7670	0.82	.4155	1.8944	-0.6423
Station 06	-0.1353	0.7214	-0.19	.8515	1.0577	-1.3282
Station 08	-0.2261	0.7489	-0.30	.7631	1.0123	-1.4646
Station 09	-3.0933	0.7214	-4.29	.0000	-1.9003	-4.2862
Station 10	0.5415	0.7245	0.75	.4558	1.7397	-0.6566
Station 12	1.0308	0.7214	1.43	.1548	2.2237	-0.1622

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	13.93	6.20	0.456	14.90	12.96	1.44	6.35	2.37	0.51
04	Op-2	6	16.95	5.10	0.800	19.01	14.89	-1.39	5.15	0.62	-3.41
05	Op-1	16	13.36	7.40	0.476	14.38	12.35	2.01	4.70	2.79	1.23
05	Op-2	7	14.17	5.40	0.691	15.86	12.48	1.25	4.80	2.60	-0.10
06	Op-1	26	14.34	4.60	0.174	14.70	13.98	0.85	4.75	1.37	0.33
06	Op-2	7	14.47	3.30	0.425	15.51	13.43	0.95	2.70	1.74	0.16
08	Op-1	19	12.72	5.20	0.303	13.36	12.09	2.79	5.85	3.59	1.98
08	Op-2	7	12.39	3.00	0.388	13.34	11.44	3.04	3.15	4.32	1.75
09	Op-1	26	11.84	8.60	0.465	12.80	10.88	3.34	8.70	4.19	2.50
09	Op-2	7	8.89	5.80	0.744	10.71	7.07	6.54	8.05	8.94	4.13
10	Op-1	25	10.53	9.20	0.399	11.35	9.70	4.57	8.85	5.40	3.74
10	Op-2	7	11.46	4.40	0.595	12.91	10.00	3.96	3.70	5.34	2.59
12	Op-1	26	5.58	6.40	0.350	6.30	4.86	9.61	5.10	10.23	8.98
12	Op-2	7	6.84	3.60	0.500	8.07	5.62	8.58	4.60	10.20	6.95

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	15.19	4.65	0.254	15.71	14.66
Op-2	7	15.42	2.45	0.347	16.27	14.57

Analysis of Variance for HBT for 1173 - Ulva/Enteromorpha spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	84.15	0.0000
SEASON	1	174.000	15.20	0.0001
STATION	6	174.000	7.97	0.0000
PERIOD*SEASON	1	174.000	0.00	0.9749
STATION*PERIOD	6	174.000	0.56	0.7630
STATION*SEASON	6	174.000	1.22	0.2989
PERIOD*STATION*SEASON	6	174.000	0.93	0.4736

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	84.15	82.18	1.0000	1.0000	0.2922
STATION*PERIOD	3.35	0.00	0.3323	.	0.1469

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	3.4595	0.5306	6.520	.0000
Period in FC	3.1669	0.4902	6.461	.0000
Period in FC-S	3.4807	0.6345	5.486	.0000
Period in FC-W	2.8530	0.7473	3.818	.0002
Period in DC-S	3.1685	0.7083	4.473	.0000
Period in DC-W	3.7506	0.7903	4.746	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.487	0.0504	9.66	.0000	0.5704	0.4036
Period Op-2	-0.460	0.0900	-5.11	.0000	-0.3108	-0.6085
Op-1-04	0.823	0.1529	5.38	.0000	1.0754	0.5698
Op-2-04	-0.482	0.2648	-1.82	.0705	-0.0440	-0.9197
Op-1-05	0.945	0.1529	6.18	.0000	1.1982	0.6926
Op-2-05	-0.058	0.2335	-0.25	.8034	0.3279	-0.4444
Op-1-06	0.739	0.1199	6.17	.0000	0.9376	0.5410
Op-2-06	-0.119	0.2335	-0.51	.6095	0.2666	-0.5056
Op-1-08	0.037	0.1405	0.26	.7919	0.2694	-0.1952
Op-2-08	-0.765	0.2335	-3.27	.0013	-0.3785	-1.1507
Op-1-09	-0.029	0.1199	-0.24	.8081	0.1691	-0.2275
Op-2-09	-0.901	0.2335	-3.86	.0002	-0.5151	-1.2874
Op-1-10	0.245	0.1224	2.00	.0468	0.4475	0.0427
Op-2-10	-0.867	0.2335	-3.72	.0003	-0.4813	-1.2536
Op-1-12	0.649	0.1199	5.41	.0000	0.8469	0.4503
Op-2-12	-0.025	0.2335	-0.11	.9161	0.3615	-0.4108

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.9466	0.1032	9.173	.0000	1.1173	0.7760

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	1.3045	0.3057	4.27	.0000	1.8100	0.7989
Station 05	1.0036	0.2791	3.60	.0004	1.4651	0.5421
Station 06	0.8588	0.2625	3.27	.0013	1.2929	0.4247
Station 08	0.8017	0.2725	2.94	.0037	1.2523	0.3511
Station 09	0.8721	0.2625	3.32	.0011	1.3061	0.4380
Station 10	1.1126	0.2636	4.22	.0000	1.5485	0.6766
Station 12	0.6732	0.2625	2.56	.0112	1.1073	0.2391

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.19	2.64	0.164	0.54	-0.16	1.03	5.73	1.77	0.29
04	Op-2	6	1.84	5.21	0.753	3.78	-0.10	-1.48	4.72	0.31	-3.27
05	Op-1	16	0.01	0.14	0.009	0.03	-0.01	1.21	3.47	1.79	0.63
05	Op-2	7	0.60	2.15	0.310	1.35	-0.16	-0.27	2.19	0.45	-0.99
06	Op-1	26	0.05	0.62	0.027	0.10	-0.01	0.86	3.72	1.25	0.46
06	Op-2	7	0.72	2.78	0.386	1.67	-0.22	-0.40	1.77	0.25	-1.06
08	Op-1	19	2.36	8.68	0.663	3.76	0.97	-1.25	7.53	-0.06	-2.45
08	Op-2	7	4.60	20.62	2.827	11.52	-2.31	-4.28	19.41	2.25	-10.81
09	Op-1	26	3.72	27.43	1.278	6.35	1.09	-2.81	30.00	-0.19	-5.44
09	Op-2	7	5.92	13.96	2.161	11.21	0.64	-5.60	13.40	-0.53	-10.67
10	Op-1	25	2.29	17.29	0.915	4.18	0.41	-1.38	20.38	0.51	-3.28
10	Op-2	7	10.74	31.32	4.950	22.86	-1.37	-10.42	31.35	1.58	-22.43
12	Op-1	26	1.69	29.72	1.245	4.25	-0.88	-0.78	30.97	1.70	-3.26
12	Op-2	7	0.83	2.71	0.443	1.92	-0.25	-0.51	2.43	0.33	-1.35

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.91	3.54	0.188	1.29	0.52
Op-2	7	0.32	1.22	0.160	0.71	-0.07

APPENDIX E2 – ANOVA Test Results

Intertidal Invertebrates

(Taxa alphabetized by +3 ft. MLLW and +1 ft. MLLW elevations)

Analysis of Variance for HBT for 0287 - Acanthina spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.90	0.3431
SEASON	1	176.000	1.40	0.2388
STATION	6	176.000	16.48	0.0000
PERIOD*SEASON	1	176.000	5.16	0.0244
STATION*PERIOD	6	176.000	1.31	0.2558
STATION*SEASON	6	176.000	0.58	0.7459
PERIOD*STATION*SEASON	6	176.000	1.08	0.3767

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.90	0.00	0.2474	.	0.9950
STATION*PERIOD	7.85	1.76	0.6335	0.2165	0.4228

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1816	0.2783	0.653	.5149
Period in FC	-0.5408	0.2557	-2.115	.0358
Period in FC-S	-0.0777	0.3328	-0.234	.8156
Period in FC-W	-1.0038	0.3882	-2.586	.0105
Period in DC-S	0.5767	0.3714	1.553	.1223
Period in DC-W	-0.2135	0.4144	-0.515	.6070

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.352	0.0262	-13.45	.0000	-0.3087	-0.3952
Period Op-2	-0.301	0.0472	-6.37	.0000	-0.2226	-0.3787
Op-1-04	-0.780	0.0779	-10.01	.0000	-0.6509	-0.9085
Op-2-04	-0.455	0.1388	-3.28	.0013	-0.2255	-0.6846
Op-1-05	-0.762	0.0779	-9.78	.0000	-0.6329	-0.8906
Op-2-05	-0.535	0.1224	-4.37	.0000	-0.3328	-0.7377
Op-1-06	-0.202	0.0629	-3.22	.0015	-0.0983	-0.3062
Op-2-06	-0.213	0.1224	-1.74	.0842	-0.0101	-0.4151
Op-1-08	-0.268	0.0629	-4.26	.0000	-0.1642	-0.3721
Op-2-08	-0.428	0.1224	-3.50	.0006	-0.2258	-0.6308
Op-1-09	0.158	0.0737	2.14	.0334	0.2797	0.0361
Op-2-09	0.077	0.1224	0.63	.5277	0.2800	-0.1250
Op-1-10	-0.059	0.0642	-0.91	.3626	0.0475	-0.1647
Op-2-10	-0.046	0.1224	-0.38	.7047	0.1560	-0.2490
Op-1-12	-0.551	0.0629	-8.76	.0000	-0.4472	-0.6551
Op-2-12	-0.504	0.1224	-4.12	.0001	-0.3018	-0.7067

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0513	0.0540	-0.951	.3431	0.0379	-0.1406

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.3246	0.1592	-2.04	.0429	-0.0614	-0.5879
Station 05	-0.2265	0.1451	-1.56	.1204	0.0135	-0.4665
Station 06	0.0104	0.1377	0.08	.9400	0.2380	-0.2172
Station 08	0.1601	0.1377	1.16	.2463	0.3878	-0.0675
Station 09	0.0804	0.1429	0.56	.5743	0.3167	-0.1559
Station 10	-0.0121	0.1383	-0.09	.9304	0.2165	-0.2407
Station 12	-0.0469	0.1377	-0.34	.7337	0.1807	-0.2745

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.94	2.20	0.155	1.26	0.61	-0.88	2.30	-0.54	-1.22
04	Op-2	6	0.37	0.70	0.115	0.66	0.07	-0.33	0.65	-0.09	-0.58
05	Op-1	17	0.83	1.60	0.102	1.05	0.61	-0.78	1.65	-0.55	-1.01
05	Op-2	7	0.56	1.20	0.159	0.95	0.17	-0.46	1.00	-0.16	-0.77
06	Op-1	26	0.21	0.80	0.039	0.29	0.13	-0.14	1.05	-0.05	-0.23
06	Op-2	7	0.21	0.50	0.063	0.37	0.06	-0.12	0.85	0.13	-0.37
08	Op-1	26	0.29	1.00	0.058	0.41	0.17	-0.22	1.10	-0.10	-0.33
08	Op-2	7	0.40	1.00	0.135	0.73	0.07	-0.31	0.55	-0.10	-0.52
09	Op-1	19	0.01	0.10	0.007	0.03	-0.00	0.05	0.15	0.07	0.03
09	Op-2	7	0.07	0.40	0.057	0.21	-0.07	0.02	0.70	0.22	-0.18
10	Op-1	25	0.26	2.70	0.119	0.50	0.01	-0.18	2.75	0.05	-0.42
10	Op-2	7	0.10	0.20	0.038	0.19	0.01	-0.01	0.55	0.16	-0.17
12	Op-1	26	0.62	2.80	0.108	0.84	0.39	-0.54	2.75	-0.32	-0.76
12	Op-2	7	0.51	0.80	0.116	0.80	0.23	-0.42	0.80	-0.14	-0.70

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.07	0.30	0.014	0.10	0.04
Op-2	7	0.09	0.45	0.063	0.25	-0.06

Analysis of Variance for HBT for 0264 - Anthopleura elegantissima

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	5.67	0.0183
SEASON	1	176.000	19.34	0.0000
STATION	6	176.000	265.28	0.0000
PERIOD*SEASON	1	176.000	5.94	0.0158
STATION*PERIOD	6	176.000	9.36	0.0000
STATION*SEASON	6	176.000	0.65	0.6886
PERIOD*STATION*SEASON	6	176.000	0.26	0.9542

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.67	4.60	0.7663	0.6889	1.0000
STATION*PERIOD	56.18	49.54	1.0000	1.0000	0.7681

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.0808	0.2097	5.154	.0000
Period in FC	-0.4028	0.1927	-2.091	.0380
Period in FC-S	-0.1527	0.2508	-0.609	.5433
Period in FC-W	-0.6529	0.2926	-2.232	.0269
Period in DC-S	1.5249	0.2799	5.448	.0000
Period in DC-W	0.6366	0.3123	2.038	.0430

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.827	0.0197	-41.95	.0000	-0.7946	-0.8598
Period Op-2	-0.924	0.0356	-25.97	.0000	-0.8652	-0.9829
Op-1-04	-1.814	0.0587	-30.89	.0000	-1.7166	-1.9108
Op-2-04	-1.771	0.1046	-16.92	.0000	-1.5979	-1.9440
Op-1-05	-1.422	0.0587	-24.21	.0000	-1.3244	-1.5186
Op-2-05	-1.284	0.0923	-13.91	.0000	-1.1312	-1.4364
Op-1-06	-0.731	0.0474	-15.42	.0000	-0.6523	-0.8090
Op-2-06	-0.508	0.0923	-5.51	.0000	-0.3557	-0.6609
Op-1-08	-0.755	0.0474	-15.94	.0000	-0.6770	-0.8337
Op-2-08	-1.136	0.0923	-12.32	.0000	-0.9839	-1.2891
Op-1-09	1.246	0.0555	22.45	.0000	1.3380	1.1544
Op-2-09	0.703	0.0923	7.62	.0000	0.8553	0.5501
Op-1-10	-1.326	0.0484	-27.42	.0000	-1.2461	-1.4061
Op-2-10	-1.110	0.0923	-12.03	.0000	-0.9575	-1.2627
Op-1-12	-0.989	0.0474	-20.87	.0000	-0.9108	-1.0676
Op-2-12	-1.361	0.0923	-14.75	.0000	-1.2088	-1.5140

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0969	0.0407	2.381	.0183	0.1641	0.0296

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0427	0.1200	-0.36	.7222	0.1557	-0.2411
Station 05	-0.1377	0.1094	-1.26	.2097	0.0432	-0.3185
Station 06	-0.2224	0.1037	-2.14	.0334	-0.0508	-0.3939
Station 08	0.3811	0.1037	3.67	.0003	0.5526	0.2096
Station 09	0.5435	0.1077	5.05	.0000	0.7216	0.3654
Station 10	-0.2160	0.1042	-2.07	.0396	-0.0437	-0.3883
Station 12	0.3722	0.1037	3.59	.0004	0.5437	0.2006

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	135.85	96.20	6.137	148.86	122.84	-133.69	96.15	-120.66	-146.72
04	Op-2	6	76.67	36.00	5.391	90.52	62.81	-75.56	36.50	-61.76	-89.36
05	Op-1	17	56.67	68.60	4.010	65.17	48.17	-54.51	69.10	-46.12	-62.91
05	Op-2	7	25.64	10.10	1.361	28.97	22.31	-24.36	9.00	-21.31	-27.40
06	Op-1	26	11.79	18.50	0.876	13.59	9.98	-9.67	16.85	-8.05	-11.28
06	Op-2	7	4.60	5.80	0.765	6.47	2.73	-3.31	4.40	-1.67	-4.96
08	Op-1	26	12.51	16.10	0.850	14.26	10.76	-10.39	16.40	-8.56	-12.21
08	Op-2	7	18.29	10.70	1.728	22.51	14.06	-17.00	9.85	-13.14	-20.86
09	Op-1	19	0.03	0.40	0.022	0.08	-0.01	2.12	4.90	2.61	1.63
09	Op-2	7	0.17	0.10	0.018	0.22	0.13	1.11	1.65	1.69	0.53
10	Op-1	25	50.56	81.50	5.694	62.31	38.80	-48.56	81.15	-36.86	-60.26
10	Op-2	7	17.90	18.20	2.341	23.63	12.17	-16.61	16.55	-11.26	-21.97
12	Op-1	26	23.71	44.30	2.403	28.66	18.76	-21.58	44.80	-16.50	-26.67
12	Op-2	7	32.17	19.40	2.760	38.92	25.42	-30.89	19.45	-23.83	-37.94

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	2.12	4.50	0.174	2.48	1.76
Op-2	7	1.29	1.65	0.238	1.87	0.70

Analysis of Variance for HBT for 0395 - Chthamalus fissus

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	2.30	0.1311
SEASON	1	176.000	0.55	0.4598
STATION	6	176.000	44.31	0.0000
PERIOD*SEASON	1	176.000	0.79	0.3756
STATION*PERIOD	6	176.000	4.08	0.0007
STATION*SEASON	6	176.000	0.22	0.9692
PERIOD*STATION*SEASON	6	176.000	0.38	0.8903

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.30	1.27	0.4475	0.3042	0.9722
STATION*PERIOD	24.48	18.20	0.9875	0.9476	0.1933

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.6246	0.4446	1.405	.1618
Period in FC	-1.5403	0.4085	-3.771	.0002
Period in FC-S	-1.3083	0.5316	-2.461	.0148
Period in FC-W	-1.7724	0.6203	-2.857	.0048
Period in DC-S	0.9288	0.5935	1.565	.1194
Period in DC-W	0.3203	0.6622	0.484	.6291

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.403	0.0418	-9.64	.0000	-0.3340	-0.4722
Period Op-2	-0.272	0.0754	-3.61	.0004	-0.1476	-0.3970
Op-1-04	-0.146	0.1245	-1.17	.2419	0.0597	-0.3520
Op-2-04	0.316	0.2218	1.42	.1559	0.6829	-0.0507
Op-1-05	-0.022	0.1245	-0.18	.8572	0.1834	-0.2282
Op-2-05	0.775	0.1956	3.96	.0001	1.0982	0.4511
Op-1-06	0.431	0.1005	4.29	.0000	0.5968	0.2645
Op-2-06	0.712	0.1956	3.64	.0004	1.0351	0.3881
Op-1-08	-0.710	0.1005	-7.07	.0000	-0.5441	-0.8764
Op-2-08	-1.379	0.1956	-7.05	.0000	-1.0557	-1.7027
Op-1-09	-1.521	0.1177	-12.92	.0000	-1.3263	-1.7156
Op-2-09	-1.502	0.1956	-7.68	.0000	-1.1790	-1.8260
Op-1-10	-0.348	0.1025	-3.39	.0009	-0.1781	-0.5173
Op-2-10	-0.380	0.1956	-1.94	.0536	-0.0567	-0.7037
Op-1-12	-0.505	0.1005	-5.03	.0000	-0.3389	-0.6712
Op-2-12	-0.447	0.1956	-2.28	.0236	-0.1231	-0.7701

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1308	0.0862	-1.517	.1311	0.0118	-0.2734

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.4623	0.2544	-1.82	.0709	-0.0417	-0.8829
Station 05	-0.7971	0.2319	-3.44	.0007	-0.4136	-1.1805
Station 06	-0.2810	0.2199	-1.28	.2031	0.0827	-0.6446
Station 08	0.6690	0.2199	3.04	.0027	1.0327	0.3054
Station 09	-0.0185	0.2283	-0.08	.9356	0.3590	-0.3960
Station 10	0.0325	0.2209	0.15	.8832	0.3977	-0.3327
Station 12	-0.0585	0.2199	-0.27	.7907	0.3052	-0.4221

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.66	1.81	0.127	0.93	0.39	-0.26	2.60	0.06	-0.58
04	Op-2	6	0.19	0.62	0.104	0.45	-0.08	0.23	1.25	0.73	-0.28
05	Op-1	17	0.42	0.97	0.065	0.56	0.28	-0.02	2.12	0.22	-0.25
05	Op-2	7	0.00	0.00	0.000	.	.	0.69	2.29	1.43	-0.04
06	Op-1	26	0.08	0.49	0.021	0.12	0.04	0.32	2.22	0.47	0.16
06	Op-2	7	0.02	0.14	0.020	0.07	-0.03	0.67	2.15	1.37	-0.02
08	Op-1	26	3.93	14.10	0.698	5.37	2.49	-3.53	14.31	-2.10	-4.97
08	Op-2	7	14.91	10.42	1.573	18.76	11.06	-14.22	9.65	-10.17	-18.26
09	Op-1	19	17.15	25.07	1.886	21.11	13.19	-16.74	25.00	-12.78	-20.70
09	Op-2	7	19.01	10.42	1.508	22.70	15.32	-18.31	10.66	-14.83	-21.80
10	Op-1	25	3.07	10.90	0.735	4.59	1.55	-2.67	12.57	-1.13	-4.21
10	Op-2	7	1.96	5.21	0.645	3.54	0.39	-1.27	2.99	-0.33	-2.21
12	Op-1	26	1.72	5.28	0.254	2.24	1.19	-1.32	5.56	-0.82	-1.83
12	Op-2	7	1.94	5.00	0.639	3.51	0.38	-1.25	2.99	-0.19	-2.31

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.40	1.94	0.070	0.54	0.25
Op-2	7	0.69	2.29	0.302	1.43	-0.04

Analysis of Variance for HBT for 0298 - Cyanoplax spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.06	0.8121
SEASON	1	176.000	40.41	0.0000
STATION	6	176.000	12.71	0.0000
PERIOD*SEASON	1	176.000	2.74	0.0994
STATION*PERIOD	6	176.000	1.14	0.3414
STATION*SEASON	6	176.000	0.77	0.5974
PERIOD*STATION*SEASON	6	176.000	0.46	0.8390

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.06	0.00	0.1095	.	0.9996
STATION*PERIOD	6.84	0.76	0.5735	0.1477	0.1861

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3918	0.2962	1.323	.1876
Period in FC	-0.4875	0.2721	-1.792	.0749
Period in FC-S	-0.1310	0.3542	-0.370	.7119
Period in FC-W	-0.8441	0.4132	-2.043	.0426
Period in DC-S	0.7015	0.3953	1.775	.0777
Period in DC-W	0.0820	0.4411	0.186	.8527

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.531	0.0278	-19.07	.0000	-0.4850	-0.5771
Period Op-2	-0.517	0.0503	-10.29	.0000	-0.4342	-0.6004
Op-1-04	-0.707	0.0829	-8.53	.0000	-0.5699	-0.8441
Op-2-04	-0.582	0.1478	-3.94	.0001	-0.3378	-0.8265
Op-1-05	-0.923	0.0829	-11.13	.0000	-0.7859	-1.0601
Op-2-05	-0.657	0.1303	-5.04	.0000	-0.4413	-0.8723
Op-1-06	-0.427	0.0669	-6.38	.0000	-0.3160	-0.5374
Op-2-06	-0.330	0.1303	-2.53	.0122	-0.1147	-0.5457
Op-1-08	-0.817	0.0669	-12.20	.0000	-0.7059	-0.9272
Op-2-08	-0.969	0.1303	-7.43	.0000	-0.7534	-1.1844
Op-1-09	-0.451	0.0784	-5.75	.0000	-0.3211	-0.5804
Op-2-09	-0.546	0.1303	-4.19	.0000	-0.3301	-0.7610
Op-1-10	-0.080	0.0683	-1.17	.2451	0.0333	-0.1926
Op-2-10	-0.253	0.1303	-1.94	.0534	-0.0379	-0.4689
Op-1-12	-0.313	0.0669	-4.68	.0000	-0.2027	-0.4241
Op-2-12	-0.284	0.1303	-2.18	.0305	-0.0687	-0.4997

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0137	0.0575	-0.238	.8121	0.0813	-0.1087

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1249	0.1694	-0.74	.4622	0.1553	-0.4050
Station 05	-0.2662	0.1545	-1.72	.0865	-0.0108	-0.5216
Station 06	-0.0965	0.1465	-0.66	.5111	0.1458	-0.3387
Station 08	0.1524	0.1465	1.04	.2997	0.3946	-0.0899
Station 09	0.0948	0.1521	0.62	.5338	0.3463	-0.1567
Station 10	0.1738	0.1471	1.18	.2393	0.4171	-0.0696
Station 12	-0.0292	0.1465	-0.20	.8424	0.2131	-0.2714

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.25	3.90	0.291	1.87	0.64	-1.15	3.65	-0.55	-1.75
04	Op-2	6	0.75	1.20	0.223	1.32	0.18	-0.68	1.20	-0.16	-1.21
05	Op-1	17	2.08	8.70	0.524	3.19	0.97	-1.98	8.45	-0.91	-3.05
05	Op-2	7	1.26	4.00	0.534	2.56	-0.05	-1.19	4.00	0.11	-2.50
06	Op-1	26	0.68	2.60	0.153	1.00	0.37	-0.57	2.60	-0.27	-0.87
06	Op-2	7	0.40	0.90	0.138	0.74	0.06	-0.34	0.75	-0.05	-0.63
08	Op-1	26	2.23	7.90	0.487	3.23	1.23	-2.12	7.90	-1.15	-3.09
08	Op-2	7	1.89	4.10	0.525	3.17	0.60	-1.82	3.90	-0.60	-3.05
09	Op-1	19	0.81	3.40	0.240	1.31	0.31	-0.70	3.15	-0.21	-1.19
09	Op-2	7	0.61	1.00	0.172	1.04	0.19	-0.55	1.00	-0.17	-0.93
10	Op-1	25	0.18	0.60	0.039	0.27	0.10	-0.07	0.85	0.00	-0.14
10	Op-2	7	0.23	0.50	0.075	0.41	0.05	-0.16	0.50	-0.00	-0.33
12	Op-1	26	0.43	1.70	0.093	0.62	0.24	-0.32	1.90	-0.13	-0.50
12	Op-2	7	0.36	1.10	0.156	0.74	-0.02	-0.29	1.10	0.07	-0.66

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.11	0.55	0.028	0.17	0.05
Op-2	7	0.06	0.20	0.030	0.14	-0.01

Analysis of Variance for HBT for 0300 - Fissurella volcano

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	10.54	0.0014
SEASON	1	176.000	4.15	0.0432
STATION	6	176.000	57.61	0.0000
PERIOD*SEASON	1	176.000	0.01	0.9358
STATION*PERIOD	6	176.000	2.85	0.0114
STATION*SEASON	6	176.000	3.65	0.0019
PERIOD*STATION*SEASON	6	176.000	0.33	0.9182

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	10.54	9.42	0.9440	0.9212	0.5732
STATION*PERIOD	17.07	10.88	0.9334	0.7779	0.4526

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.3784	0.3012	4.577	.0000
Period in FC	-0.0505	0.2767	-0.182	.8554
Period in FC-S	0.1138	0.3601	0.316	.7525
Period in FC-W	-0.2147	0.4202	-0.511	.6100
Period in DC-S	1.1812	0.4020	2.938	.0037
Period in DC-W	1.5757	0.4485	3.513	.0006

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.145	0.0283	-5.10	.0000	-0.0977	-0.1913
Period Op-2	-0.334	0.0511	-6.54	.0000	-0.2497	-0.4187
Op-1-04	0.194	0.0843	2.30	.0225	0.3335	0.0546
Op-2-04	0.160	0.1503	1.06	.2891	0.4083	-0.0887
Op-1-05	0.129	0.0843	1.53	.1288	0.2681	-0.0107
Op-2-05	0.181	0.1325	1.36	.1747	0.3998	-0.0385
Op-1-06	0.148	0.0681	2.17	.0312	0.2604	0.0353
Op-2-06	0.181	0.1325	1.36	.1747	0.3998	-0.0385
Op-1-08	-0.052	0.0681	-0.76	.4481	0.0608	-0.1643
Op-2-08	-0.338	0.1325	-2.55	.0116	-0.1190	-0.5573
Op-1-09	-1.071	0.0797	-13.43	.0000	-0.9387	-1.2024
Op-2-09	-1.534	0.1325	-11.57	.0000	-1.3148	-1.7531
Op-1-10	-0.501	0.0695	-7.21	.0000	-0.3860	-0.6157
Op-2-10	-1.090	0.1325	-8.22	.0000	-0.8704	-1.3087
Op-1-12	0.141	0.0681	2.07	.0397	0.2536	0.0285
Op-2-12	0.101	0.1325	0.76	.4466	0.3202	-0.1180

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1897	0.0584	3.247	.0014	0.2863	0.0931

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0342	0.1723	0.20	.8427	0.3192	-0.2507
Station 05	-0.0519	0.1571	-0.33	.7413	0.2078	-0.3117
Station 06	-0.0328	0.1490	-0.22	.8261	0.2136	-0.2791
Station 08	0.2864	0.1490	1.92	.0562	0.5328	0.0400
Station 09	0.4634	0.1547	3.00	.0031	0.7191	0.2076
Station 10	0.5887	0.1496	3.93	.0001	0.8361	0.3413
Station 12	0.0400	0.1490	0.27	.7889	0.2863	-0.2064

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.00	0.000	.	.	0.07	0.25	0.12	0.03
04	Op-2	6	0.03	0.10	0.021	0.09	-0.02	0.04	0.30	0.16	-0.08
05	Op-1	17	0.02	0.20	0.014	0.05	-0.01	0.05	0.25	0.09	0.01
05	Op-2	7	0.00	0.00	0.000	.	.	0.06	0.20	0.14	-0.01
06	Op-1	26	0.00	0.10	0.004	0.01	-0.00	0.05	0.25	0.08	0.02
06	Op-2	7	0.00	0.00	0.000	.	.	0.06	0.20	0.14	-0.01
08	Op-1	26	0.25	2.90	0.137	0.53	-0.04	-0.19	2.90	0.09	-0.46
08	Op-2	7	0.51	2.30	0.315	1.29	-0.26	-0.45	2.10	0.27	-1.17
09	Op-1	19	4.49	19.90	1.506	7.65	1.33	-4.42	19.65	-1.28	-7.57
09	Op-2	7	11.36	57.70	7.903	30.69	-7.98	-11.29	57.65	7.99	-30.58
10	Op-1	25	1.01	5.70	0.323	1.67	0.34	-0.95	5.75	-0.30	-1.60
10	Op-2	7	3.53	13.30	1.758	7.83	-0.77	-3.46	13.10	0.79	-7.72
12	Op-1	26	0.01	0.20	0.008	0.02	-0.01	0.05	0.35	0.08	0.02
12	Op-2	7	0.03	0.20	0.029	0.10	-0.04	0.04	0.15	0.09	-0.02

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.06	0.25	0.015	0.09	0.03
Op-2	7	0.06	0.20	0.030	0.14	-0.01

Analysis of Variance for HBT for 0484 - Haliclona spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	1.58	0.2101
SEASON	1	176.000	13.65	0.0003
STATION	6	176.000	0.10	0.9963
PERIOD*SEASON	1	176.000	2.05	0.1540
STATION*PERIOD	6	176.000	0.08	0.9980
STATION*SEASON	6	176.000	0.07	0.9988
PERIOD*STATION*SEASON	6	176.000	0.03	0.9999

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.58	0.56	0.3494	0.1933	0.1061
STATION*PERIOD	0.48	0.00	0.1295	.	0.1156

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0175	0.0226	0.776	.4388
Period in FC	0.0211	0.0208	1.015	.3117
Period in FC-S	0.0000	0.0270	0.000	1.000
Period in FC-W	0.0421	0.0315	1.336	.1832
Period in DC-S	-0.0053	0.0302	-0.177	.8597
Period in DC-W	0.0404	0.0337	1.201	.2315

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.010	0.0021	4.93	.0000	0.0140	0.0070
Period Op-2	0.005	0.0038	1.29	.1976	0.0113	-0.0014
Op-1-04	0.010	0.0063	1.52	.1293	0.0201	-0.0008
Op-2-04	0.000	0.0113	0.00	1.000	0.0187	-0.0187
Op-1-05	0.010	0.0063	1.52	.1293	0.0201	-0.0008
Op-2-05	0.006	0.0099	0.58	.5615	0.0222	-0.0107
Op-1-06	0.013	0.0051	2.61	.0097	0.0218	0.0049
Op-2-06	0.006	0.0099	0.58	.5615	0.0222	-0.0107
Op-1-08	0.005	0.0051	1.05	.2971	0.0138	-0.0031
Op-2-08	0.006	0.0099	0.58	.5615	0.0222	-0.0107
Op-1-09	0.010	0.0060	1.74	.0835	0.0203	0.0005
Op-2-09	0.006	0.0099	0.58	.5615	0.0222	-0.0107
Op-1-10	0.012	0.0052	2.22	.0277	0.0202	0.0030
Op-2-10	0.006	0.0099	0.58	.5615	0.0222	-0.0107
Op-1-12	0.013	0.0051	2.61	.0097	0.0218	0.0049
Op-2-12	0.006	0.0099	0.58	.5615	0.0222	-0.0107

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0055	0.0044	1.258	.2101	0.0128	-0.0017

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0096	0.0129	0.75	.4568	0.0310	-0.0117
Station 05	0.0039	0.0118	0.33	.7439	0.0234	-0.0156
Station 06	0.0076	0.0112	0.68	.4995	0.0261	-0.0109
Station 08	-0.0004	0.0112	-0.04	.9683	0.0180	-0.0189
Station 09	0.0046	0.0116	0.40	.6905	0.0238	-0.0146
Station 10	0.0058	0.0112	0.52	.6070	0.0244	-0.0128
Station 12	0.0076	0.0112	0.68	.4995	0.0261	-0.0109

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.00	0.000	.	.	0.01	0.10	0.03	-0.00
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	17	0.00	0.00	0.000	.	.	0.01	0.10	0.03	-0.00
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
06	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.10	0.03	0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
08	Op-1	26	0.01	0.14	0.006	0.02	-0.00	0.01	0.17	0.02	-0.01
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
09	Op-1	19	0.00	0.00	0.000	.	.	0.01	0.10	0.02	-0.00
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
10	Op-1	25	0.00	0.00	0.000	.	.	0.01	0.10	0.02	-0.00
10	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
12	Op-1	26	0.00	0.00	0.000	.	.	0.01	0.10	0.03	0.00
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.01	0.10	0.006	0.03	0.00
Op-2	7	0.00	0.03	0.005	0.02	-0.01

Analysis of Variance for HBT for 0838 - Haliotis spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	4.83	0.0292
SEASON	1	176.000	3.41	0.0666
STATION	6	176.000	15.42	0.0000
PERIOD*SEASON	1	176.000	0.09	0.7680
STATION*PERIOD	6	176.000	2.55	0.0218
STATION*SEASON	6	176.000	0.44	0.8508
PERIOD*STATION*SEASON	6	176.000	0.71	0.6382

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.83	3.78	0.7072	0.6148	0.9096
STATION*PERIOD	15.27	9.10	0.9034	0.6993	0.4450

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.3076	0.3083	4.242	.0000
Period in FC	-0.3873	0.2832	-1.367	.1732
Period in FC-S	-0.0727	0.3686	-0.197	.8439
Period in FC-W	-0.7019	0.4301	-1.632	.1045
Period in DC-S	1.1167	0.4115	2.714	.0073
Period in DC-W	1.4985	0.4591	3.264	.0013

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.392	0.0290	13.53	.0000	0.4402	0.3444
Period Op-2	0.261	0.0523	4.99	.0000	0.3473	0.1743
Op-1-04	-0.161	0.0863	-1.87	.0636	-0.0184	-0.3038
Op-2-04	0.067	0.1538	0.44	.6641	0.3213	-0.1874
Op-1-05	-0.165	0.0863	-1.91	.0577	-0.0222	-0.3076
Op-2-05	0.020	0.1357	0.15	.8807	0.2447	-0.2039
Op-1-06	0.368	0.0697	5.28	.0000	0.4831	0.2527
Op-2-06	0.342	0.1357	2.52	.0126	0.5662	0.1176
Op-1-08	0.738	0.0697	10.59	.0000	0.8533	0.6229
Op-2-08	0.417	0.1357	3.07	.0024	0.6414	0.1928
Op-1-09	0.302	0.0816	3.70	.0003	0.4368	0.1669
Op-2-09	0.045	0.1357	0.33	.7411	0.2692	-0.1794
Op-1-10	0.830	0.0711	11.67	.0000	0.9473	0.7121
Op-2-10	0.467	0.1357	3.44	.0007	0.6916	0.2430
Op-1-12	0.835	0.0697	11.98	.0000	0.9498	0.7194
Op-2-12	0.467	0.1357	3.44	.0007	0.6916	0.2430

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1315	0.0598	2.198	.0292	0.2304	0.0326

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.2280	0.1764	-1.29	.1977	0.0636	-0.5197
Station 05	-0.1853	0.1608	-1.15	.2507	0.0806	-0.4511
Station 06	0.0260	0.1525	0.17	.8647	0.2782	-0.2261
Station 08	0.3210	0.1525	2.10	.0367	0.5731	0.0688
Station 09	0.2569	0.1583	1.62	.1064	0.5187	-0.0048
Station 10	0.3624	0.1532	2.37	.0191	0.6157	0.1091
Station 12	0.3673	0.1525	2.41	.0170	0.6195	0.1152

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.23	3.10	0.206	1.67	0.79	-0.53	3.00	-0.13	-0.92
04	Op-2	6	0.33	0.80	0.126	0.66	0.01	-0.07	0.55	0.18	-0.31
05	Op-1	17	1.81	4.80	0.383	2.62	0.99	-1.11	4.85	-0.37	-1.84
05	Op-2	7	0.23	0.60	0.081	0.43	0.03	0.01	0.75	0.26	-0.25
06	Op-1	26	0.29	0.90	0.048	0.39	0.19	0.41	1.45	0.55	0.27
06	Op-2	7	0.04	0.10	0.020	0.09	-0.01	0.19	0.55	0.38	0.01
08	Op-1	26	0.05	0.30	0.018	0.09	0.02	0.65	1.25	0.77	0.53
08	Op-2	7	0.01	0.10	0.014	0.05	-0.02	0.22	0.65	0.41	0.03
09	Op-1	19	0.71	3.40	0.262	1.26	0.16	-0.03	3.55	0.53	-0.60
09	Op-2	7	0.30	1.20	0.165	0.70	-0.10	-0.06	1.60	0.40	-0.53
10	Op-1	25	0.01	0.20	0.009	0.03	-0.01	0.68	1.05	0.80	0.56
10	Op-2	7	0.00	0.00	0.000	.	.	0.24	0.55	0.41	0.06
12	Op-1	26	0.01	0.10	0.006	0.02	-0.00	0.69	1.05	0.81	0.57
12	Op-2	7	0.00	0.00	0.000	.	.	0.24	0.55	0.41	0.06

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.70	1.05	0.057	0.82	0.58
Op-2	7	0.24	0.55	0.070	0.41	0.06

Analysis of Variance for HBT for 0423 - Leptasterias spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	6.70	0.0104
SEASON	1	176.000	10.68	0.0013
STATION	6	176.000	1.68	0.1286
PERIOD*SEASON	1	176.000	18.50	0.0000
STATION*PERIOD	6	176.000	0.18	0.9827
STATION*SEASON	6	176.000	0.83	0.5457
PERIOD*STATION*SEASON	6	176.000	0.69	0.6542

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.70	5.63	0.8248	0.7636	0.1993
STATION*PERIOD	1.06	0.00	0.1680	.	0.1419

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5009	0.1973	-2.539	.0120
Period in FC	-0.1926	0.1813	-1.063	.2893
Period in FC-S	0.5149	0.2359	2.182	.0304
Period in FC-W	-0.9002	0.2752	-3.270	.0013
Period in DC-S	-0.0560	0.2634	-0.213	.8319
Period in DC-W	-0.9459	0.2938	-3.219	.0015

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.360	0.0186	19.38	.0000	0.3902	0.3289
Period Op-2	0.459	0.0335	13.70	.0000	0.5140	0.4033
Op-1-04	0.348	0.0552	6.31	.0000	0.4396	0.2569
Op-2-04	0.363	0.0984	3.68	.0003	0.5254	0.1999
Op-1-05	0.438	0.0552	7.93	.0000	0.5294	0.3467
Op-2-05	0.501	0.0868	5.77	.0000	0.6443	0.3572
Op-1-06	0.228	0.0446	5.12	.0000	0.3020	0.1545
Op-2-06	0.344	0.0868	3.96	.0001	0.4874	0.2003
Op-1-08	0.358	0.0446	8.02	.0000	0.4313	0.2839
Op-2-08	0.501	0.0868	5.77	.0000	0.6443	0.3572
Op-1-09	0.393	0.0522	7.52	.0000	0.4791	0.3063
Op-2-09	0.501	0.0868	5.77	.0000	0.6443	0.3572
Op-1-10	0.371	0.0455	8.15	.0000	0.4463	0.2958
Op-2-10	0.501	0.0868	5.77	.0000	0.6443	0.3572
Op-1-12	0.381	0.0446	8.54	.0000	0.4545	0.3070
Op-2-12	0.501	0.0868	5.77	.0000	0.6443	0.3572

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0991	0.0383	-2.589	.0104	-0.0358	-0.1624

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0143	0.1129	-0.13	.8990	0.1723	-0.2010
Station 05	-0.0627	0.1029	-0.61	.5430	0.1074	-0.2329
Station 06	-0.1156	0.0976	-1.18	.2379	0.0458	-0.2770
Station 08	-0.1432	0.0976	-1.47	.1442	0.0182	-0.3046
Station 09	-0.1081	0.1013	-1.07	.2876	0.0595	-0.2756
Station 10	-0.1297	0.0980	-1.32	.1876	0.0324	-0.2918
Station 12	-0.1200	0.0976	-1.23	.2205	0.0414	-0.2814

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.04	0.20	0.017	0.08	0.00	0.19	0.80	0.30	0.08
04	Op-2	6	0.08	0.20	0.040	0.19	-0.02	0.18	0.50	0.35	-0.00
05	Op-1	17	0.01	0.10	0.006	0.02	-0.01	0.22	0.70	0.33	0.12
05	Op-2	7	0.00	0.00	0.000	.	.	0.24	0.45	0.38	0.10
06	Op-1	26	0.06	0.50	0.021	0.10	0.02	0.12	0.85	0.20	0.04
06	Op-2	7	0.07	0.20	0.036	0.16	-0.02	0.17	0.50	0.31	0.03
08	Op-1	26	0.01	0.10	0.005	0.02	-0.00	0.18	0.75	0.25	0.10
08	Op-2	7	0.00	0.00	0.000	.	.	0.24	0.45	0.38	0.10
09	Op-1	19	0.02	0.30	0.016	0.06	-0.01	0.20	0.80	0.30	0.10
09	Op-2	7	0.00	0.00	0.000	.	.	0.24	0.45	0.38	0.10
10	Op-1	25	0.00	0.10	0.004	0.01	-0.00	0.18	0.70	0.26	0.11
10	Op-2	7	0.00	0.00	0.000	.	.	0.24	0.45	0.38	0.10
12	Op-1	26	0.00	0.00	0.000	.	.	0.18	0.70	0.26	0.11
12	Op-2	7	0.00	0.00	0.000	.	.	0.24	0.45	0.38	0.10

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.18	0.70	0.035	0.26	0.11
Op-2	7	0.24	0.45	0.057	0.38	0.10

Analysis of Variance for HBT for 0292 - Lottia digitalis

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	2.31	0.1304
SEASON	1	176.000	0.02	0.8896
STATION	6	176.000	46.05	0.0000
PERIOD*SEASON	1	176.000	26.38	0.0000
STATION*PERIOD	6	176.000	9.45	0.0000
STATION*SEASON	6	176.000	2.08	0.0572
PERIOD*STATION*SEASON	6	176.000	1.81	0.1002

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.31	1.28	0.4487	0.3055	0.7590
STATION*PERIOD	56.69	50.05	1.0000	1.0000	0.2980

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.1517	0.3379	3.408	.0008
Period in FC	-0.4543	0.3105	-1.463	.1452
Period in FC-S	0.1943	0.4041	0.481	.6313
Period in FC-W	-1.1029	0.4714	-2.339	.0204
Period in DC-S	2.8602	0.4511	6.341	.0000
Period in DC-W	-0.5568	0.5033	-1.106	.2701

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.320	0.0318	-10.07	.0000	-0.2676	-0.3727
Period Op-2	-0.420	0.0573	-7.32	.0000	-0.3249	-0.5146
Op-1-04	0.057	0.0946	0.60	.5492	0.2132	-0.0997
Op-2-04	0.099	0.1686	0.59	.5559	0.3783	-0.1793
Op-1-05	-0.580	0.0946	-6.13	.0000	-0.4232	-0.7361
Op-2-05	-0.318	0.1487	-2.14	.0337	-0.0723	-0.5641
Op-1-06	0.075	0.0764	0.98	.3264	0.2014	-0.0511
Op-2-06	0.225	0.1487	1.52	.1314	0.4713	-0.0205
Op-1-08	-0.486	0.0764	-6.36	.0000	-0.3592	-0.6118
Op-2-08	-1.165	0.1487	-7.83	.0000	-0.9186	-1.4104
Op-1-09	-0.940	0.0895	-10.50	.0000	-0.7917	-1.0876
Op-2-09	-1.951	0.1487	-13.12	.0000	-1.7049	-2.1967
Op-1-10	-0.123	0.0779	-1.57	.1177	0.0063	-0.2514
Op-2-10	0.225	0.1487	1.52	.1314	0.4713	-0.0205
Op-1-12	-0.245	0.0764	-3.21	.0016	-0.1192	-0.3717
Op-2-12	-0.055	0.1487	-0.37	.7127	0.1910	-0.3007

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0996	0.0656	1.520	.1304	0.2080	-0.0088

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0427	0.1933	-0.22	.8255	0.2770	-0.3624
Station 05	-0.2614	0.1762	-1.48	.1398	0.0300	-0.5529
Station 06	-0.1502	0.1672	-0.90	.3701	0.1262	-0.4266
Station 08	0.6790	0.1672	4.06	.0001	0.9554	0.4026
Station 09	1.0112	0.1735	5.83	.0000	1.2982	0.7243
Station 10	-0.3479	0.1679	-2.07	.0397	-0.0703	-0.6255
Station 12	-0.1906	0.1672	-1.14	.2557	0.0858	-0.4670

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.02	0.20	0.013	0.04	-0.01	0.01	0.35	0.05	-0.02
04	Op-2	6	0.00	0.00	0.000	.	.	0.03	0.15	0.09	-0.04
05	Op-1	17	0.50	1.00	0.082	0.67	0.33	-0.47	1.00	-0.31	-0.63
05	Op-2	7	0.63	2.10	0.346	1.47	-0.22	-0.49	1.95	0.20	-1.19
06	Op-1	26	0.00	0.10	0.004	0.01	-0.00	0.03	0.25	0.05	0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.14	0.80	0.41	-0.14
08	Op-1	26	0.58	2.40	0.140	0.87	0.30	-0.56	2.50	-0.26	-0.85
08	Op-2	7	4.44	8.20	1.197	7.37	1.51	-4.31	8.10	-1.35	-7.26
09	Op-1	19	2.75	11.70	0.755	4.34	1.17	-2.72	11.80	-1.13	-4.31
09	Op-2	7	17.27	32.50	4.375	27.98	6.57	-17.14	31.70	-6.65	-27.62
10	Op-1	25	0.38	6.90	0.277	0.95	-0.20	-0.35	7.05	0.23	-0.92
10	Op-2	7	0.00	0.00	0.000	.	.	0.14	0.80	0.41	-0.14
12	Op-1	26	0.19	0.70	0.045	0.28	0.10	-0.16	0.80	-0.06	-0.26
12	Op-2	7	0.14	0.70	0.097	0.38	-0.10	-0.01	0.20	0.05	-0.06

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.03	0.15	0.009	0.05	0.01
Op-2	7	0.14	0.80	0.113	0.41	-0.14

Analysis of Variance for HBT for 0293 - Lottia limatula

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	2.00	0.1589
SEASON	1	176.000	10.72	0.0013
STATION	6	176.000	15.10	0.0000
PERIOD*SEASON	1	176.000	3.85	0.0514
STATION*PERIOD	6	176.000	0.81	0.5606
STATION*SEASON	6	176.000	2.41	0.0289
PERIOD*STATION*SEASON	6	176.000	1.73	0.1167

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.00	0.98	0.4080	0.2591	1.0000
STATION*PERIOD	4.88	0.00	0.4434	.	0.1345

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.4884	0.3000	1.628	.1052
Period in FC	0.0878	0.2756	0.319	.7504
Period in FC-S	0.6636	0.3587	1.850	.0660
Period in FC-W	-0.4880	0.4185	-1.166	.2452
Period in DC-S	0.7118	0.4004	1.778	.0772
Period in DC-W	0.2651	0.4468	0.593	.5536

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.115	0.0282	-4.07	.0001	-0.0681	-0.1614
Period Op-2	-0.197	0.0509	-3.87	.0002	-0.1129	-0.2812
Op-1-04	-0.155	0.0840	-1.84	.0672	-0.0158	-0.2935
Op-2-04	-0.019	0.1497	-0.13	.8998	0.2286	-0.2664
Op-1-05	-0.015	0.0840	-0.18	.8554	0.1235	-0.1542
Op-2-05	-0.174	0.1320	-1.32	.1901	0.0446	-0.3919
Op-1-06	0.379	0.0678	5.59	.0000	0.4914	0.2672
Op-2-06	0.314	0.1320	2.38	.0184	0.5323	0.0957
Op-1-08	-0.386	0.0678	-5.70	.0000	-0.2741	-0.4983
Op-2-08	-0.668	0.1320	-5.06	.0000	-0.4502	-0.8867
Op-1-09	-0.452	0.0794	-5.70	.0000	-0.3212	-0.5838
Op-2-09	-0.513	0.1320	-3.89	.0001	-0.2952	-0.7318
Op-1-10	-0.030	0.0692	-0.44	.6611	0.0840	-0.1448
Op-2-10	-0.218	0.1320	-1.65	.1008	0.0005	-0.4360
Op-1-12	-0.143	0.0678	-2.12	.0357	-0.0314	-0.2556
Op-2-12	-0.101	0.1320	-0.77	.4438	0.1170	-0.3196

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0823	0.0582	1.415	.1589	0.1785	-0.0139

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1358	0.1716	-0.79	.4299	0.1480	-0.4196
Station 05	0.1583	0.1565	1.01	.3130	0.4170	-0.1004
Station 06	0.0653	0.1484	0.44	.6606	0.3106	-0.1801
Station 08	0.2822	0.1484	1.90	.0588	0.5276	0.0368
Station 09	0.0610	0.1540	0.40	.6925	0.3157	-0.1937
Station 10	0.1874	0.1490	1.26	.2103	0.4338	-0.0591
Station 12	-0.0421	0.1484	-0.28	.7768	0.2032	-0.2875

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.95	3.10	0.229	2.44	1.47	-0.34	4.55	0.19	-0.87
04	Op-2	6	2.43	5.50	0.781	4.44	0.42	-0.73	4.55	1.14	-2.61
05	Op-1	17	1.94	6.30	0.442	2.87	1.00	-0.32	6.50	0.42	-1.06
05	Op-2	7	2.69	5.30	0.773	4.58	0.79	-1.11	5.25	0.59	-2.80
06	Op-1	26	0.72	3.20	0.136	1.00	0.44	1.02	6.30	1.63	0.41
06	Op-2	7	2.03	9.30	1.263	5.12	-1.06	-0.45	10.05	2.65	-3.55
08	Op-1	26	3.77	9.20	0.431	4.66	2.89	-2.03	14.35	-0.93	-3.13
08	Op-2	7	7.07	11.70	1.580	10.94	3.21	-5.49	12.85	-1.49	-9.50
09	Op-1	19	3.84	7.60	0.432	4.75	2.93	-2.29	9.55	-1.20	-3.39
09	Op-2	7	5.94	15.10	2.112	11.11	0.78	-4.36	16.75	0.95	-9.68
10	Op-1	25	1.81	7.00	0.319	2.47	1.15	-0.01	7.15	0.55	-0.58
10	Op-2	7	2.59	6.30	0.810	4.57	0.60	-1.01	7.95	1.40	-3.41
12	Op-1	26	2.29	6.00	0.345	3.00	1.58	-0.55	8.20	0.18	-1.29
12	Op-2	7	2.24	5.30	0.746	4.07	0.42	-0.66	6.45	1.23	-2.56

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.74	5.55	0.299	2.36	1.12
Op-2	7	1.58	2.85	0.356	2.45	0.71

Analysis of Variance for HBT for 0294 - Lottia pelta

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.40	0.5284
SEASON	1	176.000	0.24	0.6227
STATION	6	176.000	8.09	0.0000
PERIOD*SEASON	1	176.000	2.96	0.0869
STATION*PERIOD	6	176.000	0.45	0.8455
STATION*SEASON	6	176.000	1.54	0.1688
PERIOD*STATION*SEASON	6	176.000	0.71	0.6386

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.40	0.00	0.1664	.	0.9883
STATION*PERIOD	2.69	0.00	0.2839	.	0.1436

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2464	0.3661	-0.673	.5017
Period in FC	-0.0676	0.3363	-0.201	.8410
Period in FC-S	0.0241	0.4378	0.055	.9562
Period in FC-W	-0.1593	0.5107	-0.312	.7555
Period in DC-S	0.5176	0.4887	1.059	.2909
Period in DC-W	-1.0105	0.5452	-1.853	.0655

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.033	0.0344	-0.97	.3344	0.0236	-0.0902
Period Op-2	0.012	0.0621	0.19	.8528	0.1143	-0.0912
Op-1-04	0.261	0.1025	2.55	.0118	0.4304	0.0915
Op-2-04	0.226	0.1827	1.24	.2183	0.5278	-0.0763
Op-1-05	-0.049	0.1025	-0.48	.6331	0.1205	-0.2185
Op-2-05	0.072	0.1611	0.45	.6535	0.3388	-0.1939
Op-1-06	0.191	0.0827	2.31	.0219	0.3281	0.0545
Op-2-06	0.173	0.1611	1.07	.2852	0.4391	-0.0937
Op-1-08	-0.007	0.0827	-0.09	.9306	0.1296	-0.1440
Op-2-08	0.129	0.1611	0.80	.4244	0.3954	-0.1374
Op-1-09	-0.233	0.0969	-2.41	.0172	-0.0728	-0.3934
Op-2-09	-0.246	0.1611	-1.53	.1278	0.0199	-0.5129
Op-1-10	-0.435	0.0844	-5.16	.0000	-0.2957	-0.5749
Op-2-10	-0.550	0.1611	-3.41	.0008	-0.2837	-0.8164
Op-1-12	0.039	0.0827	0.47	.6369	0.1759	-0.0977
Op-2-12	0.277	0.1611	1.72	.0868	0.5439	0.0111

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0449	0.0710	-0.632	.5284	0.0726	-0.1623

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0352	0.2095	0.17	.8666	0.3816	-0.3111
Station 05	-0.1214	0.1909	-0.64	.5256	0.1943	-0.4372
Station 06	0.0186	0.1811	0.10	.9182	0.3181	-0.2808
Station 08	-0.1362	0.1811	-0.75	.4530	0.1633	-0.4357
Station 09	0.0134	0.1880	0.07	.9433	0.3243	-0.2975
Station 10	0.1147	0.1819	0.63	.5290	0.4155	-0.1860
Station 12	-0.2383	0.1811	-1.32	.1899	0.0611	-0.5378

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.21	0.50	0.045	0.31	0.12	0.18	1.05	0.31	0.04
04	Op-2	6	0.40	1.40	0.213	0.95	-0.15	0.30	1.80	0.97	-0.37
05	Op-1	17	0.51	1.30	0.088	0.69	0.32	-0.12	1.40	0.08	-0.32
05	Op-2	7	0.56	1.10	0.151	0.93	0.19	0.15	1.75	0.85	-0.55
06	Op-1	26	0.32	1.50	0.077	0.48	0.16	0.08	1.75	0.24	-0.08
06	Op-2	7	0.57	1.90	0.253	1.19	-0.05	0.14	1.80	0.70	-0.42
08	Op-1	26	0.94	7.40	0.308	1.58	0.31	-0.53	7.20	0.07	-1.14
08	Op-2	7	0.89	2.70	0.384	1.82	-0.05	-0.18	2.90	0.88	-1.23
09	Op-1	19	1.14	5.10	0.309	1.79	0.49	-0.76	4.70	-0.17	-1.35
09	Op-2	7	4.76	29.30	4.142	14.89	-5.38	-4.05	29.50	6.04	-14.14
10	Op-1	25	1.79	7.70	0.359	2.53	1.05	-1.37	7.25	-0.66	-2.09
10	Op-2	7	2.56	4.50	0.623	4.08	1.03	-1.85	4.70	-0.47	-3.23
12	Op-1	26	0.53	2.40	0.104	0.75	0.32	-0.13	2.75	0.11	-0.37
12	Op-2	7	0.27	0.50	0.068	0.44	0.11	0.44	1.15	0.87	-0.00

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.41	0.70	0.038	0.49	0.33
Op-2	7	0.71	1.35	0.187	1.16	0.25

Analysis of Variance for HBT for 0295 - Macclintockia scabra

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	4.47	0.0359
SEASON	1	176.000	0.83	0.3629
STATION	6	176.000	35.94	0.0000
PERIOD*SEASON	1	176.000	0.26	0.6100
STATION*PERIOD	6	176.000	1.13	0.3465
STATION*SEASON	6	176.000	0.38	0.8895
PERIOD*STATION*SEASON	6	176.000	0.44	0.8528

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.47	3.42	0.6777	0.5783	1.0000
STATION*PERIOD	6.78	0.71	0.5702	0.1442	0.1518

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.8123	0.3025	2.685	.0079
Period in FC	0.0562	0.2779	0.202	.8400
Period in FC-S	0.2225	0.3617	0.615	.5393
Period in FC-W	-0.1102	0.4220	-0.261	.7944
Period in DC-S	0.8558	0.4038	2.119	.0355
Period in DC-W	0.7687	0.4505	1.706	.0897

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.206	0.0284	-7.23	.0000	-0.1586	-0.2527
Period Op-2	-0.330	0.0513	-6.42	.0000	-0.2449	-0.4146
Op-1-04	-0.201	0.0847	-2.38	.0186	-0.0612	-0.3412
Op-2-04	-0.006	0.1509	-0.04	.9665	0.2432	-0.2559
Op-1-05	-0.204	0.0847	-2.41	.0169	-0.0642	-0.3443
Op-2-05	-0.233	0.1331	-1.75	.0818	-0.0129	-0.4531
Op-1-06	0.405	0.0684	5.93	.0000	0.5183	0.2922
Op-2-06	0.183	0.1331	1.37	.1710	0.4031	-0.0371
Op-1-08	-0.635	0.0684	-9.29	.0000	-0.5223	-0.7484
Op-2-08	-0.990	0.1331	-7.44	.0000	-0.7703	-1.2105
Op-1-09	-0.850	0.0801	-10.62	.0000	-0.7181	-0.9829
Op-2-09	-0.979	0.1331	-7.36	.0000	-0.7591	-1.1993
Op-1-10	0.263	0.0698	3.77	.0002	0.3783	0.1475
Op-2-10	0.062	0.1331	0.47	.6423	0.2821	-0.1582
Op-1-12	-0.217	0.0684	-3.17	.0018	-0.1036	-0.3297
Op-2-12	-0.344	0.1331	-2.59	.0105	-0.1241	-0.5643

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1241	0.0587	2.114	.0359	0.2211	0.0270

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1949	0.1731	-1.13	.2618	0.0913	-0.4811
Station 05	0.0288	0.1578	0.18	.8554	0.2897	-0.2321
Station 06	0.2222	0.1496	1.49	.1393	0.4697	-0.0252
Station 08	0.3551	0.1496	2.37	.0187	0.6025	0.1076
Station 09	0.1287	0.1554	0.83	.4085	0.3856	-0.1282
Station 10	0.2010	0.1503	1.34	.1829	0.4495	-0.0475
Station 12	0.1275	0.1496	0.85	.3953	0.3750	-0.1199

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	21.16	53.50	3.407	28.39	13.94	-8.63	52.95	-1.30	-15.96
04	Op-2	6	6.72	12.10	2.076	12.05	1.38	-1.01	6.65	1.72	-3.74
05	Op-1	17	21.03	68.90	4.581	30.74	11.32	-8.50	82.75	1.25	-18.25
05	Op-2	7	11.13	19.70	2.518	17.29	4.97	-4.46	16.60	0.78	-9.69
06	Op-1	26	5.47	11.60	0.647	6.80	4.13	12.04	33.45	16.24	7.84
06	Op-2	7	3.60	5.30	0.739	5.41	1.79	3.07	7.15	5.73	0.41
08	Op-1	26	66.56	112.60	5.664	78.22	54.89	-49.05	130.25	-37.07	-61.03
08	Op-2	7	80.51	132.20	19.835	129.05	31.98	-73.84	126.75	-25.18	-122.51
09	Op-1	19	87.09	134.20	8.668	105.30	68.88	-73.03	119.35	-55.04	-91.02
09	Op-2	7	76.40	142.70	19.560	124.26	28.54	-69.73	133.30	-22.66	-116.79
10	Op-1	25	25.38	156.80	8.660	43.25	7.51	-8.67	153.60	6.50	-23.84
10	Op-2	7	5.39	8.30	1.132	8.16	2.62	1.29	11.30	5.01	-2.44
12	Op-1	26	27.75	81.10	3.615	35.19	20.31	-10.24	69.10	-4.86	-15.63
12	Op-2	7	15.00	25.30	3.173	22.76	7.24	-8.33	18.05	-1.89	-14.77

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	17.51	43.00	2.340	22.33	12.69
Op-2	7	6.67	10.95	1.750	10.95	2.39

Analysis of Variance for HBT for 0362 - Nuttallina californica

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	34.27	0.0000
SEASON	1	176.000	1.29	0.2569
STATION	6	176.000	4.65	0.0002
PERIOD*SEASON	1	176.000	0.66	0.4161
STATION*PERIOD	6	176.000	0.93	0.4713
STATION*SEASON	6	176.000	0.11	0.9949
PERIOD*STATION*SEASON	6	176.000	0.13	0.9920

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	34.27	32.88	1.0000	1.0000	0.8661
STATION*PERIOD	5.61	0.00	0.4938	.	0.4523

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5835	0.1183	-4.934	.0000
Period in FC	-0.3565	0.1087	-3.281	.0012
Period in FC-S	-0.3579	0.1414	-2.531	.0123
Period in FC-W	-0.3552	0.1650	-2.153	.0327
Period in DC-S	-0.4513	0.1579	-2.859	.0048
Period in DC-W	-0.7158	0.1761	-4.064	.0001

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.019	0.0111	-1.70	.0913	-0.0005	-0.0373
Period Op-2	0.115	0.0201	5.75	.0000	0.1486	0.0822
Op-1-04	-0.010	0.0331	-0.31	.7553	0.0444	-0.0651
Op-2-04	0.101	0.0590	1.72	.0875	0.1990	0.0038
Op-1-05	0.009	0.0331	0.27	.7906	0.0636	-0.0459
Op-2-05	0.145	0.0520	2.79	.0058	0.2315	0.0594
Op-1-06	0.007	0.0267	0.24	.8069	0.0507	-0.0377
Op-2-06	0.115	0.0520	2.21	.0287	0.2008	0.0287
Op-1-08	-0.144	0.0267	-5.39	.0000	-0.0999	-0.1882
Op-2-08	0.070	0.0520	1.35	.1778	0.1565	-0.0156
Op-1-09	-0.144	0.0313	-4.59	.0000	-0.0920	-0.1955
Op-2-09	0.068	0.0520	1.30	.1936	0.1540	-0.0181
Op-1-10	0.071	0.0273	2.62	.0095	0.1166	0.0264
Op-2-10	0.151	0.0520	2.89	.0043	0.2366	0.0645
Op-1-12	0.079	0.0267	2.96	.0035	0.1233	0.0350
Op-2-12	0.157	0.0520	3.03	.0028	0.2435	0.0714

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1343	0.0229	-5.854	.0000	-0.0964	-0.1722

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1117	0.0677	-1.65	.1005	0.0002	-0.2236
Station 05	-0.1366	0.0617	-2.21	.0281	-0.0346	-0.2386
Station 06	-0.1082	0.0585	-1.85	.0660	-0.0115	-0.2049
Station 08	-0.2145	0.0585	-3.67	.0003	-0.1177	-0.3112
Station 09	-0.2117	0.0607	-3.49	.0006	-0.1112	-0.3121
Station 10	-0.0791	0.0588	-1.35	.1800	0.0181	-0.1763
Station 12	-0.0783	0.0585	-1.34	.1823	0.0184	-0.1751

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.31	0.90	0.082	0.49	0.14	-0.06	1.20	0.14	-0.26
04	Op-2	6	0.10	0.50	0.082	0.31	-0.11	0.31	1.05	0.70	-0.08
05	Op-1	17	0.24	0.90	0.062	0.37	0.11	0.01	1.10	0.18	-0.15
05	Op-2	7	0.03	0.10	0.018	0.07	-0.02	0.41	0.65	0.66	0.17
06	Op-1	26	0.21	1.10	0.054	0.32	0.10	-0.00	1.30	0.13	-0.13
06	Op-2	7	0.10	0.40	0.058	0.24	-0.04	0.34	0.50	0.51	0.18
08	Op-1	26	0.86	4.30	0.197	1.27	0.46	-0.65	4.50	-0.23	-1.07
08	Op-2	7	0.24	0.60	0.090	0.46	0.02	0.20	1.05	0.63	-0.23
09	Op-1	19	0.95	4.30	0.271	1.52	0.38	-0.71	4.40	-0.12	-1.31
09	Op-2	7	0.24	0.50	0.065	0.40	0.08	0.20	0.75	0.44	-0.04
10	Op-1	25	0.03	0.70	0.028	0.09	-0.03	0.18	0.90	0.26	0.11
10	Op-2	7	0.01	0.10	0.014	0.05	-0.02	0.43	0.65	0.69	0.17
12	Op-1	26	0.00	0.10	0.004	0.01	-0.00	0.21	0.50	0.26	0.15
12	Op-2	7	0.00	0.00	0.000	.	.	0.44	0.65	0.69	0.20

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.21	0.50	0.027	0.27	0.16
Op-2	7	0.44	0.65	0.100	0.69	0.20

Analysis of Variance for HBT for 0528 - Ocenebra spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	2.84	0.0937
SEASON	1	176.000	0.70	0.4051
STATION	6	176.000	10.71	0.0000
PERIOD*SEASON	1	176.000	0.96	0.3288
STATION*PERIOD	6	176.000	0.64	0.6957
STATION*SEASON	6	176.000	0.70	0.6494
PERIOD*STATION*SEASON	6	176.000	0.61	0.7224

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.84	1.81	0.5141	0.3815	0.9999
STATION*PERIOD	3.86	0.00	0.3697	.	0.4582

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0837	0.1710	-0.489	.6252
Period in FC	-0.3077	0.1571	-1.959	.0517
Period in FC-S	-0.1772	0.2045	-0.866	.3875
Period in FC-W	-0.4383	0.2386	-1.837	.0679
Period in DC-S	0.0132	0.2283	0.058	.9540
Period in DC-W	-0.1805	0.2547	-0.709	.4794

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.125	0.0161	-7.75	.0000	-0.0980	-0.1511
Period Op-2	-0.069	0.0290	-2.37	.0191	-0.0207	-0.1166
Op-1-04	-0.338	0.0479	-7.06	.0000	-0.2587	-0.4170
Op-2-04	-0.154	0.0853	-1.80	.0735	-0.0126	-0.2947
Op-1-05	-0.106	0.0479	-2.21	.0282	-0.0268	-0.1851
Op-2-05	-0.014	0.0753	-0.18	.8576	0.1109	-0.1380
Op-1-06	-0.130	0.0386	-3.36	.0010	-0.0659	-0.1937
Op-2-06	-0.099	0.0753	-1.31	.1912	0.0257	-0.2232
Op-1-08	-0.082	0.0386	-2.13	.0348	-0.0183	-0.1461
Op-2-08	-0.114	0.0753	-1.51	.1318	0.0105	-0.2384
Op-1-09	-0.325	0.0453	-7.18	.0000	-0.2500	-0.3997
Op-2-09	-0.236	0.0753	-3.13	.0020	-0.1113	-0.3601
Op-1-10	0.159	0.0394	4.03	.0001	0.2241	0.0936
Op-2-10	0.146	0.0753	1.94	.0543	0.2702	0.0214
Op-1-12	-0.050	0.0386	-1.29	.1975	0.0139	-0.1139
Op-2-12	-0.011	0.0753	-0.14	.8873	0.1138	-0.1351

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0559	0.0332	-1.686	.0937	-0.0011	-0.1108

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1842	0.0978	-1.88	.0613	-0.0225	-0.3460
Station 05	-0.0924	0.0892	-1.04	.3016	0.0551	-0.2399
Station 06	-0.0311	0.0846	-0.37	.7135	0.1088	-0.1710
Station 08	0.0317	0.0846	0.38	.7080	0.1716	-0.1081
Station 09	-0.0892	0.0878	-1.02	.3113	0.0560	-0.2344
Station 10	0.0131	0.0850	0.15	.8779	0.1536	-0.1274
Station 12	-0.0393	0.0846	-0.46	.6427	0.1006	-0.1792

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.44	2.70	0.180	1.82	1.06	-1.10	2.60	-0.73	-1.47
04	Op-2	6	0.55	0.40	0.062	0.71	0.39	-0.30	0.80	0.03	-0.63
05	Op-1	17	0.62	1.80	0.102	0.84	0.41	-0.28	1.85	-0.05	-0.52
05	Op-2	7	0.31	0.80	0.116	0.60	0.03	-0.04	1.15	0.33	-0.40
06	Op-1	26	0.63	1.80	0.072	0.78	0.48	-0.31	1.90	-0.15	-0.47
06	Op-2	7	0.60	1.30	0.219	1.14	0.06	-0.32	1.55	0.29	-0.94
08	Op-1	26	0.52	1.60	0.070	0.66	0.38	-0.20	2.00	-0.03	-0.37
08	Op-2	7	0.54	0.90	0.109	0.81	0.28	-0.26	1.15	0.13	-0.66
09	Op-1	19	1.65	4.60	0.301	2.28	1.01	-1.32	4.65	-0.66	-1.97
09	Op-2	7	0.81	0.60	0.074	0.99	0.63	-0.54	0.40	-0.40	-0.68
10	Op-1	25	0.06	0.60	0.027	0.12	0.01	0.25	1.15	0.35	0.15
10	Op-2	7	0.04	0.20	0.030	0.12	-0.03	0.24	0.60	0.46	0.02
12	Op-1	26	0.47	1.70	0.080	0.63	0.30	-0.15	2.25	0.04	-0.33
12	Op-2	7	0.30	0.90	0.123	0.60	-0.00	-0.02	0.95	0.28	-0.32

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.32	0.85	0.037	0.39	0.24
Op-2	7	0.28	0.60	0.088	0.49	0.06

Analysis of Variance for HBT for D397 - Pachygrapsus crassipes

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	3.66	0.0574
SEASON	1	176.000	22.24	0.0000
STATION	6	176.000	15.68	0.0000
PERIOD*SEASON	1	176.000	9.77	0.0021
STATION*PERIOD	6	176.000	1.44	0.2030
STATION*SEASON	6	176.000	1.91	0.0812
PERIOD*STATION*SEASON	6	176.000	0.42	0.8671

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.66	2.62	0.6030	0.4873	1.0000
STATION*PERIOD	8.62	2.52	0.6753	0.2716	0.1460

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2648	0.2974	0.890	.3745
Period in FC	0.5078	0.2733	1.858	.0648
Period in FC-S	1.0514	0.3557	2.956	.0035
Period in FC-W	-0.0358	0.4150	-0.086	.9314
Period in DC-S	0.9835	0.3970	2.477	.0142
Period in DC-W	-0.4538	0.4430	-1.024	.3071

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.181	0.0280	-6.48	.0000	-0.1350	-0.2275
Period Op-2	-0.292	0.0505	-5.78	.0000	-0.2082	-0.3751
Op-1-04	-0.231	0.0833	-2.77	.0062	-0.0930	-0.3684
Op-2-04	-0.363	0.1484	-2.45	.0153	-0.1181	-0.6089
Op-1-05	-0.308	0.0833	-3.70	.0003	-0.1705	-0.4459
Op-2-05	-0.528	0.1309	-4.03	.0001	-0.3117	-0.7445
Op-1-06	-0.094	0.0672	-1.40	.1647	0.0174	-0.2049
Op-2-06	-0.249	0.1309	-1.90	.0589	-0.0324	-0.4653
Op-1-08	-0.250	0.0672	-3.72	.0003	-0.1389	-0.3612
Op-2-08	-0.391	0.1309	-2.99	.0032	-0.1747	-0.6075
Op-1-09	-0.506	0.0787	-6.42	.0000	-0.3756	-0.6360
Op-2-09	-0.877	0.1309	-6.70	.0000	-0.6610	-1.0939
Op-1-10	0.154	0.0686	2.24	.0264	0.2670	0.0401
Op-2-10	0.283	0.1309	2.17	.0317	0.4999	0.0670
Op-1-12	-0.034	0.0672	-0.50	.6159	0.0774	-0.1449
Op-2-12	0.084	0.1309	0.64	.5208	0.3007	-0.1322

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1104	0.0577	1.913	.0574	0.2058	0.0150

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1328	0.1702	0.78	.4361	0.4142	-0.1486
Station 05	0.2199	0.1551	1.42	.1581	0.4764	-0.0366
Station 06	0.1551	0.1471	1.05	.2933	0.3984	-0.0882
Station 08	0.1411	0.1471	0.96	.3389	0.3844	-0.1022
Station 09	0.3716	0.1527	2.43	.0160	0.6242	0.1190
Station 10	-0.1299	0.1478	-0.88	.3807	0.1145	-0.3742
Station 12	-0.1180	0.1471	-0.80	.4236	0.1253	-0.3613

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.95	1.80	0.143	1.26	0.65	-0.47	1.95	-0.19	-0.75
04	Op-2	6	1.13	2.00	0.300	1.90	0.36	-0.85	1.95	-0.06	-1.64
05	Op-1	17	1.21	2.70	0.196	1.62	0.79	-0.73	2.25	-0.35	-1.10
05	Op-2	7	1.39	1.60	0.204	1.88	0.89	-1.08	1.55	-0.61	-1.55
06	Op-1	26	0.63	2.10	0.097	0.83	0.43	-0.21	2.25	-0.03	-0.40
06	Op-2	7	0.83	1.50	0.198	1.31	0.34	-0.52	1.70	0.02	-1.06
08	Op-1	26	0.94	3.20	0.156	1.26	0.62	-0.53	2.70	-0.22	-0.83
08	Op-2	7	1.39	2.20	0.358	2.26	0.51	-1.08	2.15	-0.17	-1.98
09	Op-1	19	1.88	5.10	0.297	2.50	1.26	-1.44	4.60	-0.85	-2.03
09	Op-2	7	3.54	7.60	1.050	6.11	0.97	-3.24	7.60	-0.68	-5.79
10	Op-1	25	0.34	1.10	0.067	0.48	0.20	0.09	1.75	0.23	-0.06
10	Op-2	7	0.23	0.70	0.113	0.50	-0.05	0.08	0.95	0.38	-0.23
12	Op-1	26	0.52	1.80	0.084	0.69	0.35	-0.10	2.25	0.09	-0.29
12	Op-2	7	0.40	1.50	0.195	0.88	-0.08	-0.09	1.40	0.33	-0.51

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.42	0.90	0.055	0.53	0.30
Op-2	7	0.31	0.25	0.046	0.42	0.20

Analysis of Variance for HBT for 0398 - Pagurus spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	0.23	0.6305
SEASON	1	176.000	1.33	0.2504
STATION	6	176.000	8.51	0.0000
PERIOD*SEASON	1	176.000	2.80	0.0958
STATION*PERIOD	6	176.000	0.95	0.4640
STATION*SEASON	6	176.000	1.34	0.2401
PERIOD*STATION*SEASON	6	176.000	0.28	0.9444

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.23	0.00	0.1388	.	1.0000
STATION*PERIOD	5.67	0.00	0.4980	.	0.1186

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4318	0.2695	-1.602	.1108
Period in FC	0.2555	0.2476	1.032	.3035
Period in FC-S	0.3912	0.3222	1.214	.2263
Period in FC-W	0.1197	0.3759	0.319	.7505
Period in DC-S	0.0452	0.3597	0.126	.9001
Period in DC-W	-0.9088	0.4013	-2.265	.0248

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.047	0.0253	1.87	.0636	0.0892	0.0054
Period Op-2	0.072	0.0457	1.59	.1147	0.1481	-0.0031
Op-1-04	-0.241	0.0754	-3.19	.0017	-0.1162	-0.3657
Op-2-04	-0.376	0.1345	-2.80	.0057	-0.1538	-0.5984
Op-1-05	0.302	0.0754	4.00	.0001	0.4263	0.1768
Op-2-05	0.177	0.1186	1.49	.1380	0.3727	-0.0194
Op-1-06	-0.018	0.0609	-0.29	.7697	0.0828	-0.1185
Op-2-06	-0.013	0.1186	-0.11	.9105	0.1827	-0.2094
Op-1-08	0.222	0.0609	3.64	.0004	0.3223	0.1209
Op-2-08	0.250	0.1186	2.11	.0363	0.4463	0.0542
Op-1-09	0.061	0.0713	0.86	.3917	0.1792	-0.0567
Op-2-09	0.140	0.1186	1.18	.2393	0.3361	-0.0561
Op-1-10	0.121	0.0621	1.95	.0526	0.2240	0.0185
Op-2-10	0.387	0.1186	3.27	.0013	0.5833	0.1912
Op-1-12	-0.116	0.0609	-1.90	.0590	-0.0150	-0.2164
Op-2-12	-0.057	0.1186	-0.48	.6294	0.1388	-0.2534

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0252	0.0523	-0.482	.6305	0.0612	-0.1116

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1351	0.1542	0.88	.3820	0.3901	-0.1198
Station 05	0.1249	0.1405	0.89	.3755	0.3572	-0.1075
Station 06	-0.0045	0.1333	-0.03	.9731	0.2159	-0.2249
Station 08	-0.0286	0.1333	-0.21	.8302	0.1918	-0.2490
Station 09	-0.0787	0.1384	-0.57	.5700	0.1501	-0.3076
Station 10	-0.2660	0.1339	-1.99	.0485	-0.0446	-0.4874
Station 12	-0.0584	0.1333	-0.44	.6617	0.1620	-0.2788

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	17.63	26.20	1.693	21.22	14.04	-7.60	31.35	-3.43	-11.78
04	Op-2	6	19.43	46.50	6.737	36.75	2.12	-11.98	38.25	2.70	-26.66
05	Op-1	17	4.38	7.30	0.513	5.46	3.29	5.65	20.45	8.78	2.52
05	Op-2	7	3.94	5.20	0.693	5.64	2.25	2.95	13.40	6.96	-1.06
06	Op-1	26	8.25	12.50	0.772	9.84	6.66	0.00	21.20	2.29	-2.28
06	Op-2	7	7.04	8.50	1.317	10.27	3.82	-0.15	13.35	4.33	-4.63
08	Op-1	26	4.36	10.40	0.490	5.37	3.35	3.90	12.95	5.38	2.41
08	Op-2	7	4.50	14.40	1.817	8.95	0.05	2.39	18.95	8.20	-3.41
09	Op-1	19	9.42	40.40	2.156	13.94	4.89	0.08	34.20	4.09	-3.92
09	Op-2	7	6.57	13.00	1.996	11.46	1.69	0.32	17.50	5.73	-5.09
10	Op-1	25	6.81	20.20	0.983	8.84	4.78	1.66	28.40	5.14	-1.82
10	Op-2	7	2.81	7.00	0.932	5.09	0.53	4.08	11.10	8.09	0.06
12	Op-1	26	13.45	62.70	2.634	18.87	8.02	-5.19	59.60	-0.48	-9.91
12	Op-2	7	8.94	13.80	1.971	13.77	4.12	-2.05	12.10	2.31	-6.41

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	8.25	15.00	0.957	10.23	6.28
Op-2	7	6.89	8.60	1.450	10.44	3.35

Analysis of Variance for HBT for 0735 - Phragmatopoma californica

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	37.22	0.0000
SEASON	1	176.000	1.57	0.2124
STATION	6	176.000	8.60	0.0000
PERIOD*SEASON	1	176.000	0.57	0.4506
STATION*PERIOD	6	176.000	3.69	0.0018
STATION*SEASON	6	176.000	1.28	0.2672
PERIOD*STATION*SEASON	6	176.000	0.11	0.9950

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	37.22	35.79	1.0000	1.0000	0.9891
STATION*PERIOD	22.12	15.87	0.9782	0.9145	0.4752

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.8504	0.2562	-3.320	.0011
Period in FC	-1.2718	0.2354	-5.404	.0000
Period in FC-S	-1.4469	0.3063	-4.723	.0000
Period in FC-W	-1.0968	0.3574	-3.069	.0025
Period in DC-S	-0.9383	0.3420	-2.744	.0067
Period in DC-W	-0.7624	0.3815	-1.998	.0472

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.348	0.0241	-14.43	.0000	-0.3079	-0.3875
Period Op-2	-0.045	0.0435	-1.02	.3069	0.0273	-0.1164
Op-1-04	-0.760	0.0717	-10.59	.0000	-0.6410	-0.8782
Op-2-04	-0.041	0.1278	-0.32	.7483	0.1703	-0.2524
Op-1-05	-0.440	0.0717	-6.13	.0000	-0.3211	-0.5583
Op-2-05	-0.122	0.1127	-1.09	.2791	0.0640	-0.3088
Op-1-06	-0.429	0.0579	-7.41	.0000	-0.3334	-0.5248
Op-2-06	-0.193	0.1127	-1.71	.0884	-0.0067	-0.3796
Op-1-08	-0.641	0.0579	-11.08	.0000	-0.5456	-0.7371
Op-2-08	-0.075	0.1127	-0.66	.5075	0.1115	-0.2613
Op-1-09	-0.210	0.0678	-3.10	.0023	-0.0978	-0.3221
Op-2-09	-0.013	0.1127	-0.11	.9110	0.1738	-0.1990
Op-1-10	-0.074	0.0591	-1.25	.2115	0.0236	-0.1718
Op-2-10	0.035	0.1127	0.31	.7589	0.2211	-0.1518
Op-1-12	0.120	0.0579	2.07	.0399	0.2156	0.0241
Op-2-12	0.098	0.1127	0.87	.3874	0.2841	-0.0887

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3032	0.0497	-6.100	.0000	-0.2210	-0.3854

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.7186	0.1466	-4.90	.0000	-0.4762	-0.9609
Station 05	-0.3173	0.1336	-2.37	.0186	-0.0964	-0.5383
Station 06	-0.2360	0.1267	-1.86	.0643	-0.0264	-0.4455
Station 08	-0.5665	0.1267	-4.47	.0000	-0.3569	-0.7760
Station 09	-0.1973	0.1316	-1.50	.1355	0.0202	-0.4148
Station 10	-0.1088	0.1273	-0.85	.3940	0.1017	-0.3192
Station 12	0.0221	0.1267	0.17	.8615	0.2317	-0.1874

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.93	2.22	0.165	1.28	0.58	-0.89	2.19	-0.56	-1.23
04	Op-2	6	0.01	0.07	0.012	0.04	-0.02	-0.01	0.10	0.03	-0.04
05	Op-1	17	0.36	1.74	0.098	0.57	0.16	-0.32	1.63	-0.12	-0.52
05	Op-2	7	0.09	0.42	0.058	0.23	-0.05	-0.05	0.24	0.03	-0.14
06	Op-1	26	0.36	1.04	0.060	0.48	0.23	-0.32	0.94	-0.20	-0.43
06	Op-2	7	0.20	1.11	0.154	0.58	-0.18	-0.16	0.94	0.14	-0.47
08	Op-1	26	0.73	2.01	0.114	0.96	0.49	-0.69	1.94	-0.46	-0.92
08	Op-2	7	0.06	0.28	0.038	0.15	-0.03	-0.02	0.42	0.09	-0.14
09	Op-1	19	0.22	0.97	0.072	0.37	0.07	-0.18	1.11	-0.03	-0.33
09	Op-2	7	0.04	0.14	0.026	0.10	-0.02	-0.00	0.35	0.10	-0.11
10	Op-1	25	0.10	0.49	0.032	0.17	0.03	-0.06	0.66	0.01	-0.13
10	Op-2	7	0.02	0.14	0.020	0.07	-0.03	0.01	0.07	0.04	-0.01
12	Op-1	26	0.00	0.00	0.000	.	.	0.04	0.24	0.06	0.02
12	Op-2	7	0.00	0.00	0.000	.	.	0.03	0.21	0.11	-0.04

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.04	0.24	0.011	0.06	0.02
Op-2	7	0.03	0.21	0.029	0.11	-0.04

Analysis of Variance for HBT for 0389 - Pista spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	18.05	0.0000
SEASON	1	176.000	0.20	0.6571
STATION	6	176.000	34.57	0.0000
PERIOD*SEASON	1	176.000	0.51	0.4760
STATION*PERIOD	6	176.000	19.08	0.0000
STATION*SEASON	6	176.000	0.21	0.9736
PERIOD*STATION*SEASON	6	176.000	0.54	0.7778

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	18.05	16.84	0.9952	0.9927	0.1107
STATION*PERIOD	114.47	107.17	1.0000	1.0000	0.1268

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.8897	0.1542	5.769	.0000
Period in FC	-0.0000	0.1417	-0.000	1.000
Period in FC-S	-0.0000	0.1844	-0.000	1.000
Period in FC-W	0.0000	0.2152	0.000	1.000
Period in DC-S	0.7401	0.2059	3.595	.0004
Period in DC-W	1.0393	0.2297	4.525	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.022	0.0145	-1.52	.1311	0.0020	-0.0460
Period Op-2	-0.149	0.0262	-5.70	.0000	-0.1058	-0.1924
Op-1-04	-0.000	0.0432	-0.00	1.000	0.0714	-0.0714
Op-2-04	-0.000	0.0770	-0.00	1.000	0.1272	-0.1272
Op-1-05	0.000	0.0432	0.00	1.000	0.0714	-0.0714
Op-2-05	0.000	0.0679	0.00	1.000	0.1122	-0.1122
Op-1-06	-0.000	0.0349	-0.00	1.000	0.0576	-0.0576
Op-2-06	-0.000	0.0679	-0.00	1.000	0.1122	-0.1122
Op-1-08	-0.000	0.0349	-0.00	1.000	0.0576	-0.0576
Op-2-08	-0.000	0.0679	-0.00	1.000	0.1122	-0.1122
Op-1-09	-0.000	0.0408	-0.00	1.000	0.0675	-0.0675
Op-2-09	-0.000	0.0679	-0.00	1.000	0.1122	-0.1122
Op-1-10	-0.154	0.0356	-4.33	.0000	-0.0952	-0.2128
Op-2-10	-1.044	0.0679	-15.38	.0000	-0.9315	-1.1559
Op-1-12	-0.000	0.0349	-0.00	1.000	0.0576	-0.0576
Op-2-12	0.000	0.0679	0.00	1.000	0.1122	-0.1122

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1271	0.0299	4.248	.0000	0.1766	0.0776

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0000	0.0882	0.00	1.000	0.1459	-0.1459
Station 05	-0.0000	0.0804	-0.00	1.000	0.1330	-0.1330
Station 06	0.0000	0.0763	0.00	1.000	0.1262	-0.1262
Station 08	0.0000	0.0763	0.00	1.000	0.1262	-0.1262
Station 09	0.0000	0.0792	0.00	1.000	0.1310	-0.1310
Station 10	0.8897	0.0766	11.61	.0000	1.0164	0.7630
Station 12	-0.0000	0.0763	-0.00	1.000	0.1262	-0.1262

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
10	Op-1	25	0.22	3.12	0.142	0.52	-0.07	-0.22	3.12	0.07	-0.52
10	Op-2	7	1.44	2.43	0.358	2.31	0.56	-1.44	2.43	-0.56	-2.31
12	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT fpr 0400 - Pollicipes polymerus

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	54.83	0.0000
SEASON	1	176.000	0.86	0.3552
STATION	6	176.000	31.69	0.0000
PERIOD*SEASON	1	176.000	0.50	0.4783
STATION*PERIOD	6	176.000	0.42	0.8622
STATION*SEASON	6	176.000	0.22	0.9692
PERIOD*STATION*SEASON	6	176.000	0.13	0.9921

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	54.83	53.20	1.0000	1.0000	0.5325
STATION*PERIOD	2.55	0.00	0.2732	.	0.3769

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Brr.	T-value	Prob.
Period in DC	-2.1783	0.3759	-5.794	.0000
Period in FC	-1.6019	0.3454	-4.638	.0000
Period in FC-S	-1.6640	0.4496	-3.702	.0003
Period in FC-W	-1.5398	0.5245	-2.936	.0038
Period in DC-S	-2.4789	0.5018	-4.940	.0000
Period in DC-W	-1.8776	0.5599	-3.353	.0010

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Brr.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.087	0.0354	2.47	.0145	0.1457	0.0288
Period Op-2	0.627	0.0638	9.83	.0000	0.7328	0.5218
Op-1-04	0.427	0.1053	4.06	.0001	0.6012	0.2532
Op-2-04	0.954	0.1876	5.08	.0000	1.2639	0.6436
Op-1-05	-0.192	0.1053	-1.82	.0704	-0.0175	-0.3656
Op-2-05	0.294	0.1654	1.78	.0768	0.5680	0.0209
Op-1-06	0.380	0.0850	4.47	.0000	0.5202	0.2392
Op-2-06	0.969	0.1654	5.86	.0000	1.2426	0.6954
Op-1-08	0.380	0.0850	4.47	.0000	0.5202	0.2392
Op-2-08	0.969	0.1654	5.86	.0000	1.2426	0.6954
Op-1-09	0.094	0.0995	0.94	.3475	0.2583	-0.0708
Op-2-09	0.802	0.1654	4.85	.0000	1.0759	0.5288
Op-1-10	0.398	0.0867	4.59	.0000	0.5416	0.2549
Op-2-10	0.969	0.1654	5.86	.0000	1.2426	0.6954
Op-1-12	-0.876	0.0850	-10.31	.0000	-0.7356	-1.0165
Op-2-12	-0.566	0.1654	-3.42	.0008	-0.2929	-0.8400

Paired comparisons of least square means between periods

Source	Difference	Std. Brr.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.5400	0.0729	-7.405	.0000	-0.4194	-0.6606

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Brr.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.5266	0.2151	-2.45	.0153	-0.1709	-0.8822
Station 05	-0.4860	0.1961	-2.48	.0141	-0.1618	-0.8102
Station 06	-0.5893	0.1860	-3.17	.0018	-0.2818	-0.8969
Station 08	-0.5893	0.1860	-3.17	.0018	-0.2818	-0.8969
Station 09	-0.7086	0.1931	-3.67	.0003	-0.3893	-1.0278
Station 10	-0.5708	0.1868	-3.06	.0026	-0.2619	-0.8796
Station 12	-0.3096	0.1860	-1.66	.0978	-0.0021	-0.6171

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.04	0.30	0.019	0.08	0.00	0.33	1.10	0.53	0.13
04	Op-2	6	0.00	0.00	0.000	.	.	0.81	0.70	1.10	0.52
05	Op-1	17	0.92	5.60	0.339	1.64	0.20	-0.56	6.25	0.23	-1.34
05	Op-2	7	0.56	1.40	0.207	1.06	0.05	0.29	1.50	0.86	-0.28
06	Op-1	26	0.00	0.00	0.000	.	.	0.25	1.00	0.38	0.12
06	Op-2	7	0.00	0.00	0.000	.	.	0.85	0.70	1.10	0.60
08	Op-1	26	0.00	0.00	0.000	.	.	0.25	1.00	0.38	0.12
08	Op-2	7	0.00	0.00	0.000	.	.	0.85	0.70	1.10	0.60
09	Op-1	19	0.22	0.70	0.049	0.32	0.11	0.12	1.40	0.34	-0.11
09	Op-2	7	0.07	0.40	0.057	0.21	-0.07	0.78	0.60	0.99	0.57
10	Op-1	25	0.00	0.00	0.000	.	.	0.26	1.00	0.40	0.12
10	Op-2	7	0.00	0.00	0.000	.	.	0.85	0.70	1.10	0.60
12	Op-1	26	3.22	11.80	0.564	4.38	2.05	-2.97	11.70	-1.85	-4.09
12	Op-2	7	3.41	1.90	0.291	4.13	2.70	-2.56	1.90	-1.87	-3.26

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.25	1.00	0.064	0.38	0.12
Op-2	7	0.85	0.70	0.104	1.10	0.60

Analysis of Variance for HBT for 1120 - Spirorbidae.

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	2.38	0.1247
SEASON	1	176.000	2.13	0.1465
STATION	6	176.000	0.44	0.8497
PERIOD*SEASON	1	176.000	0.85	0.3570
STATION*PERIOD	6	176.000	0.19	0.9792
STATION*SEASON	6	176.000	0.49	0.8137
PERIOD*STATION*SEASON	6	176.000	0.31	0.9301

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.38	1.35	0.4578	0.3160	0.1897
STATION*PERIOD	1.14	0.00	0.1734	.	0.1421

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0413	0.0259	-1.593	.1129
Period in FC	-0.0130	0.0238	-0.546	.5855
Period in FC-S	-0.0260	0.0310	-0.840	.4023
Period in FC-W	0.0000	0.0362	0.000	1.000
Period in DC-S	-0.0608	0.0346	-1.757	.0806
Period in DC-W	-0.0218	0.0386	-0.565	.5730

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.005	0.0024	-2.08	.0388	-0.0010	-0.0091
Period Op-2	0.003	0.0044	0.61	.5424	0.0100	-0.0046
Op-1-04	-0.000	0.0073	-0.00	1.000	0.0120	-0.0120
Op-2-04	0.004	0.0129	0.34	.7378	0.0257	-0.0171
Op-1-05	-0.000	0.0073	-0.00	1.000	0.0120	-0.0120
Op-2-05	0.004	0.0114	0.38	.7042	0.0232	-0.0145
Op-1-06	0.000	0.0059	0.00	1.000	0.0097	-0.0097
Op-2-06	0.004	0.0114	0.38	.7042	0.0232	-0.0145
Op-1-08	-0.003	0.0059	-0.46	.6492	0.0070	-0.0124
Op-2-08	0.004	0.0114	0.38	.7042	0.0232	-0.0145
Op-1-09	-0.008	0.0069	-1.12	.2627	0.0036	-0.0191
Op-2-09	0.004	0.0114	0.38	.7042	0.0232	-0.0145
Op-1-10	-0.014	0.0060	-2.42	.0166	-0.0046	-0.0244
Op-2-10	0.004	0.0114	0.38	.7042	0.0232	-0.0145
Op-1-12	-0.011	0.0059	-1.82	.0701	-0.0010	-0.0204
Op-2-12	-0.007	0.0114	-0.63	.5271	0.0116	-0.0261

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0078	0.0050	-1.543	.1247	0.0006	-0.0161

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0043	0.0148	-0.29	.7703	0.0202	-0.0289
Station 05	-0.0043	0.0135	-0.32	.7487	0.0180	-0.0267
Station 06	-0.0043	0.0128	-0.34	.7356	0.0169	-0.0256
Station 08	-0.0070	0.0128	-0.55	.5855	0.0142	-0.0282
Station 09	-0.0121	0.0133	-0.91	.3667	0.0100	-0.0341
Station 10	-0.0188	0.0129	-1.46	.1462	0.0025	-0.0401
Station 12	-0.0034	0.0128	-0.27	.7883	0.0178	-0.0247

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
04	Op-2	6	0.00	0.00	0.000	.	.	0.01	0.03	0.02	-0.01
05	Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
06	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
08	Op-1	26	0.00	0.07	0.003	0.01	-0.00	-0.00	0.07	0.00	-0.01
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
09	Op-1	19	0.01	0.07	0.005	0.02	-0.00	-0.01	0.07	0.00	-0.02
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
10	Op-1	25	0.01	0.35	0.014	0.04	-0.01	-0.01	0.35	0.01	-0.04
10	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.03	0.02	-0.01
12	Op-1	26	0.01	0.14	0.006	0.02	-0.00	-0.01	0.14	0.00	-0.02
12	Op-2	7	0.01	0.07	0.010	0.03	-0.01	-0.00	0.10	0.02	-0.03

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.03	0.005	0.02	-0.01

Analysis of Variance for HBT for ispp - Spp. Inverts

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	15.78	0.0001
SEASON	1	176.000	0.88	0.3487
STATION	6	176.000	20.66	0.0000
PERIOD*SEASON	1	176.000	13.94	0.0003
STATION*PERIOD	6	176.000	2.01	0.0664
STATION*SEASON	6	176.000	1.78	0.1053
PERIOD*STATION*SEASON	6	176.000	1.49	0.1851

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	15.78	14.60	0.9896	0.9847	1.0000
STATION*PERIOD	12.07	5.93	0.8208	0.5156	0.1035

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2101	0.0430	4.890	.0000
Period in PC	0.0217	0.0395	0.550	.5832
Period in FC-S	0.1251	0.0514	2.435	.0159
Period in FC-W	-0.0817	0.0599	-1.363	.1745
Period in DC-S	0.3245	0.0574	5.658	.0000
Period in DC-W	0.0957	0.0640	1.495	.1366

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.050	0.0040	-12.37	.0000	-0.0433	-0.0567
Period Op-2	-0.083	0.0073	-11.40	.0000	-0.0710	-0.0951
Op-1-04	-0.078	0.0120	-6.48	.0000	-0.0581	-0.0979
Op-2-04	-0.099	0.0214	-4.63	.0000	-0.0637	-0.1346
Op-1-05	-0.074	0.0120	-6.14	.0000	-0.0540	-0.0938
Op-2-05	-0.091	0.0189	-4.84	.0000	-0.0602	-0.1228
Op-1-06	0.002	0.0097	0.22	.8257	0.0182	-0.0139
Op-2-06	0.019	0.0189	1.02	.3102	0.0505	-0.0120
Op-1-08	-0.056	0.0097	-5.76	.0000	-0.0399	-0.0720
Op-2-08	-0.111	0.0189	-5.85	.0000	-0.0794	-0.1419
Op-1-09	-0.104	0.0114	-9.15	.0000	-0.0853	-0.1229
Op-2-09	-0.168	0.0189	-8.89	.0000	-0.1368	-0.1994
Op-1-10	-0.037	0.0099	-3.76	.0002	-0.0209	-0.0536
Op-2-10	-0.105	0.0189	-5.54	.0000	-0.0735	-0.1360
Op-1-12	-0.003	0.0097	-0.30	.7664	0.0132	-0.0189
Op-2-12	-0.027	0.0189	-1.42	.1588	0.0045	-0.0580

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0331	0.0083	3.973	.0001	0.0469	0.0193

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0212	0.0246	0.86	.3896	0.0619	-0.0194
Station 05	0.0176	0.0224	0.79	.4333	0.0547	-0.0195
Station 06	-0.0171	0.0213	-0.80	.4222	0.0180	-0.0522
Station 08	0.0548	0.0213	2.58	.0108	0.0899	0.0196
Station 09	0.0640	0.0221	2.90	.0042	0.1005	0.0275
Station 10	0.0675	0.0213	3.16	.0019	0.1028	0.0322
Station 12	0.0239	0.0213	1.12	.2630	0.0590	-0.0113

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	13.87	5.10	0.326	14.56	13.18	-2.37	4.50	-1.79	-2.94
04	Op-2	6	12.95	5.60	0.845	15.12	10.78	-3.03	5.85	-0.88	-5.17
05	Op-1	17	13.73	4.70	0.325	14.42	13.04	-2.23	4.45	-1.71	-2.74
05	Op-2	7	12.57	4.80	0.550	13.92	11.23	-2.49	3.30	-1.22	-3.75
06	Op-1	26	11.43	4.20	0.228	11.90	10.96	0.05	5.20	0.54	-0.43
06	Op-2	7	9.94	5.00	0.709	11.68	8.21	0.14	4.65	1.70	-1.41
08	Op-1	26	13.13	4.30	0.240	13.62	12.63	-1.64	6.70	-1.08	-2.20
08	Op-2	7	13.40	4.70	0.697	15.11	11.69	-3.31	6.25	-1.32	-5.31
09	Op-1	19	14.77	5.80	0.325	15.45	14.09	-3.28	7.95	-2.48	-4.07
09	Op-2	7	14.99	2.00	0.282	15.68	14.29	-4.90	3.50	-3.62	-6.18
10	Op-1	25	12.57	5.70	0.335	13.26	11.88	-1.10	6.75	-0.36	-1.83
10	Op-2	7	13.19	6.10	0.776	15.08	11.29	-3.10	4.80	-1.60	-4.60
12	Op-1	26	11.58	5.40	0.248	12.09	11.07	-0.10	5.40	0.51	-0.70
12	Op-2	7	10.80	3.90	0.608	12.29	9.31	-0.71	2.45	0.14	-1.57

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	11.48	4.45	0.223	11.94	11.02
Op-2	7	10.09	2.45	0.368	10.99	9.19

Analysis of Variance for HBT for 0427 - Strongylocentrotus purpuratus

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	9.30	0.0027
SEASON	1	176.000	0.06	0.8029
STATION	6	176.000	43.99	0.0000
PERIOD*SEASON	1	176.000	1.38	0.2425
STATION*PERIOD	6	176.000	5.86	0.0000
STATION*SEASON	6	176.000	0.59	0.7354
PERIOD*STATION*SEASON	6	176.000	0.10	0.9961

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	9.30	8.19	0.9181	0.8861	0.9252
STATION*PERIOD	35.15	28.75	0.9992	0.9956	0.3939

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.8847	0.2920	3.030	.0028
Period in FC	0.3244	0.2683	1.209	.2282
Period in FC-S	0.2060	0.3492	0.590	.5559
Period in FC-W	0.4428	0.4074	1.087	.2786
Period in DC-S	0.5380	0.3898	1.380	.1693
Period in DC-W	1.2314	0.4349	2.831	.0052

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.192	0.0275	-7.01	.0000	-0.1470	-0.2378
Period Op-2	-0.365	0.0496	-7.37	.0000	-0.2832	-0.4471
Op-1-04	-0.686	0.0818	-8.39	.0000	-0.5512	-0.8216
Op-2-04	-1.044	0.1457	-7.16	.0000	-0.8030	-1.2849
Op-1-05	0.241	0.0818	2.94	.0037	0.3758	0.1054
Op-2-05	0.025	0.1285	0.20	.8455	0.2376	-0.1874
Op-1-06	-0.043	0.0660	-0.65	.5138	0.0659	-0.1523
Op-2-06	0.205	0.1285	1.60	.1116	0.4180	-0.0070
Op-1-08	-0.161	0.0660	-2.44	.0157	-0.0519	-0.2702
Op-2-08	-0.299	0.1285	-2.32	.0213	-0.0861	-0.5111
Op-1-09	-0.667	0.0773	-8.63	.0000	-0.5392	-0.7949
Op-2-09	-1.515	0.1285	-11.79	.0000	-1.3027	-1.7277
Op-1-10	-0.218	0.0674	-3.24	.0014	-0.1070	-0.3297
Op-2-10	-0.109	0.1285	-0.85	.3959	0.1031	-0.3219
Op-1-12	0.188	0.0660	2.85	.0048	0.2975	0.0793
Op-2-12	0.180	0.1285	1.40	.1622	0.3929	-0.0321

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1727	0.0567	3.049	.0027	0.2664	0.0791

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.3576	0.1671	2.14	.0337	0.6339	0.0813
Station 05	0.2155	0.1523	1.41	.1589	0.4674	-0.0364
Station 06	-0.2487	0.1445	-1.72	.0870	-0.0098	-0.4875
Station 08	0.1375	0.1445	0.95	.3424	0.3764	-0.1013
Station 09	0.8482	0.1500	5.66	.0000	1.0961	0.6002
Station 10	-0.1090	0.1451	-0.75	.4536	0.1309	-0.3489
Station 12	0.0080	0.1445	0.06	.9559	0.2469	-0.2309

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.10	3.30	0.211	1.55	0.65	-0.99	3.20	-0.55	-1.42
04	Op-2	6	2.02	1.20	0.164	2.44	1.59	-1.90	1.50	-1.39	-2.41
05	Op-1	17	0.02	0.30	0.018	0.06	-0.02	0.10	0.50	0.16	0.03
05	Op-2	7	0.11	0.40	0.059	0.26	-0.03	-0.00	0.55	0.15	-0.15
06	Op-1	26	0.15	0.90	0.046	0.24	0.05	-0.05	1.00	0.03	-0.14
06	Op-2	7	0.03	0.10	0.018	0.07	-0.02	0.09	0.40	0.20	-0.03
08	Op-1	26	0.21	0.70	0.042	0.30	0.12	-0.12	0.85	-0.03	-0.20
08	Op-2	7	0.34	0.70	0.090	0.56	0.12	-0.23	0.40	-0.08	-0.37
09	Op-1	19	2.48	24.70	1.306	5.23	-0.26	-2.38	24.85	0.36	-5.12
09	Op-2	7	8.40	20.70	2.865	15.41	1.39	-8.29	20.60	-1.35	-15.22
10	Op-1	25	0.36	2.20	0.108	0.59	0.14	-0.27	2.30	-0.06	-0.48
10	Op-2	7	0.30	1.30	0.180	0.74	-0.14	-0.19	1.10	0.17	-0.54
12	Op-1	26	0.01	0.10	0.006	0.02	-0.00	0.08	0.45	0.13	0.04
12	Op-2	7	0.04	0.30	0.043	0.15	-0.06	0.07	0.45	0.21	-0.06

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.09	0.35	0.021	0.14	0.05
Op-2	7	0.11	0.30	0.042	0.22	0.01

Analysis of Variance for HBT for 0311 - Tectura scutum

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	4.98	0.0268
SEASON	1	176.000	0.32	0.5705
STATION	6	176.000	9.17	0.0000
PERIOD*SEASON	1	176.000	17.13	0.0001
STATION*PERIOD	6	176.000	0.32	0.9276
STATION*SEASON	6	176.000	1.70	0.1237
PERIOD*STATION*SEASON	6	176.000	0.78	0.5904

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.98	3.93	0.7188	0.6292	0.9995
STATION*PERIOD	1.90	0.00	0.2266	.	0.1337

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5312	0.3540	-1.501	.1352
Period in FC	-0.5419	0.3252	-1.666	.0974
Period in FC-S	0.2115	0.4233	0.500	.6180
Period in FC-W	-1.2952	0.4938	-2.623	.0095
Period in DC-S	0.7048	0.4725	1.492	.1376
Period in DC-W	-1.7673	0.5272	-3.352	.0010

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.091	0.0333	2.74	.0068	0.1462	0.0361
Period Op-2	0.244	0.0601	4.07	.0001	0.3438	0.1451
Op-1-04	0.103	0.0991	1.04	.3000	0.2669	-0.0609
Op-2-04	0.395	0.1766	2.24	.0264	0.6875	0.1034
Op-1-05	0.091	0.0991	0.92	.3580	0.2552	-0.0725
Op-2-05	0.161	0.1558	1.03	.3035	0.4183	-0.0968
Op-1-06	0.560	0.0800	6.99	.0000	0.6918	0.4272
Op-2-06	0.740	0.1558	4.75	.0000	0.9971	0.4819
Op-1-08	-0.090	0.0800	-1.13	.2602	0.0419	-0.2226
Op-2-08	0.110	0.1558	0.71	.4804	0.3677	-0.1474
Op-1-09	-0.224	0.0937	-2.39	.0179	-0.0690	-0.3789
Op-2-09	-0.248	0.1558	-1.59	.1126	0.0092	-0.5060
Op-1-10	0.131	0.0816	1.60	.1104	0.2660	-0.0040
Op-2-10	0.354	0.1558	2.27	.0243	0.6115	0.0964
Op-1-12	0.068	0.0800	0.85	.3990	0.1999	-0.0646
Op-2-12	0.200	0.1558	1.28	.2013	0.4573	-0.0578

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1533	0.0687	-2.233	.0268	-0.0398	-0.2668

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.2925	0.2025	-1.44	.1505	0.0424	-0.6273
Station 05	-0.0694	0.1846	-0.38	.7074	0.2358	-0.3747
Station 06	-0.1800	0.1751	-1.03	.3054	0.1096	-0.4695
Station 08	-0.2005	0.1751	-1.15	.2537	0.0890	-0.4901
Station 09	0.0244	0.1818	0.13	.8933	0.3250	-0.2762
Station 10	-0.2230	0.1759	-1.27	.2065	0.0678	-0.5138
Station 12	-0.1322	0.1751	-0.75	.4514	0.1574	-0.4217

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	1.24	3.80	0.248	1.77	0.72	0.17	3.40	0.68	-0.33
04	Op-2	6	0.82	1.40	0.244	1.44	0.19	0.89	3.05	2.00	-0.22
05	Op-1	17	1.41	4.20	0.308	2.07	0.76	0.00	4.35	0.56	-0.55
05	Op-2	7	1.37	2.60	0.353	2.24	0.51	0.47	1.55	0.99	-0.04
06	Op-1	26	0.51	2.60	0.118	0.75	0.27	1.16	5.55	1.67	0.65
06	Op-2	7	0.23	0.50	0.068	0.39	0.06	1.61	2.45	2.56	0.67
08	Op-1	26	2.38	7.80	0.375	3.15	1.61	-0.71	7.60	0.01	-1.43
08	Op-2	7	3.14	10.60	1.468	6.73	-0.45	-1.30	10.00	2.16	-4.76
09	Op-1	19	2.96	6.90	0.443	3.89	2.03	-1.38	6.90	-0.52	-2.23
09	Op-2	7	3.67	6.80	1.142	6.46	0.88	-1.83	6.30	0.50	-4.16
10	Op-1	25	2.22	10.70	0.567	3.39	1.05	-0.55	10.25	0.36	-1.47
10	Op-2	7	1.16	4.30	0.586	2.59	-0.28	0.69	3.90	2.25	-0.88
12	Op-1	26	1.77	7.20	0.392	2.58	0.96	-0.10	7.70	0.63	-0.83
12	Op-2	7	1.17	2.70	0.329	1.98	0.37	0.67	4.35	2.12	-0.78

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.67	4.90	0.237	2.16	1.18
Op-2	7	1.84	2.45	0.413	2.85	0.83

Analysis of Variance for HBT for 0319 - Tegula brunnea

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	5.16	0.0243
SEASON	1	176.000	0.35	0.5534
STATION	6	176.000	9.93	0.0000
PERIOD*SEASON	1	176.000	0.00	0.9541
STATION*PERIOD	6	176.000	5.96	0.0000
STATION*SEASON	6	176.000	1.01	0.4189
PERIOD*STATION*SEASON	6	176.000	0.90	0.4952

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.16	4.10	0.7320	0.6456	0.2202
STATION*PERIOD	35.77	29.36	0.9993	0.9963	0.1256

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.6934	0.2344	2.958	.0035
Period in FC	0.0299	0.2154	0.139	.8896
Period in FC-S	-0.1938	0.2803	-0.691	.4902
Period in FC-W	0.2537	0.3270	0.776	.4389
Period in DC-S	0.8988	0.3129	2.872	.0046
Period in DC-W	0.4880	0.3491	1.398	.1640

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.024	0.0220	-1.09	.2752	0.0123	-0.0606
Period Op-2	-0.127	0.0398	-3.20	.0016	-0.0617	-0.1932
Op-1-04	0.011	0.0656	0.17	.8674	0.1195	-0.0976
Op-2-04	0.060	0.1170	0.51	.6108	0.2531	-0.1338
Op-1-05	-0.008	0.0656	-0.12	.9050	0.1007	-0.1164
Op-2-05	0.009	0.1032	0.09	.9270	0.1800	-0.1611
Op-1-06	0.016	0.0530	0.31	.7572	0.1040	-0.0712
Op-2-06	-0.080	0.1032	-0.77	.4418	0.0911	-0.2501
Op-1-08	0.033	0.0530	0.62	.5368	0.1204	-0.0548
Op-2-08	-0.150	0.1032	-1.46	.1467	0.0202	-0.3210
Op-1-09	-0.141	0.0621	-2.27	.0244	-0.0383	-0.2435
Op-2-09	-0.851	0.1032	-8.25	.0000	-0.6801	-1.0213
Op-1-10	-0.143	0.0541	-2.65	.0089	-0.0536	-0.2324
Op-2-10	0.060	0.1032	0.58	.5639	0.2302	-0.1109
Op-1-12	0.063	0.0530	1.18	.2381	0.1503	-0.0249
Op-2-12	0.060	0.1032	0.58	.5639	0.2302	-0.1109

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1033	0.0455	2.272	.0243	0.1785	0.0281

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0487	0.1341	-0.36	.7171	0.1731	-0.2704
Station 05	-0.0173	0.1223	-0.14	.8876	0.1849	-0.2195
Station 06	0.0959	0.1160	0.83	.4093	0.2877	-0.0958
Station 08	0.1832	0.1160	1.58	.1160	0.3749	-0.0086
Station 09	0.7098	0.1204	5.90	.0000	0.9089	0.5108
Station 10	-0.2027	0.1165	-1.74	.0836	-0.0101	-0.3952
Station 12	0.0031	0.1160	0.03	.9789	0.1948	-0.1887

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.02	0.10	0.010	0.04	-0.00	0.00	0.15	0.02	-0.02
04	Op-2	6	0.00	0.00	0.000	.	.	0.03	0.20	0.12	-0.05
05	Op-1	17	0.02	0.10	0.011	0.05	0.00	-0.01	0.15	0.02	-0.03
05	Op-2	7	0.01	0.10	0.014	0.05	-0.02	0.01	0.30	0.10	-0.07
06	Op-1	26	0.02	0.10	0.007	0.03	0.00	0.00	0.25	0.02	-0.02
06	Op-2	7	0.06	0.20	0.037	0.15	-0.03	-0.03	0.40	0.10	-0.16
08	Op-1	26	0.01	0.20	0.008	0.03	-0.01	0.01	0.20	0.02	-0.01
08	Op-2	7	0.27	1.80	0.255	0.90	-0.35	-0.24	1.60	0.31	-0.80
09	Op-1	19	0.42	6.70	0.352	1.15	-0.32	-0.40	6.75	0.34	-1.14
09	Op-2	7	1.80	5.60	0.877	3.95	-0.35	-1.77	5.40	0.32	-3.87
10	Op-1	25	0.17	1.70	0.084	0.34	-0.00	-0.15	1.80	0.02	-0.32
10	Op-2	7	0.00	0.00	0.000	.	.	0.03	0.20	0.10	-0.04
12	Op-1	26	0.00	0.00	0.000	.	.	0.02	0.15	0.03	0.01
12	Op-2	7	0.00	0.00	0.000	.	.	0.03	0.20	0.10	-0.04

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.02	0.15	0.007	0.03	0.01
Op-2	7	0.03	0.20	0.029	0.10	-0.04

Analysis of Variance for HBT for 0320 - Tegula funebralis

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	1.32	0.2519
SEASON	1	176.000	15.28	0.0001
STATION	6	176.000	11.08	0.0000
PERIOD*SEASON	1	176.000	0.18	0.6679
STATION*PERIOD	6	176.000	1.33	0.2452
STATION*SEASON	6	176.000	2.21	0.0438
PERIOD*STATION*SEASON	6	176.000	0.90	0.4954

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.32	0.31	0.3113	0.1511	1.0000
STATION*PERIOD	7.99	1.90	0.6414	0.2265	0.5358

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	41.6571	45.4662	0.916	.3608
Period in FC	29.3169	41.7718	0.702	.4837
Period in FC-S	22.8596	54.3695	0.420	.6747
Period in FC-W	35.7741	63.4311	0.564	.5735
Period in DC-S	21.5808	60.6904	0.356	.7226
Period in DC-W	61.7335	67.7155	0.912	.3632

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-11.110	4.2752	-2.60	.0102	-4.0406	-18.1793
Period Op-2	-21.249	7.7149	-2.75	.0065	-8.4921	-34.0061
Op-1-04	-68.441	12.7289	-5.38	.0000	-47.3933	-89.4893
Op-2-04	-51.594	22.6863	-2.27	.0242	-14.0807	-89.1068
Op-1-05	2.317	12.7289	0.18	.8558	23.3650	-18.7310
Op-2-05	-6.881	20.0074	-0.34	.7313	26.2022	-39.9647
Op-1-06	-21.769	10.2749	-2.12	.0355	-4.7791	-38.7593
Op-2-06	-58.735	20.0074	-2.94	.0038	-25.6520	-91.8188
Op-1-08	8.565	10.2749	0.83	.4056	25.5555	-8.4247
Op-2-08	-22.935	20.0074	-1.15	.2532	10.1480	-56.0188
Op-1-09	28.035	12.0362	2.33	.0210	47.9375	8.1325
Op-2-09	52.040	20.0074	2.60	.0101	85.1230	18.9562
Op-1-10	14.423	10.4867	1.38	.1708	31.7638	-2.9170
Op-2-10	21.423	20.0074	1.07	.2857	54.5063	-11.6605
Op-1-12	-40.900	10.2749	-3.98	.0001	-23.9099	-57.8901
Op-2-12	-82.060	20.0074	-4.10	.0001	-48.9770	-115.1438

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	10.1391	8.8203	1.150	.2519	24.7240	-4.4457

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-16.8476	26.0133	-0.65	.5181	26.1670	-59.8621
Station 05	9.1983	23.7133	0.39	.6986	48.4096	-30.0131
Station 06	36.9662	22.4916	1.64	.1021	74.1573	-0.2249
Station 08	31.5008	22.4916	1.40	.1631	68.6919	-5.6903
Station 09	-24.0046	23.3488	-1.03	.3053	14.6040	-62.6132
Station 10	-6.9995	22.5891	-0.31	.7570	30.3529	-44.3519
Station 12	41.1604	22.4916	1.83	.0689	78.3515	3.9693

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	156.68	148.60	11.671	181.42	131.93	-66.16	187.75	-35.90	-96.43
04	Op-2	6	125.82	49.20	7.431	144.92	106.71	-56.65	69.55	-31.03	-82.27
05	Op-1	17	87.58	94.60	6.330	100.99	74.16	2.94	118.70	22.20	-16.32
05	Op-2	7	77.87	59.50	9.177	100.33	55.42	-10.80	93.50	19.71	-41.31
06	Op-1	26	124.06	247.10	11.535	147.82	100.30	-21.77	242.20	6.58	-50.12
06	Op-2	7	130.80	138.20	19.288	178.00	83.60	-63.73	160.40	-16.92	-110.54
08	Op-1	26	93.73	203.30	8.784	111.82	75.64	8.57	208.00	27.51	-10.38
08	Op-2	7	88.33	158.60	20.436	138.33	38.32	-21.26	110.45	13.79	-56.30
09	Op-1	19	67.80	143.70	10.957	90.82	44.78	28.01	135.60	43.47	12.55
09	Op-2	7	17.09	22.80	3.001	24.43	9.74	49.99	77.35	75.67	24.30
10	Op-1	25	86.68	406.70	18.691	125.26	48.10	14.07	408.20	46.32	-18.19
10	Op-2	7	42.71	153.00	21.711	95.84	-10.41	24.36	151.95	74.77	-26.05
12	Op-1	26	143.19	237.80	11.910	167.72	118.66	-40.90	231.60	-14.57	-67.23
12	Op-2	7	155.96	102.00	14.805	192.18	119.73	-88.89	166.10	-34.45	-143.32

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	102.29	123.05	6.662	116.01	88.57
Op-2	7	67.07	65.75	9.160	89.48	44.66

Analysis of Variance for HBT for 0404 - Tetraclita rubescens

Stations = 4, 5, 6, 8, 9, 10, 12 level +3 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	176.000	1.30	0.2559
SEASON	1	176.000	11.01	0.0011
STATION	6	176.000	51.33	0.0000
PERIOD*SEASON	1	176.000	5.95	0.0157
STATION*PERIOD	6	176.000	1.87	0.0882
STATION*SEASON	6	176.000	0.54	0.7744
PERIOD*STATION*SEASON	6	176.000	0.11	0.9948

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.30	0.28	0.3079	0.1475	0.7007
STATION*PERIOD	11.23	5.10	0.7912	0.4587	0.3118

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2383	0.4998	0.477	.6341
Period in FC	0.5353	0.4592	1.166	.2453
Period in FC-S	1.2721	0.5977	2.128	.0347
Period in FC-W	-0.2015	0.6973	-0.289	.7729
Period in DC-S	1.1568	0.6672	1.734	.0847
Period in DC-W	-0.6801	0.7444	-0.914	.3622

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.114	0.0470	2.42	.0167	0.1913	0.0358
Period Op-2	0.003	0.0848	0.04	.9717	0.1433	-0.1372
Op-1-04	0.842	0.1399	6.02	.0000	1.0734	0.6106
Op-2-04	0.613	0.2494	2.46	.0149	1.0257	0.2010
Op-1-05	0.940	0.1399	6.72	.0000	1.1717	0.7090
Op-2-05	0.739	0.2199	3.36	.0010	1.1028	0.3754
Op-1-06	0.794	0.1130	7.03	.0000	0.9811	0.6075
Op-2-06	0.689	0.2199	3.13	.0020	1.0526	0.3252
Op-1-08	0.498	0.1130	4.41	.0000	0.6852	0.3117
Op-2-08	0.423	0.2199	1.92	.0560	0.7868	0.0594
Op-1-09	-0.733	0.1323	-5.54	.0000	-0.5144	-0.9519
Op-2-09	-1.417	0.2199	-6.44	.0000	-1.0529	-1.7803
Op-1-10	-1.389	0.1153	-12.05	.0000	-1.1980	-1.5793
Op-2-10	-1.339	0.2199	-6.09	.0000	-0.9757	-1.7031
Op-1-12	-0.158	0.1130	-1.40	.1623	0.0283	-0.3453
Op-2-12	0.313	0.2199	1.42	.1569	0.6763	-0.0510

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1105	0.0970	1.140	.2559	0.2709	-0.0498

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2287	0.2860	0.80	.4250	0.7015	-0.2442
Station 05	0.2013	0.2607	0.77	.4411	0.6323	-0.2298
Station 06	0.1054	0.2473	0.43	.6704	0.5142	-0.3035
Station 08	0.0753	0.2473	0.30	.7610	0.4842	-0.3335
Station 09	0.6834	0.2567	2.66	.0085	1.1079	0.2590
Station 10	-0.0493	0.2483	-0.20	.8430	0.3614	-0.4599
Station 12	-0.4712	0.2473	-1.91	.0583	-0.0623	-0.8800

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	17	0.08	0.50	0.035	0.16	0.01	1.76	7.70	2.85	0.67
04	Op-2	6	0.03	0.20	0.033	0.12	-0.05	0.79	3.80	2.34	-0.76
05	Op-1	17	0.03	0.30	0.019	0.07	-0.01	1.81	7.70	2.91	0.72
05	Op-2	7	0.00	0.00	0.000	.	.	0.89	4.00	2.22	-0.44
06	Op-1	26	0.01	0.20	0.008	0.03	-0.01	1.28	7.80	2.04	0.52
06	Op-2	7	0.01	0.10	0.014	0.05	-0.02	0.88	4.00	2.21	-0.46
08	Op-1	26	0.25	1.80	0.087	0.43	0.07	1.04	8.15	1.78	0.30
08	Op-2	7	0.13	0.20	0.036	0.22	0.04	0.76	3.80	2.05	-0.53
09	Op-1	19	9.89	33.70	2.532	15.21	4.57	-8.23	31.20	-3.32	-13.14
09	Op-2	7	15.94	26.80	3.194	23.76	8.13	-15.05	23.00	-8.18	-21.92
10	Op-1	25	35.66	132.60	7.870	51.90	19.41	-34.32	132.45	-18.20	-50.44
10	Op-2	7	16.51	50.00	6.988	33.61	-0.58	-15.62	46.00	0.17	-31.41
12	Op-1	26	1.30	4.70	0.256	1.82	0.77	-0.01	10.40	0.75	-0.77
12	Op-2	7	0.46	2.40	0.334	1.27	-0.36	0.44	5.10	1.96	-1.08

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.29	7.70	0.369	2.05	0.53
Op-2	7	0.89	4.00	0.543	2.22	-0.44

Analysis of Variance for HBT for 0264 - Anthopleura elegantissima

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	29.07	0.0000
SEASON	1	174.000	18.52	0.0000
STATION	6	174.000	40.84	0.0000
PERIOD*SEASON	1	174.000	1.38	0.2410
STATION*PERIOD	6	174.000	14.72	0.0000
STATION*SEASON	6	174.000	0.48	0.8203
PERIOD*STATION*SEASON	6	174.000	0.34	0.9156

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	29.07	27.74	0.9999	0.9998	1.0000
STATION*PERIOD	88.33	81.31	1.0000	1.0000	0.4913

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.5257	0.2973	5.132	.0000
Period in FC	0.6565	0.2746	2.391	.0179
Period in FC-S	0.6711	0.3555	1.888	.0607
Period in FC-W	0.6420	0.4187	1.533	.1270
Period in DC-S	1.9874	0.3968	5.008	.0000
Period in DC-W	1.0641	0.4428	2.403	.0173

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.403	0.0283	-14.26	.0000	-0.3561	-0.4496
Period Op-2	-0.715	0.0504	-14.17	.0000	-0.6312	-0.7980
Op-1-04	-0.569	0.0856	-6.64	.0000	-0.4271	-0.7103
Op-2-04	-0.801	0.1483	-5.40	.0000	-0.5555	-1.0461
Op-1-05	-1.087	0.0856	-12.70	.0000	-0.9457	-1.2289
Op-2-05	-1.156	0.1308	-8.84	.0000	-0.9399	-1.3726
Op-1-06	-0.407	0.0672	-6.05	.0000	-0.2957	-0.5179
Op-2-06	-0.762	0.1308	-5.83	.0000	-0.5459	-0.9786
Op-1-08	-0.337	0.0787	-4.28	.0000	-0.2064	-0.4667
Op-2-08	-0.522	0.1308	-3.99	.0001	-0.3061	-0.7388
Op-1-09	1.086	0.0672	16.17	.0000	1.1976	0.9754
Op-2-09	-0.276	0.1308	-2.11	.0362	-0.0599	-0.4925
Op-1-10	-1.106	0.0686	-16.13	.0000	-0.9924	-1.2192
Op-2-10	-0.579	0.1308	-4.43	.0000	-0.3631	-0.7958
Op-1-12	-0.401	0.0672	-5.97	.0000	-0.2901	-0.5123
Op-2-12	-0.905	0.1308	-6.92	.0000	-0.6884	-1.1211

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3118	0.0578	5.392	.0000	0.4074	0.2161

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2321	0.1713	1.36	.1771	0.5154	-0.0511
Station 05	0.0689	0.1564	0.44	.6599	0.3275	-0.1897
Station 06	0.3555	0.1471	2.42	.0167	0.5987	0.1123
Station 08	0.1859	0.1527	1.22	.2250	0.4384	-0.0666
Station 09	1.3627	0.1471	9.27	.0000	1.6059	1.1195
Station 10	-0.5264	0.1477	-3.56	.0005	-0.2821	-0.7706
Station 12	0.5036	0.1471	3.42	.0008	0.7468	0.2604

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	5.48	8.40	0.466	6.47	4.49	-3.90	7.25	-2.95	-4.85
04	Op-2	6	4.22	7.10	1.052	6.92	1.51	-3.74	7.70	-0.84	-6.64
05	Op-1	16	18.54	22.10	1.639	22.03	15.04	-16.96	20.30	-13.62	-20.30
05	Op-2	7	8.91	13.20	1.742	13.18	4.65	-8.39	12.75	-4.14	-12.64
06	Op-1	26	4.25	5.70	0.259	4.78	3.71	-2.47	5.85	-1.98	-2.97
06	Op-2	7	3.53	6.20	0.818	5.53	1.53	-3.01	6.15	-1.09	-4.93
08	Op-1	19	3.72	7.40	0.513	4.79	2.64	-2.08	6.40	-1.18	-2.98
08	Op-2	7	1.83	1.00	0.136	2.16	1.50	-1.31	1.45	-0.88	-1.73
09	Op-1	26	0.06	0.40	0.022	0.10	0.01	1.72	3.40	2.08	1.35
09	Op-2	7	1.54	3.00	0.430	2.59	0.49	-1.02	3.60	0.12	-2.16
10	Op-1	25	29.72	57.60	3.658	37.27	22.17	-28.01	55.10	-20.60	-35.42
10	Op-2	7	2.30	3.40	0.425	3.34	1.26	-1.78	3.60	-0.65	-2.90
12	Op-1	26	5.67	17.20	0.946	7.61	3.72	-3.89	18.00	-1.95	-5.83
12	Op-2	7	4.61	2.80	0.359	5.49	3.74	-4.09	3.40	-3.07	-5.11

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.77	3.20	0.168	2.12	1.43
Op-2	7	0.52	0.65	0.115	0.80	0.24

Analysis of Variance for HBT for 0394 - Balanus spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	4.14	0.0435
SEASON	1	174.000	0.00	0.9994
STATION	6	174.000	3.35	0.0037
PERIOD*SEASON	1	174.000	1.93	0.1669
STATION*PERIOD	6	174.000	1.57	0.1589
STATION*SEASON	6	174.000	0.55	0.7721
PERIOD*STATION*SEASON	6	174.000	0.54	0.7774

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.14	3.09	0.6485	0.5424	0.2632
STATION*PERIOD	9.41	3.30	0.7144	0.3290	0.2060

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.6524	0.2808	-2.323	.0213
Period in FC	-0.1250	0.2594	-0.482	.6305
Period in FC-S	-0.1626	0.3358	-0.484	.6288
Period in FC-W	-0.0874	0.3955	-0.221	.8254
Period in DC-S	-1.1455	0.3748	-3.056	.0026
Period in DC-W	-0.1594	0.4182	-0.381	.7035

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.149	0.0267	-5.58	.0000	-0.1048	-0.1931
Period Op-2	-0.038	0.0476	-0.80	.4277	0.0409	-0.1167
Op-1-04	0.000	0.0809	0.00	1.000	0.1338	-0.1338
Op-2-04	0.000	0.1401	0.00	1.000	0.2317	-0.2317
Op-1-05	-0.125	0.0809	-1.55	.1241	0.0088	-0.2588
Op-2-05	0.000	0.1236	0.00	1.000	0.2043	-0.2043
Op-1-06	0.000	0.0635	0.00	1.000	0.1049	-0.1049
Op-2-06	0.000	0.1236	0.00	1.000	0.2043	-0.2043
Op-1-08	-0.062	0.0743	-0.83	.4063	0.0610	-0.1848
Op-2-08	0.000	0.1236	0.00	1.000	0.2043	-0.2043
Op-1-09	-0.255	0.0635	-4.02	.0001	-0.1501	-0.3600
Op-2-09	-0.186	0.1236	-1.50	.1348	0.0187	-0.3900
Op-1-10	-0.578	0.0648	-8.92	.0000	-0.4704	-0.6846
Op-2-10	-0.080	0.1236	-0.64	.5207	0.1248	-0.2839
Op-1-12	-0.023	0.0635	-0.36	.7156	0.0818	-0.1281
Op-2-12	-0.000	0.1236	-0.00	1.000	0.2043	-0.2043

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1111	0.0546	-2.034	.0435	-0.0208	-0.2014

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0000	0.1618	0.00	1.000	0.2675	-0.2675
Station 05	-0.1250	0.1477	-0.85	.3985	0.1192	-0.3692
Station 06	-0.0000	0.1389	-0.00	1.000	0.2297	-0.2297
Station 08	-0.0619	0.1442	-0.43	.6683	0.1766	-0.3004
Station 09	-0.0694	0.1389	-0.50	.6181	0.1603	-0.2991
Station 10	-0.4980	0.1395	-3.57	.0005	-0.2673	-0.7287
Station 12	-0.0232	0.1389	-0.17	.8678	0.2066	-0.2529

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CI1.	Lower 95% C.I.
04	Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	16	0.09	0.90	0.060	0.21	-0.04	-0.09	0.90	0.04	-0.21
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	19	0.06	1.20	0.063	0.20	-0.07	-0.06	1.20	0.07	-0.20
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-1	26	0.22	1.40	0.078	0.38	0.05	-0.22	1.40	-0.05	-0.38
09	Op-2	7	0.17	1.20	0.171	0.59	-0.25	-0.17	1.20	0.25	-0.59
10	Op-1	25	1.52	16.60	0.747	3.06	-0.03	-1.52	16.60	0.03	-3.06
10	Op-2	7	0.03	0.20	0.029	0.10	-0.04	-0.03	0.20	0.04	-0.10
12	Op-1	26	0.01	0.10	0.005	0.02	-0.00	-0.01	0.10	0.00	-0.02
12	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0395 - Chthamalus fissus

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	5.70	0.0180
SEASON	1	174.000	3.03	0.0834
STATION	6	174.000	8.81	0.0000
PERIOD*SEASON	1	174.000	0.44	0.5089
STATION*PERIOD	6	174.000	1.29	0.2630
STATION*SEASON	6	174.000	0.84	0.5425
PERIOD*STATION*SEASON	6	174.000	0.48	0.8238

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.70	4.64	0.7686	0.6918	0.8194
STATION*PERIOD	7.76	1.67	0.6280	0.2098	0.4248

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.6841	0.2099	-3.259	.0013
Period in FC	0.0016	0.1939	0.008	.9934
Period in FC-S	-0.0145	0.2510	-0.058	.9539
Period in FC-W	0.0178	0.2956	0.060	.9522
Period in DC-S	-0.8571	0.2802	-3.059	.0026
Period in DC-W	-0.5111	0.3126	-1.635	.1039

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.207	0.0199	-10.39	.0000	-0.1743	-0.2403
Period Op-2	-0.110	0.0356	-3.08	.0024	-0.0509	-0.1687
Op-1-04	-0.001	0.0605	-0.01	.9891	0.0992	-0.1008
Op-2-04	0.000	0.1047	0.00	1.000	0.1732	-0.1732
Op-1-05	-0.006	0.0605	-0.10	.9172	0.0937	-0.1063
Op-2-05	0.000	0.0924	0.00	1.000	0.1527	-0.1527
Op-1-06	0.009	0.0474	0.18	.8541	0.0872	-0.0697
Op-2-06	0.000	0.0924	0.00	1.000	0.1527	-0.1527
Op-1-08	-0.429	0.0556	-7.72	.0000	-0.3371	-0.5209
Op-2-08	-0.205	0.0924	-2.22	.0280	-0.0519	-0.3574
Op-1-09	-0.300	0.0474	-6.33	.0000	-0.2219	-0.3787
Op-2-09	0.000	0.0924	0.00	1.000	0.1527	-0.1527
Op-1-10	-0.355	0.0484	-7.34	.0000	-0.2754	-0.4355
Op-2-10	-0.303	0.0924	-3.28	.0012	-0.1506	-0.4561
Op-1-12	-0.368	0.0474	-7.75	.0000	-0.2894	-0.4463
Op-2-12	-0.260	0.0924	-2.82	.0054	-0.1076	-0.4131

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0975	0.0408	-2.388	.0180	-0.0300	-0.1650

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0008	0.1209	-0.01	.9945	0.1992	-0.2008
Station 05	-0.0063	0.1104	-0.06	.9546	0.1763	-0.1889
Station 06	0.0087	0.1038	0.08	.9331	0.1804	-0.1630
Station 08	-0.2243	0.1078	-2.08	.0389	-0.0460	-0.4026
Station 09	-0.3003	0.1038	-2.89	.0043	-0.1286	-0.4720
Station 10	-0.0521	0.1043	-0.50	.6183	0.1204	-0.2245
Station 12	-0.1075	0.1038	-1.03	.3022	0.0643	-0.2792

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.02	0.35	0.022	0.07	-0.02	-0.00	0.42	0.04	-0.05
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	16	0.03	0.35	0.022	0.08	-0.01	-0.02	0.38	0.03	-0.06
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-1	26	0.01	0.21	0.008	0.03	-0.01	0.02	0.35	0.05	-0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	19	2.70	9.51	0.686	4.14	1.26	-2.68	9.48	-1.25	-4.11
08	Op-2	7	0.76	1.88	0.362	1.65	-0.12	-0.76	1.88	0.12	-1.65
09	Op-1	26	1.79	7.71	0.482	2.78	0.80	-1.76	7.74	-0.76	-2.75
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
10	Op-1	25	2.78	11.25	0.769	4.37	1.20	-2.76	11.28	-1.18	-4.33
10	Op-2	7	1.14	2.71	0.417	2.16	0.12	-1.14	2.71	-0.12	-2.16
12	Op-1	26	1.68	4.65	0.258	2.21	1.15	-1.65	4.51	-1.12	-2.17
12	Op-2	7	0.86	1.81	0.217	1.39	0.33	-0.86	1.81	-0.33	-1.39

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.03	0.28	0.012	0.06	0.01
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0388 - Diopatra ornata

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	11.84	0.0007
SEASON	1	174.000	0.49	0.4851
STATION	6	174.000	3.82	0.0013
PERIOD*SEASON	1	174.000	2.71	0.1014
STATION*PERIOD	6	174.000	1.11	0.3581
STATION*SEASON	6	174.000	0.91	0.4900
PERIOD*STATION*SEASON	6	174.000	1.63	0.1414

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	11.84	10.71	0.9627	0.9468	0.1287
STATION*PERIOD	6.66	0.59	0.5625	0.1364	0.1235

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3915	0.1070	3.658	.0003
Period in FC	0.1099	0.0989	1.111	.2679
Period in FC-S	0.0502	0.1280	0.393	.6951
Period in FC-W	0.1695	0.1507	1.125	.2622
Period in DC-S	0.2112	0.1429	1.478	.1411
Period in DC-W	0.5718	0.1594	3.587	.0004

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.026	0.0102	2.53	.0124	0.0425	0.0089
Period Op-2	-0.046	0.0182	-2.53	.0123	-0.0159	-0.0760
Op-1-04	0.030	0.0308	0.97	.3348	0.0808	-0.0212
Op-2-04	0.000	0.0534	0.00	1.000	0.0883	-0.0883
Op-1-05	0.030	0.0308	0.97	.3348	0.0808	-0.0212
Op-2-05	0.000	0.0471	0.00	1.000	0.0779	-0.0779
Op-1-06	0.050	0.0242	2.08	.0392	0.0902	0.0103
Op-2-06	-0.000	0.0471	-0.00	1.000	0.0779	-0.0779
Op-1-08	-0.010	0.0283	-0.34	.7354	0.0373	-0.0564
Op-2-08	-0.130	0.0471	-2.75	.0065	-0.0518	-0.2076
Op-1-09	0.050	0.0242	2.08	.0392	0.0902	0.0103
Op-2-09	-0.000	0.0471	-0.00	1.000	0.0779	-0.0779
Op-1-10	0.041	0.0247	1.65	.1005	0.0816	-0.0001
Op-2-10	0.000	0.0471	0.00	1.000	0.0779	-0.0779
Op-1-12	-0.011	0.0242	-0.47	.6389	0.0286	-0.0514
Op-2-12	-0.192	0.0471	-4.07	.0001	-0.1139	-0.2696

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0716	0.0208	3.441	.0007	0.1060	0.0372

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0298	0.0617	0.48	.6293	0.1318	-0.0722
Station 05	0.0298	0.0563	0.53	.5970	0.1229	-0.0633
Station 06	0.0502	0.0529	0.95	.3439	0.1378	-0.0373
Station 08	0.1201	0.0550	2.19	.0302	0.2110	0.0292
Station 09	0.0502	0.0529	0.95	.3439	0.1378	-0.0373
Station 10	0.0408	0.0532	0.77	.4444	0.1287	-0.0472
Station 12	0.1804	0.0529	3.41	.0008	0.2679	0.0928

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.00	0.00	0.000	.	.	0.01	0.10	0.02	-0.01
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	16	0.00	0.00	0.000	.	.	0.01	0.10	0.02	-0.01
05	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
06	Op-1	26	0.00	0.00	0.000	.	.	0.02	0.10	0.03	0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
08	Op-1	19	0.01	0.10	0.007	0.03	-0.00	-0.00	0.20	0.02	-0.02
08	Op-2	7	0.04	0.20	0.030	0.12	-0.03	-0.04	0.20	0.03	-0.12
09	Op-1	26	0.00	0.00	0.000	.	.	0.02	0.10	0.03	0.00
09	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
10	Op-1	25	0.00	0.10	0.004	0.01	-0.00	0.01	0.20	0.03	-0.00
10	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
12	Op-1	26	0.03	0.40	0.016	0.06	-0.01	-0.01	0.50	0.03	-0.05
12	Op-2	7	0.09	0.40	0.055	0.22	-0.05	-0.09	0.40	0.05	-0.22

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.02	0.10	0.006	0.03	0.00
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for 0266 - Epiactis prolifera

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	7.60	0.0065
SEASON	1	174.000	0.12	0.7256
STATION	6	174.000	15.15	0.0000
PERIOD*SEASON	1	174.000	3.17	0.0767
STATION*PERIOD	6	174.000	0.50	0.8041
STATION*SEASON	6	174.000	1.24	0.2887
PERIOD*STATION*SEASON	6	174.000	0.53	0.7843

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.60	6.51	0.8646	0.8152	0.9512
STATION*PERIOD	3.03	0.00	0.3087	.	0.4122

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.6146	0.2704	2.273	.0242
Period in FC	0.4001	0.2498	1.602	.1110
Period in FC-S	-0.0313	0.3233	-0.097	.9229
Period in FC-W	0.8315	0.3808	2.184	.0303
Period in DC-S	0.3906	0.3609	1.082	.2807
Period in DC-W	0.8387	0.4027	2.083	.0387

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.100	0.0257	3.88	.0001	0.1423	0.0573
Period Op-2	-0.045	0.0459	-0.98	.3260	0.0307	-0.1211
Op-1-04	-0.401	0.0779	-5.15	.0000	-0.2725	-0.5301
Op-2-04	-0.539	0.1349	-3.99	.0001	-0.3157	-0.7619
Op-1-05	-0.090	0.0779	-1.15	.2515	0.0392	-0.2184
Op-2-05	-0.223	0.1190	-1.87	.0626	-0.0262	-0.4197
Op-1-06	0.121	0.0611	1.98	.0492	0.2221	0.0200
Op-2-06	-0.008	0.1190	-0.07	.9452	0.1886	-0.2049
Op-1-08	0.204	0.0716	2.85	.0050	0.3221	0.0854
Op-2-08	-0.139	0.1190	-1.17	.2456	0.0581	-0.3354
Op-1-09	0.059	0.0611	0.97	.3355	0.1601	-0.0420
Op-2-09	0.033	0.1190	0.27	.7849	0.2293	-0.1642
Op-1-10	0.391	0.0624	6.28	.0000	0.4945	0.2882
Op-2-10	0.305	0.1190	2.56	.0112	0.5017	0.1082
Op-1-12	0.414	0.0611	6.78	.0000	0.5153	0.3132
Op-2-12	0.255	0.1190	2.14	.0336	0.4515	0.0580

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1450	0.0526	2.757	.0065	0.2319	0.0580

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1375	0.1558	0.88	.3786	0.3951	-0.1201
Station 05	0.1334	0.1422	0.94	.3496	0.3685	-0.1018
Station 06	0.1292	0.1337	0.97	.3353	0.3504	-0.0920
Station 08	0.3424	0.1388	2.47	.0146	0.5720	0.1127
Station 09	0.0265	0.1337	0.20	.8432	0.2477	-0.1947
Station 10	0.0864	0.1343	0.64	.5211	0.3085	-0.1358
Station 12	0.1594	0.1337	1.19	.2349	0.3806	-0.0617

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.77	1.10	0.069	0.92	0.62	-0.51	0.90	-0.37	-0.66
04	Op-2	6	0.72	1.10	0.170	1.15	0.28	-0.58	1.35	-0.02	-1.13
05	Op-1	16	0.38	1.00	0.070	0.53	0.23	-0.13	1.20	0.06	-0.31
05	Op-2	7	0.50	1.90	0.269	1.16	-0.16	-0.37	2.20	0.36	-1.10
06	Op-1	26	0.15	0.50	0.029	0.21	0.09	0.06	0.90	0.14	-0.02
06	Op-2	7	0.13	0.40	0.057	0.27	-0.01	-0.00	0.75	0.22	-0.22
08	Op-1	19	0.11	0.20	0.019	0.15	0.06	0.13	0.60	0.20	0.05
08	Op-2	7	0.24	0.50	0.075	0.43	0.06	-0.11	0.80	0.15	-0.38
09	Op-1	26	0.17	0.50	0.026	0.23	0.12	0.04	0.70	0.11	-0.04
09	Op-2	7	0.14	0.40	0.061	0.29	-0.01	-0.01	0.60	0.17	-0.20
10	Op-1	25	0.02	0.10	0.008	0.04	0.00	0.19	0.55	0.25	0.13
10	Op-2	7	0.00	0.00	0.000	.	.	0.13	0.40	0.25	0.01
12	Op-1	26	0.01	0.10	0.006	0.02	-0.00	0.20	0.50	0.26	0.14
12	Op-2	7	0.01	0.10	0.014	0.05	-0.02	0.11	0.40	0.24	-0.02

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.21	0.50	0.027	0.27	0.15
Op-2	7	0.13	0.40	0.050	0.25	0.01

Analysis of Variance for HBT for 0300 - Fissurella volcano

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	22.75	0.0000
SEASON	1	174.000	0.00	0.9467
STATION	6	174.000	32.51	0.0000
PERIOD*SEASON	1	174.000	4.53	0.0347
STATION*PERIOD	6	174.000	0.82	0.5531
STATION*SEASON	6	174.000	0.60	0.7319
PERIOD*STATION*SEASON	6	174.000	0.47	0.8293

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	22.75	21.49	0.9991	0.9985	0.9998
STATION*PERIOD	4.94	0.00	0.4475	.	0.2570

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.6892	0.3360	5.028	.0000
Period in FC	0.4924	0.3103	1.587	.1144
Period in FC-S	0.5940	0.4017	1.479	.1411
Period in FC-W	0.3908	0.4731	0.826	.4099
Period in DC-S	2.5613	0.4484	5.712	.0000
Period in DC-W	0.8171	0.5004	1.633	.1043

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.397	0.0319	-12.45	.0000	-0.3446	-0.4502
Period Op-2	-0.709	0.0570	-12.44	.0000	-0.6148	-0.8034
Op-1-04	-0.269	0.0968	-2.78	.0061	-0.1087	-0.4287
Op-2-04	-0.528	0.1676	-3.15	.0019	-0.2504	-0.8048
Op-1-05	-0.412	0.0968	-4.26	.0000	-0.2523	-0.5724
Op-2-05	-0.513	0.1478	-3.47	.0007	-0.2683	-0.7572
Op-1-06	-0.488	0.0759	-6.42	.0000	-0.3620	-0.6131
Op-2-06	-0.621	0.1478	-4.20	.0000	-0.3762	-0.8651
Op-1-08	-0.629	0.0889	-7.07	.0000	-0.4820	-0.7761
Op-2-08	-1.125	0.1478	-7.61	.0000	-0.8807	-1.3697
Op-1-09	-1.132	0.0759	-14.91	.0000	-1.0061	-1.2572
Op-2-09	-1.603	0.1478	-10.85	.0000	-1.3590	-1.8479
Op-1-10	-0.200	0.0775	-2.58	.0108	-0.0716	-0.3279
Op-2-10	-0.585	0.1478	-3.96	.0001	-0.3403	-0.8292
Op-1-12	0.347	0.0759	4.57	.0000	0.4725	0.2214
Op-2-12	0.011	0.1478	0.07	.9420	0.2552	-0.2337

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3117	0.0653	4.770	.0000	0.4197	0.2036

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2589	0.1936	1.34	.1828	0.5790	-0.0612
Station 05	0.1005	0.1767	0.57	.5704	0.3926	-0.1917
Station 06	0.1331	0.1662	0.80	.4243	0.4079	-0.1417
Station 08	0.4961	0.1725	2.88	.0045	0.7814	0.2108
Station 09	0.4718	0.1662	2.84	.0051	0.7466	0.1970
Station 10	0.3850	0.1669	2.31	.0222	0.6611	0.1090
Station 12	0.3362	0.1662	2.02	.0446	0.6110	0.0614

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	1.11	2.40	0.186	1.50	0.71	-0.62	2.50	-0.23	-1.02
04	Op-2	6	1.27	3.10	0.430	2.37	0.16	-1.03	2.75	-0.08	-1.99
05	Op-1	16	1.43	2.30	0.145	1.73	1.12	-0.94	2.00	-0.63	-1.25
05	Op-2	7	1.69	5.00	0.668	3.32	0.05	-1.34	4.05	-0.02	-2.67
06	Op-1	26	1.50	5.90	0.214	1.94	1.06	-1.13	5.70	-0.70	-1.55
06	Op-2	7	1.71	3.20	0.457	2.83	0.59	-1.37	2.85	-0.45	-2.29
08	Op-1	19	4.73	33.70	1.774	8.46	1.01	-4.27	33.15	-0.59	-7.95
08	Op-2	7	6.89	25.60	3.440	15.30	-1.53	-6.54	26.05	1.82	-14.90
09	Op-1	26	12.56	51.10	3.095	18.93	6.18	-12.18	50.40	-5.87	-18.49
09	Op-2	7	16.87	35.80	4.771	28.55	5.20	-16.53	35.35	-4.94	-28.12
10	Op-1	25	1.10	6.00	0.267	1.65	0.55	-0.72	5.85	-0.21	-1.24
10	Op-2	7	2.27	6.90	1.028	4.79	-0.24	-1.93	6.50	0.47	-4.33
12	Op-1	26	0.22	1.90	0.085	0.39	0.04	0.16	2.30	0.35	-0.02
12	Op-2	7	0.31	0.90	0.122	0.61	0.01	0.03	1.35	0.43	-0.37

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.38	0.85	0.043	0.47	0.29
Op-2	7	0.34	1.00	0.134	0.67	0.01

Analysis of Variance for HBT for 0838 - Haliotis spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	22.66	0.0000
SEASON	1	174.000	0.59	0.4454
STATION	6	174.000	13.90	0.0000
PERIOD*SEASON	1	174.000	1.64	0.2015
STATION*PERIOD	6	174.000	4.54	0.0003
STATION*SEASON	6	174.000	0.75	0.6109
PERIOD*STATION*SEASON	6	174.000	0.25	0.9575

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	22.66	21.40	0.9990	0.9985	0.9661
STATION*PERIOD	27.22	20.91	0.9936	0.9712	0.6167

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0974	0.2654	-0.367	.7141
Period in FC	-1.6229	0.2452	-6.619	.0000
Period in FC-S	-1.9061	0.3174	-6.005	.0000
Period in FC-W	-1.3398	0.3738	-3.584	.0004
Period in DC-S	-0.2776	0.3543	-0.784	.4344
Period in DC-W	0.0829	0.3953	0.210	.8342

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.402	0.0252	-15.95	.0000	-0.3606	-0.4441
Period Op-2	-0.157	0.0450	-3.48	.0006	-0.0821	-0.2311
Op-1-04	-0.829	0.0765	-10.84	.0000	-0.7026	-0.9555
Op-2-04	-0.329	0.1325	-2.49	.0138	-0.1104	-0.5485
Op-1-05	-0.561	0.0765	-7.33	.0000	-0.4342	-0.6871
Op-2-05	-0.108	0.1168	-0.92	.3579	0.0855	-0.3008
Op-1-06	-0.885	0.0600	-14.75	.0000	-0.7856	-0.9840
Op-2-06	-0.214	0.1168	-1.84	.0681	-0.0213	-0.4076
Op-1-08	-0.198	0.0703	-2.82	.0054	-0.0819	-0.3143
Op-2-08	-0.153	0.1168	-1.31	.1915	0.0400	-0.3463
Op-1-09	-0.440	0.0600	-7.33	.0000	-0.3404	-0.5388
Op-2-09	-0.335	0.1168	-2.87	.0046	-0.1422	-0.5286
Op-1-10	0.046	0.0612	0.74	.4577	0.1468	-0.0557
Op-2-10	0.022	0.1168	0.19	.8508	0.2152	-0.1712
Op-1-12	0.050	0.0600	0.84	.4034	0.1494	-0.0490
Op-2-12	0.022	0.1168	0.19	.8508	0.2152	-0.1712

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2458	0.0516	-4.761	.0000	-0.1604	-0.3311

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.4996	0.1529	-3.27	.0013	-0.2467	-0.7525
Station 05	-0.4529	0.1396	-3.24	.0014	-0.2221	-0.6838
Station 06	-0.6704	0.1313	-5.11	.0000	-0.4532	-0.8875
Station 08	-0.0450	0.1363	-0.33	.7419	0.1805	-0.2704
Station 09	-0.1042	0.1313	-0.79	.4285	0.1129	-0.3214
Station 10	0.0236	0.1319	0.18	.8584	0.2416	-0.1945
Station 12	0.0282	0.1313	0.22	.8300	0.2454	-0.1889

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	1.06	2.60	0.222	1.53	0.58	-1.04	2.65	-0.57	-1.52
04	Op-2	6	0.20	0.50	0.100	0.46	-0.06	-0.19	0.55	0.07	-0.46
05	Op-1	16	0.38	0.90	0.071	0.53	0.23	-0.37	1.00	-0.21	-0.53
05	Op-2	7	0.04	0.20	0.030	0.12	-0.03	-0.04	0.25	0.04	-0.11
06	Op-1	26	0.84	1.60	0.076	1.00	0.68	-0.82	1.60	-0.66	-0.98
06	Op-2	7	0.10	0.20	0.038	0.19	0.01	-0.09	0.20	0.00	-0.19
08	Op-1	19	0.15	0.90	0.059	0.27	0.02	-0.13	0.95	-0.01	-0.26
08	Op-2	7	0.09	0.40	0.055	0.22	-0.05	-0.08	0.40	0.06	-0.21
09	Op-1	26	0.44	2.40	0.119	0.69	0.20	-0.43	2.35	-0.19	-0.67
09	Op-2	7	0.21	0.60	0.094	0.44	-0.01	-0.21	0.65	0.03	-0.44
10	Op-1	25	0.00	0.00	0.000	.	.	0.01	0.10	0.03	0.00
10	Op-2	7	0.00	0.00	0.000	.	.	0.01	0.05	0.02	-0.01
12	Op-1	26	0.00	0.00	0.000	.	.	0.02	0.10	0.03	0.00
12	Op-2	7	0.00	0.00	0.000	.	.	0.01	0.05	0.02	-0.01

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.02	0.10	0.006	0.03	0.00
Op-2	7	0.01	0.05	0.007	0.02	-0.01

Analysis of Variance for HBT for 0423 - Leptasterias spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.51	0.4741
SEASON	1	174.000	0.27	0.6045
STATION	6	174.000	35.59	0.0000
PERIOD*SEASON	1	174.000	0.46	0.4964
STATION*PERIOD	6	174.000	0.48	0.8234
STATION*SEASON	6	174.000	1.75	0.1120
PERIOD*STATION*SEASON	6	174.000	0.50	0.8106

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.51	0.00	0.1853	.	0.9376
STATION*PERIOD	2.87	0.00	0.2973	.	0.7739

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1130	0.2340	0.483	.6297
Period in FC	-0.3415	0.2161	-1.580	.1159
Period in FC-S	-0.5703	0.2798	-2.038	.0431
Period in FC-W	-0.1128	0.3295	-0.342	.7326
Period in DC-S	0.1247	0.3123	0.399	.6903
Period in DC-W	0.1014	0.3485	0.291	.7715

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.250	0.0222	11.23	.0000	0.2865	0.2130
Period Op-2	0.282	0.0397	7.11	.0000	0.3480	0.2167
Op-1-04	-0.112	0.0674	-1.66	.0979	-0.0007	-0.2237
Op-2-04	-0.004	0.1168	-0.03	.9740	0.1893	-0.1969
Op-1-05	-0.254	0.0674	-3.77	.0002	-0.1425	-0.3654
Op-2-05	-0.171	0.1030	-1.66	.0986	-0.0007	-0.3412
Op-1-06	-0.150	0.0529	-2.83	.0051	-0.0625	-0.2373
Op-2-06	0.000	0.1030	0.00	.9977	0.1706	-0.1700
Op-1-08	0.561	0.0619	9.06	.0000	0.6635	0.4586
Op-2-08	0.538	0.1030	5.22	.0000	0.7080	0.3675
Op-1-09	0.518	0.0529	9.80	.0000	0.6054	0.4305
Op-2-09	0.538	0.1030	5.22	.0000	0.7080	0.3675
Op-1-10	0.592	0.0540	10.97	.0000	0.6811	0.5026
Op-2-10	0.538	0.1030	5.22	.0000	0.7080	0.3675
Op-1-12	0.593	0.0529	11.22	.0000	0.6806	0.5057
Op-2-12	0.538	0.1030	5.22	.0000	0.7080	0.3675

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0326	0.0455	-0.717	.4741	0.0426	-0.1079

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1084	0.1348	-0.80	.4226	0.1146	-0.3313
Station 05	-0.0830	0.1231	-0.67	.5012	0.1206	-0.2865
Station 06	-0.1502	0.1158	-1.30	.1961	0.0412	-0.3416
Station 08	0.0233	0.1202	0.19	.8464	0.2220	-0.1754
Station 09	-0.0198	0.1158	-0.17	.8644	0.1716	-0.2112
Station 10	0.0541	0.1163	0.47	.6420	0.2464	-0.1381
Station 12	0.0554	0.1158	0.48	.6330	0.2468	-0.1360

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.53	1.60	0.108	0.76	0.30	-0.19	1.40	0.05	-0.43
04	Op-2	6	0.32	0.70	0.114	0.61	0.02	-0.03	0.80	0.26	-0.33
05	Op-1	16	0.72	1.90	0.131	1.00	0.45	-0.38	2.00	-0.10	-0.67
05	Op-2	7	0.66	1.80	0.227	1.21	0.10	-0.39	1.50	0.08	-0.85
06	Op-1	26	0.58	1.60	0.078	0.74	0.42	-0.23	1.65	-0.07	-0.39
06	Op-2	7	0.31	0.50	0.077	0.50	0.13	-0.04	0.65	0.18	-0.27
08	Op-1	19	0.01	0.20	0.011	0.03	-0.01	0.32	0.70	0.42	0.22
08	Op-2	7	0.00	0.00	0.000	.	.	0.27	0.35	0.40	0.14
09	Op-1	26	0.06	0.80	0.035	0.13	-0.01	0.30	1.30	0.41	0.18
09	Op-2	7	0.00	0.00	0.000	.	.	0.27	0.35	0.40	0.14
10	Op-1	25	0.00	0.10	0.004	0.01	-0.00	0.35	0.70	0.44	0.27
10	Op-2	7	0.00	0.00	0.000	.	.	0.27	0.35	0.40	0.14
12	Op-1	26	0.00	0.10	0.004	0.01	-0.00	0.35	0.75	0.44	0.26
12	Op-2	7	0.00	0.00	0.000	.	.	0.27	0.35	0.40	0.14

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.35	0.75	0.043	0.44	0.27
Op-2	7	0.27	0.35	0.053	0.40	0.14

Analysis of Variance for HBT for 0292 - Lottia digitalis

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	1.32	0.2530
SEASON	1	174.000	0.75	0.3877
STATION	6	174.000	13.15	0.0000
PERIOD*SEASON	1	174.000	1.57	0.2121
STATION*PERIOD	6	174.000	1.07	0.3806
STATION*SEASON	6	174.000	0.09	0.9971
PERIOD*STATION*SEASON	6	174.000	0.21	0.9741

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.32	0.30	0.3103	0.1501	0.2107
STATION*PERIOD	6.44	0.36	0.5482	0.1222	0.2512

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2459	0.1283	1.916	.0570
Period in FC	-0.0455	0.1185	-0.384	.7014
Period in FC-S	-0.0151	0.1535	-0.098	.9218
Period in FC-W	-0.0760	0.1807	-0.420	.6748
Period in DC-S	0.4343	0.1713	2.535	.0121
Period in DC-W	0.0575	0.1911	0.301	.7639

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.040	0.0122	-3.28	.0013	-0.0198	-0.0602
Period Op-2	-0.069	0.0218	-3.15	.0019	-0.0326	-0.1046
Op-1-04	-0.010	0.0370	-0.26	.7937	0.0515	-0.0708
Op-2-04	0.000	0.0640	0.00	1.000	0.1059	-0.1059
Op-1-05	0.001	0.0370	0.04	.9715	0.0625	-0.0598
Op-2-05	0.019	0.0565	0.34	.7371	0.1124	-0.0744
Op-1-06	0.001	0.0290	0.03	.9776	0.0488	-0.0471
Op-2-06	0.019	0.0565	0.34	.7371	0.1124	-0.0744
Op-1-08	-0.243	0.0340	-7.16	.0000	-0.1870	-0.2993
Op-2-08	-0.397	0.0565	-7.04	.0000	-0.3040	-0.4908
Op-1-09	-0.018	0.0290	-0.60	.5468	0.0305	-0.0655
Op-2-09	-0.092	0.0565	-1.63	.1051	0.0014	-0.1854
Op-1-10	0.001	0.0296	0.03	.9781	0.0498	-0.0481
Op-2-10	-0.048	0.0565	-0.85	.3966	0.0454	-0.1414
Op-1-12	-0.013	0.0290	-0.44	.6631	0.0353	-0.0606
Op-2-12	0.019	0.0565	0.34	.7371	0.1124	-0.0744

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0286	0.0250	1.147	.2530	0.0699	-0.0126

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0097	0.0739	-0.13	.8960	0.1126	-0.1320
Station 05	-0.0177	0.0675	-0.26	.7938	0.0940	-0.1293
Station 06	-0.0182	0.0635	-0.29	.7750	0.0868	-0.1232
Station 08	0.1542	0.0659	2.34	.0204	0.2632	0.0453
Station 09	0.0745	0.0635	1.17	.2422	0.1795	-0.0305
Station 10	0.0488	0.0638	0.77	.4451	0.1542	-0.0566
Station 12	-0.0316	0.0635	-0.50	.6188	0.0733	-0.1366

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.03	0.50	0.031	0.10	-0.04	-0.03	0.55	0.04	-0.10
04	Op-2	6	0.00	0.00	0.000	.	.	0.00	0.00	.	.
05	Op-1	16	0.00	0.00	0.000	.	.	0.00	0.05	0.01	-0.00
05	Op-2	7	0.00	0.00	0.000	.	.	0.04	0.30	0.15	-0.06
06	Op-1	26	0.00	0.00	0.000	.	.	0.00	0.05	0.01	-0.00
06	Op-2	7	0.00	0.00	0.000	.	.	0.04	0.30	0.15	-0.06
08	Op-1	19	1.46	7.10	0.544	2.60	0.31	-1.46	7.10	-0.31	-2.60
08	Op-2	7	3.29	10.00	1.588	7.17	-0.60	-3.24	9.70	0.57	-7.06
09	Op-1	26	0.05	0.60	0.027	0.11	-0.01	-0.05	0.65	0.01	-0.10
09	Op-2	7	0.57	3.50	0.493	1.78	-0.64	-0.53	3.50	0.69	-1.74
10	Op-1	25	0.00	0.00	0.000	.	.	0.00	0.05	0.01	-0.00
10	Op-2	7	0.21	1.00	0.149	0.58	-0.15	-0.17	1.00	0.17	-0.52
12	Op-1	26	0.04	0.60	0.027	0.09	-0.02	-0.04	0.65	0.02	-0.09
12	Op-2	7	0.00	0.00	0.000	.	.	0.04	0.30	0.15	-0.06

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.00	0.05	0.002	0.01	-0.00
Op-2	7	0.04	0.30	0.043	0.15	-0.06

Analysis of Variance for HBT for 0293 - Lottia limatula

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.10	0.7570
SEASON	1	174.000	0.00	0.9892
STATION	6	174.000	13.86	0.0000
PERIOD*SEASON	1	174.000	0.00	0.9712
STATION*PERIOD	6	174.000	0.66	0.6824
STATION*SEASON	6	174.000	1.25	0.2838
PERIOD*STATION*SEASON	6	174.000	1.50	0.1817

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.10	0.00	0.1161	.	0.9989
STATION*PERIOD	3.96	0.00	0.3768	.	0.1472

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0706	0.3724	0.190	.8499
Period in FC	-0.2277	0.3440	-0.662	.5089
Period in FC-S	-0.2557	0.4453	-0.574	.5666
Period in FC-W	-0.1998	0.5245	-0.381	.7037
Period in DC-S	0.0802	0.4971	0.161	.8720
Period in DC-W	0.0610	0.5546	0.110	.9126

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.495	0.0354	-13.98	.0000	-0.4364	-0.5534
Period Op-2	-0.472	0.0632	-7.48	.0000	-0.3680	-0.5770
Op-1-04	-0.234	0.1073	-2.18	.0305	-0.0567	-0.4115
Op-2-04	-0.330	0.1858	-1.78	.0772	-0.0230	-0.6376
Op-1-05	-0.421	0.1073	-3.93	.0001	-0.2437	-0.5986
Op-2-05	-0.183	0.1639	-1.12	.2645	0.0875	-0.4545
Op-1-06	-0.007	0.0842	-0.08	.9345	0.1322	-0.1461
Op-2-06	0.079	0.1639	0.48	.6288	0.3504	-0.1916
Op-1-08	-0.646	0.0986	-6.55	.0000	-0.4829	-0.8090
Op-2-08	-0.612	0.1639	-3.73	.0003	-0.3406	-0.8826
Op-1-09	-0.869	0.0842	-10.32	.0000	-0.7297	-1.0080
Op-2-09	-1.100	0.1639	-6.71	.0000	-0.8290	-1.3710
Op-1-10	-0.414	0.0859	-4.82	.0000	-0.2721	-0.5562
Op-2-10	-0.426	0.1639	-2.60	.0102	-0.1547	-0.6967
Op-1-12	-0.873	0.0842	-10.38	.0000	-0.7340	-1.0124
Op-2-12	-0.735	0.1639	-4.49	.0000	-0.4645	-1.0065

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0224	0.0724	-0.310	.7570	0.0973	-0.1422

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0962	0.2146	0.45	.6543	0.4511	-0.2586
Station 05	-0.2377	0.1959	-1.21	.2266	0.0862	-0.5616
Station 06	-0.0863	0.1842	-0.47	.6401	0.2183	-0.3909
Station 08	-0.0343	0.1912	-0.18	.8578	0.2819	-0.3506
Station 09	0.2311	0.1842	1.25	.2113	0.5358	-0.0735
Station 10	0.0115	0.1850	0.06	.9504	0.3175	-0.2944
Station 12	-0.1377	0.1842	-0.75	.4557	0.1669	-0.4424

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.50	1.30	0.089	0.69	0.31	-0.24	1.45	-0.02	-0.46
04	Op-2	6	1.10	1.90	0.334	1.96	0.24	-0.53	1.60	0.09	-1.14
05	Op-1	16	0.91	2.40	0.191	1.31	0.50	-0.65	2.35	-0.26	-1.04
05	Op-2	7	0.90	3.20	0.431	1.95	-0.15	-0.36	4.50	0.90	-1.63
06	Op-1	26	0.30	1.20	0.063	0.43	0.17	-0.06	1.70	0.10	-0.21
06	Op-2	7	0.44	1.40	0.180	0.88	0.00	0.09	2.10	0.68	-0.49
08	Op-1	19	1.35	2.70	0.172	1.71	0.99	-1.10	2.80	-0.74	-1.46
08	Op-2	7	4.73	11.90	1.988	9.59	-0.14	-4.19	11.40	0.41	-8.79
09	Op-1	26	2.58	5.60	0.310	3.21	1.94	-2.33	5.70	-1.68	-2.98
09	Op-2	7	9.57	22.40	3.343	17.75	1.39	-9.04	21.40	-1.15	-16.93
10	Op-1	25	0.91	2.30	0.123	1.16	0.65	-0.65	2.70	-0.39	-0.92
10	Op-2	7	1.40	3.60	0.472	2.56	0.24	-0.86	4.90	0.59	-2.32
12	Op-1	26	3.23	11.70	0.577	4.41	2.04	-2.98	11.65	-1.81	-4.15
12	Op-2	7	3.91	12.30	1.511	7.61	0.22	-3.38	12.30	0.50	-7.26

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.25	0.80	0.039	0.33	0.17
Op-2	7	0.54	1.70	0.229	1.10	-0.02

Analysis of Variance for HBT fpr 0294 - Lottia pelta

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.15	0.7016
SEASON	1	174.000	4.78	0.0301
STATION	6	174.000	13.49	0.0000
PERIOD*SEASON	1	174.000	1.63	0.2028
STATION*PERIOD	6	174.000	1.17	0.3232
STATION*SEASON	6	174.000	0.73	0.6276
PERIOD*STATION*SEASON	6	174.000	0.31	0.9335

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.15	0.00	0.1247	.	0.9947
STATION*PERIOD	7.03	0.95	0.5855	0.1606	0.1710

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0487	0.3609	-0.135	.8928
Period in FC	0.2373	0.3334	0.712	.4776
Period in FC-S	0.5188	0.4316	1.202	.2310
Period in FC-W	-0.0443	0.5082	-0.087	.9307
Period in DC-S	0.2979	0.4817	0.618	.5371
Period in DC-W	-0.3953	0.5375	-0.735	.4630

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.220	0.0343	-6.42	.0000	-0.1635	-0.2769
Period Op-2	-0.247	0.0612	-4.04	.0001	-0.1459	-0.3484
Op-1-04	0.117	0.1040	1.12	.2632	0.2886	-0.0552
Op-2-04	-0.307	0.1801	-1.70	.0903	-0.0090	-0.6045
Op-1-05	0.038	0.1040	0.37	.7150	0.2100	-0.1339
Op-2-05	0.016	0.1588	0.10	.9211	0.2784	-0.2469
Op-1-06	0.070	0.0816	0.86	.3924	0.2048	-0.0649
Op-2-06	0.278	0.1588	1.75	.0814	0.5410	0.0158
Op-1-08	-0.593	0.0955	-6.21	.0000	-0.4354	-0.7513
Op-2-08	-0.572	0.1588	-3.60	.0004	-0.3098	-0.8350
Op-1-09	-0.630	0.0816	-7.72	.0000	-0.4949	-0.7646
Op-2-09	-0.752	0.1588	-4.74	.0000	-0.4897	-1.0149
Op-1-10	-0.528	0.0832	-6.34	.0000	-0.3900	-0.6653
Op-2-10	-0.346	0.1588	-2.18	.0306	-0.0836	-0.6089
Op-1-12	-0.015	0.0816	-0.19	.8508	0.1195	-0.1502
Op-2-12	-0.046	0.1588	-0.29	.7703	0.2162	-0.3091

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0269	0.0702	0.384	.7016	0.1430	-0.0891

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.4234	0.2079	2.04	.0432	0.7673	0.0796
Station 05	0.0223	0.1898	0.12	.9067	0.3362	-0.2916
Station 06	-0.2085	0.1785	-1.17	.2445	0.0867	-0.5037
Station 08	-0.0210	0.1853	-0.11	.9100	0.2855	-0.3274
Station 09	0.1226	0.1785	0.69	.4932	0.4178	-0.1726
Station 10	-0.1814	0.1793	-1.01	.3131	0.1151	-0.4779
Station 12	0.0311	0.1785	0.17	.8620	0.3263	-0.2641

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.53	2.40	0.207	0.97	0.09	-0.16	2.60	0.22	-0.53
04	Op-2	6	2.53	9.40	1.450	6.26	-1.19	-1.87	8.50	1.62	-5.35
05	Op-1	16	0.37	1.10	0.081	0.54	0.20	0.00	1.15	0.16	-0.15
05	Op-2	7	0.96	4.00	0.535	2.27	-0.35	-0.31	4.00	0.91	-1.52
06	Op-1	26	0.43	3.80	0.147	0.73	0.12	-0.06	4.05	0.24	-0.35
06	Op-2	7	0.87	5.10	0.707	2.60	-0.86	-0.22	5.10	1.40	-1.84
08	Op-1	19	2.00	6.40	0.419	2.88	1.12	-1.64	6.35	-0.79	-2.49
08	Op-2	7	3.77	8.90	1.309	6.98	0.57	-3.12	8.55	-0.01	-6.24
09	Op-1	26	2.98	21.10	0.849	4.72	1.23	-2.61	20.35	-0.91	-4.31
09	Op-2	7	20.09	118.10	16.539	60.56	-20.38	-19.44	117.50	20.90	-59.77
10	Op-1	25	1.93	8.20	0.396	2.75	1.11	-1.55	7.75	-0.78	-2.32
10	Op-2	7	1.64	4.00	0.510	2.89	0.40	-0.99	3.60	0.12	-2.11
12	Op-1	26	0.63	3.10	0.167	0.97	0.28	-0.26	3.50	0.08	-0.60
12	Op-2	7	1.34	4.70	0.615	2.85	-0.16	-0.69	4.10	0.70	-2.09

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.37	0.95	0.056	0.48	0.25
Op-2	7	0.65	1.20	0.149	1.01	0.29

Analysis of Variance for HBT for 0295 - Macclintockia scabra

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	20.09	0.0000
SEASON	1	174.000	10.53	0.0014
STATION	6	174.000	30.05	0.0000
PERIOD*SEASON	1	174.000	0.87	0.3534
STATION*PERIOD	6	174.000	1.05	0.3965
STATION*SEASON	6	174.000	2.75	0.0139
PERIOD*STATION*SEASON	6	174.000	0.79	0.5775

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	20.09	18.86	0.9976	0.9963	0.9802
STATION*PERIOD	6.28	0.21	0.5383	0.1128	0.2584

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.9490	0.4108	-4.745	.0000
Period in FC	-0.5576	0.3794	-1.470	.1435
Period in FC-S	-0.5254	0.4912	-1.070	.2863
Period in FC-W	-0.5898	0.5785	-1.020	.3094
Period in DC-S	-1.4608	0.5483	-2.664	.0084
Period in DC-W	-2.4371	0.6118	-3.984	.0001

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.729	0.0390	-18.67	.0000	-0.6643	-0.7934
Period Op-2	-0.371	0.0697	-5.32	.0000	-0.2555	-0.4860
Op-1-04	0.008	0.1183	0.07	.9444	0.2039	-0.1874
Op-2-04	0.054	0.2050	0.26	.7916	0.3932	-0.2847
Op-1-05	-0.512	0.1183	-4.33	.0000	-0.3167	-0.7080
Op-2-05	-0.147	0.1808	-0.81	.4186	0.1524	-0.4454
Op-1-06	0.113	0.0928	1.22	.2239	0.2668	-0.0402
Op-2-06	0.259	0.1808	1.43	.1536	0.5580	-0.0398
Op-1-08	-1.682	0.1087	-15.47	.0000	-1.5024	-1.8620
Op-2-08	-1.186	0.1808	-6.56	.0000	-0.8869	-1.4847
Op-1-09	-1.166	0.0928	-12.56	.0000	-1.0128	-1.3198
Op-2-09	-0.832	0.1808	-4.60	.0000	-0.5334	-1.1312
Op-1-10	-0.655	0.0947	-6.92	.0000	-0.4987	-0.8121
Op-2-10	-0.244	0.1808	-1.35	.1781	0.0545	-0.5433
Op-1-12	-1.207	0.0928	-13.01	.0000	-1.0538	-1.3608
Op-2-12	-0.500	0.1808	-2.76	.0063	-0.2008	-0.7986

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3581	0.0799	-4.482	.0000	-0.2260	-0.4902

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0460	0.2367	-0.19	.8462	0.3454	-0.4373
Station 05	-0.3658	0.2160	-1.69	.0922	-0.0086	-0.7231
Station 06	-0.1458	0.2032	-0.72	.4741	0.1902	-0.4818
Station 08	-0.4964	0.2109	-2.35	.0197	-0.1476	-0.8452
Station 09	-0.3340	0.2032	-1.64	.1020	0.0020	-0.6700
Station 10	-0.4110	0.2041	-2.01	.0456	-0.0735	-0.7485
Station 12	-0.7076	0.2032	-3.48	.0006	-0.3716	-1.0436

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.68	5.70	0.360	1.44	-0.09	-0.05	10.65	1.03	-1.13
04	Op-2	6	3.43	19.00	3.116	11.44	-4.58	-2.34	20.70	6.05	-10.74
05	Op-1	16	2.89	7.20	0.519	3.99	1.78	-2.27	6.95	-1.31	-3.22
05	Op-2	7	2.69	9.70	1.250	5.75	-0.37	-1.32	11.60	2.38	-5.03
06	Op-1	26	0.93	5.20	0.301	1.55	0.31	0.21	9.15	1.04	-0.61
06	Op-2	7	0.51	1.30	0.191	0.98	0.05	0.85	3.65	2.20	-0.50
08	Op-1	19	68.36	147.80	10.167	89.72	47.00	-67.41	146.10	-46.43	-88.39
08	Op-2	7	35.34	67.30	10.070	59.98	10.70	-33.98	69.20	-8.93	-59.03
09	Op-1	26	31.08	113.40	6.516	44.50	17.66	-29.94	111.65	-16.65	-43.23
09	Op-2	7	22.33	56.50	8.427	42.95	1.71	-20.96	58.40	0.19	-42.11
10	Op-1	25	27.79	168.10	10.201	48.85	6.74	-26.77	166.65	-6.11	-47.43
10	Op-2	7	3.23	10.00	1.317	6.45	0.01	-1.86	10.00	1.30	-5.03
12	Op-1	26	33.07	103.30	5.729	44.87	21.27	-31.93	100.70	-20.37	-43.49
12	Op-2	7	16.93	57.50	7.668	35.69	-1.83	-15.56	60.00	3.54	-34.67

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.14	5.60	0.275	1.71	0.58
Op-2	7	1.36	2.75	0.397	2.34	0.39

Analysis of Variance for HBT for 0308 - Mopalia spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	15.82	0.0001
SEASON	1	174.000	0.15	0.7026
STATION	6	174.000	0.96	0.4509
PERIOD*SEASON	1	174.000	0.20	0.6517
STATION*PERIOD	6	174.000	0.95	0.4613
STATION*SEASON	6	174.000	0.55	0.7699
PERIOD*STATION*SEASON	6	174.000	0.55	0.7712

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	15.82	14.63	0.9897	0.9848	0.5243
STATION*PERIOD	5.70	0.00	0.4995	.	0.1321

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.2410	0.3171	-3.913	.0001
Period in FC	-0.4760	0.2930	-1.625	.1060
Period in FC-S	-0.7922	0.3792	-2.089	.0382
Period in FC-W	-0.1599	0.4466	-0.358	.7208
Period in DC-S	-1.1201	0.4233	-2.646	.0089
Period in DC-W	-1.3619	0.4723	-2.883	.0044

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.063	0.0301	2.10	.0370	0.1132	0.0135
Period Op-2	0.309	0.0538	5.74	.0000	0.3976	0.2196
Op-1-04	0.132	0.0914	1.44	.1513	0.2828	-0.0194
Op-2-04	0.159	0.1582	1.01	.3160	0.4208	-0.1025
Op-1-05	0.154	0.0914	1.68	.0943	0.3048	0.0026
Op-2-05	0.438	0.1396	3.14	.0020	0.6688	0.2073
Op-1-06	0.086	0.0717	1.20	.2336	0.2042	-0.0329
Op-2-06	0.250	0.1396	1.79	.0751	0.4807	0.0191
Op-1-08	-0.035	0.0840	-0.41	.6796	0.1041	-0.1736
Op-2-08	0.187	0.1396	1.34	.1811	0.4182	-0.0434
Op-1-09	-0.139	0.0717	-1.94	.0545	-0.0202	-0.2573
Op-2-09	0.400	0.1396	2.87	.0046	0.6312	0.1696
Op-1-10	0.049	0.0731	0.67	.5018	0.1702	-0.0717
Op-2-10	0.363	0.1396	2.60	.0101	0.5936	0.1320
Op-1-12	0.197	0.0717	2.74	.0067	0.3152	0.0781
Op-2-12	0.363	0.1396	2.60	.0101	0.5936	0.1320

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2453	0.0617	-3.977	.0001	-0.1433	-0.3473

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0275	0.1827	-0.15	.8807	0.2747	-0.3296
Station 05	-0.2843	0.1668	-1.70	.0901	-0.0085	-0.5602
Station 06	-0.1642	0.1569	-1.05	.2966	0.0952	-0.4237
Station 08	-0.2221	0.1629	-1.36	.1744	0.0472	-0.4914
Station 09	-0.5392	0.1569	-3.44	.0007	-0.2797	-0.7986
Station 10	-0.3135	0.1576	-1.99	.0482	-0.0530	-0.5741
Station 12	-0.1661	0.1569	-1.06	.2911	0.0933	-0.4256

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.08	0.30	0.026	0.14	0.03	0.07	0.55	0.16	-0.01
04	Op-2	6	0.13	0.30	0.061	0.29	-0.02	0.08	0.55	0.29	-0.12
05	Op-1	16	0.07	0.30	0.024	0.12	0.02	0.08	0.60	0.18	-0.01
05	Op-2	7	0.00	0.00	0.000	.	.	0.21	0.55	0.39	0.04
06	Op-1	26	0.06	0.30	0.018	0.10	0.03	0.05	0.75	0.12	-0.02
06	Op-2	7	0.07	0.30	0.042	0.17	-0.03	0.14	0.60	0.32	-0.03
08	Op-1	19	0.20	1.20	0.073	0.35	0.05	-0.07	1.55	0.11	-0.24
08	Op-2	7	0.13	0.60	0.084	0.33	-0.08	0.09	0.75	0.31	-0.13
09	Op-1	26	0.34	2.40	0.117	0.58	0.10	-0.23	2.85	0.03	-0.49
09	Op-2	7	0.01	0.10	0.014	0.05	-0.02	0.20	0.45	0.35	0.05
10	Op-1	25	0.10	0.50	0.029	0.15	0.04	0.02	0.70	0.09	-0.06
10	Op-2	7	0.03	0.10	0.018	0.07	-0.02	0.19	0.55	0.35	0.02
12	Op-1	26	0.02	0.10	0.007	0.03	0.00	0.09	0.65	0.15	0.03
12	Op-2	7	0.03	0.10	0.018	0.07	-0.02	0.19	0.55	0.35	0.02

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.11	0.55	0.028	0.17	0.05
Op-2	7	0.21	0.55	0.072	0.39	0.04

Analysis of Variance for HBT for 0273 - Nemertea unid.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	10.69	0.0013
SEASON	1	174.000	20.89	0.0000
STATION	6	174.000	15.94	0.0000
PERIOD*SEASON	1	174.000	1.46	0.2285
STATION*PERIOD	6	174.000	1.17	0.3237
STATION*SEASON	6	174.000	4.10	0.0007
PERIOD*STATION*SEASON	6	174.000	0.31	0.9306

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	10.69	9.56	0.9465	0.9245	0.6053
STATION*PERIOD	7.03	0.95	0.5852	0.1602	0.3599

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.6063	0.2672	2.269	.0245
Period in FC	0.5830	0.2469	2.362	.0193
Period in FC-S	0.2590	0.3196	0.811	.4187
Period in FC-W	0.9069	0.3764	2.410	.0170
Period in DC-S	0.4906	0.3567	1.375	.1708
Period in DC-W	0.7220	0.3980	1.814	.0714

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.328	0.0254	12.93	.0000	0.3704	0.2864
Period Op-2	0.158	0.0453	3.49	.0006	0.2335	0.0835
Op-1-04	0.063	0.0770	0.82	.4107	0.1908	-0.0638
Op-2-04	-0.318	0.1333	-2.39	.0181	-0.0976	-0.5386
Op-1-05	0.107	0.0770	1.38	.1682	0.2338	-0.0208
Op-2-05	-0.188	0.1176	-1.60	.1115	0.0064	-0.3826
Op-1-06	-0.031	0.0604	-0.52	.6031	0.0684	-0.1313
Op-2-06	0.062	0.1176	0.53	.5999	0.2563	-0.1327
Op-1-08	0.523	0.0707	7.39	.0000	0.6396	0.4056
Op-2-08	0.414	0.1176	3.52	.0006	0.6083	0.2194
Op-1-09	0.511	0.0604	8.46	.0000	0.6107	0.4110
Op-2-09	0.350	0.1176	2.98	.0033	0.5444	0.1555
Op-1-10	0.551	0.0616	8.94	.0000	0.6531	0.4493
Op-2-10	0.339	0.1176	2.88	.0045	0.5330	0.1441
Op-1-12	0.576	0.0604	9.53	.0000	0.6754	0.4756
Op-2-12	0.451	0.1176	3.84	.0002	0.6459	0.2570

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1699	0.0520	3.269	.0013	0.2558	0.0840

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.3816	0.1540	2.48	.0142	0.6362	0.1270
Station 05	0.2946	0.1406	2.10	.0375	0.5271	0.0622
Station 06	-0.0933	0.1322	-0.71	.4815	0.1254	-0.3119
Station 08	0.1088	0.1372	0.79	.4292	0.3357	-0.1182
Station 09	0.1609	0.1322	1.22	.2252	0.3795	-0.0577
Station 10	0.2126	0.1328	1.60	.1111	0.4322	-0.0069
Station 12	0.1240	0.1322	0.94	.3494	0.3427	-0.0946

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.39	2.60	0.164	0.74	0.04	-0.06	2.85	0.27	-0.38
04	Op-2	6	0.85	1.40	0.196	1.35	0.35	-0.48	1.00	-0.01	-0.94
05	Op-1	16	0.34	1.80	0.126	0.61	0.07	-0.00	2.30	0.25	-0.26
05	Op-2	7	0.80	1.80	0.296	1.52	0.08	-0.48	1.75	0.19	-1.14
06	Op-1	26	0.52	1.50	0.103	0.74	0.31	-0.13	1.85	0.06	-0.31
06	Op-2	7	0.41	1.20	0.192	0.88	-0.06	-0.09	1.25	0.27	-0.46
08	Op-1	19	0.02	0.20	0.014	0.05	-0.01	0.37	1.55	0.55	0.19
08	Op-2	7	0.03	0.10	0.018	0.07	-0.02	0.29	0.55	0.50	0.09
09	Op-1	26	0.02	0.20	0.010	0.04	0.00	0.37	1.35	0.51	0.23
09	Op-2	7	0.06	0.20	0.037	0.15	-0.03	0.26	0.60	0.51	0.02
10	Op-1	25	0.00	0.10	0.004	0.01	-0.00	0.39	1.55	0.55	0.23
10	Op-2	7	0.07	0.30	0.042	0.17	-0.03	0.25	0.50	0.43	0.07
12	Op-1	26	0.00	0.00	0.000	.	.	0.39	1.55	0.55	0.24
12	Op-2	7	0.01	0.10	0.014	0.05	-0.02	0.31	0.55	0.52	0.09

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.39	1.55	0.074	0.55	0.24
Op-2	7	0.32	0.55	0.092	0.55	0.10

Analysis of Variance for HBT for 0362 - Nuttallina californica

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	4.75	0.0306
SEASON	1	174.000	6.20	0.0137
STATION	6	174.000	73.35	0.0000
PERIOD*SEASON	1	174.000	0.83	0.3624
STATION*PERIOD	6	174.000	1.51	0.1771
STATION*SEASON	6	174.000	1.06	0.3916
PERIOD*STATION*SEASON	6	174.000	2.14	0.0511

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.75	3.70	0.7007	0.6066	0.9967
STATION*PERIOD	9.07	2.96	0.6976	0.3037	0.6148

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.6290	0.2955	-2.129	.0347
Period in FC	-0.2478	0.2730	-0.908	.3652
Period in FC-S	-0.5406	0.3534	-1.530	.1279
Period in FC-W	0.0450	0.4161	0.108	.9140
Period in DC-S	0.0312	0.3944	0.079	.9371
Period in DC-W	-1.2891	0.4401	-2.929	.0039

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.749	0.0281	-26.69	.0000	-0.7029	-0.7958
Period Op-2	-0.624	0.0501	-12.45	.0000	-0.5412	-0.7070
Op-1-04	-1.337	0.0851	-15.70	.0000	-1.1960	-1.4775
Op-2-04	-1.268	0.1474	-8.60	.0000	-1.0239	-1.5116
Op-1-05	-1.792	0.0851	-21.06	.0000	-1.6517	-1.9332
Op-2-05	-1.666	0.1300	-12.82	.0000	-1.4514	-1.8815
Op-1-06	-0.683	0.0668	-10.23	.0000	-0.5729	-0.7938
Op-2-06	-0.631	0.1300	-4.85	.0000	-0.4156	-0.8457
Op-1-08	-0.559	0.0782	-7.14	.0000	-0.4293	-0.6880
Op-2-08	-0.575	0.1300	-4.42	.0000	-0.3595	-0.7895
Op-1-09	-0.929	0.0668	-13.92	.0000	-0.8189	-1.0398
Op-2-09	-0.407	0.1300	-3.13	.0020	-0.1921	-0.6221
Op-1-10	-0.004	0.0682	-0.05	.9579	0.1091	-0.1163
Op-2-10	0.089	0.1300	0.68	.4947	0.3040	-0.1260
Op-1-12	0.059	0.0668	0.88	.3783	0.1694	-0.0514
Op-2-12	0.089	0.1300	0.68	.4947	0.3040	-0.1260

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1253	0.0575	-2.180	.0306	-0.0302	-0.2203

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0690	0.1703	-0.41	.6857	0.2125	-0.3506
Station 05	-0.1260	0.1554	-0.81	.4185	0.1310	-0.3831
Station 06	-0.0527	0.1462	-0.36	.7188	0.1890	-0.2945
Station 08	0.0159	0.1517	0.10	.9169	0.2668	-0.2351
Station 09	-0.5222	0.1462	-3.57	.0005	-0.2805	-0.7640
Station 10	-0.0926	0.1468	-0.63	.5291	0.1502	-0.3354
Station 12	-0.0300	0.1462	-0.21	.8376	0.2117	-0.2717

Station-period means and deltas from original data where control n=2

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04 Op-1	16	2.71	4.00	0.331	3.42	2.01	-2.70	4.00	-1.99	-3.40
04 Op-2	6	2.58	3.40	0.601	4.13	1.04	-2.55	3.45	-1.02	-4.08
05 Op-1	16	8.69	32.50	1.937	12.82	4.56	-8.67	32.50	-4.54	-12.80
05 Op-2	7	6.77	15.20	2.070	11.84	1.71	-6.74	15.25	-1.67	-11.82
06 Op-1	26	0.60	1.60	0.079	0.76	0.43	-0.58	1.60	-0.41	-0.74
06 Op-2	7	0.57	1.70	0.234	1.14	-0.00	-0.54	1.80	0.04	-1.13
08 Op-1	19	0.48	2.10	0.119	0.73	0.24	-0.47	2.15	-0.22	-0.72
08 Op-2	7	0.51	1.00	0.140	0.86	0.17	-0.49	1.00	-0.15	-0.82
09 Op-1	26	1.84	7.10	0.356	2.58	1.11	-1.82	7.10	-1.09	-2.55
09 Op-2	7	0.36	0.90	0.136	0.69	0.02	-0.33	0.95	-0.00	-0.65
10 Op-1	25	0.03	0.30	0.016	0.07	-0.00	-0.01	0.40	0.03	-0.05
10 Op-2	7	0.00	0.00	0.000	.	.	0.03	0.10	0.06	-0.01
12 Op-1	26	0.00	0.10	0.004	0.01	-0.00	0.02	0.20	0.03	0.00
12 Op-2	7	0.00	0.00	0.000	.	.	0.03	0.10	0.06	-0.01

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.02	0.10	0.006	0.03	0.01
Op-2	7	0.03	0.10	0.015	0.06	-0.01

Analysis of Variance for HBT for 0528 - Ocenebra spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	19.27	0.0000
SEASON	1	174.000	4.52	0.0349
STATION	6	174.000	7.18	0.0000
PERIOD*SEASON	1	174.000	0.31	0.5789
STATION*PERIOD	6	174.000	2.74	0.0143
STATION*SEASON	6	174.000	0.91	0.4910
PERIOD*STATION*SEASON	6	174.000	0.30	0.9347

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	19.27	18.05	0.9968	0.9952	0.9966
STATION*PERIOD	16.45	10.26	0.9240	0.7524	0.2249

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.7803	0.3185	-5.589	.0000
Period in FC	-0.1233	0.2942	-0.419	.6757
Period in FC-S	-0.2876	0.3809	-0.755	.4513
Period in FC-W	0.0409	0.4486	0.091	.9274
Period in DC-S	-1.8572	0.4252	-4.368	.0000
Period in DC-W	-1.7035	0.4744	-3.591	.0004

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.157	0.0303	-5.20	.0000	-0.1074	-0.2075
Period Op-2	0.115	0.0541	2.12	.0355	0.2039	0.0252
Op-1-04	-0.112	0.0918	-1.22	.2238	0.0397	-0.2638
Op-2-04	-0.329	0.1589	-2.07	.0398	-0.0664	-0.5920
Op-1-05	-0.075	0.0918	-0.82	.4156	0.0769	-0.2266
Op-2-05	0.133	0.1402	0.95	.3446	0.3646	-0.0990
Op-1-06	-0.137	0.0720	-1.90	.0591	-0.0177	-0.2558
Op-2-06	-0.004	0.1402	-0.03	.9771	0.2278	-0.2358
Op-1-08	-0.425	0.0843	-5.04	.0000	-0.2853	-0.5642
Op-2-08	0.088	0.1402	0.63	.5295	0.3201	-0.1435
Op-1-09	-0.354	0.0720	-4.92	.0000	-0.2354	-0.4735
Op-2-09	0.256	0.1402	1.83	.0696	0.4877	0.0241
Op-1-10	0.338	0.0735	4.60	.0000	0.4594	0.2164
Op-2-10	0.531	0.1402	3.79	.0002	0.7632	0.2996
Op-1-12	-0.337	0.0720	-4.68	.0000	-0.2178	-0.4559
Op-2-12	0.127	0.1402	0.90	.3677	0.3584	-0.1052

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2719	0.0619	-4.390	.0000	-0.1695	-0.3744

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2172	0.1835	1.18	.2383	0.5206	-0.0863
Station 05	-0.2077	0.1675	-1.24	.2167	0.0693	-0.4848
Station 06	-0.1327	0.1576	-0.84	.4007	0.1278	-0.3933
Station 08	-0.5131	0.1636	-3.14	.0020	-0.2425	-0.7836
Station 09	-0.6103	0.1576	-3.87	.0002	-0.3497	-0.8709
Station 10	-0.1935	0.1583	-1.22	.2231	0.0682	-0.4552
Station 12	-0.4635	0.1576	-2.94	.0037	-0.2029	-0.7240

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.41	1.20	0.078	0.57	0.24	-0.14	1.60	0.06	-0.33
04	Op-2	6	0.52	0.60	0.091	0.75	0.28	-0.31	0.70	-0.04	-0.58
05	Op-1	16	0.41	1.10	0.083	0.58	0.23	-0.14	1.40	0.04	-0.32
05	Op-2	7	0.31	1.70	0.233	0.89	-0.26	0.01	1.05	0.34	-0.32
06	Op-1	26	0.46	1.20	0.071	0.60	0.31	-0.20	1.60	-0.03	-0.36
06	Op-2	7	0.31	0.90	0.126	0.62	0.01	0.01	0.70	0.24	-0.21
08	Op-1	19	1.10	3.20	0.191	1.50	0.70	-0.83	3.00	-0.45	-1.22
08	Op-2	7	0.24	0.80	0.107	0.50	-0.02	0.09	0.55	0.28	-0.11
09	Op-1	26	1.09	6.00	0.236	1.58	0.61	-0.83	6.25	-0.35	-1.31
09	Op-2	7	0.13	0.40	0.061	0.28	-0.02	0.20	1.00	0.50	-0.10
10	Op-1	25	0.08	0.40	0.027	0.14	0.03	0.18	0.80	0.25	0.10
10	Op-2	7	0.00	0.00	0.000	.	.	0.33	1.05	0.67	-0.01
12	Op-1	26	0.77	1.90	0.100	0.98	0.56	-0.51	1.80	-0.30	-0.72
12	Op-2	7	0.23	0.60	0.099	0.47	-0.01	0.10	0.80	0.35	-0.15

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.26	0.60	0.031	0.32	0.20
Op-2	7	0.33	1.05	0.138	0.67	-0.01

Analysis of Variance for HBT for 0397 - Pachygrapsus crassipes

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	6.10	0.0144
SEASON	1	174.000	7.09	0.0085
STATION	6	174.000	13.90	0.0000
PERIOD*SEASON	1	174.000	7.67	0.0062
STATION*PERIOD	6	174.000	1.06	0.3865
STATION*SEASON	6	174.000	1.27	0.2734
PERIOD*STATION*SEASON	6	174.000	0.39	0.8824

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.10	5.03	0.7929	0.7225	0.9988
STATION*PERIOD	6.38	0.31	0.5445	0.1186	0.2181

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.8628	0.3176	2.716	.0073
Period in FC	0.2057	0.2934	0.701	.4842
Period in FC-S	0.6396	0.3799	1.684	.0940
Period in FC-W	-0.2282	0.4473	-0.510	.6107
Period in DC-S	1.6265	0.4240	3.836	.0002
Period in DC-W	0.0991	0.4731	0.209	.8344

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.471	0.0302	-15.61	.0000	-0.4212	-0.5210
Period Op-2	-0.624	0.0539	-11.57	.0000	-0.5346	-0.7129
Op-1-04	-0.737	0.0915	-8.05	.0000	-0.5854	-0.8880
Op-2-04	-0.839	0.1585	-5.30	.0000	-0.5773	-1.1015
Op-1-05	-0.681	0.0915	-7.44	.0000	-0.5292	-0.8318
Op-2-05	-0.770	0.1398	-5.51	.0000	-0.5393	-1.0016
Op-1-06	-0.498	0.0718	-6.94	.0000	-0.3793	-0.6167
Op-2-06	-0.511	0.1398	-3.66	.0003	-0.2799	-0.7422
Op-1-08	-0.499	0.0841	-5.94	.0000	-0.3604	-0.6385
Op-2-08	-0.724	0.1398	-5.18	.0000	-0.4928	-0.9551
Op-1-09	-0.662	0.0718	-9.22	.0000	-0.5432	-0.7806
Op-2-09	-1.097	0.1398	-7.84	.0000	-0.8654	-1.3277
Op-1-10	-0.055	0.0733	-0.75	.4569	0.0665	-0.1758
Op-2-10	-0.009	0.1398	-0.06	.9504	0.2224	-0.2399
Op-1-12	-0.167	0.0718	-2.32	.0215	-0.0478	-0.2853
Op-2-12	-0.416	0.1398	-2.98	.0033	-0.1850	-0.6473

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1526	0.0618	2.471	.0144	0.2548	0.0505

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.1027	0.1830	0.56	.5755	0.4053	-0.2000
Station 05	0.0899	0.1671	0.54	.5911	0.3662	-0.1863
Station 06	0.0131	0.1571	0.08	.9337	0.2729	-0.2468
Station 08	0.2245	0.1631	1.38	.1705	0.4943	-0.0452
Station 09	0.4346	0.1571	2.77	.0063	0.6944	0.1747
Station 10	-0.0459	0.1578	-0.29	.7714	0.2151	-0.3069
Station 12	0.2496	0.1571	1.59	.1141	0.5094	-0.0103

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	1.11	3.20	0.194	1.52	0.69	-1.00	3.30	-0.56	-1.44
04	Op-2	6	1.10	1.40	0.219	1.66	0.54	-1.03	1.50	-0.47	-1.60
05	Op-1	16	1.02	2.30	0.174	1.39	0.65	-0.91	2.15	-0.55	-1.28
05	Op-2	7	1.19	1.90	0.272	1.85	0.52	-1.10	2.00	-0.41	-1.79
06	Op-1	26	0.63	2.60	0.112	0.87	0.40	-0.54	2.70	-0.31	-0.78
06	Op-2	7	0.69	1.30	0.183	1.13	0.24	-0.60	1.50	-0.11	-1.09
08	Op-1	19	0.60	1.60	0.096	0.80	0.40	-0.50	1.40	-0.30	-0.70
08	Op-2	7	0.93	1.60	0.209	1.44	0.42	-0.84	1.60	-0.31	-1.37
09	Op-1	26	1.01	2.80	0.161	1.34	0.68	-0.92	2.80	-0.58	-1.25
09	Op-2	7	2.41	3.30	0.531	3.71	1.11	-2.33	3.35	-1.00	-3.66
10	Op-1	25	0.17	0.90	0.047	0.27	0.07	-0.07	1.15	0.03	-0.18
10	Op-2	7	0.17	0.70	0.099	0.41	-0.07	-0.09	0.90	0.20	-0.37
12	Op-1	26	0.24	1.20	0.058	0.36	0.12	-0.15	1.20	-0.04	-0.26
12	Op-2	7	0.83	2.60	0.410	1.83	-0.18	-0.74	2.70	0.27	-1.76

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.09	0.30	0.017	0.13	0.06
Op-2	7	0.09	0.20	0.028	0.15	0.02

Analysis of Variance for HBT for 0398 - Pagurus spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	16.92	0.0001
SEASON	1	174.000	9.21	0.0028
STATION	6	174.000	18.51	0.0000
PERIOD*SEASON	1	174.000	6.66	0.0107
STATION*PERIOD	6	174.000	2.41	0.0291
STATION*SEASON	6	174.000	0.70	0.6518
PERIOD*STATION*SEASON	6	174.000	1.02	0.4122

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	16.92	15.72	0.9929	0.9894	1.0000
STATION*PERIOD	14.46	8.30	0.8864	0.6580	0.1246

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.5479	0.2796	-5.536	.0000
Period in FC	-0.0178	0.2583	-0.069	.9452
Period in FC-S	0.3496	0.3344	1.045	.2972
Period in FC-W	-0.3851	0.3938	-0.978	.3294
Period in DC-S	-0.9326	0.3732	-2.499	.0134
Period in DC-W	-2.1632	0.4164	-5.194	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.036	0.0266	-1.36	.1742	0.0077	-0.0802
Period Op-2	0.187	0.0474	3.95	.0001	0.2659	0.1090
Op-1-04	0.093	0.0806	1.15	.2511	0.2260	-0.0404
Op-2-04	0.219	0.1395	1.57	.1185	0.4496	-0.0118
Op-1-05	-0.081	0.0806	-1.01	.3155	0.0521	-0.2143
Op-2-05	-0.121	0.1230	-0.98	.3267	0.0824	-0.3245
Op-1-06	-0.043	0.0632	-0.68	.4978	0.0616	-0.1474
Op-2-06	-0.111	0.1230	-0.91	.3667	0.0921	-0.3148
Op-1-08	0.015	0.0740	0.20	.8395	0.1374	-0.1074
Op-2-08	0.294	0.1230	2.39	.0181	0.4971	0.0902
Op-1-09	0.396	0.0632	6.26	.0000	0.5001	0.2911
Op-2-09	0.816	0.1230	6.63	.0000	1.0197	0.6127
Op-1-10	-0.054	0.0645	-0.84	.4008	0.0523	-0.1610
Op-2-10	0.343	0.1230	2.79	.0059	0.5465	0.1396
Op-1-12	-0.579	0.0632	-9.16	.0000	-0.4744	-0.6834
Op-2-12	-0.127	0.1230	-1.04	.3016	0.0760	-0.3310

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2237	0.0544	-4.113	.0001	-0.1337	-0.3136

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1261	0.1611	-0.78	.4347	0.1403	-0.3926
Station 05	0.0399	0.1471	0.27	.7863	0.2831	-0.2033
Station 06	0.0684	0.1383	0.49	.6214	0.2972	-0.1603
Station 08	-0.2786	0.1436	-1.94	.0540	-0.0412	-0.5161
Station 09	-0.4206	0.1383	-3.04	.0027	-0.1918	-0.6493
Station 10	-0.3974	0.1389	-2.86	.0048	-0.1676	-0.6271
Station 12	-0.4514	0.1383	-3.26	.0013	-0.2226	-0.6801

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	6.46	10.70	0.835	8.24	4.68	1.22	14.40	3.53	-1.09
04	Op-2	6	5.38	14.30	2.103	10.79	-0.02	1.72	15.40	7.84	-4.41
05	Op-1	16	9.38	10.90	0.837	11.16	7.59	-1.70	12.95	0.13	-3.52
05	Op-2	7	12.29	19.40	2.546	18.52	6.05	-4.58	22.80	2.70	-11.86
06	Op-1	26	8.02	13.10	0.727	9.51	6.52	-1.02	17.45	0.75	-2.80
06	Op-2	7	11.13	18.30	2.319	16.80	5.45	-3.42	14.15	1.26	-8.10
08	Op-1	19	7.50	10.80	0.707	8.99	6.01	0.12	16.80	2.24	-2.01
08	Op-2	7	5.80	13.40	1.832	10.28	1.32	1.91	15.90	7.49	-3.67
09	Op-1	26	3.20	12.80	0.605	4.45	1.96	3.79	16.45	5.53	2.04
09	Op-2	7	0.99	2.70	0.376	1.91	0.06	6.72	6.65	8.57	4.87
10	Op-1	25	9.28	26.80	1.282	11.93	6.64	-2.27	27.65	0.59	-5.12
10	Op-2	7	7.39	31.10	4.088	17.39	-2.62	0.32	32.45	10.84	-10.20
12	Op-1	26	40.27	174.80	8.245	57.25	23.29	-33.28	171.25	-16.81	-49.74
12	Op-2	7	14.26	32.40	4.098	24.28	4.23	-6.55	29.50	3.45	-16.55

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	6.99	9.75	0.513	8.05	5.94
Op-2	7	7.71	7.55	0.961	10.06	5.36

Analysis of Variance for HBT for 0735 - Phragmatopoma californica

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	4.86	0.0287
SEASON	1	174.000	0.64	0.4262
STATION	6	174.000	0.71	0.6444
PERIOD*SEASON	1	174.000	0.00	0.9870
STATION*PERIOD	6	174.000	0.61	0.7234
STATION*SEASON	6	174.000	0.09	0.9976
PERIOD*STATION*SEASON	6	174.000	0.14	0.9910

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.86	3.81	0.7097	0.6178	0.3119
STATION*PERIOD	3.65	0.00	0.3544	.	0.2763

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.1368	1.0603	1.072	.2851
Period in FC	2.0469	0.9795	2.090	.0381
Period in FC-S	1.8616	1.2679	1.468	.1438
Period in FC-W	2.2322	1.4932	1.495	.1367
Period in DC-S	1.3456	1.4153	0.951	.3431
Period in DC-W	0.9280	1.5792	0.588	.5575

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.869	0.1008	8.62	.0000	1.0352	0.7020
Period Op-2	0.414	0.1799	2.30	.0226	0.7113	0.1163
Op-1-04	1.061	0.3055	3.47	.0006	1.5663	0.5561
Op-2-04	0.425	0.5291	0.80	.4225	1.3002	-0.4495
Op-1-05	1.079	0.3055	3.53	.0005	1.5837	0.5734
Op-2-05	0.443	0.4666	0.95	.3440	1.2143	-0.3289
Op-1-06	1.218	0.2396	5.08	.0000	1.6142	0.8217
Op-2-06	0.443	0.4666	0.95	.3440	1.2143	-0.3289
Op-1-08	0.813	0.2807	2.90	.0042	1.2774	0.3491
Op-2-08	0.431	0.4666	0.92	.3568	1.2027	-0.3404
Op-1-09	0.032	0.2396	0.13	.8937	0.4283	-0.3642
Op-2-09	0.431	0.4666	0.92	.3568	1.2027	-0.3404
Op-1-10	0.651	0.2446	2.66	.0085	1.0556	0.2467
Op-2-10	0.281	0.4666	0.60	.5483	1.0522	-0.4909
Op-1-12	1.226	0.2396	5.12	.0000	1.6222	0.8297
Op-2-12	0.443	0.4666	0.95	.3440	1.2143	-0.3289

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.4548	0.2062	2.206	.0287	0.7958	0.1138

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.6359	0.6109	1.04	.2994	1.6461	-0.3744
Station 05	0.6359	0.5577	1.14	.2558	1.5581	-0.2864
Station 06	0.7752	0.5245	1.48	.1412	1.6426	-0.0921
Station 08	0.3821	0.5445	0.70	.4837	1.2826	-0.5183
Station 09	-0.3991	0.5245	-0.76	.4478	0.4683	-1.2665
Station 10	0.3705	0.5268	0.70	.4828	1.2416	-0.5007
Station 12	0.7833	0.5245	1.49	.1372	1.6506	-0.0841

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.03	0.35	0.025	0.09	-0.02	1.06	4.41	1.77	0.35
04	Op-2	6	0.00	0.00	0.000	.	.	0.39	0.83	0.75	0.04
05	Op-1	16	0.02	0.21	0.013	0.05	-0.01	1.08	4.41	1.79	0.37
05	Op-2	7	0.00	0.00	0.000	.	.	0.43	0.83	0.73	0.13
06	Op-1	26	0.04	0.28	0.015	0.07	0.01	1.22	4.41	1.70	0.74
06	Op-2	7	0.00	0.00	0.000	.	.	0.43	0.83	0.73	0.13
08	Op-1	19	0.29	1.74	0.112	0.53	0.06	0.81	4.10	1.30	0.32
08	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.42	0.83	0.72	0.11
09	Op-1	26	1.23	5.21	0.256	1.76	0.70	0.03	6.22	0.57	-0.50
09	Op-2	7	0.01	0.07	0.010	0.03	-0.01	0.42	0.83	0.72	0.11
10	Op-1	25	0.66	4.44	0.250	1.18	0.14	0.64	7.99	1.38	-0.09
10	Op-2	7	0.14	0.97	0.139	0.48	-0.20	0.29	1.15	0.66	-0.09
12	Op-1	26	0.03	0.42	0.019	0.07	-0.00	1.23	4.34	1.69	0.76
12	Op-2	7	0.00	0.00	0.000	.	.	0.43	0.83	0.73	0.13

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.26	4.41	0.232	1.74	0.78
Op-2	7	0.43	0.83	0.122	0.73	0.13

Analysis of Variance for HBT for 0389 - Pista spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.77	0.3810
SEASON	1	174.000	3.37	0.0682
STATION	6	174.000	25.94	0.0000
PERIOD*SEASON	1	174.000	0.02	0.8857
STATION*PERIOD	6	174.000	9.50	0.0000
STATION*SEASON	6	174.000	0.67	0.6734
PERIOD*STATION*SEASON	6	174.000	0.12	0.9933

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.77	0.00	0.2266	.	0.2641
STATION*PERIOD	57.02	50.36	1.0000	1.0000	0.1668

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0394	0.2077	-0.190	.8499
Period in FC	-0.2090	0.1919	-1.089	.2775
Period in FC-S	-0.2680	0.2484	-1.079	.2821
Period in FC-W	-0.1500	0.2925	-0.513	.6088
Period in DC-S	-0.0211	0.2773	-0.076	.9396
Period in DC-W	-0.0577	0.3094	-0.187	.8522

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.225	0.0197	11.41	.0000	0.2578	0.1925
Period Op-2	0.261	0.0352	7.39	.0000	0.3189	0.2023
Op-1-04	0.310	0.0598	5.18	.0000	0.4090	0.2111
Op-2-04	0.333	0.1036	3.21	.0016	0.5043	0.1615
Op-1-05	0.338	0.0598	5.65	.0000	0.4368	0.2389
Op-2-05	0.515	0.0914	5.63	.0000	0.6657	0.3634
Op-1-06	0.240	0.0469	5.11	.0000	0.3175	0.1622
Op-2-06	0.249	0.0914	2.73	.0070	0.4005	0.0982
Op-1-08	0.140	0.0550	2.54	.0118	0.2308	0.0490
Op-2-08	0.348	0.0914	3.81	.0002	0.4994	0.1971
Op-1-09	0.273	0.0469	5.82	.0000	0.3510	0.1957
Op-2-09	0.519	0.0914	5.68	.0000	0.6706	0.3683
Op-1-10	-0.006	0.0479	-0.13	.8996	0.0732	-0.0853
Op-2-10	-0.659	0.0914	-7.21	.0000	-0.5083	-0.8106
Op-1-12	0.281	0.0469	5.99	.0000	0.3586	0.2034
Op-2-12	0.519	0.0914	5.68	.0000	0.6706	0.3683

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0355	0.0404	-0.878	.3810	0.0313	-0.1023

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0229	0.1197	-0.19	.8488	0.1751	-0.2208
Station 05	-0.1767	0.1093	-1.62	.1077	0.0040	-0.3573
Station 06	-0.0095	0.1028	-0.09	.9265	0.1604	-0.1794
Station 08	-0.2083	0.1067	-1.95	.0524	-0.0319	-0.3847
Station 09	-0.2461	0.1028	-2.39	.0177	-0.0761	-0.4160
Station 10	0.6534	0.1032	6.33	.0000	0.8241	0.4827
Station 12	-0.2384	0.1028	-2.32	.0215	-0.0685	-0.4083

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.13	0.97	0.059	0.26	0.00	1.33	3.16	1.82	0.84
04	Op-2	6	0.42	0.83	0.118	0.72	0.11	1.68	1.53	2.29	1.08
05	Op-1	16	0.05	0.35	0.024	0.10	-0.00	1.41	3.30	1.97	0.86
05	Op-2	7	0.01	0.07	0.010	0.03	-0.01	2.35	2.57	3.21	1.48
06	Op-1	26	0.12	0.90	0.041	0.21	0.03	0.97	2.92	1.31	0.63
06	Op-2	7	0.97	1.60	0.266	1.62	0.32	1.38	2.64	2.21	0.56
08	Op-1	19	0.59	1.88	0.141	0.89	0.30	0.68	4.20	1.31	0.05
08	Op-2	7	0.75	3.75	0.506	1.99	-0.48	1.60	4.90	3.09	0.12
09	Op-1	26	0.03	0.49	0.019	0.07	-0.01	1.06	3.68	1.46	0.66
09	Op-2	7	0.00	0.00	0.000	.	.	2.36	2.64	3.24	1.48
10	Op-1	25	4.69	44.17	2.145	9.12	0.27	-3.57	43.02	0.56	-7.70
10	Op-2	7	19.70	45.14	6.009	34.41	5.00	-17.35	43.44	-3.00	-31.70
12	Op-1	26	0.01	0.07	0.004	0.01	-0.00	1.08	3.40	1.47	0.70
12	Op-2	7	0.00	0.00	0.000	.	.	2.36	2.64	3.24	1.48

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	1.09	3.40	0.189	1.48	0.70
Op-2	7	2.36	2.64	0.360	3.24	1.48

Analysis of Variance for HBT for 0612 - Pugettia spp.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	9.56	0.0023
SEASON	1	174.000	7.52	0.0068
STATION	6	174.000	3.76	0.0015
PERIOD*SEASON	1	174.000	1.41	0.2373
STATION*PERIOD	6	174.000	2.14	0.0507
STATION*SEASON	6	174.000	1.85	0.0922
PERIOD*STATION*SEASON	6	174.000	0.81	0.5621

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	9.56	8.45	0.9243	0.8944	0.6060
STATION*PERIOD	12.87	6.72	0.8453	0.5660	0.1445

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0386	0.2713	0.142	.8871
Period in FC	1.1033	0.2506	4.402	.0000
Period in FC-S	1.1948	0.3244	3.682	.0003
Period in FC-W	1.0117	0.3821	2.648	.0088
Period in DC-S	0.3851	0.3622	1.063	.2891
Period in DC-W	-0.3079	0.4041	-0.762	.4470

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.258	0.0258	10.02	.0000	0.3010	0.2158
Period Op-2	0.095	0.0460	2.07	.0399	0.1714	0.0192
Op-1-04	0.320	0.0782	4.09	.0001	0.4491	0.1906
Op-2-04	-0.089	0.1354	-0.66	.5130	0.1351	-0.3126
Op-1-05	0.254	0.0782	3.25	.0014	0.3831	0.1246
Op-2-05	-0.036	0.1194	-0.31	.7606	0.1610	-0.2339
Op-1-06	0.217	0.0613	3.54	.0005	0.3186	0.1158
Op-2-06	-0.187	0.1194	-1.57	.1188	0.0103	-0.3846
Op-1-08	0.210	0.0718	2.92	.0040	0.3286	0.0910
Op-2-08	0.189	0.1194	1.58	.1150	0.3866	-0.0083
Op-1-09	0.263	0.0613	4.29	.0000	0.3645	0.1617
Op-2-09	0.380	0.1194	3.18	.0018	0.5769	0.1821
Op-1-10	0.137	0.0626	2.19	.0295	0.2408	0.0338
Op-2-10	0.059	0.1194	0.50	.6196	0.2568	-0.1381
Op-1-12	0.408	0.0613	6.65	.0000	0.5091	0.3063
Op-2-12	0.351	0.1194	2.94	.0037	0.5488	0.1539

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1631	0.0528	3.091	.0023	0.2504	0.0759

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.4086	0.1563	2.61	.0097	0.6671	0.1501
Station 05	0.2903	0.1427	2.03	.0434	0.5263	0.0543
Station 06	0.4043	0.1342	3.01	.0030	0.6263	0.1824
Station 08	0.0207	0.1393	0.15	.8823	0.2511	-0.2097
Station 09	-0.1164	0.1342	-0.87	.3869	0.1055	-0.3384
Station 10	0.0780	0.1348	0.58	.5638	0.3009	-0.1450
Station 12	0.0564	0.1342	0.42	.6749	0.2783	-0.1656

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.08	0.40	0.031	0.14	0.01	0.18	0.85	0.29	0.07
04	Op-2	6	0.48	1.70	0.251	1.13	-0.16	-0.18	1.60	0.40	-0.77
05	Op-1	16	0.09	0.30	0.022	0.13	0.04	0.17	0.70	0.27	0.07
05	Op-2	7	0.27	0.60	0.089	0.49	0.05	-0.01	1.00	0.27	-0.29
06	Op-1	26	0.12	1.20	0.047	0.21	0.02	0.12	1.45	0.24	0.01
06	Op-2	7	0.50	1.00	0.138	0.84	0.16	-0.24	1.00	0.07	-0.54
08	Op-1	19	0.12	0.60	0.042	0.21	0.03	0.12	1.00	0.22	0.01
08	Op-2	7	0.16	0.40	0.075	0.34	-0.03	0.11	0.55	0.27	-0.05
09	Op-1	26	0.10	0.90	0.040	0.18	0.01	0.14	1.25	0.25	0.03
09	Op-2	7	0.03	0.20	0.029	0.10	-0.04	0.24	0.60	0.44	0.03
10	Op-1	25	0.17	0.80	0.043	0.26	0.08	0.08	1.05	0.17	-0.02
10	Op-2	7	0.43	1.30	0.223	0.97	-0.12	-0.16	1.60	0.33	-0.66
12	Op-1	26	0.01	0.20	0.008	0.03	-0.01	0.23	0.85	0.31	0.14
12	Op-2	7	0.03	0.10	0.018	0.07	-0.02	0.24	0.70	0.47	0.00

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.24	0.75	0.042	0.32	0.15
Op-2	7	0.26	0.60	0.096	0.50	0.03

Analysis of Variance for HBT for 0615 - Serpulidae unid.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	6.24	0.0134
SEASON	1	174.000	0.07	0.7980
STATION	6	174.000	26.16	0.0000
PERIOD*SEASON	1	174.000	0.00	0.9479
STATION*PERIOD	6	174.000	2.29	0.0375
STATION*SEASON	6	174.000	0.81	0.5660
PERIOD*STATION*SEASON	6	174.000	1.57	0.1572

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.24	5.17	0.8007	0.7325	0.9567
STATION*PERIOD	13.73	7.58	0.8690	0.6178	0.5665

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1721	0.2600	-0.662	.5089
Period in FC	-0.7123	0.2402	-2.966	.0034
Period in FC-S	-0.9243	0.3109	-2.973	.0034
Period in FC-W	-0.5004	0.3662	-1.367	.1735
Period in DC-S	0.0630	0.3471	0.182	.8561
Period in DC-W	-0.4072	0.3873	-1.051	.2945

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.233	0.0247	-9.44	.0000	-0.1924	-0.2741
Period Op-2	-0.107	0.0441	-2.42	.0164	-0.0340	-0.1799
Op-1-04	-0.437	0.0749	-5.84	.0000	-0.3135	-0.5612
Op-2-04	-0.415	0.1297	-3.20	.0017	-0.2000	-0.6291
Op-1-05	-0.497	0.0749	-6.63	.0000	-0.3728	-0.6205
Op-2-05	-0.106	0.1144	-0.93	.3540	0.0829	-0.2955
Op-1-06	-0.412	0.0588	-7.01	.0000	-0.3149	-0.5092
Op-2-06	-0.113	0.1144	-0.99	.3258	0.0765	-0.3020
Op-1-08	0.131	0.0688	1.90	.0587	0.2448	0.0172
Op-2-08	0.012	0.1144	0.10	.9179	0.2010	-0.1774
Op-1-09	-0.611	0.0588	-10.40	.0000	-0.5137	-0.7080
Op-2-09	-0.727	0.1144	-6.36	.0000	-0.5381	-0.9165
Op-1-10	0.063	0.0600	1.05	.2936	0.1623	-0.0360
Op-2-10	0.245	0.1144	2.15	.0333	0.4347	0.0562
Op-1-12	0.130	0.0588	2.21	.0285	0.2270	0.0326
Op-2-12	0.355	0.1144	3.10	.0022	0.5445	0.1661

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1263	0.0506	-2.499	.0134	-0.0427	-0.2100

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.0228	0.1498	-0.15	.8795	0.2250	-0.2705
Station 05	-0.3903	0.1368	-2.85	.0048	-0.1641	-0.6164
Station 06	-0.2993	0.1286	-2.33	.0211	-0.0866	-0.5120
Station 08	0.1192	0.1335	0.89	.3733	0.3400	-0.1016
Station 09	0.1164	0.1286	0.91	.3665	0.3292	-0.0963
Station 10	-0.1823	0.1292	-1.41	.1600	0.0313	-0.3959
Station 12	-0.2254	0.1286	-1.75	.0814	-0.0127	-0.4382

Station-period means and deltas from original data where control n=2

Station	Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.35	0.90	0.062	0.48	0.22	-0.30	0.95	-0.16	-0.43
04	Op-2	6	0.57	2.00	0.327	1.41	-0.27	-0.46	1.85	0.31	-1.23
05	Op-1	16	0.54	2.70	0.161	0.88	0.19	-0.48	2.80	-0.14	-0.83
05	Op-2	7	0.50	2.50	0.348	1.35	-0.35	-0.36	2.30	0.41	-1.14
06	Op-1	26	0.37	1.00	0.060	0.50	0.25	-0.32	1.05	-0.20	-0.44
06	Op-2	7	0.31	1.00	0.135	0.65	-0.02	-0.18	0.85	0.11	-0.47
08	Op-1	19	0.01	0.10	0.007	0.03	-0.00	0.04	0.25	0.08	0.01
08	Op-2	7	0.17	0.50	0.078	0.36	-0.02	-0.04	0.35	0.08	-0.15
09	Op-1	26	0.63	1.80	0.089	0.81	0.45	-0.58	1.85	-0.40	-0.76
09	Op-2	7	1.27	2.20	0.278	1.95	0.59	-1.14	2.20	-0.46	-1.81
10	Op-1	25	0.05	0.60	0.031	0.12	-0.01	0.00	0.75	0.07	-0.07
10	Op-2	7	0.04	0.20	0.030	0.12	-0.03	0.09	0.35	0.20	-0.01
12	Op-1	26	0.01	0.10	0.005	0.02	-0.00	0.04	0.25	0.07	0.02
12	Op-2	7	0.00	0.00	0.000	.	.	0.14	0.25	0.23	0.04

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.05	0.15	0.011	0.08	0.03
Op-2	7	0.14	0.25	0.037	0.23	0.04

Analysis of Variance for HBT for 0318 - Serpulorbis squamigerus

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.86	0.3545
SEASON	1	174.000	3.52	0.0622
STATION	6	174.000	63.65	0.0000
PERIOD*SEASON	1	174.000	3.18	0.0763
STATION*PERIOD	6	174.000	1.86	0.0905
STATION*SEASON	6	174.000	0.99	0.4328
PERIOD*STATION*SEASON	6	174.000	0.39	0.8833

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.86	0.00	0.2408	.	0.9897
STATION*PERIOD	11.15	5.02	0.7881	0.4531	0.7864

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3249	0.2510	1.294	.1972
Period in FC	-0.0077	0.2319	-0.033	.9736
Period in FC-S	-0.3374	0.3001	-1.124	.2626
Period in FC-W	0.3220	0.3535	0.911	.3636
Period in DC-S	0.0451	0.3350	0.135	.8930
Period in DC-W	0.6046	0.3738	1.617	.1076

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.443	0.0239	-18.56	.0000	-0.4032	-0.4821
Period Op-2	-0.488	0.0426	-11.46	.0000	-0.4175	-0.5584
Op-1-04	-0.625	0.0723	-8.64	.0000	-0.5053	-0.7444
Op-2-04	-0.885	0.1252	-7.07	.0000	-0.6778	-1.0920
Op-1-05	-1.016	0.0723	-14.05	.0000	-0.8963	-1.1355
Op-2-05	-0.990	0.1105	-8.96	.0000	-0.8069	-1.1722
Op-1-06	-1.302	0.0567	-22.96	.0000	-1.2086	-1.3962
Op-2-06	-1.061	0.1105	-9.61	.0000	-0.8784	-1.2437
Op-1-08	0.103	0.0664	1.56	.1217	0.2132	-0.0065
Op-2-08	0.000	0.1105	0.00	1.000	0.1826	-0.1826
Op-1-09	-0.026	0.0567	-0.46	.6473	0.0678	-0.1198
Op-2-09	-0.038	0.1105	-0.34	.7338	0.1450	-0.2203
Op-1-10	-0.313	0.0579	-5.40	.0000	-0.2171	-0.4086
Op-2-10	-0.276	0.1105	-2.50	.0134	-0.0933	-0.4586
Op-1-12	0.080	0.0567	1.41	.1593	0.1740	-0.0136
Op-2-12	-0.167	0.1105	-1.51	.1331	0.0160	-0.3493

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0453	0.0488	0.928	.3545	0.1260	-0.0354

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2601	0.1446	1.80	.0738	0.4992	0.0209
Station 05	-0.0264	0.1320	-0.20	.8417	0.1919	-0.2447
Station 06	-0.2414	0.1242	-1.94	.0535	-0.0360	-0.4467
Station 08	0.1033	0.1289	0.80	.4238	0.3165	-0.1098
Station 09	0.0116	0.1242	0.09	.9255	0.2170	-0.1937
Station 10	-0.0369	0.1247	-0.30	.7675	0.1693	-0.2432
Station 12	0.2468	0.1242	1.99	.0484	0.4522	0.0415

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.52	1.00	0.071	0.67	0.37	-0.48	1.15	-0.31	-0.64
04	Op-2	6	0.77	1.70	0.258	1.43	0.10	-0.77	1.70	-0.10	-1.43
05	Op-1	16	1.59	3.10	0.234	2.09	1.09	-1.54	3.10	-1.05	-2.04
05	Op-2	7	1.39	4.80	0.640	2.95	-0.18	-1.39	4.80	0.18	-2.95
06	Op-1	26	2.87	9.30	0.380	3.66	2.09	-2.84	9.30	-2.05	-3.62
06	Op-2	7	1.69	4.10	0.558	3.05	0.32	-1.69	4.10	-0.32	-3.05
08	Op-1	19	0.00	0.00	0.000	.	.	0.04	0.30	0.08	0.00
08	Op-2	7	0.00	0.00	0.000	.	.	0.00	0.00	.	.
09	Op-1	26	0.04	0.20	0.013	0.07	0.02	-0.01	0.40	0.03	-0.05
09	Op-2	7	0.01	0.10	0.014	0.05	-0.02	-0.01	0.10	0.02	-0.05
10	Op-1	25	0.22	0.80	0.047	0.32	0.13	-0.19	0.90	-0.10	-0.28
10	Op-2	7	0.10	0.30	0.038	0.19	0.01	-0.10	0.30	-0.01	-0.19
12	Op-1	26	0.00	0.10	0.004	0.01	-0.00	0.03	0.40	0.06	-0.00
12	Op-2	7	0.07	0.40	0.057	0.21	-0.07	-0.07	0.40	0.07	-0.21

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.03	0.30	0.014	0.06	0.01
Op-2	7	0.00	0.00	0.000	.	.

Analysis of Variance for HBT for ispp - Spp. Inverts

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	3.86	0.0509
SEASON	1	174.000	29.85	0.0000
STATION	6	174.000	17.91	0.0000
PERIOD*SEASON	1	174.000	4.76	0.0305
STATION*PERIOD	6	174.000	4.05	0.0008
STATION*SEASON	6	174.000	1.09	0.3715
PERIOD*STATION*SEASON	6	174.000	1.79	0.1047

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.86	2.82	0.6232	0.5116	1.0000
STATION*PERIOD	24.29	18.01	0.9869	0.9454	0.1002

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1420	0.0545	-2.606	.0099
Period in FC	-0.0038	0.0503	-0.076	.9398
Period in FC-S	-0.0412	0.0651	-0.633	.5278
Period in FC-W	0.0336	0.0767	0.438	.6619
Period in DC-S	0.0572	0.0727	0.786	.4327
Period in DC-W	-0.3411	0.0811	-4.205	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.033	0.0052	-6.33	.0000	-0.0242	-0.0413
Period Op-2	-0.012	0.0092	-1.29	.1979	0.0033	-0.0272
Op-1-04	-0.068	0.0157	-4.33	.0000	-0.0420	-0.0939
Op-2-04	-0.128	0.0272	-4.70	.0000	-0.0828	-0.1727
Op-1-05	-0.095	0.0157	-6.08	.0000	-0.0694	-0.1213
Op-2-05	-0.065	0.0240	-2.73	.0071	-0.0257	-0.1050
Op-1-06	-0.073	0.0123	-5.95	.0000	-0.0529	-0.0936
Op-2-06	-0.040	0.0240	-1.65	.1001	0.0000	-0.0793
Op-1-08	-0.002	0.0144	-0.16	.8742	0.0216	-0.0261
Op-2-08	0.001	0.0240	0.06	.9509	0.0411	-0.0382
Op-1-09	-0.074	0.0123	-6.04	.0000	-0.0539	-0.0947
Op-2-09	0.027	0.0240	1.13	.2613	0.0666	-0.0126
Op-1-10	0.021	0.0126	1.66	.0992	0.0416	0.0000
Op-2-10	0.094	0.0240	3.91	.0001	0.1334	0.0541
Op-1-12	0.063	0.0123	5.11	.0000	0.0833	0.0426
Op-2-12	0.027	0.0240	1.12	.2634	0.0665	-0.0127

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0208	0.0106	-1.966	.0509	-0.0033	-0.0383

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.0598	0.0314	1.91	.0582	0.1117	0.0079
Station 05	-0.0300	0.0286	-1.05	.2962	0.0174	-0.0774
Station 06	-0.0336	0.0269	-1.25	.2138	0.0109	-0.0782
Station 08	-0.0038	0.0280	-0.13	.8931	0.0425	-0.0500
Station 09	-0.1013	0.0269	-3.76	.0002	-0.0568	-0.1459
Station 10	-0.0729	0.0271	-2.69	.0077	-0.0282	-0.1176
Station 12	0.0360	0.0269	1.34	.1831	0.0806	-0.0085

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	17.00	6.40	0.536	18.14	15.86	-2.55	9.65	-1.12	-3.99
04	Op-2	6	18.00	9.20	1.379	21.54	14.46	-4.68	9.25	-0.79	-8.56
05	Op-1	16	18.12	9.90	0.607	19.41	16.82	-3.67	8.65	-2.30	-5.05
05	Op-2	7	15.93	9.10	1.129	18.69	13.17	-2.34	8.40	0.31	-5.00
06	Op-1	26	16.83	10.50	0.394	17.65	16.02	-2.67	10.05	-1.76	-3.58
06	Op-2	7	15.01	4.90	0.712	16.76	13.27	-1.43	4.30	0.02	-2.88
08	Op-1	19	14.67	5.30	0.357	15.42	13.92	-0.07	6.15	0.71	-0.85
08	Op-2	7	13.86	5.00	0.675	15.51	12.20	-0.27	8.45	2.54	-3.09
09	Op-1	26	16.83	5.90	0.307	17.46	16.20	-2.66	6.25	-1.97	-3.36
09	Op-2	7	13.01	4.90	0.689	14.70	11.33	0.57	7.35	2.84	-1.69
10	Op-1	25	13.59	9.30	0.407	14.43	12.75	0.56	9.05	1.46	-0.33
10	Op-2	7	11.39	7.10	0.912	13.62	9.15	2.20	8.45	5.39	-0.99
12	Op-1	26	12.25	5.20	0.248	12.77	11.74	1.91	7.25	2.56	1.27
12	Op-2	7	12.96	4.60	0.665	14.58	11.33	0.63	6.10	2.52	-1.26

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	14.17	4.10	0.256	14.70	13.64
Op-2	7	13.59	5.00	0.704	15.31	11.86

Analysis of Variance for HBT for 0427 - Strongylocentrotus purpuratus

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	28.32	0.0000
SEASON	1	174.000	0.56	0.4566
STATION	6	174.000	41.07	0.0000
PERIOD*SEASON	1	174.000	0.29	0.5889
STATION*PERIOD	6	174.000	2.08	0.0580
STATION*SEASON	6	174.000	0.14	0.9914
PERIOD*STATION*SEASON	6	174.000	0.21	0.9748

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	28.32	26.99	0.9999	0.9998	0.9816
STATION*PERIOD	12.47	6.33	0.8335	0.5412	0.2292

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.0123	0.4563	4.410	.0000
Period in FC	1.2933	0.4215	3.068	.0025
Period in FC-S	1.2337	0.5456	2.261	.0250
Period in FC-W	1.3529	0.6426	2.105	.0367
Period in DC-S	2.4082	0.6091	3.954	.0001
Period in DC-W	1.6163	0.6796	2.378	.0185

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-1.174	0.0434	-27.08	.0000	-1.1027	-1.2461
Period Op-2	-1.647	0.0774	-21.27	.0000	-1.5186	-1.7746
Op-1-04	-1.448	0.1314	-11.02	.0000	-1.2306	-1.6654
Op-2-04	-1.739	0.2277	-7.64	.0000	-1.3629	-2.1159
Op-1-05	-1.998	0.1314	-15.20	.0000	-1.7802	-2.2150
Op-2-05	-2.280	0.2008	-11.36	.0000	-1.9482	-2.6123
Op-1-06	-1.654	0.1031	-16.04	.0000	-1.4839	-1.8249
Op-2-06	-2.374	0.2008	-11.82	.0000	-2.0416	-2.7057
Op-1-08	-1.081	0.1208	-8.95	.0000	-0.8812	-1.2807
Op-2-08	-1.808	0.2008	-9.01	.0000	-1.4761	-2.1402
Op-1-09	-1.499	0.1031	-14.54	.0000	-1.3284	-1.6694
Op-2-09	-2.279	0.2008	-11.35	.0000	-1.9469	-2.6110
Op-1-10	-0.505	0.1052	-4.80	.0000	-0.3308	-0.6789
Op-2-10	-0.390	0.2008	-1.94	.0539	-0.0576	-0.7217
Op-1-12	-0.036	0.1031	-0.35	.7282	0.1346	-0.2064
Op-2-12	-0.656	0.2008	-3.27	.0013	-0.3241	-0.9882

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.4722	0.0887	5.321	.0000	0.6190	0.3255

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2914	0.2629	1.11	.2692	0.7262	-0.1433
Station 05	0.2826	0.2400	1.18	.2405	0.6795	-0.1142
Station 06	0.7192	0.2257	3.19	.0017	1.0925	0.3460
Station 08	0.7272	0.2343	3.10	.0022	1.1147	0.3397
Station 09	0.7800	0.2257	3.46	.0007	1.1533	0.4067
Station 10	-0.1152	0.2267	-0.51	.6121	0.2597	-0.4901
Station 12	0.6203	0.2257	2.75	.0066	0.9935	0.2470

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	5.58	16.30	1.082	7.88	3.27	-5.52	16.35	-3.22	-7.82
04	Op-2	6	6.10	6.30	0.879	8.36	3.84	-6.09	6.35	-3.82	-8.36
05	Op-1	16	17.49	51.30	2.893	23.65	11.32	-17.43	51.30	-11.26	-23.60
05	Op-2	7	20.86	27.40	3.423	29.23	12.48	-20.85	27.45	-12.47	-29.23
06	Op-1	26	16.92	90.90	5.188	27.60	6.23	-16.87	90.75	-6.19	-27.55
06	Op-2	7	30.09	56.30	8.083	49.86	10.31	-30.08	56.30	-10.30	-49.86
08	Op-1	19	3.13	9.00	0.605	4.40	1.86	-3.07	9.10	-1.80	-4.34
08	Op-2	7	8.19	15.00	1.921	12.89	3.48	-8.18	15.00	-3.47	-12.89
09	Op-1	26	14.43	143.20	5.612	25.99	2.88	-14.39	143.25	-2.83	-25.95
09	Op-2	7	29.01	82.00	10.752	55.32	2.71	-29.01	82.05	-2.69	-55.32
10	Op-1	25	0.64	2.40	0.146	0.95	0.34	-0.59	2.50	-0.30	-0.89
10	Op-2	7	0.40	2.00	0.273	1.07	-0.27	-0.39	2.05	0.28	-1.06
12	Op-1	26	0.14	2.20	0.086	0.32	-0.04	-0.09	2.20	0.08	-0.27
12	Op-2	7	0.66	1.50	0.221	1.20	0.12	-0.65	1.50	-0.11	-1.19

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.05	0.20	0.012	0.07	0.02
Op-2	7	0.01	0.05	0.007	0.02	-0.01

Analysis of Variance for HBT for 0311 - Tectura scutum

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.82	0.3668
SEASON	1	174.000	0.26	0.6128
STATION	6	174.000	9.69	0.0000
PERIOD*SEASON	1	174.000	4.16	0.0430
STATION*PERIOD	6	174.000	1.76	0.1095
STATION*SEASON	6	174.000	0.37	0.8979
PERIOD*STATION*SEASON	6	174.000	0.76	0.6011

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.82	0.00	0.2340	.	0.9964
STATION*PERIOD	10.57	4.45	0.7655	0.4126	0.1247

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3528	0.3857	0.915	.3616
Period in FC	0.1223	0.3563	0.343	.7318
Period in FC-S	0.6799	0.4612	1.474	.1423
Period in FC-W	-0.4353	0.5432	-0.801	.4240
Period in DC-S	0.8657	0.5148	1.682	.0945
Period in DC-W	-0.1602	0.5744	-0.279	.7807

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.201	0.0367	-5.49	.0000	-0.1407	-0.2619
Period Op-2	-0.269	0.0654	-4.11	.0001	-0.1609	-0.3774
Op-1-04	-0.080	0.1111	-0.72	.4742	0.1040	-0.2634
Op-2-04	0.022	0.1924	0.11	.9096	0.3401	-0.2963
Op-1-05	-0.125	0.1111	-1.12	.2629	0.0589	-0.3085
Op-2-05	-0.023	0.1697	-0.14	.8915	0.2575	-0.3039
Op-1-06	0.174	0.0872	2.00	.0472	0.3183	0.0300
Op-2-06	-0.151	0.1697	-0.89	.3738	0.1293	-0.4320
Op-1-08	-0.318	0.1021	-3.12	.0021	-0.1493	-0.4870
Op-2-08	-0.542	0.1697	-3.19	.0017	-0.2615	-0.8228
Op-1-09	-0.588	0.0872	-6.75	.0000	-0.4443	-0.7326
Op-2-09	-0.760	0.1697	-4.48	.0000	-0.4792	-1.0406
Op-1-10	-0.097	0.0890	-1.10	.2748	0.0497	-0.2446
Op-2-10	0.259	0.1697	1.53	.1287	0.5397	-0.0216
Op-1-12	-0.374	0.0872	-4.30	.0000	-0.2303	-0.5186
Op-2-12	-0.688	0.1697	-4.06	.0001	-0.4076	-0.9689

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0679	0.0750	0.905	.3668	0.1919	-0.0562

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.1016	0.2222	-0.46	.6481	0.2659	-0.4691
Station 05	-0.1016	0.2029	-0.50	.6170	0.2338	-0.4371
Station 06	0.3255	0.1908	1.71	.0898	0.6410	0.0100
Station 08	0.2240	0.1981	1.13	.2596	0.5516	-0.1035
Station 09	0.1715	0.1908	0.90	.3701	0.4870	-0.1440
Station 10	-0.3565	0.1916	-1.86	.0645	-0.0397	-0.6734
Station 12	0.3138	0.1908	1.64	.1018	0.6293	-0.0017

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.72	2.20	0.150	1.04	0.40	-0.15	2.90	0.22	-0.53
04	Op-2	6	0.35	0.70	0.118	0.65	0.05	0.02	1.00	0.43	-0.39
05	Op-1	16	1.00	3.60	0.231	1.49	0.51	-0.43	4.20	0.06	-0.92
05	Op-2	7	0.47	1.20	0.152	0.84	0.10	-0.04	1.00	0.27	-0.34
06	Op-1	26	0.49	2.30	0.110	0.72	0.26	0.19	2.50	0.44	-0.06
06	Op-2	7	0.61	1.10	0.152	0.99	0.24	-0.18	1.10	0.22	-0.58
08	Op-1	19	1.77	6.60	0.408	2.63	0.92	-1.23	5.55	-0.50	-1.96
08	Op-2	7	1.83	3.30	0.506	3.07	0.59	-1.39	2.65	-0.33	-2.46
09	Op-1	26	3.38	12.00	0.630	4.67	2.08	-2.70	11.05	-1.53	-3.87
09	Op-2	7	7.17	29.60	3.967	16.88	-2.54	-6.74	29.00	2.81	-16.28
10	Op-1	25	1.07	3.80	0.204	1.49	0.65	-0.37	4.45	0.05	-0.79
10	Op-2	7	0.26	1.10	0.148	0.62	-0.10	0.18	1.70	0.67	-0.32
12	Op-1	26	2.68	19.70	0.836	4.40	0.96	-2.00	21.45	-0.31	-3.69
12	Op-2	7	4.39	15.70	2.033	9.36	-0.59	-3.95	15.45	1.09	-8.99

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.68	3.90	0.149	0.98	0.37
Op-2	7	0.44	0.85	0.119	0.73	0.14

Analysis of Variance for HBT for 0319 - Tegula brunnea

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	0.03	0.8732
SEASON	1	174.000	3.84	0.0515
STATION	6	174.000	23.13	0.0000
PERIOD*SEASON	1	174.000	4.24	0.0411
STATION*PERIOD	6	174.000	1.41	0.2113
STATION*SEASON	6	174.000	0.79	0.5776
PERIOD*STATION*SEASON	6	174.000	0.29	0.9410

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.03	0.00	0.1043	.	0.9836
STATION*PERIOD	8.49	2.39	0.6682	0.2620	0.3228

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4351	0.3147	-1.383	.1685
Period in FC	0.3666	0.2907	1.261	.2090
Period in FC-S	0.5867	0.3763	1.559	.1208
Period in FC-W	0.1465	0.4432	0.331	.7413
Period in DC-S	0.2266	0.4200	0.539	.5903
Period in DC-W	-1.0967	0.4687	-2.340	.0204

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.311	0.0299	10.41	.0000	0.3606	0.2617
Period Op-2	0.321	0.0534	6.01	.0000	0.4093	0.2327
Op-1-04	0.021	0.0907	0.23	.8212	0.1704	-0.1294
Op-2-04	-0.191	0.1570	-1.21	.2264	0.0690	-0.4503
Op-1-05	0.075	0.0907	0.82	.4106	0.2247	-0.0751
Op-2-05	0.066	0.1385	0.48	.6344	0.2949	-0.1630
Op-1-06	-0.126	0.0711	-1.78	.0775	-0.0087	-0.2439
Op-2-06	-0.273	0.1385	-1.97	.0503	-0.0439	-0.5019
Op-1-08	0.473	0.0833	5.67	.0000	0.6104	0.3349
Op-2-08	0.394	0.1385	2.85	.0050	0.6230	0.1650
Op-1-09	0.432	0.0711	6.08	.0000	0.5499	0.3147
Op-2-09	0.640	0.1385	4.62	.0000	0.8691	0.4111
Op-1-10	0.518	0.0726	7.14	.0000	0.6383	0.3983
Op-2-10	0.843	0.1385	6.09	.0000	1.0720	0.6140
Op-1-12	0.786	0.0711	11.05	.0000	0.9037	0.6685
Op-2-12	0.767	0.1385	5.54	.0000	0.9963	0.5383

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0098	0.0612	-0.160	.8732	0.0914	-0.1110

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.2111	0.1813	1.16	.2458	0.5110	-0.0887
Station 05	0.0088	0.1655	0.05	.9576	0.2825	-0.2649
Station 06	0.1466	0.1557	0.94	.3475	0.4040	-0.1108
Station 08	0.0786	0.1616	0.49	.6273	0.3458	-0.1886
Station 09	-0.2079	0.1557	-1.34	.1835	0.0496	-0.4653
Station 10	-0.3247	0.1563	-2.08	.0393	-0.0661	-0.5832
Station 12	0.0188	0.1557	0.12	.9039	0.2762	-0.2386

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	4.19	9.50	0.785	5.86	2.51	-0.36	14.10	1.78	-2.50
04	Op-2	6	5.57	7.30	1.053	8.27	2.86	-2.55	6.25	0.06	-5.16
05	Op-1	16	3.66	8.10	0.668	5.08	2.23	0.17	10.75	1.98	-1.63
05	Op-2	7	3.43	10.40	1.423	6.91	-0.05	-0.43	9.40	2.73	-3.59
06	Op-1	26	6.41	19.80	1.035	8.54	4.28	-2.74	19.35	-0.57	-4.91
06	Op-2	7	7.00	9.20	1.463	10.58	3.42	-4.00	9.30	-0.74	-7.26
08	Op-1	19	1.33	6.70	0.423	2.22	0.44	2.46	9.50	3.82	1.10
08	Op-2	7	1.20	3.10	0.414	2.21	0.19	1.80	4.55	3.21	0.39
09	Op-1	26	1.55	7.00	0.370	2.32	0.79	2.12	10.15	3.17	1.07
09	Op-2	7	0.41	1.10	0.187	0.87	-0.04	2.59	2.55	3.29	1.88
10	Op-1	25	1.36	6.30	0.393	2.17	0.55	2.40	8.90	3.35	1.45
10	Op-2	7	0.00	0.00	0.000	.	.	3.00	1.75	3.60	2.40
12	Op-1	26	0.24	3.20	0.134	0.51	-0.04	3.43	6.60	4.22	2.65
12	Op-2	7	0.11	0.50	0.077	0.30	-0.07	2.89	1.25	3.31	2.46

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	3.67	6.20	0.360	4.41	2.93
Op-2	7	3.00	1.75	0.245	3.60	2.40

Analysis of Variance for HBT for 0320 - Tegula funebralis

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	24.90	0.0000
SEASON	1	174.000	2.27	0.1335
STATION	6	174.000	13.72	0.0000
PERIOD*SEASON	1	174.000	0.01	0.9150
STATION*PERIOD	6	174.000	2.10	0.0554
STATION*SEASON	6	174.000	0.91	0.4871
PERIOD*STATION*SEASON	6	174.000	0.52	0.7939

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	24.90	23.62	0.9996	0.9993	0.9513
STATION*PERIOD	12.61	6.46	0.8376	0.5498	0.1287

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.5310	0.5245	-2.919	.0040
Period in FC	-2.0321	0.4845	-4.194	.0000
Period in FC-S	-2.2478	0.6272	-3.584	.0004
Period in FC-W	-1.8163	0.7386	-2.459	.0149
Period in DC-S	-1.3916	0.7001	-1.988	.0484
Period in DC-W	-1.6705	0.7811	-2.139	.0339

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.205	0.0498	-4.12	.0001	-0.1229	-0.2877
Period Op-2	0.304	0.0890	3.41	.0008	0.4509	0.1565
Op-1-04	-0.365	0.1511	-2.41	.0169	-0.1147	-0.6144
Op-2-04	0.697	0.2617	2.66	.0085	1.1295	0.2639
Op-1-05	-0.550	0.1511	-3.64	.0004	-0.3001	-0.7998
Op-2-05	-0.271	0.2308	-1.17	.2421	0.1108	-0.6525
Op-1-06	-0.439	0.1185	-3.71	.0003	-0.2433	-0.6353
Op-2-06	0.252	0.2308	1.09	.2757	0.6340	-0.1293
Op-1-08	0.168	0.1388	1.21	.2285	0.3974	-0.0618
Op-2-08	0.785	0.2308	3.40	.0008	1.1663	0.4030
Op-1-09	0.226	0.1185	1.90	.0586	0.4217	0.0297
Op-2-09	0.995	0.2308	4.31	.0000	1.3763	0.6130
Op-1-10	0.186	0.1210	1.53	.1267	0.3857	-0.0144
Op-2-10	0.467	0.2308	2.02	.0445	0.8488	0.0854
Op-1-12	-0.662	0.1185	-5.59	.0000	-0.4664	-0.8584
Op-2-12	-0.799	0.2308	-3.46	.0007	-0.4170	-1.1803

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.5090	0.1020	-4.990	.0000	-0.3403	-0.6777

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-1.0613	0.3022	-3.51	.0006	-0.5616	-1.5610
Station 05	-0.2791	0.2759	-1.01	.3130	0.1771	-0.7353
Station 06	-0.6917	0.2595	-2.67	.0084	-0.2626	-1.1207
Station 08	-0.6169	0.2693	-2.29	.0232	-0.1715	-1.0623
Station 09	-0.7690	0.2595	-2.96	.0035	-0.3399	-1.1980
Station 10	-0.2815	0.2606	-1.08	.2816	0.1494	-0.7124
Station 12	0.1363	0.2595	0.53	.6001	0.5653	-0.2928

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	64.78	146.40	12.936	92.35	37.21	-50.05	151.95	-24.01	-76.08
04	Op-2	6	1.23	2.40	0.445	2.38	0.09	12.45	29.95	26.21	-1.31
05	Op-1	16	62.86	132.50	10.394	85.01	40.70	-48.12	116.55	-27.82	-68.42
05	Op-2	7	24.24	52.00	7.825	43.39	5.10	-10.24	46.90	5.63	-26.10
06	Op-1	26	64.48	151.60	8.023	81.00	47.95	-45.23	152.80	-31.14	-59.31
06	Op-2	7	9.07	28.80	4.485	20.05	-1.90	4.94	34.85	17.18	-7.30
08	Op-1	19	26.92	99.80	7.606	42.90	10.94	-8.63	82.75	2.53	-19.78
08	Op-2	7	1.30	7.40	1.041	3.85	-1.25	12.71	30.35	23.39	2.03
09	Op-1	26	32.12	163.00	8.405	49.43	14.80	-12.86	165.45	4.33	-30.05
09	Op-2	7	0.04	0.20	0.030	0.12	-0.03	13.96	31.75	25.71	2.22
10	Op-1	25	49.93	190.90	12.680	76.10	23.76	-32.17	193.15	-8.02	-56.32
10	Op-2	7	12.13	43.90	7.835	31.30	-7.04	1.88	61.05	20.76	-17.00
12	Op-1	26	124.53	245.70	16.257	158.01	91.05	-105.28	240.00	-73.11	-137.44
12	Op-2	7	112.19	244.20	31.894	190.23	34.14	-98.18	213.55	-29.12	-167.23

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	19.25	59.90	3.017	25.46	13.04
Op-2	7	14.01	31.95	4.812	25.78	2.23

Analysis of Variance for HBT for 0404 - Tetraclita rubescens

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	1.40	0.2379
SEASON	1	174.000	23.67	0.0000
STATION	6	174.000	14.21	0.0000
PERIOD*SEASON	1	174.000	2.17	0.1426
STATION*PERIOD	6	174.000	3.42	0.0032
STATION*SEASON	6	174.000	0.76	0.6037
PERIOD*STATION*SEASON	6	174.000	0.48	0.8209

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.40	0.39	0.3233	0.1643	0.9965
STATION*PERIOD	20.51	14.28	0.9685	0.8821	0.1553

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1322	0.3862	0.342	.7325
Period in FC	-0.7548	0.3568	-2.116	.0358
Period in FC-S	-0.8406	0.4618	-1.820	.0705
Period in FC-W	-0.6691	0.5439	-1.230	.2203
Period in DC-S	0.9923	0.5155	1.925	.0559
Period in DC-W	-0.7279	0.5752	-1.265	.2074

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.042	0.0367	-1.13	.2596	0.0192	-0.1022
Period Op-2	0.047	0.0655	0.72	.4700	0.1558	-0.0609
Op-1-04	0.045	0.1113	0.41	.6856	0.2291	-0.1389
Op-2-04	0.357	0.1927	1.85	.0659	0.6753	0.0380
Op-1-05	0.201	0.1113	1.80	.0729	0.3847	0.0167
Op-2-05	0.461	0.1699	2.71	.0074	0.7416	0.1795
Op-1-06	0.317	0.0873	3.63	.0004	0.4609	0.1723
Op-2-06	0.500	0.1699	2.94	.0037	0.7811	0.2190
Op-1-08	-0.138	0.1022	-1.35	.1782	0.0309	-0.3073
Op-2-08	-0.408	0.1699	-2.40	.0174	-0.1270	-0.6890
Op-1-09	-0.301	0.0873	-3.45	.0007	-0.1569	-0.4456
Op-2-09	-0.737	0.1699	-4.34	.0000	-0.4557	-1.0178
Op-1-10	-0.632	0.0891	-7.10	.0000	-0.4848	-0.7794
Op-2-10	-0.023	0.1699	-0.14	.8911	0.2577	-0.3043
Op-1-12	0.219	0.0873	2.50	.0132	0.3629	0.0743
Op-2-12	0.183	0.1699	1.08	.2833	0.4639	-0.0981

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0889	0.0751	-1.184	.2379	0.0353	-0.2132

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	-0.3115	0.2225	-1.40	.1633	0.0564	-0.6795
Station 05	-0.2598	0.2031	-1.28	.2026	0.0761	-0.5957
Station 06	-0.1835	0.1910	-0.96	.3381	0.1324	-0.4994
Station 08	0.2698	0.1983	1.36	.1754	0.5978	-0.0581
Station 09	0.4355	0.1910	2.28	.0238	0.7514	0.1196
Station 10	-0.6088	0.1919	-3.17	.0018	-0.2915	-0.9261
Station 12	0.0357	0.1910	0.19	.8520	0.3516	-0.2802

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	16.57	62.90	4.391	25.93	7.21	-1.33	46.40	5.61	-8.28
04	Op-2	6	4.92	13.90	2.089	10.29	-0.45	9.84	49.80	28.64	-8.96
05	Op-1	16	11.58	79.00	4.909	22.04	1.12	3.65	57.40	10.87	-3.56
05	Op-2	7	3.60	12.20	1.613	7.55	-0.35	11.75	46.00	26.70	-3.20
06	Op-1	26	13.56	111.70	4.988	23.83	3.29	-2.17	90.10	4.70	-9.05
06	Op-2	7	3.74	12.60	1.806	8.16	-0.68	11.61	44.80	26.41	-3.20
08	Op-1	19	22.75	56.90	4.597	32.41	13.10	-8.67	66.15	-0.05	-17.28
08	Op-2	7	32.06	40.50	6.792	48.68	15.44	-16.71	52.80	2.83	-36.25
09	Op-1	26	40.68	182.30	10.433	62.17	19.19	-29.30	190.30	-9.80	-48.79
09	Op-2	7	69.74	116.90	16.402	109.88	29.61	-54.39	130.15	-11.93	-96.86
10	Op-1	25	60.76	184.00	10.913	83.28	38.23	-49.24	190.10	-27.84	-70.65
10	Op-2	7	13.56	43.00	5.694	27.49	-0.37	1.79	20.00	9.60	-6.01
12	Op-1	26	8.93	40.20	2.126	13.31	4.56	2.45	28.40	4.93	-0.03
12	Op-2	7	7.31	14.10	2.156	12.59	2.04	8.04	46.25	23.07	-7.00

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	11.38	42.95	2.150	15.81	6.96
Op-2	7	15.35	56.90	7.684	34.15	-3.45

Analysis of Variance for HBT for 0480 - tunicates, colonial/social unid.

Stations = 4, 5, 6, 8, 9, 10, 12 level +1 ft MLLW

Data transformed using arcsin.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	174.000	4.27	0.0402
SEASON	1	174.000	1.21	0.2732
STATION	6	174.000	2.83	0.0118
PERIOD*SEASON	1	174.000	0.08	0.7801
STATION*PERIOD	6	174.000	0.99	0.4345
STATION*SEASON	6	174.000	0.89	0.5065
PERIOD*STATION*SEASON	6	174.000	0.42	0.8648

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.27	3.22	0.6606	0.5572	0.1110
STATION*PERIOD	5.93	0.00	0.5153	.	0.1053

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-3.4310	1.2926	-2.654	.0087
Period in FC	-0.2056	1.1940	-0.172	.8635
Period in FC-S	0.7487	1.5457	0.484	.6287
Period in FC-W	-1.1599	1.8203	-0.637	.5248
Period in DC-S	-3.8933	1.7254	-2.256	.0253
Period in DC-W	-2.9688	1.9251	-1.542	.1249

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.779	0.1228	6.34	.0000	0.9818	0.5756
Period Op-2	1.298	0.2193	5.92	.0000	1.6609	0.9355
Op-1-04	0.493	0.3724	1.32	.1875	1.1084	-0.1231
Op-2-04	-0.313	0.6449	-0.49	.6281	0.7536	-1.3795
Op-1-05	0.337	0.3724	0.90	.3669	0.9526	-0.2789
Op-2-05	0.230	0.5688	0.40	.6863	1.1707	-0.7105
Op-1-06	0.716	0.2921	2.45	.0152	1.1992	0.2331
Op-2-06	1.834	0.5688	3.22	.0015	2.7747	0.8935
Op-1-08	0.995	0.3422	2.91	.0041	1.5604	0.4287
Op-2-08	1.834	0.5688	3.22	.0015	2.7747	0.8935
Op-1-09	0.976	0.2921	3.34	.0010	1.4587	0.4927
Op-2-09	1.834	0.5688	3.22	.0015	2.7747	0.8935
Op-1-10	0.959	0.2981	3.22	.0015	1.4524	0.4664
Op-2-10	1.834	0.5688	3.22	.0015	2.7747	0.8935
Op-1-12	0.976	0.2921	3.34	.0010	1.4587	0.4927
Op-2-12	1.834	0.5688	3.22	.0015	2.7747	0.8935

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.5195	0.2514	-2.067	.0402	-0.1038	-0.9352

Paired comparisons of least square means among stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 04	0.8056	0.7447	1.08	.2808	2.0371	-0.4259
Station 05	0.1067	0.6798	0.16	.8755	1.2309	-1.0175
Station 06	-1.1179	0.6394	-1.75	.0822	-0.0605	-2.1753
Station 08	-0.8396	0.6638	-1.26	.2076	0.2581	-1.9372
Station 09	-0.8584	0.6394	-1.34	.1812	0.1990	-1.9158
Station 10	-0.8747	0.6422	-1.36	.1750	0.1873	-1.9366
Station 12	-0.8584	0.6394	-1.34	.1812	0.1990	-1.9158

Station-period means and deltas from original data where control n=2

Station-Period		N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
04	Op-1	16	0.02	0.14	0.010	0.04	-0.00	0.03	0.24	0.06	-0.01
04	Op-2	6	0.35	1.32	0.211	0.89	-0.19	-0.12	0.76	0.17	-0.40
05	Op-1	16	0.04	0.35	0.024	0.09	-0.01	0.00	0.45	0.06	-0.05
05	Op-2	7	0.13	0.21	0.035	0.22	0.04	0.11	1.08	0.47	-0.24
06	Op-1	26	0.03	0.83	0.032	0.10	-0.03	0.03	1.11	0.10	-0.05
06	Op-2	7	0.00	0.00	0.000	.	.	0.24	1.08	0.61	-0.12
08	Op-1	19	0.00	0.00	0.000	.	.	0.05	0.17	0.09	0.02
08	Op-2	7	0.00	0.00	0.000	.	.	0.24	1.08	0.61	-0.12
09	Op-1	26	0.00	0.00	0.000	.	.	0.06	0.35	0.09	0.03
09	Op-2	7	0.00	0.00	0.000	.	.	0.24	1.08	0.61	-0.12
10	Op-1	25	0.00	0.00	0.000	.	.	0.06	0.35	0.10	0.03
10	Op-2	7	0.00	0.00	0.000	.	.	0.24	1.08	0.61	-0.12
12	Op-1	26	0.00	0.00	0.000	.	.	0.06	0.35	0.09	0.03
12	Op-2	7	0.00	0.00	0.000	.	.	0.24	1.08	0.61	-0.12

Period means and deltas from original control data where n=2

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	26	0.06	0.35	0.016	0.09	0.03
Op-2	7	0.24	1.08	0.148	0.61	-0.12

APPENDIX E3 – ANOVA Test Results

Subtidal Algae

Analysis of Variance for SLC for 0981 - Ahnfeltiopsis linearis

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.69	0.1961
SEASON	1	102.000	3.50	0.0643
STATION	5	102.000	1.55	0.1811
PERIOD*SEASON	1	102.000	2.24	0.1374
STATION*PERIOD	5	102.000	1.46	0.2081
STATION*SEASON	5	102.000	1.74	0.1320
PERIOD*STATION*SEASON	5	102.000	0.91	0.4772

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.69	0.66	0.3640	0.2082	0.5632
STATION*PERIOD	7.32	2.18	0.6270	0.2584	0.2078

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.9080	0.4659	-1.949	.0541
Period in FC	0.2428	0.2104	1.154	.2513
Period in FC-S	0.0274	0.2151	0.127	.8990
Period in FC-W	0.4581	0.3617	1.267	.2082
Period in DC-S	0.0728	0.4588	0.159	.8742
Period in DC-W	-1.8889	0.8111	-2.329	.0218

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.220	0.0365	-6.04	.0000	-0.1598	-0.2808
Period Op-2	-0.109	0.0770	-1.42	.1583	0.0184	-0.2373
Op-1 0611	-0.060	0.0815	-0.73	.4646	0.0754	-0.1951
Op-2 0611	0.000	0.1906	0.00	1.000	0.3165	-0.3165
Op-1 0910	-0.206	0.0869	-2.37	.0196	-0.0618	-0.3503
Op-2 0910	0.091	0.1846	0.49	.6236	0.3973	-0.2155
Op-1 0915	-0.269	0.0977	-2.76	.0069	-0.1072	-0.4314
Op-2 0915	-0.209	0.1906	-1.10	.2750	0.1072	-0.5257
Op-1 1015	-0.242	0.0977	-2.47	.0151	-0.0794	-0.4037
Op-2 1015	-0.230	0.1906	-1.21	.2304	0.0864	-0.5465
Op-1 1210	-0.589	0.0815	-7.23	.0000	-0.4538	-0.7243
Op-2 1210	-0.109	0.1846	-0.59	.5548	0.1970	-0.4158
Op-1 2210	0.044	0.0890	0.49	.6240	0.1916	-0.1040
Op-2 2210	-0.199	0.1906	-1.04	.2991	0.1175	-0.5154

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1109	0.0852	-1.301	.1961	0.0306	-0.2523

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0598	0.2073	-0.29	.7735	0.2843	-0.4040
Station 0910	-0.2969	0.2040	-1.46	.1486	0.0417	-0.6356
Station 0915	-0.0601	0.2142	-0.28	.7796	0.2955	-0.4157
Station 1015	-0.0115	0.2142	-0.05	.9573	0.3441	-0.3671
Station 1210	-0.4797	0.2018	-2.38	.0193	-0.1448	-0.8146
Station 2210	0.2428	0.2104	1.15	.2513	0.5920	-0.1065

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.24	1.50	0.096	0.44	0.03	-0.13	2.00	0.11	-0.37
0611 Op-2	4	1.00	3.50	0.842	3.68	-1.68	-0.75	4.00	2.26	-3.76
0910 Op-1	18	0.64	2.00	0.150	0.96	0.32	-0.53	3.00	-0.15	-0.90
0910 Op-2	5	0.40	1.00	0.187	0.92	-0.12	-0.10	1.50	0.71	-0.91
0915 Op-1	14	0.93	3.50	0.286	1.55	0.31	-0.79	4.50	-0.10	-1.47
0915 Op-2	4	1.13	2.00	0.473	2.63	-0.38	-0.88	2.50	0.89	-2.64
1015 Op-1	14	0.82	4.00	0.354	1.59	0.06	-0.68	5.00	0.12	-1.48
1015 Op-2	4	0.75	1.50	0.323	1.78	-0.28	-0.50	1.50	0.63	-1.63
1210 Op-1	19	2.47	7.50	0.452	3.42	1.52	-2.37	7.50	-1.42	-3.32
1210 Op-2	5	2.40	7.00	1.317	6.06	-1.26	-2.10	7.50	1.86	-6.06
2210 Op-1	16	0.00	0.00	0.000	.	.	0.06	0.50	0.15	-0.03
2210 Op-2	4	0.63	2.00	0.473	2.13	-0.88	-0.38	1.50	0.82	-1.57

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.11	1.00	0.061	0.23	-0.02
Op-2	5	0.30	0.50	0.122	0.64	-0.04

Analysis of Variance for SLC for 0003 - bare rock

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	7.26	0.0082
SEASON	1	102.000	0.02	0.8775
STATION	5	102.000	4.39	0.0012
PERIOD*SEASON	1	102.000	0.99	0.3224
STATION*PERIOD	5	102.000	1.20	0.3138
STATION*SEASON	5	102.000	1.36	0.2448
PERIOD*STATION*SEASON	5	102.000	1.79	0.1213

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.26	6.12	0.8489	0.7917	0.7726
STATION*PERIOD	6.01	0.89	0.5439	0.1614	0.1321

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.9319	0.6343	3.046	.0030
Period in FC	-0.0567	0.2864	-0.198	.8435
Period in FC-S	0.1610	0.2928	0.550	.5836
Period in FC-W	-0.2744	0.4924	-0.557	.5786
Period in DC-S	1.0222	0.6246	1.637	.1048
Period in DC-W	2.8415	1.1041	2.574	.0115

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.012	0.0496	-0.25	.8052	0.0701	-0.0946
Period Op-2	-0.325	0.1048	-3.10	.0025	-0.1508	-0.4988
Op-1 0611	-0.520	0.1109	-4.69	.0000	-0.3359	-0.7042
Op-2 0611	-0.538	0.2595	-2.07	.0407	-0.1072	-0.9687
Op-1 0910	-0.170	0.1183	-1.44	.1525	0.0258	-0.3668
Op-2 0910	-0.774	0.2513	-3.08	.0027	-0.3568	-1.1910
Op-1 0915	0.116	0.1330	0.88	.3831	0.3372	-0.1042
Op-2 0915	-0.296	0.2595	-1.14	.2561	0.1344	-0.7271
Op-1 1015	0.306	0.1330	2.30	.0234	0.5266	0.0852
Op-2 1015	0.100	0.2595	0.39	.6998	0.5311	-0.3304
Op-1 1210	0.117	0.1109	1.05	.2945	0.3010	-0.0673
Op-2 1210	-0.575	0.2513	-2.29	.0241	-0.1582	-0.9924
Op-1 2210	0.078	0.1212	0.64	.5231	0.2789	-0.1235
Op-2 2210	0.134	0.2595	0.52	.6058	0.5651	-0.2964

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3125	0.1160	2.694	.0082	0.5051	0.1200

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0179	0.2822	0.06	.9496	0.4864	-0.4506
Station 0910	0.6034	0.2777	2.17	.0321	1.0644	0.1425
Station 0915	0.4128	0.2916	1.42	.1599	0.8969	-0.0712
Station 1015	0.2056	0.2916	0.70	.4824	0.6896	-0.2785
Station 1210	0.6921	0.2747	2.52	.0133	1.1481	0.2362
Station 2210	-0.0567	0.2864	-0.20	.8435	0.4188	-0.5321

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	8.84	23.00	1.770	12.56	5.12	-6.92	30.50	-2.74	-11.11
0611 Op-2	4	3.50	8.00	1.848	9.38	-2.38	-2.75	9.00	3.95	-9.45
0910 Op-1	18	2.61	17.00	0.924	4.56	0.66	-0.86	25.50	1.48	-3.20
0910 Op-2	5	8.40	16.00	3.385	17.80	-1.00	-7.70	15.00	1.11	-16.51
0915 Op-1	14	2.25	17.00	1.191	4.82	-0.32	-0.11	5.50	0.92	-1.13
0915 Op-2	4	4.88	14.00	3.275	15.30	-5.55	-4.13	13.50	5.90	-14.15
1015 Op-1	14	0.96	3.50	0.285	1.58	0.35	1.18	16.00	3.34	-0.98
1015 Op-2	4	1.50	5.50	1.339	5.76	-2.76	-0.75	4.50	2.72	-4.22
1210 Op-1	19	1.24	5.50	0.325	1.92	0.55	0.68	11.50	1.88	-0.51
1210 Op-2	5	3.00	9.50	1.673	7.65	-1.65	-2.30	9.00	2.38	-6.98
2210 Op-1	16	1.16	4.00	0.328	1.86	0.46	0.66	15.00	2.49	-1.18
2210 Op-2	4	0.75	2.00	0.479	2.27	-0.77	0.00	3.50	2.34	-2.34

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	1.92	14.00	0.721	3.44	0.41
Op-2	5	0.70	1.50	0.255	1.41	-0.01

Analysis of Variance for SLC for 0049 - Calliarthron/Bossiella spp.-complex

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	11.37	0.0011
SEASON	1	102.000	1.50	0.2237
STATION	5	102.000	40.43	0.0000
PERIOD*SEASON	1	102.000	0.60	0.4404
STATION*PERIOD	5	102.000	4.91	0.0005
STATION*SEASON	5	102.000	0.64	0.6726
PERIOD*STATION*SEASON	5	102.000	0.32	0.9025

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	11.37	10.15	0.9559	0.9357	1.0000
STATION*PERIOD	24.57	19.08	0.9901	0.9635	0.9961

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-42.8926	12.3320	-3.478	.0007
Period in FC	-2.7348	5.5692	-0.491	.6244
Period in FC-S	1.5303	5.6925	0.269	.7886
Period in FC-W	-7.0000	9.5738	-0.731	.4664
Period in DC-S	-36.6769	12.1439	-3.020	.0032
Period in DC-W	-49.1083	21.4671	-2.288	.0242

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	6.402	0.9648	6.64	.0000	8.0039	4.8008
Period Op-2	14.007	2.0384	6.87	.0000	17.3905	10.6234
Op-1 0611	15.308	2.1567	7.10	.0000	18.8877	11.7277
Op-2 0611	40.250	5.0458	7.98	.0000	48.6257	31.8743
Op-1 0910	12.454	2.2996	5.42	.0000	16.2709	8.6367
Op-2 0910	29.438	4.8856	6.03	.0000	37.5473	21.3277
Op-1 0915	-5.488	2.5852	-2.12	.0362	-1.1962	-9.7788
Op-2 0915	-0.000	5.0458	-0.00	1.000	8.3757	-8.3757
Op-1 1015	16.625	2.5852	6.43	.0000	20.9163	12.3337
Op-2 1015	5.750	5.0458	1.14	.2571	14.1257	-2.6257
Op-1 1210	19.083	2.1567	8.85	.0000	22.6633	15.5033
Op-2 1210	25.438	4.8856	5.21	.0000	33.5473	17.3277
Op-1 2210	-19.568	2.3569	-8.30	.0000	-15.6559	-23.4805
Op-2 2210	-16.833	5.0458	-3.34	.0012	-8.4576	-25.2091

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-7.6046	2.2552	-3.372	.0011	-3.8611	-11.3481

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-24.9423	5.4874	-4.55	.0000	-15.8335	-34.0511
Station 0910	-16.9837	5.3997	-3.15	.0022	-8.0205	-25.9468
Station 0915	-5.4875	5.6696	-0.97	.3354	3.9236	-14.8986
Station 1015	10.8750	5.6696	1.92	.0579	20.2861	1.4639
Station 1210	-6.3542	5.3405	-1.19	.2369	2.5107	-15.2190
Station 2210	-2.7348	5.5692	-0.49	.6244	6.5096	-11.9793

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	25.32	32.50	2.116	29.76	20.87	16.71	44.50	22.05	11.37
0611 Op-2	4	3.25	3.50	0.722	5.55	0.95	40.38	15.00	50.69	30.06
0910 Op-1	18	29.94	32.50	1.921	34.00	25.89	12.83	42.00	17.34	8.32
0910 Op-2	5	17.60	15.00	2.416	24.31	10.89	27.90	18.50	37.36	18.44
0915 Op-1	14	47.71	22.00	1.569	51.10	44.33	-3.93	29.50	0.58	-8.44
0915 Op-2	4	41.63	9.00	1.908	47.70	35.55	2.00	18.50	16.94	-12.94
1015 Op-1	14	25.07	21.50	1.548	28.41	21.73	18.71	40.00	24.22	13.21
1015 Op-2	4	37.00	4.00	0.816	39.60	34.40	6.63	15.00	17.71	-4.46
1210 Op-1	19	22.97	39.00	2.134	27.46	18.49	19.05	32.00	22.87	15.23
1210 Op-2	5	18.00	11.00	2.074	23.76	12.24	27.50	16.50	36.81	18.19
2210 Op-1	16	62.47	32.50	2.636	68.09	56.85	-19.41	26.50	-15.53	-23.28
2210 Op-2	4	62.38	11.00	2.478	70.26	54.49	-18.75	15.00	-8.49	-29.01

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	42.03	40.00	2.112	46.46	37.59
Op-2	5	45.50	20.00	3.521	55.28	35.72

Analysis of Variance for SLC for 0112 - Callophyllis spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.20	0.2756
SEASON	1	102.000	0.51	0.4778
STATION	5	102.000	3.63	0.0046
PERIOD*SEASON	1	102.000	5.34	0.0228
STATION*PERIOD	5	102.000	0.60	0.6999
STATION*SEASON	5	102.000	0.48	0.7871
PERIOD*STATION*SEASON	5	102.000	0.28	0.9252

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.20	0.18	0.2922	0.1296	0.7144
STATION*PERIOD	3.00	0.00	0.3224	.	0.2057

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.6418	0.4646	1.381	.1702
Period in PC	-0.0830	0.2098	-0.396	.6932
Period in PC-S	0.0089	0.2145	0.042	.9669
Period in PC-W	-0.1749	0.3607	-0.485	.6288
Period in DC-S	1.7283	0.4575	3.778	.0003
Period in DC-W	-0.4448	0.8088	-0.550	.5836

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.468	0.0364	12.88	.0000	0.5285	0.4079
Period Op-2	0.375	0.0768	4.88	.0000	0.5026	0.2476
Op-1 0611	0.630	0.0813	7.76	.0000	0.7652	0.4955
Op-2 0611	0.481	0.1901	2.53	.0129	0.7965	0.1653
Op-1 0910	0.707	0.0866	8.16	.0000	0.8511	0.5635
Op-2 0910	0.410	0.1841	2.23	.0280	0.7160	0.1049
Op-1 0915	0.424	0.0974	4.35	.0000	0.5855	0.2622
Op-2 0915	0.242	0.1901	1.27	.2053	0.5579	-0.0732
Op-1 1015	0.360	0.0974	3.69	.0004	0.5215	0.1981
Op-2 1015	0.481	0.1901	2.53	.0129	0.7965	0.1653
Op-1 1210	0.658	0.0813	8.10	.0000	0.7932	0.5235
Op-2 1210	0.523	0.1841	2.84	.0054	0.8288	0.2178
Op-1 2210	0.030	0.0888	0.33	.7392	0.1770	-0.1178
Op-2 2210	0.113	0.1901	0.59	.5548	0.4282	-0.2029

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0931	0.0850	1.096	.2756	0.2342	-0.0479

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1495	0.2067	0.72	.4714	0.4926	-0.1937
Station 0910	0.2969	0.2034	1.46	.1475	0.6346	-0.0408
Station 0915	0.1815	0.2136	0.85	.3975	0.5361	-0.1731
Station 1015	-0.1211	0.2136	-0.57	.5720	0.2335	-0.4757
Station 1210	0.1350	0.2012	0.67	.5036	0.4690	-0.1989
Station 2210	-0.0830	0.2098	-0.40	.6932	0.2653	-0.4313

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.53	2.50	0.181	0.91	0.15	3.63	8.00	4.64	2.62
0611 Op-2	4	0.00	0.00	0.000	.	.	1.13	2.50	2.89	-0.64
0910 Op-1	18	0.44	2.50	0.156	0.77	0.12	3.92	8.00	4.87	2.97
0910 Op-2	5	0.40	1.50	0.292	1.21	-0.41	0.90	2.00	1.92	-0.12
0915 Op-1	14	1.32	7.00	0.504	2.41	0.23	2.89	9.00	4.29	1.50
0915 Op-2	4	0.25	1.00	0.250	1.05	-0.55	0.88	2.50	2.64	-0.89
1015 Op-1	14	1.54	5.50	0.501	2.62	0.45	2.68	9.00	4.09	1.27
1015 Op-2	4	0.00	0.00	0.000	.	.	1.13	2.50	2.89	-0.64
1210 Op-1	19	0.45	4.50	0.245	0.96	-0.07	3.71	8.00	4.77	2.65
1210 Op-2	5	0.00	0.00	0.000	.	.	1.30	2.50	2.59	0.01
2210 Op-1	16	3.81	9.00	0.694	5.29	2.33	0.47	9.50	1.85	-0.91
2210 Op-2	4	0.88	2.50	0.591	2.75	-1.00	0.25	0.50	0.71	-0.21

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	4.16	8.50	0.534	5.28	3.04
Op-2	5	1.30	2.50	0.464	2.59	0.01

Analysis of Variance for SLC for 0125 - Chondracanthus corymbiferus

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	39.95	0.0000
SEASON	1	102.000	11.80	0.0009
STATION	5	102.000	6.66	0.0000
PERIOD*SEASON	1	102.000	0.10	0.7579
STATION*PERIOD	5	102.000	1.00	0.4234
STATION*SEASON	5	102.000	1.56	0.1771
PERIOD*STATION*SEASON	5	102.000	0.70	0.6273

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	39.95	38.16	1.0000	1.0000	1.0000
STATION*PERIOD	4.99	0.00	0.4726	.	0.1001

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.6638	0.4051	-6.576	.0000
Period in FC	-0.1452	0.1829	-0.794	.4291
Period in FC-S	-0.1079	0.1870	-0.577	.5652
Period in FC-W	-0.1826	0.3145	-0.581	.5628
Period in DC-S	-2.5638	0.3989	-6.428	.0000
Period in DC-W	-2.7638	0.7051	-3.920	.0002

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.128	0.0317	4.05	.0001	0.1808	0.0756
Period Op-2	0.596	0.0670	8.91	.0000	0.7076	0.4853
Op-1 0611	-0.055	0.0708	-0.77	.4433	0.0631	-0.1721
Op-2 0611	0.596	0.1657	3.60	.0005	0.8712	0.3210
Op-1 0910	0.181	0.0755	2.40	.0183	0.3066	0.0558
Op-2 0910	0.691	0.1605	4.31	.0000	0.9575	0.4248
Op-1 0915	0.309	0.0849	3.64	.0004	0.4502	0.1683
Op-2 0915	0.710	0.1657	4.28	.0000	0.9848	0.4346
Op-1 1015	0.195	0.0849	2.30	.0234	0.3364	0.0545
Op-2 1015	0.813	0.1657	4.91	.0000	1.0886	0.5384
Op-1 1210	0.288	0.0708	4.06	.0001	0.4054	0.1702
Op-2 1210	0.772	0.1605	4.81	.0000	1.0389	0.5061
Op-1 2210	-0.150	0.0774	-1.93	.0559	-0.0212	-0.2782
Op-2 2210	-0.004	0.1657	-0.03	.9785	0.2706	-0.2796

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4682	0.0741	-6.320	.0000	-0.3452	-0.5911

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.6506	0.1802	-3.61	.0005	-0.3515	-0.9498
Station 0910	-0.5100	0.1774	-2.88	.0049	-0.2156	-0.8044
Station 0915	-0.4005	0.1862	-2.15	.0339	-0.0914	-0.7096
Station 1015	-0.6181	0.1862	-3.32	.0013	-0.3089	-0.9272
Station 1210	-0.4847	0.1754	-2.76	.0068	-0.1935	-0.7758
Station 2210	-0.1452	0.1829	-0.79	.4291	0.1584	-0.4489

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	32.71	75.50	5.265	43.77	21.65	-13.03	81.00	-0.67	-25.38
0611 Op-2	4	12.00	21.00	4.416	26.05	-2.05	12.88	33.50	39.73	-13.98
0910 Op-1	18	16.36	29.50	1.972	20.52	12.20	3.47	35.50	8.93	-1.99
0910 Op-2	5	6.00	7.00	1.151	9.20	2.80	19.50	15.50	28.09	10.91
0915 Op-1	14	15.36	25.50	2.458	20.67	10.05	5.46	33.00	11.14	-0.21
0915 Op-2	4	6.25	5.50	1.233	10.17	2.33	18.63	21.50	34.82	2.43
1015 Op-1	14	15.00	18.50	1.567	18.39	11.61	5.82	25.00	9.24	2.40
1015 Op-2	4	5.75	13.00	2.955	15.15	-3.65	19.13	17.50	30.66	7.59
1210 Op-1	19	12.55	34.00	1.848	16.43	8.67	7.13	47.50	12.32	1.95
1210 Op-2	5	5.80	15.00	2.681	13.24	-1.64	19.70	12.00	25.62	13.78
2210 Op-1	16	29.09	24.00	1.691	32.70	25.49	-9.00	20.00	-5.72	-12.28
2210 Op-2	4	26.00	9.50	1.969	32.26	19.74	-1.13	12.50	9.28	-11.53

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	19.68	18.50	1.213	22.23	17.13
Op-2	5	25.50	21.00	3.918	36.38	14.62

Analysis of Variance for SLC for 1305 - Chondracanthus harveyanus/spinosus

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.45	0.2308
SEASON	1	102.000	0.02	0.8815
STATION	5	102.000	12.25	0.0000
PERIOD*SEASON	1	102.000	0.05	0.8214
STATION*PERIOD	5	102.000	0.98	0.4365
STATION*SEASON	5	102.000	0.90	0.4828
PERIOD*STATION*SEASON	5	102.000	0.63	0.6756

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.45	0.42	0.3296	0.1703	0.2430
STATION*PERIOD	4.88	0.00	0.4647	.	0.1804

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.9578	0.7240	1.323	.1888
Period in FC	-0.0000	0.3270	-0.000	1.000
Period in FC-S	0.0000	0.3342	0.000	1.000
Period in FC-W	-0.0000	0.5621	-0.000	1.000
Period in DC-S	0.7780	0.7130	1.091	.2778
Period in DC-W	1.1376	1.2604	0.903	.3689

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.360	0.0566	-6.35	.0000	-0.2658	-0.4539
Period Op-2	-0.519	0.1197	-4.34	.0000	-0.3208	-0.7182
Op-1 0611	0.000	0.1266	0.00	1.000	0.2102	-0.2102
Op-2 0611	-0.000	0.2963	-0.00	1.000	0.4918	-0.4918
Op-1 0910	-0.409	0.1350	-3.03	.0031	-0.1849	-0.6331
Op-2 0910	-1.032	0.2868	-3.60	.0005	-0.5560	-1.5083
Op-1 0915	-0.614	0.1518	-4.04	.0001	-0.3618	-0.8658
Op-2 0915	-0.456	0.2963	-1.54	.1267	0.0356	-0.9480
Op-1 1015	0.000	0.1518	0.00	1.000	0.2520	-0.2520
Op-2 1015	0.000	0.2963	0.00	1.000	0.4918	-0.4918
Op-1 1210	-1.136	0.1266	-8.97	.0000	-0.9262	-1.3466
Op-2 1210	-1.629	0.2868	-5.68	.0000	-1.1524	-2.1047
Op-1 2210	-0.000	0.1384	-0.00	1.000	0.2297	-0.2297
Op-2 2210	0.000	0.2963	0.00	1.000	0.4918	-0.4918

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1596	0.1324	1.206	.2308	0.3794	-0.0602

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	0.3222	0.00	1.000	0.5348	-0.5348
Station 0910	0.6232	0.3170	1.97	.0521	1.1495	0.0969
Station 0915	-0.1576	0.3329	-0.47	.6369	0.3950	-0.7102
Station 1015	0.0000	0.3329	0.00	1.000	0.5526	-0.5526
Station 1210	0.4922	0.3136	1.57	.1196	1.0127	-0.0283
Station 2210	-0.0000	0.3270	-0.00	1.000	0.5428	-0.5428

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.47	2.50	0.174	0.84	0.11	-0.47	2.50	-0.11	-0.84
0910 Op-2	5	0.90	2.50	0.430	2.09	-0.29	-0.90	2.50	0.29	-2.09
0915 Op-1	14	1.14	4.50	0.417	2.04	0.24	-1.14	4.50	-0.24	-2.04
0915 Op-2	4	1.13	2.50	0.657	3.22	-0.97	-1.13	2.50	0.97	-3.22
1015 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	3.47	16.00	0.985	5.54	1.40	-3.47	16.00	-1.40	-5.54
1210 Op-2	5	7.20	20.00	3.397	16.63	-2.23	-7.20	20.00	2.23	-16.63
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 1302 - Chrysophyta unid.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	5.55	0.0204
SEASON	1	102.000	8.47	0.0044
STATION	5	102.000	1.63	0.1598
PERIOD*SEASON	1	102.000	1.20	0.2763
STATION*PERIOD	5	102.000	1.24	0.2967
STATION*SEASON	5	102.000	0.55	0.7390
PERIOD*STATION*SEASON	5	102.000	0.77	0.5771

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.55	4.44	0.7568	0.6734	0.3645
STATION*PERIOD	6.19	1.07	0.5562	0.1746	0.1389

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	16.5769	6.3341	2.617	.0102
Period in FC	-0.2000	2.8605	-0.070	.9444
Period in FC-S	0.0000	2.9238	0.000	1.000
Period in FC-W	-0.4000	4.9174	-0.081	.9353
Period in DC-S	8.7705	6.2375	1.406	.1627
Period in DC-W	24.3833	11.0261	2.211	.0292

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-1.784	0.4956	-3.60	.0005	-0.9618	-2.6070
Period Op-2	-4.514	1.0470	-4.31	.0000	-2.7760	-6.2518
Op-1 0611	-3.538	1.1078	-3.19	.0019	-1.6997	-5.3773
Op-2 0611	-4.667	2.5917	-1.80	.0747	-0.3646	-8.9687
Op-1 0910	-2.485	1.1811	-2.10	.0379	-0.5240	-4.4452
Op-2 0910	-9.125	2.5094	-3.64	.0004	-4.9596	-13.2904
Op-1 0915	-1.837	1.3279	-1.38	.1694	0.3666	-4.0416
Op-2 0915	-3.417	2.5917	-1.32	.1904	0.8854	-7.7187
Op-1 1015	-0.437	1.3279	-0.33	.7425	1.7666	-2.6416
Op-2 1015	-7.250	2.5917	-2.80	.0062	-2.9480	-11.5520
Op-1 1210	-1.208	1.1078	-1.09	.2779	0.6305	-3.0471
Op-2 1210	-1.625	2.5094	-0.65	.5187	2.5404	-5.7904
Op-1 2210	-1.200	1.2106	-0.99	.3239	0.8095	-3.2095
Op-2 2210	-1.000	2.5917	-0.39	.7004	3.3020	-5.3020

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	2.7295	1.1583	2.356	.0204	4.6522	0.8067

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	1.1282	2.8185	0.40	.6898	5.8067	-3.5503
Station 0910	6.6404	2.7735	2.39	.0185	11.2442	2.0366
Station 0915	1.5792	2.9121	0.54	.5888	6.4130	-3.2546
Station 1015	6.8125	2.9121	2.34	.0213	11.6463	1.9787
Station 1210	0.4167	2.7430	0.15	.8796	4.9699	-4.1366
Station 2210	-0.2000	2.8605	-0.07	.9444	4.5482	-4.9482

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	2.34	24.00	1.390	5.26	-0.58	-2.26	25.50	0.68	-5.20
0611 Op-2	4	3.25	7.50	1.588	8.30	-1.80	-3.25	7.50	1.80	-8.30
0910 Op-1	18	2.61	32.00	1.788	6.38	-1.16	-2.61	32.00	1.16	-6.38
0910 Op-2	5	7.40	13.50	2.586	14.58	0.22	-7.40	13.50	-0.22	-14.58
0915 Op-1	14	1.71	10.00	0.827	3.50	-0.07	-1.71	10.00	0.07	-3.50
0915 Op-2	4	1.88	6.50	1.546	6.80	-3.05	-1.88	6.50	3.05	-6.80
1015 Op-1	14	0.25	3.50	0.250	0.79	-0.29	-0.25	3.50	0.29	-0.79
1015 Op-2	4	4.88	12.00	2.860	13.98	-4.23	-4.88	12.00	4.23	-13.98
1210 Op-1	19	0.84	13.50	0.709	2.33	-0.65	-0.76	15.00	0.75	-2.27
1210 Op-2	5	2.00	9.00	1.761	6.89	-2.89	-2.00	9.00	2.89	-6.89
2210 Op-1	16	0.75	12.00	0.750	2.35	-0.85	-0.75	12.00	0.85	-2.35
2210 Op-2	4	0.50	2.00	0.500	2.09	-1.09	-0.50	2.00	1.09	-2.09

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.08	1.50	0.079	0.24	-0.09
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0055 - Corallina officinalis

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	11.47	0.0010
SEASON	1	102.000	0.35	0.5568
STATION	5	102.000	2.92	0.0167
PERIOD*SEASON	1	102.000	0.59	0.4423
STATION*PERIOD	5	102.000	0.33	0.8918
STATION*SEASON	5	102.000	0.04	0.9992
PERIOD*STATION*SEASON	5	102.000	0.17	0.9725

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	11.47	10.25	0.9573	0.9376	0.2332
STATION*PERIOD	1.67	0.00	0.2191	.	0.1426

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.7515	0.5548	3.157	.0021
Period in FC	0.3104	0.2505	1.239	.2182
Period in FC-S	0.2712	0.2561	1.059	.2921
Period in FC-W	0.3496	0.4307	0.812	.4188
Period in DC-S	1.3212	0.5463	2.418	.0174
Period in DC-W	2.1818	0.9657	2.259	.0260

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.233	0.0434	5.36	.0000	0.3049	0.1608
Period Op-2	-0.111	0.0917	-1.21	.2296	0.0414	-0.2630
Op-1 0611	0.379	0.0970	3.91	.0002	0.5401	0.2180
Op-2 0611	0.080	0.2270	0.35	.7268	0.4563	-0.2973
Op-1 0910	0.086	0.1034	0.83	.4082	0.2576	-0.0858
Op-2 0910	-0.351	0.2198	-1.60	.1129	0.0134	-0.7163
Op-1 0915	0.276	0.1163	2.37	.0195	0.4690	0.0829
Op-2 0915	0.080	0.2270	0.35	.7268	0.4563	-0.2973
Op-1 1015	0.238	0.1163	2.05	.0430	0.4313	0.0452
Op-2 1015	0.000	0.2270	0.00	1.000	0.3768	-0.3768
Op-1 1210	0.028	0.0970	0.29	.7751	0.1888	-0.1333
Op-2 1210	-0.552	0.2198	-2.51	.0136	-0.1873	-0.9169
Op-1 2210	0.390	0.1060	3.68	.0004	0.5659	0.2139
Op-2 2210	0.080	0.2270	0.35	.7268	0.4563	-0.2973

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3436	0.1015	3.387	.0010	0.5121	0.1752

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2995	0.2469	1.21	.2278	0.7093	-0.1103
Station 0910	0.4374	0.2429	1.80	.0747	0.8406	0.0341
Station 0915	0.1964	0.2551	0.77	.4430	0.6198	-0.2270
Station 1015	0.2383	0.2551	0.93	.3523	0.6617	-0.1851
Station 1210	0.5799	0.2402	2.41	.0176	0.9787	0.1811
Station 2210	0.3104	0.2505	1.24	.2182	0.7263	-0.1055

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.05	0.50	0.036	0.13	-0.02	1.08	3.50	1.59	0.56
0611 Op-2	4	0.00	0.00	0.000	.	.	0.25	1.00	1.05	-0.55
0910 Op-1	18	1.06	3.50	0.265	1.61	0.50	0.08	6.50	0.94	-0.77
0910 Op-2	5	0.90	1.00	0.187	1.42	0.38	-0.60	1.50	0.21	-1.41
0915 Op-1	14	0.11	0.50	0.057	0.23	-0.02	0.75	3.00	1.28	0.22
0915 Op-2	4	0.00	0.00	0.000	.	.	0.25	1.00	1.05	-0.55
1015 Op-1	14	0.14	0.50	0.063	0.28	0.01	0.71	3.00	1.27	0.16
1015 Op-2	4	0.25	1.00	0.250	1.05	-0.55	0.00	2.00	1.30	-1.30
1210 Op-1	19	1.05	3.00	0.253	1.58	0.52	0.08	6.50	0.98	-0.82
1210 Op-2	5	2.60	7.00	1.355	6.36	-1.16	-2.30	6.50	1.00	-5.60
2210 Op-1	16	0.09	0.50	0.050	0.20	-0.01	1.19	3.00	1.74	0.64
2210 Op-2	4	0.00	0.00	0.000	.	.	0.25	1.00	1.05	-0.55

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	1.13	3.50	0.250	1.66	0.61
Op-2	5	0.30	1.00	0.200	0.86	-0.26

Analysis of Variance for SLC for 0057 - coralline crust

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	4.43	0.0378
SEASON	1	102.000	0.00	0.9724
STATION	5	102.000	6.15	0.0001
PERIOD*SEASON	1	102.000	2.00	0.1605
STATION*PERIOD	5	102.000	0.49	0.7827
STATION*SEASON	5	102.000	0.52	0.7590
PERIOD*STATION*SEASON	5	102.000	0.19	0.9639

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.43	3.34	0.6721	0.5681	1.0000
STATION*PERIOD	2.45	0.00	0.2797	.	0.6894

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-47.5734	23.2531	-2.046	.0433
Period in FC	-6.1152	10.5012	-0.582	.5616
Period in FC-S	-18.0303	10.7337	-1.680	.0961
Period in FC-W	5.8000	18.0524	0.321	.7486
Period in DC-S	-71.7301	22.8986	-3.133	.0023
Period in DC-W	-23.4167	40.4783	-0.578	.5642

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-4.118	1.8193	-2.26	.0257	-1.0983	-7.1381
Period Op-2	4.830	3.8436	1.26	.2118	11.2099	-1.5502
Op-1 0611	23.798	4.0667	5.85	.0000	30.5485	17.0476
Op-2 0611	23.750	9.5144	2.50	.0142	39.5433	7.9567
Op-1 0910	-10.385	4.3360	-2.39	.0184	-3.1871	-17.5821
Op-2 0910	-1.437	9.2123	-0.16	.8763	13.8543	-16.7293
Op-1 0915	-4.925	4.8747	-1.01	.3147	3.1666	-13.0166
Op-2 0915	-0.583	9.5144	-0.06	.9512	15.2099	-16.3766
Op-1 1015	-24.400	4.8747	-5.01	.0000	-16.3084	-32.4916
Op-2 1015	-3.583	9.5144	-0.38	.7072	12.2099	-19.3766
Op-1 1210	-2.266	4.0667	-0.56	.5786	4.4844	-9.0165
Op-2 1210	11.250	9.2123	1.22	.2248	26.5418	-4.0418
Op-1 2210	-6.532	4.4442	-1.47	.1447	0.8452	-13.9089
Op-2 2210	-0.417	9.5144	-0.04	.9652	15.3766	-16.2099

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-8.9481	4.2524	-2.104	.0378	-1.8894	-16.0068

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0481	10.3471	0.00	.9963	17.2235	-17.1274
Station 0910	-8.9471	10.1817	-0.88	.3816	7.9539	-25.8481
Station 0915	-4.3417	10.6905	-0.41	.6855	13.4038	-22.0872
Station 1015	-20.8167	10.6905	-1.95	.0543	-3.0712	-38.5622
Station 1210	-13.5160	10.0700	-1.34	.1825	3.1994	-30.2315
Station 2210	-6.1152	10.5012	-0.58	.5616	11.3161	-23.5464

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	24.76	29.50	2.050	29.07	20.46	22.89	69.00	31.39	14.40
0611 Op-2	4	22.75	8.50	1.854	28.65	16.85	25.38	16.50	37.83	12.92
0910 Op-1	18	58.75	32.00	2.410	63.83	53.67	-11.44	49.50	-4.20	-18.68
0910 Op-2	5	50.90	18.00	3.341	60.18	41.62	-2.90	15.50	4.57	-10.37
0915 Op-1	14	52.86	36.50	2.489	58.23	47.48	-4.79	61.00	4.32	-13.89
0915 Op-2	4	43.25	30.00	6.395	63.60	22.90	4.88	38.00	30.63	-20.88
1015 Op-1	14	73.93	24.50	2.025	78.30	69.55	-25.86	71.50	-15.32	-36.39
1015 Op-2	4	50.75	16.00	3.794	62.82	38.68	-2.63	25.00	14.17	-19.42
1210 Op-1	19	52.26	49.00	3.284	59.16	45.36	-4.61	80.50	5.18	-14.39
1210 Op-2	5	39.00	19.50	3.972	50.03	27.97	9.00	26.50	22.99	-4.99
2210 Op-1	16	53.31	37.50	2.962	59.63	47.00	-7.78	43.00	-0.28	-15.29
2210 Op-2	4	44.25	27.50	7.025	66.61	21.89	3.88	25.50	22.47	-14.72

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	47.66	51.50	2.755	53.45	41.87
Op-2	5	48.00	9.00	1.658	52.60	43.40

Analysis of Variance for SLC for 0052 - Cryptopleura ruprechtiana

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.05	0.8204
SEASON	1	102.000	4.59	0.0345
STATION	5	102.000	6.72	0.0000
PERIOD*SEASON	1	102.000	0.04	0.8343
STATION*PERIOD	5	102.000	1.55	0.1815
STATION*SEASON	5	102.000	0.44	0.8168
PERIOD*STATION*SEASON	5	102.000	0.18	0.9684

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.05	0.00	0.1087	.	0.9527
STATION*PERIOD	7.74	2.59	0.6514	0.2904	0.8393

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	13.2340	22.9885	0.576	.5661
Period in PC	-7.4939	10.3817	-0.722	.4720
Period in PC-S	-10.2879	10.6116	-0.969	.3346
Period in PC-W	-4.7000	17.8469	-0.263	.7928
Period in DC-S	21.3179	22.6380	0.942	.3486
Period in DC-W	5.1500	40.0176	0.129	.8979

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	17.019	1.7986	9.46	.0000	20.0047	14.0336
Period Op-2	16.063	3.7998	4.23	.0001	22.3700	9.7550
Op-1 0611	32.897	4.0204	8.18	.0000	39.5711	26.2238
Op-2 0611	19.917	9.4061	2.12	.0367	35.5302	4.3031
Op-1 0910	32.623	4.2867	7.61	.0000	39.7387	25.5075
Op-2 0910	20.813	9.1075	2.29	.0244	35.9302	5.6948
Op-1 0915	25.188	4.8192	5.23	.0000	33.1871	17.1879
Op-2 0915	19.667	9.4061	2.09	.0390	35.2802	4.0531
Op-1 1015	-2.638	4.8192	-0.55	.5854	5.3621	-10.6371
Op-2 1015	18.250	9.4061	1.94	.0551	33.8635	2.6365
Op-1 1210	24.622	4.0204	6.12	.0000	31.2954	17.9482
Op-2 1210	20.813	9.1075	2.29	.0244	35.9302	5.6948
Op-1 2210	-10.577	4.3936	-2.41	.0179	-3.2842	-17.8703
Op-2 2210	-3.083	9.4061	-0.33	.7437	12.5302	-18.6969

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.9567	4.2040	0.228	.8204	7.9350	-6.0217

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	12.9808	10.2293	1.27	.2073	29.9608	-3.9992
Station 0910	11.8106	10.0659	1.17	.2434	28.5192	-4.8980
Station 0915	5.5208	10.5688	0.52	.6025	23.0644	-12.0227
Station 1015	-20.8875	10.5688	-1.98	.0508	-3.3440	-38.4310
Station 1210	3.8093	9.9554	0.38	.7028	20.3345	-12.7159
Station 2210	-7.4939	10.3817	-0.72	.4720	9.7389	-24.7268

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.05	0.50	0.036	0.13	-0.02	36.97	58.50	44.40	29.55
0611 Op-2	4	0.00	0.00	0.000	.	.	22.13	10.50	29.40	14.85
0910 Op-1	18	1.58	22.50	1.243	4.21	-1.04	36.72	58.50	44.04	29.40
0910 Op-2	5	0.00	0.00	0.000	.	.	24.00	16.00	31.16	16.84
0915 Op-1	14	12.54	63.00	4.923	23.17	1.90	27.57	78.50	40.96	14.18
0915 Op-2	4	0.13	0.50	0.125	0.52	-0.27	22.00	11.00	29.66	14.34
1015 Op-1	14	43.50	79.00	5.944	56.34	30.66	-3.39	80.00	10.23	-17.02
1015 Op-2	4	2.00	7.00	1.683	7.36	-3.36	20.13	11.50	28.87	11.38
1210 Op-1	19	9.66	27.50	2.433	14.77	4.55	27.37	61.50	36.62	18.12
1210 Op-2	5	0.00	0.00	0.000	.	.	24.00	16.00	31.16	16.84
2210 Op-1	16	49.72	56.50	3.882	57.99	41.45	-11.28	43.50	-4.46	-18.10
2210 Op-2	4	24.75	21.00	4.684	39.66	9.84	-2.63	21.00	11.70	-16.95

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	37.03	58.50	3.538	44.46	29.59
Op-2	5	24.00	16.00	2.579	31.16	16.84

Analysis of Variance for SLC for 0115 - Cryptopleura violacea

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	4.48	0.0368
SEASON	1	102.000	0.25	0.6191
STATION	5	102.000	18.57	0.0000
PERIOD*SEASON	1	102.000	0.43	0.5156
STATION*PERIOD	5	102.000	0.77	0.5767
STATION*SEASON	5	102.000	1.13	0.3519
PERIOD*STATION*SEASON	5	102.000	1.43	0.2184

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.48	3.39	0.6763	0.5732	0.9117
STATION*PERIOD	3.83	0.00	0.3863	.	0.2400

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.2902	0.6138	-2.102	.0380
Period in FC	-0.1350	0.2772	-0.487	.6274
Period in FC-S	0.0209	0.2834	0.074	.9412
Period in FC-W	-0.2909	0.4765	-0.610	.5429
Period in DC-S	-1.8856	0.6045	-3.119	.0024
Period in DC-W	-0.6948	1.0686	-0.650	.5170

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.948	0.0480	-19.73	.0000	-0.8680	-1.0274
Period Op-2	-0.710	0.1015	-7.00	.0000	-0.5417	-0.8786
Op-1 0611	-1.469	0.1074	-13.69	.0000	-1.2913	-1.6477
Op-2 0611	-0.822	0.2512	-3.27	.0015	-0.4051	-1.2389
Op-1 0910	-1.634	0.1145	-14.28	.0000	-1.4444	-1.8244
Op-2 0910	-1.282	0.2432	-5.27	.0000	-0.8780	-1.6853
Op-1 0915	-1.179	0.1287	-9.17	.0000	-0.9658	-1.3930
Op-2 0915	-1.024	0.2512	-4.08	.0001	-0.6070	-1.4409
Op-1 1015	-0.263	0.1287	-2.04	.0437	-0.0492	-0.4764
Op-2 1015	-0.083	0.2512	-0.33	.7404	0.3335	-0.5003
Op-1 1210	-1.077	0.1074	-10.03	.0000	-0.8987	-1.2551
Op-2 1210	-1.122	0.2432	-4.61	.0000	-0.7181	-1.5254
Op-1 2210	-0.063	0.1173	-0.54	.5920	0.1317	-0.2578
Op-2 2210	0.072	0.2512	0.29	.7753	0.4888	-0.3450

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2375	0.1123	-2.116	.0368	-0.0512	-0.4239

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.6475	0.2731	-2.37	.0196	-0.1941	-1.1009
Station 0910	-0.3527	0.2688	-1.31	.1923	0.0934	-0.7989
Station 0915	-0.1554	0.2822	-0.55	.5830	0.3130	-0.6239
Station 1015	-0.1794	0.2822	-0.64	.5264	0.2890	-0.6479
Station 1210	0.0448	0.2658	0.17	.8664	0.4861	-0.3964
Station 2210	-0.1350	0.2772	-0.49	.6274	0.3252	-0.5951

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	42.21	76.00	4.457	51.57	32.85	-41.76	76.00	-32.43	-51.09
0611 Op-2	4	23.75	64.00	14.891	71.14	-23.64	-23.25	63.50	23.70	-70.20
0910 Op-1	18	56.22	67.50	3.972	64.60	47.84	-55.75	66.50	-47.48	-64.02
0910 Op-2	5	32.20	53.00	9.258	57.90	6.50	-31.80	52.50	-6.27	-57.33
0915 Op-1	14	23.11	47.50	4.505	32.84	13.37	-22.64	46.50	-12.84	-32.44
0915 Op-2	4	18.88	28.00	6.552	39.73	-1.98	-18.38	27.50	2.32	-39.07
1015 Op-1	14	4.14	37.50	2.629	9.82	-1.54	-3.68	34.50	1.45	-8.80
1015 Op-2	4	2.25	8.50	2.087	8.89	-4.39	-1.75	9.50	5.44	-8.94
1210 Op-1	19	27.13	74.50	4.659	36.92	17.34	-26.68	73.50	-16.94	-36.43
1210 Op-2	5	20.60	54.50	10.258	49.08	-7.88	-20.20	54.50	8.45	-48.85
2210 Op-1	16	0.47	3.00	0.207	0.91	0.03	-0.19	5.00	0.41	-0.79
2210 Op-2	4	0.50	1.50	0.354	1.63	-0.63	0.00	1.50	1.13	-1.13

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.45	4.00	0.232	0.94	-0.04
Op-2	5	0.40	1.00	0.187	0.92	-0.12

Analysis of Variance for SLC for 0036 - Cystoseira osmundacea

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.20	0.2766
SEASON	1	102.000	0.03	0.8546
STATION	5	102.000	4.46	0.0010
PERIOD*SEASON	1	102.000	0.25	0.6177
STATION*PERIOD	5	102.000	0.28	0.9207
STATION*SEASON	5	102.000	0.07	0.9968
PERIOD*STATION*SEASON	5	102.000	0.15	0.9794

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.20	0.17	0.2915	0.1288	0.3321
STATION*PERIOD	1.42	0.00	0.2006	.	0.2010

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3872	0.4214	-0.919	.3604
Period in FC	-0.1186	0.1903	-0.623	.5346
Period in FC-S	-0.0709	0.1945	-0.365	.7162
Period in FC-W	-0.1662	0.3272	-0.508	.6125
Period in DC-S	-0.6664	0.4150	-1.606	.1114
Period in DC-W	-0.1080	0.7336	-0.147	.8832

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.546	0.0330	16.55	.0000	0.6004	0.4909
Period Op-2	0.630	0.0697	9.04	.0000	0.7456	0.5143
Op-1 0611	0.638	0.0737	8.65	.0000	0.7602	0.5155
Op-2 0611	0.852	0.1724	4.94	.0000	1.1386	0.5661
Op-1 0910	0.677	0.0786	8.62	.0000	0.8079	0.5470
Op-2 0910	0.858	0.1670	5.14	.0000	1.1352	0.5808
Op-1 0915	0.527	0.0884	5.96	.0000	0.6732	0.3799
Op-2 0915	0.508	0.1724	2.94	.0040	0.7937	0.2213
Op-1 1015	0.411	0.0884	4.65	.0000	0.5578	0.2645
Op-2 1015	0.407	0.1724	2.36	.0203	0.6930	0.1205
Op-1 1210	0.316	0.0737	4.29	.0000	0.4387	0.1940
Op-2 1210	0.332	0.1670	1.99	.0494	0.6092	0.0549
Op-1 2210	0.704	0.0805	8.74	.0000	0.8381	0.5707
Op-2 2210	0.823	0.1724	4.77	.0000	1.1092	0.5367

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0843	0.0771	-1.094	.2766	0.0436	-0.2122

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.2145	0.1875	-1.14	.2554	0.0968	-0.5258
Station 0910	-0.1806	0.1845	-0.98	.3301	0.1257	-0.4869
Station 0915	0.0191	0.1938	0.10	.9217	0.3407	-0.3025
Station 1015	0.0044	0.1938	0.02	.9818	0.3261	-0.3172
Station 1210	-0.0157	0.1825	-0.09	.9317	0.2873	-0.3186
Station 2210	-0.1186	0.1903	-0.62	.5346	0.1973	-0.4345

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.03	0.50	0.026	0.08	-0.03	4.32	9.50	5.76	2.88
0611 Op-2	4	0.00	0.00	0.000	.	.	7.25	12.00	15.09	-0.59
0910 Op-1	18	0.06	1.00	0.056	0.17	-0.06	4.50	9.00	5.94	3.06
0910 Op-2	5	0.00	0.00	0.000	.	.	7.10	12.00	12.41	1.79
0915 Op-1	14	1.61	10.00	0.749	3.23	-0.01	3.86	19.00	6.43	1.28
0915 Op-2	4	1.25	2.00	0.433	2.63	-0.13	6.00	11.50	13.66	-1.66
1015 Op-1	14	1.54	4.50	0.325	2.24	0.83	3.93	9.50	5.49	2.37
1015 Op-2	4	2.00	4.50	0.979	5.12	-1.12	5.25	7.50	10.39	0.11
1210 Op-1	19	2.16	9.00	0.597	3.41	0.90	2.18	11.50	3.40	0.97
1210 Op-2	5	2.50	5.00	0.806	4.74	0.26	4.60	7.00	7.78	1.42
2210 Op-1	16	0.00	0.00	0.000	.	.	4.81	9.00	6.37	3.26
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	7.13	12.00	14.96	-0.71

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	4.34	9.50	0.678	5.77	2.92
Op-2	5	7.10	12.00	1.913	12.41	1.79

Analysis of Variance for SLC for 0037 - Desmarestia spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	2.49	0.1179
SEASON	1	102.000	11.13	0.0012
STATION	5	102.000	0.85	0.5182
PERIOD*SEASON	1	102.000	5.62	0.0197
STATION*PERIOD	5	102.000	0.85	0.5206
STATION*SEASON	5	102.000	0.42	0.8322
PERIOD*STATION*SEASON	5	102.000	0.31	0.9070

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.49	1.44	0.4695	0.3274	0.1134
STATION*PERIOD	4.23	0.00	0.4166	.	0.1014

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.2228	0.5375	-2.275	.0250
Period in FC	0.2926	0.2427	1.206	.2308
Period in FC-S	0.3296	0.2481	1.328	.1870
Period in FC-W	0.2557	0.4173	0.613	.5414
Period in DC-S	-2.6578	0.5293	-5.021	.0000
Period in DC-W	0.2122	0.9357	0.227	.8210

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.096	0.0421	2.28	.0244	0.1659	0.0263
Period Op-2	0.251	0.0888	2.83	.0057	0.3986	0.1036
Op-1 0611	0.160	0.0940	1.70	.0921	0.3159	0.0038
Op-2 0611	0.402	0.2199	1.83	.0704	0.7672	0.0371
Op-1 0910	0.149	0.1002	1.49	.1396	0.3156	-0.0172
Op-2 0910	0.351	0.2130	1.65	.1020	0.7048	-0.0021
Op-1 0915	0.000	0.1127	0.00	1.000	0.1870	-0.1870
Op-2 0915	0.252	0.2199	1.14	.2553	0.6167	-0.1134
Op-1 1015	-0.010	0.1127	-0.09	.9280	0.1768	-0.1973
Op-2 1015	0.311	0.2199	1.42	.1598	0.6766	-0.0536
Op-1 1210	0.146	0.0940	1.56	.1227	0.3024	-0.0097
Op-2 1210	0.351	0.2130	1.65	.1020	0.7048	-0.0021
Op-1 2210	0.131	0.1027	1.28	.2042	0.3018	-0.0393
Op-2 2210	-0.161	0.2199	-0.73	.4648	0.2037	-0.5264

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1550	0.0983	-1.577	.1179	0.0082	-0.3182

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.2423	0.2392	-1.01	.3135	0.1547	-0.6393
Station 0910	-0.2021	0.2354	-0.86	.3925	0.1886	-0.5928
Station 0915	-0.2516	0.2471	-1.02	.3110	0.1586	-0.6618
Station 1015	-0.3217	0.2471	-1.30	.1960	0.0885	-0.7319
Station 1210	-0.2050	0.2328	-0.88	.3805	0.1814	-0.5914
Station 2210	0.2926	0.2427	1.21	.2308	0.6956	-0.1103

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.05	1.00	0.053	0.16	-0.06	1.42	16.50	3.23	-0.39
0611 Op-2	4	0.00	0.00	0.000	.	.	8.00	21.50	24.34	-8.34
0910 Op-1	18	0.14	1.50	0.089	0.33	-0.05	1.42	17.00	3.34	-0.50
0910 Op-2	5	0.00	0.00	0.000	.	.	6.70	21.50	18.32	-4.92
0915 Op-1	14	0.82	9.00	0.639	2.20	-0.56	-0.32	7.50	0.66	-1.30
0915 Op-2	4	1.75	7.00	1.750	7.32	-3.82	6.25	14.50	18.02	-5.52
1015 Op-1	14	1.50	19.00	1.349	4.41	-1.41	-1.00	17.50	1.51	-3.51
1015 Op-2	4	0.63	2.50	0.625	2.61	-1.36	7.38	19.00	22.01	-7.26
1210 Op-1	19	0.11	1.00	0.061	0.23	-0.02	1.37	17.00	3.20	-0.46
1210 Op-2	5	0.00	0.00	0.000	.	.	6.70	21.50	18.32	-4.92
2210 Op-1	16	1.56	24.50	1.529	4.82	-1.70	0.19	40.50	4.25	-3.87
2210 Op-2	4	17.00	56.00	13.268	59.22	-25.22	-9.00	34.50	18.06	-36.06

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	1.47	16.50	0.866	3.29	-0.34
Op-2	5	6.70	21.50	4.185	18.32	-4.92

Analysis of Variance for SLC for 0030 - Dictyoneurum californicum

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.40	0.5302
SEASON	1	102.000	1.22	0.2729
STATION	5	102.000	1.20	0.3147
PERIOD*SEASON	1	102.000	0.40	0.5302
STATION*PERIOD	5	102.000	0.39	0.8535
STATION*SEASON	5	102.000	1.20	0.3147
PERIOD*STATION*SEASON	5	102.000	0.39	0.8535

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.40	0.00	0.1657	.	0.1044
STATION*PERIOD	1.96	0.00	0.2415	.	0.1087

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0000	0.0528	0.000	1.000
Period in FC	0.0365	0.0238	1.530	.1290
Period in FC-S	0.0730	0.0244	2.995	.0034
Period in FC-W	-0.0000	0.0410	-0.000	1.000
Period in DC-S	0.0000	0.0520	0.000	1.000
Period in DC-W	0.0000	0.0919	0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.002	0.0041	-0.55	.5821	0.0046	-0.0091
Period Op-2	-0.008	0.0087	-0.96	.3402	0.0061	-0.0228
Op-1 0611	0.000	0.0092	0.00	1.000	0.0153	-0.0153
Op-2 0611	-0.000	0.0216	-0.00	1.000	0.0359	-0.0359
Op-1 0910	-0.000	0.0098	-0.00	1.000	0.0163	-0.0163
Op-2 0910	0.000	0.0209	0.00	1.000	0.0347	-0.0347
Op-1 0915	0.000	0.0111	0.00	1.000	0.0184	-0.0184
Op-2 0915	-0.000	0.0216	-0.00	1.000	0.0359	-0.0359
Op-1 1015	0.000	0.0111	0.00	1.000	0.0184	-0.0184
Op-2 1015	-0.000	0.0216	-0.00	1.000	0.0359	-0.0359
Op-1 1210	-0.000	0.0092	-0.00	1.000	0.0153	-0.0153
Op-2 1210	0.000	0.0209	0.00	1.000	0.0347	-0.0347
Op-1 2210	-0.014	0.0101	-1.36	.1781	0.0031	-0.0304
Op-2 2210	-0.050	0.0216	-2.32	.0222	-0.0143	-0.0860

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0061	0.0097	0.630	.5302	0.0221	-0.0099

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	0.0235	0.00	1.000	0.0390	-0.0390
Station 0910	-0.0000	0.0231	-0.00	1.000	0.0384	-0.0384
Station 0915	0.0000	0.0243	0.00	1.000	0.0403	-0.0403
Station 1015	0.0000	0.0243	0.00	1.000	0.0403	-0.0403
Station 1210	-0.0000	0.0229	-0.00	1.000	0.0380	-0.0380
Station 2210	0.0365	0.0238	1.53	.1290	0.0761	-0.0031

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	16	0.03	0.50	0.031	0.10	-0.04	-0.03	0.50	0.04	-0.10
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.13	0.50	0.27	-0.52

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for ADIV - Diversity

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	28.02	0.0000
SEASON	1	102.000	2.19	0.1420
STATION	5	102.000	2.65	0.0272
PERIOD*SEASON	1	102.000	0.02	0.9001
STATION*PERIOD	5	102.000	0.56	0.7322
STATION*SEASON	5	102.000	0.60	0.6976
PERIOD*STATION*SEASON	5	102.000	0.71	0.6141

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	28.02	26.47	0.9998	0.9997	1.0000
STATION*PERIOD	2.79	0.00	0.3058	.	0.1011

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3981	0.0774	-5.142	.0000
Period in FC	-0.0516	0.0350	-1.475	.1433
Period in FC-S	-0.0687	0.0357	-1.922	.0574
Period in FC-W	-0.0345	0.0601	-0.573	.5678
Period in DC-S	-0.3917	0.0763	-5.137	.0000
Period in DC-W	-0.4046	0.1348	-3.001	.0034

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.009	0.0061	-1.44	.1541	0.0014	-0.0188
Period Op-2	0.066	0.0128	5.18	.0000	0.0875	0.0450
Op-1 0611	-0.021	0.0135	-1.57	.1204	0.0013	-0.0437
Op-2 0611	0.092	0.0317	2.92	.0044	0.1450	0.0398
Op-1 0910	-0.026	0.0144	-1.78	.0785	-0.0017	-0.0496
Op-2 0910	0.039	0.0307	1.26	.2100	0.0896	-0.0122
Op-1 0915	-0.033	0.0162	-2.02	.0463	-0.0058	-0.0597
Op-2 0915	0.057	0.0317	1.79	.0764	0.1093	0.0041
Op-1 1015	0.040	0.0162	2.44	.0164	0.0666	0.0127
Op-2 1015	0.124	0.0317	3.92	.0002	0.1769	0.0718
Op-1 1210	-0.015	0.0135	-1.11	.2709	0.0075	-0.0375
Op-2 1210	0.031	0.0307	1.01	.3145	0.0819	-0.0199
Op-1 2210	0.003	0.0148	0.19	.8507	0.0274	-0.0218
Op-2 2210	0.054	0.0317	1.72	.0892	0.1070	0.0018

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0750	0.0142	-5.293	.0000	-0.0514	-0.0985

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1136	0.0345	-3.30	.0013	-0.0564	-0.1708
Station 0910	-0.0644	0.0339	-1.90	.0605	-0.0081	-0.1206
Station 0915	-0.0895	0.0356	-2.51	.0135	-0.0304	-0.1485
Station 1015	-0.0847	0.0356	-2.38	.0192	-0.0256	-0.1438
Station 1210	-0.0460	0.0335	-1.37	.1732	0.0097	-0.1017
Station 2210	-0.0516	0.0350	-1.47	.1433	0.0065	-0.1096

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	2.13	0.55	0.032	2.20	2.07	-0.07	0.82	0.03	-0.17
0611 Op-2	4	1.97	0.50	0.106	2.31	1.63	0.38	0.59	0.88	-0.11
0910 Op-1	18	2.21	0.86	0.058	2.33	2.08	-0.12	1.07	0.02	-0.27
0910 Op-2	5	2.11	1.12	0.202	2.67	1.55	0.23	1.23	0.84	-0.38
0915 Op-1	14	2.21	0.74	0.053	2.33	2.10	-0.17	0.60	-0.08	-0.25
0915 Op-2	4	2.01	0.82	0.185	2.60	1.42	0.34	1.02	1.03	-0.34
1015 Op-1	14	1.81	0.80	0.056	1.94	1.69	0.23	0.79	0.38	0.08
1015 Op-2	4	1.69	0.90	0.197	2.32	1.07	0.66	0.79	1.24	0.08
1210 Op-1	19	2.14	1.09	0.064	2.27	2.01	-0.08	0.87	0.03	-0.18
1210 Op-2	5	2.17	0.83	0.134	2.54	1.79	0.17	0.92	0.58	-0.24
2210 Op-1	16	2.04	0.65	0.038	2.12	1.96	0.03	0.75	0.15	-0.09
2210 Op-2	4	2.01	0.55	0.123	2.40	1.62	0.35	0.39	0.60	0.09

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	2.06	0.78	0.048	2.17	1.96
Op-2	5	2.34	0.70	0.113	2.65	2.03

Analysis of Variance for SLC for 0071 - Erythrophyllum delesserioides

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.99	0.1614
SEASON	1	102.000	0.62	0.4345
STATION	5	102.000	3.05	0.0131
PERIOD*SEASON	1	102.000	0.62	0.4345
STATION*PERIOD	5	102.000	3.05	0.0131
STATION*SEASON	5	102.000	1.27	0.2830
PERIOD*STATION*SEASON	5	102.000	1.27	0.2830

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.99	0.95	0.4049	0.2539	0.1679
STATION*PERIOD	15.25	9.95	0.9153	0.7612	0.2500

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1202	0.3850	0.312	.7556
Period in FC	-0.7160	0.1739	-4.118	.0001
Period in FC-S	-1.1676	0.1777	-6.570	.0000
Period in FC-W	-0.2644	0.2989	-0.885	.3784
Period in DC-S	0.2403	0.3791	0.634	.5276
Period in DC-W	-0.0000	0.6702	-0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.099	0.0301	-3.30	.0013	-0.0493	-0.1493
Period Op-2	-0.000	0.0636	-0.00	1.000	0.1056	-0.1056
Op-1 0611	0.040	0.0673	0.59	.5533	0.1518	-0.0717
Op-2 0611	0.000	0.1575	0.00	1.000	0.2615	-0.2615
Op-1 0910	0.040	0.0718	0.56	.5781	0.1592	-0.0791
Op-2 0910	0.000	0.1525	0.00	1.000	0.2532	-0.2532
Op-1 0915	-0.000	0.0807	-0.00	1.000	0.1340	-0.1340
Op-2 0915	0.000	0.1575	0.00	1.000	0.2615	-0.2615
Op-1 1015	-0.000	0.0807	-0.00	1.000	0.1340	-0.1340
Op-2 1015	0.000	0.1575	0.00	1.000	0.2615	-0.2615
Op-1 1210	0.040	0.0673	0.59	.5533	0.1518	-0.0717
Op-2 1210	-0.000	0.1525	-0.00	1.000	0.2532	-0.2532
Op-1 2210	-0.716	0.0736	-9.73	.0000	-0.5939	-0.8382
Op-2 2210	-0.000	0.1575	-0.00	1.000	0.2615	-0.2615

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0993	0.0704	-1.411	.1614	0.0176	-0.2162

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0401	0.1713	0.23	.8156	0.3244	-0.2443
Station 0910	0.0401	0.1686	0.24	.8127	0.3199	-0.2398
Station 0915	-0.0000	0.1770	-0.00	1.000	0.2938	-0.2938
Station 1015	-0.0000	0.1770	-0.00	1.000	0.2938	-0.2938
Station 1210	0.0401	0.1667	0.24	.8106	0.3168	-0.2367
Station 2210	-0.7160	0.1739	-4.12	.0001	-0.4274	-1.0047

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.05	1.00	0.16	-0.06
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.00	0.00	0.000	.	.	0.06	1.00	0.17	-0.06
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.00	0.00	0.000	.	.	0.05	1.00	0.16	-0.06
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	16	1.69	4.50	0.413	2.57	0.81	-1.63	5.00	-0.71	-2.54
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.05	1.00	0.053	0.16	-0.06
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 1304 - Farlowia/Pikea spp.-complex

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	2.53	0.1144
SEASON	1	102.000	2.41	0.1236
STATION	5	102.000	4.93	0.0004
PERIOD*SEASON	1	102.000	1.35	0.2479
STATION*PERIOD	5	102.000	0.19	0.9667
STATION*SEASON	5	102.000	0.46	0.8018
PERIOD*STATION*SEASON	5	102.000	0.11	0.9894

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.53	1.49	0.4754	0.3342	0.6777
STATION*PERIOD	0.94	0.00	0.1649	.	0.1033

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.6516	1.0710	-1.542	.1261
Period in FC	-0.2193	0.4837	-0.453	.6512
Period in FC-S	-0.0237	0.4944	-0.048	.9619
Period in FC-W	-0.4150	0.8314	-0.499	.6188
Period in DC-S	-0.4815	1.0546	-0.457	.6489
Period in DC-W	-2.8217	1.8643	-1.514	.1332

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-1.285	0.0838	-15.34	.0000	-1.1460	-1.4242
Period Op-2	-0.973	0.1770	-5.50	.0000	-0.6794	-1.2671
Op-1 0611	-1.908	0.1873	-10.18	.0000	-1.5967	-2.2185
Op-2 0611	-1.930	0.4382	-4.40	.0000	-1.2027	-2.6575
Op-1 0910	-1.590	0.1997	-7.96	.0000	-1.2589	-1.9219
Op-2 0910	-1.169	0.4243	-2.76	.0069	-0.4649	-1.8735
Op-1 0915	-1.727	0.2245	-7.69	.0000	-1.3541	-2.0994
Op-2 0915	-1.167	0.4382	-2.66	.0090	-0.4397	-1.8945
Op-1 1015	-0.817	0.2245	-3.64	.0004	-0.4442	-1.1896
Op-2 1015	-0.366	0.4382	-0.84	.4052	0.3611	-1.0936
Op-1 1210	-0.915	0.1873	-4.88	.0000	-0.6039	-1.2257
Op-2 1210	-0.672	0.4243	-1.58	.1163	0.0322	-1.3764
Op-1 2210	-0.754	0.2047	-3.68	.0004	-0.4144	-1.0939
Op-2 2210	-0.535	0.4382	-1.22	.2251	0.1926	-1.2622

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3118	0.1959	-1.592	.1144	0.0133	-0.6369

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0225	0.4766	0.05	.9624	0.8136	-0.7685
Station 0910	-0.4212	0.4689	-0.90	.3712	0.3572	-1.1996
Station 0915	-0.5596	0.4924	-1.14	.2584	0.2577	-1.3769
Station 1015	-0.4507	0.4924	-0.92	.3622	0.3666	-1.2680
Station 1210	-0.2427	0.4638	-0.52	.6019	0.5272	-1.0126
Station 2210	-0.2193	0.4837	-0.45	.6512	0.5835	-1.0222

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	26.00	61.50	5.150	36.82	15.18	-25.82	61.50	-14.97	-36.66
0611 Op-2	4	54.00	12.50	2.908	63.26	44.74	-53.38	14.50	-43.16	-63.59
0910 Op-1	18	12.00	35.50	2.683	17.66	6.34	-11.81	35.50	-6.13	-17.48
0910 Op-2	5	14.00	21.00	3.701	24.28	3.72	-13.40	21.50	-2.80	-24.00
0915 Op-1	14	11.86	22.00	2.105	16.40	7.31	-11.64	23.00	-7.04	-16.24
0915 Op-2	4	11.88	20.00	4.125	25.00	-1.25	-11.25	20.50	2.29	-24.79
1015 Op-1	14	1.50	6.00	0.439	2.45	0.55	-1.29	6.50	-0.35	-2.22
1015 Op-2	4	1.63	5.00	1.143	5.26	-2.01	-1.00	3.50	1.34	-3.34
1210 Op-1	19	2.18	7.00	0.446	3.12	1.25	-2.00	7.00	-1.02	-2.98
1210 Op-2	5	6.20	12.00	2.630	13.50	-1.10	-5.60	12.50	1.75	-12.95
2210 Op-1	16	1.06	5.00	0.306	1.71	0.41	-0.97	5.50	-0.27	-1.67
2210 Op-2	4	2.63	6.00	1.344	6.90	-1.65	-2.00	4.00	1.25	-5.25

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.18	2.00	0.116	0.43	-0.06
Op-2	5	0.60	2.00	0.367	1.62	-0.42

Analysis of Variance for SLC for 1300 - filamentous red algae-complex

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.16	0.0784
SEASON	1	102.000	0.07	0.7855
STATION	5	102.000	7.82	0.0000
PERIOD*SEASON	1	102.000	0.62	0.4311
STATION*PERIOD	5	102.000	1.29	0.2721
STATION*SEASON	5	102.000	0.65	0.6589
PERIOD*STATION*SEASON	5	102.000	1.06	0.3856

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.16	2.10	0.5486	0.4195	0.3072
STATION*PERIOD	6.47	1.35	0.5745	0.1950	0.1252

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.8069	0.9443	1.913	.0585
Period in FC	0.0354	0.4265	0.083	.9341
Period in FC-S	0.0707	0.4359	0.162	.8714
Period in FC-W	0.0000	0.7331	0.000	1.000
Period in DC-S	2.5906	0.9299	2.786	.0064
Period in DC-W	1.0232	1.6439	0.622	.5351

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.512	0.0739	-6.92	.0000	-0.3889	-0.6342
Period Op-2	-0.819	0.1561	-5.24	.0000	-0.5595	-1.0777
Op-1 0611	-1.140	0.1652	-6.90	.0000	-0.8662	-1.4145
Op-2 0611	-2.196	0.3864	-5.68	.0000	-1.5547	-2.8375
Op-1 0910	-0.534	0.1761	-3.03	.0031	-0.2418	-0.8264
Op-2 0910	-1.290	0.3741	-3.45	.0008	-0.6689	-1.9109
Op-1 0915	-0.683	0.1980	-3.45	.0008	-0.3541	-1.0113
Op-2 0915	-0.593	0.3864	-1.54	.1279	0.0482	-1.2345
Op-1 1015	-0.491	0.1980	-2.48	.0148	-0.1624	-0.8196
Op-2 1015	-0.609	0.3864	-1.58	.1178	0.0319	-1.2508
Op-1 1210	-0.257	0.1652	-1.55	.1231	0.0174	-0.5309
Op-2 1210	-0.223	0.3741	-0.60	.5522	0.3979	-0.8442
Op-1 2210	0.035	0.1805	0.20	.8450	0.3350	-0.2642
Op-2 2210	-0.000	0.3864	-0.00	1.000	0.6414	-0.6414

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3070	0.1727	1.778	.0784	0.5937	0.0204

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	1.0557	0.4202	2.51	.0136	1.7532	0.3582
Station 0910	0.7558	0.4135	1.83	.0705	1.4422	0.0695
Station 0915	-0.0895	0.4342	-0.21	.8370	0.6311	-0.8102
Station 1015	0.1184	0.4342	0.27	.7856	0.8391	-0.6022
Station 1210	-0.0336	0.4090	-0.08	.9347	0.6453	-0.7124
Station 2210	0.0354	0.4265	0.08	.9341	0.7433	-0.6725

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	4.13	14.00	0.947	6.12	2.14	-4.08	13.50	-2.11	-6.05
0611 Op-2	4	17.75	13.50	2.990	27.26	8.24	-17.75	13.50	-8.24	-27.26
0910 Op-1	18	1.50	7.00	0.510	2.58	0.42	-1.44	7.50	-0.36	-2.53
0910 Op-2	5	3.50	10.00	1.910	8.80	-1.80	-3.50	10.00	1.80	-8.80
0915 Op-1	14	1.00	4.50	0.359	1.78	0.22	-0.96	4.50	-0.21	-1.72
0915 Op-2	4	3.00	7.00	1.780	8.66	-2.66	-3.00	7.00	2.66	-8.66
1015 Op-1	14	0.75	6.00	0.444	1.71	-0.21	-0.71	6.00	0.25	-1.68
1015 Op-2	4	0.63	2.00	0.473	2.13	-0.88	-0.63	2.00	0.88	-2.13
1210 Op-1	19	0.39	2.50	0.201	0.82	-0.03	-0.34	3.00	0.10	-0.78
1210 Op-2	5	1.20	6.00	1.200	4.53	-2.13	-1.20	6.00	2.13	-4.53
2210 Op-1	16	0.03	0.50	0.031	0.10	-0.04	0.03	1.00	0.15	-0.09
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.05	0.50	0.036	0.13	-0.02
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0075 - Gelidium robustum

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.22	0.0757
SEASON	1	102.000	0.31	0.5780
STATION	5	102.000	28.95	0.0000
PERIOD*SEASON	1	102.000	0.06	0.8055
STATION*PERIOD	5	102.000	1.46	0.2079
STATION*SEASON	5	102.000	0.41	0.8376
PERIOD*STATION*SEASON	5	102.000	0.53	0.7513

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.22	2.16	0.5551	0.4273	0.9800
STATION*PERIOD	7.32	2.18	0.6272	0.2586	0.3285

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4060	0.3928	-1.033	.3038
Period in FC	-0.3676	0.1774	-2.072	.0408
Period in FC-S	-0.2872	0.1813	-1.584	.1163
Period in FC-W	-0.4479	0.3050	-1.469	.1450
Period in DC-S	-0.3799	0.3868	-0.982	.3284
Period in DC-W	-0.4320	0.6838	-0.632	.5289

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.240	0.0307	-7.80	.0000	-0.1886	-0.2906
Period Op-2	-0.111	0.0649	-1.70	.0913	-0.0029	-0.2185
Op-1 0611	-0.830	0.0687	-12.08	.0000	-0.7159	-0.9440
Op-2 0611	-0.806	0.1607	-5.01	.0000	-0.5390	-1.0726
Op-1 0910	-0.507	0.0733	-6.92	.0000	-0.3850	-0.6282
Op-2 0910	-0.700	0.1556	-4.50	.0000	-0.4421	-0.9587
Op-1 0915	-0.249	0.0824	-3.03	.0031	-0.1128	-0.3862
Op-2 0915	-0.189	0.1607	-1.17	.2436	0.0783	-0.4553
Op-1 1015	0.126	0.0824	1.53	.1288	0.2628	-0.0106
Op-2 1015	0.310	0.1607	1.93	.0562	0.5773	0.0437
Op-1 1210	-0.209	0.0687	-3.05	.0029	-0.0954	-0.3235
Op-2 1210	0.121	0.1556	0.78	.4393	0.3792	-0.1375
Op-1 2210	0.232	0.0751	3.09	.0026	0.3563	0.1070
Op-2 2210	0.599	0.1607	3.73	.0003	0.8660	0.3324

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1289	0.0718	-1.795	.0757	-0.0097	-0.2482

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0242	0.1748	-0.14	.8901	0.2660	-0.3144
Station 0910	0.1938	0.1720	1.13	.2625	0.4793	-0.0917
Station 0915	-0.0610	0.1806	-0.34	.7364	0.2388	-0.3608
Station 1015	-0.1844	0.1806	-1.02	.3097	0.1154	-0.4842
Station 1210	-0.3302	0.1701	-1.94	.0550	-0.0478	-0.6126
Station 2210	-0.3676	0.1774	-2.07	.0408	-0.0731	-0.6620

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	9.21	19.00	1.441	12.24	6.18	-8.53	17.50	-5.68	-11.38
0611 Op-2	4	15.25	6.50	1.534	20.13	10.37	-13.13	7.00	-8.29	-17.96
0910 Op-1	18	4.19	11.50	0.930	6.16	2.23	-3.47	11.50	-1.68	-5.26
0910 Op-2	5	11.10	6.50	1.229	14.51	7.69	-9.20	8.00	-5.16	-13.24
0915 Op-1	14	1.82	4.00	0.346	2.57	1.07	-1.04	3.00	-0.44	-1.63
0915 Op-2	4	3.00	3.50	0.791	5.52	0.48	-0.88	4.50	2.06	-3.81
1015 Op-1	14	0.43	1.00	0.103	0.65	0.21	0.36	2.00	0.67	0.05
1015 Op-2	4	0.75	1.50	0.323	1.78	-0.28	1.38	3.00	3.66	-0.91
1210 Op-1	19	1.34	5.50	0.291	1.95	0.73	-0.66	4.00	-0.13	-1.18
1210 Op-2	5	1.60	2.00	0.400	2.71	0.49	0.30	1.00	0.86	-0.26
2210 Op-1	16	0.16	0.50	0.060	0.28	0.03	0.53	2.50	0.87	0.19
2210 Op-2	4	0.25	0.50	0.144	0.71	-0.21	1.88	2.50	3.52	0.23

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.68	2.50	0.149	1.00	0.37
Op-2	5	1.90	2.00	0.400	3.01	0.79

Analysis of Variance for SLC for 0206 - Gelidium spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	7.60	0.0069
SEASON	1	102.000	0.44	0.5079
STATION	5	102.000	40.54	0.0000
PERIOD*SEASON	1	102.000	1.10	0.2975
STATION*PERIOD	5	102.000	8.02	0.0000
STATION*SEASON	5	102.000	0.47	0.8007
PERIOD*STATION*SEASON	5	102.000	1.16	0.3354

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.60	6.45	0.8628	0.8099	0.2757
STATION*PERIOD	40.09	34.31	0.9998	0.9992	0.5652

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3872	0.1280	3.024	.0032
Period in FC	-0.0000	0.0578	-0.000	1.000
Period in FC-S	0.0000	0.0591	0.000	1.000
Period in FC-W	-0.0000	0.0994	-0.000	1.000
Period in DC-S	0.5343	0.1261	4.238	.0000
Period in DC-W	0.2401	0.2229	1.077	.2839

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.040	0.0100	-4.02	.0001	-0.0237	-0.0569
Period Op-2	-0.105	0.0212	-4.95	.0000	-0.0697	-0.1400
Op-1 0611	-0.000	0.0224	-0.00	1.000	0.0372	-0.0372
Op-2 0611	-0.000	0.0524	-0.00	1.000	0.0870	-0.0870
Op-1 0910	-0.000	0.0239	-0.00	1.000	0.0396	-0.0396
Op-2 0910	-0.000	0.0507	-0.00	1.000	0.0842	-0.0842
Op-1 0915	-0.000	0.0268	-0.00	1.000	0.0446	-0.0446
Op-2 0915	-0.000	0.0524	-0.00	1.000	0.0870	-0.0870
Op-1 1015	-0.000	0.0268	-0.00	1.000	0.0446	-0.0446
Op-2 1015	-0.000	0.0524	-0.00	1.000	0.0870	-0.0870
Op-1 1210	-0.242	0.0224	-10.80	.0000	-0.2046	-0.2789
Op-2 1210	-0.629	0.0507	-12.40	.0000	-0.5447	-0.7131
Op-1 2210	-0.000	0.0245	-0.00	1.000	0.0406	-0.0406
Op-2 2210	0.000	0.0524	0.00	1.000	0.0870	-0.0870

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0645	0.0234	2.756	.0069	0.1034	0.0257

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	0.0570	0.00	1.000	0.0946	-0.0946
Station 0910	0.0000	0.0561	0.00	1.000	0.0931	-0.0931
Station 0915	0.0000	0.0589	0.00	1.000	0.0977	-0.0977
Station 1015	0.0000	0.0589	0.00	1.000	0.0977	-0.0977
Station 1210	0.3872	0.0554	6.98	.0000	0.4792	0.2952
Station 2210	-0.0000	0.0578	-0.00	1.000	0.0960	-0.0960

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.84	4.50	0.284	1.44	0.25	-0.84	4.50	-0.25	-1.44
1210 Op-2	5	3.70	5.00	0.889	6.17	1.23	-3.70	5.00	-1.23	-6.17
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	..	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0152 - Halymenia/Schizymenia spp.-complex

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	36.31	0.0000
SEASON	1	102.000	1.31	0.2545
STATION	5	102.000	2.40	0.0425
PERIOD*SEASON	1	102.000	2.08	0.1521
STATION*PERIOD	5	102.000	0.51	0.7691
STATION*SEASON	5	102.000	1.30	0.2681
PERIOD*STATION*SEASON	5	102.000	0.07	0.9960

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	36.31	34.60	1.0000	1.0000	0.1717
STATION*PERIOD	2.54	0.00	0.2868	.	0.1196

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-5.4315	0.9109	-5.963	.0000
Period in FC	-0.5910	0.4113	-1.437	.1539
Period in FC-S	-0.5364	0.4205	-1.276	.2049
Period in FC-W	-0.6455	0.7071	-0.913	.3635
Period in DC-S	-4.0440	0.8970	-4.508	.0000
Period in DC-W	-6.8191	1.5856	-4.301	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.174	0.0713	-2.45	.0162	-0.0560	-0.2926
Period Op-2	0.829	0.1506	5.51	.0000	1.0794	0.5796
Op-1 0611	-0.311	0.1593	-1.96	.0533	-0.0471	-0.5759
Op-2 0611	1.060	0.3727	2.84	.0054	1.6782	0.4410
Op-1 0910	-0.348	0.1698	-2.05	.0428	-0.0664	-0.6303
Op-2 0910	0.960	0.3609	2.66	.0091	1.5590	0.3610
Op-1 0915	0.013	0.1909	0.07	.9452	0.3301	-0.3038
Op-2 0915	0.930	0.3727	2.50	.0142	1.5486	0.3113
Op-1 1015	0.149	0.1909	0.78	.4360	0.4663	-0.1676
Op-2 1015	1.060	0.3727	2.84	.0054	1.6782	0.4410
Op-1 1210	0.035	0.1593	0.22	.8269	0.2993	-0.2295
Op-2 1210	0.960	0.3609	2.66	.0091	1.5590	0.3610
Op-1 2210	-0.583	0.1741	-3.35	.0011	-0.2942	-0.8721
Op-2 2210	0.008	0.3727	0.02	.9832	0.6265	-0.6108

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-1.0038	0.1666	-6.026	.0000	-0.7273	-1.2802

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-1.3711	0.4053	-3.38	.0010	-0.6983	-2.0439
Station 0910	-1.3084	0.3988	-3.28	.0014	-0.6463	-1.9704
Station 0915	-0.9167	0.4188	-2.19	.0309	-0.2216	-1.6119
Station 1015	-0.9103	0.4188	-2.17	.0320	-0.2151	-1.6054
Station 1210	-0.9251	0.3945	-2.35	.0210	-0.2703	-1.5798
Station 2210	-0.5910	0.4113	-1.44	.1539	0.0918	-1.2738

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.79	5.00	0.351	1.53	0.05	-0.71	6.00	0.06	-1.48
0611 Op-2	4	0.00	0.00	0.000	.	.	1.63	4.00	4.48	-1.23
0910 Op-1	18	1.33	9.50	0.598	2.60	0.07	-1.25	10.50	0.04	-2.54
0910 Op-2	5	0.00	0.00	0.000	.	.	1.30	4.00	3.43	-0.83
0915 Op-1	14	0.07	0.50	0.049	0.18	-0.03	0.04	1.50	0.25	-0.18
0915 Op-2	4	0.13	0.50	0.125	0.52	-0.27	1.50	3.50	4.02	-1.02
1015 Op-1	14	0.00	0.00	0.000	.	.	0.11	1.00	0.27	-0.06
1015 Op-2	4	0.00	0.00	0.000	.	.	1.63	4.00	4.48	-1.23
1210 Op-1	19	0.08	1.00	0.058	0.20	-0.04	0.00	2.00	0.18	-0.18
1210 Op-2	5	0.00	0.00	0.000	.	.	1.30	4.00	3.43	-0.83
2210 Op-1	16	0.69	2.50	0.232	1.18	0.19	-0.59	3.50	-0.08	-1.11
2210 Op-2	4	1.63	4.50	1.068	5.02	-1.77	0.00	4.50	2.98	-2.98

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.08	1.00	0.058	0.20	-0.04
Op-2	5	1.30	4.00	0.768	3.43	-0.83

Analysis of Variance for SLC for 0035 - Laminaria setchellii

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.49	0.4876
SEASON	1	102.000	0.00	0.9506
STATION	5	102.000	2.65	0.0270
PERIOD*SEASON	1	102.000	4.04	0.0472
STATION*PERIOD	5	102.000	0.27	0.9303
STATION*SEASON	5	102.000	0.50	0.7753
PERIOD*STATION*SEASON	5	102.000	0.22	0.9548

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.49	0.00	0.1801	.	0.1938
STATION*PERIOD	1.33	0.00	0.1940	.	0.1764

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3237	0.3331	-0.972	.3336
Period in FC	0.0690	0.1504	0.459	.6475
Period in FC-S	0.3327	0.1538	2.163	.0328
Period in FC-W	-0.1947	0.2586	-0.753	.4533
Period in DC-S	0.1470	0.3281	0.448	.6549
Period in DC-W	-0.7944	0.5799	-1.370	.1738

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.535	0.0261	20.52	.0000	0.5780	0.4915
Period Op-2	0.577	0.0551	10.48	.0000	0.6686	0.4858
Op-1 0611	0.619	0.0583	10.63	.0000	0.7161	0.5226
Op-2 0611	0.652	0.1363	4.79	.0000	0.8786	0.4261
Op-1 0910	0.624	0.0621	10.05	.0000	0.7273	0.5211
Op-2 0910	0.645	0.1320	4.88	.0000	0.8637	0.4256
Op-1 0915	0.567	0.0698	8.11	.0000	0.6825	0.4507
Op-2 0915	0.652	0.1363	4.79	.0000	0.8786	0.4261
Op-1 1015	0.398	0.0698	5.70	.0000	0.5142	0.2823
Op-2 1015	0.564	0.1363	4.14	.0001	0.7905	0.3380
Op-1 1210	0.626	0.0583	10.75	.0000	0.7228	0.5294
Op-2 1210	0.645	0.1320	4.88	.0000	0.8637	0.4256
Op-1 2210	0.374	0.0637	5.87	.0000	0.4796	0.2682
Op-2 2210	0.305	0.1363	2.24	.0275	0.5312	0.0786

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0424	0.0609	-0.697	.4876	0.0587	-0.1436

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0330	0.1482	-0.22	.8243	0.2131	-0.2790
Station 0910	-0.0204	0.1459	-0.14	.8890	0.2217	-0.2625
Station 0915	-0.0857	0.1532	-0.56	.5769	0.1685	-0.3400
Station 1015	-0.1660	0.1532	-1.08	.2809	0.0882	-0.4203
Station 1210	-0.0185	0.1443	-0.13	.8982	0.2210	-0.2580
Station 2210	0.0690	0.1504	0.46	.6475	0.3187	-0.1807

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.03	0.50	0.026	0.08	-0.03	3.87	8.00	4.97	2.77
0611 Op-2	4	0.00	0.00	0.000	.	.	3.63	5.00	7.09	0.16
0910 Op-1	18	0.00	0.00	0.000	.	.	3.94	8.00	5.11	2.78
0910 Op-2	5	0.00	0.00	0.000	.	.	3.40	5.00	5.82	0.98
0915 Op-1	14	0.00	0.00	0.000	.	.	3.39	8.00	4.66	2.12
0915 Op-2	4	0.00	0.00	0.000	.	.	3.63	5.00	7.09	0.16
1015 Op-1	14	0.46	1.50	0.143	0.77	0.15	2.93	7.50	4.17	1.68
1015 Op-2	4	0.13	0.50	0.125	0.52	-0.27	3.50	5.00	6.94	0.06
1210 Op-1	19	0.00	0.00	0.000	.	.	3.89	8.00	4.99	2.79
1210 Op-2	5	0.00	0.00	0.000	.	.	3.40	5.00	5.82	0.98
2210 Op-1	16	1.06	3.50	0.299	1.70	0.43	2.91	8.50	4.19	1.62
2210 Op-2	4	2.25	4.50	1.090	5.72	-1.22	1.38	4.00	4.00	-1.25

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	3.89	8.00	0.524	4.99	2.79
Op-2	5	3.40	5.00	0.872	5.82	0.98

Analysis of Variance for SLC for 0038 - Macrocystis spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	25.19	0.0000
SEASON	1	102.000	2.63	0.1080
STATION	5	102.000	8.93	0.0000
PERIOD*SEASON	1	102.000	1.74	0.1896
STATION*PERIOD	5	102.000	2.13	0.0677
STATION*SEASON	5	102.000	0.34	0.8888
PERIOD*STATION*SEASON	5	102.000	0.24	0.9439

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	25.19	23.69	0.9996	0.9993	0.3177
STATION*PERIOD	10.65	5.44	0.7896	0.5052	0.1862

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.1002	0.3814	5.507	.0000
Period in FC	-0.0000	0.1722	-0.000	1.000
Period in FC-S	0.0000	0.1760	0.000	1.000
Period in FC-W	-0.0000	0.2961	-0.000	1.000
Period in DC-S	2.6529	0.3756	7.064	.0000
Period in DC-W	1.5476	0.6639	2.331	.0217

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.153	0.0298	-5.12	.0000	-0.1033	-0.2023
Period Op-2	-0.503	0.0630	-7.98	.0000	-0.3982	-0.6075
Op-1 0611	0.000	0.0667	0.00	1.000	0.1107	-0.1107
Op-2 0611	-0.100	0.1561	-0.64	.5217	0.1587	-0.3594
Op-1 0910	-0.024	0.0711	-0.34	.7324	0.0937	-0.1424
Op-2 0910	-0.584	0.1511	-3.87	.0002	-0.3336	-0.8353
Op-1 0915	-0.268	0.0800	-3.35	.0011	-0.1353	-0.4007
Op-2 0915	-0.666	0.1561	-4.27	.0000	-0.4071	-0.9251
Op-1 1015	-0.306	0.0800	-3.83	.0002	-0.1737	-0.4391
Op-2 1015	-0.937	0.1561	-6.01	.0000	-0.6782	-1.1963
Op-1 1210	-0.318	0.0667	-4.77	.0000	-0.2072	-0.4286
Op-2 1210	-0.729	0.1511	-4.82	.0000	-0.4780	-0.9796
Op-1 2210	0.000	0.0729	0.00	1.000	0.1210	-0.1210
Op-2 2210	0.000	0.1561	0.00	1.000	0.2590	-0.2590

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3500	0.0697	5.019	.0000	0.4658	0.2343

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1003	0.1697	0.59	.5556	0.3820	-0.1814
Station 0910	0.5601	0.1670	3.35	.0011	0.8373	0.2829
Station 0915	0.3981	0.1753	2.27	.0253	0.6891	0.1070
Station 1015	0.6308	0.1753	3.60	.0005	0.9219	0.3398
Station 1210	0.4109	0.1652	2.49	.0145	0.6851	0.1368
Station 2210	-0.0000	0.1722	-0.00	1.000	0.2859	-0.2859

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.75	3.00	0.750	3.14	-1.64	-0.75	3.00	1.64	-3.14
0910 Op-1	18	0.06	0.50	0.038	0.14	-0.02	-0.06	0.50	0.02	-0.14
0910 Op-2	5	3.60	3.50	0.579	5.21	1.99	-3.60	3.50	-1.99	-5.21
0915 Op-1	14	1.82	9.50	0.753	3.45	0.19	-1.82	9.50	-0.19	-3.45
0915 Op-2	4	5.63	13.50	3.023	15.25	-4.00	-5.63	13.50	4.00	-15.25
1015 Op-1	14	1.93	10.00	0.805	3.67	0.19	-1.93	10.00	-0.19	-3.67
1015 Op-2	4	9.63	11.00	2.617	17.95	1.30	-9.63	11.00	-1.30	-17.95
1210 Op-1	19	2.37	13.50	0.878	4.21	0.52	-2.37	13.50	-0.52	-4.21
1210 Op-2	5	8.70	19.00	3.382	18.09	-0.69	-8.70	19.00	0.69	-18.09
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0147 - Mazzaella lilacina

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	48.77	0.0000
SEASON	1	102.000	5.48	0.0211
STATION	5	102.000	4.32	0.0013
PERIOD*SEASON	1	102.000	6.39	0.0130
STATION*PERIOD	5	102.000	1.67	0.1497
STATION*SEASON	5	102.000	0.60	0.7021
PERIOD*STATION*SEASON	5	102.000	1.03	0.4050

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	48.77	46.81	1.0000	1.0000	0.6410
STATION*PERIOD	8.33	3.16	0.6834	0.3351	0.7445

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-31.3042	6.0048	-5.213	.0000
Period in FC	-14.7076	2.7118	-5.424	.0000
Period in FC-S	-23.0152	2.7718	-8.303	.0000
Period in FC-W	-6.4000	4.6617	-1.373	.1728
Period in DC-S	-39.6500	5.9132	-6.705	.0000
Period in DC-W	-22.9583	10.4529	-2.196	.0303

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-1.078	0.4698	-2.30	.0238	-0.2985	-1.8582
Period Op-2	6.590	0.9925	6.64	.0000	8.2378	4.9427
Op-1 0611	1.385	1.0502	1.32	.1903	3.1278	-0.3586
Op-2 0611	7.167	2.4570	2.92	.0043	11.2450	3.0883
Op-1 0910	0.846	1.1197	0.76	.4516	2.7048	-1.0125
Op-2 0910	6.813	2.3789	2.86	.0051	10.7614	2.8636
Op-1 0915	1.450	1.2588	1.15	.2521	3.5395	-0.6395
Op-2 0915	7.167	2.4570	2.92	.0043	11.2450	3.0883
Op-1 1015	0.537	1.2588	0.43	.6703	2.6270	-1.5520
Op-2 1015	7.167	2.4570	2.92	.0043	11.2450	3.0883
Op-1 1210	-0.397	1.0502	-0.38	.7059	1.3458	-2.1406
Op-2 1210	6.812	2.3789	2.86	.0051	10.7614	2.8636
Op-1 2210	-10.291	1.1476	-8.97	.0000	-8.3859	-12.1959
Op-2 2210	4.417	2.4570	1.80	.0752	8.4950	0.3383

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-7.6686	1.0981	-6.983	.0000	-5.8458	-9.4914

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-5.7821	2.6720	-2.16	.0328	-1.3468	-10.2173
Station 0910	-5.9663	2.6293	-2.27	.0254	-1.6019	-10.3308
Station 0915	-5.7167	2.7607	-2.07	.0409	-1.1342	-10.2992
Station 1015	-6.6292	2.7607	-2.40	.0181	-2.0467	-11.2117
Station 1210	-7.2099	2.6004	-2.77	.0066	-2.8934	-11.5264
Station 2210	-14.7076	2.7118	-5.42	.0000	-10.2062	-19.2089

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.24	4.00	0.211	0.68	-0.21	1.89	7.00	2.94	0.85
0611 Op-2	4	0.00	0.00	0.000	.	.	8.50	11.50	16.64	0.36
0910 Op-1	18	1.03	9.00	0.602	2.30	-0.24	1.22	10.00	2.56	-0.12
0910 Op-2	5	0.00	0.00	0.000	.	.	8.20	11.50	13.76	2.64
0915 Op-1	14	0.43	5.00	0.359	1.20	-0.35	2.07	7.00	3.43	0.71
0915 Op-2	4	0.00	0.00	0.000	.	.	8.50	11.50	16.64	0.36
1015 Op-1	14	1.68	5.00	0.459	2.67	0.69	0.82	7.50	2.12	-0.48
1015 Op-2	4	0.00	0.00	0.000	.	.	8.50	11.50	16.64	0.36
1210 Op-1	19	2.55	21.50	1.249	5.18	-0.07	-0.42	22.50	2.07	-2.91
1210 Op-2	5	0.00	0.00	0.000	.	.	8.20	11.50	13.76	2.64
2210 Op-1	16	14.13	30.50	2.192	18.80	9.45	-12.13	26.50	-7.62	-16.63
2210 Op-2	4	2.38	2.00	0.427	3.73	1.02	6.13	12.50	14.53	-2.28

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	2.13	7.00	0.542	3.27	0.99
Op-2	5	8.20	11.50	2.004	13.76	2.64

Analysis of Variance for SLC for 0095 - Microcladia coulteri

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	13.61	0.0004
SEASON	1	102.000	1.27	0.2619
STATION	5	102.000	0.93	0.4619
PERIOD*SEASON	1	102.000	1.01	0.3176
STATION*PERIOD	5	102.000	0.20	0.9601
STATION*SEASON	5	102.000	0.15	0.9798
PERIOD*STATION*SEASON	5	102.000	0.15	0.9785

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	13.61	12.35	0.9783	0.9675	0.1632
STATION*PERIOD	1.02	0.00	0.1709	.	0.1181

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.4163	0.6562	-3.683	.0004
Period in FC	-0.2400	0.2963	-0.810	.4198
Period in FC-S	-0.5211	0.3029	-1.721	.0884
Period in FC-W	0.0411	0.5094	0.081	.9358
Period in DC-S	-2.8583	0.6461	-4.424	.0000
Period in DC-W	-1.9743	1.1422	-1.728	.0869

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.062	0.0513	1.21	.2299	0.1472	-0.0232
Period Op-2	0.505	0.1085	4.65	.0000	0.6848	0.3247
Op-1 0611	0.165	0.1148	1.44	.1542	0.3552	-0.0257
Op-2 0611	0.591	0.2685	2.20	.0300	1.0365	0.1452
Op-1 0910	-0.076	0.1224	-0.62	.5340	0.1267	-0.2795
Op-2 0910	0.562	0.2600	2.16	.0328	0.9939	0.1309
Op-1 0915	0.071	0.1376	0.51	.6088	0.2989	-0.1577
Op-2 0915	0.591	0.2685	2.20	.0300	1.0365	0.1452
Op-1 1015	0.179	0.1376	1.30	.1961	0.4073	-0.0493
Op-2 1015	0.591	0.2685	2.20	.0300	1.0365	0.1452
Op-1 1210	0.143	0.1148	1.25	.2148	0.3337	-0.0472
Op-2 1210	0.562	0.2600	2.16	.0328	0.9939	0.1309
Op-1 2210	-0.109	0.1254	-0.87	.3859	0.0990	-0.3174
Op-2 2210	0.131	0.2685	0.49	.6271	0.5765	-0.3148

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4427	0.1200	-3.690	.0004	-0.2435	-0.6419

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.4261	0.2920	-1.46	.1475	0.0585	-0.9108
Station 0910	-0.6388	0.2873	-2.22	.0284	-0.1619	-1.1157
Station 0915	-0.5203	0.3017	-1.72	.0876	-0.0195	-1.0210
Station 1015	-0.4119	0.3017	-1.37	.1751	0.0889	-0.9126
Station 1210	-0.4192	0.2842	-1.48	.1432	0.0525	-0.8909
Station 2210	-0.2400	0.2963	-0.81	.4198	0.2519	-0.7319

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.53	9.00	0.474	1.52	-0.47	0.11	11.50	1.20	-0.99
0611 Op-2	4	0.00	0.00	0.000	.	.	2.38	5.50	6.35	-1.60
0910 Op-1	18	3.56	22.00	1.685	7.11	0.00	-2.89	25.00	0.73	-6.50
0910 Op-2	5	0.00	0.00	0.000	.	.	2.10	5.50	4.89	-0.69
0915 Op-1	14	0.50	6.00	0.426	1.42	-0.42	0.07	8.00	1.07	-0.93
0915 Op-2	4	0.00	0.00	0.000	.	.	2.38	5.50	6.35	-1.60
1015 Op-1	14	0.00	0.00	0.000	.	.	0.57	3.00	1.09	0.05
1015 Op-2	4	0.00	0.00	0.000	.	.	2.38	5.50	6.35	-1.60
1210 Op-1	19	0.63	11.00	0.577	1.84	-0.58	0.00	13.50	1.28	-1.28
1210 Op-2	5	0.00	0.00	0.000	.	.	2.10	5.50	4.89	-0.69
2210 Op-1	16	1.75	8.00	0.658	3.15	0.35	-1.03	11.00	0.55	-2.62
2210 Op-2	4	0.88	1.50	0.315	1.88	-0.13	1.50	5.50	5.34	-2.34

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.63	3.00	0.187	1.02	0.24
Op-2	5	2.10	5.50	1.005	4.89	-0.69

Analysis of Variance for SLC for 0041 - Nereocystis luetkeana

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	6.94	0.0097
SEASON	1	102.000	29.02	0.0000
STATION	5	102.000	2.57	0.0311
PERIOD*SEASON	1	102.000	18.57	0.0000
STATION*PERIOD	5	102.000	3.05	0.0133
STATION*SEASON	5	102.000	0.03	0.9995
PERIOD*STATION*SEASON	5	102.000	0.03	0.9996

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.94	5.81	0.8346	0.7731	0.1000
STATION*PERIOD	15.23	9.93	0.9149	0.7601	0.1000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.6991	0.4235	-4.012	.0001
Period in FC	0.4746	0.1913	2.482	.0147
Period in FC-S	0.1711	0.1955	0.875	.3834
Period in FC-W	0.7782	0.3288	2.367	.0198
Period in DC-S	-3.3982	0.4170	-8.148	.0000
Period in DC-W	-0.0000	0.7372	-0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.042	0.0331	1.26	.2109	0.0967	-0.0133
Period Op-2	0.246	0.0700	3.51	.0007	0.3620	0.1296
Op-1 0611	0.060	0.0741	0.81	.4209	0.1828	-0.0631
Op-2 0611	0.374	0.1733	2.16	.0331	0.6619	0.0866
Op-1 0910	0.060	0.0790	0.76	.4502	0.1909	-0.0712
Op-2 0910	0.378	0.1678	2.25	.0264	0.6565	0.0995
Op-1 0915	-0.000	0.0888	-0.00	1.000	0.1474	-0.1474
Op-2 0915	0.374	0.1733	2.16	.0331	0.6619	0.0866
Op-1 1015	-0.000	0.0888	-0.00	1.000	0.1474	-0.1474
Op-2 1015	0.374	0.1733	2.16	.0331	0.6619	0.0866
Op-1 1210	0.060	0.0741	0.81	.4209	0.1828	-0.0631
Op-2 1210	0.378	0.1678	2.25	.0264	0.6565	0.0995
Op-1 2210	0.071	0.0809	0.87	.3842	0.2051	-0.0636
Op-2 2210	-0.404	0.1733	-2.33	.0217	-0.1163	-0.6915

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2041	0.0774	-2.635	.0097	-0.0755	-0.3326

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.3144	0.1884	-1.67	.0983	-0.0016	-0.6272
Station 0910	-0.3181	0.1854	-1.72	.0893	-0.0103	-0.6259
Station 0915	-0.3743	0.1947	-1.92	.0574	-0.0511	-0.6974
Station 1015	-0.3743	0.1947	-1.92	.0574	-0.0511	-0.6974
Station 1210	-0.3181	0.1834	-1.73	.0859	-0.0137	-0.6225
Station 2210	0.4746	0.1913	2.48	.0147	0.7921	0.1572

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.05	0.50	0.13	-0.02
0611 Op-2	4	0.00	0.00	0.000	.	.	0.63	1.50	1.82	-0.57
0910 Op-1	18	0.00	0.00	0.000	.	.	0.06	0.50	0.14	-0.02
0910 Op-2	5	0.00	0.00	0.000	.	.	0.60	1.50	1.41	-0.21
0915 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.63	1.50	1.82	-0.57
1015 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.63	1.50	1.82	-0.57
1210 Op-1	19	0.00	0.00	0.000	.	.	0.05	0.50	0.13	-0.02
1210 Op-2	5	0.00	0.00	0.000	.	.	0.60	1.50	1.41	-0.21
2210 Op-1	16	0.00	0.00	0.000	.	.	0.06	0.50	0.15	-0.03
2210 Op-2	4	0.50	0.00	0.000	.	.	0.13	1.50	1.32	-1.07

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.05	0.50	0.036	0.13	-0.02
Op-2	5	0.60	1.50	0.292	1.41	-0.21

Analysis of Variance for SLC for 1154 - Nienburgia andersoniana

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.77	0.0550
SEASON	1	102.000	0.02	0.8936
STATION	5	102.000	6.51	0.0000
PERIOD*SEASON	1	102.000	0.10	0.7522
STATION*PERIOD	5	102.000	1.70	0.1410
STATION*SEASON	5	102.000	0.37	0.8693
PERIOD*STATION*SEASON	5	102.000	0.18	0.9711

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.77	2.69	0.6116	0.4946	0.2051
STATION*PERIOD	8.51	3.34	0.6928	0.3487	0.1214

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.9918	0.9353	2.130	.0356
Period in FC	-0.0000	0.4224	-0.000	1.000
Period in FC-S	-0.0000	0.4318	-0.000	1.000
Period in FC-W	-0.0000	0.7261	-0.000	1.000
Period in DC-S	1.6669	0.9211	1.810	.0733
Period in DC-W	2.3168	1.6282	1.423	.1578

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.411	0.0732	-5.61	.0000	-0.2891	-0.5320
Period Op-2	-0.743	0.1546	-4.80	.0000	-0.4859	-0.9992
Op-1 0611	-0.112	0.1636	-0.68	.4959	0.1597	-0.3833
Op-2 0611	-0.249	0.3827	-0.65	.5175	0.3867	-0.8838
Op-1 0910	-0.847	0.1744	-4.86	.0000	-0.5574	-1.1365
Op-2 0910	-1.472	0.3706	-3.97	.0001	-0.8568	-2.0870
Op-1 0915	-0.690	0.1961	-3.52	.0006	-0.3649	-1.0158
Op-2 0915	-0.963	0.3827	-2.52	.0134	-0.3278	-1.5983
Op-1 1015	-0.287	0.1961	-1.47	.1460	0.0382	-0.6127
Op-2 1015	-0.000	0.3827	-0.00	1.000	0.6353	-0.6353
Op-1 1210	-0.527	0.1636	-3.22	.0017	-0.2555	-0.7985
Op-2 1210	-1.772	0.3706	-4.78	.0000	-1.1566	-2.3868
Op-1 2210	0.000	0.1788	0.00	1.000	0.2967	-0.2967
Op-2 2210	0.000	0.3827	0.00	1.000	0.6353	-0.6353

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3320	0.1710	1.941	.0550	0.6159	0.0480

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1368	0.4162	0.33	.7431	0.8276	-0.5541
Station 0910	0.6249	0.4096	1.53	.1301	1.3048	-0.0549
Station 0915	0.2727	0.4300	0.63	.5274	0.9865	-0.4411
Station 1015	-0.2873	0.4300	-0.67	.5056	0.4265	-1.0011
Station 1210	1.2447	0.4051	3.07	.0027	1.9170	0.5723
Station 2210	-0.0000	0.4224	-0.00	1.000	0.7012	-0.7012

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.29	3.00	0.200	0.71	-0.13	-0.29	3.00	0.13	-0.71
0611 Op-2	4	0.75	3.00	0.750	3.14	-1.64	-0.75	3.00	1.64	-3.14
0910 Op-1	18	2.83	13.00	1.008	4.96	0.71	-2.83	13.00	-0.71	-4.96
0910 Op-2	5	3.00	5.00	0.975	5.71	0.29	-3.00	5.00	-0.29	-5.71
0915 Op-1	14	1.50	7.00	0.618	2.84	0.16	-1.50	7.00	-0.16	-2.84
0915 Op-2	4	1.50	4.00	0.866	4.26	-1.26	-1.50	4.00	1.26	-4.26
1015 Op-1	14	0.32	2.00	0.162	0.67	-0.03	-0.32	2.00	0.03	-0.67
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	1.76	10.50	0.681	3.19	0.33	-1.76	10.50	-0.33	-3.19
1210 Op-2	5	9.90	21.00	3.462	19.51	0.29	-9.90	21.00	-0.29	-19.51
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0059 - non-coralline crust

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.00	0.3195
SEASON	1	102.000	5.04	0.0270
STATION	5	102.000	2.49	0.0357
PERIOD*SEASON	1	102.000	1.49	0.2248
STATION*PERIOD	5	102.000	1.01	0.4156
STATION*SEASON	5	102.000	0.13	0.9855
PERIOD*STATION*SEASON	5	102.000	0.14	0.9827

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.00	0.00	0.2616	.	0.8723
STATION*PERIOD	5.05	0.00	0.4774	.	0.1750

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.4708	0.4925	0.956	.3413
Period in FC	0.0697	0.2224	0.313	.7547
Period in FC-S	0.1991	0.2273	0.876	.3831
Period in FC-W	-0.0597	0.3823	-0.156	.8761
Period in DC-S	1.0013	0.4849	2.065	.0415
Period in DC-W	-0.0596	0.8572	-0.070	.9447

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.128	0.0385	-3.34	.0012	-0.0645	-0.1925
Period Op-2	-0.219	0.0814	-2.69	.0085	-0.0835	-0.3537
Op-1 0611	0.123	0.0861	1.43	.1556	0.2662	-0.0197
Op-2 0611	-0.245	0.2015	-1.22	.2267	0.0894	-0.5795
Op-1 0910	-0.457	0.0918	-4.97	.0000	-0.3044	-0.6093
Op-2 0910	-0.449	0.1951	-2.30	.0235	-0.1249	-0.7726
Op-1 0915	0.040	0.1032	0.38	.7020	0.2110	-0.1318
Op-2 0915	0.055	0.2015	0.27	.7860	0.3893	-0.2796
Op-1 1015	0.053	0.1032	0.51	.6094	0.2243	-0.1185
Op-2 1015	-0.276	0.2015	-1.37	.1731	0.0580	-0.6109
Op-1 1210	-0.315	0.0861	-3.65	.0004	-0.1716	-0.4576
Op-2 1210	-0.111	0.1951	-0.57	.5700	0.2127	-0.4350
Op-1 2210	-0.215	0.0941	-2.29	.0242	-0.0591	-0.3715
Op-2 2210	-0.285	0.2015	-1.41	.1603	0.0495	-0.6194

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0901	0.0901	1.000	.3195	0.2396	-0.0594

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.3683	0.2191	1.68	.0959	0.7320	0.0045
Station 0910	-0.0081	0.2156	-0.04	.9700	0.3498	-0.3661
Station 0915	-0.0152	0.2264	-0.07	.9465	0.3606	-0.3910
Station 1015	0.3293	0.2264	1.45	.1488	0.7052	-0.0465
Station 1210	-0.2034	0.2133	-0.95	.3424	0.1506	-0.5574
Station 2210	0.0697	0.2224	0.31	.7547	0.4388	-0.2995

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	1.37	7.50	0.510	2.44	0.30	0.32	9.00	1.63	-1.00
0611 Op-2	4	1.50	2.50	0.540	3.22	-0.22	-1.25	2.50	0.41	-2.91
0910 Op-1	18	6.56	14.50	0.888	8.43	4.68	-4.94	11.00	-3.27	-6.62
0910 Op-2	5	3.20	4.00	0.663	5.04	1.36	-2.90	4.00	-1.02	-4.78
0915 Op-1	14	0.93	3.50	0.261	1.49	0.36	0.32	4.00	0.91	-0.26
0915 Op-2	4	0.50	1.50	0.354	1.63	-0.63	-0.25	2.50	1.41	-1.91
1015 Op-1	14	0.93	2.50	0.215	1.39	0.46	0.32	7.00	1.35	-0.71
1015 Op-2	4	2.00	4.50	1.061	5.38	-1.38	-1.75	4.50	1.72	-5.22
1210 Op-1	19	5.21	10.50	0.829	6.95	3.47	-3.53	13.50	-1.62	-5.43
1210 Op-2	5	1.40	2.00	0.458	2.67	0.13	-1.10	3.00	0.38	-2.58
2210 Op-1	16	3.44	9.00	0.698	4.93	1.95	-1.91	8.50	-0.36	-3.46
2210 Op-2	4	1.88	1.00	0.239	2.64	1.11	-1.63	2.00	-0.27	-2.98

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	1.68	4.50	0.355	2.43	0.94
Op-2	5	0.30	1.00	0.200	0.86	-0.26

Analysis of Variance for SLC for 0184 - Osmundea spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.59	0.0611
SEASON	1	102.000	0.60	0.4411
STATION	5	102.000	1.73	0.1340
PERIOD*SEASON	1	102.000	0.14	0.7084
STATION*PERIOD	5	102.000	1.21	0.3090
STATION*SEASON	5	102.000	0.17	0.9746
PERIOD*STATION*SEASON	5	102.000	0.25	0.9374

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.59	2.52	0.5936	0.4730	0.3218
STATION*PERIOD	6.06	0.94	0.5474	0.1651	0.1099

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.3003	1.1536	-1.994	.0488
Period in PC	-0.0965	0.5209	-0.185	.8534
Period in FC-S	-0.1148	0.5325	-0.216	.8298
Period in FC-W	-0.0782	0.8956	-0.087	.9306
Period in DC-S	-1.8073	1.1360	-1.591	.1147
Period in DC-W	-2.7933	2.0081	-1.391	.1672

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.468	0.0903	5.18	.0000	0.6176	0.3179
Period Op-2	0.867	0.1907	4.55	.0000	1.1837	0.5507
Op-1 0611	0.991	0.2017	4.91	.0000	1.3258	0.6561
Op-2 0611	1.274	0.4720	2.70	.0082	2.0572	0.4902
Op-1 0910	0.030	0.2151	0.14	.8882	0.3874	-0.3267
Op-2 0910	0.325	0.4570	0.71	.4788	1.0835	-0.4337
Op-1 0915	0.583	0.2418	2.41	.0176	0.9849	0.1821
Op-2 0915	0.236	0.4720	0.50	.6179	1.0196	-0.5473
Op-1 1015	0.483	0.2418	2.00	.0485	0.8842	0.0814
Op-2 1015	1.274	0.4720	2.70	.0082	2.0572	0.4902
Op-1 1210	0.061	0.2017	0.30	.7645	0.3955	-0.2743
Op-2 1210	1.340	0.4570	2.93	.0042	2.0986	0.5814
Op-1 2210	0.658	0.2205	2.99	.0035	1.0244	0.2925
Op-2 2210	0.755	0.4720	1.60	.1128	1.5384	-0.0286

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3995	0.2110	-1.894	.0611	-0.0493	-0.7496

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.2828	0.5133	-0.55	.5829	0.5693	-1.1348
Station 0910	-0.2945	0.5051	-0.58	.5611	0.5439	-1.1330
Station 0915	0.3473	0.5303	0.65	.5140	1.2276	-0.5330
Station 1015	-0.7909	0.5303	-1.49	.1390	0.0894	-1.6712
Station 1210	-1.2794	0.4996	-2.56	.0119	-0.4502	-2.1086
Station 2210	-0.0965	0.5209	-0.19	.8534	0.7682	-0.9612

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.61	5.00	0.280	1.19	0.02	2.53	7.00	3.48	1.57
0611 Op-2	4	0.00	0.00	0.000	.	.	1.75	2.00	3.27	0.23
0910 Op-1	18	6.94	31.00	2.039	11.25	2.64	-3.86	33.50	0.51	-8.23
0910 Op-2	5	1.60	5.50	1.005	4.39	-1.19	0.70	3.00	2.06	-0.66
0915 Op-1	14	2.54	10.50	1.016	4.73	0.34	0.43	15.50	3.03	-2.18
0915 Op-2	4	1.13	3.50	0.800	3.67	-1.42	0.63	3.00	2.61	-1.36
1015 Op-1	14	1.21	4.00	0.381	2.04	0.39	1.75	8.00	2.90	0.60
1015 Op-2	4	0.00	0.00	0.000	.	.	1.75	2.00	3.27	0.23
1210 Op-1	19	5.95	20.50	1.546	9.20	2.70	-2.82	24.50	0.60	-6.23
1210 Op-2	5	0.00	0.00	0.000	.	.	2.30	4.00	4.14	0.46
2210 Op-1	16	0.75	1.50	0.171	1.11	0.39	2.31	7.50	3.41	1.22
2210 Op-2	4	0.25	0.50	0.144	0.71	-0.21	1.50	1.50	2.63	0.37

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	3.13	6.50	0.393	3.96	2.31
Op-2	5	2.30	4.00	0.663	4.14	0.46

Analysis of Variance for SLC for 0135 - Phyllospadix spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	0	102.000	.	.
SEASON	0	102.000	.	.
STATION	0	102.000	.	.
PERIOD*SEASON	0	102.000	.	.
STATION*PERIOD	0	102.000	.	.
STATION*SEASON	0	102.000	.	.
PERIOD*STATION*SEASON	0	102.000	.	.

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	.	0.00	.	.	.
STATION*PERIOD	.	0.00	.	.	.

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0000	.	.	.
Period in FC	0.0000	.	.	.
Period in FC-S	0.0000	.	.	.
Period in FC-W	0.0000	.	.	.
Period in DC-S	0.0000	.	.	.
Period in DC-W	0.0000	.	.	.

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.000	.	.	.	.	.
Period Op-2	0.000	.	.	.	.	.
Op-1 0611	0.000	.	.	.	.	.
Op-2 0611	0.000	.	.	.	.	.
Op-1 0910	0.000	.	.	.	.	.
Op-2 0910	0.000	.	.	.	.	.
Op-1 0915	0.000	.	.	.	.	.
Op-2 0915	0.000	.	.	.	.	.
Op-1 1015	0.000	.	.	.	.	.
Op-2 1015	0.000	.	.	.	.	.
Op-1 1210	0.000	.	.	.	.	.
Op-2 1210	0.000	.	.	.	.	.
Op-1 2210	0.000	.	.	.	.	.
Op-2 2210	0.000	.	.	.	.	.

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0000	.	.	.	.	.

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	.	.	.	.	.
Station 0910	0.0000	.	.	.	.	.
Station 0915	0.0000	.	.	.	.	.
Station 1015	0.0000	.	.	.	.	.
Station 1210	0.0000	.	.	.	.	.
Station 2210	0.0000	.	.	.	.	.

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0118 - Polyneura latissima

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	37.84	0.0000
SEASON	1	102.000	22.03	0.0000
STATION	5	102.000	0.08	0.9949
PERIOD*SEASON	1	102.000	13.45	0.0004
STATION*PERIOD	5	102.000	0.05	0.9985
STATION*SEASON	5	102.000	0.04	0.9988
PERIOD*STATION*SEASON	5	102.000	0.04	0.9993

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	37.84	36.10	1.0000	1.0000	0.1017
STATION*PERIOD	0.25	0.00	0.1163	.	0.1009

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-3.5730	0.6542	-5.461	.0000
Period in FC	-0.8429	0.2955	-2.853	.0052
Period in FC-S	-0.3704	0.3020	-1.226	.2229
Period in FC-W	-1.3155	0.5079	-2.590	.0110
Period in DC-S	-1.4128	0.6442	-2.193	.0306
Period in DC-W	-5.7332	1.1389	-5.034	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.320	0.0512	6.25	.0000	0.4051	0.2352
Period Op-2	1.056	0.1081	9.77	.0000	1.2356	0.8766
Op-1 0611	0.295	0.1144	2.58	.0113	0.4850	0.1051
Op-2 0611	1.081	0.2677	4.04	.0001	1.5258	0.6371
Op-1 0910	0.298	0.1220	2.44	.0162	0.5006	0.0956
Op-2 0910	1.006	0.2592	3.88	.0002	1.4358	0.5754
Op-1 0915	0.417	0.1371	3.04	.0030	0.6442	0.1889
Op-2 0915	1.081	0.2677	4.04	.0001	1.5258	0.6371
Op-1 1015	0.378	0.1371	2.75	.0070	0.6053	0.1500
Op-2 1015	1.081	0.2677	4.04	.0001	1.5258	0.6371
Op-1 1210	0.295	0.1144	2.58	.0113	0.4850	0.1051
Op-2 1210	1.006	0.2592	3.88	.0002	1.4358	0.5754
Op-1 2210	0.238	0.1250	1.91	.0593	0.4460	0.0309
Op-2 2210	1.081	0.2677	4.04	.0001	1.5258	0.6371

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.7360	0.1196	-6.152	.0000	-0.5374	-0.9346

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.7864	0.2911	-2.70	.0081	-0.3031	-1.2696
Station 0910	-0.7075	0.2865	-2.47	.0152	-0.2319	-1.1830
Station 0915	-0.6648	0.3008	-2.21	.0293	-0.1656	-1.1641
Station 1015	-0.7037	0.3008	-2.34	.0212	-0.2045	-1.2030
Station 1210	-0.7106	0.2833	-2.51	.0137	-0.2403	-1.1809
Station 2210	-0.8429	0.2955	-2.85	.0052	-0.3525	-1.3333

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.24	1.50	0.44	0.03
0611 Op-2	4	0.00	0.00	0.000	.	.	1.25	3.50	3.72	-1.22
0910 Op-1	18	0.03	0.50	0.028	0.09	-0.03	0.22	1.50	0.42	0.03
0910 Op-2	5	0.00	0.00	0.000	.	.	1.00	3.50	2.81	-0.81
0915 Op-1	14	0.00	0.00	0.000	.	.	0.32	1.50	0.59	0.05
0915 Op-2	4	0.00	0.00	0.000	.	.	1.25	3.50	3.72	-1.22
1015 Op-1	14	0.04	0.50	0.036	0.11	-0.04	0.29	1.50	0.56	0.02
1015 Op-2	4	0.00	0.00	0.000	.	.	1.25	3.50	3.72	-1.22
1210 Op-1	19	0.00	0.00	0.000	.	.	0.24	1.50	0.44	0.03
1210 Op-2	5	0.00	0.00	0.000	.	.	1.00	3.50	2.81	-0.81
2210 Op-1	16	0.03	0.50	0.031	0.10	-0.04	0.22	1.50	0.46	-0.02
2210 Op-2	4	0.00	0.00	0.000	.	.	1.25	3.50	3.72	-1.22

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.24	1.50	0.096	0.44	0.03
Op-2	5	1.00	3.50	0.652	2.81	-0.81

Analysis of Variance for SLC for 0220 - Prionitis australis

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	2.39	0.1249
SEASON	1	102.000	1.17	0.2816
STATION	5	102.000	1.50	0.1970
PERIOD*SEASON	1	102.000	0.01	0.9370
STATION*PERIOD	5	102.000	0.53	0.7517
STATION*SEASON	5	102.000	1.53	0.1863
PERIOD*STATION*SEASON	5	102.000	0.14	0.9833

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.39	1.35	0.4578	0.3139	0.6857
STATION*PERIOD	2.66	0.00	0.2958	.	0.3054

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.7192	0.9806	-1.753	.0826
Period in FC	0.0545	0.4428	0.123	.9022
Period in FC-S	-0.0909	0.4526	-0.201	.8412
Period in FC-W	0.2000	0.7613	0.263	.7933
Period in DC-S	-1.4885	0.9656	-1.541	.1263
Period in DC-W	-1.9500	1.7070	-1.142	.2560

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.465	0.0767	-6.06	.0000	-0.3376	-0.5923
Period Op-2	-0.187	0.1621	-1.16	.2500	0.0815	-0.4565
Op-1 0611	-0.000	0.1715	-0.00	1.000	0.2847	-0.2847
Op-2 0611	0.000	0.4012	0.00	1.000	0.6660	-0.6660
Op-1 0910	-0.312	0.1828	-1.70	.0915	-0.0080	-0.6151
Op-2 0910	-0.188	0.3885	-0.48	.6304	0.4573	-0.8323
Op-1 0915	-1.150	0.2056	-5.59	.0000	-0.8088	-1.4912
Op-2 0915	-0.500	0.4012	-1.25	.2155	0.1660	-1.1660
Op-1 1015	-0.700	0.2056	-3.41	.0009	-0.3588	-1.0412
Op-2 1015	0.000	0.4012	0.00	1.000	0.6660	-0.6660
Op-1 1210	-0.433	0.1715	-2.52	.0132	-0.1480	-0.7174
Op-2 1210	-0.187	0.3885	-0.48	.6304	0.4573	-0.8323
Op-1 2210	-0.195	0.1874	-1.04	.2994	0.1156	-0.5065
Op-2 2210	-0.250	0.4012	-0.62	.5346	0.4160	-0.9160

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2774	0.1793	-1.547	.1249	0.0202	-0.5751

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0000	0.4363	-0.00	1.000	0.7243	-0.7243
Station 0910	-0.1240	0.4294	-0.29	.7733	0.5887	-0.8367
Station 0915	-0.6500	0.4508	-1.44	.1524	0.0983	-1.3983
Station 1015	-0.7000	0.4508	-1.55	.1236	0.0483	-1.4483
Station 1210	-0.2452	0.4246	-0.58	.5649	0.4597	-0.9501
Station 2210	0.0545	0.4428	0.12	.9022	0.7896	-0.6805

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.36	1.50	0.139	0.65	0.07	-0.36	1.50	-0.07	-0.65
0910 Op-2	5	0.30	1.00	0.200	0.86	-0.26	-0.30	1.00	0.26	-0.86
0915 Op-1	14	1.43	4.00	0.327	2.13	0.72	-1.43	4.00	-0.72	-2.13
0915 Op-2	4	0.75	2.00	0.433	2.13	-0.63	-0.75	2.00	0.63	-2.13
1015 Op-1	14	0.57	2.00	0.221	1.05	0.09	-0.57	2.00	-0.09	-1.05
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.50	3.50	0.220	0.96	0.04	-0.50	3.50	-0.04	-0.96
1210 Op-2	5	0.30	1.00	0.200	0.86	-0.26	-0.30	1.00	0.26	-0.86
2210 Op-1	16	0.16	1.50	0.099	0.37	-0.06	-0.16	1.50	0.06	-0.37
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.13	0.50	0.27	-0.52

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0106 - Prionitis spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.07	0.3037
SEASON	1	102.000	0.28	0.5998
STATION	5	102.000	6.52	0.0000
PERIOD*SEASON	1	102.000	13.32	0.0004
STATION*PERIOD	5	102.000	1.44	0.2173
STATION*SEASON	5	102.000	0.08	0.9945
PERIOD*STATION*SEASON	5	102.000	0.11	0.9896

Results for Power Analysis .
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.07	0.05	0.2721	0.1080	0.9493
STATION*PERIOD	7.19	2.04	0.6189	0.2481	0.1039

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.8873	0.7750	-1.145	.2549
Period in FC	0.0082	0.3500	0.023	.9814
Period in FC-S	-0.5217	0.3577	-1.458	.1479
Period in FC-W	0.5381	0.6017	0.894	.3733
Period in DC-S	-3.4615	0.7632	-4.536	.0000
Period in DC-W	1.6869	1.3491	1.250	.2140

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.737	0.0606	-12.16	.0000	-0.6365	-0.8378
Period Op-2	-0.591	0.1281	-4.61	.0000	-0.3780	-0.8033
Op-1 0611	-0.434	0.1355	-3.20	.0018	-0.2092	-0.6592
Op-2 0611	0.451	0.3171	1.42	.1583	0.9771	-0.0757
Op-1 0910	-0.980	0.1445	-6.78	.0000	-0.7400	-1.2198
Op-2 0910	-0.748	0.3070	-2.44	.0166	-0.2385	-1.2578
Op-1 0915	-1.055	0.1625	-6.49	.0000	-0.7851	-1.3244
Op-2 0915	-0.838	0.3171	-2.64	.0095	-0.3120	-1.3648
Op-1 1015	-0.071	0.1625	-0.44	.6624	0.1985	-0.3408
Op-2 1015	-0.357	0.3171	-1.13	.2630	0.1695	-0.8833
Op-1 1210	-0.941	0.1355	-6.94	.0000	-0.7157	-1.1657
Op-2 1210	-1.101	0.3070	-3.58	.0005	-0.5909	-1.6102
Op-1 2210	-0.942	0.1481	-6.36	.0000	-0.6966	-1.1884
Op-2 2210	-0.951	0.3171	-3.00	.0034	-0.4243	-1.4771

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1465	0.1417	-1.034	.3037	0.0887	-0.3818

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.8849	0.3449	-2.57	.0117	-0.3124	-1.4573
Station 0910	-0.2317	0.3393	-0.68	.4962	0.3316	-0.7950
Station 0915	-0.2163	0.3563	-0.61	.5451	0.3751	-0.8078
Station 1015	0.2857	0.3563	0.80	.4244	0.8772	-0.3057
Station 1210	0.1599	0.3356	0.48	.6349	0.7170	-0.3973
Station 2210	0.0082	0.3500	0.02	.9814	0.5892	-0.5728

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	12.13	30.00	2.474	17.33	6.93	-10.16	28.50	-5.41	-14.90
0611 Op-2	4	0.38	1.00	0.239	1.14	-0.39	1.38	4.50	4.77	-2.02
0910 Op-1	18	18.14	21.00	1.793	21.92	14.36	-16.25	22.50	-12.30	-20.20
0910 Op-2	5	6.40	6.50	1.155	9.61	3.19	-4.70	9.50	-0.21	-9.19
0915 Op-1	14	16.61	21.50	1.510	19.87	13.34	-15.07	25.00	-11.43	-18.72
0915 Op-2	4	6.50	3.50	0.791	9.02	3.98	-4.75	7.50	0.30	-9.80
1015 Op-1	14	1.93	4.50	0.388	2.77	1.09	-0.39	7.50	0.82	-1.60
1015 Op-2	4	2.38	3.00	0.625	4.36	0.39	-0.63	2.50	1.14	-2.39
1210 Op-1	19	15.61	22.00	1.444	18.64	12.57	-13.63	26.00	-10.65	-16.62
1210 Op-2	5	12.40	9.00	1.503	16.57	8.23	-10.70	9.00	-5.84	-15.56
2210 Op-1	16	13.72	11.00	0.641	15.08	12.35	-11.94	11.50	-10.38	-13.49
2210 Op-2	4	9.00	6.00	1.399	13.45	4.55	-7.25	4.00	-4.31	-10.19

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	1.97	5.50	0.351	2.71	1.24
Op-2	5	1.70	4.00	0.718	3.69	-0.29

Analysis of Variance for SLC for 0192 - Pterosiphonia dendroidea

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	40.18	0.0000
SEASON	1	102.000	10.73	0.0014
STATION	5	102.000	6.29	0.0000
PERIOD*SEASON	1	102.000	1.68	0.1973
STATION*PERIOD	5	102.000	4.46	0.0010
STATION*SEASON	5	102.000	3.46	0.0062
PERIOD*STATION*SEASON	5	102.000	1.49	0.1986

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	40.18	38.40	1.0000	1.0000	0.1634
STATION*PERIOD	22.29	16.85	0.9827	0.9399	0.1123

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	3.3282	0.4785	6.955	.0000
Period in FC	-0.0000	0.2161	-0.000	1.000
Period in FC-S	0.0000	0.2209	0.000	1.000
Period in FC-W	-0.0000	0.3715	-0.000	1.000
Period in DC-S	2.6469	0.4712	5.617	.0000
Period in DC-W	4.0095	0.8330	4.814	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.130	0.0374	-3.47	.0008	-0.0677	-0.1920
Period Op-2	-0.685	0.0791	-8.65	.0000	-0.5532	-0.8158
Op-1 0611	-0.105	0.0837	-1.25	.2129	0.0340	-0.2438
Op-2 0611	-0.220	0.1958	-1.13	.2630	0.1046	-0.5454
Op-1 0910	-0.192	0.0892	-2.16	.0335	-0.0442	-0.3405
Op-2 0910	-0.747	0.1896	-3.94	.0001	-0.4320	-1.0614
Op-1 0915	-0.320	0.1003	-3.19	.0019	-0.1531	-0.4861
Op-2 0915	-0.961	0.1958	-4.91	.0000	-0.6361	-1.2861
Op-1 1015	-0.097	0.1003	-0.97	.3345	0.0692	-0.2638
Op-2 1015	-0.905	0.1958	-4.62	.0000	-0.5803	-1.2303
Op-1 1210	-0.065	0.0837	-0.77	.4402	0.0741	-0.2038
Op-2 1210	-1.274	0.1896	-6.72	.0000	-0.9590	-1.5884
Op-1 2210	0.000	0.0915	0.00	1.000	0.1518	-0.1518
Op-2 2210	0.000	0.1958	0.00	1.000	0.3250	-0.3250

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5547	0.0875	6.339	.0000	0.7000	0.4094

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1155	0.2129	0.54	.5888	0.4689	-0.2380
Station 0910	0.5543	0.2095	2.65	.0094	0.9021	0.2066
Station 0915	0.6415	0.2200	2.92	.0044	1.0066	0.2763
Station 1015	0.8080	0.2200	3.67	.0004	1.1732	0.4429
Station 1210	1.2089	0.2072	5.83	.0000	1.5528	0.8649
Station 2210	-0.0000	0.2161	-0.00	1.000	0.3587	-0.3587

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.08	1.00	0.058	0.20	-0.04	-0.08	1.00	0.04	-0.20
0611 Op-2	4	0.50	2.00	0.500	2.09	-1.09	-0.50	2.00	1.09	-2.09
0910 Op-1	18	0.25	2.50	0.173	0.61	-0.11	-0.25	2.50	0.11	-0.61
0910 Op-2	5	0.60	1.00	0.187	1.12	0.08	-0.60	1.00	-0.08	-1.12
0915 Op-1	14	0.21	1.50	0.125	0.48	-0.06	-0.21	1.50	0.06	-0.48
0915 Op-2	4	1.25	4.50	1.090	4.72	-2.22	-1.25	4.50	2.22	-4.72
1015 Op-1	14	0.04	0.50	0.036	0.11	-0.04	-0.04	0.50	0.04	-0.11
1015 Op-2	4	0.75	1.50	0.323	1.78	-0.28	-0.75	1.50	0.28	-1.78
1210 Op-1	19	0.03	0.50	0.026	0.08	-0.03	-0.03	0.50	0.03	-0.08
1210 Op-2	5	2.00	4.50	0.866	4.40	-0.40	-2.00	4.50	0.40	-4.40
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SLC for 0042 - Pterygophora californica

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.30	0.5860
SEASON	1	102.000	1.91	0.1698
STATION	5	102.000	0.31	0.9079
PERIOD*SEASON	1	102.000	3.19	0.0770
STATION*PERIOD	5	102.000	0.14	0.9812
STATION*SEASON	5	102.000	0.02	0.9999
PERIOD*STATION*SEASON	5	102.000	0.01	1.0000

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.30	0.00	0.1496	.	0.1101
STATION*PERIOD	0.72	0.00	0.1494	.	0.1161

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.8183	5.9672	0.305	.7612
Period in FC	1.7591	2.6948	0.653	.5154
Period in FC-S	0.3182	2.7545	0.116	.9083
Period in FC-W	3.2000	4.6326	0.691	.4913
Period in DC-S	-8.4385	5.8763	-1.436	.1541
Period in DC-W	12.0750	10.3876	1.162	.2478

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	4.742	0.4669	10.16	.0000	5.5170	3.9671
Period Op-2	4.146	0.9863	4.20	.0001	5.7831	2.5086
Op-1 0611	5.410	1.0436	5.18	.0000	7.1426	3.6780
Op-2 0611	4.500	2.4416	1.84	.0682	8.5529	0.4471
Op-1 0910	5.427	1.1127	4.88	.0000	7.2740	3.5799
Op-2 0910	4.313	2.3641	1.82	.0711	8.2367	0.3883
Op-1 0915	4.313	1.2509	3.45	.0008	6.3890	2.2360
Op-2 0915	4.500	2.4416	1.84	.0682	8.5529	0.4471
Op-1 1015	2.425	1.2509	1.94	.0553	4.5015	0.3485
Op-2 1015	3.500	2.4416	1.43	.1548	7.5529	-0.5529
Op-1 1210	5.369	1.0436	5.14	.0000	7.1009	3.6363
Op-2 1210	4.312	2.3641	1.82	.0711	8.2367	0.3883
Op-1 2210	5.509	1.1405	4.83	.0000	7.4022	3.6160
Op-2 2210	3.750	2.4416	1.54	.1277	7.8029	-0.3029

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5962	1.0913	0.546	.5860	2.4076	-1.2152

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.9103	2.6553	0.34	.7324	5.3178	-3.4973
Station 0910	1.1144	2.6128	0.43	.6706	5.4516	-3.2227
Station 0915	-0.1875	2.7434	-0.07	.9456	4.3664	-4.7414
Station 1015	-1.0750	2.7434	-0.39	.6960	3.4789	-5.6289
Station 1210	1.0561	2.5842	0.41	.6836	5.3456	-3.2334
Station 2210	1.7591	2.6948	0.65	.5154	6.2323	-2.7141

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CI.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	5.32	11.00	6.87	3.77
0611 Op-2	4	0.00	0.00	0.000	.	.	5.50	15.00	17.19	-6.19
0910 Op-1	18	0.00	0.00	0.000	.	.	5.31	11.00	6.95	3.66
0910 Op-2	5	0.00	0.00	0.000	.	.	5.40	15.00	13.31	-2.51
0915 Op-1	14	0.00	0.00	0.000	.	.	4.29	8.00	5.82	2.75
0915 Op-2	4	0.00	0.00	0.000	.	.	5.50	15.00	17.19	-6.19
1015 Op-1	14	2.00	5.50	0.466	3.01	0.99	2.29	9.50	4.00	0.57
1015 Op-2	4	1.25	4.00	0.924	4.19	-1.69	4.25	19.00	17.60	-9.10
1210 Op-1	19	0.03	0.50	0.026	0.08	-0.03	5.29	11.00	6.85	3.73
1210 Op-2	5	0.00	0.00	0.000	.	.	5.40	15.00	13.31	-2.51
2210 Op-1	16	0.03	0.50	0.031	0.10	-0.04	5.44	11.00	7.28	3.59
2210 Op-2	4	1.13	4.50	1.125	4.71	-2.46	4.38	10.50	12.50	-3.75

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	5.32	11.00	0.738	6.87	3.77
Op-2	5	5.40	15.00	2.848	13.31	-2.51

Analysis of Variance for SLC for 0159 - Rhodymenia spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	23.92	0.0000
SEASON	1	102.000	0.66	0.4175
STATION	5	102.000	12.60	0.0000
PERIOD*SEASON	1	102.000	5.84	0.0174
STATION*PERIOD	5	102.000	1.46	0.2110
STATION*SEASON	5	102.000	0.70	0.6247
PERIOD*STATION*SEASON	5	102.000	0.53	0.7526

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	23.92	22.45	0.9993	0.9989	1.0000
STATION*PERIOD	7.28	2.14	0.6244	0.2551	0.1441

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.7801	0.3635	-4.897	.0000
Period in FC	-0.1707	0.1642	-1.040	.3009
Period in FC-S	-0.1831	0.1678	-1.091	.2777
Period in FC-W	-0.1583	0.2822	-0.561	.5761
Period in DC-S	-0.8036	0.3580	-2.245	.0269
Period in DC-W	-2.7567	0.6328	-4.356	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.025	0.0284	-0.87	.3843	0.0224	-0.0721
Period Op-2	0.300	0.0601	5.00	.0000	0.4000	0.2005
Op-1 0611	-0.678	0.0636	-10.66	.0000	-0.5725	-0.7836
Op-2 0611	-0.181	0.1487	-1.22	.2260	0.0657	-0.4281
Op-1 0910	0.195	0.0678	2.88	.0049	0.3075	0.0825
Op-2 0910	0.523	0.1440	3.63	.0004	0.7623	0.2842
Op-1 0915	-0.138	0.0762	-1.81	.0733	-0.0114	-0.2644
Op-2 0915	0.474	0.1487	3.19	.0019	0.7212	0.2274
Op-1 1015	0.151	0.0762	1.98	.0503	0.2775	0.0245
Op-2 1015	0.230	0.1487	1.55	.1245	0.4773	-0.0165
Op-1 1210	0.157	0.0636	2.48	.0149	0.2629	0.0519
Op-2 1210	0.421	0.1440	2.92	.0043	0.6598	0.1817
Op-1 2210	0.163	0.0695	2.35	.0206	0.2788	0.0481
Op-2 2210	0.334	0.1487	2.25	.0268	0.5810	0.0872

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3251	0.0665	-4.891	.0000	-0.2148	-0.4355

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.4969	0.1618	-3.07	.0027	-0.2283	-0.7654
Station 0910	-0.3282	0.1592	-2.06	.0417	-0.0640	-0.5925
Station 0915	-0.6122	0.1671	-3.66	.0004	-0.3348	-0.8896
Station 1015	-0.0794	0.1671	-0.48	.6356	0.1980	-0.3569
Station 1210	-0.2634	0.1574	-1.67	.0974	-0.0021	-0.5247
Station 2210	-0.1707	0.1642	-1.04	.3009	0.1018	-0.4432

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	33.82	23.50	1.557	37.09	30.55	-25.61	30.00	-21.39	-29.82
0611 Op-2	4	28.00	8.50	2.010	34.40	21.60	-12.75	20.50	1.96	-27.46
0910 Op-1	18	4.92	12.50	0.885	6.78	3.05	3.64	15.00	5.91	1.37
0910 Op-2	5	4.50	6.00	1.118	7.60	1.40	10.30	11.00	16.02	4.58
0915 Op-1	14	12.75	16.50	1.232	15.41	10.09	-3.46	16.50	-0.54	-6.39
0915 Op-2	4	6.00	12.00	2.525	14.04	-2.04	9.25	12.00	18.00	0.50
1015 Op-1	14	6.04	11.50	1.010	8.22	3.85	3.25	10.50	5.18	1.32
1015 Op-2	4	9.50	9.50	2.264	16.70	2.30	5.75	8.50	12.13	-0.63
1210 Op-1	19	5.39	11.50	0.858	7.20	3.59	2.82	13.00	4.60	1.03
1210 Op-2	5	7.10	16.50	2.939	15.26	-1.06	7.70	16.00	15.22	0.18
2210 Op-1	16	4.75	8.00	0.627	6.09	3.41	3.75	15.00	6.14	1.36
2210 Op-2	4	6.13	12.00	2.809	15.06	-2.81	9.13	8.50	15.40	2.85

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	8.21	12.00	0.896	10.09	6.33
Op-2	5	14.80	13.00	2.380	21.41	8.19

Analysis of Variance for SLC for 0104 - Sarcodiotheca gaudichaudii

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	10.59	0.0015
SEASON	1	102.000	0.03	0.8543
STATION	5	102.000	0.35	0.8797
PERIOD*SEASON	1	102.000	1.17	0.2815
STATION*PERIOD	5	102.000	0.49	0.7822
STATION*SEASON	5	102.000	0.25	0.9392
PERIOD*STATION*SEASON	5	102.000	0.06	0.9972

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	10.59	9.38	0.9437	0.9188	0.2818
STATION*PERIOD	2.46	0.00	0.2799	.	0.1543

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.8132	0.2364	-3.440	.0008
Period in FC	-0.0306	0.1068	-0.287	.7746
Period in FC-S	-0.0363	0.1091	-0.333	.7400
Period in FC-W	-0.0250	0.1835	-0.136	.8920
Period in DC-S	-0.5267	0.2328	-2.263	.0258
Period in DC-W	-1.0997	0.4115	-2.672	.0088

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.021	0.0185	-1.15	.2525	0.0094	-0.0520
Period Op-2	0.119	0.0391	3.05	.0029	0.1842	0.0545
Op-1 0611	-0.018	0.0413	-0.44	.6621	0.0505	-0.0867
Op-2 0611	0.138	0.0967	1.43	.1561	0.2988	-0.0223
Op-1 0910	-0.064	0.0441	-1.46	.1483	0.0090	-0.1374
Op-2 0910	0.126	0.0937	1.34	.1826	0.2811	-0.0298
Op-1 0915	0.026	0.0496	0.53	.5952	0.1087	-0.0558
Op-2 0915	0.138	0.0967	1.43	.1561	0.2988	-0.0223
Op-1 1015	0.026	0.0496	0.53	.5952	0.1087	-0.0558
Op-2 1015	0.138	0.0967	1.43	.1561	0.2988	-0.0223
Op-1 1210	-0.118	0.0413	-2.85	.0053	-0.0491	-0.1863
Op-2 1210	0.126	0.0937	1.34	.1826	0.2811	-0.0298
Op-1 2210	0.020	0.0452	0.43	.6666	0.0945	-0.0555
Op-2 2210	0.050	0.0967	0.52	.6051	0.2107	-0.1104

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1406	0.0432	-3.254	.0015	-0.0689	-0.2124

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1563	0.1052	-1.49	.1403	0.0183	-0.3309
Station 0910	-0.1899	0.1035	-1.83	.0695	-0.0181	-0.3617
Station 0915	-0.1118	0.1087	-1.03	.3060	0.0686	-0.2922
Station 1015	-0.1118	0.1087	-1.03	.3060	0.0686	-0.2922
Station 1210	-0.2434	0.1024	-2.38	.0193	-0.0735	-0.4133
Station 2210	-0.0306	0.1068	-0.29	.7746	0.1466	-0.2079

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.29	2.50	0.145	0.59	-0.01	-0.11	3.00	0.21	-0.42
0611 Op-2	4	0.00	0.00	0.000	.	.	0.38	1.00	1.14	-0.39
0910 Op-1	18	0.61	5.50	0.315	1.27	-0.05	-0.42	5.50	0.20	-1.03
0910 Op-2	5	0.00	0.00	0.000	.	.	0.30	1.00	0.86	-0.26
0915 Op-1	14	0.04	0.50	0.036	0.11	-0.04	0.11	0.50	0.23	-0.02
0915 Op-2	4	0.00	0.00	0.000	.	.	0.38	1.00	1.14	-0.39
1015 Op-1	14	0.04	0.50	0.036	0.11	-0.04	0.11	0.50	0.23	-0.02
1015 Op-2	4	0.00	0.00	0.000	.	.	0.38	1.00	1.14	-0.39
1210 Op-1	19	0.82	7.00	0.369	1.59	0.04	-0.63	7.00	0.13	-1.39
1210 Op-2	5	0.00	0.00	0.000	.	.	0.30	1.00	0.86	-0.26
2210 Op-1	16	0.09	1.00	0.068	0.24	-0.05	0.09	1.50	0.29	-0.11
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	0.25	1.00	1.05	-0.55

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.18	0.50	0.057	0.30	0.06
Op-2	5	0.30	1.00	0.200	0.86	-0.26

Analysis of Variance for SLC for ASPP - Spp. Algae

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	9.14	0.0032
SEASON	1	102.000	0.44	0.5107
STATION	5	102.000	5.64	0.0001
PERIOD*SEASON	1	102.000	0.18	0.6765
STATION*PERIOD	5	102.000	0.72	0.6085
STATION*SEASON	5	102.000	0.63	0.6789
PERIOD*STATION*SEASON	5	102.000	0.70	0.6248

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	9.14	7.97	0.9129	0.8767	1.0000
STATION*PERIOD	3.61	0.00	0.3695	.	0.4635

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-13.7234	4.0137	-3.419	.0009
Period in FC	0.4053	1.8126	0.224	.8235
Period in FC-S	-0.9394	1.8528	-0.507	.6132
Period in FC-W	1.7500	3.1160	0.562	.5756
Period in DC-S	-14.2218	3.9525	-3.598	.0005
Period in DC-W	-13.2250	6.9870	-1.893	.0612

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.926	0.3140	2.95	.0040	1.4474	0.4049
Period Op-2	3.146	0.6634	4.74	.0000	4.2471	2.0446
Op-1 0611	4.756	0.7020	6.78	.0000	5.9216	3.5912
Op-2 0611	7.667	1.6423	4.67	.0000	10.3928	4.9406
Op-1 0910	0.046	0.7484	0.06	.9509	1.2885	-1.1962
Op-2 0910	1.406	1.5901	0.88	.3786	4.0458	-1.2333
Op-1 0915	0.487	0.8414	0.58	.5636	1.8842	-0.9092
Op-2 0915	2.833	1.6423	1.73	.0875	5.5594	0.1072
Op-1 1015	0.150	0.8414	0.18	.8589	1.5467	-1.2467
Op-2 1015	3.917	1.6423	2.38	.0189	6.6428	1.1906
Op-1 1210	-0.872	0.7020	-1.24	.2171	0.2934	-2.0370
Op-2 1210	2.469	1.5901	1.55	.1236	5.1083	-0.1708
Op-1 2210	0.989	0.7671	1.29	.2004	2.2620	-0.2847
Op-2 2210	0.583	1.6423	0.36	.7232	3.3094	-2.1428

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-2.2197	0.7340	-3.024	.0032	-1.0013	-3.4381

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-2.9103	1.7860	-1.63	.1063	0.0544	-5.8749
Station 0910	-1.3601	1.7575	-0.77	.4408	1.5572	-4.2774
Station 0915	-2.3458	1.8453	-1.27	.2065	0.7172	-5.4089
Station 1015	-3.7667	1.8453	-2.04	.0438	-0.7036	-6.8297
Station 1210	-3.3405	1.7382	-1.92	.0574	-0.4553	-6.2258
Station 2210	0.4053	1.8126	0.22	.8235	3.4141	-2.6035

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	12.37	11.50	0.670	13.78	10.96	4.88	10.25	6.25	3.51
0611 Op-2	4	11.19	4.50	0.976	14.29	8.08	6.88	8.75	13.74	0.01
0910 Op-1	18	17.39	10.50	0.619	18.70	16.08	0.00	10.25	1.34	-1.34
0910 Op-2	5	16.25	8.75	1.679	20.91	11.59	2.10	10.50	7.04	-2.84
0915 Op-1	14	17.39	10.00	0.781	19.08	15.71	-0.27	8.75	1.34	-1.88
0915 Op-2	4	15.06	10.00	2.132	21.85	8.28	3.00	11.00	10.18	-4.18
1015 Op-1	14	16.54	8.25	0.593	17.82	15.25	0.59	7.50	1.98	-0.80
1015 Op-2	4	13.94	12.50	2.613	22.25	5.62	4.13	8.75	10.31	-2.06
1210 Op-1	19	17.74	12.50	0.705	19.22	16.26	-0.49	9.00	0.76	-1.73
1210 Op-2	5	15.45	7.00	1.192	18.76	12.14	2.90	7.75	6.81	-1.01
2210 Op-1	16	16.25	5.50	0.383	17.07	15.43	0.98	8.25	1.99	-0.02
2210 Op-2	4	16.81	8.00	1.835	22.65	10.97	1.25	6.75	6.12	-3.62

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	17.25	7.50	0.432	18.16	16.34
Op-2	5	18.35	9.00	1.465	22.42	14.28

Analysis of Variance for SLC for ACOV - Total Cover

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	43.25	0.0000
SEASON	1	102.000	1.25	0.2661
STATION	5	102.000	10.31	0.0000
PERIOD*SEASON	1	102.000	0.22	0.6401
STATION*PERIOD	5	102.000	1.14	0.3431
STATION*SEASON	5	102.000	1.02	0.4121
PERIOD*STATION*SEASON	5	102.000	1.05	0.3934

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	43.25	41.40	1.0000	1.0000	1.0000
STATION*PERIOD	5.71	0.60	0.5237	0.1406	0.8660

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-233.1022	37.8481	-6.159	.0000
Period in FC	-40.0136	17.0923	-2.341	.0212
Period in FC-S	-45.2273	17.4708	-2.589	.0110
Period in FC-W	-34.8000	29.3830	-1.184	.2390
Period in DC-S	-247.3628	37.2709	-6.637	.0000
Period in DC-W	-218.8417	65.8846	-3.322	.0012

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-17.526	2.9612	-5.92	.0000	-12.6109	-22.4416
Period Op-2	27.993	6.2560	4.47	.0000	38.3776	17.6085
Op-1 0611	-55.814	6.6192	-8.43	.0000	-44.8267	-66.8015
Op-2 0611	6.750	15.4862	0.44	.6639	32.4560	-18.9560
Op-1 0910	-29.592	7.0576	-4.19	.0001	-17.8772	-41.3074
Op-2 0910	34.438	14.9944	2.30	.0237	59.3272	9.5478
Op-1 0915	-17.250	7.9343	-2.17	.0320	-4.0796	-30.4204
Op-2 0915	33.083	15.4862	2.14	.0350	58.7893	7.3773
Op-1 1015	27.513	7.9343	3.47	.0008	40.6829	14.3421
Op-2 1015	67.250	15.4862	4.34	.0000	92.9560	41.5440
Op-1 1210	13.500	6.6192	2.04	.0440	24.4874	2.5126
Op-2 1210	29.938	14.9944	2.00	.0485	54.8272	5.0478
Op-1 2210	-43.514	7.2336	-6.02	.0000	-31.5064	-55.5209
Op-2 2210	-3.500	15.4862	-0.23	.8216	22.2060	-29.2060

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-45.5193	6.9214	-6.577	.0000	-34.0302	-57.0084

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-62.5641	16.8415	-3.71	.0003	-34.6084	-90.5198
Station 0910	-64.0298	16.5723	-3.86	.0002	-36.5209	-91.5387
Station 0915	-50.3333	17.4004	-2.89	.0047	-21.4498	-79.2168
Station 1015	-39.7375	17.4004	-2.28	.0245	-10.8540	-68.6210
Station 1210	-16.4375	16.3904	-1.00	.3183	10.7695	-43.6445
Station 2210	-40.0136	17.0923	-2.34	.0212	-11.6416	-68.3857

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	192.05	107.50	6.172	205.02	179.09	-53.66	79.50	-43.19	-64.12
0611 Op-2	4	161.25	77.00	16.199	212.80	109.70	-5.13	63.50	45.93	-56.18
0910 Op-1	18	169.94	138.50	8.787	188.48	151.41	-28.39	142.00	-11.95	-44.83
0910 Op-2	5	115.80	108.00	19.660	170.38	61.22	41.60	85.50	85.44	-2.24
0915 Op-1	14	159.29	134.00	8.911	178.54	140.03	-15.96	100.00	-1.93	-29.99
0915 Op-2	4	115.50	62.00	13.915	159.78	71.22	40.63	62.50	91.04	-9.79
1015 Op-1	14	112.75	90.50	7.348	128.62	96.88	30.57	101.00	47.09	14.06
1015 Op-2	4	84.00	46.00	9.832	115.29	52.71	72.13	56.00	111.82	32.43
1210 Op-1	19	124.16	124.00	7.803	140.55	107.76	14.24	134.00	27.39	1.08
1210 Op-2	5	114.30	73.50	13.750	152.48	76.12	43.10	60.50	74.72	11.48
2210 Op-1	16	188.16	115.00	9.046	207.44	168.88	-46.22	85.50	-35.70	-56.73
2210 Op-2	4	160.63	86.50	19.021	221.16	100.09	-4.50	5.00	-0.88	-8.12

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	138.39	116.00	7.604	154.37	122.42
Op-2	5	157.40	84.00	14.358	197.26	117.54

Analysis of Variance for SLC for 1173 - Ulva/Enteromorpha spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	6.96	0.0097
SEASON	1	102.000	0.55	0.4588
STATION	5	102.000	0.03	0.9994
PERIOD*SEASON	1	102.000	8.64	0.0041
STATION*PERIOD	5	102.000	0.03	0.9994
STATION*SEASON	5	102.000	0.01	0.9999
PERIOD*STATION*SEASON	5	102.000	0.02	0.9999

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.96	5.82	0.8352	0.7738	0.1073
STATION*PERIOD	0.17	0.00	0.1110	.	0.1063

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-3.5462	1.4438	-2.456	.0157
Period in FC	-0.6318	0.6520	-0.969	.3348
Period in FC-S	0.1364	0.6665	0.205	.8383
Period in FC-W	-1.4000	1.1209	-1.249	.2145
Period in DC-S	0.3410	1.4218	0.240	.8109
Period in DC-W	-7.4333	2.5134	-2.958	.0039

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.318	0.1130	2.81	.0059	0.5051	0.1301
Period Op-2	1.014	0.2387	4.25	.0000	1.4100	0.6177
Op-1 0611	0.426	0.2525	1.69	.0944	0.8454	0.0071
Op-2 0611	0.917	0.5908	1.55	.1238	1.8973	-0.0640
Op-1 0910	0.162	0.2692	0.60	.5498	0.6084	-0.2854
Op-2 0910	0.938	0.5720	1.64	.1043	1.8870	-0.0120
Op-1 0915	0.275	0.3027	0.91	.3657	0.7774	-0.2274
Op-2 0915	1.083	0.5908	1.83	.0696	2.0640	0.1027
Op-1 1015	0.325	0.3027	1.07	.2855	0.8274	-0.1774
Op-2 1015	1.083	0.5908	1.83	.0696	2.0640	0.1027
Op-1 1210	0.349	0.2525	1.38	.1695	0.7685	-0.0698
Op-2 1210	1.063	0.5720	1.86	.0661	2.0120	0.1130
Op-1 2210	0.368	0.2759	1.33	.1851	0.8262	-0.0899
Op-2 2210	1.000	0.5908	1.69	.0936	1.9806	0.0194

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.6963	0.2640	-2.637	.0097	-0.2580	-1.1346

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.4904	0.6425	-0.76	.4471	0.5761	-1.5568
Station 0910	-0.7760	0.6322	-1.23	.2225	0.2734	-1.8254
Station 0915	-0.8083	0.6638	-1.22	.2261	0.2935	-1.9102
Station 1015	-0.7583	0.6638	-1.14	.2559	0.3435	-1.8602
Station 1210	-0.7131	0.6253	-1.14	.2567	0.3247	-1.7510
Station 2210	-0.6318	0.6520	-0.97	.3348	0.4505	-1.7141

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.55	3.00	1.01	0.09
0611 Op-2	4	0.25	1.00	0.250	1.05	-0.55	0.63	3.00	2.82	-1.57
0910 Op-1	18	0.31	2.50	0.152	0.63	-0.02	0.28	5.50	0.92	-0.37
0910 Op-2	5	0.20	0.50	0.122	0.54	-0.14	0.60	2.50	2.02	-0.82
0915 Op-1	14	0.07	0.50	0.049	0.18	-0.03	0.39	3.50	0.98	-0.20
0915 Op-2	4	0.00	0.00	0.000	.	.	0.88	2.00	2.52	-0.77
1015 Op-1	14	0.00	0.00	0.000	.	.	0.46	3.00	1.04	-0.11
1015 Op-2	4	0.00	0.00	0.000	.	.	0.88	2.00	2.52	-0.77
1210 Op-1	19	0.11	2.00	0.105	0.33	-0.12	0.45	3.00	0.88	0.02
1210 Op-2	5	0.00	0.00	0.000	.	.	0.80	2.00	1.93	-0.33
2210 Op-1	16	0.00	0.00	0.000	.	.	0.47	2.50	0.90	0.04
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	0.75	1.50	2.13	-0.63

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.55	3.00	0.219	1.01	0.09
Op-2	5	0.80	2.00	0.406	1.93	-0.33

Analysis of Variance for SAQ for 0036 - Cystoseira osmundacea

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.35	0.0702
SEASON	1	102.000	3.89	0.0514
STATION	5	102.000	16.16	0.0000
PERIOD*SEASON	1	102.000	2.35	0.1285
STATION*PERIOD	5	102.000	0.91	0.4767
STATION*SEASON	5	102.000	0.50	0.7735
PERIOD*STATION*SEASON	5	102.000	0.69	0.6326

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.35	2.28	0.5688	0.4435	0.8790
STATION*PERIOD	4.56	0.00	0.4413	.	0.3738

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.7941	0.3625	2.191	.0308
Period in FC	-0.0663	0.1637	-0.405	.6861
Period in FC-S	-0.0445	0.1673	-0.266	.7909
Period in FC-W	-0.0882	0.2814	-0.313	.7546
Period in DC-S	0.1627	0.3570	0.456	.6495
Period in DC-W	1.4254	0.6310	2.259	.0260

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.495	0.0284	17.46	.0000	0.5421	0.4480
Period Op-2	0.374	0.0599	6.24	.0000	0.4732	0.2743
Op-1 0611	0.741	0.0634	11.69	.0000	0.8463	0.6359
Op-2 0611	0.799	0.1483	5.39	.0000	1.0452	0.5528
Op-1 0910	0.650	0.0676	9.62	.0000	0.7622	0.5378
Op-2 0910	0.393	0.1436	2.74	.0073	0.6316	0.1548
Op-1 0915	0.275	0.0760	3.62	.0005	0.4011	0.1489
Op-2 0915	0.139	0.1483	0.94	.3514	0.3850	-0.1073
Op-1 1015	0.249	0.0760	3.28	.0014	0.3751	0.1228
Op-2 1015	0.084	0.1483	0.56	.5744	0.3297	-0.1626
Op-1 1210	0.240	0.0634	3.79	.0003	0.3453	0.1349
Op-2 1210	-0.053	0.1436	-0.37	.7104	0.1849	-0.2919
Op-1 2210	0.815	0.0693	11.77	.0000	0.9301	0.7001
Op-2 2210	0.881	0.1483	5.94	.0000	1.1276	0.6353

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1213	0.0663	1.830	.0702	0.2313	0.0113

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0579	0.1613	-0.36	.7205	0.2099	-0.3256
Station 0910	0.2568	0.1587	1.62	.1087	0.5203	-0.0066
Station 0915	0.1361	0.1666	0.82	.4159	0.4128	-0.1405
Station 1015	0.1654	0.1666	0.99	.3232	0.4420	-0.1112
Station 1210	0.2936	0.1570	1.87	.0643	0.5541	0.0330
Station 2210	-0.0663	0.1637	-0.41	.6861	0.2054	-0.3381

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.18	2.25	0.124	0.44	-0.08	5.92	13.00	7.44	4.40
0611 Op-2	4	0.31	1.00	0.237	1.07	-0.44	6.94	6.00	11.37	2.50
0910 Op-1	18	0.54	1.50	0.146	0.85	0.23	5.86	10.50	7.26	4.46
0910 Op-2	5	2.10	4.50	0.793	4.30	-0.10	6.75	9.75	12.26	1.24
0915 Op-1	14	3.48	4.50	0.408	4.36	2.60	3.23	10.75	5.02	1.44
0915 Op-2	4	4.19	7.75	1.681	9.54	-1.16	3.06	8.50	9.05	-2.93
1015 Op-1	14	3.54	5.75	0.465	4.54	2.53	3.18	13.00	5.04	1.31
1015 Op-2	4	5.00	3.25	0.714	7.27	2.73	2.25	6.25	6.62	-2.12
1210 Op-1	19	4.32	11.50	0.949	6.31	2.32	1.79	14.75	3.66	-0.08
1210 Op-2	5	8.00	4.50	0.866	10.40	5.60	0.85	12.50	7.39	-5.69
2210 Op-1	16	0.09	0.50	0.039	0.18	0.01	6.55	10.50	8.05	5.05
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	7.19	6.25	11.45	2.92

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	6.11	12.25	0.677	7.53	4.68
Op-2	5	8.85	10.25	1.892	14.10	3.60

Analysis of Variance for SAQ for 0031 - Egregia menziesii

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.45	0.5016
SEASON	1	102.000	1.85	0.1772
STATION	5	102.000	0.08	0.9958
PERIOD*SEASON	1	102.000	0.45	0.5016
STATION*PERIOD	5	102.000	0.15	0.9795
STATION*SEASON	5	102.000	0.08	0.9958
PERIOD*STATION*SEASON	5	102.000	0.15	0.9795

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.45	0.00	0.1751	.	0.1042
STATION*PERIOD	0.75	0.00	0.1515	.	0.1061

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4123	0.4877	-0.845	.4000
Period in FC	0.0514	0.2203	0.233	.8160
Period in FC-S	0.1028	0.2251	0.456	.6491
Period in FC-W	-0.0000	0.3787	-0.000	1.000
Period in DC-S	-0.8245	0.4803	-1.717	.0891
Period in DC-W	0.0000	0.8490	0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.031	0.0382	0.80	.4255	0.0939	-0.0328
Period Op-2	0.091	0.0806	1.12	.2633	0.2245	-0.0431
Op-1 0611	0.073	0.0853	0.86	.3915	0.2150	-0.0682
Op-2 0611	0.091	0.1996	0.45	.6505	0.4219	-0.2406
Op-1 0910	0.073	0.0910	0.81	.4215	0.2244	-0.0776
Op-2 0910	0.136	0.1932	0.70	.4831	0.4568	-0.1847
Op-1 0915	0.012	0.1022	0.11	.9091	0.1814	-0.1580
Op-2 0915	0.091	0.1996	0.45	.6505	0.4219	-0.2406
Op-1 1015	0.039	0.1022	0.38	.7044	0.2086	-0.1308
Op-2 1015	0.091	0.1996	0.45	.6505	0.4219	-0.2406
Op-1 1210	-0.066	0.0853	-0.77	.4435	0.0760	-0.2072
Op-2 1210	0.136	0.1932	0.70	.4831	0.4568	-0.1847
Op-1 2210	0.051	0.0932	0.55	.5827	0.2061	-0.1034
Op-2 2210	0.000	0.1996	0.00	1.000	0.3313	-0.3313

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0601	0.0892	-0.674	.5016	0.0879	-0.2082

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0173	0.2170	-0.08	.9367	0.3430	-0.3775
Station 0910	-0.0626	0.2136	-0.29	.7700	0.2919	-0.4171
Station 0915	-0.0790	0.2242	-0.35	.7254	0.2932	-0.4512
Station 1015	-0.0518	0.2242	-0.23	.8179	0.3204	-0.4240
Station 1210	-0.2016	0.2112	-0.95	.3420	0.1490	-0.5522
Station 2210	0.0514	0.2203	0.23	.8160	0.4170	-0.3142

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.09	1.25	0.24	-0.05
0611 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
0910 Op-1	18	0.00	0.00	0.000	.	.	0.10	1.25	0.25	-0.06
0910 Op-2	5	0.00	0.00	0.000	.	.	0.10	0.25	0.27	-0.07
0915 Op-1	14	0.02	0.25	0.018	0.06	-0.02	0.02	0.75	0.11	-0.07
0915 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
1015 Op-1	14	0.00	0.00	0.000	.	.	0.04	0.50	0.11	-0.04
1015 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
1210 Op-1	19	0.14	1.50	0.082	0.32	-0.03	-0.05	2.75	0.19	-0.29
1210 Op-2	5	0.00	0.00	0.000	.	.	0.10	0.25	0.27	-0.07
2210 Op-1	16	0.00	0.00	0.000	.	.	0.08	1.25	0.24	-0.09
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.00	0.50	0.32	-0.32

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.09	1.25	0.069	0.24	-0.05
Op-2	5	0.10	0.25	0.061	0.27	-0.07

Analysis of Variance for SAQ for 0035 - Laminaria setchellii

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.39	0.2404
SEASON	1	102.000	0.21	0.6501
STATION	5	102.000	37.50	0.0000
PERIOD*SEASON	1	102.000	0.13	0.7236
STATION*PERIOD	5	102.000	1.22	0.3036
STATION*SEASON	5	102.000	0.26	0.9362
PERIOD*STATION*SEASON	5	102.000	0.44	0.8212

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.39	0.37	0.3209	0.1608	0.5182
STATION*PERIOD	6.12	1.00	0.5512	0.1691	0.2748

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3603	0.6717	0.536	.5928
Period in FC	0.5099	0.3034	1.681	.0958
Period in FC-S	0.8038	0.3101	2.592	.0109
Period in FC-W	0.2160	0.5215	0.414	.6796
Period in DC-S	0.3278	0.6615	0.496	.6212
Period in DC-W	0.3928	1.1693	0.336	.7376

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	1.908	0.0526	36.31	.0000	1.9956	1.8211
Period Op-2	1.763	0.1110	15.88	.0000	1.9476	1.5790
Op-1 0611	2.464	0.1175	20.98	.0000	2.6591	2.2691
Op-2 0611	2.516	0.2748	9.16	.0000	2.9725	2.0600
Op-1 0910	2.622	0.1253	20.93	.0000	2.8296	2.4138
Op-2 0910	2.512	0.2661	9.44	.0000	2.9534	2.0700
Op-1 0915	2.356	0.1408	16.73	.0000	2.5894	2.1219
Op-2 0915	2.036	0.2748	7.41	.0000	2.4927	1.5803
Op-1 1015	0.884	0.1408	6.28	.0000	1.1174	0.6499
Op-2 1015	1.291	0.2748	4.70	.0000	1.7468	0.8343
Op-1 1210	2.562	0.1175	21.81	.0000	2.7568	2.3668
Op-2 1210	2.172	0.2661	8.16	.0000	2.6134	1.7299
Op-1 2210	0.563	0.1284	4.39	.0000	0.7761	0.3499
Op-2 2210	0.053	0.2748	0.19	.8472	0.5093	-0.4031

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1450	0.1228	1.181	.2404	0.3489	-0.0589

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0521	0.2989	-0.17	.8619	0.4440	-0.5483
Station 0910	0.1100	0.2941	0.37	.7091	0.5982	-0.3782
Station 0915	0.3192	0.3088	1.03	.3038	0.8318	-0.1934
Station 1015	-0.4069	0.3088	-1.32	.1906	0.1057	-0.9195
Station 1210	0.3901	0.2909	1.34	.1828	0.8730	-0.0927
Station 2210	0.5099	0.3034	1.68	.0958	1.0135	0.0064

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.33	5.00	0.262	0.88	-0.22	61.97	170.25	82.48	41.47
0611 Op-2	4	0.00	0.00	0.000	.	.	36.63	59.75	77.14	-3.89
0910 Op-1	18	0.03	0.50	0.028	0.09	-0.03	62.13	170.25	84.00	40.25
0910 Op-2	5	0.00	0.00	0.000	.	.	33.70	59.75	62.26	5.14
0915 Op-1	14	0.14	0.50	0.051	0.25	0.03	50.89	101.75	69.06	32.73
0915 Op-2	4	0.19	0.50	0.120	0.57	-0.19	36.44	59.75	76.92	-4.04
1015 Op-1	14	5.09	8.00	0.517	6.21	3.97	45.95	103.50	64.20	27.69
1015 Op-2	4	2.06	3.75	0.926	5.01	-0.89	34.56	58.75	74.61	-5.49
1210 Op-1	19	0.05	0.25	0.024	0.10	0.00	62.25	170.25	82.87	41.63
1210 Op-2	5	0.10	0.25	0.061	0.27	-0.07	33.60	59.50	62.01	5.19
2210 Op-1	16	18.77	51.00	3.484	26.19	11.34	44.61	148.50	64.77	24.45
2210 Op-2	4	41.25	81.50	17.213	96.03	-13.53	-4.63	106.75	76.39	-85.64

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	62.30	170.25	9.814	82.92	41.68
Op-2	5	33.70	59.75	10.286	62.26	5.14

Analysis of Variance for SAQ for 0233 - Laminariales

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	6.55	0.0120
SEASON	1	102.000	9.18	0.0031
STATION	5	102.000	1.26	0.2875
PERIOD*SEASON	1	102.000	5.67	0.0191
STATION*PERIOD	5	102.000	0.08	0.9958
STATION*SEASON	5	102.000	0.11	0.9896
PERIOD*STATION*SEASON	5	102.000	0.29	0.9172

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.55	5.42	0.8151	0.7478	0.1078
STATION*PERIOD	0.38	0.00	0.1254	.	0.1039

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.9780	1.3711	2.172	.0322
Period in FC	0.8713	0.6192	1.407	.1624
Period in FC-S	0.7674	0.6329	1.212	.2281
Period in FC-W	0.9753	1.0644	0.916	.3617
Period in DC-S	-0.5016	1.3502	-0.371	.7110
Period in DC-W	6.4576	2.3868	2.706	.0080

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	1.033	0.1073	9.63	.0000	1.2106	0.8545
Period Op-2	0.391	0.2266	1.73	.0875	0.7672	0.0148
Op-1 0611	1.279	0.2398	5.33	.0000	1.6769	0.8808
Op-2 0611	0.609	0.5610	1.09	.2800	1.5406	-0.3219
Op-1 0910	1.211	0.2557	4.74	.0000	1.6354	0.7866
Op-2 0910	0.726	0.5432	1.34	.1843	1.6277	-0.1756
Op-1 0915	0.845	0.2874	2.94	.0041	1.3223	0.3681
Op-2 0915	0.350	0.5610	0.62	.5342	1.2812	-0.5813
Op-1 1015	0.486	0.2874	1.69	.0938	0.9632	0.0090
Op-2 1015	-0.326	0.5610	-0.58	.5624	0.6052	-1.2573
Op-1 1210	1.242	0.2398	5.18	.0000	1.6402	0.8441
Op-2 1210	0.726	0.5432	1.34	.1843	1.6277	-0.1756
Op-1 2210	1.132	0.2620	4.32	.0000	1.5672	0.6972
Op-2 2210	0.261	0.5610	0.46	.6429	1.1921	-0.6704

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.6416	0.2507	2.559	.0120	1.0578	0.2253

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.6695	0.6101	1.10	.2751	1.6823	-0.3432
Station 0910	0.4850	0.6004	0.81	.4211	1.4815	-0.5116
Station 0915	0.4952	0.6304	0.79	.4339	1.5416	-0.5511
Station 1015	0.8121	0.6304	1.29	.2005	1.8585	-0.2342
Station 1210	0.5161	0.5938	0.87	.3868	1.5017	-0.4695
Station 2210	0.8713	0.6192	1.41	.1624	1.8992	-0.1565

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	32.03	122.50	50.05	14.01
0611 Op-2	4	0.19	0.50	0.120	0.57	-0.19	29.81	76.00	88.62	-28.99
0910 Op-1	18	0.00	0.00	0.000	.	.	31.78	122.50	50.90	12.65
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	30.95	76.00	70.83	-8.93
0915 Op-1	14	0.39	2.50	0.219	0.87	-0.08	18.32	106.25	34.72	1.92
0915 Op-2	4	1.69	6.25	1.525	6.54	-3.17	28.31	70.50	83.49	-26.87
1015 Op-1	14	3.66	13.75	1.312	6.50	0.83	15.05	113.75	31.44	-1.33
1015 Op-2	4	11.31	32.50	7.675	35.74	-13.11	18.69	56.50	65.48	-28.10
1210 Op-1	19	0.08	0.50	0.038	0.16	-0.00	31.95	122.75	49.97	13.92
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	30.95	76.25	70.93	-9.03
2210 Op-1	16	0.42	5.75	0.358	1.19	-0.34	28.84	128.25	47.94	9.74
2210 Op-2	4	6.25	21.25	5.078	22.41	-9.91	23.75	58.75	71.46	-23.96

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	32.03	122.50	8.577	50.05	14.01
Op-2	5	31.00	76.25	14.402	70.99	-8.99

Analysis of Variance for SAQ for 0038 - Macrocystis spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	46.85	0.0000
SEASON	1	102.000	0.98	0.3256
STATION	5	102.000	9.88	0.0000
PERIOD*SEASON	1	102.000	0.36	0.5472
STATION*PERIOD	5	102.000	2.91	0.0170
STATION*SEASON	5	102.000	0.54	0.7491
PERIOD*STATION*SEASON	5	102.000	0.31	0.9055

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	46.85	44.93	1.0000	1.0000	0.3245
STATION*PERIOD	14.54	9.26	0.9018	0.7299	0.1702

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.6849	0.3614	7.429	.0000
Period in FC	0.0293	0.1632	0.180	.8577
Period in FC-S	0.0587	0.1668	0.352	.7257
Period in FC-W	-0.0000	0.2806	-0.000	1.000
Period in DC-S	2.8950	0.3559	8.134	.0000
Period in DC-W	2.4747	0.6291	3.934	.0002

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.140	0.0283	-4.96	.0000	-0.0932	-0.1871
Period Op-2	-0.593	0.0597	-9.92	.0000	-0.4934	-0.6917
Op-1 0611	-0.007	0.0632	-0.11	.9149	0.0981	-0.1117
Op-2 0611	-0.193	0.1479	-1.30	.1949	0.0525	-0.4384
Op-1 0910	-0.055	0.0674	-0.81	.4171	0.0570	-0.1668
Op-2 0910	-0.714	0.1432	-4.99	.0000	-0.4767	-0.9521
Op-1 0915	-0.220	0.0758	-2.91	.0044	-0.0947	-0.3462
Op-2 0915	-0.769	0.1479	-5.20	.0000	-0.5238	-1.0147
Op-1 1015	-0.296	0.0758	-3.90	.0002	-0.1701	-0.4216
Op-2 1015	-1.001	0.1479	-6.77	.0000	-0.7555	-1.2464
Op-1 1210	-0.263	0.0632	-4.16	.0001	-0.1581	-0.3680
Op-2 1210	-0.848	0.1432	-5.93	.0000	-0.6107	-1.0860
Op-1 2210	0.000	0.0691	0.00	1.000	0.1147	-0.1147
Op-2 2210	-0.029	0.1479	-0.20	.8431	0.2161	-0.2748

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.4524	0.0661	6.845	.0000	0.5621	0.3427

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1862	0.1608	1.16	.2497	0.4531	-0.0808
Station 0910	0.6595	0.1582	4.17	.0001	0.9222	0.3968
Station 0915	0.5488	0.1662	3.30	.0013	0.8246	0.2730
Station 1015	0.7051	0.1662	4.24	.0000	0.9809	0.4293
Station 1210	0.5853	0.1565	3.74	.0003	0.8451	0.3255
Station 2210	0.0293	0.1632	0.18	.8577	0.3003	-0.2416

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.03	0.50	0.026	0.08	-0.03	-0.03	0.50	0.03	-0.08
0611 Op-2	4	2.69	10.50	2.605	10.98	-5.60	-2.69	10.50	5.60	-10.98
0910 Op-1	18	0.19	1.50	0.102	0.41	-0.02	-0.19	1.50	0.02	-0.41
0910 Op-2	5	5.70	9.50	1.727	10.50	0.90	-5.70	9.50	-0.90	-10.50
0915 Op-1	14	1.39	8.25	0.603	2.70	0.09	-1.39	8.25	-0.09	-2.70
0915 Op-2	4	7.00	15.25	3.681	18.72	-4.72	-7.00	15.25	4.72	-18.72
1015 Op-1	14	1.64	6.00	0.626	2.99	0.29	-1.64	6.00	-0.29	-2.99
1015 Op-2	4	8.56	7.00	1.644	13.79	3.33	-8.56	7.00	-3.33	-13.79
1210 Op-1	19	1.89	17.75	0.940	3.87	-0.08	-1.89	17.75	0.08	-3.87
1210 Op-2	5	6.70	7.50	1.288	10.28	3.12	-6.70	7.50	-3.12	-10.28
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.13	0.50	0.27	-0.52

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SAQ for 0041 - Nereocystis luetkeana

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	2.08	0.1526
SEASON	1	102.000	39.62	0.0000
STATION	5	102.000	4.19	0.0017
PERIOD*SEASON	1	102.000	8.92	0.0035
STATION*PERIOD	5	102.000	3.18	0.0104
STATION*SEASON	5	102.000	0.07	0.9963
PERIOD*STATION*SEASON	5	102.000	0.07	0.9968

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.08	1.04	0.4166	0.2671	0.1013
STATION*PERIOD	15.91	10.60	0.9264	0.7876	0.1015

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.3492	0.7939	-2.959	.0038
Period in FC	1.0937	0.3585	3.051	.0029
Period in FC-S	0.8414	0.3665	2.296	.0237
Period in FC-W	1.3460	0.6163	2.184	.0313
Period in DC-S	-4.6983	0.7818	-6.010	.0000
Period in DC-W	-0.0000	1.3620	-0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.222	0.0621	3.57	.0005	0.3251	0.1189
Period Op-2	0.431	0.1312	3.29	.0014	0.6490	0.2134
Op-1 0611	0.250	0.1388	1.80	.0747	0.4805	0.0195
Op-2 0611	0.727	0.3248	2.24	.0273	1.2665	0.1881
Op-1 0910	0.250	0.1480	1.69	.0943	0.4957	0.0042
Op-2 0910	0.687	0.3145	2.18	.0313	1.2089	0.1647
Op-1 0915	0.242	0.1664	1.45	.1493	0.5181	-0.0344
Op-2 0915	0.727	0.3248	2.24	.0273	1.2665	0.1881
Op-1 1015	0.215	0.1664	1.29	.2001	0.4909	-0.0616
Op-2 1015	0.727	0.3248	2.24	.0273	1.2665	0.1881
Op-1 1210	0.250	0.1388	1.80	.0747	0.4805	0.0195
Op-2 1210	0.687	0.3145	2.18	.0313	1.2089	0.1647
Op-1 2210	0.125	0.1517	0.83	.4103	0.3773	-0.1264
Op-2 2210	-0.968	0.3248	-2.98	.0036	-0.4291	-1.5075

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2092	0.1452	-1.441	.1526	0.0318	-0.4502

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.4774	0.3533	-1.35	.1796	0.1090	-1.0637
Station 0910	-0.4368	0.3476	-1.26	.2118	0.1402	-1.0138
Station 0915	-0.4855	0.3650	-1.33	.1864	0.1204	-1.0914
Station 1015	-0.5127	0.3650	-1.40	.1632	0.0932	-1.1186
Station 1210	-0.4368	0.3438	-1.27	.2068	0.1339	-1.0075
Station 2210	1.0937	0.3585	3.05	.0029	1.6888	0.4986

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.53	4.50	1.09	-0.04
0611 Op-2	4	0.00	0.00	0.000	.	.	5.50	18.25	19.26	-8.26
0910 Op-1	18	0.00	0.00	0.000	.	.	0.56	4.50	1.15	-0.04
0910 Op-2	5	0.00	0.00	0.000	.	.	4.65	18.25	14.24	-4.94
0915 Op-1	14	0.00	0.00	0.000	.	.	0.39	2.75	0.84	-0.06
0915 Op-2	4	0.00	0.00	0.000	.	.	5.50	18.25	19.26	-8.26
1015 Op-1	14	0.02	0.25	0.018	0.06	-0.02	0.38	2.75	0.81	-0.06
1015 Op-2	4	0.00	0.00	0.000	.	.	5.50	18.25	19.26	-8.26
1210 Op-1	19	0.00	0.00	0.000	.	.	0.53	4.50	1.09	-0.04
1210 Op-2	5	0.00	0.00	0.000	.	.	4.65	18.25	14.24	-4.94
2210 Op-1	16	0.05	0.25	0.025	0.10	-0.01	0.41	4.75	1.03	-0.21
2210 Op-2	4	10.38	22.25	5.207	26.94	-6.19	-4.88	7.25	0.37	-10.12

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.53	4.50	0.270	1.09	-0.04
Op-2	5	4.65	18.25	3.456	14.24	-4.94

Analysis of Variance for SAQ for 0042 - Pterygophora californica

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	11.49	0.0010
SEASON	1	102.000	12.73	0.0005
STATION	5	102.000	14.20	0.0000
PERIOD*SEASON	1	102.000	2.41	0.1237
STATION*PERIOD	5	102.000	0.40	0.8456
STATION*SEASON	5	102.000	0.64	0.6722
PERIOD*STATION*SEASON	5	102.000	0.59	0.7085

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	11.49	10.26	0.9575	0.9379	0.2487
STATION*PERIOD	2.02	0.00	0.2459	.	0.2640

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.5443	0.5467	2.825	.0057
Period in PC	0.4889	0.2469	1.980	.0504
Period in PC-S	0.5489	0.2524	2.175	.0319
Period in PC-W	0.4289	0.4244	1.011	.3146
Period in DC-S	0.5533	0.5384	1.028	.3065
Period in DC-W	2.5354	0.9517	2.664	.0090

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	1.476	0.0428	34.50	.0000	1.5465	1.4045
Period Op-2	1.137	0.0904	12.58	.0000	1.2866	0.9866
Op-1 0611	1.777	0.0956	18.59	.0000	1.9360	1.6186
Op-2 0611	1.391	0.2237	6.22	.0000	1.7621	1.0195
Op-1 0910	1.728	0.1019	16.95	.0000	1.8968	1.5584
Op-2 0910	1.361	0.2166	6.29	.0000	1.7208	1.0017
Op-1 0915	1.619	0.1146	14.13	.0000	1.8096	1.4292
Op-2 0915	1.318	0.2237	5.89	.0000	1.6889	0.9462
Op-1 1015	0.384	0.1146	3.35	.0011	0.5745	0.1940
Op-2 1015	0.340	0.2237	1.52	.1317	0.7113	-0.0314
Op-1 1210	1.756	0.0956	18.36	.0000	1.9146	1.5972
Op-2 1210	1.311	0.2166	6.05	.0000	1.6701	0.9511
Op-1 2210	1.589	0.1045	15.20	.0000	1.7621	1.4152
Op-2 2210	1.100	0.2237	4.92	.0000	1.4710	0.7284

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3389	0.1000	3.390	.0010	0.5048	0.1729

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.3865	0.2433	1.59	.1152	0.7903	-0.0173
Station 0910	0.3664	0.2394	1.53	.1290	0.7637	-0.0310
Station 0915	0.3018	0.2513	1.20	.2326	0.7191	-0.1154
Station 1015	0.0443	0.2513	0.18	.8603	0.4616	-0.3729
Station 1210	0.4453	0.2368	1.88	.0629	0.8383	0.0523
Station 2210	0.4889	0.2469	1.98	.0504	0.8987	0.0791

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.01	0.25	0.013	0.04	-0.01	93.41	239.00	129.78	57.04
0611 Op-2	4	0.00	0.00	0.000	.	.	55.31	149.25	168.49	-57.87
0910 Op-1	18	0.10	1.00	0.067	0.24	-0.05	93.07	238.50	131.64	54.50
0910 Op-2	5	0.10	0.50	0.100	0.38	-0.18	51.90	148.75	128.66	-24.86
0915 Op-1	14	0.07	1.00	0.071	0.23	-0.08	75.11	238.25	117.47	32.75
0915 Op-2	4	0.44	1.75	0.438	1.83	-0.95	54.88	147.50	166.67	-56.92
1015 Op-1	14	21.43	31.25	2.691	27.24	15.61	53.75	227.25	93.97	13.53
1015 Op-2	4	9.13	18.75	4.270	22.71	-4.46	46.19	168.00	167.36	-74.99
1210 Op-1	19	0.07	0.50	0.037	0.14	-0.01	93.36	239.00	129.72	56.99
1210 Op-2	5	0.15	0.25	0.061	0.32	-0.02	51.85	149.50	128.99	-25.29
2210 Op-1	16	2.63	30.50	1.948	6.78	-1.53	85.31	225.75	120.12	50.51
2210 Op-2	4	13.69	54.75	13.688	57.25	-29.87	41.63	94.50	111.58	-28.33

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	93.42	239.25	17.317	129.80	57.04
Op-2	5	52.00	149.25	27.746	129.04	-25.04

Analysis of Variance for SAQ for 1326 - Sargassum muticum

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	0	102.000	.	.
SEASON	0	102.000	.	.
STATION	0	102.000	.	.
PERIOD*SEASON	0	102.000	.	.
STATION*PERIOD	0	102.000	.	.
STATION*SEASON	0	102.000	.	.
PERIOD*STATION*SEASON	0	102.000	.	.

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	.	0.00	.	.	.
STATION*PERIOD	.	0.00	.	.	.

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0000	.	.	.
Period in FC	0.0000	.	.	.
Period in FC-S	0.0000	.	.	.
Period in FC-W	0.0000	.	.	.
Period in DC-S	0.0000	.	.	.
Period in DC-W	0.0000	.	.	.

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.000	.	.	.	.	.
Period Op-2	0.000	.	.	.	.	.
Op-1 0611	0.000	.	.	.	.	.
Op-2 0611	0.000	.	.	.	.	.
Op-1 0910	0.000	.	.	.	.	.
Op-2 0910	0.000	.	.	.	.	.
Op-1 0915	0.000	.	.	.	.	.
Op-2 0915	0.000	.	.	.	.	.
Op-1 1015	0.000	.	.	.	.	.
Op-2 1015	0.000	.	.	.	.	.
Op-1 1210	0.000	.	.	.	.	.
Op-2 1210	0.000	.	.	.	.	.
Op-1 2210	0.000	.	.	.	.	.
Op-2 2210	0.000	.	.	.	.	.

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0000	.	.	.	.	.

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	.	.	.	.	.
Station 0910	0.0000	.	.	.	.	.
Station 0915	0.0000	.	.	.	.	.
Station 1015	0.0000	.	.	.	.	.
Station 1210	0.0000	.	.	.	.	.
Station 2210	0.0000	.	.	.	.	.

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

APPENDIX E4 – ANOVA Test Results
Subtidal Invertebrates

Analysis of Variance for SFQ for 0288 - Acmaea mitra

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	6.67	0.0111
SEASON	1	108.000	12.90	0.0005
STATION	5	108.000	1.80	0.1186
PERIOD*SEASON	1	108.000	6.06	0.0154
STATION*PERIOD	5	108.000	1.58	0.1725
STATION*SEASON	5	108.000	0.39	0.8543
PERIOD*STATION*SEASON	5	108.000	0.31	0.9083

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.67	5.55	0.8218	0.7569	0.8960
STATION*PERIOD	7.89	2.74	0.6606	0.3027	0.1223

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.9711	0.7406	-2.662	.0090
Period in FC	-0.1281	0.3344	-0.383	.7024
Period in FC-S	0.1898	0.3395	0.559	.5772
Period in FC-W	-0.4461	0.5762	-0.774	.4405
Period in DC-S	-0.2885	0.7243	-0.398	.6912
Period in DC-W	-3.6537	1.2920	-2.828	.0056

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.307	0.0574	-5.35	.0000	-0.2117	-0.4021
Period Op-2	0.043	0.1227	0.35	.7269	0.2465	-0.1606
Op-1 0611	0.202	0.1283	1.58	.1176	0.4153	-0.0105
Op-2 0611	0.202	0.3037	0.67	.5070	0.7060	-0.3017
Op-1 0910	-0.317	0.1370	-2.32	.0224	-0.0900	-0.5447
Op-2 0910	-0.092	0.2940	-0.31	.7538	0.3954	-0.5803
Op-1 0915	-0.584	0.1536	-3.80	.0002	-0.3289	-0.8384
Op-2 0915	-0.255	0.3037	-0.84	.4028	0.2488	-0.7589
Op-1 1015	-0.387	0.1536	-2.52	.0131	-0.1327	-0.6422
Op-2 1015	-0.113	0.3037	-0.37	.7100	0.3906	-0.6170
Op-1 1210	-0.520	0.1283	-4.05	.0001	-0.3074	-0.7332
Op-2 1210	0.623	0.2940	2.12	.0363	1.1112	0.1355
Op-1 2210	-0.235	0.1400	-1.68	.0959	-0.0029	-0.4674
Op-2 2210	-0.107	0.3037	-0.35	.7252	0.3968	-0.6109

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3499	0.1354	-2.583	.0111	-0.1252	-0.5746

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0003	0.3297	0.00	.9993	0.5472	-0.5467
Station 0910	-0.2249	0.3244	-0.69	.4897	0.3133	-0.7631
Station 0915	-0.3286	0.3403	-0.97	.3364	0.2360	-0.8932
Station 1015	-0.2743	0.3403	-0.81	.4220	0.2903	-0.8388
Station 1210	-1.1436	0.3208	-3.56	.0005	-0.6114	-1.6759
Station 2210	-0.1281	0.3344	-0.38	.7024	0.4267	-0.6829

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.30	1.00	0.072	0.45	0.15	0.25	2.00	0.47	0.03
0611 Op-2	4	0.50	1.00	0.228	1.23	-0.23	0.31	2.25	1.81	-1.19
0910 Op-1	19	1.46	6.25	0.336	2.17	0.75	-0.88	6.25	-0.23	-1.53
0910 Op-2	5	1.70	2.75	0.470	3.01	0.39	-0.70	3.50	1.22	-2.62
0915 Op-1	15	2.40	6.25	0.489	3.45	1.35	-1.78	5.00	-0.96	-2.60
0915 Op-2	4	2.00	4.00	0.835	4.66	-0.66	-1.19	4.75	2.07	-4.44
1015 Op-1	15	1.72	4.75	0.361	2.49	0.94	-1.10	5.75	-0.26	-1.94
1015 Op-2	4	1.44	3.25	0.710	3.70	-0.82	-0.63	4.50	2.53	-3.78
1210 Op-1	20	1.86	4.00	0.244	2.37	1.35	-1.31	3.75	-0.76	-1.86
1210 Op-2	5	0.70	1.75	0.330	1.62	-0.22	0.30	3.75	2.12	-1.52
2210 Op-1	17	0.88	2.00	0.119	1.13	0.62	-0.30	1.75	-0.08	-0.53
2210 Op-2	4	0.94	0.75	0.188	1.53	0.34	-0.13	2.25	1.42	-1.67

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.55	1.75	0.122	0.81	0.29
Op-2	5	1.00	2.25	0.433	2.20	-0.20

Analysis of Variance for SFQ for 0306 - Alia spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	5.23	0.0242
SEASON	1	108.000	0.54	0.4642
STATION	5	108.000	2.27	0.0530
PERIOD*SEASON	1	108.000	0.84	0.3602
STATION*PERIOD	5	108.000	0.64	0.6689
STATION*SEASON	5	108.000	0.53	0.7516
PERIOD*STATION*SEASON	5	108.000	0.28	0.9217

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.23	4.13	0.7347	0.6462	0.7334
STATION*PERIOD	3.20	0.00	0.3388	.	0.1165

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.1398	0.5897	1.933	.0559
Period in FC	0.3394	0.2663	1.275	.2051
Period in FC-S	0.2321	0.2703	0.858	.3926
Period in FC-W	0.4468	0.4588	0.974	.3323
Period in DC-S	0.6526	0.5767	1.132	.2603
Period in DC-W	1.6270	1.0287	1.582	.1167

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.036	0.0457	0.78	.4358	0.1115	-0.0401
Period Op-2	-0.211	0.0977	-2.16	.0331	-0.0487	-0.3729
Op-1 0611	-0.138	0.1022	-1.35	.1791	0.0313	-0.3077
Op-2 0611	-0.714	0.2418	-2.95	.0039	-0.3130	-1.1154
Op-1 0910	-0.112	0.1091	-1.03	.3060	0.0688	-0.2932
Op-2 0910	-0.083	0.2341	-0.35	.7252	0.3059	-0.4709
Op-1 0915	0.181	0.1223	1.48	.1415	0.3839	-0.0218
Op-2 0915	-0.121	0.2418	-0.50	.6173	0.2800	-0.5223
Op-1 1015	0.262	0.1223	2.14	.0345	0.4647	0.0590
Op-2 1015	0.091	0.2418	0.38	.7084	0.4919	-0.3105
Op-1 1210	-0.015	0.1022	-0.14	.8852	0.1547	-0.1843
Op-2 1210	-0.135	0.2341	-0.58	.5657	0.2535	-0.5233
Op-1 2210	0.037	0.1115	0.33	.7430	0.2216	-0.1483
Op-2 2210	-0.303	0.2418	-1.25	.2132	0.0984	-0.7040

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2465	0.1078	2.286	.0242	0.4254	0.0676

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.5760	0.2625	2.19	.0304	1.0115	0.1405
Station 0910	-0.0297	0.2583	-0.12	.9086	0.3988	-0.4583
Station 0915	0.3022	0.2710	1.12	.2671	0.7518	-0.1473
Station 1015	0.1712	0.2710	0.63	.5289	0.6207	-0.2784
Station 1210	0.1201	0.2555	0.47	.6392	0.5439	-0.3037
Station 2210	0.3394	0.2663	1.27	.2051	0.7812	-0.1023

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	3.00	14.00	0.736	4.54	1.46	-1.78	18.25	0.02	-3.57
0611 Op-2	4	7.75	20.50	4.486	22.03	-6.53	-7.13	19.25	6.37	-20.62
0910 Op-1	19	1.93	6.25	0.440	2.86	1.01	-0.67	6.75	0.09	-1.43
0910 Op-2	5	0.35	1.00	0.187	0.87	-0.17	0.15	1.50	0.93	-0.63
0915 Op-1	15	0.68	2.50	0.197	1.11	0.26	0.70	6.25	1.68	-0.28
0915 Op-2	4	2.06	6.50	1.515	6.88	-2.76	-1.44	5.25	2.62	-5.50
1015 Op-1	15	0.63	2.75	0.233	1.13	0.13	0.75	6.00	1.66	-0.16
1015 Op-2	4	0.25	0.50	0.102	0.57	-0.07	0.38	1.00	1.14	-0.39
1210 Op-1	20	1.28	3.00	0.180	1.65	0.90	-0.05	5.75	0.65	-0.75
1210 Op-2	5	2.10	8.50	1.614	6.58	-2.38	-1.60	9.00	3.20	-6.40
2210 Op-1	17	1.87	8.00	0.536	3.00	0.73	-0.50	9.50	0.85	-1.85
2210 Op-2	4	3.19	8.25	1.872	9.14	-2.77	-2.56	7.00	2.52	-7.64

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.23	4.50	0.282	1.82	0.63
Op-2	5	0.50	1.25	0.262	1.23	-0.23

Analysis of Variance for SFQ for 0631 - Amphissa spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	7.28	0.0081
SEASON	1	108.000	3.70	0.0571
STATION	5	108.000	2.58	0.0304
PERIOD*SEASON	1	108.000	4.13	0.0445
STATION*PERIOD	5	108.000	1.13	0.3512
STATION*SEASON	5	108.000	0.17	0.9727
PERIOD*STATION*SEASON	5	108.000	0.16	0.9776

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.28	6.15	0.8501	0.7937	0.5921
STATION*PERIOD	5.63	0.52	0.5190	0.1355	0.1100

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.3369	0.8308	-2.813	.0058
Period in FC	-0.1231	0.3751	-0.328	.7434
Period in FC-S	0.3715	0.3809	0.975	.3315
Period in FC-W	-0.6178	0.6464	-0.956	.3413
Period in DC-S	-0.9784	0.8125	-1.204	.2312
Period in DC-W	-3.6955	1.4494	-2.550	.0122

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.058	0.0644	-0.90	.3678	0.0486	-0.1650
Period Op-2	0.352	0.1376	2.56	.0120	0.5801	0.1235
Op-1 0611	-0.217	0.1440	-1.51	.1346	0.0218	-0.4559
Op-2 0611	-0.103	0.3407	-0.30	.7634	0.4624	-0.6680
Op-1 0910	0.201	0.1537	1.31	.1939	0.4560	-0.0541
Op-2 0910	0.864	0.3299	2.62	.0101	1.4116	0.3170
Op-1 0915	0.193	0.1723	1.12	.2642	0.4791	-0.0925
Op-2 0915	0.132	0.3407	0.39	.7000	0.6968	-0.4336
Op-1 1015	-0.118	0.1723	-0.68	.4966	0.1683	-0.4033
Op-2 1015	0.650	0.3407	1.91	.0589	1.2156	0.0852
Op-1 1210	-0.105	0.1440	-0.73	.4671	0.1338	-0.3439
Op-2 1210	0.748	0.3299	2.27	.0253	1.2954	0.2009
Op-1 2210	-0.304	0.1570	-1.94	.0556	-0.0433	-0.5644
Op-2 2210	-0.181	0.3407	-0.53	.5968	0.3845	-0.7460

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4100	0.1519	-2.699	.0081	-0.1579	-0.6621

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1142	0.3699	-0.31	.7581	0.4994	-0.7278
Station 0910	-0.6634	0.3639	-1.82	.0711	-0.0596	-1.2672
Station 0915	0.0617	0.3818	0.16	.8719	0.6951	-0.5716
Station 1015	-0.7679	0.3818	-2.01	.0468	-0.1345	-1.4013
Station 1210	-0.8532	0.3599	-2.37	.0195	-0.2561	-1.4503
Station 2210	-0.1231	0.3751	-0.33	.7434	0.4992	-0.7455

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	1.11	3.75	0.218	1.57	0.66	-0.49	5.75	0.10	-1.08
0611 Op-2	4	1.25	2.25	0.530	2.94	-0.44	-0.63	2.50	1.05	-2.30
0910 Op-1	19	0.32	1.75	0.099	0.52	0.11	0.33	4.25	0.77	-0.12
0910 Op-2	5	0.00	0.00	0.000	.	.	0.65	1.00	1.17	0.13
0915 Op-1	15	0.52	2.75	0.180	0.90	0.13	0.20	5.00	0.86	-0.46
0915 Op-2	4	0.50	1.00	0.204	1.15	-0.15	0.13	0.50	0.52	-0.27
1015 Op-1	15	1.37	4.50	0.371	2.16	0.57	-0.65	5.50	0.23	-1.53
1015 Op-2	4	0.25	1.00	0.250	1.05	-0.55	0.38	1.00	1.14	-0.39
1210 Op-1	20	1.01	3.50	0.238	1.51	0.52	-0.39	4.25	0.06	-0.84
1210 Op-2	5	0.15	0.75	0.150	0.57	-0.27	0.50	1.00	0.99	0.01
2210 Op-1	17	1.08	2.50	0.179	1.46	0.70	-0.46	4.25	0.07	-0.99
2210 Op-2	4	2.06	5.50	1.324	6.28	-2.15	-1.44	6.00	3.07	-5.94

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.63	2.75	0.162	0.96	0.29
Op-2	5	0.65	1.00	0.187	1.17	0.13

Analysis of Variance for SAQ for 0263 - Anthopleura artemisia

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	4.08	0.0460
SEASON	1	102.000	0.20	0.6552
STATION	5	102.000	3.00	0.0145
PERIOD*SEASON	1	102.000	0.46	0.5014
STATION*PERIOD	5	102.000	0.52	0.7631
STATION*SEASON	5	102.000	0.80	0.5548
PERIOD*STATION*SEASON	5	102.000	0.20	0.9603

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.08	3.00	0.6415	0.5308	0.3957
STATION*PERIOD	2.58	0.00	0.2899	.	0.1762

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.1127	0.6823	1.631	.1060
Period in PC	0.4000	0.3081	1.298	.1972
Period in FC-S	0.4887	0.3150	1.552	.1238
Period in FC-W	0.3113	0.5297	0.588	.5581
Period in DC-S	1.5291	0.6719	2.276	.0250
Period in DC-W	0.6962	1.1878	0.586	.5590

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.108	0.0534	2.03	.0452	0.1969	0.0196
Period Op-2	-0.144	0.1128	-1.28	.2051	0.0434	-0.3311
Op-1 0611	-0.305	0.1193	-2.56	.0120	-0.1072	-0.5034
Op-2 0611	-0.229	0.2792	-0.82	.4150	0.2349	-0.6919
Op-1 0910	0.415	0.1272	3.26	.0015	0.6262	0.2038
Op-2 0910	0.116	0.2703	0.43	.6683	0.5649	-0.3325
Op-1 0915	0.344	0.1430	2.40	.0181	0.5811	0.1062
Op-2 0915	-0.000	0.2792	-0.00	1.000	0.4634	-0.4634
Op-1 1015	-0.113	0.1430	-0.79	.4315	0.1245	-0.3504
Op-2 1015	-0.609	0.2792	-2.18	.0313	-0.1460	-1.0729
Op-1 1210	-0.091	0.1193	-0.76	.4484	0.1073	-0.2889
Op-2 1210	-0.141	0.2703	-0.52	.6023	0.3074	-0.5900
Op-1 2210	0.400	0.1304	3.07	.0028	0.6165	0.1835
Op-2 2210	0.000	0.2792	0.00	1.000	0.4634	-0.4634

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2521	0.1248	2.020	.0460	0.4592	0.0450

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0768	0.3036	-0.25	.8008	0.4272	-0.5808
Station 0910	0.2989	0.2988	1.00	.3195	0.7948	-0.1971
Station 0915	0.3436	0.3137	1.10	.2759	0.8643	-0.1771
Station 1015	0.4965	0.3137	1.58	.1166	1.0172	-0.0242
Station 1210	0.0505	0.2955	0.17	.8647	0.5410	-0.4400
Station 2210	0.4000	0.3081	1.30	.1972	0.9115	-0.1115

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	1.51	5.50	0.356	2.26	0.77	-1.09	5.75	-0.37	-1.82
0611 Op-2	4	0.56	2.25	0.563	2.35	-1.23	-0.56	2.25	1.23	-2.35
0910 Op-1	18	0.06	1.00	0.056	0.17	-0.06	0.32	1.75	0.54	0.09
0910 Op-2	5	0.00	0.00	0.000	.	.	0.15	0.75	0.57	-0.27
0915 Op-1	14	0.16	1.00	0.085	0.35	-0.02	0.27	1.50	0.50	0.03
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.45	1.00	0.088	0.64	0.26	-0.02	1.75	0.26	-0.29
1015 Op-2	4	0.31	0.50	0.120	0.69	-0.07	-0.31	0.50	0.07	-0.69
1210 Op-1	19	0.59	3.00	0.184	0.98	0.21	-0.17	2.75	0.17	-0.51
1210 Op-2	5	0.40	1.25	0.257	1.11	-0.31	-0.25	1.25	0.44	-0.94
2210 Op-1	16	0.03	0.25	0.021	0.08	-0.01	0.34	1.25	0.57	0.12
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.42	1.25	0.094	0.62	0.22
Op-2	5	0.15	0.75	0.150	0.57	-0.27

Analysis of Variance for SFQ for 0264 - Anthopleura elegantissima

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	5.99	0.0160
SEASON	1	108.000	1.40	0.2400
STATION	5	108.000	9.02	0.0000
PERIOD*SEASON	1	108.000	0.41	0.5230
STATION*PERIOD	5	108.000	5.30	0.0002
STATION*SEASON	5	108.000	0.93	0.4643
PERIOD*STATION*SEASON	5	108.000	0.43	0.8264

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.99	4.88	0.7842	0.7087	0.9479
STATION*PERIOD	26.48	20.99	0.9940	0.9768	0.6661

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5780	0.2388	-2.420	.0172
Period in FC	-0.0631	0.1078	-0.585	.5597
Period in FC-S	-0.0512	0.1095	-0.468	.6410
Period in FC-W	-0.0750	0.1858	-0.403	.6874
Period in DC-S	-0.4220	0.2335	-1.807	.0736
Period in DC-W	-0.7340	0.4166	-1.762	.0809

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.016	0.0185	-0.85	.3948	0.0149	-0.0465
Period Op-2	0.091	0.0396	2.30	.0233	0.1567	0.0254
Op-1 0611	-0.364	0.0414	-8.79	.0000	-0.2952	-0.4325
Op-2 0611	0.187	0.0979	1.91	.0582	0.3500	0.0250
Op-1 0910	0.112	0.0442	2.53	.0128	0.1852	0.0386
Op-2 0910	-0.087	0.0948	-0.92	.3588	0.0699	-0.2447
Op-1 0915	-0.031	0.0495	-0.63	.5295	0.0509	-0.1134
Op-2 0915	0.049	0.0979	0.50	.6159	0.2117	-0.1132
Op-1 1015	-0.194	0.0495	-3.92	.0002	-0.1117	-0.2760
Op-2 1015	-0.130	0.0979	-1.33	.1870	0.0324	-0.2925
Op-1 1210	0.178	0.0414	4.31	.0000	0.2470	0.1097
Op-2 1210	0.260	0.0948	2.74	.0072	0.4172	0.1026
Op-1 2210	0.204	0.0451	4.52	.0000	0.2788	0.1290
Op-2 2210	0.267	0.0979	2.73	.0075	0.4295	0.1045

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1068	0.0437	-2.447	.0160	-0.0344	-0.1793

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.5514	0.1063	-5.19	.0000	-0.3750	-0.7277
Station 0910	0.1993	0.1046	1.91	.0594	0.3728	0.0257
Station 0915	-0.0805	0.1097	-0.73	.4647	0.1015	-0.2626
Station 1015	-0.0638	0.1097	-0.58	.5621	0.1182	-0.2459
Station 1210	-0.0816	0.1034	-0.79	.4321	0.0901	-0.2532
Station 2210	-0.0631	0.1078	-0.59	.5597	0.1158	-0.2420

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	1.56	3.25	0.193	1.97	1.16	-1.23	3.75	-0.80	-1.65
0611 Op-2	4	0.19	0.50	0.120	0.57	-0.19	0.25	0.50	0.71	-0.21
0910 Op-1	19	0.18	0.75	0.050	0.29	0.08	0.14	1.25	0.30	-0.01
0910 Op-2	5	0.70	0.50	0.094	0.96	0.44	-0.30	1.25	0.30	-0.90
0915 Op-1	15	0.38	1.00	0.068	0.53	0.24	-0.05	1.25	0.11	-0.21
0915 Op-2	4	0.44	1.00	0.213	1.12	-0.24	0.00	1.00	0.73	-0.73
1015 Op-1	15	0.75	1.00	0.065	0.89	0.61	-0.42	1.00	-0.25	-0.59
1015 Op-2	4	0.63	1.00	0.239	1.39	-0.14	-0.19	1.25	0.63	-1.01
1210 Op-1	20	0.09	0.50	0.033	0.16	0.02	0.25	0.75	0.35	0.15
1210 Op-2	5	0.00	0.00	0.000	.	.	0.40	0.75	0.75	0.05
2210 Op-1	17	0.01	0.25	0.015	0.05	-0.02	0.31	1.00	0.42	0.19
2210 Op-2	4	0.00	0.00	0.000	.	.	0.44	0.75	0.94	-0.06

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.34	0.75	0.042	0.42	0.25
Op-2	5	0.40	0.75	0.127	0.75	0.05

Analysis of Variance for SPQ for 0271 - Anthozoa unid.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.00	0.9961
SEASON	1	108.000	0.10	0.7484
STATION	5	108.000	1.91	0.0983
PERIOD*SEASON	1	108.000	0.04	0.8511
STATION*PERIOD	5	108.000	0.48	0.7871
STATION*SEASON	5	108.000	0.79	0.5593
PERIOD*STATION*SEASON	5	108.000	0.67	0.6503

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.00	0.00	0.1000	.	0.4938
STATION*PERIOD	2.42	0.00	0.2779	.	0.1494

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1240	0.5542	-0.224	.8233
Period in FC	0.1211	0.2502	0.484	.6294
Period in FC-S	-0.1931	0.2541	-0.760	.4490
Period in FC-W	0.4353	0.4312	1.009	.3150
Period in DC-S	0.3046	0.5420	0.562	.5754
Period in DC-W	-0.5526	0.9669	-0.572	.5688

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.266	0.0429	-6.19	.0000	-0.1945	-0.3370
Period Op-2	-0.265	0.0918	-2.89	.0047	-0.1130	-0.4176
Op-1 0611	-0.287	0.0960	-2.99	.0034	-0.1282	-0.4468
Op-2 0611	-0.427	0.2273	-1.88	.0630	-0.0499	-0.8040
Op-1 0910	-0.110	0.1025	-1.07	.2858	0.0601	-0.2801
Op-2 0910	-0.068	0.2200	-0.31	.7579	0.2971	-0.4331
Op-1 0915	-0.362	0.1149	-3.15	.0021	-0.1715	-0.5528
Op-2 0915	-0.363	0.2273	-1.60	.1134	0.0143	-0.7398
Op-1 1015	-0.591	0.1149	-5.15	.0000	-0.4007	-0.7820
Op-2 1015	-0.264	0.2273	-1.16	.2475	0.1128	-0.6413
Op-1 1210	0.037	0.0960	0.39	.7010	0.1963	-0.1224
Op-2 1210	-0.068	0.2200	-0.31	.7579	0.2971	-0.4331
Op-1 2210	-0.281	0.1048	-2.68	.0085	-0.1068	-0.4544
Op-2 2210	-0.402	0.2273	-1.77	.0799	-0.0247	-0.7788

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0005	0.1013	-0.005	.9961	0.1677	-0.1686

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1395	0.2467	0.57	.5731	0.5488	-0.2699
Station 0910	-0.0420	0.2428	-0.17	.8630	0.3608	-0.4447
Station 0915	0.0006	0.2547	0.00	.9982	0.4231	-0.4219
Station 1015	-0.3271	0.2547	-1.28	.2018	0.0954	-0.7496
Station 1210	0.1050	0.2401	0.44	.6628	0.5033	-0.2933
Station 2210	0.1211	0.2502	0.48	.6294	0.5363	-0.2941

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.25	1.25	0.079	0.42	0.08	-0.20	1.25	-0.04	-0.36
0611 Op-2	4	0.25	0.75	0.177	0.81	-0.31	-0.25	0.75	0.31	-0.81
0910 Op-1	19	0.11	0.50	0.040	0.19	0.02	-0.07	0.75	0.03	-0.16
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	-0.05	0.25	0.09	-0.19
0915 Op-1	15	0.22	1.25	0.084	0.40	0.04	-0.18	1.25	-0.01	-0.36
0915 Op-2	4	0.13	0.25	0.072	0.35	-0.10	-0.13	0.25	0.10	-0.35
1015 Op-1	15	0.48	1.50	0.113	0.73	0.24	-0.45	1.75	-0.19	-0.71
1015 Op-2	4	0.31	1.00	0.237	1.07	-0.44	-0.31	1.00	0.44	-1.07
1210 Op-1	20	0.05	0.50	0.029	0.11	-0.01	0.00	0.75	0.07	-0.07
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	-0.05	0.25	0.09	-0.19
2210 Op-1	17	0.37	1.50	0.123	0.63	0.11	-0.34	1.75	-0.07	-0.61
2210 Op-2	4	0.19	0.50	0.120	0.57	-0.19	-0.19	0.50	0.19	-0.57

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.05	0.25	0.023	0.10	0.00
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SAQ for 1191 - Aplysia californica

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.52	0.4737
SEASON	1	102.000	2.87	0.0933
STATION	5	102.000	0.93	0.4666
PERIOD*SEASON	1	102.000	1.55	0.2163
STATION*PERIOD	5	102.000	0.23	0.9486
STATION*SEASON	5	102.000	0.20	0.9636
PERIOD*STATION*SEASON	5	102.000	0.19	0.9666

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.52	0.00	0.1852	.	0.2619
STATION*PERIOD	1.15	0.00	0.1805	.	0.1259

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5512	0.5837	-0.944	.3472
Period in FC	0.0907	0.2636	0.344	.7316
Period in FC-S	0.1814	0.2694	0.673	.5024
Period in FC-W	-0.0000	0.4531	-0.000	1.000
Period in DC-S	0.1548	0.5748	0.269	.7882
Period in DC-W	-1.2573	1.0161	-1.237	.2188

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.234	0.0457	-5.11	.0000	-0.1578	-0.3094
Period Op-2	-0.157	0.0965	-1.63	.1072	0.0033	-0.3170
Op-1 0611	-0.110	0.1021	-1.08	.2849	0.0597	-0.2792
Op-2 0611	-0.091	0.2388	-0.38	.7050	0.3058	-0.4871
Op-1 0910	-0.190	0.1088	-1.75	.0834	-0.0096	-0.3710
Op-2 0910	-0.068	0.2312	-0.29	.7693	0.3158	-0.4519
Op-1 0915	-0.468	0.1224	-3.82	.0002	-0.2647	-0.6710
Op-2 0915	-0.220	0.2388	-0.92	.3583	0.1761	-0.6168
Op-1 1015	-0.342	0.1224	-2.80	.0061	-0.1393	-0.5455
Op-2 1015	-0.355	0.2388	-1.49	.1403	0.0415	-0.7514
Op-1 1210	-0.291	0.1021	-2.85	.0053	-0.1217	-0.4606
Op-2 1210	-0.116	0.2312	-0.50	.6165	0.2677	-0.5000
Op-1 2210	-0.000	0.1116	-0.00	1.000	0.1852	-0.1852
Op-2 2210	-0.091	0.2388	-0.38	.7050	0.3058	-0.4871

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0768	0.1067	-0.719	.4737	0.1004	-0.2539

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0191	0.2597	-0.07	.9416	0.4121	-0.4502
Station 0910	-0.1223	0.2556	-0.48	.6333	0.3020	-0.5465
Station 0915	-0.2475	0.2684	-0.92	.3586	0.1980	-0.6929
Station 1015	0.0126	0.2684	0.05	.9628	0.4580	-0.4329
Station 1210	-0.1750	0.2528	-0.69	.4904	0.2446	-0.5945
Station 2210	0.0907	0.2636	0.34	.7316	0.5282	-0.3469

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.09	1.25	0.067	0.23	-0.05	-0.09	1.25	0.05	-0.23
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26
0910 Op-1	18	0.18	1.25	0.085	0.36	0.00	-0.18	1.25	-0.00	-0.36
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	-0.05	0.25	0.09	-0.19
0915 Op-1	14	0.41	1.75	0.147	0.73	0.09	-0.41	1.75	-0.09	-0.73
0915 Op-2	4	0.50	2.00	0.500	2.09	-1.09	-0.50	2.00	1.09	-2.09
1015 Op-1	14	0.30	1.50	0.126	0.58	0.03	-0.30	1.50	-0.03	-0.58
1015 Op-2	4	1.00	3.75	0.919	3.92	-1.92	-1.00	3.75	1.92	-3.92
1210 Op-1	19	0.28	1.75	0.119	0.53	0.03	-0.28	1.75	-0.03	-0.53
1210 Op-2	5	0.15	0.75	0.150	0.57	-0.27	-0.15	0.75	0.27	-0.57
2210 Op-1	16	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SAQ for 0424 - Asterina miniata

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	11.92	0.0008
SEASON	1	102.000	0.00	0.9747
STATION	5	102.000	9.74	0.0000
PERIOD*SEASON	1	102.000	0.00	0.9875
STATION*PERIOD	5	102.000	2.68	0.0257
STATION*SEASON	5	102.000	0.42	0.8314
PERIOD*STATION*SEASON	5	102.000	0.25	0.9391

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	11.92	10.69	0.9628	0.9454	0.8698
STATION*PERIOD	13.39	8.13	0.8759	0.6729	0.1232

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-3.0253	0.7524	-4.021	.0001
Period in FC	0.1751	0.3398	0.515	.6075
Period in FC-S	-0.1564	0.3473	-0.450	.6535
Period in FC-W	0.5065	0.5841	0.867	.3879
Period in DC-S	-2.7068	0.7409	-3.653	.0004
Period in DC-W	-3.3438	1.3098	-2.553	.0122

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.716	0.0589	12.15	.0000	0.8132	0.6178
Period Op-2	1.191	0.1244	9.57	.0000	1.3970	0.9841
Op-1 0611	-0.022	0.1316	-0.16	.8698	0.1968	-0.2401
Op-2 0611	1.196	0.3079	3.88	.0002	1.7066	0.6846
Op-1 0910	1.359	0.1403	9.68	.0000	1.5916	1.1258
Op-2 0910	1.784	0.2981	5.99	.0000	2.2790	1.2894
Op-1 0915	0.903	0.1577	5.72	.0000	1.1648	0.6411
Op-2 0915	1.727	0.3079	5.61	.0000	2.2380	1.2160
Op-1 1015	0.838	0.1577	5.31	.0000	1.1000	0.5764
Op-2 1015	0.688	0.3079	2.23	.0276	1.1990	0.1770
Op-1 1210	0.934	0.1316	7.10	.0000	1.1525	0.7157
Op-2 1210	1.643	0.2981	5.51	.0000	2.1377	1.1481
Op-1 2210	0.281	0.1438	1.95	.0536	0.5195	0.0421
Op-2 2210	0.106	0.3079	0.34	.7320	0.6167	-0.4053

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4750	0.1376	-3.452	.0008	-0.2466	-0.7034

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-1.2172	0.3348	-3.64	.0004	-0.6615	-1.7730
Station 0910	-0.4255	0.3295	-1.29	.1995	0.1214	-0.9723
Station 0915	-0.8241	0.3459	-2.38	.0191	-0.2499	-1.3983
Station 1015	0.1502	0.3459	0.43	.6650	0.7244	-0.4240
Station 1210	-0.7088	0.3258	-2.18	.0319	-0.1679	-1.2496
Station 2210	0.1751	0.3398	0.52	.6075	0.7391	-0.3889

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	19.37	54.75	3.812	27.38	11.36	-12.41	57.00	-4.94	-19.88
0611 Op-2	4	0.31	0.50	0.120	0.69	-0.07	6.31	9.50	13.17	-0.55
0910 Op-1	18	0.39	1.75	0.116	0.63	0.14	6.69	10.75	8.15	5.23
0910 Op-2	5	0.00	0.00	0.000	.	.	7.75	11.50	13.25	2.25
0915 Op-1	14	1.20	3.50	0.281	1.80	0.59	6.25	10.00	7.96	4.54
0915 Op-2	4	0.00	0.00	0.000	.	..	6.63	9.50	13.33	-0.08
1015 Op-1	14	1.25	3.50	0.287	1.87	0.63	6.20	10.50	8.02	4.37
1015 Op-2	4	1.44	3.00	0.616	3.40	-0.52	5.19	8.25	10.62	-0.24
1210 Op-1	19	0.89	2.50	0.156	1.22	0.57	6.07	10.75	7.47	4.66
1210 Op-2	5	0.25	1.25	0.250	0.94	-0.44	7.50	10.25	12.64	2.36
2210 Op-1	16	3.81	4.50	0.350	4.56	3.07	3.66	9.00	5.11	2.20
2210 Op-2	4	4.44	10.75	2.301	11.76	-2.89	2.19	11.25	10.55	-6.18

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	6.96	12.50	0.708	8.45	5.47
Op-2	5	7.75	11.50	1.983	13.25	2.25

Analysis of Variance for SFQ for 0495 - Balanophyllia elegans

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	2.16	0.1445
SEASON	1	108.000	0.83	0.3654
STATION	5	108.000	18.72	0.0000
PERIOD*SEASON	1	108.000	0.00	0.9799
STATION*PERIOD	5	108.000	0.77	0.5736
STATION*SEASON	5	108.000	0.20	0.9625
PERIOD*STATION*SEASON	5	108.000	0.10	0.9918

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.16	1.12	0.4279	0.2801	0.3207
STATION*PERIOD	3.85	0.00	0.3886	.	0.2058

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.9649	0.6431	1.500	.1364
Period in FC	0.0723	0.2904	0.249	.8039
Period in FC-S	0.0617	0.2948	0.209	.8345
Period in FC-W	0.0828	0.5003	0.165	.8689
Period in DC-S	0.9932	0.6289	1.579	.1172
Period in DC-W	0.9365	1.1219	0.835	.4057

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.442	0.0498	8.88	.0000	0.5250	0.3597
Period Op-2	0.270	0.1065	2.53	.0128	0.4463	0.0928
Op-1 0611	0.655	0.1114	5.88	.0000	0.8398	0.4700
Op-2 0611	0.583	0.2637	2.21	.0291	1.0206	0.1456
Op-1 0910	0.772	0.1190	6.49	.0000	0.9692	0.5744
Op-2 0910	0.621	0.2553	2.43	.0166	1.0451	0.1979
Op-1 0915	0.524	0.1333	3.93	.0002	0.7453	0.3028
Op-2 0915	0.583	0.2637	2.21	.0291	1.0206	0.1456
Op-1 1015	-0.598	0.1333	-4.48	.0000	-0.3764	-0.8188
Op-2 1015	-1.278	0.2637	-4.85	.0000	-0.8403	-1.7153
Op-1 1210	0.646	0.1114	5.80	.0000	0.8306	0.4609
Op-2 1210	0.524	0.2553	2.05	.0425	0.9478	0.1006
Op-1 2210	0.655	0.1216	5.39	.0000	0.8570	0.4537
Op-2 2210	0.583	0.2637	2.21	.0291	1.0206	0.1456

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1729	0.1176	1.470	.1445	0.3680	-0.0222

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0718	0.2863	0.25	.8023	0.5468	-0.4031
Station 0910	0.1503	0.2817	0.53	.5947	0.6177	-0.3170
Station 0915	-0.0590	0.2955	-0.20	.8420	0.4312	-0.5493
Station 1015	0.6802	0.2955	2.30	.0233	1.1705	0.1900
Station 1210	0.1215	0.2786	0.44	.6635	0.5837	-0.3407
Station 2210	0.0723	0.2904	0.25	.8039	0.5540	-0.4095

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.29	4.50	0.226	0.76	-0.19	0.39	6.00	0.94	-0.17
0611 Op-2	4	0.00	0.00	0.000	.	.	0.63	2.00	2.10	-0.85
0910 Op-1	19	0.01	0.25	0.013	0.04	-0.01	0.68	1.75	0.89	0.48
0910 Op-2	5	0.00	0.00	0.000	.	.	0.65	2.00	1.65	-0.35
0915 Op-1	15	0.17	0.75	0.053	0.28	0.05	0.50	1.75	0.73	0.27
0915 Op-2	4	0.00	0.00	0.000	.	.	0.63	2.00	2.10	-0.85
1015 Op-1	15	2.37	5.00	0.343	3.10	1.63	-1.70	5.75	-0.90	-2.50
1015 Op-2	4	7.13	7.75	1.878	13.10	1.15	-6.50	9.00	0.20	-13.20
1210 Op-1	20	0.05	0.25	0.023	0.10	0.00	0.63	1.75	0.83	0.42
1210 Op-2	5	0.10	0.50	0.100	0.38	-0.18	0.55	1.50	1.29	-0.19
2210 Op-1	17	0.07	0.25	0.028	0.13	0.01	0.65	1.50	0.86	0.44
2210 Op-2	4	0.00	0.00	0.000	.	.	0.63	2.00	2.10	-0.85

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.68	1.75	0.094	0.87	0.48
Op-2	5	0.65	2.00	0.359	1.65	-0.35

Analysis of Variance for SFQ for 0394 - Balanus spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	19.21	0.0000
SEASON	1	108.000	33.91	0.0000
STATION	5	108.000	0.05	0.9980
PERIOD*SEASON	1	108.000	27.58	0.0000
STATION*PERIOD	5	108.000	0.03	0.9995
STATION*SEASON	5	108.000	0.01	0.9999
PERIOD*STATION*SEASON	5	108.000	0.02	0.9999

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	19.21	17.86	0.9966	0.9947	0.1209
STATION*PERIOD	0.15	0.00	0.1099	.	0.1031

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.4370	0.6032	-4.040	.0001
Period in FC	-0.4642	0.2724	-1.704	.0912
Period in FC-S	0.0899	0.2766	0.325	.7457
Period in FC-W	-1.0182	0.4693	-2.170	.0322
Period in DC-S	0.4847	0.5900	0.822	.4131
Period in DC-W	-5.3588	1.0524	-5.092	.0000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.110	0.0467	2.35	.0206	0.1873	0.0322
Period Op-2	0.593	0.0999	5.94	.0000	0.7591	0.4275
Op-1 0611	0.079	0.1045	0.75	.4532	0.2521	-0.0947
Op-2 0611	0.562	0.2474	2.27	.0252	0.9719	0.1512
Op-1 0910	0.126	0.1116	1.13	.2625	0.3109	-0.0594
Op-2 0910	0.602	0.2395	2.51	.0134	0.9994	0.2047
Op-1 0915	0.108	0.1251	0.86	.3917	0.3151	-0.0999
Op-2 0915	0.602	0.2474	2.43	.0166	1.0125	0.1917
Op-1 1015	0.181	0.1251	1.45	.1500	0.3889	-0.0262
Op-2 1015	0.602	0.2474	2.43	.0166	1.0125	0.1917
Op-1 1210	0.027	0.1045	0.26	.7943	0.2007	-0.1461
Op-2 1210	0.590	0.2395	2.46	.0154	0.9873	0.1926
Op-1 2210	0.138	0.1140	1.21	.2291	0.3271	-0.0513
Op-2 2210	0.602	0.2474	2.43	.0166	1.0125	0.1917

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4835	0.1103	-4.383	.0000	-0.3005	-0.6665

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.4829	0.2685	-1.80	.0750	-0.0373	-0.9284
Station 0910	-0.4763	0.2642	-1.80	.0742	-0.0380	-0.9147
Station 0915	-0.4945	0.2772	-1.78	.0772	-0.0346	-0.9544
Station 1015	-0.4207	0.2772	-1.52	.1320	0.0392	-0.8806
Station 1210	-0.5626	0.2613	-2.15	.0335	-0.1291	-0.9962
Station 2210	-0.4642	0.2724	-1.70	.0912	-0.0123	-0.9161

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.64	8.75	0.443	1.56	-0.29	1.23	32.50	4.06	-1.61
0611 Op-2	4	0.19	0.75	0.188	0.78	-0.41	3.56	15.75	15.71	-8.58
0910 Op-1	19	0.66	11.25	0.589	1.90	-0.58	1.30	12.75	2.92	-0.32
0910 Op-2	5	0.00	0.00	0.000	.	.	3.00	15.00	11.33	-5.33
0915 Op-1	15	0.55	5.50	0.374	1.35	-0.25	1.87	29.25	5.57	-1.83
0915 Op-2	4	0.00	0.00	0.000	.	.	3.75	15.00	15.68	-8.18
1015 Op-1	15	0.17	1.50	0.108	0.40	-0.07	2.25	25.25	5.77	-1.27
1015 Op-2	4	0.00	0.00	0.000	.	.	3.75	15.00	15.68	-8.18
1210 Op-1	20	1.09	12.50	0.693	2.54	-0.36	0.78	36.25	3.88	-2.33
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	2.95	15.25	11.32	-5.42
2210 Op-1	17	0.00	0.00	0.000	.	.	0.79	7.50	1.88	-0.29
2210 Op-2	4	0.00	0.00	0.000	.	.	3.75	15.00	15.68	-8.18

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.86	23.75	1.232	4.44	-0.72
Op-2	5	3.00	15.00	3.000	11.33	-5.33

Analysis of Variance for SFQ for 0773 - Balanus/Tetraclita spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	3.80	0.0539
SEASON	1	108.000	0.09	0.7710
STATION	5	108.000	0.41	0.8399
PERIOD*SEASON	1	108.000	0.08	0.7742
STATION*PERIOD	5	108.000	0.90	0.4846
STATION*SEASON	5	108.000	0.61	0.6946
PERIOD*STATION*SEASON	5	108.000	0.45	0.8137

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.80	2.73	0.6150	0.4991	0.2034
STATION*PERIOD	4.50	0.00	0.4375	.	0.1241

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.5641	0.8064	-1.940	.0550
Period in PC	-0.1604	0.3641	-0.440	.6605
Period in PC-S	-0.4095	0.3697	-1.108	.2704
Period in PC-W	0.0888	0.6274	0.142	.8877
Period in DC-S	-1.5694	0.7886	-1.990	.0491
Period in DC-W	-1.5588	1.4068	-1.108	.2703

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.109	0.0625	1.74	.0840	0.2126	0.0053
Period Op-2	0.396	0.1336	2.97	.0037	0.6180	0.1747
Op-1 0611	0.252	0.1397	1.80	.0741	0.4838	0.0202
Op-2 0611	0.560	0.3307	1.69	.0934	1.1083	0.0111
Op-1 0910	-0.297	0.1492	-1.99	.0492	-0.0492	-0.5443
Op-2 0910	0.539	0.3202	1.68	.0954	1.0698	0.0074
Op-1 0915	0.221	0.1672	1.32	.1890	0.4984	-0.0564
Op-2 0915	0.111	0.3307	0.34	.7370	0.6599	-0.4373
Op-1 1015	0.365	0.1672	2.18	.0313	0.6423	0.0875
Op-2 1015	0.400	0.3307	1.21	.2296	0.9481	-0.1491
Op-1 1210	-0.024	0.1397	-0.17	.8623	0.2075	-0.2561
Op-2 1210	0.472	0.3202	1.47	.1434	1.0031	-0.0593
Op-1 2210	0.137	0.1524	0.90	.3719	0.3896	-0.1162
Op-2 2210	0.297	0.3307	0.90	.3710	0.8456	-0.2516

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2874	0.1475	-1.949	.0539	-0.0428	-0.5321

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.3077	0.3590	-0.86	.3933	0.2879	-0.9033
Station 0910	-0.8354	0.3532	-2.36	.0198	-0.2493	-1.4214
Station 0915	0.1097	0.3705	0.30	.7677	0.7245	-0.5050
Station 1015	-0.0346	0.3705	-0.09	.9257	0.5801	-0.6494
Station 1210	-0.4962	0.3493	-1.42	.1584	0.0834	-1.0757
Station 2210	-0.1604	0.3641	-0.44	.6605	0.4437	-0.7644

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.24	1.75	0.106	0.46	0.01	2.63	21.00	5.07	0.18
0611 Op-2	4	0.19	0.75	0.188	0.78	-0.41	3.75	6.25	8.22	-0.72
0910 Op-1	19	5.28	16.25	1.250	7.90	2.65	-2.26	34.50	1.38	-5.91
0910 Op-2	5	1.05	5.25	1.050	3.97	-1.87	3.40	7.00	7.52	-0.72
0915 Op-1	15	0.48	1.75	0.165	0.84	0.13	3.23	21.00	6.45	0.02
0915 Op-2	4	2.13	8.50	2.125	8.89	-4.64	1.81	12.25	10.70	-7.08
1015 Op-1	15	0.08	0.50	0.047	0.18	-0.02	3.63	19.75	6.82	0.44
1015 Op-2	4	3.75	15.00	3.750	15.68	-8.18	0.19	13.50	9.59	-9.21
1210 Op-1	20	4.34	40.50	2.108	8.75	-0.07	-1.48	54.25	3.75	-6.70
1210 Op-2	5	1.00	4.00	0.762	3.12	-1.12	3.45	6.50	7.02	-0.12
2210 Op-1	17	1.18	10.75	0.673	2.60	-0.25	1.65	30.00	4.94	-1.65
2210 Op-2	4	0.75	2.75	0.669	2.88	-1.38	3.19	7.00	8.71	-2.34

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	2.86	19.25	1.159	5.29	0.44
Op-2	5	4.45	7.00	1.285	8.02	0.88

Analysis of Variance for SFQ.for 0543 - Bittium spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.17	0.6825
SEASON	1	108.000	2.41	0.1233
STATION	5	108.000	0.91	0.4767
PERIOD*SEASON	1	108.000	0.96	0.3291
STATION*PERIOD	5	108.000	0.75	0.5900
STATION*SEASON	5	108.000	0.38	0.8624
PERIOD*STATION*SEASON	5	108.000	0.20	0.9619

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.17	0.00	0.1281	.	0.1999
STATION*PERIOD	3.74	0.00	0.3799	.	0.1532

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0414	0.6290	0.066	.9476
Period in FC	0.2417	0.2840	0.851	.3967
Period in FC-S	0.2657	0.2884	0.921	.3589
Period in FC-W	0.2176	0.4894	0.445	.6574
Period in DC-S	-0.6592	0.6152	-1.072	.2863
Period in DC-W	0.7420	1.0974	0.676	.5004

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.014	0.0487	0.29	.7708	0.0951	-0.0666
Period Op-2	-0.033	0.1042	-0.32	.7524	0.1399	-0.2058
Op-1 0611	0.236	0.1090	2.17	.0324	0.4170	0.0554
Op-2 0611	0.000	0.2579	0.00	1.000	0.4279	-0.4279
Op-1 0910	0.082	0.1164	0.71	.4818	0.2752	-0.1109
Op-2 0910	-0.068	0.2497	-0.27	.7859	0.3463	-0.4824
Op-1 0915	-0.162	0.1304	-1.25	.2155	0.0539	-0.3789
Op-2 0915	-0.130	0.2579	-0.50	.6161	0.2982	-0.5576
Op-1 1015	0.079	0.1304	0.60	.5478	0.2950	-0.1377
Op-2 1015	0.000	0.2579	0.00	1.000	0.4279	-0.4279
Op-1 1210	-0.391	0.1090	-3.59	.0005	-0.2100	-0.5716
Op-2 1210	0.000	0.2497	0.00	1.000	0.4144	-0.4144
Op-1 2210	0.242	0.1189	2.03	.0446	0.4389	0.0444
Op-2 2210	-0.000	0.2579	-0.00	1.000	0.4279	-0.4279

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0472	0.1150	0.410	.6825	0.2380	-0.1437

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2362	0.2800	0.84	.4008	0.7008	-0.2284
Station 0910	0.1502	0.2755	0.54	.5869	0.6073	-0.3070
Station 0915	-0.0328	0.2890	-0.11	.9099	0.4467	-0.5123
Station 1015	0.0786	0.2890	0.27	.7861	0.5582	-0.4009
Station 1210	-0.3908	0.2725	-1.43	.1544	0.0613	-0.8429
Station 2210	0.2417	0.2840	0.85	.3967	0.7129	-0.2296

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.04	0.75	0.038	0.12	-0.04	0.10	1.25	0.23	-0.03
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.21	1.25	0.107	0.44	-0.01	-0.09	1.75	0.12	-0.31
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	-0.05	0.25	0.09	-0.19
0915 Op-1	15	0.45	2.75	0.189	0.86	0.04	-0.37	3.00	0.04	-0.77
0915 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.13	0.50	0.27	-0.52
1015 Op-1	15	0.05	0.25	0.027	0.11	-0.01	0.03	0.75	0.14	-0.07
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	1.23	8.50	0.446	2.16	0.29	-1.09	9.00	-0.13	-2.04
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.00	0.00	0.000	.	.	0.13	0.50	0.22	0.04
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.14	0.50	0.042	0.23	0.05
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SPQ for 0507 - Bryozoa, unid. (encrusting)

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	4.81	0.0305
SEASON	1	108.000	1.70	0.1957
STATION	5	108.000	4.21	0.0015
PERIOD*SEASON	1	108.000	2.91	0.0910
STATION*PERIOD	5	108.000	1.19	0.3175
STATION*SEASON	5	108.000	0.84	0.5264
PERIOD*STATION*SEASON	5	108.000	0.72	0.6080

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.81	3.72	0.7034	0.6072	0.9425
STATION*PERIOD	5.96	0.85	0.5420	0.1590	0.1172

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.4446	0.6573	2.198	.0301
Period in FC	0.1369	0.2968	0.461	.6457
Period in FC-S	0.2115	0.3014	0.702	.4843
Period in FC-W	0.0622	0.5114	0.122	.9034
Period in DC-S	0.1401	0.6428	0.218	.8278
Period in DC-W	2.7490	1.1467	2.397	.0182

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.236	0.0509	4.63	.0000	0.3200	0.1511
Period Op-2	-0.028	0.1089	-0.26	.7973	0.1526	-0.2087
Op-1 0611	-0.269	0.1139	-2.36	.0200	-0.0799	-0.4578
Op-2 0611	-0.164	0.2695	-0.61	.5431	0.2828	-0.6116
Op-1 0910	0.540	0.1216	4.44	.0000	0.7421	0.3385
Op-2 0910	0.147	0.2610	0.56	.5741	0.5801	-0.2859
Op-1 0915	0.156	0.1363	1.14	.2563	0.3817	-0.0706
Op-2 0915	-0.671	0.2695	-2.49	.0143	-0.2237	-1.1180
Op-1 1015	0.366	0.1363	2.69	.0083	0.5924	0.1401
Op-2 1015	0.094	0.2695	0.35	.7291	0.5408	-0.3536
Op-1 1210	0.507	0.1139	4.45	.0000	0.6956	0.3177
Op-2 1210	0.450	0.2610	1.72	.0876	0.8829	0.0170
Op-1 2210	0.113	0.1243	0.91	.3639	0.3194	-0.0928
Op-2 2210	-0.024	0.2695	-0.09	.9305	0.4236	-0.4707

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2636	0.1202	2.193	.0305	0.4630	0.0641

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1045	0.2926	-0.36	.7218	0.3810	-0.5899
Station 0910	0.3932	0.2879	1.37	.1749	0.8709	-0.0845
Station 0915	0.8264	0.3020	2.74	.0073	1.3275	0.3253
Station 1015	0.2727	0.3020	0.90	.3686	0.7738	-0.2284
Station 1210	0.0567	0.2847	0.20	.8425	0.5292	-0.4157
Station 2210	0.1369	0.2968	0.46	.6457	0.6293	-0.3556

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	7.61	27.25	1.549	10.85	4.37	-5.16	25.50	-1.91	-8.42
0611 Op-2	4	1.25	1.50	0.368	2.42	0.08	-0.19	3.25	2.02	-2.40
0910 Op-1	19	1.01	4.50	0.294	1.63	0.40	1.13	6.50	1.77	0.49
0910 Op-2	5	0.40	0.75	0.127	0.75	0.05	0.70	2.75	2.08	-0.68
0915 Op-1	15	1.42	3.75	0.272	2.00	0.83	0.43	5.75	1.20	-0.34
0915 Op-2	4	2.81	3.25	0.786	5.32	0.31	-1.75	5.50	2.07	-5.57
1015 Op-1	15	0.82	2.50	0.170	1.18	0.45	1.03	3.75	1.60	0.47
1015 Op-2	4	0.56	1.00	0.213	1.24	-0.12	0.50	3.00	2.68	-1.68
1210 Op-1	20	0.96	5.00	0.255	1.50	0.43	1.49	4.50	2.05	0.92
1210 Op-2	5	0.65	1.75	0.359	1.65	-0.35	0.45	3.25	2.05	-1.15
2210 Op-1	17	1.53	4.42	0.244	2.05	1.02	0.64	5.17	1.34	-0.05
2210 Op-2	4	1.00	1.25	0.270	1.86	0.14	0.06	2.25	1.67	-1.54

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	2.45	7.75	0.412	3.31	1.59
Op-2	5	1.10	2.25	0.392	2.19	0.01

Analysis of Variance for SPQ for 0371 - Cactosoma arenaria

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.42	0.2363
SEASON	1	108.000	0.01	0.9359
STATION	5	108.000	0.50	0.7771
PERIOD*SEASON	1	108.000	0.01	0.9359
STATION*PERIOD	5	108.000	0.50	0.7771
STATION*SEASON	5	108.000	0.08	0.9946
PERIOD*STATION*SEASON	5	108.000	0.08	0.9946

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.42	0.39	0.3246	0.1649	0.2598
STATION*PERIOD	2.49	0.00	0.2831	.	0.2280

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1335	0.2808	-0.475	.6354
Period in FC	-0.2333	0.1268	-1.841	.0684
Period in FC-S	-0.1667	0.1287	-1.295	.1981
Period in FC-W	-0.3000	0.2184	-1.373	.1725
Period in DC-S	-0.1753	0.2746	-0.639	.5245
Period in DC-W	-0.0917	0.4898	-0.187	.8519

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.061	0.0217	-2.81	.0059	-0.0251	-0.0972
Period Op-2	0.000	0.0465	0.00	1.000	0.0772	-0.0772
Op-1 0611	-0.021	0.0487	-0.43	.6693	0.0599	-0.1015
Op-2 0611	-0.000	0.1151	-0.00	1.000	0.1910	-0.1910
Op-1 0910	-0.079	0.0519	-1.51	.1333	0.0076	-0.1648
Op-2 0910	0.000	0.1115	0.00	1.000	0.1849	-0.1849
Op-1 0915	0.000	0.0582	0.00	1.000	0.0966	-0.0966
Op-2 0915	-0.000	0.1151	-0.00	1.000	0.1910	-0.1910
Op-1 1015	-0.034	0.0582	-0.59	.5594	0.0625	-0.1307
Op-2 1015	-0.000	0.1151	-0.00	1.000	0.1910	-0.1910
Op-1 1210	0.000	0.0487	0.00	1.000	0.0807	-0.0807
Op-2 1210	-0.000	0.1115	-0.00	1.000	0.1849	-0.1849
Op-1 2210	-0.233	0.0531	-4.40	.0000	-0.1453	-0.3214
Op-2 2210	0.000	0.1151	0.00	1.000	0.1910	-0.1910

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0611	0.0513	-1.191	.2363	0.0240	-0.1463

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0208	0.1250	-0.17	.8679	0.1865	-0.2282
Station 0910	-0.0786	0.1230	-0.64	.5242	0.1255	-0.2826
Station 0915	0.0000	0.1290	0.00	1.000	0.2140	-0.2140
Station 1015	-0.0341	0.1290	-0.26	.7921	0.1799	-0.2481
Station 1210	0.0000	0.1216	0.00	1.000	0.2018	-0.2018
Station 2210	-0.2333	0.1268	-1.84	.0684	-0.0230	-0.4437

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.01	0.25	0.013	0.04	-0.01	-0.01	0.25	0.01	-0.04
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.09	0.75	0.048	0.19	-0.01	-0.09	0.75	0.01	-0.19
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.05	0.75	0.050	0.16	-0.06	-0.05	0.75	0.06	-0.16
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.21	1.25	0.106	0.43	-0.02	-0.21	1.25	0.02	-0.43
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SAQ for 0290 - Calliostoma ligatum

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.81	0.0536
SEASON	1	102.000	4.58	0.0348
STATION	5	102.000	1.58	0.1726
PERIOD*SEASON	1	102.000	0.14	0.7066
STATION*PERIOD	5	102.000	0.30	0.9112
STATION*SEASON	5	102.000	0.38	0.8591
PERIOD*STATION*SEASON	5	102.000	0.09	0.9939

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.81	2.74	0.6161	0.5001	0.1577
STATION*PERIOD	1.51	0.00	0.2070	.	0.1236

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.3682	1.0427	-1.312	.1924
Period in FC	-0.8658	0.4709	-1.839	.0689
Period in FC-S	-0.6111	0.4813	-1.270	.2071
Period in FC-W	-1.1205	0.8095	-1.384	.1693
Period in DC-S	-1.1911	1.0268	-1.160	.2487
Period in DC-W	-1.5453	1.8150	-0.851	.3965

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.759	0.0816	9.30	.0000	0.8942	0.6234
Period Op-2	1.131	0.1723	6.56	.0000	1.4172	0.8451
Op-1 0611	0.826	0.1823	4.53	.0000	1.1287	0.5233
Op-2 0611	1.135	0.4266	2.66	.0091	1.8429	0.4266
Op-1 0910	1.008	0.1944	5.18	.0000	1.3303	0.6849
Op-2 0910	1.297	0.4131	3.14	.0022	1.9831	0.6118
Op-1 0915	0.970	0.2186	4.44	.0000	1.3325	0.6068
Op-2 0915	1.135	0.4266	2.66	.0091	1.8429	0.4266
Op-1 1015	0.952	0.2186	4.36	.0000	1.3153	0.5896
Op-2 1015	1.135	0.4266	2.66	.0091	1.8429	0.4266
Op-1 1210	0.875	0.1823	4.80	.0000	1.1781	0.5727
Op-2 1210	1.297	0.4131	3.14	.0022	1.9831	0.6118
Op-1 2210	-0.078	0.1993	-0.39	.6957	0.2526	-0.4089
Op-2 2210	0.788	0.4266	1.85	.0678	1.4958	0.0795

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3723	0.1907	-1.953	.0536	-0.0558	-0.6888

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.3088	0.4640	-0.67	.5072	0.4614	-1.0789
Station 0910	-0.2899	0.4565	-0.63	.5269	0.4679	-1.0477
Station 0915	-0.1651	0.4794	-0.34	.7312	0.6306	-0.9608
Station 1015	-0.1823	0.4794	-0.38	.7045	0.6134	-0.9780
Station 1210	-0.4221	0.4515	-0.93	.3521	0.3274	-1.1716
Station 2210	-0.8658	0.4709	-1.84	.0689	-0.0842	-1.6474

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.51	3.75	0.250	1.04	-0.01	1.82	9.00	2.83	0.81
0611 Op-2	4	0.00	0.00	0.000	.	.	1.69	3.00	3.73	-0.35
0910 Op-1	18	0.17	1.50	0.097	0.37	-0.04	1.96	9.00	2.99	0.93
0910 Op-2	5	0.00	0.00	0.000	.	.	4.50	15.75	12.43	-3.43
0915 Op-1	14	0.21	3.00	0.214	0.68	-0.25	1.82	8.25	3.04	0.60
0915 Op-2	4	0.00	0.00	0.000	.	.	1.69	3.00	3.73	-0.35
1015 Op-1	14	0.48	6.75	0.482	1.52	-0.56	1.55	10.50	2.93	0.18
1015 Op-2	4	0.00	0.00	0.000	.	.	1.69	3.00	3.73	-0.35
1210 Op-1	19	0.47	6.00	0.326	1.16	-0.21	1.86	8.25	2.78	0.93
1210 Op-2	5	0.00	0.00	0.000	.	.	4.50	15.75	12.43	-3.43
2210 Op-1	16	3.38	9.75	0.787	5.05	1.70	-1.36	11.25	0.50	-3.22
2210 Op-2	4	3.00	12.00	3.000	12.55	-6.55	-1.31	11.25	6.98	-9.60

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	2.33	8.25	0.496	3.37	1.29
Op-2	5	4.50	15.75	2.856	12.43	-3.43

Analysis of Variance for SFQ for 1113 - Chaetopteridae

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.17	0.6846
SEASON	1	108.000	0.53	0.4685
STATION	5	108.000	1.77	0.1247
PERIOD*SEASON	1	108.000	1.44	0.2328
STATION*PERIOD	5	108.000	0.95	0.4543
STATION*SEASON	5	108.000	1.14	0.3460
PERIOD*STATION*SEASON	5	108.000	0.58	0.7165

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.17	0.00	0.1277	.	0.7783
STATION*PERIOD	4.73	0.00	0.4549	.	0.1796

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0789	0.5734	-0.138	.8908
Period in PC	0.3352	0.2589	1.295	.1982
Period in PC-S	0.1330	0.2629	0.506	.6138
Period in PC-W	0.5373	0.4461	1.204	.2311
Period in DC-S	-0.6317	0.5608	-1.126	.2625
Period in DC-W	0.4739	1.0003	0.474	.6367

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.171	0.0444	-3.85	.0002	-0.0974	-0.2448
Period Op-2	-0.214	0.0950	-2.25	.0264	-0.0562	-0.3714
Op-1 0611	-0.148	0.0994	-1.49	.1386	0.0166	-0.3131
Op-2 0611	-0.114	0.2351	-0.48	.6302	0.2766	-0.5036
Op-1 0910	0.040	0.1061	0.38	.7074	0.2159	-0.1361
Op-2 0910	-0.051	0.2277	-0.22	.8238	0.3269	-0.4285
Op-1 0915	-0.081	0.1189	-0.68	.4958	0.1160	-0.2785
Op-2 0915	-0.354	0.2351	-1.51	.1347	0.0358	-0.7444
Op-1 1015	-0.368	0.1189	-3.10	.0025	-0.1711	-0.5656
Op-2 1015	-0.302	0.2351	-1.28	.2019	0.0882	-0.6920
Op-1 1210	-0.602	0.0994	-6.06	.0000	-0.4374	-0.7670
Op-2 1210	-0.261	0.2277	-1.14	.2549	0.1171	-0.6383
Op-1 2210	0.134	0.1084	1.23	.2204	0.3134	-0.0462
Op-2 2210	-0.202	0.2351	-0.86	.3932	0.1885	-0.5917

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0427	0.1049	0.407	.6846	0.2167	-0.1313

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0347	0.2553	-0.14	.8921	0.3888	-0.4582
Station 0910	0.0907	0.2512	0.36	.7186	0.5074	-0.3260
Station 0915	0.2731	0.2635	1.04	.3023	0.7102	-0.1641
Station 1015	-0.0664	0.2635	-0.25	.8015	0.3707	-0.5035
Station 1210	-0.3416	0.2484	-1.38	.1719	0.0705	-0.7538
Station 2210	0.3352	0.2589	1.29	.1982	0.7647	-0.0944

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	1.93	6.50	0.424	2.81	1.04	-1.14	7.50	-0.14	-2.13
0611 Op-2	4	0.38	1.00	0.239	1.14	-0.39	-0.06	1.00	0.62	-0.74
0910 Op-1	19	1.41	5.50	0.389	2.22	0.59	-0.63	7.75	0.32	-1.58
0910 Op-2	5	0.80	3.75	0.739	2.85	-1.25	-0.55	3.50	1.18	-2.28
0915 Op-1	15	1.40	5.50	0.373	2.20	0.60	-0.47	7.00	0.46	-1.39
0915 Op-2	4	1.13	2.00	0.415	2.44	-0.19	-0.81	2.25	0.69	-2.31
1015 Op-1	15	4.50	24.00	1.547	7.82	1.18	-3.57	23.75	-0.21	-6.92
1015 Op-2	4	1.69	3.25	0.786	4.19	-0.82	-1.38	2.50	0.53	-3.28
1210 Op-1	20	5.01	10.00	0.697	6.47	3.55	-4.23	10.25	-2.70	-5.75
1210 Op-2	5	1.80	4.00	0.696	3.73	-0.13	-1.55	4.00	0.43	-3.53
2210 Op-1	17	0.26	1.25	0.096	0.46	0.06	0.45	4.00	0.93	-0.03
2210 Op-2	4	0.50	1.00	0.289	1.42	-0.42	-0.19	1.75	1.31	-1.69

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.79	3.00	0.172	1.15	0.43
Op-2	5	0.25	0.75	0.158	0.69	-0.19

Analysis of Variance for SFQ for 0472 - Clavelina huntsmani

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.63	0.2050
SEASON	1	108.000	0.54	0.4640
STATION	5	108.000	0.12	0.9886
PERIOD*SEASON	1	108.000	1.44	0.2327
STATION*PERIOD	5	108.000	0.02	0.9998
STATION*SEASON	5	108.000	0.02	0.9997
PERIOD*STATION*SEASON	5	108.000	0.04	0.9990

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.63	0.60	0.3546	0.1979	0.1056
STATION*PERIOD	0.10	0.00	0.1068	.	0.1096

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	3.0305	2.7351	1.108	.2703
Period in FC	0.7958	1.2350	0.644	.5207
Period in FC-S	1.2917	1.2539	1.030	.3053
Period in FC-W	0.3000	2.1280	0.141	.8882
Period in DC-S	6.1361	2.6750	2.294	.0237
Period in DC-W	-0.0750	4.7716	-0.016	.9875

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.521	0.2119	2.46	.0154	0.8729	0.1699
Period Op-2	-0.116	0.4531	-0.26	.7979	0.6354	-0.8680
Op-1 0611	0.679	0.4739	1.43	.1551	1.4649	-0.1077
Op-2 0611	0.000	1.1216	0.00	1.000	1.8608	-1.8608
Op-1 0910	0.704	0.5060	1.39	.1673	1.5431	-0.1360
Op-2 0910	0.000	1.0860	0.00	1.000	1.8017	-1.8017
Op-1 0915	0.386	0.5671	0.68	.4972	1.3273	-0.5545
Op-2 0915	-0.417	1.1216	-0.37	.7110	1.4441	-2.2774
Op-1 1015	0.466	0.5671	0.82	.4132	1.4068	-0.4750
Op-2 1015	0.000	1.1216	0.00	1.000	1.8608	-1.8608
Op-1 1210	0.098	0.4739	0.21	.8362	0.8845	-0.6881
Op-2 1210	-0.281	1.0860	-0.26	.7961	1.5204	-2.0829
Op-1 2210	0.796	0.5170	1.54	.1267	1.6536	-0.0619
Op-2 2210	-0.000	1.1216	-0.00	1.000	1.8608	-1.8608

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.6377	0.5002	1.275	.2050	1.4676	-0.1921

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.6786	1.2176	0.56	.5785	2.6987	-1.3415
Station 0910	0.7036	1.1981	0.59	.5583	2.6913	-1.2841
Station 0915	0.8030	1.2568	0.64	.5242	2.8882	-1.2821
Station 1015	0.4659	1.2568	0.37	.7116	2.5510	-1.6192
Station 1210	0.3795	1.1849	0.32	.7494	2.3453	-1.5863
Station 2210	0.7958	1.2350	0.64	.5207	2.8448	-1.2531

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.85	8.00	1.77	-0.07
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.00	0.00	0.000	.	.	0.89	8.00	1.86	-0.07
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.12	1.00	0.073	0.27	-0.04	0.57	7.75	1.64	-0.51
0915 Op-2	4	0.63	2.50	0.625	2.61	-1.36	-0.63	2.50	1.36	-2.61
1015 Op-1	15	0.00	0.00	0.000	.	.	0.68	8.00	1.82	-0.45
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.46	5.25	0.273	1.03	-0.11	0.39	11.75	1.44	-0.66
1210 Op-2	5	0.45	2.25	0.450	1.70	-0.80	-0.45	2.25	0.80	-1.70
2210 Op-1	17	0.00	0.00	0.000	.	.	1.00	8.00	2.08	-0.08
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.85	8.00	0.437	1.77	-0.07
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 1139 - Clavularia spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.87	0.3519
SEASON	1	108.000	0.11	0.7407
STATION	5	108.000	0.27	0.9264
PERIOD*SEASON	1	108.000	0.11	0.7407
STATION*PERIOD	5	108.000	0.27	0.9264
STATION*SEASON	5	108.000	0.05	0.9986
PERIOD*STATION*SEASON	5	108.000	0.05	0.9986

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.87	0.00	0.2421	.	0.2237
STATION*PERIOD	1.37	0.00	0.1971	.	0.1680

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.0215	2.2093	-0.462	.6448
Period in FC	-1.2451	0.9976	-1.248	.2147
Period in FC-S	-1.5903	1.0129	-1.570	.1193
Period in FC-W	-0.9000	1.7190	-0.524	.6016
Period in DC-S	-1.4805	2.1607	-0.685	.4947
Period in DC-W	-0.5625	3.8544	-0.146	.8842

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.378	0.1711	-2.21	.0294	-0.0938	-0.6617
Period Op-2	0.000	0.3660	0.00	1.000	0.6072	-0.6072
Op-1 0611	0.062	0.3828	0.16	.8706	0.6977	-0.5727
Op-2 0611	-0.000	0.9060	-0.00	1.000	1.5031	-1.5031
Op-1 0910	0.062	0.4088	0.15	.8788	0.7407	-0.6157
Op-2 0910	-0.000	0.8772	-0.00	1.000	1.4553	-1.4553
Op-1 0915	-0.455	0.4581	-0.99	.3233	0.3055	-1.2146
Op-2 0915	-0.000	0.9060	-0.00	1.000	1.5031	-1.5031
Op-1 1015	-0.656	0.4581	-1.43	.1549	0.1038	-1.4163
Op-2 1015	-0.000	0.9060	-0.00	1.000	1.5031	-1.5031
Op-1 1210	-0.036	0.3828	-0.09	.9258	0.5995	-0.6709
Op-2 1210	-0.000	0.8772	-0.00	1.000	1.4553	-1.4553
Op-1 2210	-1.245	0.4176	-2.98	.0035	-0.5523	-1.9380
Op-2 2210	0.000	0.9060	0.00	1.000	1.5031	-1.5031

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.3778	0.4040	-0.935	.3519	0.2925	-1.0481

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0625	0.9835	0.06	.9494	1.6943	-1.5693
Station 0910	0.0625	0.9678	0.06	.9486	1.6681	-1.5431
Station 0915	-0.4545	1.0152	-0.45	.6552	1.2298	-2.1388
Station 1015	-0.6562	1.0152	-0.65	.5194	1.0281	-2.3406
Station 1210	-0.0357	0.9571	-0.04	.9703	1.5522	-1.6236
Station 2210	-1.2451	0.9976	-1.25	.2147	0.4100	-2.9002

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.09	1.75	0.27	-0.10
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.00	0.00	0.000	.	.	0.09	1.75	0.29	-0.10
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.67	10.00	0.667	2.10	-0.76	-0.67	10.00	0.76	-2.10
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.70	3.75	0.327	1.40	-0.00	-0.70	3.75	0.00	-1.40
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.14	2.75	0.138	0.43	-0.15	-0.05	4.50	0.30	-0.40
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	1.49	8.33	0.692	2.96	0.02	-1.39	10.08	0.12	-2.90
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.09	1.75	0.088	0.27	-0.10
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0272 - Corynactis californica

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.01	0.3171
SEASON	1	108.000	0.02	0.8842
STATION	5	108.000	1.02	0.4093
PERIOD*SEASON	1	108.000	0.02	0.8842
STATION*PERIOD	5	108.000	1.02	0.4093
STATION*SEASON	5	108.000	0.02	0.9998
PERIOD*STATION*SEASON	5	108.000	0.02	0.9998

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.01	0.00	0.2632	.	0.2152
STATION*PERIOD	5.10	0.01	0.4819	0.1005	0.4056

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-3.8512	3.4924	-1.103	.2726
Period in FC	-0.0000	1.5769	-0.000	1.000
Period in FC-S	0.0000	1.6011	0.000	1.000
Period in FC-W	-0.0000	2.7172	-0.000	1.000
Period in DC-S	-4.4107	3.4156	-1.291	.1993
Period in DC-W	-3.2917	6.0928	-0.540	.5901

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.642	0.2705	-2.37	.0194	-0.1930	-1.0907
Period Op-2	0.000	0.5785	0.00	1.000	0.9598	-0.9598
Op-1 0611	-3.851	0.6052	-6.36	.0000	-2.8472	-4.8552
Op-2 0611	-0.000	1.4321	-0.00	1.000	2.3760	-2.3760
Op-1 0910	0.000	0.6462	0.00	1.000	1.0720	-1.0720
Op-2 0910	0.000	1.3866	0.00	1.000	2.3005	-2.3005
Op-1 0915	0.000	0.7241	0.00	1.000	1.2014	-1.2014
Op-2 0915	-0.000	1.4321	-0.00	1.000	2.3760	-2.3760
Op-1 1015	-0.000	0.7241	-0.00	1.000	1.2014	-1.2014
Op-2 1015	-0.000	1.4321	-0.00	1.000	2.3760	-2.3760
Op-1 1210	0.000	0.6052	0.00	1.000	1.0040	-1.0040
Op-2 1210	0.000	1.3866	0.00	1.000	2.3005	-2.3005
Op-1 2210	0.000	0.6602	0.00	1.000	1.0953	-1.0953
Op-2 2210	0.000	1.4321	0.00	1.000	2.3760	-2.3760

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.6419	0.6387	-1.005	.3171	0.4177	-1.7015

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-3.8512	1.5547	-2.48	.0148	-1.2718	-6.4306
Station 0910	-0.0000	1.5298	-0.00	1.000	2.5381	-2.5381
Station 0915	0.0000	1.6048	0.00	1.000	2.6625	-2.6625
Station 1015	0.0000	1.6048	0.00	1.000	2.6625	-2.6625
Station 1210	-0.0000	1.5129	-0.00	1.000	2.5101	-2.5101
Station 2210	-0.0000	1.5769	-0.00	1.000	2.6163	-2.6163

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	4.08	17.00	1.328	6.85	1.30	-4.08	17.00	-1.30	-6.85
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0346 - Crepidula spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	2.93	0.0898
SEASON	1	108.000	1.55	0.2156
STATION	5	108.000	0.07	0.9960
PERIOD*SEASON	1	108.000	9.46	0.0027
STATION*PERIOD	5	108.000	0.17	0.9730
STATION*SEASON	5	108.000	0.15	0.9786
PERIOD*STATION*SEASON	5	108.000	0.05	0.9981

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.93	1.88	0.5228	0.3896	0.1103
STATION*PERIOD	0.85	0.00	0.1588	.	0.1031

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.0371	0.8103	1.280	.2033
Period in FC	0.4848	0.3659	1.325	.1880
Period in FC-S	0.0928	0.3715	0.250	.8031
Period in FC-W	0.8767	0.6305	1.390	.1672
Period in DC-S	-1.3051	0.7925	-1.647	.1025
Period in DC-W	3.3794	1.4137	2.390	.0186

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.574	0.0628	9.14	.0000	0.6779	0.4696
Period Op-2	0.320	0.1342	2.38	.0188	0.5428	0.0974
Op-1 0611	0.618	0.1404	4.40	.0000	0.8505	0.3846
Op-2 0611	0.318	0.3323	0.96	.3406	0.8694	-0.2332
Op-1 0910	0.682	0.1499	4.55	.0000	0.9310	0.4335
Op-2 0910	0.389	0.3217	1.21	.2292	0.9229	-0.1447
Op-1 0915	0.500	0.1680	2.98	.0036	0.7792	0.2217
Op-2 0915	0.318	0.3323	0.96	.3406	0.8694	-0.2332
Op-1 1015	0.544	0.1680	3.24	.0016	0.8225	0.2650
Op-2 1015	0.318	0.3323	0.96	.3406	0.8694	-0.2332
Op-1 1210	0.426	0.1404	3.03	.0031	0.6585	0.1926
Op-2 1210	0.389	0.3217	1.21	.2292	0.9229	-0.1447
Op-1 2210	0.673	0.1532	4.39	.0000	0.9273	0.4190
Op-2 2210	0.188	0.3323	0.57	.5719	0.7397	-0.3629

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2536	0.1482	1.712	.0898	0.4995	0.0078

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2995	0.3607	0.83	.4083	0.8980	-0.2990
Station 0910	0.2932	0.3550	0.83	.4106	0.8821	-0.2957
Station 0915	0.1824	0.3724	0.49	.6253	0.8001	-0.4354
Station 1015	0.2256	0.3724	0.61	.5458	0.8434	-0.3921
Station 1210	0.0365	0.3510	0.10	.9175	0.6189	-0.5459
Station 2210	0.4848	0.3659	1.32	.1880	1.0918	-0.1223

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.01	0.25	0.013	0.04	-0.01	0.61	2.50	0.95	0.27
0611 Op-2	4	0.00	0.00	0.000	.	.	0.44	1.25	1.38	-0.50
0910 Op-1	19	0.03	0.50	0.026	0.08	-0.03	0.63	3.00	1.00	0.26
0910 Op-2	5	0.00	0.00	0.000	.	.	0.65	1.50	1.52	-0.22
0915 Op-1	15	0.02	0.25	0.017	0.05	-0.02	0.38	1.00	0.61	0.16
0915 Op-2	4	0.00	0.00	0.000	.	.	0.44	1.25	1.38	-0.50
1015 Op-1	15	0.02	0.25	0.017	0.05	-0.02	0.38	1.00	0.62	0.14
1015 Op-2	4	0.00	0.00	0.000	.	.	0.44	1.25	1.38	-0.50
1210 Op-1	20	0.13	1.00	0.064	0.26	-0.01	0.50	3.50	0.87	0.13
1210 Op-2	5	0.00	0.00	0.000	.	.	0.65	1.50	1.52	-0.22
2210 Op-1	17	0.07	0.67	0.042	0.16	-0.02	0.67	3.17	1.09	0.24
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	0.31	1.25	1.31	-0.68

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.63	2.50	0.163	0.97	0.28
Op-2	5	0.65	1.50	0.312	1.52	-0.22

Analysis of Variance for SAQ for 0538 - Cryptochiton stelleri

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	5.38	0.0224
SEASON	1	102.000	11.42	0.0010
STATION	5	102.000	10.11	0.0000
PERIOD*SEASON	1	102.000	22.14	0.0000
STATION*PERIOD	5	102.000	2.02	0.0826
STATION*SEASON	5	102.000	1.57	0.1751
PERIOD*STATION*SEASON	5	102.000	0.89	0.4909

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.38	4.27	0.7450	0.6586	0.1958
STATION*PERIOD	10.08	4.88	0.7665	0.4650	0.2287

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.5547	0.2605	2.129	.0356
Period in FC	0.1082	0.1176	0.920	.3599
Period in FC-S	-0.0903	0.1203	-0.751	.4544
Period in FC-W	0.3067	0.2022	1.517	.1324
Period in DC-S	-0.5918	0.2565	-2.307	.0231
Period in DC-W	1.7012	0.4535	3.751	.0003

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.044	0.0204	2.18	.0315	0.0783	0.0106
Period Op-2	-0.066	0.0431	-1.53	.1282	0.0054	-0.1375
Op-1 0611	0.086	0.0456	1.89	.0609	0.1620	0.0107
Op-2 0611	-0.074	0.1066	-0.69	.4894	0.1030	-0.2509
Op-1 0910	0.097	0.0486	2.00	.0480	0.1779	0.0166
Op-2 0910	0.094	0.1032	0.91	.3657	0.2651	-0.0776
Op-1 0915	0.099	0.0546	1.82	.0721	0.1899	0.0086
Op-2 0915	0.125	0.1066	1.17	.2436	0.3020	-0.0519
Op-1 1015	-0.179	0.0546	-3.28	.0014	-0.0885	-0.2698
Op-2 1015	-0.600	0.1066	-5.63	.0000	-0.4227	-0.7766
Op-1 1210	0.068	0.0456	1.49	.1388	0.1436	-0.0076
Op-2 1210	0.072	0.1032	0.70	.4885	0.2431	-0.0996
Op-1 2210	0.095	0.0498	1.91	.0592	0.1777	0.0124
Op-2 2210	-0.013	0.1066	-0.12	.9017	0.1637	-0.1901

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1105	0.0476	2.319	.0224	0.1896	0.0314

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1603	0.1159	1.38	.1698	0.3527	-0.0321
Station 0910	0.0035	0.1141	0.03	.9759	0.1928	-0.1859
Station 0915	-0.0258	0.1198	-0.22	.8301	0.1730	-0.2246
Station 1015	0.4205	0.1198	3.51	.0007	0.6193	0.2217
Station 1210	-0.0038	0.1128	-0.03	.9734	0.1835	-0.1910
Station 2210	0.1082	0.1176	0.92	.3599	0.3035	-0.0871

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.13	1.00	0.25	0.01
0611 Op-2	4	0.19	0.75	0.188	0.78	-0.41	0.13	1.50	1.13	-0.88
0910 Op-1	18	0.00	0.00	0.000	.	.	0.14	1.00	0.27	0.01
0910 Op-2	5	0.00	0.00	0.000	.	.	0.25	0.75	0.63	-0.13
0915 Op-1	14	0.05	0.50	0.039	0.14	-0.03	0.13	1.50	0.33	-0.08
0915 Op-2	4	0.00	0.00	0.000	.	.	0.31	0.75	0.81	-0.19
1015 Op-1	14	0.57	1.75	0.145	0.88	0.26	-0.39	2.25	-0.04	-0.75
1015 Op-2	4	2.13	4.25	0.904	5.00	-0.75	-1.81	4.50	1.34	-4.97
1210 Op-1	19	0.04	0.50	0.029	0.10	-0.02	0.09	1.50	0.24	-0.05
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.20	1.00	0.66	-0.26
2210 Op-1	16	0.00	0.00	0.000	.	.	0.14	1.00	0.29	-0.01
2210 Op-2	4	0.19	0.50	0.120	0.57	-0.19	0.13	1.00	0.89	-0.64

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.13	1.00	0.059	0.25	0.01
Op-2	5	0.25	0.75	0.137	0.63	-0.13

Analysis of Variance for SFQ for 0562 - Cucumaria spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.56	0.4552
SEASON	1	108.000	2.59	0.1106
STATION	5	108.000	1.06	0.3867
PERIOD*SEASON	1	108.000	0.05	0.8249
STATION*PERIOD	5	108.000	0.06	0.9978
STATION*SEASON	5	108.000	0.22	0.9511
PERIOD*STATION*SEASON	5	108.000	0.23	0.9509

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.56	0.00	0.1925	.	0.1565
STATION*PERIOD	0.29	0.00	0.1192	.	0.1143

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3105	0.5958	0.521	.6034
Period in FC	0.1795	0.2690	0.667	.5060
Period in FC-S	0.0008	0.2732	0.003	.9975
Period in FC-W	0.3582	0.4636	0.773	.4414
Period in DC-S	0.6341	0.5827	1.088	.2790
Period in DC-W	-0.0132	1.0395	-0.013	.9899

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.024	0.0462	-0.52	.6022	0.0524	-0.1007
Period Op-2	-0.106	0.0987	-1.07	.2862	0.0580	-0.2695
Op-1 0611	0.049	0.1032	0.47	.6371	0.2201	-0.1225
Op-2 0611	-0.000	0.2443	-0.00	1.000	0.4054	-0.4054
Op-1 0910	0.039	0.1102	0.35	.7269	0.2215	-0.1443
Op-2 0910	-0.000	0.2366	-0.00	1.000	0.3925	-0.3925
Op-1 0915	0.010	0.1235	0.08	.9382	0.2146	-0.1954
Op-2 0915	0.000	0.2443	0.00	1.000	0.4054	-0.4054
Op-1 1015	-0.224	0.1235	-1.81	.0725	-0.0191	-0.4290
Op-2 1015	-0.363	0.2443	-1.48	.1406	0.0427	-0.7681
Op-1 1210	0.075	0.1032	0.72	.4707	0.2460	-0.0966
Op-2 1210	0.000	0.2366	0.00	1.000	0.3925	-0.3925
Op-1 2210	-0.093	0.1126	-0.82	.4132	0.0943	-0.2794
Op-2 2210	-0.272	0.2443	-1.11	.2680	0.1333	-0.6774

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0817	0.1090	0.749	.4552	0.2624	-0.0991

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0488	0.2652	0.18	.8543	0.4889	-0.3912
Station 0910	0.0386	0.2610	0.15	.8827	0.4716	-0.3944
Station 0915	0.0096	0.2738	0.04	.9721	0.4638	-0.4446
Station 1015	0.1387	0.2738	0.51	.6136	0.5929	-0.3156
Station 1210	0.0747	0.2581	0.29	.7727	0.5030	-0.3535
Station 2210	0.1795	0.2690	0.67	.5060	0.6259	-0.2668

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.01	0.25	0.013	0.04	-0.01	0.09	1.00	0.21	-0.03
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.05	0.50	0.036	0.13	-0.02	0.05	1.25	0.21	-0.10
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.07	0.75	0.052	0.18	-0.04	0.07	1.50	0.27	-0.14
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.35	2.50	0.174	0.72	-0.02	-0.22	2.50	0.12	-0.55
1015 Op-2	4	0.13	0.25	0.072	0.35	-0.10	-0.13	0.25	0.10	-0.35
1210 Op-1	20	0.01	0.25	0.013	0.04	-0.01	0.09	1.00	0.21	-0.03
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.18	1.00	0.088	0.36	-0.01	-0.06	1.75	0.16	-0.28
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.10	0.75	0.056	0.22	-0.02
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0683 - Dendropoma spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	6.56	0.0118
SEASON	1	108.000	0.91	0.3429
STATION	5	108.000	1.52	0.1890
PERIOD*SEASON	1	108.000	0.14	0.7044
STATION*PERIOD	5	108.000	0.94	0.4574
STATION*SEASON	5	108.000	0.17	0.9732
PERIOD*STATION*SEASON	5	108.000	0.43	0.8235

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.56	5.44	0.8161	0.7496	0.2397
STATION*PERIOD	4.71	0.00	0.4531	.	0.1192

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.5885	1.2147	2.131	.0354
Period in FC	0.8256	0.5485	1.505	.1352
Period in FC-S	0.9892	0.5569	1.776	.0785
Period in FC-W	0.6620	0.9451	0.700	.4851
Period in DC-S	2.9319	1.1880	2.468	.0152
Period in DC-W	2.2451	2.1191	1.059	.2918

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	1.687	0.0941	17.93	.0000	1.8435	1.5313
Period Op-2	1.118	0.2012	5.56	.0000	1.4522	0.7846
Op-1 0611	1.250	0.2105	5.94	.0000	1.5993	0.9009
Op-2 0611	1.376	0.4981	2.76	.0067	2.2027	0.5500
Op-1 0910	2.311	0.2247	10.28	.0000	2.6841	1.9384
Op-2 0910	1.355	0.4823	2.81	.0059	2.1555	0.5553
Op-1 0915	1.777	0.2519	7.05	.0000	2.1945	1.3588
Op-2 0915	0.527	0.4981	1.06	.2928	1.3530	-0.2998
Op-1 1015	0.965	0.2519	3.83	.0002	1.3833	0.5476
Op-2 1015	0.875	0.4981	1.76	.0817	1.7016	0.0488
Op-1 1210	1.774	0.2105	8.43	.0000	2.1231	1.4247
Op-2 1210	1.355	0.4823	2.81	.0059	2.1555	0.5553
Op-1 2210	2.047	0.2296	8.92	.0000	2.4280	1.6661
Op-2 2210	1.221	0.4981	2.45	.0158	2.0478	0.3951

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5690	0.2221	2.562	.0118	0.9375	0.2005

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1262	0.5407	-0.23	.8159	0.7709	-1.0234
Station 0910	0.9558	0.5321	1.80	.0752	1.8386	0.0731
Station 0915	1.2501	0.5581	2.24	.0272	2.1761	0.3241
Station 1015	0.0903	0.5581	0.16	.8718	1.0163	-0.8357
Station 1210	0.4185	0.5262	0.80	.4281	1.2915	-0.4545
Station 2210	0.8256	0.5485	1.51	.1352	1.7356	-0.0843

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	5.26	29.50	1.648	8.71	1.81	43.80	132.50	63.50	24.10
0611 Op-2	4	0.00	0.00	0.000	.	.	8.81	30.00	31.38	-13.75
0910 Op-1	19	0.08	1.50	0.079	0.24	-0.09	47.39	135.00	69.06	25.73
0910 Op-2	5	0.00	0.00	0.000	.	.	7.30	30.00	23.12	-8.52
0915 Op-1	15	1.15	5.00	0.417	2.05	0.25	39.45	138.00	64.82	14.08
0915 Op-2	4	1.56	5.00	1.183	5.33	-2.20	7.25	25.00	26.15	-11.65
1015 Op-1	15	6.92	26.50	2.293	11.84	2.00	33.68	149.00	58.89	8.48
1015 Op-2	4	1.94	6.25	1.480	6.65	-2.77	6.88	23.75	24.87	-11.12
1210 Op-1	20	1.16	5.50	0.400	2.00	0.33	47.90	135.00	68.62	27.18
1210 Op-2	5	0.00	0.00	0.000	.	.	7.30	30.00	23.12	-8.52
2210 Op-1	17	0.50	3.25	0.239	1.01	-0.01	47.91	134.75	71.75	24.07
2210 Op-2	4	0.19	0.75	0.188	0.78	-0.41	8.63	29.25	30.59	-13.34

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	49.06	135.00	9.896	69.77	28.35
Op-2	5	7.30	30.00	5.696	23.12	-8.52

Analysis of Variance for SFQ for 0699 - Didemnum/Trididemnum spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	9.47	0.0027
SEASON	1	108.000	3.63	0.0594
STATION	5	108.000	2.29	0.0508
PERIOD*SEASON	1	108.000	0.46	0.4968
STATION*PERIOD	5	108.000	0.47	0.7952
STATION*SEASON	5	108.000	0.32	0.8984
PERIOD*STATION*SEASON	5	108.000	0.51	0.7662

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	9.47	8.29	0.9211	0.8881	0.7031
STATION*PERIOD	2.37	0.00	0.2736	.	0.2262

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.8265	0.2957	2.795	.0061
Period in PC	0.1716	0.1335	1.285	.2014
Period in PC-S	0.0908	0.1356	0.670	.5043
Period in PC-W	0.2524	0.2301	1.097	.2750
Period in DC-S	0.6861	0.2892	2.373	.0194
Period in DC-W	0.9670	0.5158	1.874	.0636

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.107	0.0229	4.65	.0000	0.1446	0.0686
Period Op-2	-0.060	0.0490	-1.22	.2251	0.0215	-0.1410
Op-1 0611	0.299	0.0512	5.83	.0000	0.3838	0.2138
Op-2 0611	0.029	0.1213	0.24	.8092	0.2305	-0.1718
Op-1 0910	0.131	0.0547	2.40	.0183	0.2219	0.0403
Op-2 0910	-0.000	0.1174	-0.00	1.000	0.1948	-0.1948
Op-1 0915	0.071	0.0613	1.15	.2515	0.1724	-0.0310
Op-2 0915	-0.059	0.1213	-0.48	.6293	0.1425	-0.2599
Op-1 1015	0.143	0.0613	2.33	.0217	0.2445	0.0411
Op-2 1015	-0.121	0.1213	-1.00	.3199	0.0800	-0.3223
Op-1 1210	0.055	0.0512	1.07	.2886	0.1397	-0.0304
Op-2 1210	0.022	0.1174	0.19	.8516	0.2168	-0.1728
Op-1 2210	-0.058	0.0559	-1.05	.2983	0.0343	-0.1511
Op-2 2210	-0.230	0.1213	-1.90	.0605	-0.0289	-0.4312

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1664	0.0541	3.077	.0027	0.2561	0.0767

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2695	0.1316	2.05	.0431	0.4879	0.0511
Station 0910	0.1311	0.1295	1.01	.3137	0.3460	-0.0838
Station 0915	0.1294	0.1359	0.95	.3431	0.3548	-0.0960
Station 1015	0.2640	0.1359	1.94	.0547	0.4894	0.0385
Station 1210	0.0326	0.1281	0.25	.7994	0.2452	-0.1799
Station 2210	0.1716	0.1335	1.29	.2014	0.3931	-0.0499

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.70	1.50	0.95	0.45
0611 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
0910 Op-1	19	0.36	1.25	0.084	0.53	0.18	0.37	1.75	0.62	0.12
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.00	0.00	.	.
0915 Op-1	15	0.57	1.75	0.147	0.88	0.25	0.10	2.50	0.47	-0.27
0915 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.00	0.50	0.32	-0.32
1015 Op-1	15	0.23	0.75	0.067	0.38	0.09	0.43	1.75	0.76	0.11
1015 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.06	0.75	0.44	-0.56
1210 Op-1	20	0.55	2.00	0.135	0.83	0.27	0.15	2.25	0.36	-0.06
1210 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
2210 Op-1	17	1.05	3.00	0.209	1.50	0.61	-0.27	2.75	0.12	-0.66
2210 Op-2	4	0.44	1.00	0.213	1.12	-0.24	-0.38	1.25	0.45	-1.20

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.70	1.50	0.118	0.95	0.45
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SAQ for 0388 - Diopatra ornata

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	8.25	0.0050
SEASON	1	102.000	0.12	0.7273
STATION	5	102.000	16.06	0.0000
PERIOD*SEASON	1	102.000	3.42	0.0673
STATION*PERIOD	5	102.000	1.31	0.2669
STATION*SEASON	5	102.000	0.59	0.7092
PERIOD*STATION*SEASON	5	102.000	0.25	0.9382

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	8.25	7.09	0.8866	0.8413	0.7012
STATION*PERIOD	6.54	1.41	0.5785	0.1995	0.1297

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.3158	0.8310	-2.787	.0063
Period in FC	-0.3033	0.3753	-0.808	.4209
Period in FC-S	0.0320	0.3836	0.083	.9337
Period in FC-W	-0.6385	0.6451	-0.990	.3247
Period in DC-S	-0.9648	0.8183	-1.179	.2412
Period in DC-W	-3.6668	1.4465	-2.535	.0128

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.386	0.0650	5.94	.0000	0.4940	0.2781
Period Op-2	0.823	0.1374	5.99	.0000	1.0505	0.5945
Op-1 0611	0.613	0.1453	4.21	.0001	0.8538	0.3713
Op-2 0611	1.244	0.3400	3.66	.0004	1.8080	0.6792
Op-1 0910	0.843	0.1550	5.44	.0000	1.0997	0.5853
Op-2 0910	1.349	0.3292	4.10	.0001	1.8956	0.8027
Op-1 0915	0.207	0.1742	1.19	.2364	0.4967	-0.0817
Op-2 0915	1.342	0.3400	3.95	.0001	1.9064	0.7777
Op-1 1015	-0.937	0.1742	-5.38	.0000	-0.6479	-1.2262
Op-2 1015	-0.806	0.3400	-2.37	.0196	-0.2417	-1.3705
Op-1 1210	0.567	0.1453	3.90	.0002	0.8080	0.3256
Op-2 1210	0.479	0.3292	1.46	.1485	1.0258	-0.0671
Op-1 2210	1.024	0.1588	6.45	.0000	1.2876	0.7604
Op-2 2210	1.327	0.3400	3.90	.0002	1.8916	0.7628

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4365	0.1520	-2.872	.0050	-0.1843	-0.6888

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.6310	0.3698	-1.71	.0909	-0.0173	-1.2448
Station 0910	-0.5067	0.3639	-1.39	.1668	0.0973	-1.1106
Station 0915	-1.1346	0.3820	-2.97	.0037	-0.5004	-1.7687
Station 1015	-0.1310	0.3820	-0.34	.7324	0.5032	-0.7651
Station 1210	0.0874	0.3599	0.24	.8085	0.6848	-0.5099
Station 2210	-0.3033	0.3753	-0.81	.4209	0.3197	-0.9262

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.96	2.50	0.211	1.40	0.52	2.82	11.00	4.21	1.43
0611 Op-2	4	0.13	0.25	0.072	0.35	-0.10	4.00	3.75	6.74	1.26
0910 Op-1	18	0.50	2.50	0.162	0.84	0.16	3.18	13.25	4.94	1.42
0910 Op-2	5	0.40	1.50	0.292	1.21	-0.41	3.55	4.25	5.53	1.57
0915 Op-1	14	1.27	2.50	0.244	1.79	0.74	1.71	10.75	3.60	-0.17
0915 Op-2	4	0.31	1.00	0.237	1.07	-0.44	3.81	4.00	6.65	0.97
1015 Op-1	14	16.86	27.75	2.403	22.05	11.67	-13.88	34.00	-7.82	-19.93
1015 Op-2	4	26.88	19.50	4.342	40.69	13.06	-22.75	23.25	-6.30	-39.20
1210 Op-1	19	1.57	8.75	0.529	2.68	0.45	2.21	19.00	4.43	-0.01
1210 Op-2	5	3.35	8.75	1.656	7.95	-1.25	0.60	12.00	6.46	-5.26
2210 Op-1	16	0.31	1.75	0.122	0.57	0.05	3.23	11.50	4.90	1.57
2210 Op-2	4	0.38	1.25	0.298	1.32	-0.57	3.75	4.50	6.97	0.53

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	3.78	11.75	0.747	5.34	2.21
Op-2	5	3.95	3.75	0.668	5.80	2.10

Analysis of Variance for SFQ for IDIV - Diversity

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	26.28	0.0000
SEASON	1	108.000	1.35	0.2470
STATION	5	108.000	0.98	0.4340
PERIOD*SEASON	1	108.000	0.00	0.9828
STATION*PERIOD	5	108.000	0.65	0.6624
STATION*SEASON	5	108.000	0.11	0.9897
PERIOD*STATION*SEASON	5	108.000	0.17	0.9717

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	26.28	24.79	0.9997	0.9995	1.0000
STATION*PERIOD	3.25	0.00	0.3422	.	0.1026

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.7301	0.1415	-5.158	.0000
Period in FC	-0.0660	0.0639	-1.033	.3039
Period in FC-S	-0.0549	0.0649	-0.845	.3998
Period in FC-W	-0.0772	0.1101	-0.701	.4848
Period in DC-S	-0.7447	0.1384	-5.379	.0000
Period in DC-W	-0.7156	0.2469	-2.898	.0045

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.098	0.0110	-8.94	.0000	-0.0799	-0.1162
Period Op-2	0.035	0.0234	1.48	.1425	0.0735	-0.0043
Op-1 0611	-0.088	0.0245	-3.60	.0005	-0.0475	-0.1289
Op-2 0611	0.015	0.0580	0.26	.7922	0.1116	-0.0810
Op-1 0910	-0.087	0.0262	-3.32	.0012	-0.0434	-0.1303
Op-2 0910	0.082	0.0562	1.46	.1475	0.1752	-0.0112
Op-1 0915	-0.106	0.0293	-3.61	.0005	-0.0573	-0.1547
Op-2 0915	0.093	0.0580	1.60	.1116	0.1894	-0.0032
Op-1 1015	-0.076	0.0293	-2.60	.0106	-0.0276	-0.1250
Op-2 1015	0.019	0.0580	0.34	.7378	0.1158	-0.0768
Op-1 1210	-0.108	0.0245	-4.40	.0000	-0.0672	-0.1486
Op-2 1210	0.055	0.0562	0.98	.3299	0.1482	-0.0382
Op-1 2210	-0.123	0.0268	-4.60	.0000	-0.0787	-0.1675
Op-2 2210	-0.057	0.0580	-0.98	.3277	0.0392	-0.1534

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1327	0.0259	-5.126	.0000	-0.0898	-0.1756

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1035	0.0630	-1.64	.1033	0.0010	-0.2081
Station 0910	-0.1688	0.0620	-2.72	.0075	-0.0660	-0.2717
Station 0915	-0.1991	0.0650	-3.06	.0028	-0.0912	-0.3070
Station 1015	-0.0958	0.0650	-1.47	.1437	0.0121	-0.2037
Station 1210	-0.1629	0.0613	-2.66	.0091	-0.0612	-0.2646
Station 2210	-0.0660	0.0639	-1.03	.3039	0.0400	-0.1721

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	3.67	1.57	0.099	3.88	3.46	-0.87	3.64	-0.43	-1.31
0611 Op-2	4	3.37	1.78	0.400	4.64	2.09	0.08	2.06	1.59	-1.44
0910 Op-1	19	3.71	1.45	0.089	3.90	3.52	-0.88	2.94	-0.41	-1.36
0910 Op-2	5	2.80	2.42	0.460	4.08	1.52	0.78	2.18	1.78	-0.23
0915 Op-1	15	4.19	0.86	0.060	4.32	4.07	-1.16	2.53	-0.66	-1.66
0915 Op-2	4	2.73	1.71	0.370	3.91	1.56	0.71	1.67	2.00	-0.58
1015 Op-1	15	3.81	1.36	0.106	4.03	3.58	-0.77	2.31	-0.35	-1.19
1015 Op-2	4	3.36	1.40	0.302	4.32	2.40	0.09	1.20	0.93	-0.76
1210 Op-1	20	3.85	1.87	0.089	4.03	3.66	-1.05	3.66	-0.58	-1.52
1210 Op-2	5	3.33	1.69	0.322	4.23	2.44	0.25	1.85	1.28	-0.79
2210 Op-1	17	4.00	0.81	0.056	4.11	3.88	-1.18	2.72	-0.71	-1.65
2210 Op-2	4	4.16	0.48	0.102	4.48	3.83	-0.71	0.82	-0.12	-1.30

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	2.80	2.30	0.172	3.16	2.44
Op-2	5	3.58	1.05	0.195	4.12	3.04

Analysis of Variance for SAQ.for IDIV - Diversity

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.00	0.9881
SEASON	1	102.000	8.59	0.0042
STATION	5	102.000	1.53	0.1868
PERIOD*SEASON	1	102.000	11.34	0.0011
STATION*PERIOD	5	102.000	0.54	0.7484
STATION*SEASON	5	102.000	0.85	0.5191
PERIOD*STATION*SEASON	5	102.000	0.45	0.8149

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.00	0.00	0.1000	.	1.0000
STATION*PERIOD	2.68	0.00	0.2975	.	0.1006

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0454	0.1883	-0.241	.8099
Period in FC	0.0485	0.0850	0.570	.5698
Period in FC-S	0.1699	0.0869	1.955	.0533
Period in FC-W	-0.0729	0.1462	-0.499	.6189
Period in DC-S	0.5291	0.1854	2.853	.0052
Period in DC-W	-0.6199	0.3278	-1.891	.0614

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.080	0.0147	-5.41	.0000	-0.0552	-0.1041
Period Op-2	-0.080	0.0311	-2.58	.0114	-0.0285	-0.1319
Op-1 0611	0.020	0.0329	0.61	.5459	0.0746	-0.0347
Op-2 0611	-0.063	0.0770	-0.82	.4150	0.0648	-0.1910
Op-1 0910	-0.068	0.0351	-1.93	.0567	-0.0094	-0.1260
Op-2 0910	-0.033	0.0746	-0.45	.6566	0.0906	-0.1571
Op-1 0915	-0.173	0.0395	-4.38	.0000	-0.1073	-0.2384
Op-2 0915	-0.083	0.0770	-1.08	.2839	0.0449	-0.2109
Op-1 1015	-0.164	0.0395	-4.16	.0001	-0.0986	-0.2297
Op-2 1015	-0.141	0.0770	-1.83	.0699	-0.0133	-0.2690
Op-1 1210	-0.082	0.0329	-2.48	.0147	-0.0271	-0.1364
Op-2 1210	-0.101	0.0746	-1.35	.1803	0.0232	-0.2245
Op-1 2210	-0.012	0.0360	-0.32	.7485	0.0482	-0.0713
Op-2 2210	-0.060	0.0770	-0.78	.4375	0.0678	-0.1879

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0005	0.0344	0.015	.9881	0.0577	-0.0566

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0830	0.0838	0.99	.3242	0.2221	-0.0561
Station 0910	-0.0344	0.0825	-0.42	.6773	0.1025	-0.1713
Station 0915	-0.0899	0.0866	-1.04	.3017	0.0538	-0.2336
Station 1015	-0.0230	0.0866	-0.27	.7908	0.1207	-0.1667
Station 1210	0.0189	0.0815	0.23	.8174	0.1542	-0.1165
Station 2210	0.0485	0.0850	0.57	.5698	0.1896	-0.0927

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	2.39	1.62	0.127	2.66	2.12	0.06	2.27	0.40	-0.28
0611 Op-2	4	2.76	1.27	0.307	3.74	1.78	-0.82	3.23	1.41	-3.05
0910 Op-1	18	2.94	2.03	0.165	3.29	2.59	-0.55	3.08	-0.12	-0.97
0910 Op-2	5	2.41	1.32	0.234	3.06	1.76	-0.42	1.52	0.26	-1.11
0915 Op-1	14	3.34	2.83	0.204	3.78	2.90	-1.09	3.39	-0.56	-1.62
0915 Op-2	4	2.49	1.58	0.368	3.66	1.32	-0.55	1.78	0.72	-1.81
1015 Op-1	14	3.32	1.52	0.102	3.54	3.09	-1.06	1.63	-0.81	-1.32
1015 Op-2	4	3.05	0.79	0.192	3.66	2.43	-1.11	1.66	0.14	-2.35
1210 Op-1	19	3.04	2.69	0.154	3.37	2.72	-0.59	3.42	-0.16	-1.02
1210 Op-2	5	2.60	1.26	0.243	3.28	1.93	-0.62	1.19	-0.03	-1.20
2210 Op-1	16	2.40	1.91	0.123	2.66	2.14	0.01	2.85	0.36	-0.34
2210 Op-2	4	2.41	1.97	0.430	3.78	1.04	-0.47	1.37	0.45	-1.39

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	2.45	1.84	0.107	2.68	2.23
Op-2	5	1.99	1.97	0.319	2.88	1.10

Analysis of Variance for SAQ for 0515 - Doriopsilla albopunctata

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	2.97	0.0876
SEASON	1	102.000	0.65	0.4220
STATION	5	102.000	2.25	0.0554
PERIOD*SEASON	1	102.000	1.39	0.2412
STATION*PERIOD	5	102.000	0.78	0.5637
STATION*SEASON	5	102.000	0.52	0.7589
PERIOD*STATION*SEASON	5	102.000	0.52	0.7600

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.97	1.92	0.5276	0.3949	0.7437
STATION*PERIOD	3.92	0.00	0.3932	.	0.1809

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.5531	0.3464	1.597	.1134
Period in PC	0.1024	0.1564	0.655	.5141
Period in PC-S	0.1661	0.1599	1.039	.3013
Period in PC-W	0.0388	0.2689	0.144	.8857
Period in DC-S	0.9375	0.3411	2.748	.0071
Period in DC-W	0.1686	0.6030	0.280	.7803

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.009	0.0271	0.35	.7295	0.0544	-0.0356
Period Op-2	-0.100	0.0573	-1.74	.0842	-0.0048	-0.1949
Op-1 0611	0.216	0.0606	3.57	.0005	0.3169	0.1158
Op-2 0611	0.000	0.1417	0.00	1.000	0.2353	-0.2353
Op-1 0910	0.140	0.0646	2.17	.0327	0.2471	0.0326
Op-2 0910	-0.185	0.1372	-1.35	.1799	0.0425	-0.4131
Op-1 0915	-0.195	0.0726	-2.68	.0085	-0.0742	-0.3153
Op-2 0915	-0.208	0.1417	-1.47	.1452	0.0272	-0.4433
Op-1 1015	-0.181	0.0726	-2.50	.0141	-0.0609	-0.3020
Op-2 1015	-0.154	0.1417	-1.09	.2786	0.0809	-0.3896
Op-1 1210	0.003	0.0606	0.05	.9571	0.1038	-0.0973
Op-2 1210	-0.022	0.1372	-0.16	.8729	0.2058	-0.2498
Op-1 2210	0.073	0.0662	1.10	.2722	0.1830	-0.0368
Op-2 2210	-0.029	0.1417	-0.21	.8364	0.2059	-0.2646

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1092	0.0633	1.725	.0876	0.2144	0.0041

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2164	0.1541	1.40	.1634	0.4722	-0.0395
Station 0910	0.3252	0.1517	2.14	.0344	0.5769	0.0734
Station 0915	0.0133	0.1593	0.08	.9336	0.2777	-0.2510
Station 1015	-0.0271	0.1593	-0.17	.8653	0.2373	-0.2914
Station 1210	0.0253	0.1500	0.17	.8665	0.2743	-0.2237
Station 2210	0.1024	0.1564	0.65	.5141	0.3621	-0.1572

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.13	1.75	0.092	0.33	-0.06	0.37	2.75	0.65	0.09
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.22	1.25	0.073	0.38	0.07	0.26	2.75	0.58	-0.06
0910 Op-2	5	0.30	0.50	0.094	0.56	0.04	-0.30	0.50	-0.04	-0.56
0915 Op-1	14	0.89	4.00	0.304	1.55	0.24	-0.46	4.75	0.23	-1.16
0915 Op-2	4	0.44	1.25	0.277	1.32	-0.44	-0.44	1.25	0.44	-1.32
1015 Op-1	14	1.36	11.00	0.781	3.04	-0.33	-0.93	10.25	0.53	-2.39
1015 Op-2	4	0.25	0.75	0.177	0.81	-0.31	-0.25	0.75	0.31	-0.81
1210 Op-1	19	0.46	2.25	0.138	0.75	0.17	0.04	1.75	0.28	-0.20
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	-0.05	0.25	0.09	-0.19
2210 Op-1	16	0.31	1.75	0.111	0.55	0.08	0.19	1.25	0.40	-0.03
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.50	1.75	0.110	0.73	0.27
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0266 - Epiactis prolifera

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.00	0.9576
SEASON	1	108.000	9.49	0.0026
STATION	5	108.000	1.47	0.2040
PERIOD*SEASON	1	108.000	3.30	0.0719
STATION*PERIOD	5	108.000	0.31	0.9066
STATION*SEASON	5	108.000	0.16	0.9768
PERIOD*STATION*SEASON	5	108.000	0.14	0.9832

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.00	0.00	0.1005	.	0.3852
STATION*PERIOD	1.54	0.00	0.2102	.	0.1620

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0352	0.3109	-0.113	.9101
Period in FC	0.0170	0.1404	0.121	.9037
Period in FC-S	0.0692	0.1426	0.485	.6285
Period in FC-W	-0.0351	0.2419	-0.145	.8848
Period in DC-S	0.5329	0.3041	1.752	.0826
Period in DC-W	-0.6033	0.5425	-1.112	.2686

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.129	0.0241	5.37	.0000	0.1693	0.0894
Period Op-2	0.132	0.0515	2.57	.0115	0.2179	0.0469
Op-1 0611	0.234	0.0539	4.35	.0000	0.3236	0.1448
Op-2 0611	0.180	0.1275	1.41	.1612	0.3914	-0.0317
Op-1 0910	0.032	0.0575	0.56	.5794	0.1274	-0.0635
Op-2 0910	0.173	0.1235	1.40	.1651	0.3774	-0.0323
Op-1 0915	0.138	0.0645	2.14	.0344	0.2451	0.0311
Op-2 0915	0.180	0.1275	1.41	.1612	0.3914	-0.0317
Op-1 1015	0.163	0.0645	2.52	.0132	0.2695	0.0555
Op-2 1015	0.121	0.1275	0.95	.3441	0.3327	-0.0904
Op-1 1210	0.224	0.0539	4.16	.0001	0.3134	0.1346
Op-2 1210	0.173	0.1235	1.40	.1651	0.3774	-0.0323
Op-1 2210	-0.015	0.0588	-0.25	.8049	0.0830	-0.1121
Op-2 2210	-0.032	0.1275	-0.25	.8049	0.1800	-0.2431

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0030	0.0569	-0.053	.9576	0.0913	-0.0974

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0543	0.1384	0.39	.6956	0.2840	-0.1753
Station 0910	-0.1405	0.1362	-1.03	.3044	0.0854	-0.3665
Station 0915	-0.0418	0.1429	-0.29	.7707	0.1953	-0.2788
Station 1015	0.0414	0.1429	0.29	.7728	0.2784	-0.1957
Station 1210	0.0514	0.1347	0.38	.7033	0.2749	-0.1720
Station 2210	0.0170	0.1404	0.12	.9037	0.2500	-0.2159

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.05	0.50	0.029	0.11	-0.01	0.44	1.75	0.65	0.22
0611 Op-2	4	0.00	0.00	0.000	.	.	0.19	0.50	0.57	-0.19
0910 Op-1	19	0.41	2.00	0.130	0.68	0.13	0.04	3.00	0.35	-0.27
0910 Op-2	5	0.00	0.00	0.000	.	.	0.15	0.50	0.43	-0.13
0915 Op-1	15	0.22	1.25	0.100	0.43	0.00	0.18	2.25	0.46	-0.09
0915 Op-2	4	0.00	0.00	0.000	.	.	0.19	0.50	0.57	-0.19
1015 Op-1	15	0.08	0.25	0.031	0.15	0.02	0.32	1.75	0.56	0.07
1015 Op-2	4	0.13	0.25	0.072	0.35	-0.10	0.06	0.75	0.56	-0.44
1210 Op-1	20	0.05	0.25	0.023	0.10	0.00	0.44	2.00	0.66	0.21
1210 Op-2	5	0.00	0.00	0.000	.	.	0.15	0.50	0.43	-0.13
2210 Op-1	17	0.59	2.25	0.137	0.88	0.30	-0.15	3.75	0.26	-0.55
2210 Op-2	4	0.63	2.25	0.545	2.36	-1.11	-0.44	2.50	1.49	-2.37

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.49	1.75	0.105	0.71	0.27
Op-2	5	0.15	0.50	0.100	0.43	-0.13

Analysis of Variance for SFQ for 1259 - epiphytic bryozoan

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.79	0.3754
SEASON	1	108.000	0.56	0.4562
STATION	5	108.000	12.64	0.0000
PERIOD*SEASON	1	108.000	0.01	0.9156
STATION*PERIOD	5	108.000	0.94	0.4591
STATION*SEASON	5	108.000	0.46	0.8016
PERIOD*STATION*SEASON	5	108.000	0.00	1.0000

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.79	0.00	0.2292	.	0.2153
STATION*PERIOD	4.69	0.00	0.4521	.	0.3697

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1626	0.1665	0.977	.3309
Period in FC	0.0000	0.0752	0.000	1.000
Period in FC-S	-0.0000	0.0763	-0.000	1.000
Period in FC-W	0.0000	0.1295	0.000	1.000
Period in DC-S	0.1432	0.1628	0.879	.3811
Period in DC-W	0.1820	0.2904	0.627	.5322

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.041	0.0129	-3.21	.0018	-0.0200	-0.0628
Period Op-2	-0.068	0.0276	-2.48	.0146	-0.0227	-0.1142
Op-1 0611	-0.237	0.0288	-8.22	.0000	-0.1893	-0.2850
Op-2 0611	-0.411	0.0683	-6.02	.0000	-0.2975	-0.5240
Op-1 0910	0.000	0.0308	0.00	1.000	0.0511	-0.0511
Op-2 0910	0.000	0.0661	0.00	1.000	0.1097	-0.1097
Op-1 0915	0.000	0.0345	0.00	1.000	0.0573	-0.0573
Op-2 0915	0.000	0.0683	0.00	1.000	0.1133	-0.1133
Op-1 1015	-0.011	0.0345	-0.32	.7495	0.0462	-0.0683
Op-2 1015	0.000	0.0683	0.00	1.000	0.1133	-0.1133
Op-1 1210	0.000	0.0288	0.00	1.000	0.0479	-0.0479
Op-2 1210	0.000	0.0661	0.00	1.000	0.1097	-0.1097
Op-1 2210	0.000	0.0315	0.00	1.000	0.0522	-0.0522
Op-2 2210	-0.000	0.0683	-0.00	1.000	0.1133	-0.1133

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0271	0.0304	0.890	.3754	0.0776	-0.0234

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1736	0.0741	2.34	.0210	0.2966	0.0507
Station 0910	-0.0000	0.0729	-0.00	1.000	0.1210	-0.1210
Station 0915	-0.0000	0.0765	-0.00	1.000	0.1269	-0.1269
Station 1015	-0.0110	0.0765	-0.14	.8854	0.1159	-0.1380
Station 1210	-0.0000	0.0721	-0.00	1.000	0.1196	-0.1196
Station 2210	0.0000	0.0752	0.00	1.000	0.1247	-0.1247

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	1.31	9.25	0.470	2.30	0.33	-1.31	9.25	-0.33	-2.30
0611 Op-2	4	1.94	2.75	0.607	3.87	0.01	-1.94	2.75	-0.01	-3.87
0910 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.05	0.75	0.050	0.16	-0.06	-0.05	0.75	0.06	-0.16
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SAQ for 0564 - Eudistylia polymorpha

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.04	0.8392
SEASON	1	102.000	0.01	0.9179
STATION	5	102.000	1.19	0.3181
PERIOD*SEASON	1	102.000	0.12	0.7323
STATION*PERIOD	5	102.000	0.02	0.9998
STATION*SEASON	5	102.000	0.00	1.0000
PERIOD*STATION*SEASON	5	102.000	0.16	0.9751

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.04	0.00	0.1069	.	0.1626
STATION*PERIOD	0.11	0.00	0.1070	.	0.2062

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5312	2.3396	-0.227	.8208
Period in FC	0.0091	1.0566	0.009	.9932
Period in FC-S	0.0682	1.0800	0.063	.9498
Period in FC-W	-0.0500	1.8163	-0.028	.9781
Period in DC-S	-1.4708	2.3039	-0.638	.5246
Period in DC-W	0.4083	4.0727	0.100	.9203

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.283	0.1830	-1.55	.1249	0.0206	-0.5871
Period Op-2	-0.196	0.3867	-0.51	.6130	0.4457	-0.8381
Op-1 0611	-1.591	0.4092	-3.89	.0002	-0.9121	-2.2705
Op-2 0611	-1.208	0.9573	-1.26	.2097	0.3807	-2.7974
Op-1 0910	-0.006	0.4363	-0.01	.9895	0.7184	-0.7299
Op-2 0910	0.031	0.9269	0.03	.9732	1.5698	-1.5073
Op-1 0915	-0.113	0.4905	-0.23	.8190	0.7016	-0.9266
Op-2 0915	-0.000	0.9573	-0.00	1.000	1.5890	-1.5890
Op-1 1015	0.013	0.4905	0.03	.9797	0.8266	-0.8016
Op-2 1015	-0.000	0.9573	-0.00	1.000	1.5890	-1.5890
Op-1 1210	-0.011	0.4092	-0.03	.9782	0.6680	-0.6904
Op-2 1210	-0.000	0.9269	-0.00	1.000	1.5386	-1.5386
Op-1 2210	0.009	0.4472	0.02	.9838	0.7513	-0.7331
Op-2 2210	0.000	0.9573	0.00	1.000	1.5890	-1.5890

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0870	0.4279	-0.203	.8392	0.6232	-0.7972

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.3830	1.0411	-0.37	.7137	1.3451	-2.1111
Station 0910	-0.0370	1.0244	-0.04	.9712	1.6635	-1.7375
Station 0915	-0.1125	1.0756	-0.10	.9169	1.6730	-1.8980
Station 1015	0.0125	1.0756	0.01	.9908	1.7980	-1.7730
Station 1210	-0.0112	1.0132	-0.01	.9912	1.6706	-1.6930
Station 2210	0.0091	1.0566	0.01	.9932	1.7629	-1.7448

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CI.	Lower 95% C.I.
0611 Op-1	19	1.82	16.75	0.911	3.73	-0.10	-1.76	17.00	0.14	-3.67
0611 Op-2	4	0.94	1.50	0.313	1.93	-0.06	-0.94	1.50	0.06	-1.93
0910 Op-1	18	0.04	0.50	0.030	0.11	-0.02	0.01	1.00	0.11	-0.09
0910 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
0915 Op-1	14	0.14	0.75	0.063	0.28	0.01	-0.11	0.50	-0.01	-0.20
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.02	0.25	0.018	0.06	-0.02	0.02	0.75	0.11	-0.07
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.05	0.25	0.024	0.10	0.00	0.00	0.50	0.07	-0.07
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.00	0.50	0.22	-0.22
2210 Op-1	16	0.03	0.25	0.021	0.08	-0.01	0.03	0.75	0.11	-0.05
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.05	0.50	0.031	0.12	-0.01
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SFQ for 0449 - Eurystomella bilabiata

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.13	0.2897
SEASON	1	108.000	0.47	0.4928
STATION	5	108.000	4.43	0.0010
PERIOD*SEASON	1	108.000	0.02	0.8993
STATION*PERIOD	5	108.000	0.43	0.8280
STATION*SEASON	5	108.000	0.31	0.9070
PERIOD*STATION*SEASON	5	108.000	1.11	0.3581

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.13	0.11	0.2819	0.1186	0.3269
STATION*PERIOD	2.14	0.00	0.2560	.	0.1994

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4624	0.5459	-0.847	.3988
Period in FC	-0.1749	0.2465	-0.710	.4795
Period in FC-S	-0.6430	0.2503	-2.569	.0116
Period in FC-W	0.2932	0.4247	0.690	.4914
Period in DC-S	-0.0703	0.5338	-0.132	.8956
Period in DC-W	-0.8546	0.9523	-0.897	.3715

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.220	0.0423	-5.21	.0000	-0.1503	-0.2906
Period Op-2	-0.114	0.0904	-1.26	.2092	0.0358	-0.2642
Op-1 0611	-0.348	0.0946	-3.68	.0004	-0.1916	-0.5054
Op-2 0611	-0.000	0.2238	-0.00	1.000	0.3714	-0.3714
Op-1 0910	-0.101	0.1010	-1.00	.3181	0.0663	-0.2688
Op-2 0910	0.068	0.2167	0.31	.7543	0.4276	-0.2916
Op-1 0915	-0.043	0.1132	-0.38	.7029	0.1445	-0.2311
Op-2 0915	0.000	0.2238	0.00	1.000	0.3714	-0.3714
Op-1 1015	-0.011	0.1132	-0.09	.9253	0.1771	-0.1984
Op-2 1015	-0.130	0.2238	-0.58	.5635	0.2417	-0.5010
Op-1 1210	-0.050	0.0946	-0.53	.6006	0.1073	-0.2066
Op-2 1210	-0.029	0.2167	-0.14	.8929	0.3303	-0.3888
Op-1 2210	-0.769	0.1032	-7.46	.0000	-0.5981	-0.9405
Op-2 2210	-0.594	0.2238	-2.66	.0091	-0.2230	-0.9658

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1062	0.0998	-1.064	.2897	0.0594	-0.2718

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.3485	0.2430	-1.43	.1544	0.0547	-0.7516
Station 0910	-0.1693	0.2391	-0.71	.4804	0.2274	-0.5660
Station 0915	-0.0433	0.2508	-0.17	.8633	0.3729	-0.4594
Station 1015	0.1191	0.2508	0.47	.6360	0.5352	-0.2971
Station 1210	-0.0204	0.2365	-0.09	.9314	0.3719	-0.4127
Station 2210	-0.1749	0.2465	-0.71	.4795	0.2340	-0.5838

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.23	1.25	0.075	0.38	0.07	-0.19	1.75	-0.01	-0.37
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.22	2.00	0.127	0.49	-0.04	-0.18	2.25	0.09	-0.46
0910 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
0915 Op-1	15	0.02	0.25	0.017	0.05	-0.02	0.00	0.50	0.05	-0.05
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.03	0.50	0.033	0.10	-0.04	-0.02	0.75	0.07	-0.10
1015 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.13	0.50	0.27	-0.52
1210 Op-1	20	0.05	0.75	0.039	0.13	-0.03	-0.01	1.25	0.09	-0.12
1210 Op-2	5	0.10	0.50	0.100	0.38	-0.18	-0.05	0.75	0.29	-0.39
2210 Op-1	17	1.27	6.67	0.390	2.10	0.45	-1.23	6.42	-0.42	-2.04
2210 Op-2	4	0.31	0.75	0.188	0.91	-0.28	-0.31	0.75	0.28	-0.91

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.04	0.50	0.027	0.09	-0.02
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SFQ for 0300 - Fissurella volcano

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	3.30	0.0720
SEASON	1	108.000	0.08	0.7714
STATION	5	108.000	8.16	0.0000
PERIOD*SEASON	1	108.000	4.47	0.0368
STATION*PERIOD	5	108.000	1.30	0.2677
STATION*SEASON	5	108.000	0.39	0.8554
PERIOD*STATION*SEASON	5	108.000	0.86	0.5097

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.30	2.24	0.5641	0.4383	0.9519
STATION*PERIOD	6.52	1.40	0.5785	0.1992	0.4619

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5085	0.2734	-1.860	.0656
Period in FC	-0.0365	0.1234	-0.296	.7678
Period in FC-S	-0.0372	0.1253	-0.296	.7675
Period in FC-W	-0.0359	0.2127	-0.169	.8663
Period in DC-S	0.1262	0.2674	0.472	.6379
Period in DC-W	-1.1432	0.4770	-2.397	.0183

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.276	0.0212	-13.03	.0000	-0.2408	-0.3111
Period Op-2	-0.185	0.0453	-4.09	.0001	-0.1100	-0.2603
Op-1 0611	-0.149	0.0474	-3.14	.0022	-0.0702	-0.2274
Op-2 0611	-0.197	0.1121	-1.76	.0818	-0.0109	-0.3829
Op-1 0910	-0.551	0.0506	-10.90	.0000	-0.4672	-0.6351
Op-2 0910	-0.359	0.1085	-3.31	.0013	-0.1789	-0.5391
Op-1 0915	-0.468	0.0567	-8.26	.0000	-0.3743	-0.5624
Op-2 0915	-0.146	0.1121	-1.30	.1961	0.0402	-0.3318
Op-1 1015	-0.060	0.0567	-1.06	.2920	0.0340	-0.1541
Op-2 1015	0.000	0.1121	0.00	1.000	0.1860	-0.1860
Op-1 1210	-0.041	0.0474	-0.88	.3834	0.0371	-0.1201
Op-2 1210	-0.060	0.1085	-0.55	.5838	0.1205	-0.2397
Op-1 2210	-0.386	0.0517	-7.47	.0000	-0.3003	-0.4718
Op-2 2210	-0.349	0.1121	-3.12	.0023	-0.1635	-0.5355

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0908	0.0500	-1.817	.0720	-0.0079	-0.1738

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0481	0.1217	0.40	.6935	0.2500	-0.1538
Station 0910	-0.1922	0.1198	-1.60	.1114	0.0065	-0.3909
Station 0915	-0.3225	0.1256	-2.57	.0116	-0.1141	-0.5309
Station 1015	-0.0600	0.1256	-0.48	.6337	0.1484	-0.2685
Station 1210	0.0182	0.1184	0.15	.8783	0.2147	-0.1783
Station 2210	-0.0365	0.1234	-0.30	.7678	0.1683	-0.2413

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.25	1.25	0.085	0.43	0.07	-0.24	1.50	-0.05	-0.42
0611 Op-2	4	0.38	1.00	0.217	1.06	-0.31	-0.38	1.00	0.31	-1.06
0910 Op-1	19	1.41	4.00	0.256	1.95	0.87	-1.39	4.00	-0.86	-1.93
0910 Op-2	5	1.25	2.75	0.506	2.66	-0.16	-1.25	2.75	0.16	-2.66
0915 Op-1	15	1.12	2.50	0.218	1.58	0.65	-1.12	2.50	-0.65	-1.58
0915 Op-2	4	0.44	1.00	0.258	1.26	-0.38	-0.44	1.00	0.38	-1.26
1015 Op-1	15	0.07	0.25	0.030	0.13	0.00	-0.07	0.25	-0.00	-0.13
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.09	0.75	0.042	0.17	0.00	-0.08	1.00	0.02	-0.17
1210 Op-2	5	0.15	0.50	0.100	0.43	-0.13	-0.15	0.50	0.13	-0.43
2210 Op-1	17	0.82	2.00	0.163	1.16	0.47	-0.80	2.00	-0.46	-1.15
2210 Op-2	4	0.56	0.25	0.063	0.76	0.36	-0.56	0.25	-0.36	-0.76

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.01	0.25	0.013	0.04	-0.01
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0526 - Fusinus luteopictus

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.02	0.8963
SEASON	1	108.000	0.09	0.7588
STATION	5	108.000	12.17	0.0000
PERIOD*SEASON	1	108.000	0.21	0.6451
STATION*PERIOD	5	108.000	0.79	0.5580
STATION*SEASON	5	108.000	0.12	0.9876
PERIOD*STATION*SEASON	5	108.000	0.22	0.9516

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.02	0.00	0.1029	.	0.2928
STATION*PERIOD	3.96	0.00	0.3969	.	0.2577

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2487	0.4107	-0.606	.5461
Period in FC	0.3076	0.1854	1.659	.1001
Period in FC-S	0.5000	0.1883	2.656	.0091
Period in FC-W	0.1152	0.3195	0.360	.7192
Period in DC-S	-0.2330	0.4017	-0.580	.5631
Period in DC-W	-0.2644	0.7165	-0.369	.7128

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.151	0.0318	-4.74	.0000	-0.0981	-0.2037
Period Op-2	-0.161	0.0680	-2.36	.0200	-0.0478	-0.2736
Op-1 0611	0.000	0.0712	0.00	1.000	0.1181	-0.1181
Op-2 0611	-0.000	0.1684	-0.00	1.000	0.2794	-0.2794
Op-1 0910	-0.191	0.0760	-2.51	.0137	-0.0645	-0.3166
Op-2 0910	-0.000	0.1631	-0.00	1.000	0.2705	-0.2705
Op-1 0915	-0.035	0.0852	-0.42	.6787	0.1059	-0.1767
Op-2 0915	0.000	0.1684	0.00	1.000	0.2794	-0.2794
Op-1 1015	-0.042	0.0852	-0.50	.6208	0.0990	-0.1835
Op-2 1015	0.000	0.1684	0.00	1.000	0.2794	-0.2794
Op-1 1210	0.019	0.0712	0.27	.7853	0.1375	-0.0986
Op-2 1210	0.000	0.1631	0.00	1.000	0.2705	-0.2705
Op-1 2210	-0.657	0.0776	-8.46	.0000	-0.5277	-0.7853
Op-2 2210	-0.964	0.1684	-5.73	.0000	-0.6847	-1.2435

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0098	0.0751	0.131	.8963	0.1344	-0.1148

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	0.1828	0.00	1.000	0.3033	-0.3033
Station 0910	-0.1905	0.1799	-1.06	.2919	0.1079	-0.4890
Station 0915	-0.0354	0.1887	-0.19	.8517	0.2777	-0.3485
Station 1015	-0.0422	0.1887	-0.22	.8233	0.2708	-0.3553
Station 1210	0.0194	0.1779	0.11	.9132	0.3146	-0.2757
Station 2210	0.3076	0.1854	1.66	.1001	0.6153	-0.0001

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.01	0.25	0.013	0.04	-0.01	0.00	0.50	0.04	-0.04
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.09	0.50	0.034	0.16	0.02	-0.08	0.75	0.00	-0.16
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.13	2.00	0.133	0.42	-0.15	-0.12	2.25	0.17	-0.41
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.07	0.75	0.052	0.18	-0.04	-0.05	1.00	0.07	-0.17
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.00	0.00	0.000	.	.	0.01	0.25	0.04	-0.01
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.50	2.25	0.137	0.79	0.21	-0.50	2.25	-0.21	-0.79
2210 Op-2	4	1.06	1.75	0.373	2.25	-0.13	-1.06	1.75	0.13	-2.25

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.01	0.25	0.013	0.04	-0.01
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0422 - Henricia leviuscula

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.85	0.3599
SEASON	1	108.000	7.71	0.0065
STATION	5	108.000	0.74	0.5953
PERIOD*SEASON	1	108.000	8.47	0.0044
STATION*PERIOD	5	108.000	0.55	0.7401
STATION*SEASON	5	108.000	0.30	0.9128
PERIOD*STATION*SEASON	5	108.000	0.54	0.7431

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.85	0.00	0.2376	.	0.1139
STATION*PERIOD	2.74	0.00	0.3023	.	0.1283

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.1866	0.4215	-0.443	.6589
Period in FC	-0.2387	0.1903	-1.254	.2125
Period in FC-S	-0.2915	0.1933	-1.509	.1343
Period in FC-W	-0.1859	0.3280	-0.567	.5720
Period in DC-S	-1.4794	0.4123	-3.589	.0005
Period in DC-W	1.1063	0.7354	1.504	.1354

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.058	0.0327	1.76	.0807	0.1118	0.0034
Period Op-2	0.128	0.0698	1.84	.0686	0.2443	0.0126
Op-1 0611	0.093	0.0730	1.27	.2078	0.2137	-0.0286
Op-2 0611	0.181	0.1729	1.05	.2964	0.4681	-0.1054
Op-1 0910	0.102	0.0780	1.30	.1953	0.2310	-0.0278
Op-2 0910	0.204	0.1674	1.22	.2255	0.4817	-0.0736
Op-1 0915	0.103	0.0874	1.18	.2395	0.2484	-0.0416
Op-2 0915	0.181	0.1729	1.05	.2964	0.4681	-0.1054
Op-1 1015	0.103	0.0874	1.18	.2395	0.2484	-0.0416
Op-2 1015	-0.091	0.1729	-0.52	.6009	0.1961	-0.3775
Op-1 1210	0.093	0.0730	1.27	.2078	0.2137	-0.0286
Op-2 1210	0.204	0.1674	1.22	.2255	0.4817	-0.0736
Op-1 2210	-0.148	0.0797	-1.86	.0659	-0.0158	-0.2802
Op-2 2210	0.091	0.1729	0.52	.6009	0.3775	-0.1961

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0709	0.0771	-0.920	.3599	0.0570	-0.1988

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0888	0.1877	-0.47	.6370	0.2225	-0.4001
Station 0910	-0.1024	0.1846	-0.55	.5803	0.2039	-0.4087
Station 0915	-0.0780	0.1937	-0.40	.6881	0.2434	-0.3993
Station 1015	0.1941	0.1937	1.00	.3186	0.5154	-0.1273
Station 1210	-0.1115	0.1826	-0.61	.5429	0.1915	-0.4144
Station 2210	-0.2387	0.1903	-1.25	.2125	0.0771	-0.5545

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.05	0.50	0.11	-0.01
0611 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.25	0.35	-0.10
0910 Op-1	19	0.00	0.00	0.000	.	.	0.05	0.50	0.12	-0.01
0910 Op-2	5	0.00	0.00	0.000	.	.	0.15	0.25	0.32	-0.02
0915 Op-1	15	0.00	0.00	0.000	.	.	0.05	0.50	0.13	-0.03
0915 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.25	0.35	-0.10
1015 Op-1	15	0.00	0.00	0.000	.	.	0.05	0.50	0.13	-0.03
1015 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.06	0.50	0.44	-0.32
1210 Op-1	20	0.00	0.00	0.000	.	.	0.05	0.50	0.11	-0.01
1210 Op-2	5	0.00	0.00	0.000	.	.	0.15	0.25	0.32	-0.02
2210 Op-1	17	0.15	0.75	0.057	0.27	0.03	-0.09	1.25	0.07	-0.25
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.06	0.25	0.26	-0.14

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.05	0.50	0.029	0.11	-0.01
Op-2	5	0.15	0.25	0.061	0.32	-0.02

Analysis of Variance for SFQ for 0518 - Homalopoma spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.17	0.6832
SEASON	1	108.000	7.32	0.0079
STATION	5	108.000	2.88	0.0175
PERIOD*SEASON	1	108.000	1.82	0.1797
STATION*PERIOD	5	108.000	0.28	0.9207
STATION*SEASON	5	108.000	0.40	0.8510
PERIOD*STATION*SEASON	5	108.000	0.07	0.9964

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.17	0.00	0.1279	.	0.3245
STATION*PERIOD	1.42	0.00	0.2009	.	0.2546

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.4376	3.1958	-0.763	.4473
Period in FC	1.0028	1.4430	0.695	.4886
Period in FC-S	0.8056	1.4651	0.550	.5836
Period in FC-W	1.2000	2.4864	0.483	.6303
Period in DC-S	-6.9751	3.1255	-2.232	.0277
Period in DC-W	2.1000	5.5753	0.377	.7072

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	4.240	0.2475	17.13	.0000	4.6507	3.8293
Period Op-2	4.479	0.5294	8.46	.0000	5.3575	3.6009
Op-1 0611	4.872	0.5538	8.80	.0000	5.7908	3.9533
Op-2 0611	5.042	1.3105	3.85	.0002	7.2158	2.8675
Op-1 0910	5.220	0.5913	8.83	.0000	6.2006	4.2387
Op-2 0910	5.219	1.2689	4.11	.0001	7.3239	3.1136
Op-1 0915	4.801	0.6626	7.25	.0000	5.9005	3.7018
Op-2 0915	5.042	1.3105	3.85	.0002	7.2158	2.8675
Op-1 1015	4.188	0.6626	6.32	.0000	5.2869	3.0881
Op-2 1015	5.000	1.3105	3.82	.0002	7.1742	2.8258
Op-1 1210	3.940	0.5538	7.12	.0000	4.8592	3.0217
Op-2 1210	5.156	1.2689	4.06	.0001	7.2614	3.0511
Op-1 2210	2.419	0.6041	4.01	.0001	3.4217	1.4172
Op-2 2210	1.417	1.3105	1.08	.2821	3.5908	-0.7575

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2391	0.5844	-0.409	.6832	0.7305	-1.2087

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1696	1.4227	-0.12	.9053	2.1907	-2.5300
Station 0910	0.0009	1.3999	0.00	.9995	2.3234	-2.3216
Station 0915	-0.2405	1.4685	-0.16	.8702	2.1958	-2.6769
Station 1015	-0.8125	1.4685	-0.55	.5812	1.6238	-3.2488
Station 1210	-1.2158	1.3844	-0.88	.3818	1.0811	-3.5127
Station 2210	1.0028	1.4430	0.69	.4886	3.3968	-1.3913

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CI.	Lower 95% C.I.
0611 Op-1	20	0.04	0.75	0.038	0.12	-0.04	4.49	8.75	5.55	3.42
0611 Op-2	4	0.00	0.00	0.000	.	.	4.94	2.00	6.33	3.55
0910 Op-1	19	0.09	1.25	0.069	0.24	-0.05	4.57	9.25	5.69	3.44
0910 Op-2	5	0.00	0.00	0.000	.	.	5.20	2.25	6.39	4.01
0915 Op-1	15	0.23	2.25	0.149	0.55	-0.09	4.30	8.50	5.57	3.03
0915 Op-2	4	0.00	0.00	0.000	.	.	4.94	2.00	6.33	3.55
1015 Op-1	15	0.90	6.00	0.456	1.88	-0.08	3.63	12.25	5.27	2.00
1015 Op-2	4	0.06	0.25	0.063	0.26	-0.14	4.88	2.00	6.35	3.40
1210 Op-1	20	0.88	3.25	0.253	1.40	0.35	3.65	8.50	4.83	2.47
1210 Op-2	5	0.10	0.50	0.100	0.38	-0.18	5.10	2.25	6.43	3.77
2210 Op-1	17	3.17	4.50	0.337	3.88	2.45	1.69	9.75	3.29	0.08
2210 Op-2	4	4.31	4.25	0.868	7.08	1.55	0.63	3.50	3.19	-1.94

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	4.53	8.00	0.493	5.56	3.49
Op-2	5	5.20	2.25	0.429	6.39	4.01

Analysis of Variance for SFQ for 0259 - Hydroida

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.53	0.2193
SEASON	1	108.000	0.95	0.3328
STATION	5	108.000	21.72	0.0000
PERIOD*SEASON	1	108.000	1.30	0.2575
STATION*PERIOD	5	108.000	0.75	0.5912
STATION*SEASON	5	108.000	0.36	0.8754
PERIOD*STATION*SEASON	5	108.000	0.59	0.7105

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.53	0.50	0.3404	0.1823	0.2269
STATION*PERIOD	3.73	0.00	0.3793	.	0.4378

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3513	0.2721	1.291	.1994
Period in PC	0.0176	0.1229	0.143	.8863
Period in PC-S	-0.0000	0.1248	-0.000	1.000
Period in PC-W	0.0352	0.2117	0.166	.8682
Period in DC-S	0.0290	0.2661	0.109	.9133
Period in DC-W	0.6736	0.4747	1.419	.1588

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.075	0.0211	-3.57	.0005	-0.0403	-0.1102
Period Op-2	-0.137	0.0451	-3.03	.0030	-0.0619	-0.2115
Op-1 0611	-0.545	0.0472	-11.56	.0000	-0.4671	-0.6236
Op-2 0611	-0.820	0.1116	-7.35	.0000	-0.6352	-1.0055
Op-1 0910	0.018	0.0503	0.35	.7272	0.1011	-0.0659
Op-2 0910	0.000	0.1080	0.00	1.000	0.1793	-0.1793
Op-1 0915	0.022	0.0564	0.39	.6972	0.1156	-0.0716
Op-2 0915	-0.000	0.1116	-0.00	1.000	0.1851	-0.1851
Op-1 1015	0.022	0.0564	0.39	.6972	0.1156	-0.0716
Op-2 1015	-0.000	0.1116	-0.00	1.000	0.1851	-0.1851
Op-1 1210	0.015	0.0472	0.31	.7563	0.0929	-0.0636
Op-2 1210	-0.000	0.1080	-0.00	1.000	0.1793	-0.1793
Op-1 2210	0.018	0.0514	0.34	.7328	0.1030	-0.0677
Op-2 2210	-0.000	0.1116	-0.00	1.000	0.1851	-0.1851

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0615	0.0498	1.236	.2193	0.1441	-0.0211

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2750	0.1211	2.27	.0252	0.4760	0.0740
Station 0910	0.0176	0.1192	0.15	.8828	0.2154	-0.1802
Station 0915	0.0220	0.1250	0.18	.8606	0.2295	-0.1854
Station 1015	0.0220	0.1250	0.18	.8606	0.2295	-0.1854
Station 1210	0.0147	0.1179	0.12	.9012	0.2103	-0.1809
Station 2210	0.0176	0.1229	0.14	.8863	0.2215	-0.1863

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	3.95	33.75	1.694	7.49	0.41	-3.94	34.00	-0.39	-7.49
0611 Op-2	4	2.75	1.25	0.270	3.61	1.89	-2.75	1.25	-1.89	-3.61
0910 Op-1	19	0.00	0.00	0.000	.	.	0.01	0.25	0.04	-0.01
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.00	0.00	0.000	.	.	0.02	0.25	0.05	-0.02
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.00	0.00	0.000	.	.	0.02	0.25	0.05	-0.02
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.00	0.00	0.000	.	.	0.01	0.25	0.04	-0.01
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.00	0.00	0.000	.	.	0.01	0.25	0.05	-0.02
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.01	0.25	0.013	0.04	-0.01
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0608 - Hymenamphiastra cyanocrypta

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	3.86	0.0519
SEASON	1	108.000	13.80	0.0003
STATION	5	108.000	24.05	0.0000
PERIOD*SEASON	1	108.000	1.05	0.3079
STATION*PERIOD	5	108.000	0.54	0.7437
STATION*SEASON	5	108.000	2.00	0.0849
PERIOD*STATION*SEASON	5	108.000	0.65	0.6588

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.86	2.79	0.6214	0.5068	0.3827
STATION*PERIOD	2.71	0.00	0.3004	.	0.4652

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3977	0.3315	1.200	.2329
Period in PC	0.3174	0.1497	2.120	.0363
Period in PC-S	0.0907	0.1520	0.597	.5520
Period in PC-W	0.5441	0.2579	2.109	.0372
Period in DC-S	0.2517	0.3242	0.776	.4392
Period in DC-W	0.5437	0.5784	0.940	.3493

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.139	0.0257	-5.41	.0000	-0.0963	-0.1815
Period Op-2	-0.258	0.0549	-4.70	.0000	-0.1670	-0.3492
Op-1 0611	0.039	0.0574	0.68	.5002	0.1342	-0.0565
Op-2 0611	-0.000	0.1359	-0.00	1.000	0.2255	-0.2255
Op-1 0910	0.039	0.0613	0.63	.5277	0.1406	-0.0629
Op-2 0910	-0.000	0.1316	-0.00	1.000	0.2184	-0.2184
Op-1 0915	-0.855	0.0687	-12.43	.0000	-0.7407	-0.9688
Op-2 0915	-1.004	0.1359	-7.39	.0000	-0.7789	-1.2300
Op-1 1015	-0.141	0.0687	-2.04	.0433	-0.0265	-0.2546
Op-2 1015	-0.272	0.1359	-2.00	.0479	-0.0465	-0.4976
Op-1 1210	0.039	0.0574	0.68	.5002	0.1342	-0.0565
Op-2 1210	0.000	0.1316	0.00	1.000	0.2184	-0.2184
Op-1 2210	0.045	0.0627	0.72	.4710	0.1493	-0.0586
Op-2 2210	-0.272	0.1359	-2.00	.0479	-0.0465	-0.4976

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1192	0.0606	1.966	.0519	0.2198	0.0186

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0389	0.1476	0.26	.7928	0.2837	-0.2060
Station 0910	0.0389	0.1452	0.27	.7895	0.2798	-0.2021
Station 0915	0.1496	0.1523	0.98	.3282	0.4024	-0.1031
Station 1015	0.1315	0.1523	0.86	.3900	0.3842	-0.1213
Station 1210	0.0389	0.1436	0.27	.7872	0.2771	-0.1994
Station 2210	0.3174	0.1497	2.12	.0363	0.5657	0.0690

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.03	0.25	0.06	-0.01
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.00	0.00	0.000	.	.	0.03	0.25	0.06	-0.01
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.85	1.50	0.133	1.14	0.56	-0.82	1.50	-0.54	-1.09
0915 Op-2	4	1.00	2.00	0.421	2.34	-0.34	-1.00	2.00	0.34	-2.34
1015 Op-1	15	0.07	0.50	0.038	0.15	-0.02	-0.03	0.75	0.07	-0.14
1015 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26
1210 Op-1	20	0.00	0.00	0.000	.	.	0.03	0.25	0.06	-0.01
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.00	0.00	0.000	.	.	0.03	0.25	0.07	-0.01
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.03	0.25	0.017	0.06	-0.01
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0536 - Ischnochitonidae

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.04	0.8337
SEASON	1	108.000	4.16	0.0439
STATION	5	108.000	2.85	0.0184
PERIOD*SEASON	1	108.000	6.65	0.0113
STATION*PERIOD	5	108.000	0.79	0.5625
STATION*SEASON	5	108.000	0.37	0.8683
PERIOD*STATION*SEASON	5	108.000	1.59	0.1692

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.04	0.00	0.1074	.	0.3239
STATION*PERIOD	3.93	0.00	0.3945	.	0.1362

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0786	0.5614	0.140	.8889
Period in FC	0.0511	0.2535	0.202	.8407
Period in FC-S	0.1022	0.2574	0.397	.6922
Period in FC-W	-0.0000	0.4368	-0.000	1.000
Period in DC-S	-1.5604	0.5490	-2.842	.0054
Period in DC-W	1.7175	0.9794	1.754	.0823

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.150	0.0435	-3.45	.0008	-0.0780	-0.2223
Period Op-2	-0.172	0.0930	-1.85	.0675	-0.0175	-0.3261
Op-1 0611	0.036	0.0973	0.37	.7125	0.1973	-0.1255
Op-2 0611	0.155	0.2302	0.67	.5024	0.5368	-0.2270
Op-1 0910	-0.295	0.1039	-2.84	.0054	-0.1225	-0.4672
Op-2 0910	-0.156	0.2229	-0.70	.4859	0.2139	-0.5256
Op-1 0915	-0.209	0.1164	-1.80	.0750	-0.0161	-0.4024
Op-2 0915	-0.584	0.2302	-2.54	.0126	-0.2019	-0.9657
Op-1 1015	-0.155	0.1164	-1.33	.1868	0.0385	-0.3478
Op-2 1015	0.064	0.2302	0.28	.7808	0.4461	-0.3177
Op-1 1210	-0.311	0.0973	-3.19	.0018	-0.1492	-0.4720
Op-2 1210	-0.491	0.2229	-2.20	.0296	-0.1216	-0.8612
Op-1 2210	0.032	0.1061	0.31	.7605	0.2085	-0.1436
Op-2 2210	-0.019	0.2302	-0.08	.9355	0.3633	-0.4006

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0216	0.1027	0.211	.8337	0.1919	-0.1487

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1190	0.2499	-0.48	.6350	0.2957	-0.5336
Station 0910	-0.1390	0.2459	-0.57	.5731	0.2690	-0.5470
Station 0915	0.3746	0.2580	1.45	.1494	0.8025	-0.0534
Station 1015	-0.2189	0.2580	-0.85	.3981	0.2091	-0.6468
Station 1210	0.1808	0.2432	0.74	.4587	0.5843	-0.2226
Station 2210	0.0511	0.2535	0.20	.8407	0.4716	-0.3695

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.09	1.00	0.055	0.20	-0.03	-0.01	1.00	0.08	-0.10
0611 Op-2	4	0.00	0.00	0.000	.	.	0.19	0.75	0.78	-0.41
0910 Op-1	19	0.24	1.00	0.062	0.37	0.11	-0.17	1.25	-0.04	-0.30
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.10	1.00	0.57	-0.37
0915 Op-1	15	0.37	1.25	0.117	0.62	0.12	-0.28	1.25	-0.06	-0.50
0915 Op-2	4	0.56	1.25	0.329	1.61	-0.48	-0.38	1.25	0.57	-1.32
1015 Op-1	15	0.12	0.50	0.048	0.22	0.01	-0.03	1.00	0.11	-0.18
1015 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.13	0.50	0.52	-0.27
1210 Op-1	20	0.45	2.00	0.122	0.71	0.19	-0.38	2.50	-0.12	-0.63
1210 Op-2	5	0.45	1.50	0.278	1.22	-0.32	-0.30	0.75	0.10	-0.70
2210 Op-1	17	0.01	0.25	0.015	0.05	-0.02	0.03	0.50	0.09	-0.03
2210 Op-2	4	0.25	1.00	0.250	1.05	-0.55	-0.06	1.75	1.08	-1.21

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.08	0.50	0.037	0.15	-0.00
Op-2	5	0.15	0.75	0.150	0.57	-0.27

Analysis of Variance for SFQ for 0611 - Lacuna spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.00	0.9780
SEASON	1	108.000	1.23	0.2700
STATION	5	108.000	4.23	0.0015
PERIOD*SEASON	1	108.000	0.22	0.6378
STATION*PERIOD	5	108.000	0.37	0.8666
STATION*SEASON	5	108.000	0.36	0.8761
PERIOD*STATION*SEASON	5	108.000	0.51	0.7676

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.00	0.00	0.1001	.	0.6866
STATION*PERIOD	1.86	0.00	0.2344	.	0.1882

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0898	0.3892	-0.231	.8180
Period in FC	0.1016	0.1758	0.578	.5644
Period in FC-S	0.0088	0.1784	0.049	.9607
Period in FC-W	0.1944	0.3028	0.642	.5223
Period in DC-S	-0.1986	0.3807	-0.522	.6030
Period in DC-W	0.0190	0.6790	0.028	.9777

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.130	0.0301	-4.30	.0000	-0.0795	-0.1796
Period Op-2	-0.132	0.0645	-2.04	.0438	-0.0246	-0.2385
Op-1 0611	-0.459	0.0674	-6.81	.0000	-0.3474	-0.5712
Op-2 0611	-0.494	0.1596	-3.10	.0025	-0.2293	-0.7589
Op-1 0910	-0.226	0.0720	-3.14	.0022	-0.1067	-0.3456
Op-2 0910	-0.090	0.1545	-0.58	.5614	0.1664	-0.3464
Op-1 0915	-0.027	0.0807	-0.34	.7355	0.1066	-0.1612
Op-2 0915	-0.154	0.1596	-0.97	.3356	0.1104	-0.4192
Op-1 1015	-0.018	0.0807	-0.22	.8277	0.1163	-0.1515
Op-2 1015	0.000	0.1596	0.00	1.000	0.2648	-0.2648
Op-1 1210	-0.082	0.0674	-1.22	.2255	0.0297	-0.1941
Op-2 1210	0.016	0.1545	0.10	.9197	0.2720	-0.2408
Op-1 2210	0.035	0.0736	0.48	.6326	0.1573	-0.0868
Op-2 2210	-0.066	0.1596	-0.42	.6786	0.1985	-0.3311

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0020	0.0712	0.028	.9780	0.1201	-0.1161

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0347	0.1733	0.20	.8415	0.3222	-0.2527
Station 0910	-0.1361	0.1705	-0.80	.4264	0.1468	-0.4190
Station 0915	0.1270	0.1789	0.71	.4791	0.4238	-0.1697
Station 1015	-0.0176	0.1789	-0.10	.9218	0.2791	-0.3143
Station 1210	-0.0978	0.1686	-0.58	.5630	0.1819	-0.3776
Station 2210	0.1016	0.1758	0.58	.5644	0.3932	-0.1900

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	1.81	8.25	0.455	2.77	0.86	-1.65	8.00	-0.75	-2.55
0611 Op-2	4	1.31	2.50	0.524	2.98	-0.36	-1.31	2.50	0.36	-2.98
0910 Op-1	19	0.67	1.75	0.139	0.96	0.38	-0.50	2.25	-0.21	-0.79
0910 Op-2	5	0.45	1.25	0.278	1.22	-0.32	-0.35	1.75	0.57	-1.27
0915 Op-1	15	0.43	1.50	0.128	0.71	0.16	-0.22	2.25	0.10	-0.53
0915 Op-2	4	0.25	0.75	0.177	0.81	-0.31	-0.25	0.75	0.31	-0.81
1015 Op-1	15	0.45	1.75	0.153	0.78	0.12	-0.23	2.25	0.17	-0.63
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.38	1.50	0.103	0.59	0.16	-0.21	2.25	0.05	-0.48
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.05	0.75	0.39	-0.29
2210 Op-1	17	0.20	1.25	0.087	0.39	0.02	-0.07	2.00	0.16	-0.30
2210 Op-2	4	0.19	0.75	0.188	0.78	-0.41	-0.19	0.75	0.41	-0.78

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.16	0.75	0.058	0.28	0.04
Op-2	5	0.10	0.50	0.100	0.38	-0.18

Analysis of Variance for SFQ for 0423 - Leptasterias spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	8.11	0.0053
SEASON	1	108.000	0.33	0.5676
STATION	5	108.000	4.08	0.0020
PERIOD*SEASON	1	108.000	0.07	0.7901
STATION*PERIOD	5	108.000	0.52	0.7596
STATION*SEASON	5	108.000	0.30	0.9108
PERIOD*STATION*SEASON	5	108.000	0.60	0.6974

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	8.11	6.96	0.8821	0.8358	0.2492
STATION*PERIOD	2.61	0.00	0.2922	.	0.3265

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.6852	0.3504	-1.955	.0531
Period in FC	-0.4100	0.1582	-2.591	.0109
Period in FC-S	-0.1772	0.1607	-1.103	.2724
Period in FC-W	-0.6428	0.2727	-2.358	.0202
Period in DC-S	-1.0206	0.3427	-2.978	.0036
Period in DC-W	-0.3498	0.6114	-0.572	.5684

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.206	0.0271	7.57	.0000	0.2506	0.1605
Period Op-2	0.388	0.0581	6.69	.0000	0.4844	0.2918
Op-1 0611	0.273	0.0607	4.50	.0000	0.3739	0.1724
Op-2 0611	0.423	0.1437	2.94	.0040	0.6611	0.1843
Op-1 0910	0.283	0.0648	4.37	.0000	0.3909	0.1758
Op-2 0910	0.442	0.1391	3.18	.0019	0.6729	0.2112
Op-1 0915	0.321	0.0727	4.42	.0000	0.4418	0.2007
Op-2 0915	0.423	0.1437	2.94	.0040	0.6611	0.1843
Op-1 1015	0.313	0.0727	4.31	.0000	0.4338	0.1927
Op-2 1015	0.423	0.1437	2.94	.0040	0.6611	0.1843
Op-1 1210	0.276	0.0607	4.54	.0000	0.3766	0.1751
Op-2 1210	0.442	0.1391	3.18	.0019	0.6729	0.2112
Op-1 2210	-0.233	0.0662	-3.52	.0006	-0.1236	-0.3434
Op-2 2210	0.177	0.1437	1.23	.2220	0.4149	-0.0619

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1825	0.0641	-2.848	.0053	-0.0762	-0.2889

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1496	0.1560	-0.96	.3399	0.1093	-0.4084
Station 0910	-0.1587	0.1535	-1.03	.3035	0.0960	-0.4134
Station 0915	-0.1014	0.1610	-0.63	.5302	0.1658	-0.3686
Station 1015	-0.1094	0.1610	-0.68	.4983	0.1577	-0.3766
Station 1210	-0.1661	0.1518	-1.09	.2762	0.0857	-0.4180
Station 2210	-0.4100	0.1582	-2.59	.0109	-0.1475	-0.6725

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.08	1.25	0.063	0.21	-0.06	0.51	3.25	0.82	0.21
0611 Op-2	4	0.00	0.00	0.000	.	.	1.00	1.75	2.34	-0.34
0910 Op-1	19	0.03	0.50	0.026	0.08	-0.03	0.54	2.25	0.80	0.28
0910 Op-2	5	0.00	0.00	0.000	.	.	1.10	1.75	2.05	0.15
0915 Op-1	15	0.00	0.00	0.000	.	.	0.63	2.00	0.94	0.33
0915 Op-2	4	0.00	0.00	0.000	.	.	1.00	1.75	2.34	-0.34
1015 Op-1	15	0.02	0.25	0.017	0.05	-0.02	0.62	2.00	0.92	0.31
1015 Op-2	4	0.00	0.00	0.000	.	.	1.00	1.75	2.34	-0.34
1210 Op-1	20	0.04	0.50	0.027	0.09	-0.02	0.55	2.00	0.79	0.31
1210 Op-2	5	0.00	0.00	0.000	.	.	1.10	1.75	2.05	0.15
2210 Op-1	17	1.33	2.75	0.170	1.69	0.97	-0.72	2.75	-0.27	-1.17
2210 Op-2	4	0.81	1.50	0.313	1.81	-0.18	0.19	2.25	1.79	-1.42

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.59	2.00	0.114	0.83	0.35
Op-2	5	1.10	1.75	0.341	2.05	0.15

Analysis of Variance for SFQ for 0486 - Leucandra heathi

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.02	0.8760
SEASON	1	108.000	0.03	0.8583
STATION	5	108.000	1.32	0.2591
PERIOD*SEASON	1	108.000	0.56	0.4567
STATION*PERIOD	5	108.000	0.09	0.9943
STATION*SEASON	5	108.000	0.43	0.8272
PERIOD*STATION*SEASON	5	108.000	0.44	0.8164

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.02	0.00	0.1041	.	0.1346
STATION*PERIOD	0.43	0.00	0.1288	.	0.1183

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.0604	0.4548	0.133	.8945
Period in FC	0.0176	0.2054	0.086	.9319
Period in FC-S	0.3299	0.2085	1.582	.1166
Period in FC-W	-0.2947	0.3539	-0.833	.4068
Period in DC-S	0.1209	0.4448	0.272	.7863
Period in DC-W	0.0000	0.7934	0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.011	0.0352	-0.30	.7637	0.0478	-0.0691
Period Op-2	-0.024	0.0753	-0.31	.7545	0.1014	-0.1486
Op-1 0611	0.031	0.0788	0.39	.6995	0.1613	-0.1003
Op-2 0611	-0.091	0.1865	-0.49	.6278	0.2187	-0.4001
Op-1 0910	0.078	0.0841	0.92	.3577	0.2173	-0.0619
Op-2 0910	0.097	0.1806	0.54	.5912	0.3969	-0.2023
Op-1 0915	0.023	0.0943	0.24	.8093	0.1793	-0.1336
Op-2 0915	-0.000	0.1865	-0.00	1.000	0.3094	-0.3094
Op-1 1015	-0.017	0.0943	-0.18	.8600	0.1398	-0.1731
Op-2 1015	0.000	0.1865	0.00	1.000	0.3094	-0.3094
Op-1 1210	0.050	0.0788	0.63	.5277	0.1807	-0.0808
Op-2 1210	0.097	0.1806	0.54	.5912	0.3969	-0.2023
Op-1 2210	-0.228	0.0860	-2.65	.0092	-0.0854	-0.3706
Op-2 2210	-0.246	0.1865	-1.32	.1907	0.0638	-0.5550

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0130	0.0832	0.156	.8760	0.1510	-0.1250

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1212	0.2025	0.60	.5508	0.4571	-0.2147
Station 0910	-0.0195	0.1992	-0.10	.9220	0.3110	-0.3501
Station 0915	0.0228	0.2090	0.11	.9133	0.3695	-0.3239
Station 1015	-0.0167	0.2090	-0.08	.9366	0.3301	-0.3634
Station 1210	-0.0473	0.1970	-0.24	.8106	0.2795	-0.3742
Station 2210	0.0176	0.2054	0.09	.9319	0.3583	-0.3231

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.04	0.50	0.027	0.09	-0.02	0.01	0.50	0.07	-0.05
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26
0910 Op-1	19	0.00	0.00	0.000	.	.	0.05	0.25	0.10	0.00
0910 Op-2	5	0.00	0.00	0.000	.	.	0.10	0.50	0.38	-0.18
0915 Op-1	15	0.08	1.25	0.083	0.26	-0.10	-0.03	1.25	0.12	-0.19
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.20	2.75	0.183	0.59	-0.19	-0.15	2.75	0.22	-0.52
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.03	0.50	0.025	0.08	-0.03	0.03	0.50	0.08	-0.03
1210 Op-2	5	0.00	0.00	0.000	.	.	0.10	0.50	0.38	-0.18
2210 Op-1	17	0.32	2.00	0.150	0.64	0.01	-0.28	2.25	0.04	-0.59
2210 Op-2	4	0.25	0.75	0.177	0.81	-0.31	-0.25	0.75	0.31	-0.81

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.05	0.25	0.023	0.10	0.00
Op-2	5	0.10	0.50	0.100	0.38	-0.18

Analysis of Variance for SFQ for 0485 - Leucilla nuttingi

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.22	0.6371
SEASON	1	108.000	0.12	0.7264
STATION	5	108.000	0.65	0.6626
PERIOD*SEASON	1	108.000	0.05	0.8266
STATION*PERIOD	5	108.000	0.14	0.9838
STATION*SEASON	5	108.000	0.01	1.0000
PERIOD*STATION*SEASON	5	108.000	0.24	0.9428

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.22	0.00	0.1373	.	0.2541
STATION*PERIOD	0.68	0.00	0.1462	.	0.1799

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3345	1.1983	-0.279	.7807
Period in FC	-0.2875	0.5411	-0.531	.5963
Period in FC-S	-0.8750	0.5494	-1.593	.1142
Period in FC-W	0.3000	0.9323	0.322	.7482
Period in DC-S	-0.0357	1.1720	-0.030	.9757
Period in DC-W	-0.6333	2.0906	-0.303	.7625

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.166	0.0928	-1.79	.0762	-0.0122	-0.3202
Period Op-2	-0.062	0.1985	-0.31	.7535	0.2668	-0.3918
Op-1 0611	0.045	0.2076	0.21	.8302	0.3892	-0.2999
Op-2 0611	-0.000	0.4914	-0.00	1.000	0.8153	-0.8153
Op-1 0910	-0.025	0.2217	-0.11	.9104	0.3428	-0.3928
Op-2 0910	-0.000	0.4758	-0.00	1.000	0.7894	-0.7894
Op-1 0915	0.045	0.2485	0.18	.8552	0.4577	-0.3668
Op-2 0915	-0.000	0.4914	-0.00	1.000	0.8153	-0.8153
Op-1 1015	-0.420	0.2485	-1.69	.0935	-0.0082	-0.8327
Op-2 1015	-0.000	0.4914	-0.00	1.000	0.8153	-0.8153
Op-1 1210	0.021	0.2076	0.10	.9203	0.3653	-0.3237
Op-2 1210	0.000	0.4758	0.00	1.000	0.7894	-0.7894
Op-1 2210	-0.663	0.2265	-2.92	.0042	-0.2867	-1.0383
Op-2 2210	-0.375	0.4914	-0.76	.4470	0.4403	-1.1903

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1037	0.2191	-0.473	.6371	0.2599	-0.4672

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0446	0.5335	0.08	.9335	0.9297	-0.8404
Station 0910	-0.0250	0.5249	-0.05	.9621	0.8459	-0.8959
Station 0915	0.0455	0.5506	0.08	.9344	0.9590	-0.8681
Station 1015	-0.4205	0.5506	-0.76	.4468	0.4931	-1.3340
Station 1210	0.0208	0.5191	0.04	.9681	0.8821	-0.8404
Station 2210	-0.2875	0.5411	-0.53	.5963	0.6102	-1.1852

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.05	1.00	0.050	0.15	-0.05	0.06	3.25	0.33	-0.20
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.13	1.50	0.086	0.31	-0.05	-0.01	1.50	0.11	-0.14
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.08	1.00	0.068	0.23	-0.06	0.07	3.25	0.43	-0.30
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.53	2.00	0.189	0.94	0.13	-0.38	4.25	0.18	-0.95
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.05	0.50	0.034	0.12	-0.02	0.06	2.75	0.31	-0.19
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.88	4.75	0.370	1.67	0.10	-0.75	7.00	0.12	-1.62
2210 Op-2	4	0.19	0.75	0.188	0.78	-0.41	-0.19	0.75	0.41	-0.78

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.11	2.25	0.113	0.35	-0.12
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0744 - Lissothuria nutriens

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	13.60	0.0004
SEASON	1	108.000	0.55	0.4613
STATION	5	108.000	3.97	0.0024
PERIOD*SEASON	1	108.000	1.65	0.2016
STATION*PERIOD	5	108.000	1.15	0.3409
STATION*SEASON	5	108.000	0.92	0.4728
PERIOD*STATION*SEASON	5	108.000	0.24	0.9431

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	13.60	12.35	0.9783	0.9676	0.5715
STATION*PERIOD	5.73	0.62	0.5259	0.1424	0.2158

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.2015	0.6605	-3.333	.0012
Period in FC	-0.4713	0.2982	-1.580	.1170
Period in FC-S	-0.5033	0.3028	-1.662	.0994
Period in FC-W	-0.4393	0.5139	-0.855	.3945
Period in DC-S	-3.1006	0.6460	-4.800	.0000
Period in DC-W	-1.3025	1.1523	-1.130	.2608

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.413	0.0512	-8.06	.0000	-0.3277	-0.4974
Period Op-2	0.033	0.1094	0.30	.7640	0.2145	-0.1486
Op-1 0611	0.079	0.1145	0.69	.4941	0.2684	-0.1114
Op-2 0611	0.181	0.2709	0.67	.5046	0.6307	-0.2680
Op-1 0910	-0.868	0.1222	-7.10	.0000	-0.6651	-1.0706
Op-2 0910	-0.000	0.2623	-0.00	1.000	0.4351	-0.4351
Op-1 0915	-0.764	0.1370	-5.58	.0000	-0.5366	-0.9911
Op-2 0915	0.008	0.2709	0.03	.9771	0.4572	-0.4416
Op-1 1015	-0.021	0.1370	-0.15	.8808	0.2066	-0.2478
Op-2 1015	0.181	0.2709	0.67	.5046	0.6307	-0.2680
Op-1 1210	-0.121	0.1145	-1.06	.2919	0.0687	-0.3111
Op-2 1210	0.136	0.2623	0.52	.6051	0.5711	-0.2991
Op-1 2210	-0.780	0.1249	-6.25	.0000	-0.5731	-0.9874
Op-2 2210	-0.309	0.2709	-1.14	.2566	0.1405	-0.7583

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4455	0.1208	-3.688	.0004	-0.2451	-0.6459

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1028	0.2940	-0.35	.7273	0.3850	-0.5907
Station 0910	-0.8679	0.2893	-3.00	.0034	-0.3879	-1.3479
Station 0915	-0.7716	0.3035	-2.54	.0124	-0.2681	-1.2752
Station 1015	-0.2019	0.3035	-0.67	.5072	0.3016	-0.7055
Station 1210	-0.2573	0.2861	-0.90	.3706	0.2175	-0.7320
Station 2210	-0.4713	0.2982	-1.58	.1170	0.0235	-0.9661

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.01	0.25	0.013	0.04	-0.01	0.05	1.00	0.14	-0.04
0611 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.25	0.35	-0.10
0910 Op-1	19	1.37	5.25	0.327	2.06	0.68	-1.32	5.75	-0.61	-2.03
0910 Op-2	5	0.10	0.25	0.061	0.27	-0.07	0.00	0.50	0.31	-0.31
0915 Op-1	15	1.10	3.50	0.274	1.69	0.51	-1.03	4.00	-0.42	-1.65
0915 Op-2	4	0.25	1.00	0.250	1.05	-0.55	-0.13	1.00	0.56	-0.81
1015 Op-1	15	0.12	0.50	0.054	0.23	0.00	-0.05	1.25	0.13	-0.23
1015 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.25	0.35	-0.10
1210 Op-1	20	0.19	0.75	0.060	0.31	0.06	-0.13	1.00	-0.00	-0.25
1210 Op-2	5	0.00	0.00	0.000	.	.	0.10	0.25	0.27	-0.07
2210 Op-1	17	1.58	6.25	0.403	2.43	0.72	-1.52	6.50	-0.68	-2.36
2210 Op-2	4	0.81	1.75	0.413	2.13	-0.50	-0.69	1.50	0.41	-1.78

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.06	0.75	0.040	0.15	-0.02
Op-2	5	0.10	0.25	0.061	0.27	-0.07

Analysis of Variance for SAQ for 0344 - Lithopoma gibberosum

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	2.53	0.1150
SEASON	1	102.000	0.41	0.5232
STATION	5	102.000	1.09	0.3722
PERIOD*SEASON	1	102.000	5.15	0.0254
STATION*PERIOD	5	102.000	1.28	0.2798
STATION*SEASON	5	102.000	0.29	0.9185
PERIOD*STATION*SEASON	5	102.000	0.03	0.9997

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.53	1.48	0.4744	0.3330	0.2370
STATION*PERIOD	6.38	1.26	0.5687	0.1884	0.1266

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2171	0.2645	0.821	.4136
Period in FC	0.2442	0.1194	2.044	.0435
Period in FC-S	0.1372	0.1221	1.124	.2637
Period in FC-W	0.3511	0.2053	1.710	.0903
Period in DC-S	-0.3345	0.2604	-1.284	.2020
Period in DC-W	0.7686	0.4604	1.670	.0981

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.089	0.0207	4.28	.0000	0.1229	0.0542
Period Op-2	0.012	0.0437	0.27	.7901	0.0842	-0.0609
Op-1 0611	0.165	0.0463	3.58	.0005	0.2422	0.0887
Op-2 0611	0.059	0.1082	0.54	.5887	0.2383	-0.1209
Op-1 0910	0.122	0.0493	2.47	.0151	0.2038	0.0400
Op-2 0910	0.104	0.1048	0.99	.3248	0.2776	-0.0703
Op-1 0915	0.078	0.0554	1.41	.1625	0.1700	-0.0140
Op-2 0915	0.059	0.1082	0.54	.5887	0.2383	-0.1209
Op-1 1015	0.047	0.0554	0.85	.3953	0.1394	-0.0447
Op-2 1015	-0.146	0.1082	-1.35	.1807	0.0338	-0.3255
Op-1 1210	-0.017	0.0463	-0.36	.7183	0.0600	-0.0935
Op-2 1210	0.104	0.1048	0.99	.3248	0.2776	-0.0703
Op-1 2210	0.135	0.0505	2.68	.0087	0.2192	0.0514
Op-2 2210	-0.109	0.1082	-1.01	.3168	0.0708	-0.2885

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0769	0.0484	1.589	.1150	0.1572	-0.0034

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1068	0.1177	0.91	.3664	0.3021	-0.0886
Station 0910	0.0182	0.1158	0.16	.8751	0.2105	-0.1740
Station 0915	0.0193	0.1216	0.16	.8742	0.2211	-0.1825
Station 1015	0.1932	0.1216	1.59	.1152	0.3950	-0.0087
Station 1210	-0.1204	0.1145	-1.05	.2957	0.0697	-0.3105
Station 2210	0.2442	0.1194	2.04	.0435	0.4424	0.0459

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.04	0.50	0.029	0.10	-0.02	0.25	1.50	0.43	0.07
0611 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.25	0.35	-0.10
0910 Op-1	18	0.04	0.25	0.023	0.09	-0.01	0.19	0.75	0.33	0.06
0910 Op-2	5	0.00	0.00	0.000	.	.	0.30	1.00	0.81	-0.21
0915 Op-1	14	0.11	1.00	0.073	0.26	-0.05	0.07	1.00	0.23	-0.08
0915 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.25	0.35	-0.10
1015 Op-1	14	0.14	0.50	0.057	0.27	0.02	0.04	1.25	0.21	-0.14
1015 Op-2	4	0.56	2.00	0.483	2.10	-0.97	-0.44	2.00	0.99	-1.87
1210 Op-1	19	0.67	8.00	0.427	1.57	-0.23	-0.38	7.50	0.41	-1.17
1210 Op-2	5	0.00	0.00	0.000	.	.	0.30	1.00	0.81	-0.21
2210 Op-1	16	0.03	0.25	0.021	0.08	-0.01	0.20	0.75	0.33	0.07
2210 Op-2	4	0.31	1.00	0.237	1.07	-0.44	-0.19	1.00	0.49	-0.87

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.29	1.25	0.079	0.46	0.12
Op-2	5	0.30	1.00	0.184	0.81	-0.21

Analysis of Variance for SFQ for 0695 - Lophopanopeus spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.33	0.2506
SEASON	1	108.000	0.00	0.9746
STATION	5	108.000	0.03	0.9994
PERIOD*SEASON	1	108.000	7.96	0.0057
STATION*PERIOD	5	108.000	0.06	0.9980
STATION*SEASON	5	108.000	0.07	0.9967
PERIOD*STATION*SEASON	5	108.000	0.04	0.9992

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.33	0.31	0.3122	0.1514	0.1867
STATION*PERIOD	0.28	0.00	0.1183	.	0.1040

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.4230	0.4192	1.009	.3152
Period in FC	0.1083	0.1893	0.572	.5683
Period in FC-S	-0.0833	0.1922	-0.434	.6654
Period in FC-W	0.3000	0.3261	0.920	.3597
Period in DC-S	-0.6832	0.4100	-1.666	.0985
Period in DC-W	1.5292	0.7313	2.091	.0389

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.198	0.0325	6.10	.0000	0.2518	0.1441
Period Op-2	0.109	0.0694	1.58	.1182	0.2246	-0.0058
Op-1 0611	0.217	0.0726	2.99	.0034	0.3378	0.0967
Op-2 0611	0.083	0.1719	0.48	.6288	0.3685	-0.2019
Op-1 0910	0.204	0.0776	2.62	.0099	0.3322	0.0749
Op-2 0910	0.156	0.1664	0.94	.3499	0.4324	-0.1199
Op-1 0915	0.210	0.0869	2.42	.0173	0.3544	0.0660
Op-2 0915	0.083	0.1719	0.48	.6288	0.3685	-0.2019
Op-1 1015	0.213	0.0869	2.45	.0158	0.3573	0.0689
Op-2 1015	0.125	0.1719	0.73	.4687	0.4102	-0.1602
Op-1 1210	0.152	0.0726	2.09	.0390	0.2723	0.0313
Op-2 1210	0.125	0.1664	0.75	.4543	0.4011	-0.1511
Op-1 2210	0.192	0.0792	2.42	.0172	0.3231	0.0602
Op-2 2210	0.083	0.1719	0.48	.6288	0.3685	-0.2019

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0886	0.0767	1.155	.2506	0.2157	-0.0386

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1339	0.1866	0.72	.4745	0.4435	-0.1757
Station 0910	0.0473	0.1836	0.26	.7971	0.3520	-0.2573
Station 0915	0.1269	0.1926	0.66	.5114	0.4465	-0.1927
Station 1015	0.0881	0.1926	0.46	.6484	0.4076	-0.2315
Station 1210	0.0268	0.1816	0.15	.8830	0.3281	-0.2745
Station 2210	0.1083	0.1893	0.57	.5683	0.4224	-0.2057

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.03	0.25	0.017	0.06	-0.01	0.19	1.00	0.31	0.06
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.13	0.50	0.52	-0.27
0910 Op-1	19	0.05	0.25	0.024	0.10	0.00	0.16	1.00	0.29	0.02
0910 Op-2	5	0.00	0.00	0.000	.	.	0.25	0.50	0.56	-0.06
0915 Op-1	15	0.12	0.50	0.048	0.22	0.01	0.13	1.00	0.32	-0.05
0915 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.13	0.75	0.64	-0.39
1015 Op-1	15	0.08	0.50	0.047	0.18	-0.02	0.17	1.25	0.35	-0.01
1015 Op-2	4	0.00	0.00	0.000	.	.	0.19	0.50	0.57	-0.19
1210 Op-1	20	0.10	0.50	0.042	0.19	0.01	0.11	1.25	0.26	-0.04
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.20	0.50	0.46	-0.06
2210 Op-1	17	0.07	0.50	0.036	0.15	-0.00	0.15	1.25	0.31	-0.02
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.13	0.75	0.64	-0.39

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.21	0.75	0.052	0.32	0.10
Op-2	5	0.25	0.50	0.112	0.56	-0.06

Analysis of Variance for SAQ for 0353 - Lottia instabilis

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	20.10	0.0000
SEASON	1	102.000	4.06	0.0467
STATION	5	102.000	0.22	0.9546
PERIOD*SEASON	1	102.000	0.29	0.5924
STATION*PERIOD	5	102.000	0.25	0.9412
STATION*SEASON	5	102.000	0.03	0.9995
PERIOD*STATION*SEASON	5	102.000	0.04	0.9993

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	20.10	18.70	0.9975	0.9960	0.1113
STATION*PERIOD	1.23	0.00	0.1861	.	0.1100

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.1341	0.5260	4.057	.0001
Period in FC	0.4535	0.2376	1.909	.0591
Period in FC-S	0.4475	0.2428	1.843	.0683
Period in FC-W	0.4595	0.4084	1.125	.2632
Period in DC-S	1.8300	0.5180	3.533	.0006
Period in DC-W	2.4381	0.9157	2.662	.0090

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.554	0.0412	13.46	.0000	0.6223	0.4856
Period Op-2	0.123	0.0870	1.41	.1612	0.2670	-0.0216
Op-1 0611	0.651	0.0920	7.08	.0000	0.8041	0.4986
Op-2 0611	0.142	0.2152	0.66	.5105	0.4994	-0.2152
Op-1 0910	0.594	0.0981	6.06	.0000	0.7572	0.4316
Op-2 0910	0.107	0.2084	0.51	.6101	0.4525	-0.2393
Op-1 0915	0.510	0.1103	4.63	.0000	0.6933	0.3272
Op-2 0915	0.142	0.2152	0.66	.5105	0.4994	-0.2152
Op-1 1015	0.350	0.1103	3.18	.0020	0.5332	0.1671
Op-2 1015	0.126	0.2152	0.59	.5596	0.4833	-0.2313
Op-1 1210	0.651	0.0920	7.08	.0000	0.8041	0.4986
Op-2 1210	0.107	0.2084	0.51	.6101	0.4525	-0.2393
Op-1 2210	0.566	0.1005	5.63	.0000	0.7332	0.3994
Op-2 2210	0.113	0.2152	0.52	.6014	0.4701	-0.2445

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.4313	0.0962	4.483	.0000	0.5909	0.2716

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.5092	0.2341	2.18	.0319	0.8978	0.1207
Station 0910	0.4878	0.2303	2.12	.0366	0.8702	0.1055
Station 0915	0.3681	0.2418	1.52	.1311	0.7696	-0.0333
Station 1015	0.2242	0.2418	0.93	.3562	0.6256	-0.1773
Station 1210	0.5448	0.2278	2.39	.0186	0.9229	0.1666
Station 2210	0.4535	0.2376	1.91	.0591	0.8478	0.0591

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	5.09	14.75	7.09	3.09
0611 Op-2	4	0.00	0.00	0.000	.	.	1.06	3.75	3.94	-1.81
0910 Op-1	18	0.00	0.00	0.000	.	.	4.56	12.50	6.31	2.80
0910 Op-2	5	0.00	0.00	0.000	.	.	0.85	3.75	2.88	-1.18
0915 Op-1	14	0.00	0.00	0.000	.	.	3.59	8.50	5.35	1.83
0915 Op-2	4	0.00	0.00	0.000	.	.	1.06	3.75	3.94	-1.81
1015 Op-1	14	0.52	2.00	0.184	0.92	0.12	3.07	9.50	4.87	1.27
1015 Op-2	4	0.06	0.25	0.063	0.26	-0.14	1.00	3.75	3.92	-1.92
1210 Op-1	19	0.00	0.00	0.000	.	.	5.09	14.75	7.09	3.09
1210 Op-2	5	0.00	0.00	0.000	.	.	0.85	3.75	2.88	-1.18
2210 Op-1	16	0.19	1.25	0.081	0.36	0.02	4.73	13.00	6.68	2.79
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	0.94	3.25	3.42	-1.54

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	5.09	14.75	0.952	7.09	3.09
Op-2	5	0.85	3.75	0.731	2.88	-1.18

Analysis of Variance for SFQ for 0354 - Lottia ochracea

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	2.45	0.1207
SEASON	1	108.000	3.05	0.0834
STATION	5	108.000	1.46	0.2089
PERIOD*SEASON	1	108.000	2.00	0.1598
STATION*PERIOD	5	108.000	1.94	0.0930
STATION*SEASON	5	108.000	0.61	0.6922
PERIOD*STATION*SEASON	5	108.000	0.48	0.7928

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.45	1.40	0.4646	0.3221	0.7724
STATION*PERIOD	9.72	4.54	0.7519	0.4405	0.1857

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.6356	0.3043	-2.089	.0391
Period in FC	0.1134	0.1374	0.825	.4111
Period in FC-S	0.1072	0.1395	0.768	.4439
Period in FC-W	0.1196	0.2368	0.505	.6146
Period in DC-S	-0.1568	0.2976	-0.527	.5993
Period in DC-W	-1.1145	0.5309	-2.099	.0381

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.034	0.0236	-1.44	.1534	0.0052	-0.0730
Period Op-2	0.053	0.0504	1.05	.2941	0.1368	-0.0305
Op-1 0611	0.073	0.0527	1.39	.1671	0.1608	-0.0141
Op-2 0611	-0.056	0.1248	-0.45	.6553	0.1512	-0.2629
Op-1 0910	-0.181	0.0563	-3.21	.0018	-0.0873	-0.2741
Op-2 0910	0.026	0.1208	0.21	.8309	0.2263	-0.1746
Op-1 0915	-0.047	0.0631	-0.74	.4591	0.0578	-0.1516
Op-2 0915	0.010	0.1248	0.08	.9371	0.2169	-0.1972
Op-1 1015	0.081	0.0631	1.29	.1993	0.1862	-0.0232
Op-2 1015	0.233	0.1248	1.87	.0647	0.4399	0.0258
Op-1 1210	-0.136	0.0527	-2.58	.0112	-0.0486	-0.2236
Op-2 1210	0.214	0.1208	1.77	.0793	0.4145	0.0136
Op-1 2210	0.006	0.0575	0.10	.9236	0.1010	-0.0899
Op-2 2210	-0.108	0.1248	-0.86	.3893	0.0992	-0.3149

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0870	0.0557	-1.564	.1207	0.0053	-0.1794

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1292	0.1355	0.95	.3423	0.3540	-0.0956
Station 0910	-0.2066	0.1333	-1.55	.1241	0.0146	-0.4277
Station 0915	-0.0568	0.1398	-0.41	.6856	0.1752	-0.2888
Station 1015	-0.1514	0.1398	-1.08	.2815	0.0806	-0.3834
Station 1210	-0.3501	0.1318	-2.66	.0091	-0.1314	-0.5689
Station 2210	0.1134	0.1374	0.83	.4111	0.3414	-0.1146

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.29	1.25	0.082	0.46	0.12	0.20	2.25	0.45	-0.05
0611 Op-2	4	0.88	2.00	0.515	2.52	-0.77	-0.31	2.00	1.04	-1.67
0910 Op-1	19	1.28	3.00	0.201	1.70	0.85	-0.80	3.50	-0.30	-1.31
0910 Op-2	5	0.65	1.50	0.269	1.40	-0.10	0.15	2.25	1.19	-0.89
0915 Op-1	15	0.68	2.00	0.183	1.08	0.29	-0.20	2.25	0.15	-0.55
0915 Op-2	4	0.88	2.00	0.473	2.38	-0.63	-0.31	3.25	1.90	-2.52
1015 Op-1	15	0.25	1.50	0.112	0.49	0.01	0.23	2.75	0.64	-0.18
1015 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.50	2.00	1.92	-0.92
1210 Op-1	20	1.19	4.75	0.267	1.75	0.63	-0.70	5.00	-0.13	-1.27
1210 Op-2	5	0.20	0.50	0.094	0.46	-0.06	0.60	2.25	1.81	-0.61
2210 Op-1	17	0.40	1.50	0.119	0.65	0.15	0.05	3.25	0.44	-0.33
2210 Op-2	4	1.00	2.75	0.604	2.92	-0.92	-0.44	1.00	0.24	-1.12

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.49	1.75	0.113	0.72	0.25
Op-2	5	0.80	1.75	0.398	1.91	-0.31

Analysis of Variance for SFQ for 0475 - Metandrocarpa taylori

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.49	0.4845
SEASON	1	108.000	0.03	0.8556
STATION	5	108.000	0.51	0.7681
PERIOD*SEASON	1	108.000	0.03	0.8556
STATION*PERIOD	5	108.000	0.51	0.7681
STATION*SEASON	5	108.000	0.03	0.9994
PERIOD*STATION*SEASON	5	108.000	0.03	0.9994

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.49	0.00	0.1812	.	0.1132
STATION*PERIOD	2.55	0.00	0.2878	.	0.1276

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2512	0.3263	-0.770	.4432
Period in FC	0.0000	0.1474	0.000	1.000
Period in FC-S	-0.0000	0.1496	-0.000	1.000
Period in FC-W	0.0000	0.2539	0.000	1.000
Period in DC-S	-0.3165	0.3192	-0.992	.3236
Period in DC-W	-0.1859	0.5693	-0.326	.7447

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.042	0.0253	-1.66	.1006	0.0001	-0.0838
Period Op-2	0.000	0.0541	0.00	1.000	0.0897	-0.0897
Op-1 0611	0.000	0.0565	0.00	1.000	0.0938	-0.0938
Op-2 0611	-0.000	0.1338	-0.00	1.000	0.2220	-0.2220
Op-1 0910	-0.251	0.0604	-4.16	.0001	-0.1510	-0.3514
Op-2 0910	0.000	0.1296	0.00	1.000	0.2150	-0.2150
Op-1 0915	0.000	0.0677	0.00	1.000	0.1123	-0.1123
Op-2 0915	-0.000	0.1338	-0.00	1.000	0.2220	-0.2220
Op-1 1015	-0.000	0.0677	-0.00	1.000	0.1123	-0.1123
Op-2 1015	-0.000	0.1338	-0.00	1.000	0.2220	-0.2220
Op-1 1210	-0.000	0.0565	-0.00	1.000	0.0938	-0.0938
Op-2 1210	0.000	0.1296	0.00	1.000	0.2150	-0.2150
Op-1 2210	-0.000	0.0617	-0.00	1.000	0.1023	-0.1023
Op-2 2210	-0.000	0.1338	-0.00	1.000	0.2220	-0.2220

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0419	0.0597	-0.701	.4845	0.0571	-0.1409

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	0.1453	0.00	1.000	0.2410	-0.2410
Station 0910	-0.2512	0.1429	-1.76	.0817	-0.0140	-0.4883
Station 0915	0.0000	0.1500	0.00	1.000	0.2488	-0.2488
Station 1015	0.0000	0.1500	0.00	1.000	0.2488	-0.2488
Station 1210	-0.0000	0.1414	-0.00	1.000	0.2346	-0.2346
Station 2210	0.0000	0.1474	0.00	1.000	0.2445	-0.2445

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.91	15.00	0.785	2.56	-0.74	-0.91	15.00	0.74	-2.56
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SAQ for 0523 - Mitra idae

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.52	0.0636
SEASON	1	102.000	0.27	0.6064
STATION	5	102.000	11.00	0.0000
PERIOD*SEASON	1	102.000	1.25	0.2654
STATION*PERIOD	5	102.000	0.60	0.6999
STATION*SEASON	5	102.000	0.30	0.9107
PERIOD*STATION*SEASON	5	102.000	1.30	0.2707

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.52	2.45	0.5866	0.4646	0.7854
STATION*PERIOD	3.00	0.00	0.3224	.	0.2845

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.6057	0.2930	2.067	.0413
Period in FC	-0.0027	0.1323	-0.020	.9840
Period in FC-S	0.0478	0.1353	0.354	.7244
Period in FC-W	-0.0531	0.2275	-0.234	.8158
Period in DC-S	0.9153	0.2886	3.172	.0020
Period in DC-W	0.2961	0.5101	0.581	.5628

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.131	0.0229	-5.73	.0000	-0.0933	-0.1694
Period Op-2	-0.232	0.0484	-4.79	.0000	-0.1515	-0.3123
Op-1 0611	0.051	0.0512	1.00	.3213	0.1361	-0.0340
Op-2 0611	-0.029	0.1199	-0.24	.8071	0.1697	-0.2284
Op-1 0910	0.031	0.0546	0.56	.5741	0.1215	-0.0599
Op-2 0910	-0.022	0.1161	-0.19	.8500	0.1707	-0.2147
Op-1 0915	-0.080	0.0614	-1.30	.1968	0.0222	-0.1818
Op-2 0915	-0.138	0.1199	-1.15	.2517	0.0608	-0.3372
Op-1 1015	-0.432	0.0614	-7.04	.0000	-0.3305	-0.5344
Op-2 1015	-0.729	0.1199	-6.08	.0000	-0.5299	-0.9280
Op-1 1210	-0.201	0.0512	-3.92	.0002	-0.1156	-0.2858
Op-2 1210	-0.318	0.1161	-2.74	.0072	-0.1255	-0.5110
Op-1 2210	-0.157	0.0560	-2.80	.0060	-0.0641	-0.2500
Op-2 2210	-0.154	0.1199	-1.29	.2009	0.0447	-0.3534

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1005	0.0536	1.875	.0636	0.1895	0.0116

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0804	0.1304	0.62	.5388	0.2969	-0.1360
Station 0910	0.0528	0.1283	0.41	.6814	0.2658	-0.1602
Station 0915	0.0584	0.1347	0.43	.6655	0.2820	-0.1652
Station 1015	0.2965	0.1347	2.20	.0300	0.5201	0.0728
Station 1210	0.1176	0.1269	0.93	.3564	0.3282	-0.0931
Station 2210	-0.0027	0.1323	-0.02	.9840	0.2170	-0.2223

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.11	1.50	0.080	0.27	-0.06	0.05	0.75	0.14	-0.03
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26
0910 Op-1	18	0.08	0.75	0.050	0.19	-0.02	0.07	1.75	0.26	-0.12
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	-0.05	0.25	0.09	-0.19
0915 Op-1	14	0.23	0.50	0.055	0.35	0.11	-0.14	0.75	0.01	-0.30
0915 Op-2	4	0.19	0.50	0.120	0.57	-0.19	-0.19	0.50	0.19	-0.57
1015 Op-1	14	1.04	3.25	0.241	1.56	0.51	-0.95	2.75	-0.44	-1.45
1015 Op-2	4	3.19	3.50	0.915	6.10	0.28	-3.19	3.50	-0.28	-6.10
1210 Op-1	19	0.61	3.25	0.179	0.98	0.23	-0.45	4.00	-0.04	-0.85
1210 Op-2	5	0.50	1.00	0.177	0.99	0.01	-0.50	1.00	-0.01	-0.99
2210 Op-1	16	0.42	1.50	0.109	0.65	0.19	-0.25	2.50	0.04	-0.54
2210 Op-2	4	0.25	0.75	0.177	0.81	-0.31	-0.25	0.75	0.31	-0.81

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.16	1.25	0.069	0.30	0.01
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0528 - Ocenebra spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.23	0.6359
SEASON	1	108.000	0.13	0.7209
STATION	5	108.000	0.10	0.9912
PERIOD*SEASON	1	108.000	0.10	0.7550
STATION*PERIOD	5	108.000	0.06	0.9979
STATION*SEASON	5	108.000	0.05	0.9984
PERIOD*STATION*SEASON	5	108.000	0.03	0.9996

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.23	0.00	0.1375	.	0.1538
STATION*PERIOD	0.28	0.00	0.1188	.	0.1068

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.3016	0.8389	0.360	.7199
Period in FC	0.1354	0.3788	0.358	.7214
Period in FC-S	0.0208	0.3846	0.054	.9569
Period in FC-W	0.2500	0.6527	0.383	.7024
Period in DC-S	0.1282	0.8204	0.156	.8761
Period in DC-W	0.4750	1.4635	0.325	.7461

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.236	0.0650	3.63	.0004	0.3438	0.1282
Period Op-2	0.163	0.1390	1.17	.2428	0.3937	-0.0674
Op-1 0611	0.354	0.1454	2.44	.0165	0.5953	0.1130
Op-2 0611	0.208	0.3440	0.61	.5460	0.7790	-0.3624
Op-1 0910	0.264	0.1552	1.70	.0915	0.5218	0.0068
Op-2 0910	0.219	0.3331	0.66	.5127	0.7713	-0.3338
Op-1 0915	0.153	0.1739	0.88	.3797	0.4420	-0.1352
Op-2 0915	0.208	0.3440	0.61	.5460	0.7790	-0.3624
Op-1 1015	0.250	0.1739	1.44	.1535	0.5386	-0.0386
Op-2 1015	0.083	0.3440	0.24	.8090	0.6540	-0.4874
Op-1 1210	0.217	0.1454	1.49	.1379	0.4584	-0.0239
Op-2 1210	0.219	0.3331	0.66	.5127	0.7713	-0.3338
Op-1 2210	0.177	0.1586	1.12	.2666	0.4402	-0.0860
Op-2 2210	0.042	0.3440	0.12	.9038	0.6124	-0.5290

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0728	0.1534	0.475	.6359	0.3274	-0.1817

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1458	0.3734	0.39	.6969	0.7654	-0.4737
Station 0910	0.0455	0.3675	0.12	.9016	0.6552	-0.5641
Station 0915	-0.0549	0.3855	-0.14	.8870	0.5846	-0.6944
Station 1015	0.1667	0.3855	0.43	.6663	0.8062	-0.4729
Station 1210	-0.0015	0.3634	-0.00	.9967	0.6014	-0.6044
Station 2210	0.1354	0.3788	0.36	.7214	0.7638	-0.4930

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.04	0.50	0.027	0.09	-0.02	0.31	2.25	0.56	0.07
0611 Op-2	4	0.00	0.00	0.000	.	.	0.19	0.25	0.39	-0.01
0910 Op-1	19	0.09	0.50	0.044	0.18	0.00	0.22	2.50	0.50	-0.05
0910 Op-2	5	0.00	0.00	0.000	.	.	0.20	0.25	0.34	0.06
0915 Op-1	15	0.17	0.75	0.058	0.29	0.04	0.17	2.75	0.52	-0.19
0915 Op-2	4	0.00	0.00	0.000	.	.	0.19	0.25	0.39	-0.01
1015 Op-1	15	0.08	1.00	0.068	0.23	-0.06	0.25	3.00	0.61	-0.11
1015 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.13	0.25	0.35	-0.10
1210 Op-1	20	0.16	1.00	0.066	0.30	0.02	0.19	2.75	0.47	-0.09
1210 Op-2	5	0.00	0.00	0.000	.	.	0.20	0.25	0.34	0.06
2210 Op-1	17	0.19	1.50	0.092	0.39	-0.00	0.15	3.50	0.52	-0.23
2210 Op-2	4	0.13	0.25	0.072	0.35	-0.10	0.06	0.50	0.44	-0.32

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.35	2.00	0.114	0.59	0.11
Op-2	5	0.20	0.25	0.050	0.34	0.06

Analysis of Variance for SPQ for 1451 - Ophiactis simplex

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.89	0.1725
SEASON	1	108.000	1.89	0.1725
STATION	5	108.000	1.81	0.1168
PERIOD*SEASON	1	108.000	1.89	0.1725
STATION*PERIOD	5	108.000	1.81	0.1168
STATION*SEASON	5	108.000	1.81	0.1168
PERIOD*STATION*SEASON	5	108.000	1.81	0.1168

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.89	0.85	0.3909	0.2384	.
STATION*PERIOD	9.05	3.88	0.7211	0.3913	.

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.4583	0.9679	1.507	.1348
Period in FC	-0.0000	0.4370	-0.000	1.000
Period in FC-S	-0.0000	0.4438	-0.000	1.000
Period in FC-W	0.0000	0.7531	0.000	1.000
Period in DC-S	2.9167	0.9466	3.081	.0026
Period in DC-W	0.0000	1.6886	0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.000	0.0750	0.00	1.000	0.1244	-0.1244
Period Op-2	-0.243	0.1603	-1.52	.1325	0.0230	-0.5091
Op-1 0611	0.000	0.1677	0.00	1.000	0.2783	-0.2783
Op-2 0611	-0.000	0.3969	-0.00	1.000	0.6585	-0.6585
Op-1 0910	0.000	0.1791	0.00	1.000	0.2971	-0.2971
Op-2 0910	-0.000	0.3843	-0.00	1.000	0.6376	-0.6376
Op-1 0915	0.000	0.2007	0.00	1.000	0.3330	-0.3330
Op-2 0915	-1.458	0.3969	-3.67	.0004	-0.7998	-2.1168
Op-1 1015	0.000	0.2007	0.00	1.000	0.3330	-0.3330
Op-2 1015	0.000	0.3969	0.00	1.000	0.6585	-0.6585
Op-1 1210	0.000	0.1677	0.00	1.000	0.2783	-0.2783
Op-2 1210	0.000	0.3843	0.00	1.000	0.6376	-0.6376
Op-1 2210	-0.000	0.1830	-0.00	1.000	0.3036	-0.3036
Op-2 2210	0.000	0.3969	0.00	1.000	0.6585	-0.6585

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2431	0.1770	1.373	.1725	0.5367	-0.0506

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0000	0.4309	0.00	1.000	0.7149	-0.7149
Station 0910	0.0000	0.4240	0.00	1.000	0.7034	-0.7034
Station 0915	1.4583	0.4448	3.28	.0014	2.1962	0.7204
Station 1015	-0.0000	0.4448	-0.00	1.000	0.7379	-0.7379
Station 1210	-0.0000	0.4193	-0.00	1.000	0.6957	-0.6957
Station 2210	-0.0000	0.4370	-0.00	1.000	0.7251	-0.7251

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	2.19	8.75	2.188	9.15	-4.77	-2.19	8.75	4.77	-9.15
1015 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0716 - Ophiothrix spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	2.86	0.0939
SEASON	1	108.000	18.50	0.0000
STATION	5	108.000	3.97	0.0024
PERIOD*SEASON	1	108.000	8.15	0.0052
STATION*PERIOD	5	108.000	0.30	0.9112
STATION*SEASON	5	108.000	1.06	0.3843
PERIOD*STATION*SEASON	5	108.000	1.59	0.1701

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.86	1.80	0.5143	0.3797	0.6830
STATION*PERIOD	1.51	0.00	0.2072	.	0.1299

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.1340	0.7482	-1.516	.1325
Period in FC	-0.2536	0.3378	-0.751	.4545
Period in FC-S	0.1925	0.3430	0.561	.5758
Period in FC-W	-0.6997	0.5821	-1.202	.2320
Period in DC-S	0.7635	0.7317	1.043	.2991
Period in DC-W	-3.0314	1.3052	-2.323	.0221

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.669	0.0580	-11.55	.0000	-0.5733	-0.7656
Period Op-2	-0.438	0.1239	-3.54	.0006	-0.2326	-0.6438
Op-1 0611	-0.701	0.1296	-5.41	.0000	-0.4857	-0.9159
Op-2 0611	-0.169	0.3068	-0.55	.5835	0.3403	-0.6777
Op-1 0910	-0.584	0.1384	-4.22	.0001	-0.3548	-0.8141
Op-2 0910	-0.612	0.2971	-2.06	.0419	-0.1188	-1.1045
Op-1 0915	-1.192	0.1551	-7.68	.0000	-0.9342	-1.4489
Op-2 0915	-0.963	0.3068	-3.14	.0022	-0.4536	-1.4716
Op-1 1015	-0.483	0.1551	-3.12	.0024	-0.2259	-0.7406
Op-2 1015	-0.234	0.3068	-0.76	.4464	0.2746	-0.7434
Op-1 1210	-0.830	0.1296	-6.40	.0000	-0.6146	-1.0447
Op-2 1210	-0.678	0.2971	-2.28	.0244	-0.1855	-1.1712
Op-1 2210	-0.227	0.1414	-1.61	.1112	0.0075	-0.4618
Op-2 2210	0.026	0.3068	0.09	.9314	0.5354	-0.4825

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2313	0.1368	-1.690	.0939	-0.0043	-0.4583

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.5321	0.3331	-1.60	.1130	0.0204	-1.0847
Station 0910	0.0272	0.3277	0.08	.9340	0.5709	-0.5165
Station 0915	-0.2290	0.3438	-0.67	.5069	0.3414	-0.7993
Station 1015	-0.2488	0.3438	-0.72	.4708	0.3216	-0.8192
Station 1210	-0.1513	0.3241	-0.47	.6416	0.3864	-0.6890
Station 2210	-0.2536	0.3378	-0.75	.4545	0.3069	-0.8141

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.81	2.75	0.175	1.18	0.45	-0.78	2.75	-0.41	-1.14
0611 Op-2	4	0.69	2.00	0.449	2.12	-0.74	-0.63	2.25	0.92	-2.17
0910 Op-1	19	0.95	3.50	0.231	1.43	0.46	-0.91	3.50	-0.42	-1.39
0910 Op-2	5	0.70	2.25	0.429	1.89	-0.49	-0.65	2.00	0.42	-1.72
0915 Op-1	15	2.83	6.50	0.480	3.86	1.80	-2.78	6.25	-1.76	-3.80
0915 Op-2	4	2.25	2.25	0.530	3.94	0.56	-2.19	2.50	-0.34	-4.04
1015 Op-1	15	0.75	2.75	0.210	1.20	0.30	-0.70	3.00	-0.24	-1.16
1015 Op-2	4	0.75	1.25	0.306	1.72	-0.22	-0.69	1.50	0.46	-1.83
1210 Op-1	20	2.11	8.50	0.577	3.32	0.91	-2.08	8.75	-0.88	-3.27
1210 Op-2	5	2.80	7.00	1.285	6.37	-0.77	-2.75	7.25	0.89	-6.39
2210 Op-1	17	0.20	0.75	0.063	0.33	0.06	-0.17	1.00	-0.02	-0.31
2210 Op-2	4	0.25	0.75	0.177	0.81	-0.31	-0.19	1.00	0.49	-0.87

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.04	0.25	0.020	0.08	-0.01
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SFQ for 0561 - Ophiuroidea unid.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	5.88	0.0170
SEASON	1	108.000	0.26	0.6139
STATION	5	108.000	5.12	0.0003
PERIOD*SEASON	1	108.000	1.02	0.3156
STATION*PERIOD	5	108.000	3.91	0.0027
STATION*SEASON	5	108.000	2.41	0.0412
PERIOD*STATION*SEASON	5	108.000	2.59	0.0298

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.88	4.77	0.7776	0.7002	0.1239
STATION*PERIOD	19.55	14.18	0.9675	0.8950	0.1150

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.9589	0.3762	2.549	.0122
Period in FC	0.0417	0.1699	0.245	.8067
Period in FC-S	0.0833	0.1725	0.483	.6299
Period in FC-W	0.0000	0.2927	0.000	1.000
Period in DC-S	0.5011	0.3679	1.362	.1760
Period in DC-W	1.4167	0.6563	2.159	.0331

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.031	0.0291	-1.07	.2873	0.0172	-0.0795
Period Op-2	-0.198	0.0623	-3.18	.0019	-0.0945	-0.3013
Op-1 0611	-0.074	0.0652	-1.14	.2562	0.0337	-0.1826
Op-2 0611	-0.917	0.1543	-5.94	.0000	-0.6607	-1.1726
Op-1 0910	-0.009	0.0696	-0.13	.8982	0.1065	-0.1244
Op-2 0910	-0.062	0.1494	-0.42	.6765	0.1853	-0.3103
Op-1 0915	0.000	0.0780	0.00	1.000	0.1294	-0.1294
Op-2 0915	-0.042	0.1543	-0.27	.7876	0.2143	-0.2976
Op-1 1015	-0.011	0.0780	-0.15	.8844	0.1180	-0.1408
Op-2 1015	-0.000	0.1543	-0.00	1.000	0.2559	-0.2559
Op-1 1210	-0.092	0.0652	-1.42	.1598	0.0159	-0.2004
Op-2 1210	-0.125	0.1494	-0.84	.4045	0.1228	-0.3728
Op-1 2210	-0.000	0.0711	-0.00	1.000	0.1180	-0.1180
Op-2 2210	-0.042	0.1543	-0.27	.7876	0.2143	-0.2976

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1668	0.0688	2.424	.0170	0.2809	0.0526

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.8423	0.1675	5.03	.0000	1.1201	0.5644
Station 0910	0.0536	0.1648	0.33	.7457	0.3270	-0.2198
Station 0915	0.0417	0.1729	0.24	.8100	0.3285	-0.2451
Station 1015	-0.0114	0.1729	-0.07	.9477	0.2754	-0.2982
Station 1210	0.0327	0.1630	0.20	.8412	0.3031	-0.2376
Station 2210	0.0417	0.1699	0.25	.8067	0.3235	-0.2402

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.09	1.50	0.075	0.25	-0.07	-0.09	1.50	0.07	-0.25
0611 Op-2	4	0.63	1.50	0.375	1.82	-0.57	-0.63	1.50	0.57	-1.82
0910 Op-1	19	0.01	0.25	0.013	0.04	-0.01	-0.01	0.25	0.01	-0.04
0910 Op-2	5	0.10	0.50	0.100	0.38	-0.18	-0.10	0.50	0.18	-0.38
0915 Op-1	15	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26
1015 Op-1	15	0.02	0.25	0.017	0.05	-0.02	-0.02	0.25	0.02	-0.05
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	20	0.11	2.00	0.100	0.32	-0.10	-0.11	2.00	0.10	-0.32
1210 Op-2	5	0.20	1.00	0.200	0.76	-0.36	-0.20	1.00	0.36	-0.76
2210 Op-1	17	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0398 - Pagurus spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	5.57	0.0200
SEASON	1	108.000	1.22	0.2712
STATION	5	108.000	3.06	0.0128
PERIOD*SEASON	1	108.000	0.14	0.7129
STATION*PERIOD	5	108.000	0.33	0.8956
STATION*SEASON	5	108.000	0.08	0.9951
PERIOD*STATION*SEASON	5	108.000	0.30	0.9137

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.57	4.47	0.7583	0.6758	0.9422
STATION*PERIOD	1.64	0.00	0.2171	.	0.1495

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.1882	0.5493	-2.163	.0327
Period in FC	-0.2344	0.2480	-0.945	.3467
Period in FC-S	-0.2576	0.2518	-1.023	.3087
Period in FC-W	-0.2112	0.4274	-0.494	.6221
Period in DC-S	-1.3874	0.5372	-2.583	.0111
Period in DC-W	-0.9890	0.9583	-1.032	.3043

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.357	0.0425	8.40	.0000	0.4280	0.2869
Period Op-2	0.595	0.0910	6.53	.0000	0.7455	0.4436
Op-1 0611	0.713	0.0952	7.49	.0000	0.8712	0.5554
Op-2 0611	0.902	0.2252	4.01	.0001	1.2760	0.5286
Op-1 0910	0.397	0.1016	3.90	.0002	0.5653	0.2281
Op-2 0910	0.764	0.2181	3.50	.0007	1.1259	0.4023
Op-1 0915	0.537	0.1139	4.71	.0000	0.7256	0.3477
Op-2 0915	0.554	0.2252	2.46	.0155	0.9276	0.1802
Op-1 1015	0.306	0.1139	2.69	.0084	0.4948	0.1169
Op-2 1015	0.510	0.2252	2.26	.0256	0.8837	0.1363
Op-1 1210	0.034	0.0952	0.36	.7222	0.1918	-0.1240
Op-2 1210	0.444	0.2181	2.04	.0440	0.8062	0.0825
Op-1 2210	0.158	0.1038	1.52	.1304	0.3305	-0.0140
Op-2 2210	0.393	0.2252	1.74	.0841	0.7663	0.0189

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2371	0.1004	-2.360	.0200	-0.0705	-0.4038

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1891	0.2445	-0.77	.4411	0.2166	-0.5947
Station 0910	-0.3674	0.2406	-1.53	.1297	0.0318	-0.7666
Station 0915	-0.0172	0.2524	-0.07	.9456	0.4015	-0.4360
Station 1015	-0.2041	0.2524	-0.81	.4205	0.2147	-0.6228
Station 1210	-0.4104	0.2380	-1.72	.0874	-0.0156	-0.8052
Station 2210	-0.2344	0.2480	-0.95	.3467	0.1771	-0.6459

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	1.33	8.00	0.438	2.24	0.41	4.74	18.25	6.60	2.87
0611 Op-2	4	0.25	0.75	0.177	0.81	-0.31	5.25	6.75	10.31	0.19
0910 Op-1	19	2.42	7.00	0.445	3.36	1.49	3.83	15.25	5.62	2.04
0910 Op-2	5	1.10	3.75	0.678	2.98	-0.78	4.45	6.25	8.07	0.83
0915 Op-1	15	3.05	14.50	0.996	5.19	0.91	3.82	16.50	6.03	1.60
0915 Op-2	4	1.25	1.75	0.368	2.42	0.08	4.25	7.25	9.54	-1.04
1015 Op-1	15	4.53	12.50	1.012	6.70	2.36	2.33	18.25	4.92	-0.26
1015 Op-2	4	2.31	7.25	1.666	7.61	-2.99	3.19	12.50	12.47	-6.10
1210 Op-1	20	7.31	14.25	0.892	9.18	5.45	-1.25	18.00	1.00	-3.50
1210 Op-2	5	2.35	7.50	1.355	6.11	-1.41	3.20	9.75	8.70	-2.30
2210 Op-1	17	4.43	9.50	0.704	5.92	2.93	1.54	16.00	3.25	-0.17
2210 Op-2	4	2.00	3.75	0.848	4.70	-0.70	3.50	9.25	10.43	-3.43

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	6.06	15.00	0.763	7.66	4.47
Op-2	5	5.55	6.25	1.155	8.76	2.34

Analysis of Variance for SFQ for 0544 - Pelecypoda unid. boring

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.16	0.6929
SEASON	1	108.000	3.14	0.0791
STATION	5	108.000	4.46	0.0010
PERIOD*SEASON	1	108.000	0.29	0.5925
STATION*PERIOD	5	108.000	0.85	0.5156
STATION*SEASON	5	108.000	0.05	0.9984
PERIOD*STATION*SEASON	5	108.000	0.24	0.9418

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.16	0.00	0.1262	.	0.7775
STATION*PERIOD	4.26	0.00	0.4200	.	0.1191

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4536	0.9923	-0.457	.6485
Period in FC	0.0226	0.4480	0.050	.9599
Period in FC-S	0.0889	0.4549	0.195	.8454
Period in FC-W	-0.0437	0.7720	-0.057	.9549
Period in DC-S	0.0645	0.9704	0.066	.9471
Period in DC-W	-0.9718	1.7310	-0.561	.5757

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.890	0.0769	-11.59	.0000	-0.7629	-1.0180
Period Op-2	-0.819	0.1644	-4.98	.0000	-0.5459	-1.0913
Op-1 0611	0.293	0.1719	1.71	.0909	0.5785	0.0080
Op-2 0611	-0.159	0.4069	-0.39	.6968	0.5161	-0.8340
Op-1 0910	-1.185	0.1836	-6.46	.0000	-0.8804	-1.4896
Op-2 0910	-0.700	0.3940	-1.78	.0783	-0.0465	-1.3538
Op-1 0915	-0.911	0.2057	-4.43	.0000	-0.5697	-1.2524
Op-2 0915	-1.249	0.4069	-3.07	.0027	-0.5738	-1.9239
Op-1 1015	-1.397	0.2057	-6.79	.0000	-1.0556	-1.7383
Op-2 1015	-1.116	0.4069	-2.74	.0071	-0.4409	-1.7910
Op-1 1210	-1.124	0.1719	-6.54	.0000	-0.8390	-1.4095
Op-2 1210	-0.646	0.3940	-1.64	.1037	0.0072	-1.3001
Op-1 2210	-1.019	0.1876	-5.43	.0000	-0.7076	-1.3299
Op-2 2210	-1.041	0.4069	-2.56	.0119	-0.3663	-1.7164

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0718	0.1815	-0.396	.6929	0.2292	-0.3729

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.4522	0.4417	1.02	.3082	1.1851	-0.2806
Station 0910	-0.4849	0.4346	-1.12	.2671	0.2362	-1.2060
Station 0915	0.3378	0.4559	0.74	.4603	1.0943	-0.4186
Station 1015	-0.2810	0.4559	-0.62	.5389	0.4754	-1.0375
Station 1210	-0.4778	0.4298	-1.11	.2688	0.2353	-1.1910
Station 2210	0.0226	0.4480	0.05	.9599	0.7659	-0.7207

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.50	2.00	0.127	0.77	0.23	0.66	7.00	1.48	-0.15
0611 Op-2	4	0.69	1.50	0.344	1.78	-0.41	-0.19	0.25	0.01	-0.39
0910 Op-1	19	10.28	19.00	1.285	12.98	7.58	-9.12	24.50	-6.13	-12.11
0910 Op-2	5	12.70	57.25	11.270	43.99	-18.59	-12.25	56.00	18.49	-42.99
0915 Op-1	15	6.63	14.25	1.007	8.79	4.47	-5.43	18.75	-2.98	-7.89
0915 Op-2	4	9.50	18.25	4.207	22.89	-3.89	-9.00	19.50	4.89	-22.89
1015 Op-1	15	18.48	51.75	3.670	26.35	10.61	-17.28	51.75	-9.16	-25.41
1015 Op-2	4	9.13	20.00	4.268	22.71	-4.46	-8.63	20.00	5.18	-22.43
1210 Op-1	20	13.61	25.25	1.648	17.06	10.16	-12.45	25.25	-8.98	-15.92
1210 Op-2	5	4.30	11.25	1.932	9.66	-1.06	-3.85	11.25	1.62	-9.32
2210 Op-1	17	9.60	17.00	1.287	12.33	6.87	-8.35	18.00	-5.48	-11.22
2210 Op-2	4	4.94	3.00	0.680	7.10	2.77	-4.44	3.00	-2.48	-6.40

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.16	5.75	0.361	1.92	0.41
Op-2	5	0.45	1.25	0.242	1.12	-0.22

Analysis of Variance for SAQ for 0529 - Phidiana hiltoni

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	0.00	0.9541
SEASON	1	102.000	0.20	0.6554
STATION	5	102.000	2.11	0.0706
PERIOD*SEASON	1	102.000	0.44	0.5098
STATION*PERIOD	5	102.000	0.76	0.5832
STATION*SEASON	5	102.000	0.28	0.9257
PERIOD*STATION*SEASON	5	102.000	0.16	0.9778

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.00	0.00	0.1006	.	0.4029
STATION*PERIOD	3.78	0.00	0.3828	.	0.1473

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3809	0.7948	-0.479	.6327
Period in FC	0.3306	0.3589	0.921	.3592
Period in FC-S	0.1639	0.3669	0.447	.6560
Period in FC-W	0.4973	0.6170	0.806	.4222
Period in DC-S	0.3626	0.7827	0.463	.6442
Period in DC-W	-1.1245	1.3835	-0.813	.4182

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.361	0.0622	-5.81	.0000	-0.2578	-0.4642
Period Op-2	-0.353	0.1314	-2.68	.0085	-0.1346	-0.5707
Op-1 0611	0.155	0.1390	1.12	.2672	0.3858	-0.0756
Op-2 0611	-0.091	0.3252	-0.28	.7809	0.4491	-0.6305
Op-1 0910	-0.653	0.1482	-4.41	.0000	-0.4072	-0.8992
Op-2 0910	-0.703	0.3149	-2.23	.0277	-0.1807	-1.2260
Op-1 0915	-0.735	0.1666	-4.41	.0000	-0.4585	-1.0116
Op-2 0915	-0.246	0.3252	-0.76	.4519	0.2942	-0.7854
Op-1 1015	-0.431	0.1666	-2.59	.0111	-0.1544	-0.7075
Op-2 1015	-0.155	0.3252	-0.48	.6349	0.3849	-0.6947
Op-1 1210	-0.470	0.1390	-3.38	.0010	-0.2392	-0.7006
Op-2 1210	-0.559	0.3149	-1.77	.0791	-0.0359	-1.0812
Op-1 2210	-0.032	0.1519	-0.21	.8329	0.2200	-0.2843
Op-2 2210	-0.363	0.3252	-1.12	.2673	0.1771	-0.9025

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0084	0.1453	-0.058	.9541	0.2329	-0.2497

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2458	0.3537	0.69	.4887	0.8328	-0.3413
Station 0910	0.0501	0.3480	0.14	.8858	0.6278	-0.5275
Station 0915	-0.4894	0.3654	-1.34	.1834	0.1171	-1.0960
Station 1015	-0.2760	0.3654	-0.76	.4517	0.3305	-0.8825
Station 1210	0.0886	0.3442	0.26	.7973	0.6600	-0.4827
Station 2210	0.3306	0.3589	0.92	.3592	0.9264	-0.2652

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.00	0.00	0.000	.	.	0.11	1.25	0.25	-0.04
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26
0910 Op-1	18	1.31	7.00	0.416	2.18	0.43	-1.19	7.25	-0.33	-2.06
0910 Op-2	5	1.20	3.00	0.639	2.98	-0.58	-1.20	3.00	0.58	-2.98
0915 Op-1	14	1.32	5.25	0.393	2.17	0.47	-1.29	5.50	-0.42	-2.16
0915 Op-2	4	0.25	0.75	0.177	0.81	-0.31	-0.25	0.75	0.31	-0.81
1015 Op-1	14	0.43	2.00	0.173	0.80	0.06	-0.39	2.25	-0.01	-0.78
1015 Op-2	4	0.19	0.75	0.188	0.78	-0.41	-0.19	0.75	0.41	-0.78
1210 Op-1	19	0.71	2.75	0.216	1.16	0.26	-0.61	3.00	-0.20	-1.01
1210 Op-2	5	0.45	1.50	0.267	1.19	-0.29	-0.45	1.50	0.29	-1.19
2210 Op-1	16	0.09	0.50	0.045	0.19	-0.00	0.02	1.75	0.22	-0.19
2210 Op-2	4	0.13	0.25	0.072	0.35	-0.10	-0.13	0.25	0.10	-0.35

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.11	1.25	0.067	0.25	-0.04
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0735 - Phragmatopoma californica

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	10.26	0.0018
SEASON	1	108.000	0.18	0.6701
STATION	5	108.000	5.13	0.0003
PERIOD*SEASON	1	108.000	0.24	0.6285
STATION*PERIOD	5	108.000	2.40	0.0416
STATION*SEASON	5	108.000	0.52	0.7587
PERIOD*STATION*SEASON	5	108.000	0.15	0.9790

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	10.26	9.07	0.9381	0.9112	0.7968
STATION*PERIOD	12.01	6.79	0.8381	0.5956	0.1017

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.9193	0.9636	3.029	.0031
Period in PC	0.4680	0.4351	1.076	.2845
Period in PC-S	0.3912	0.4418	0.886	.3778
Period in PC-W	0.5448	0.7497	0.727	.4690
Period in DC-S	3.5091	0.9424	3.723	.0003
Period in DC-W	2.3294	1.6811	1.386	.1687

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	1.044	0.0746	13.98	.0000	1.1676	0.9199
Period Op-2	0.479	0.1596	3.00	.0033	0.7440	0.2144
Op-1 0611	1.177	0.1670	7.05	.0000	1.4536	0.8995
Op-2 0611	1.659	0.3951	4.20	.0001	2.3146	1.0034
Op-1 0910	0.918	0.1783	5.15	.0000	1.2141	0.6225
Op-2 0910	-0.045	0.3826	-0.12	.9075	0.5902	-0.6793
Op-1 0915	0.683	0.1998	3.42	.0009	1.0150	0.3520
Op-2 0915	-0.694	0.3951	-1.76	.0819	-0.0383	-1.3495
Op-1 1015	0.939	0.1998	4.70	.0000	1.2705	0.6075
Op-2 1015	0.810	0.3951	2.05	.0428	1.4658	0.1546
Op-1 1210	1.273	0.1670	7.63	.0000	1.5503	0.9962
Op-2 1210	0.341	0.3826	0.89	.3753	0.9754	-0.2941
Op-1 2210	1.272	0.1822	6.98	.0000	1.5741	0.9696
Op-2 2210	0.804	0.3951	2.03	.0444	1.4594	0.1483

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5645	0.1762	3.204	.0018	0.8569	0.2722

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.4824	0.4290	-1.12	.2633	0.2293	-1.1941
Station 0910	0.9629	0.4221	2.28	.0245	1.6632	0.2626
Station 0915	1.3774	0.4428	3.11	.0024	2.1120	0.6428
Station 1015	0.1288	0.4428	0.29	.7717	0.8634	-0.6058
Station 1210	0.9326	0.4174	2.23	.0275	1.6252	0.2401
Station 2210	0.4680	0.4351	1.08	.2845	1.1899	-0.2539

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	8.23	76.25	4.028	16.66	-0.21	40.44	190.25	62.75	18.12
0611 Op-2	4	0.31	1.00	0.237	1.07	-0.44	9.38	11.75	18.18	0.57
0910 Op-1	19	3.92	12.00	0.731	5.46	2.38	43.09	138.00	65.37	20.82
0910 Op-2	5	18.85	63.75	12.188	52.69	-14.99	-9.80	59.25	20.88	-40.48
0915 Op-1	15	5.15	12.25	0.994	7.28	3.02	23.40	106.25	42.03	4.77
0915 Op-2	4	49.00	75.50	16.264	100.76	-2.76	-39.31	64.75	6.96	-85.58
1015 Op-1	15	3.47	9.50	0.810	5.20	1.73	25.08	92.75	41.67	8.49
1015 Op-2	4	8.06	21.75	5.110	24.32	-8.20	1.63	15.75	12.36	-9.11
1210 Op-1	20	2.03	5.75	0.329	2.71	1.34	46.64	136.25	67.93	25.34
1210 Op-2	5	4.90	10.50	1.792	9.87	-0.07	4.15	8.00	8.36	-0.06
2210 Op-1	17	1.84	5.00	0.382	2.65	1.03	49.29	132.75	73.68	24.89
2210 Op-2	4	1.44	2.50	0.524	3.11	-0.23	8.25	12.25	17.26	-0.76

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	48.66	133.50	10.253	70.12	27.20
Op-2	5	9.05	10.75	2.097	14.87	3.23

Analysis of Variance for SAQ for 0558 - Pisaster giganteus

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	3.62	0.0601
SEASON	1	102.000	0.02	0.8870
STATION	5	102.000	1.31	0.2639
PERIOD*SEASON	1	102.000	0.31	0.5771
STATION*PERIOD	5	102.000	1.54	0.1841
STATION*SEASON	5	102.000	1.38	0.2392
PERIOD*STATION*SEASON	5	102.000	0.81	0.5450

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.62	2.54	0.5966	0.4766	0.9836
STATION*PERIOD	7.70	2.55	0.6490	0.2872	0.1988

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.5762	0.2711	-2.126	.0359
Period in FC	0.0107	0.1224	0.087	.9307
Period in FC-S	0.0693	0.1251	0.554	.5809
Period in FC-W	-0.0480	0.2104	-0.228	.8202
Period in DC-S	-0.4684	0.2669	-1.755	.0823
Period in DC-W	-0.6839	0.4718	-1.449	.1503

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.171	0.0212	-8.07	.0000	-0.1359	-0.2063
Period Op-2	-0.077	0.0448	-1.72	.0893	-0.0025	-0.1512
Op-1 0611	-0.326	0.0474	-6.88	.0000	-0.2474	-0.4048
Op-2 0611	-0.012	0.1109	-0.11	.9123	0.1718	-0.1963
Op-1 0910	-0.087	0.0505	-1.71	.0900	-0.0026	-0.1704
Op-2 0910	-0.159	0.1074	-1.48	.1421	0.0194	-0.3371
Op-1 0915	-0.218	0.0568	-3.84	.0002	-0.1238	-0.3124
Op-2 0915	-0.056	0.1109	-0.50	.6149	0.1281	-0.2401
Op-1 1015	-0.198	0.0568	-3.48	.0007	-0.1036	-0.2923
Op-2 1015	-0.212	0.1109	-1.91	.0584	-0.0282	-0.3964
Op-1 1210	-0.205	0.0474	-4.33	.0000	-0.1265	-0.2839
Op-2 1210	-0.018	0.1074	-0.17	.8653	0.1600	-0.1965
Op-1 2210	0.007	0.0518	0.14	.8902	0.0932	-0.0788
Op-2 2210	-0.004	0.1109	-0.03	.9749	0.1806	-0.1876

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0942	0.0496	-1.901	.0601	-0.0120	-0.1765

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.3138	0.1206	-2.60	.0106	-0.1136	-0.5140
Station 0910	0.0724	0.1187	0.61	.5434	0.2694	-0.1246
Station 0915	-0.1622	0.1246	-1.30	.1961	0.0447	-0.3690
Station 1015	0.0144	0.1246	0.12	.9084	0.2212	-0.1925
Station 1210	-0.1869	0.1174	-1.59	.1144	0.0079	-0.3817
Station 2210	0.0107	0.1224	0.09	.9307	0.2139	-0.1925

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	2.03	5.00	0.295	2.65	1.41	-1.70	5.75	-0.97	-2.42
0611 Op-2	4	0.81	2.00	0.483	2.35	-0.72	-0.44	2.50	1.29	-2.17
0910 Op-1	18	0.67	1.75	0.116	0.91	0.42	-0.32	2.25	-0.05	-0.59
0910 Op-2	5	0.80	2.50	0.443	2.03	-0.43	-0.40	2.00	0.57	-1.37
0915 Op-1	14	1.32	3.00	0.246	1.85	0.79	-0.89	2.50	-0.42	-1.37
0915 Op-2	4	0.81	2.25	0.504	2.42	-0.79	-0.44	1.75	0.95	-1.83
1015 Op-1	14	1.27	6.50	0.465	2.27	0.26	-0.84	7.00	0.10	-1.78
1015 Op-2	4	1.25	2.25	0.489	2.81	-0.31	-0.88	1.50	0.18	-1.93
1210 Op-1	19	1.30	2.75	0.186	1.69	0.91	-0.97	3.25	-0.58	-1.37
1210 Op-2	5	0.55	1.25	0.242	1.22	-0.12	-0.15	1.00	0.32	-0.62
2210 Op-1	16	0.31	0.75	0.058	0.44	0.19	0.05	2.25	0.35	-0.25
2210 Op-2	4	0.50	0.75	0.177	1.06	-0.06	-0.13	0.75	0.39	-0.64

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.33	1.50	0.096	0.53	0.13
Op-2	5	0.40	0.75	0.127	0.75	0.05

Analysis of Variance for SFQ for 0610 - Pisaster/Henricia (juv.)

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.44	0.5106
SEASON	1	108.000	1.40	0.2401
STATION	5	108.000	0.24	0.9442
PERIOD*SEASON	1	108.000	1.00	0.3198
STATION*PERIOD	5	108.000	0.13	0.9861
STATION*SEASON	5	108.000	0.14	0.9834
PERIOD*STATION*SEASON	5	108.000	0.06	0.9971

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.44	0.00	0.1721	.	0.1190
STATION*PERIOD	0.63	0.00	0.1431	.	0.1078

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3305	0.6587	-0.502	.6168
Period in FC	-0.1466	0.2974	-0.493	.6231
Period in FC-S	-0.2628	0.3020	-0.870	.3861
Period in FC-W	-0.0304	0.5125	-0.059	.9529
Period in DC-S	-0.9367	0.6442	-1.454	.1488
Period in DC-W	0.2756	1.1491	0.240	.8109

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.596	0.0510	11.68	.0000	0.6805	0.5113
Period Op-2	0.675	0.1091	6.19	.0000	0.8564	0.4944
Op-1 0611	0.533	0.1141	4.67	.0000	0.7225	0.3438
Op-2 0611	0.686	0.2701	2.54	.0125	1.1344	0.2382
Op-1 0910	0.650	0.1219	5.33	.0000	0.8520	0.4477
Op-2 0910	0.699	0.2615	2.67	.0087	1.1328	0.2651
Op-1 0915	0.700	0.1366	5.12	.0000	0.9264	0.4732
Op-2 0915	0.686	0.2701	2.54	.0125	1.1344	0.2382
Op-1 1015	0.749	0.1366	5.49	.0000	0.9758	0.5227
Op-2 1015	0.686	0.2701	2.54	.0125	1.1344	0.2382
Op-1 1210	0.494	0.1141	4.33	.0000	0.6837	0.3050
Op-2 1210	0.699	0.2615	2.67	.0087	1.1328	0.2651
Op-1 2210	0.449	0.1245	3.61	.0005	0.6556	0.2425
Op-2 2210	0.596	0.2701	2.21	.0295	1.0437	0.1475

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0795	0.1204	-0.660	..5106	0.1203	-0.2793

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.1532	0.2932	-0.52	.6024	0.3333	-0.6397
Station 0910	-0.0491	0.2885	-0.17	.8652	0.4296	-0.5278
Station 0915	0.0135	0.3027	0.04	.9646	0.5156	-0.4887
Station 1015	0.0629	0.3027	0.21	.8357	0.5651	-0.4392
Station 1210	-0.2046	0.2853	-0.72	.4749	0.2688	-0.6780
Station 2210	-0.1466	0.2974	-0.49	.6231	0.3469	-0.6400

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.03	0.50	0.025	0.08	-0.03	0.53	2.00	0.79	0.26
0611 Op-2	4	0.00	0.00	0.000	.	.	0.50	0.50	0.82	0.18
0910 Op-1	19	0.00	0.00	0.000	.	.	0.58	1.50	0.83	0.33
0910 Op-2	5	0.00	0.00	0.000	.	.	0.55	0.50	0.81	0.29
0915 Op-1	15	0.03	0.25	0.023	0.08	-0.02	0.63	1.75	0.95	0.32
0915 Op-2	4	0.00	0.00	0.000	.	.	0.50	0.50	0.82	0.18
1015 Op-1	15	0.00	0.00	0.000	.	.	0.67	1.50	0.97	0.37
1015 Op-2	4	0.00	0.00	0.000	.	.	0.50	0.50	0.82	0.18
1210 Op-1	20	0.05	0.25	0.023	0.10	0.00	0.50	1.75	0.75	0.25
1210 Op-2	5	0.00	0.00	0.000	.	.	0.55	0.50	0.81	0.29
2210 Op-1	17	0.17	1.00	0.065	0.30	0.03	0.45	1.75	0.74	0.17
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.44	0.25	0.64	0.24

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.55	1.50	0.117	0.79	0.31
Op-2	5	0.55	0.50	0.094	0.81	0.29

Analysis of Variance for SFQ for 0389 - Pista spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	17.55	0.0001
SEASON	1	108.000	16.85	0.0001
STATION	5	108.000	11.16	0.0000
PERIOD*SEASON	1	108.000	2.18	0.1429
STATION*PERIOD	5	108.000	0.60	0.6975
STATION*SEASON	5	108.000	1.18	0.3246
PERIOD*STATION*SEASON	5	108.000	0.58	0.7134

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	17.55	16.22	0.9941	0.9908	0.5918
STATION*PERIOD	3.02	0.00	0.3242	.	0.1987

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	2.5341	0.6500	3.899	.0002
Period in FC	0.4535	0.2935	1.545	.1252
Period in FC-S	0.1391	0.2980	0.467	.6416
Period in FC-W	0.7680	0.5057	1.519	.1318
Period in DC-S	1.7960	0.6357	2.825	.0056
Period in DC-W	3.2722	1.1339	2.886	.0047

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.324	0.0503	-6.43	.0000	-0.2402	-0.4073
Period Op-2	-0.822	0.1077	-7.63	.0000	-0.6431	-1.0003
Op-1 0611	0.168	0.1126	1.49	.1395	0.3545	-0.0192
Op-2 0611	-0.000	0.2665	-0.00	1.000	0.4422	-0.4422
Op-1 0910	-0.053	0.1203	-0.44	.6589	0.1463	-0.2527
Op-2 0910	-0.435	0.2581	-1.69	.0948	-0.0068	-0.8631
Op-1 0915	-0.219	0.1348	-1.62	.1072	0.0047	-0.4425
Op-2 0915	-1.012	0.2665	-3.80	.0002	-0.5698	-1.4542
Op-1 1015	-0.958	0.1348	-7.11	.0000	-0.7344	-1.1816
Op-2 1015	-1.444	0.2665	-5.42	.0000	-1.0013	-1.8857
Op-1 1210	-0.688	0.1126	-6.10	.0000	-0.5007	-0.8744
Op-2 1210	-1.394	0.2581	-5.40	.0000	-0.9654	-1.8217
Op-1 2210	-0.193	0.1229	-1.57	.1200	0.0113	-0.3964
Op-2 2210	-0.646	0.2665	-2.42	.0170	-0.2039	-1.0883

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.4979	0.1189	4.189	.0001	0.6951	0.3007

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1677	0.2893	0.58	.5635	0.6477	-0.3124
Station 0910	0.3818	0.2847	1.34	.1828	0.8541	-0.0906
Station 0915	0.7931	0.2987	2.66	.0091	1.2886	0.2976
Station 1015	0.4855	0.2987	1.63	.1069	0.9811	-0.0100
Station 1210	0.7060	0.2816	2.51	.0137	1.1732	0.2388
Station 2210	0.4535	0.2935	1.55	.1252	0.9404	-0.0334

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.01	0.25	0.013	0.04	-0.01	0.11	0.50	0.21	0.02
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.11	0.50	0.040	0.19	0.02	0.03	1.00	0.15	-0.10
0910 Op-2	5	0.25	1.25	0.250	0.94	-0.44	-0.05	2.25	0.94	-1.04
0915 Op-1	15	0.35	2.75	0.189	0.75	-0.05	-0.18	2.75	0.20	-0.57
0915 Op-2	4	1.00	2.75	0.604	2.92	-0.92	-1.00	2.75	0.92	-2.92
1015 Op-1	15	1.68	4.75	0.352	2.44	0.93	-1.52	4.75	-0.75	-2.28
1015 Op-2	4	2.69	3.50	0.976	5.79	-0.42	-2.69	3.50	0.42	-5.79
1210 Op-1	20	1.43	9.25	0.516	2.50	0.35	-1.30	9.00	-0.26	-2.34
1210 Op-2	5	2.75	5.00	0.825	5.04	0.46	-2.55	5.00	-0.19	-4.91
2210 Op-1	17	0.30	1.00	0.081	0.47	0.13	-0.15	1.50	0.06	-0.36
2210 Op-2	4	0.31	0.75	0.157	0.81	-0.19	-0.31	0.75	0.19	-0.81

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.13	0.50	0.046	0.22	0.03
Op-2	5	0.20	1.00	0.200	0.76	-0.36

Analysis of Variance for SAQ for 0317 - Pododesmus cepio

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	2.08	0.1524
SEASON	1	102.000	0.61	0.4373
STATION	5	102.000	0.42	0.8340
PERIOD*SEASON	1	102.000	0.07	0.7941
STATION*PERIOD	5	102.000	0.24	0.9457
STATION*SEASON	5	102.000	0.28	0.9213
PERIOD*STATION*SEASON	5	102.000	0.08	0.9958

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	2.08	1.04	0.4169	0.2674	0.4463
STATION*PERIOD	1.18	0.00	0.1826	.	0.1550

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.2928	0.1851	-1.582	.1167
Period in FC	0.0000	0.0836	0.000	1.000
Period in FC-S	-0.0000	0.0854	-0.000	1.000
Period in FC-W	0.0000	0.1437	0.000	1.000
Period in DC-S	-0.3459	0.1823	-1.898	.0605
Period in DC-W	-0.2397	0.3222	-0.744	.4586

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.058	0.0145	-3.98	.0001	-0.0335	-0.0816
Period Op-2	-0.009	0.0306	-0.29	.7749	0.0420	-0.0595
Op-1 0611	-0.094	0.0324	-2.90	.0045	-0.0402	-0.1476
Op-2 0611	-0.041	0.0757	-0.53	.5939	0.0852	-0.1662
Op-1 0910	-0.061	0.0345	-1.77	.0798	-0.0038	-0.1183
Op-2 0910	-0.012	0.0733	-0.17	.8691	0.1096	-0.1338
Op-1 0915	-0.115	0.0388	-2.98	.0036	-0.0511	-0.1799
Op-2 0915	-0.000	0.0757	-0.00	1.000	0.1257	-0.1257
Op-1 1015	-0.062	0.0388	-1.60	.1135	0.0025	-0.1263
Op-2 1015	0.000	0.0757	0.00	1.000	0.1257	-0.1257
Op-1 1210	-0.013	0.0324	-0.40	.6881	0.0407	-0.0668
Op-2 1210	0.000	0.0733	0.00	1.000	0.1217	-0.1217
Op-1 2210	-0.000	0.0354	-0.00	1.000	0.0587	-0.0587
Op-2 2210	-0.000	0.0757	-0.00	1.000	0.1257	-0.1257

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0488	0.0338	-1.442	.1524	0.0074	-0.1050

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0534	0.0824	-0.65	.5181	0.0833	-0.1901
Station 0910	-0.0489	0.0810	-0.60	.5472	0.0856	-0.1835
Station 0915	-0.1155	0.0851	-1.36	.1777	0.0258	-0.2567
Station 1015	-0.0619	0.0851	-0.73	.4684	0.0793	-0.2032
Station 1210	-0.0130	0.0801	-0.16	.8712	0.1200	-0.1461
Station 2210	0.0000	0.0836	0.00	1.000	0.1387	-0.1387

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.50	2.00	0.146	0.81	0.19	-0.39	3.25	-0.05	-0.74
0611 Op-2	4	0.19	0.75	0.188	0.78	-0.41	-0.19	0.75	0.41	-0.78
0910 Op-1	18	0.39	4.50	0.248	0.91	-0.13	-0.36	4.75	0.16	-0.89
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	-0.05	0.25	0.09	-0.19
0915 Op-1	14	0.41	2.25	0.179	0.80	0.02	-0.39	2.25	-0.01	-0.77
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.20	1.00	0.095	0.40	-0.01	-0.18	1.00	0.01	-0.37
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.18	1.25	0.083	0.36	0.01	-0.08	2.00	0.11	-0.26
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	16	0.02	0.25	0.016	0.05	-0.02	0.00	0.00	.	.
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.11	1.50	0.080	0.27	-0.06
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0492 - Porifera unid. (encrusting)

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.09	0.7586
SEASON	1	108.000	0.71	0.4016
STATION	5	108.000	5.08	0.0003
PERIOD*SEASON	1	108.000	0.15	0.6986
STATION*PERIOD	5	108.000	0.48	0.7883
STATION*SEASON	5	108.000	0.15	0.9787
PERIOD*STATION*SEASON	5	108.000	0.35	0.8823

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.09	0.00	0.1159	.	0.9186
STATION*PERIOD	2.42	0.00	0.2773	.	0.1961

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1270	0.3930	0.323	.7472
Period in FC	0.0059	0.1774	0.033	.9737
Period in FC-S	-0.1320	0.1802	-0.733	.4652
Period in FC-W	0.1438	0.3058	0.470	.6392
Period in DC-S	0.0975	0.3843	0.254	.8003
Period in DC-W	0.1565	0.6856	0.228	.8198

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.184	0.0304	6.03	.0000	0.2341	0.1331
Period Op-2	0.162	0.0651	2.48	.0146	0.2695	0.0535
Op-1 0611	0.219	0.0681	3.22	.0017	0.3324	0.1065
Op-2 0611	0.135	0.1611	0.84	.4031	0.4026	-0.1321
Op-1 0910	0.224	0.0727	3.08	.0026	0.3447	0.1034
Op-2 0910	0.001	0.1560	0.01	.9934	0.2602	-0.2576
Op-1 0915	0.084	0.0815	1.03	.3038	0.2194	-0.0510
Op-2 0915	0.143	0.1611	0.89	.3761	0.4106	-0.1241
Op-1 1015	0.254	0.0815	3.11	.0024	0.3887	0.1184
Op-2 1015	0.384	0.1611	2.39	.0188	0.6518	0.1170
Op-1 1210	0.449	0.0681	6.59	.0000	0.5617	0.3358
Op-2 1210	0.439	0.1560	2.81	.0058	0.6977	0.1800
Op-1 2210	-0.128	0.0743	-1.72	.0875	-0.0049	-0.2514
Op-2 2210	-0.134	0.1611	-0.83	.4076	0.1334	-0.4013

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0221	0.0719	0.308	.7586	0.1414	-0.0971

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0842	0.1749	0.48	.6314	0.3744	-0.2061
Station 0910	0.2228	0.1721	1.29	.1984	0.5084	-0.0628
Station 0915	-0.0590	0.1806	-0.33	.7444	0.2406	-0.3586
Station 1015	-0.1308	0.1806	-0.72	.4703	0.1687	-0.4304
Station 1210	0.0099	0.1702	0.06	.9536	0.2924	-0.2725
Station 2210	0.0059	0.1774	0.03	.9737	0.3003	-0.2885

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.91	2.75	0.174	1.28	0.55	0.68	5.25	1.22	0.13
0611 Op-2	4	0.56	0.25	0.063	0.76	0.36	0.50	0.75	1.06	-0.06
0910 Op-1	19	0.75	1.75	0.138	1.04	0.46	0.78	3.75	1.33	0.23
0910 Op-2	5	1.20	1.50	0.300	2.03	0.37	-0.25	2.25	0.97	-1.47
0915 Op-1	15	1.27	3.50	0.248	1.80	0.73	0.28	4.50	1.01	-0.45
0915 Op-2	4	0.69	0.75	0.188	1.28	0.09	0.38	1.25	1.20	-0.45
1015 Op-1	15	0.78	2.75	0.226	1.27	0.30	0.77	4.25	1.46	0.07
1015 Op-2	4	0.38	1.50	0.375	1.57	-0.82	0.69	2.00	2.04	-0.67
1210 Op-1	20	0.18	1.00	0.060	0.30	0.05	1.41	4.00	1.93	0.90
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.90	1.00	1.37	0.43
2210 Op-1	17	2.63	6.00	0.460	3.61	1.66	-1.04	7.50	-0.04	-2.05
2210 Op-2	4	2.00	4.75	1.066	5.39	-1.39	-0.94	5.25	2.63	-4.50

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.59	3.50	0.235	2.08	1.10
Op-2	5	0.95	1.00	0.166	1.41	0.49

Analysis of Variance for SAQ for 0530 - Pseudomelatoma torosa

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	1.34	0.2496
SEASON	1	102.000	0.06	0.8083
STATION	5	102.000	0.13	0.9859
PERIOD*SEASON	1	102.000	0.00	0.9778
STATION*PERIOD	5	102.000	0.09	0.9940
STATION*SEASON	5	102.000	0.06	0.9977
PERIOD*STATION*SEASON	5	102.000	0.04	0.9993

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.34	0.31	0.3130	0.1521	0.2023
STATION*PERIOD	0.44	0.00	0.1295	.	0.1043

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1085	0.1086	0.999	.3200
Period in FC	0.0294	0.0490	0.600	.5496
Period in FC-S	0.0395	0.0501	0.788	.4324
Period in FC-W	0.0194	0.0843	0.230	.8186
Period in DC-S	0.1018	0.1069	0.952	.3435
Period in DC-W	0.1152	0.1890	0.610	.5435

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.020	0.0085	2.39	.0187	0.0344	0.0062
Period Op-2	-0.003	0.0179	-0.15	.8811	0.0271	-0.0325
Op-1 0611	0.037	0.0190	1.95	.0543	0.0685	0.0055
Op-2 0611	0.000	0.0444	0.00	1.000	0.0737	-0.0737
Op-1 0910	0.009	0.0202	0.47	.6427	0.0430	-0.0242
Op-2 0910	0.000	0.0430	0.00	1.000	0.0714	-0.0714
Op-1 0915	0.007	0.0228	0.33	.7457	0.0452	-0.0304
Op-2 0915	-0.000	0.0444	-0.00	1.000	0.0737	-0.0737
Op-1 1015	0.015	0.0228	0.64	.5207	0.0525	-0.0231
Op-2 1015	-0.000	0.0444	-0.00	1.000	0.0737	-0.0737
Op-1 1210	0.040	0.0190	2.11	.0375	0.0715	0.0085
Op-2 1210	0.000	0.0430	0.00	1.000	0.0714	-0.0714
Op-1 2210	0.013	0.0208	0.64	.5233	0.0477	-0.0212
Op-2 2210	-0.016	0.0444	-0.36	.7169	0.0576	-0.0899

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0230	0.0199	1.158	.2496	0.0560	-0.0100

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0370	0.0483	0.77	.4458	0.1172	-0.0432
Station 0910	0.0094	0.0475	0.20	.8433	0.0883	-0.0695
Station 0915	0.0074	0.0499	0.15	.8824	0.0903	-0.0755
Station 1015	0.0147	0.0499	0.29	.7694	0.0975	-0.0682
Station 1210	0.0400	0.0470	0.85	.3967	0.1181	-0.0380
Station 2210	0.0294	0.0490	0.60	.5496	0.1108	-0.0520

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.04	0.50	0.029	0.10	-0.02	0.09	0.75	0.19	-0.01
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.08	1.00	0.057	0.20	-0.04	0.03	1.25	0.16	-0.11
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	14	0.09	1.00	0.072	0.25	-0.07	0.02	1.00	0.15	-0.11
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	14	0.11	1.50	0.107	0.34	-0.12	0.00	1.50	0.19	-0.19
1015 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1210 Op-1	19	0.03	0.25	0.018	0.06	-0.01	0.11	0.75	0.21	0.00
1210 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
2210 Op-1	16	0.06	0.25	0.028	0.12	0.00	0.03	0.75	0.15	-0.09
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.13	0.50	0.044	0.22	0.04
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SPQ for 0612 - Pugettia spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	3.10	0.0809
SEASON	1	108.000	6.74	0.0107
STATION	5	108.000	1.25	0.2928
PERIOD*SEASON	1	108.000	0.01	0.9233
STATION*PERIOD	5	108.000	3.87	0.0029
STATION*SEASON	5	108.000	0.61	0.6902
PERIOD*STATION*SEASON	5	108.000	0.24	0.9463

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.10	2.05	0.5425	0.4127	0.8409
STATION*PERIOD	19.33	13.97	0.9658	0.8903	0.1407

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.2712	0.6136	2.072	.0407
Period in FC	-0.0849	0.2771	-0.307	.7598
Period in FC-S	0.1440	0.2813	0.512	.6098
Period in FC-W	-0.3139	0.4774	-0.657	.5123
Period in DC-S	1.1072	0.6001	1.845	.0678
Period in DC-W	1.4351	1.0705	1.341	.1829

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.249	0.0475	5.25	.0000	0.3283	0.1706
Period Op-2	0.052	0.1017	0.51	.6117	0.2204	-0.1169
Op-1 0611	0.464	0.1063	4.36	.0000	0.6405	0.2876
Op-2 0611	0.053	0.2516	0.21	.8341	0.4703	-0.3647
Op-1 0910	0.523	0.1135	4.60	.0000	0.7110	0.3342
Op-2 0910	-0.081	0.2436	-0.33	.7416	0.3237	-0.4848
Op-1 0915	0.253	0.1272	1.99	.0491	0.4643	0.0421
Op-2 0915	-0.072	0.2516	-0.29	.7751	0.3454	-0.4896
Op-1 1015	0.383	0.1272	3.01	.0033	0.5937	0.1715
Op-2 1015	-0.287	0.2516	-1.14	.2559	0.1301	-0.7049
Op-1 1210	-0.020	0.1063	-0.19	.8530	0.1567	-0.1962
Op-2 1210	0.719	0.2436	2.95	.0039	1.1229	0.3145
Op-1 2210	-0.106	0.1160	-0.91	.3634	0.0866	-0.2983
Op-2 2210	-0.021	0.2516	-0.08	.9339	0.3966	-0.4384

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1977	0.1122	1.762	.0809	0.3839	0.0115

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.4112	0.2732	1.51	.1352	0.8644	-0.0420
Station 0910	0.6031	0.2688	2.24	.0269	1.0491	0.1572
Station 0915	0.3253	0.2820	1.15	.2513	0.7931	-0.1426
Station 1015	0.6700	0.2820	2.38	.0193	1.1378	0.2022
Station 1210	-0.7385	0.2658	-2.78	.0065	-0.2974	-1.1795
Station 2210	-0.0849	0.2771	-0.31	.7598	0.3748	-0.5446

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.54	2.50	0.142	0.83	0.24	0.49	2.50	0.83	0.15
0611 Op-2	4	0.63	0.50	0.125	1.02	0.23	-0.06	0.75	0.44	-0.56
0910 Op-1	19	0.62	3.00	0.183	1.00	0.23	0.42	3.50	0.85	-0.01
0910 Op-2	5	1.10	2.25	0.478	2.43	-0.23	-0.55	2.50	0.74	-1.84
0915 Op-1	15	1.13	3.25	0.269	1.71	0.56	-0.13	3.50	0.51	-0.77
0915 Op-2	4	1.25	2.50	0.530	2.94	-0.44	-0.69	2.25	0.85	-2.22
1015 Op-1	15	0.58	2.00	0.165	0.94	0.23	0.42	2.50	0.80	0.03
1015 Op-2	4	1.19	0.75	0.188	1.78	0.59	-0.63	0.25	-0.40	-0.85
1210 Op-1	20	1.28	3.75	0.226	1.75	0.80	-0.25	4.75	0.32	-0.82
1210 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.50	0.75	0.88	0.12
2210 Op-1	17	1.29	2.50	0.166	1.65	0.94	-0.28	2.25	0.02	-0.58
2210 Op-2	4	1.00	1.75	0.395	2.26	-0.26	-0.44	1.50	0.56	-1.43

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.03	1.75	0.126	1.29	0.76
Op-2	5	0.55	0.50	0.094	0.81	0.29

Analysis of Variance for SPQ for 0381 - Sabellidae

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.09	0.7614
SEASON	1	108.000	0.63	0.4278
STATION	5	108.000	4.28	0.0014
PERIOD*SEASON	1	108.000	0.01	0.9411
STATION*PERIOD	5	108.000	0.16	0.9754
STATION*SEASON	5	108.000	0.17	0.9734
PERIOD*STATION*SEASON	5	108.000	0.63	0.6769

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.09	0.00	0.1155	.	0.5375
STATION*PERIOD	0.82	0.00	0.1563	.	0.4187

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3833	0.7420	-0.516	.6066
Period in FC	0.1354	0.3350	0.404	.6869
Period in FC-S	0.2708	0.3402	0.796	.4277
Period in FC-W	0.0000	0.5773	0.000	1.000
Period in DC-S	-0.5790	0.7257	-0.798	.4267
Period in DC-W	-0.1875	1.2945	-0.145	.8851

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.191	0.0575	-3.32	.0012	-0.0953	-0.2860
Period Op-2	-0.149	0.1229	-1.21	.2271	0.0546	-0.3532
Op-1 0611	0.039	0.1286	0.30	.7641	0.2520	-0.1746
Op-2 0611	-0.000	0.3043	-0.00	1.000	0.5048	-0.5048
Op-1 0910	0.054	0.1373	0.39	.6971	0.2813	-0.1742
Op-2 0910	-0.000	0.2946	-0.00	1.000	0.4888	-0.4888
Op-1 0915	-0.128	0.1539	-0.83	.4079	0.1274	-0.3831
Op-2 0915	0.000	0.3043	0.00	1.000	0.5048	-0.5048
Op-1 1015	-0.949	0.1539	-6.17	.0000	-0.6936	-1.2041
Op-2 1015	-0.792	0.3043	-2.60	.0106	-0.2869	-1.2965
Op-1 1210	-0.253	0.1286	-1.97	.0517	-0.0397	-0.4663
Op-2 1210	-0.062	0.2946	-0.21	.8324	0.4263	-0.5513
Op-1 2210	0.094	0.1403	0.67	.5053	0.3265	-0.1390
Op-2 2210	-0.042	0.3043	-0.14	.8913	0.4631	-0.5465

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0413	0.1357	-0.304	.7614	0.1838	-0.2664

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0387	0.3303	0.12	.9070	0.5867	-0.5093
Station 0910	0.0536	0.3250	0.16	.8694	0.5928	-0.4857
Station 0915	-0.1278	0.3410	-0.37	.7084	0.4378	-0.6935
Station 1015	-0.1572	0.3410	-0.46	.6457	0.4085	-0.7229
Station 1210	-0.1905	0.3214	-0.59	.5547	0.3428	-0.7238
Station 2210	0.1354	0.3350	0.40	.6869	0.6913	-0.4205

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.10	1.00	0.053	0.21	-0.01	0.04	1.25	0.17	-0.10
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	19	0.05	1.00	0.053	0.16	-0.06	0.08	1.50	0.23	-0.08
0910 Op-2	5	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0915 Op-1	15	0.22	1.25	0.094	0.42	0.01	-0.10	1.50	0.11	-0.31
0915 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
1015 Op-1	15	1.10	4.75	0.321	1.79	0.41	-0.98	4.50	-0.32	-1.65
1015 Op-2	4	0.56	1.25	0.277	1.44	-0.32	-0.56	1.25	0.32	-1.44
1210 Op-1	20	0.33	1.25	0.085	0.50	0.15	-0.19	1.75	0.03	-0.41
1210 Op-2	5	0.10	0.50	0.100	0.38	-0.18	-0.10	0.50	0.18	-0.38
2210 Op-1	17	0.00	0.00	0.000	.	.	0.13	0.50	0.24	0.03
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.14	0.50	0.042	0.23	0.05
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0934 - Salmacina tribranchiata

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	23.94	0.0000
SEASON	1	108.000	3.63	0.0593
STATION	5	108.000	2.34	0.0467
PERIOD*SEASON	1	108.000	0.04	0.8468
STATION*PERIOD	5	108.000	1.40	0.2297
STATION*SEASON	5	108.000	0.20	0.9626
PERIOD*STATION*SEASON	5	108.000	0.54	0.7491

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	23.94	22.49	0.9994	0.9989	0.3531
STATION*PERIOD	7.01	1.88	0.6090	0.2355	0.3108

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.6549	0.2990	5.535	.0000
Period in FC	-0.0499	0.1350	-0.370	.7125
Period in FC-S	-0.2259	0.1371	-1.648	.1023
Period in FC-W	0.1261	0.2326	0.542	.5888
Period in DC-S	1.8944	0.2924	6.479	.0000
Period in DC-W	1.4154	0.5216	2.714	.0077

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.226	0.0232	9.77	.0000	0.2647	0.1879
Period Op-2	-0.041	0.0495	-0.83	.4071	0.0409	-0.1234
Op-1 0611	0.342	0.0518	6.59	.0000	0.4276	0.2557
Op-2 0611	0.029	0.1226	0.24	.8113	0.2328	-0.1741
Op-1 0910	0.249	0.0553	4.50	.0000	0.3407	0.1572
Op-2 0910	-0.110	0.1187	-0.93	.3559	0.0869	-0.3070
Op-1 0915	0.249	0.0620	4.01	.0001	0.3515	0.1458
Op-2 0915	-0.117	0.1226	-0.96	.3404	0.0860	-0.3208
Op-1 1015	0.300	0.0620	4.84	.0000	0.4029	0.1972
Op-2 1015	-0.050	0.1226	-0.41	.6832	0.1532	-0.2536
Op-1 1210	0.327	0.0518	6.31	.0000	0.4129	0.2410
Op-2 1210	0.060	0.1187	0.50	.6164	0.2566	-0.1373
Op-1 2210	-0.109	0.0565	-1.92	.0573	-0.0148	-0.2023
Op-2 2210	-0.059	0.1226	-0.48	.6331	0.1447	-0.2621

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2675	0.0547	4.893	.0000	0.3582	0.1768

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.3123	0.1331	2.35	.0208	0.5331	0.0915
Station 0910	0.3590	0.1310	2.74	.0072	0.5763	0.1417
Station 0915	0.3660	0.1374	2.66	.0089	0.5939	0.1381
Station 1015	0.3502	0.1374	2.55	.0122	0.5782	0.1223
Station 1210	0.2673	0.1295	2.06	.0414	0.4822	0.0525
Station 2210	-0.0499	0.1350	-0.37	.7125	0.1741	-0.2739

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.81	2.00	1.09	0.54
0611 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
0910 Op-1	19	0.16	1.00	0.064	0.29	0.02	0.68	2.00	0.96	0.41
0910 Op-2	5	0.25	0.50	0.079	0.47	0.03	-0.10	0.50	0.18	-0.38
0915 Op-1	15	0.15	0.75	0.064	0.29	0.01	0.63	2.50	1.01	0.26
0915 Op-2	4	0.19	0.25	0.063	0.39	-0.01	-0.13	0.50	0.27	-0.52
1015 Op-1	15	0.05	0.25	0.027	0.11	-0.01	0.73	1.75	1.05	0.42
1015 Op-2	4	0.25	1.00	0.250	1.05	-0.55	-0.19	1.25	0.69	-1.07
1210 Op-1	20	0.01	0.25	0.013	0.04	-0.01	0.80	2.00	1.08	0.52
1210 Op-2	5	0.00	0.00	0.000	.	.	0.15	0.50	0.43	-0.13
2210 Op-1	17	1.73	7.25	0.441	2.67	0.80	-0.83	7.00	0.01	-1.68
2210 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.00	0.50	0.32	-0.32

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.81	2.00	0.132	1.09	0.54
Op-2	5	0.15	0.50	0.100	0.43	-0.13

Analysis of Variance for SAQ for 0615 - Serpulidae unid.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	5.04	0.0269
SEASON	1	102.000	1.75	0.1890
STATION	5	102.000	2.02	0.0816
PERIOD*SEASON	1	102.000	0.29	0.5933
STATION*PERIOD	5	102.000	2.48	0.0366
STATION*SEASON	5	102.000	0.68	0.6416
PERIOD*STATION*SEASON	5	102.000	1.91	0.0993

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.04	3.94	0.7210	0.6285	0.5651
STATION*PERIOD	12.40	7.16	0.8490	0.6173	0.1275

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.1530	0.5379	2.144	.0344
Period in FC	0.1721	0.2429	0.709	.4802
Period in FC-S	0.3776	0.2483	1.521	.1314
Period in FC-W	-0.0334	0.4176	-0.080	.9364
Period in DC-S	1.2636	0.5297	2.386	.0189
Period in DC-W	1.0424	0.9363	1.113	.2682

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.274	0.0421	-6.51	.0000	-0.2039	-0.3436
Period Op-2	-0.495	0.0889	-5.56	.0000	-0.3470	-0.6422
Op-1 0611	-0.279	0.0941	-2.96	.0038	-0.1226	-0.4349
Op-2 0611	-0.999	0.2201	-4.54	.0000	-0.6335	-1.3641
Op-1 0910	-0.171	0.1003	-1.70	.0913	-0.0045	-0.3375
Op-2 0910	-0.669	0.2131	-3.14	.0022	-0.3153	-1.0228
Op-1 0915	-0.563	0.1128	-4.99	.0000	-0.3756	-0.7500
Op-2 0915	-0.151	0.2201	-0.68	.4956	0.2148	-0.5158
Op-1 1015	-0.101	0.1128	-0.89	.3730	0.0863	-0.2881
Op-2 1015	-0.274	0.2201	-1.24	.2165	0.0916	-0.6390
Op-1 1210	-0.126	0.0941	-1.34	.1842	0.0304	-0.2819
Op-2 1210	-0.300	0.2131	-1.41	.1620	0.0535	-0.6539
Op-1 2210	-0.403	0.1028	-3.92	.0002	-0.2327	-0.5740
Op-2 2210	-0.575	0.2201	-2.61	.0103	-0.2101	-0.9407

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2209	0.0984	2.245	.0269	0.3841	0.0576

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.7200	0.2393	3.01	.0033	1.1173	0.3228
Station 0910	0.4981	0.2355	2.11	.0369	0.8890	0.1071
Station 0915	-0.4123	0.2473	-1.67	.0985	-0.0018	-0.8228
Station 1015	0.1728	0.2473	0.70	.4863	0.5833	-0.2377
Station 1210	0.1744	0.2329	0.75	.4557	0.5610	-0.2122
Station 2210	0.1721	0.2429	0.71	.4802	0.5753	-0.2311

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	1.66	9.00	0.552	2.82	0.50	-1.34	7.75	-0.32	-2.36
0611 Op-2	4	5.06	15.50	3.542	16.33	-6.21	-5.06	15.50	6.21	-16.33
0910 Op-1	18	0.69	2.50	0.207	1.13	0.26	-0.36	4.25	0.10	-0.82
0910 Op-2	5	4.95	20.00	3.800	15.50	-5.60	-4.95	20.00	5.60	-15.50
0915 Op-1	14	2.20	9.50	0.756	3.83	0.56	-1.93	10.00	-0.32	-3.54
0915 Op-2	4	0.50	1.50	0.354	1.63	-0.63	-0.50	1.50	0.63	-1.63
1015 Op-1	14	0.52	2.00	0.204	0.96	0.08	-0.25	2.25	0.06	-0.56
1015 Op-2	4	0.88	2.75	0.633	2.89	-1.14	-0.88	2.75	1.14	-2.89
1210 Op-1	19	0.57	3.75	0.222	1.03	0.10	-0.25	6.00	0.31	-0.81
1210 Op-2	5	0.70	1.75	0.348	1.67	-0.27	-0.70	1.75	0.27	-1.67
2210 Op-1	16	1.94	8.50	0.635	3.29	0.58	-1.67	8.50	-0.40	-2.94
2210 Op-2	4	3.06	9.50	2.315	10.43	-4.30	-3.06	9.50	4.30	-10.43

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.32	2.25	0.160	0.65	-0.02
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SAQ for 0318 - Serpulorbis squamigerus

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	7.48	0.0074
SEASON	1	102.000	0.03	0.8736
STATION	5	102.000	1.06	0.3886
PERIOD*SEASON	1	102.000	0.67	0.4139
STATION*PERIOD	5	102.000	0.37	0.8674
STATION*SEASON	5	102.000	0.30	0.9119
PERIOD*STATION*SEASON	5	102.000	0.31	0.9039

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.48	6.33	0.8580	0.8036	0.9122
STATION*PERIOD	1.86	0.00	0.2336	.	0.1255

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.1704	0.4831	2.423	.0172
Period in FC	0.2790	0.2182	1.279	.2039
Period in FC-S	0.4295	0.2230	1.926	.0568
Period in FC-W	0.1284	0.3750	0.342	.7328
Period in DC-S	1.4547	0.4757	3.058	.0028
Period in DC-W	0.8862	0.8409	1.054	.2945

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.108	0.0378	2.85	.0053	0.1703	0.0449
Period Op-2	-0.134	0.0798	-1.68	.0965	-0.0014	-0.2665
Op-1 0611	0.219	0.0845	2.60	.0109	0.3595	0.0790
Op-2 0611	-0.016	0.1977	-0.08	.9350	0.3119	-0.3442
Op-1 0910	0.307	0.0901	3.40	.0009	0.4562	0.1571
Op-2 0910	-0.138	0.1914	-0.72	.4732	0.1799	-0.4555
Op-1 0915	-0.007	0.1013	-0.07	.9474	0.1614	-0.1748
Op-2 0915	-0.046	0.1977	-0.23	.8184	0.2826	-0.3736
Op-1 1015	0.159	0.1013	1.57	.1201	0.3268	-0.0094
Op-2 1015	-0.104	0.1977	-0.53	.5992	0.2239	-0.4323
Op-1 1210	0.026	0.0845	0.31	.7568	0.1665	-0.1140
Op-2 1210	-0.163	0.1914	-0.85	.3974	0.1550	-0.4803
Op-1 2210	-0.059	0.0923	-0.63	.5274	0.0947	-0.2118
Op-2 2210	-0.338	0.1977	-1.71	.0908	-0.0094	-0.6656

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2416	0.0883	2.735	.0074	0.3882	0.0949

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.2354	0.2149	1.10	.2761	0.5922	-0.1214
Station 0910	0.4444	0.2115	2.10	.0381	0.7955	0.0933
Station 0915	0.0388	0.2221	0.17	.8616	0.4074	-0.3298
Station 1015	0.2629	0.2221	1.18	.2392	0.6316	-0.1057
Station 1210	0.1889	0.2092	0.90	.3688	0.5361	-0.1584
Station 2210	0.2790	0.2182	1.28	.2039	0.6411	-0.0832

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	2.87	19.75	1.099	5.18	0.56	2.89	30.25	5.82	-0.03
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	-0.06	0.25	0.14	-0.26
0910 Op-1	18	1.54	6.50	0.435	2.46	0.62	3.57	26.50	6.55	0.59
0910 Op-2	5	1.00	3.50	0.666	2.85	-0.85	-1.00	3.50	0.85	-2.85
0915 Op-1	14	2.82	10.25	0.709	4.35	1.29	-0.02	7.50	1.29	-1.32
0915 Op-2	4	0.19	0.50	0.120	0.57	-0.19	-0.19	0.50	0.19	-0.57
1015 Op-1	14	2.50	14.75	1.031	4.73	0.27	0.30	15.75	2.49	-1.88
1015 Op-2	4	0.50	1.25	0.270	1.36	-0.36	-0.50	1.25	0.36	-1.36
1210 Op-1	19	6.42	27.50	1.799	10.20	2.64	-0.66	33.50	2.66	-3.98
1210 Op-2	5	0.25	1.00	0.194	0.79	-0.29	-0.25	1.00	0.29	-0.79
2210 Op-1	16	4.42	9.50	0.729	5.98	2.87	0.77	25.75	4.04	-2.51
2210 Op-2	4	1.88	4.50	1.008	5.08	-1.33	-1.88	4.50	1.33	-5.08

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	5.76	28.00	1.567	9.06	2.47
Op-2	5	0.00	0.00	0.000	.	.

Analysis of Variance for SFQ for 0667 - Sipuncula unid.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	5.16	0.0251
SEASON	1	108.000	14.41	0.0002
STATION	5	108.000	10.17	0.0000
PERIOD*SEASON	1	108.000	0.15	0.7011
STATION*PERIOD	5	108.000	0.63	0.6790
STATION*SEASON	5	108.000	0.19	0.9673
PERIOD*STATION*SEASON	5	108.000	0.20	0.9618

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	5.16	4.06	0.7299	0.6401	0.7471
STATION*PERIOD	3.14	0.00	0.3337	.	0.2038

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-1.3189	0.6430	-2.051	.0427
Period in FC	-0.2836	0.2903	-0.977	.3309
Period in FC-S	-0.4853	0.2948	-1.646	.1026
Period in FC-W	-0.0818	0.5003	-0.163	.8705
Period in DC-S	-0.8456	0.6288	-1.345	.1816
Period in DC-W	-1.7923	1.1217	-1.598	.1130

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.280	0.0498	-5.62	.0000	-0.1973	-0.3625
Period Op-2	-0.013	0.1065	-0.12	.9044	0.1639	-0.1895
Op-1 0611	0.283	0.1114	2.54	.0125	0.4679	0.0982
Op-2 0611	0.272	0.2637	1.03	.3045	0.7095	-0.1654
Op-1 0910	-0.066	0.1190	-0.55	.5808	0.1315	-0.2633
Op-2 0910	0.272	0.2553	1.07	.2890	0.6956	-0.1515
Op-1 0915	0.059	0.1333	0.45	.6570	0.2806	-0.1618
Op-2 0915	0.142	0.2637	0.54	.5904	0.5798	-0.2951
Op-1 1015	-0.456	0.1333	-3.42	.0009	-0.2345	-0.6769
Op-2 1015	-0.181	0.2637	-0.69	.4930	0.2561	-0.6188
Op-1 1210	-0.363	0.1114	-3.25	.0015	-0.1778	-0.5475
Op-2 1210	0.272	0.2553	1.07	.2890	0.6956	-0.1515
Op-1 2210	-1.138	0.1215	-9.36	.0000	-0.9359	-1.3392
Op-2 2210	-0.854	0.2637	-3.24	.0016	-0.4166	-1.2914

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2671	0.1176	-2.271	.0251	-0.0720	-0.4622

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0110	0.2862	0.04	.9694	0.4859	-0.4639
Station 0910	-0.3379	0.2816	-1.20	.2328	0.1293	-0.8052
Station 0915	-0.0830	0.2955	-0.28	.7794	0.4072	-0.5732
Station 1015	-0.2744	0.2955	-0.93	.3551	0.2158	-0.7646
Station 1210	-0.6347	0.2785	-2.28	.0247	-0.1725	-1.0968
Station 2210	-0.2836	0.2903	-0.98	.3309	0.1981	-0.7652

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.04	0.25	0.020	0.08	-0.01	0.15	0.75	0.25	0.05
0611 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
0910 Op-1	19	0.38	2.00	0.121	0.64	0.13	-0.21	2.50	0.07	-0.50
0910 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
0915 Op-1	15	0.20	0.50	0.050	0.31	0.09	-0.02	1.50	0.20	-0.23
0915 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.06	0.75	0.44	-0.56
1015 Op-1	15	0.85	2.50	0.176	1.23	0.47	-0.67	2.75	-0.30	-1.04
1015 Op-2	4	0.19	0.25	0.063	0.39	-0.01	-0.13	0.25	0.10	-0.35
1210 Op-1	20	0.66	2.00	0.122	0.92	0.41	-0.48	2.50	-0.19	-0.76
1210 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
2210 Op-1	17	3.88	7.00	0.469	4.88	2.89	-3.71	7.25	-2.64	-4.77
2210 Op-2	4	1.81	3.75	0.773	4.27	-0.65	-1.75	3.75	0.70	-4.20

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.19	1.00	0.057	0.31	0.07
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SFQ for 1120 - Spirorbidae

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	4.33	0.0398
SEASON	1	108.000	5.69	0.0188
STATION	5	108.000	1.20	0.3156
PERIOD*SEASON	1	108.000	3.88	0.0513
STATION*PERIOD	5	108.000	0.20	0.9620
STATION*SEASON	5	108.000	0.21	0.9574
PERIOD*STATION*SEASON	5	108.000	0.14	0.9816

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.33	3.25	0.6641	0.5587	0.6876
STATION*PERIOD	1.00	0.00	0.1694	.	0.1950

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3118	0.1698	-1.836	.0691
Period in FC	-0.0760	0.0767	-0.992	.3236
Period in FC-S	-0.0006	0.0779	-0.007	.9942
Period in FC-W	-0.1515	0.1321	-1.147	.2541
Period in DC-S	-0.0200	0.1661	-0.120	.9044
Period in DC-W	-0.6035	0.2963	-2.037	.0441

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.052	0.0132	-3.92	.0002	-0.0297	-0.0734
Period Op-2	0.013	0.0281	0.47	.6422	0.0598	-0.0336
Op-1 0611	0.047	0.0294	1.58	.1159	0.0955	-0.0022
Op-2 0611	0.048	0.0696	0.70	.4881	0.1640	-0.0671
Op-1 0910	-0.062	0.0314	-1.98	.0505	-0.0100	-0.1143
Op-2 0910	-0.001	0.0674	-0.02	.9848	0.1106	-0.1132
Op-1 0915	-0.071	0.0352	-2.02	.0455	-0.0128	-0.1297
Op-2 0915	0.008	0.0696	0.11	.9093	0.1235	-0.1076
Op-1 1015	-0.055	0.0352	-1.56	.1209	0.0034	-0.1135
Op-2 1015	0.048	0.0696	0.70	.4881	0.1640	-0.0671
Op-1 1210	-0.110	0.0294	-3.75	.0003	-0.0616	-0.1592
Op-2 1210	-0.044	0.0674	-0.65	.5152	0.0678	-0.1559
Op-1 2210	-0.057	0.0321	-1.77	.0790	-0.0037	-0.1102
Op-2 2210	0.019	0.0696	0.27	.7843	0.1346	-0.0964

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0646	0.0311	-2.081	.0398	-0.0131	-0.1162

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0018	0.0756	-0.02	.9809	0.1236	-0.1272
Station 0910	-0.0609	0.0744	-0.82	.4151	0.0626	-0.1843
Station 0915	-0.0792	0.0780	-1.02	.3123	0.0503	-0.2087
Station 1015	-0.1035	0.0780	-1.33	.1875	0.0260	-0.2330
Station 1210	-0.0664	0.0736	-0.90	.3690	0.0557	-0.1884
Station 2210	-0.0760	0.0767	-0.99	.3236	0.0512	-0.2033

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.00	0.00	0.000	.	.	0.16	0.75	0.26	0.06
0611 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
0910 Op-1	19	0.46	3.00	0.159	0.79	0.13	-0.29	3.25	0.05	-0.63
0910 Op-2	5	0.25	1.00	0.194	0.79	-0.29	-0.20	1.25	0.40	-0.80
0915 Op-1	15	0.35	1.25	0.100	0.56	0.14	-0.23	0.75	-0.08	-0.39
0915 Op-2	4	0.19	0.75	0.188	0.78	-0.41	-0.13	1.00	0.56	-0.81
1015 Op-1	15	0.32	1.00	0.102	0.54	0.10	-0.20	1.00	-0.02	-0.38
1015 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
1210 Op-1	20	0.66	4.50	0.216	1.12	0.21	-0.50	4.50	-0.06	-0.94
1210 Op-2	5	0.25	0.50	0.112	0.56	-0.06	-0.20	0.50	0.14	-0.54
2210 Op-1	17	0.36	1.50	0.103	0.58	0.14	-0.20	1.75	0.01	-0.41
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.06	0.75	0.44	-0.56

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.16	0.75	0.049	0.26	0.06
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SAQ for ISPP - Spp. Inverts

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	4.57	0.0349
SEASON	1	102.000	7.53	0.0072
STATION	5	102.000	8.50	0.0000
PERIOD*SEASON	1	102.000	2.00	0.1599
STATION*PERIOD	5	102.000	1.66	0.1504
STATION*SEASON	5	102.000	0.25	0.9397
PERIOD*STATION*SEASON	5	102.000	0.14	0.9829

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.57	3.48	0.6840	0.5828	1.0000
STATION*PERIOD	8.31	3.15	0.6827	0.3340	0.1037

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.2422	0.1420	1.706	.0911
Period in FC	0.0908	0.0641	1.417	.1595
Period in FC-S	0.0956	0.0655	1.459	.1477
Period in FC-W	0.0861	0.1102	0.781	.4365
Period in DC-S	0.0169	0.1398	0.121	.9040
Period in DC-W	0.4674	0.2471	1.891	.0614

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.001	0.0111	0.09	.9265	0.0195	-0.0174
Period Op-2	-0.054	0.0235	-2.32	.0223	-0.0155	-0.0934
Op-1 0611	0.125	0.0248	5.04	.0000	0.1665	0.0840
Op-2 0611	-0.004	0.0581	-0.07	.9470	0.0926	-0.1003
Op-1 0910	0.085	0.0265	3.22	.0017	0.1291	0.0412
Op-2 0910	0.039	0.0562	0.69	.4898	0.1323	-0.0544
Op-1 0915	-0.070	0.0298	-2.34	.0214	-0.0201	-0.1189
Op-2 0915	-0.030	0.0581	-0.51	.6106	0.0668	-0.1261
Op-1 1015	-0.099	0.0298	-3.33	.0012	-0.0497	-0.1485
Op-2 1015	-0.247	0.0581	-4.26	.0000	-0.1508	-0.3437
Op-1 1210	0.004	0.0248	0.16	.8732	0.0452	-0.0372
Op-2 1210	0.045	0.0562	0.81	.4219	0.1387	-0.0480
Op-1 2210	-0.040	0.0271	-1.46	.1478	0.0055	-0.0846
Op-2 2210	-0.130	0.0581	-2.25	.0269	-0.0340	-0.2268

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0555	0.0260	2.138	.0349	0.0986	0.0124

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1291	0.0632	2.04	.0436	0.2340	0.0242
Station 0910	0.0462	0.0622	0.74	.4590	0.1494	-0.0570
Station 0915	-0.0399	0.0653	-0.61	.5426	0.0685	-0.1482
Station 1015	0.1481	0.0653	2.27	.0254	0.2564	0.0398
Station 1210	-0.0414	0.0615	-0.67	.5025	0.0607	-0.1434
Station 2210	0.0908	0.0641	1.42	.1595	0.1973	-0.0156

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	17.16	19.00	1.398	20.10	14.22	5.16	20.00	8.10	2.21
0611 Op-2	4	13.25	4.00	0.854	15.97	10.53	1.00	7.00	5.68	-3.68
0910 Op-1	18	18.33	17.00	1.060	20.57	16.10	3.78	18.00	5.92	1.64
0910 Op-2	5	13.80	11.00	2.083	19.58	8.02	1.80	9.00	6.31	-2.71
0915 Op-1	14	24.86	13.00	0.948	26.91	22.81	-3.21	18.00	-0.03	-6.39
0915 Op-2	4	14.25	8.00	1.652	19.51	8.99	0.00	7.00	5.03	-5.03
1015 Op-1	14	26.79	22.00	1.403	29.82	23.75	-5.14	19.00	-2.18	-8.10
1015 Op-2	4	24.50	12.00	2.598	32.77	16.23	-10.25	10.00	-3.33	-17.17
1210 Op-1	19	21.79	23.00	1.321	24.57	19.01	0.53	19.00	2.74	-1.68
1210 Op-2	5	12.60	11.00	1.939	17.98	7.22	3.00	8.00	6.83	-0.83
2210 Op-1	16	23.44	12.00	0.940	25.44	21.43	-1.56	18.00	1.08	-4.20
2210 Op-2	4	19.00	5.00	1.080	22.44	15.56	-4.75	1.00	-3.95	-5.55

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	22.32	16.00	0.940	24.29	20.34
Op-2	5	15.60	10.00	1.631	20.13	11.07

Analysis of Variance for SFQ for ISPP - Spp. Inverts Richness

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	10.50	0.0016
SEASON	1	108.000	16.31	0.0001
STATION	5	108.000	5.90	0.0001
PERIOD*SEASON	1	108.000	0.89	0.3487
STATION*PERIOD	5	108.000	2.30	0.0502
STATION*SEASON	5	108.000	0.71	0.6156
PERIOD*STATION*SEASON	5	108.000	0.64	0.6707

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	10.50	9.30	0.9423	0.9171	1.0000
STATION*PERIOD	11.48	6.27	0.8206	0.5621	0.1020

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4909	0.1319	-3.721	.0003
Period in FC	0.0219	0.0596	0.368	.7132
Period in FC-S	0.0317	0.0605	0.524	.6014
Period in FC-W	0.0122	0.1026	0.119	.9055
Period in DC-S	-0.3644	0.1290	-2.825	.0056
Period in DC-W	-0.6173	0.2301	-2.683	.0085

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.040	0.0102	3.87	.0002	0.0565	0.0226
Period Op-2	0.118	0.0219	5.39	.0000	0.1540	0.0815
Op-1 0611	0.125	0.0229	5.48	.0000	0.1633	0.0874
Op-2 0611	0.208	0.0541	3.84	.0002	0.2974	0.1179
Op-1 0910	0.054	0.0244	2.23	.0279	0.0949	0.0139
Op-2 0910	0.150	0.0524	2.87	.0049	0.2372	0.0634
Op-1 0915	-0.003	0.0274	-0.11	.9100	0.0423	-0.0485
Op-2 0915	0.009	0.0541	0.17	.8673	0.0988	-0.0807
Op-1 1015	-0.004	0.0274	-0.15	.8828	0.0413	-0.0494
Op-2 1015	0.063	0.0541	1.17	.2438	0.1531	-0.0263
Op-1 1210	0.037	0.0229	1.60	.1119	0.0746	-0.0013
Op-2 1210	0.270	0.0524	5.15	.0000	0.3566	0.1828
Op-1 2210	0.028	0.0249	1.13	.2611	0.0695	-0.0132
Op-2 2210	0.006	0.0541	0.11	.9087	0.0960	-0.0835

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0782	0.0241	-3.240	.0016	-0.0381	-0.1182

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0823	0.0587	-1.40	.1639	0.0151	-0.1797
Station 0910	-0.0959	0.0578	-1.66	.0999	-0.0000	-0.1917
Station 0915	-0.0122	0.0606	-0.20	.8414	0.0884	-0.1127
Station 1015	-0.0674	0.0606	-1.11	.2684	0.0331	-0.1680
Station 1210	-0.2331	0.0571	-4.08	.0001	-0.1383	-0.3279
Station 2210	0.0219	0.0596	0.37	.7132	0.1208	-0.0769

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	16.54	18.50	1.096	18.83	14.24	4.08	19.00	6.40	1.75
0611 Op-2	4	11.63	11.00	2.283	18.89	4.36	6.19	8.25	11.93	0.45
0910 Op-1	19	18.62	13.75	0.762	20.22	17.02	1.91	18.00	3.90	-0.09
0910 Op-2	5	13.45	5.50	0.913	15.99	10.91	5.05	4.75	7.22	2.88
0915 Op-1	15	21.72	10.75	0.871	23.59	19.85	-1.32	17.25	1.19	-3.82
0915 Op-2	4	18.38	8.25	1.916	24.47	12.28	-0.56	7.25	4.64	-5.76
1015 Op-1	15	21.63	16.00	1.182	24.17	19.10	-1.23	18.00	1.75	-4.21
1015 Op-2	4	16.88	11.25	2.425	24.59	9.16	0.94	9.00	7.71	-5.83
1210 Op-1	20	20.03	16.00	0.988	22.09	17.96	0.59	17.50	2.74	-1.57
1210 Op-2	5	12.50	10.25	2.081	18.28	6.72	6.00	12.25	12.33	-0.33
2210 Op-1	17	19.94	8.50	0.658	21.34	18.55	0.71	11.00	2.26	-0.85
2210 Op-2	4	18.31	2.00	0.413	19.63	17.00	-0.50	7.00	4.26	-5.26

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	20.61	11.25	0.515	21.69	19.54
Op-2	5	18.50	6.75	1.230	21.91	15.09

Analysis of Variance for SPQ for 0427 - Strongylocentrotus purpuratus

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	1.21	0.2738
SEASON	1	108.000	1.19	0.2776
STATION	5	108.000	6.79	0.0000
PERIOD*SEASON	1	108.000	2.41	0.1231
STATION*PERIOD	5	108.000	0.86	0.5134
STATION*SEASON	5	108.000	0.79	0.5574
PERIOD*STATION*SEASON	5	108.000	0.51	0.7673

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	1.21	0.19	0.2937	0.1313	0.9788
STATION*PERIOD	4.28	0.00	0.4213	.	0.2733

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.1437	0.3195	0.450	.6539
Period in FC	0.2420	0.1443	1.677	.0964
Period in FC-S	0.2610	0.1465	1.782	.0776
Period in FC-W	0.2229	0.2486	0.897	.3718
Period in DC-S	-0.4201	0.3125	-1.345	.1816
Period in DC-W	0.7075	0.5574	1.269	.2071

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.353	0.0247	-14.27	.0000	-0.3120	-0.3941
Period Op-2	-0.417	0.0529	-7.88	.0000	-0.3295	-0.5051
Op-1 0611	-0.143	0.0554	-2.59	.0109	-0.0516	-0.2353
Op-2 0611	-0.151	0.1310	-1.15	.2532	0.0669	-0.3679
Op-1 0910	-0.435	0.0591	-7.37	.0000	-0.3373	-0.5335
Op-2 0910	-0.437	0.1269	-3.44	.0008	-0.2263	-0.6472
Op-1 0915	-0.758	0.0662	-11.44	.0000	-0.6478	-0.8676
Op-2 0915	-0.624	0.1310	-4.76	.0000	-0.4066	-0.8414
Op-1 1015	-0.374	0.0662	-5.64	.0000	-0.2638	-0.4836
Op-2 1015	-0.543	0.1310	-4.15	.0001	-0.3261	-0.7608
Op-1 1210	-0.221	0.0554	-3.99	.0001	-0.1291	-0.3128
Op-2 1210	-0.320	0.1269	-2.52	.0130	-0.1098	-0.5307
Op-1 2210	-0.187	0.0604	-3.10	.0025	-0.0869	-0.2873
Op-2 2210	-0.429	0.1310	-3.27	.0014	-0.2116	-0.6464

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0643	0.0584	1.100	.2738	0.1612	-0.0327

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0070	0.1422	0.05	.9606	0.2430	-0.2289
Station 0910	0.0013	0.1400	0.01	.9925	0.2335	-0.2309
Station 0915	-0.1337	0.1468	-0.91	.3645	0.1099	-0.3773
Station 1015	0.1698	0.1468	1.16	.2501	0.4133	-0.0738
Station 1210	0.0992	0.1384	0.72	.4749	0.3289	-0.1304
Station 2210	0.2420	0.1443	1.68	.0964	0.4813	0.0026

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.31	1.50	0.096	0.51	0.11	-0.25	1.75	-0.03	-0.47
0611 Op-2	4	0.19	0.50	0.120	0.57	-0.19	-0.13	0.50	0.27	-0.52
0910 Op-1	19	1.28	4.50	0.263	1.83	0.72	-1.21	4.50	-0.65	-1.77
0910 Op-2	5	1.05	2.00	0.348	2.02	0.08	-1.00	2.00	-0.04	-1.96
0915 Op-1	15	3.00	4.50	0.393	3.84	2.16	-2.93	4.25	-2.11	-3.76
0915 Op-2	4	1.69	1.75	0.400	2.96	0.41	-1.63	1.75	-0.39	-2.86
1015 Op-1	15	0.83	2.00	0.168	1.19	0.47	-0.77	2.50	-0.37	-1.16
1015 Op-2	4	1.31	1.50	0.344	2.41	0.22	-1.25	1.25	-0.28	-2.22
1210 Op-1	20	0.79	3.25	0.180	1.16	0.41	-0.73	3.00	-0.36	-1.09
1210 Op-2	5	0.70	1.50	0.310	1.56	-0.16	-0.65	1.50	0.16	-1.46
2210 Op-1	17	0.47	1.50	0.113	0.70	0.23	-0.39	1.75	-0.14	-0.65
2210 Op-2	4	1.25	2.25	0.489	2.81	-0.31	-1.19	2.00	0.20	-2.58

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.06	0.50	0.031	0.13	-0.00
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SAQ for 0479 - Styela spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source dF	Error df	F-value	Prob.
PERIOD	1	102.000	3.49	0.0645
SEASON	1	102.000	0.36	0.5480
STATION	5	102.000	0.49	0.7828
PERIOD*SEASON	1	102.000	0.35	0.5537
STATION*PERIOD	5	102.000	0.02	0.9998
STATION*SEASON	5	102.000	0.08	0.9951
PERIOD*STATION*SEASON	5	102.000	0.09	0.9935

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	3.49	2.43	0.5842	0.4618	0.1579
STATION*PERIOD	0.10	0.00	0.1064	.	0.1183

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	3.1170	1.7450	1.786	.0770
Period in FC	0.4621	0.7881	0.586	.5589
Period in FC-S	0.4242	0.8055	0.527	.5996
Period in FC-W	0.5000	1.3547	0.369	.7128
Period in DC-S	2.0173	1.7184	1.174	.2432
Period in DC-W	4.2167	3.0377	1.388	.1681

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.621	0.1365	4.55	.0000	0.8474	0.3942
Period Op-2	0.024	0.2884	0.08	.9330	0.5031	-0.4545
Op-1 0611	0.878	0.3052	2.88	.0049	1.3848	0.3716
Op-2 0611	0.083	0.7140	0.12	.9073	1.2685	-1.1019
Op-1 0910	0.785	0.3254	2.41	.0177	1.3247	0.2445
Op-2 0910	0.219	0.6913	0.32	.7523	1.3663	-0.9288
Op-1 0915	0.656	0.3658	1.79	.0758	1.2635	0.0490
Op-2 0915	0.083	0.7140	0.12	.9073	1.2685	-1.1019
Op-1 1015	0.069	0.3658	0.19	.8513	0.6760	-0.5385
Op-2 1015	-0.542	0.7140	-0.76	.4498	0.6435	-1.7269
Op-1 1210	0.667	0.3052	2.18	.0312	1.1732	0.1601
Op-2 1210	0.094	0.6913	0.14	.8924	1.2413	-1.0538
Op-1 2210	0.670	0.3335	2.01	.0470	1.2241	0.1169
Op-2 2210	0.208	0.7140	0.29	.7710	1.3935	-0.9769

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5965	0.3191	1.869	.0645	1.1262	0.0668

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.7949	0.7765	1.02	.3084	2.0838	-0.4940
Station 0910	0.5659	0.7641	0.74	.4606	1.8342	-0.7025
Station 0915	0.5729	0.8023	0.71	.4768	1.9046	-0.7588
Station 1015	0.6104	0.8023	0.76	.4485	1.9421	-0.7213
Station 1210	0.5729	0.7557	0.76	.4501	1.8273	-0.6815
Station 2210	0.4621	0.7881	0.59	.5589	1.7702	-0.8460

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.29	3.25	0.189	0.69	-0.11	0.80	4.00	1.34	0.26
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.25	1.00	0.98	-0.48
0910 Op-1	18	0.07	0.50	0.039	0.15	-0.01	0.89	5.75	1.61	0.17
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.35	0.75	0.77	-0.07
0915 Op-1	14	0.00	0.00	0.000	.	.	0.64	3.75	1.22	0.07
0915 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.25	1.00	0.98	-0.48
1015 Op-1	14	0.57	2.00	0.160	0.92	0.23	0.07	4.75	0.72	-0.58
1015 Op-2	4	0.88	1.50	0.375	2.07	-0.32	-0.56	1.00	0.12	-1.24
1210 Op-1	19	0.49	2.75	0.155	0.81	0.16	0.61	6.75	1.35	-0.14
1210 Op-2	5	0.25	1.00	0.194	0.79	-0.29	0.15	0.75	0.57	-0.27
2210 Op-1	16	0.08	0.50	0.044	0.17	-0.02	0.73	5.50	1.43	0.04
2210 Op-2	4	0.00	0.00	0.000	.	.	0.31	0.75	0.91	-0.28

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	1.09	5.75	0.358	1.84	0.34
Op-2	5	0.40	0.75	0.170	0.87	-0.07

Analysis of Variance for SFQ for 0319 - Tegula brunnea

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	7.71	0.0065
SEASON	1	108.000	3.56	0.0619
STATION	5	108.000	3.60	0.0048
PERIOD*SEASON	1	108.000	0.33	0.5652
STATION*PERIOD	5	108.000	0.41	0.8394
STATION*SEASON	5	108.000	0.53	0.7558
PERIOD*STATION*SEASON	5	108.000	0.19	0.9657

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	7.71	6.56	0.8673	0.8163	0.5980
STATION*PERIOD	2.06	0.00	0.2498	.	0.1262

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-2.6596	0.9451	-2.814	.0058
Period in FC	-0.2194	0.4268	-0.514	.6082
Period in FC-S	0.0571	0.4333	0.132	.8954
Period in FC-W	-0.4959	0.7354	-0.674	.5015
Period in DC-S	-2.3378	0.9244	-2.529	.0129
Period in DC-W	-2.9814	1.6489	-1.808	.0734

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.732	0.0732	10.00	.0000	0.8539	0.6109
Period Op-2	1.212	0.1566	7.74	.0000	1.4720	0.9525
Op-1 0611	1.265	0.1638	7.72	.0000	1.5362	0.9928
Op-2 0611	1.583	0.3876	4.09	.0001	2.2264	0.9404
Op-1 0910	0.743	0.1749	4.25	.0000	1.0329	0.4527
Op-2 0910	1.062	0.3753	2.83	.0056	1.6845	0.4393
Op-1 0915	0.958	0.1960	4.89	.0000	1.2830	0.6327
Op-2 0915	1.383	0.3876	3.57	.0005	2.0257	0.7397
Op-1 1015	0.801	0.1960	4.09	.0001	1.1260	0.4758
Op-2 1015	1.473	0.3876	3.80	.0002	2.1164	0.8304
Op-1 1210	0.500	0.1638	3.06	.0028	0.7721	0.2286
Op-2 1210	1.425	0.3753	3.80	.0002	2.0473	0.8022
Op-1 2210	0.128	0.1787	0.72	.4755	0.4243	-0.1685
Op-2 2210	0.347	0.3876	0.90	.3722	0.9903	-0.2957

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.4798	0.1728	-2.776	.0065	-0.1931	-0.7666

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.3188	0.4208	-0.76	.4502	0.3792	-1.0169
Station 0910	-0.3191	0.4140	-0.77	.4426	0.3678	-1.0059
Station 0915	-0.4249	0.4343	-0.98	.3301	0.2957	-1.1454
Station 1015	-0.6724	0.4343	-1.55	.1245	0.0481	-1.3930
Station 1210	-0.9244	0.4094	-2.26	.0260	-0.2451	-1.6037
Station 2210	-0.2194	0.4268	-0.51	.6082	0.4886	-0.9274

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.49	4.75	0.251	1.01	-0.04	4.29	11.50	5.83	2.74
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	4.69	5.00	7.99	1.39
0910 Op-1	19	1.80	9.00	0.604	3.07	0.53	3.11	15.00	5.21	1.00
0910 Op-2	5	0.50	1.25	0.237	1.16	-0.16	4.85	5.00	7.35	2.35
0915 Op-1	15	1.30	4.25	0.343	2.03	0.57	3.93	11.50	6.06	1.81
0915 Op-2	4	0.44	1.50	0.359	1.58	-0.71	4.31	5.25	7.96	0.66
1015 Op-1	15	1.07	4.25	0.282	1.67	0.46	4.17	10.00	6.12	2.21
1015 Op-2	4	0.38	1.50	0.375	1.57	-0.82	4.38	5.00	7.88	0.87
1210 Op-1	20	2.45	12.75	0.683	3.88	1.02	2.33	13.25	4.19	0.46
1210 Op-2	5	0.70	3.00	0.583	2.32	-0.92	4.65	5.00	6.89	2.41
2210 Op-1	17	4.15	7.75	0.640	5.50	2.79	0.66	13.00	2.84	-1.51
2210 Op-2	4	3.50	5.75	1.220	7.38	-0.38	1.25	9.00	7.75	-5.25

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	4.78	9.00	0.626	6.08	3.47
Op-2	5	5.35	5.75	1.002	8.13	2.57

Analysis of Variance for SAQ for 0360 - Tegula montereyi

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	6.34	0.0134
SEASON	1	102.000	6.32	0.0135
STATION	5	102.000	0.45	0.8153
PERIOD*SEASON	1	102.000	0.14	0.7057
STATION*PERIOD	5	102.000	0.24	0.9445
STATION*SEASON	5	102.000	0.21	0.9581
PERIOD*STATION*SEASON	5	102.000	0.35	0.8816

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	6.34	5.21	0.8039	0.7334	0.3377
STATION*PERIOD	1.19	0.00	0.1836	.	0.1617

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-5.2962	2.5996	-2.037	.0442
Period in FC	-1.8841	1.1740	-1.605	.1116
Period in FC-S	-1.0682	1.2000	-0.890	.3755
Period in FC-W	-2.7000	2.0181	-1.338	.1839
Period in DC-S	-7.1923	2.5599	-2.810	.0059
Period in DC-W	-3.4000	4.5252	-0.751	.4542

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.509	0.2034	-2.50	.0139	-0.1716	-0.8468
Period Op-2	0.687	0.4297	1.60	.1127	1.4008	-0.0258
Op-1 0611	-1.058	0.4546	-2.33	.0220	-0.3030	-1.8124
Op-2 0611	0.500	1.0637	0.47	.6393	2.2656	-1.2656
Op-1 0910	0.040	0.4847	0.08	.9338	0.8450	-0.7643
Op-2 0910	1.125	1.0299	1.09	.2772	2.8345	-0.5845
Op-1 0915	-0.000	0.5450	-0.00	1.000	0.9046	-0.9046
Op-2 0915	0.500	1.0637	0.47	.6393	2.2656	-1.2656
Op-1 1015	-0.187	0.5450	-0.34	.7315	0.7171	-1.0921
Op-2 1015	0.375	1.0637	0.35	.7251	2.1406	-1.3906
Op-1 1210	-0.466	0.4546	-1.03	.3074	0.2883	-1.2210
Op-2 1210	1.125	1.0299	1.09	.2772	2.8345	-0.5845
Op-1 2210	-1.384	0.4968	-2.79	.0064	-0.5594	-2.2088
Op-2 2210	0.500	1.0637	0.47	.6393	2.2656	-1.2656

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-1.1967	0.4754	-2.517	.0134	-0.4076	-1.9858

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-1.5577	1.1567	-1.35	.1811	0.3624	-3.4778
Station 0910	-1.0846	1.1383	-0.95	.3429	0.8048	-2.9740
Station 0915	-0.5000	1.1951	-0.42	.6766	1.4838	-2.4838
Station 1015	-0.5625	1.1951	-0.47	.6389	1.4213	-2.5463
Station 1210	-1.5913	1.1258	-1.41	.1605	0.2773	-3.4600
Station 2210	-1.8841	1.1740	-1.60	.1116	0.0646	-3.8328

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.99	11.25	.0.671	2.40	-0.42	-0.71	13.50	0.73	-2.15
0611 Op-2	4	0.00	0.00	0.000	.	.	0.75	3.00	3.14	-1.64
0910 Op-1	18	0.17	1.50	0.097	0.37	-0.04	0.13	3.00	0.47	-0.22
0910 Op-2	5	0.00	0.00	0.000	.	.	1.80	6.00	5.13	-1.53
0915 Op-1	14	0.27	2.25	0.169	0.63	-0.10	0.00	3.75	0.48	-0.48
0915 Op-2	4	0.00	0.00	0.000	.	.	0.75	3.00	3.14	-1.64
1015 Op-1	14	0.38	1.50	0.152	0.70	0.05	-0.11	3.75	0.37	-0.58
1015 Op-2	4	0.19	0.75	0.188	0.78	-0.41	0.56	3.75	3.21	-2.08
1210 Op-1	19	0.59	5.25	0.322	1.27	-0.09	-0.32	7.50	0.43	-1.06
1210 Op-2	5	0.00	0.00	0.000	.	.	1.80	6.00	5.13	-1.53
2210 Op-1	16	1.17	7.50	0.530	2.30	0.04	-0.89	9.75	0.37	-2.15
2210 Op-2	4	0.00	0.00	0.000	.	.	0.75	3.00	3.14	-1.64

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.28	2.25	0.131	0.55	0.00
Op-2	5	1.80	6.00	1.200	5.13	-1.53

Analysis of Variance for SAQ for 0491 - Tethya aurantia

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	102.000	4.15	0.0442
SEASON	1	102.000	3.87	0.0518
STATION	5	102.000	20.31	0.0000
PERIOD*SEASON	1	102.000	0.36	0.5497
STATION*PERIOD	5	102.000	2.60	0.0293
STATION*SEASON	5	102.000	0.15	0.9785
PERIOD*STATION*SEASON	5	102.000	0.29	0.9162

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.15	3.07	0.6479	0.5386	0.9633
STATION*PERIOD	13.02	7.77	0.8663	0.6528	0.6781

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.3355	0.1925	-1.743	.0843
Period in FC	-0.0948	0.0869	-1.091	.2780
Period in FC-S	-0.0146	0.0888	-0.164	.8700
Period in FC-W	-0.1750	0.1494	-1.171	.2442
Period in DC-S	-0.2890	0.1895	-1.525	.1304
Period in DC-W	-0.3821	0.3350	-1.140	.2568

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.177	0.0151	-11.78	.0000	-0.1524	-0.2023
Period Op-2	-0.106	0.0318	-3.32	.0012	-0.0528	-0.1584
Op-1 0611	-0.025	0.0337	-0.75	.4578	0.0308	-0.0810
Op-2 0611	0.000	0.0787	0.00	1.000	0.1307	-0.1307
Op-1 0910	0.014	0.0359	0.39	.6941	0.0737	-0.0454
Op-2 0910	0.022	0.0762	0.29	.7734	0.1486	-0.1046
Op-1 0915	-0.408	0.0403	-10.11	.0000	-0.3409	-0.4748
Op-2 0915	-0.531	0.0787	-6.74	.0000	-0.4003	-0.6618
Op-1 1015	-0.450	0.0403	-11.16	.0000	-0.3832	-0.5172
Op-2 1015	-0.147	0.0787	-1.86	.0653	-0.0160	-0.2775
Op-1 1210	-0.100	0.0337	-2.98	.0036	-0.0445	-0.1562
Op-2 1210	0.022	0.0762	0.29	.7734	0.1486	-0.1046
Op-1 2210	-0.095	0.0368	-2.58	.0114	-0.0337	-0.1559
Op-2 2210	0.000	0.0787	0.00	1.000	0.1307	-0.1307

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0717	0.0352	-2.038	.0442	-0.0133	-0.1301

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0251	0.0856	-0.29	.7702	0.1171	-0.1672
Station 0910	-0.0079	0.0843	-0.09	.9259	0.1320	-0.1477
Station 0915	0.1232	0.0885	1.39	.1668	0.2701	-0.0237
Station 1015	-0.3034	0.0885	-3.43	.0009	-0.1566	-0.4503
Station 1210	-0.1224	0.0833	-1.47	.1451	0.0160	-0.2607
Station 2210	-0.0948	0.0869	-1.09	.2780	0.0495	-0.2391

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	19	0.09	1.25	0.069	0.24	-0.05	-0.03	0.50	0.03	-0.08
0611 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
0910 Op-1	18	0.01	0.25	0.014	0.04	-0.02	0.06	1.50	0.21	-0.10
0910 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
0915 Op-1	14	0.80	1.25	0.095	1.01	0.60	-0.80	1.25	-0.60	-1.01
0915 Op-2	4	1.13	1.00	0.239	1.89	0.36	-1.13	1.00	-0.36	-1.89
1015 Op-1	14	0.91	1.25	0.107	1.14	0.68	-0.91	1.25	-0.68	-1.14
1015 Op-2	4	0.19	0.25	0.063	0.39	-0.01	-0.19	0.25	0.01	-0.39
1210 Op-1	19	0.16	1.00	0.058	0.28	0.04	-0.09	2.00	0.08	-0.27
1210 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
2210 Op-1	16	0.16	0.75	0.055	0.27	0.04	-0.08	2.00	0.14	-0.30
2210 Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	19	0.07	1.25	0.066	0.20	-0.07
Op-2	5	0.05	0.25	0.050	0.19	-0.09

Analysis of Variance for SFQ for 0404 - Tetraclita rubescens

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	8.90	0.0035
SEASON	1	108.000	0.03	0.8720
STATION	5	108.000	1.64	0.1547
PERIOD*SEASON	1	108.000	0.15	0.6964
STATION*PERIOD	5	108.000	0.65	0.6596
STATION*SEASON	5	108.000	0.15	0.9801
PERIOD*STATION*SEASON	5	108.000	0.32	0.9026

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	8.90	7.73	0.9065	0.8684	0.1305
STATION*PERIOD	3.27	0.00	0.3436	.	0.1045

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	3.0487	1.0183	2.994	.0034
Period in FC	0.2841	0.4598	0.618	.5379
Period in FC-S	0.2322	0.4668	0.497	.6200
Period in FC-W	0.3360	0.7922	0.424	.6723
Period in DC-S	2.6635	0.9959	2.675	.0086
Period in DC-W	3.4340	1.7764	1.933	.0558

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.392	0.0789	4.97	.0000	0.5228	0.2611
Period Op-2	-0.164	0.1687	-0.97	.3344	0.1163	-0.4434
Op-1 0611	0.401	0.1764	2.27	.0250	0.6937	0.1082
Op-2 0611	0.100	0.4175	0.24	.8105	0.7931	-0.5924
Op-1 0910	0.164	0.1884	0.87	.3852	0.4768	-0.1483
Op-2 0910	-1.023	0.4043	-2.53	.0128	-0.3527	-1.6942
Op-1 0915	0.402	0.2111	1.90	.0597	0.7522	0.0516
Op-2 0915	-0.334	0.4175	-0.80	.4254	0.3586	-1.0268
Op-1 1015	0.663	0.2111	3.14	.0022	1.0135	0.3129
Op-2 1015	0.100	0.4175	0.24	.8105	0.7931	-0.5924
Op-1 1210	0.337	0.1764	1.91	.0589	0.6296	0.0441
Op-2 1210	0.075	0.4043	0.19	.8527	0.7460	-0.5955
Op-1 2210	0.384	0.1925	2.00	.0483	0.7038	0.0651
Op-2 2210	0.100	0.4175	0.24	.8105	0.7931	-0.5924

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5555	0.1862	2.983	.0035	0.8644	0.2465

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.3006	0.4533	0.66	.5087	1.0527	-0.4515
Station 0910	1.1877	0.4460	2.66	.0089	1.9277	0.4477
Station 0915	0.7360	0.4679	1.57	.1187	1.5122	-0.0403
Station 1015	0.5629	0.4679	1.20	.2316	1.3392	-0.2134
Station 1210	0.2616	0.4411	0.59	.5544	0.9934	-0.4703
Station 2210	0.2841	0.4598	0.62	.5379	1.0469	-0.4787

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.11	1.25	0.067	0.25	-0.03	4.44	30.00	8.23	0.65
0611 Op-2	4	0.00	0.00	0.000	.	.	0.38	1.50	1.57	-0.82
0910 Op-1	19	2.41	10.25	0.822	4.13	0.68	2.38	31.25	5.90	-1.14
0910 Op-2	5	6.60	11.25	1.910	11.90	1.30	-6.30	9.75	-1.46	-11.14
0915 Op-1	15	0.72	4.75	0.350	1.47	-0.03	5.35	33.50	10.41	0.29
0915 Op-2	4	2.50	4.75	0.984	5.63	-0.63	-2.13	4.75	1.03	-5.28
1015 Op-1	15	0.00	0.00	0.000	.	.	6.07	28.75	10.94	1.19
1015 Op-2	4	0.00	0.00	0.000	.	.	0.38	1.50	1.57	-0.82
1210 Op-1	20	0.45	5.25	0.280	1.04	-0.14	4.10	34.00	8.02	0.18
1210 Op-2	5	0.00	0.00	0.000	.	.	0.30	1.50	1.13	-0.53
2210 Op-1	17	0.73	7.75	0.484	1.75	-0.30	4.63	30.25	8.95	0.30
2210 Op-2	4	0.00	0.00	0.000	.	.	0.38	1.50	1.57	-0.82

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	4.55	28.75	1.794	8.30	0.80
Op-2	5	0.30	1.50	0.300	1.13	-0.53

Analysis of Variance for SFQ for 0341 - Tonicella lineata

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.72	0.3973
SEASON	1	108.000	4.67	0.0329
STATION	5	108.000	1.07	0.3809
PERIOD*SEASON	1	108.000	0.41	0.5226
STATION*PERIOD	5	108.000	1.37	0.2398
STATION*SEASON	5	108.000	0.62	0.6845
PERIOD*STATION*SEASON	5	108.000	0.35	0.8800

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.72	0.00	0.2181	.	0.4564
STATION*PERIOD	6.87	1.74	0.6006	0.2252	0.1516

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.4730	0.3101	-1.525	.1302
Period in FC	0.1838	0.1400	1.313	.1921
Period in FC-S	0.1487	0.1422	1.046	.2981
Period in FC-W	0.2190	0.2413	0.907	.3662
Period in DC-S	-0.2196	0.3033	-0.724	.4707
Period in DC-W	-0.7264	0.5411	-1.343	.1822

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.132	0.0240	5.50	.0000	0.1719	0.0922
Period Op-2	0.180	0.0514	3.51	.0007	0.2655	0.0950
Op-1 0611	0.235	0.0537	4.36	.0000	0.3237	0.1453
Op-2 0611	0.278	0.1272	2.19	.0307	0.4895	0.0675
Op-1 0910	0.140	0.0574	2.44	.0161	0.2355	0.0451
Op-2 0910	0.208	0.1231	1.69	.0938	0.4125	0.0039
Op-1 0915	0.137	0.0643	2.13	.0353	0.2438	0.0304
Op-2 0915	0.124	0.1272	0.98	.3313	0.3351	-0.0869
Op-1 1015	0.168	0.0643	2.62	.0101	0.2751	0.0617
Op-2 1015	0.228	0.1272	1.80	.0754	0.4393	0.0173
Op-1 1210	-0.024	0.0537	-0.44	.6616	0.0656	-0.1128
Op-2 1210	0.291	0.1231	2.36	.0201	0.4948	0.0862
Op-1 2210	0.136	0.0586	2.31	.0225	0.2330	0.0384
Op-2 2210	-0.048	0.1272	-0.38	.7059	0.1629	-0.2591

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0482	0.0567	-0.850	.3973	0.0459	-0.1423

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	-0.0440	0.1381	-0.32	.7507	0.1851	-0.2730
Station 0910	-0.0679	0.1359	-0.50	.6182	0.1575	-0.2933
Station 0915	0.0130	0.1425	0.09	.9278	0.2494	-0.2235
Station 1015	-0.0599	0.1425	-0.42	.6749	0.1765	-0.2964
Station 1210	-0.3141	0.1344	-2.34	.0212	-0.0912	-0.5370
Station 2210	0.1838	0.1400	1.31	.1921	0.4162	-0.0485

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CI.	Lower 95% C.I.
0611 Op-1	20	0.04	0.25	0.020	0.08	-0.01	0.40	1.50	0.59	0.21
0611 Op-2	4	0.00	0.00	0.000	.	.	0.38	0.75	0.89	-0.14
0910 Op-1	19	0.18	0.75	0.060	0.31	0.06	0.24	1.00	0.39	0.08
0910 Op-2	5	0.15	0.25	0.061	0.32	-0.02	0.50	1.50	1.23	-0.23
0915 Op-1	15	0.25	0.50	0.049	0.35	0.15	0.20	1.50	0.47	-0.07
0915 Op-2	4	0.25	0.75	0.177	0.81	-0.31	0.13	0.75	0.64	-0.39
1015 Op-1	15	0.20	1.50	0.098	0.41	-0.01	0.25	2.50	0.57	-0.07
1015 Op-2	4	0.13	0.50	0.125	0.52	-0.27	0.25	0.75	0.81	-0.31
1210 Op-1	20	0.53	2.00	0.146	0.83	0.22	-0.09	3.00	0.25	-0.43
1210 Op-2	5	0.15	0.75	0.150	0.57	-0.27	0.50	2.00	1.48	-0.48
2210 Op-1	17	0.15	0.50	0.048	0.25	0.04	0.26	2.00	0.52	0.01
2210 Op-2	4	0.44	0.75	0.188	1.03	-0.16	-0.06	0.50	0.32	-0.44

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.44	1.50	0.090	0.63	0.25
Op-2	5	0.65	1.75	0.302	1.49	-0.19

Analysis of Variance for SFQ for 0701 - Tricolia spp.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	0.05	0.8201
SEASON	1	108.000	0.00	0.9652
STATION	5	108.000	0.89	0.4885
PERIOD*SEASON	1	108.000	1.66	0.1998
STATION*PERIOD	5	108.000	0.08	0.9947
STATION*SEASON	5	108.000	0.42	0.8366
PERIOD*STATION*SEASON	5	108.000	0.23	0.9478

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	0.05	0.00	0.1087	.	0.3480
STATION*PERIOD	0.42	0.00	0.1279	.	0.1368

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	-0.0405	0.2024	-0.200	.8416
Period in FC	-0.0101	0.0914	-0.111	.9122
Period in FC-S	-0.0610	0.0928	-0.658	.5121
Period in FC-W	0.0408	0.1575	0.259	.7959
Period in DC-S	-0.2761	0.1979	-1.395	.1659
Period in DC-W	0.1950	0.3531	0.552	.5819

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.015	0.0157	-0.94	.3497	0.0113	-0.0407
Period Op-2	-0.006	0.0335	-0.19	.8516	0.0493	-0.0619
Op-1 0611	-0.083	0.0351	-2.35	.0204	-0.0244	-0.1407
Op-2 0611	-0.088	0.0830	-1.06	.2911	0.0496	-0.2257
Op-1 0910	-0.018	0.0374	-0.47	.6375	0.0444	-0.0798
Op-2 0910	-0.008	0.0804	-0.10	.9172	0.1249	-0.1417
Op-1 0915	0.033	0.0420	0.78	.4368	0.1024	-0.0369
Op-2 0915	0.029	0.0830	0.35	.7243	0.1670	-0.1083
Op-1 1015	0.017	0.0420	0.40	.6932	0.0862	-0.0530
Op-2 1015	-0.000	0.0830	-0.00	1.000	0.1377	-0.1377
Op-1 1210	-0.057	0.0351	-1.62	.1089	0.0015	-0.1149
Op-2 1210	0.000	0.0804	0.00	1.000	0.1333	-0.1333
Op-1 2210	0.019	0.0383	0.50	.6160	0.0827	-0.0442
Op-2 2210	0.029	0.0830	0.35	.7243	0.1670	-0.1083

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0084	0.0370	-0.228	.8201	0.0530	-0.0698

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.0055	0.0901	0.06	.9516	0.1550	-0.1440
Station 0910	-0.0093	0.0887	-0.11	.9164	0.1378	-0.1564
Station 0915	0.0034	0.0930	0.04	.9708	0.1577	-0.1509
Station 1015	0.0166	0.0930	0.18	.8586	0.1709	-0.1377
Station 1210	-0.0567	0.0877	-0.65	.5192	0.0888	-0.2022
Station 2210	-0.0101	0.0914	-0.11	.9122	0.1415	-0.1617

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.43	1.75	0.115	0.67	0.18	-0.29	2.00	-0.07	-0.50
0611 Op-2	4	0.25	0.50	0.144	0.71	-0.21	-0.13	0.50	0.27	-0.52
0910 Op-1	19	0.38	4.00	0.211	0.83	-0.06	-0.24	5.00	0.25	-0.73
0910 Op-2	5	0.15	0.75	0.150	0.57	-0.27	-0.05	1.25	0.51	-0.61
0915 Op-1	15	0.12	1.00	0.073	0.27	-0.04	0.03	1.50	0.22	-0.15
0915 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.50	0.52	-0.27
1015 Op-1	15	0.28	3.25	0.222	0.76	-0.19	-0.13	3.75	0.32	-0.59
1015 Op-2	4	0.13	0.50	0.125	0.52	-0.27	0.00	0.00	.	.
1210 Op-1	20	0.31	2.25	0.128	0.58	0.04	-0.18	2.00	0.04	-0.39
1210 Op-2	5	0.10	0.50	0.100	0.38	-0.18	0.00	0.00	.	.
2210 Op-1	17	0.12	1.00	0.065	0.25	-0.02	0.03	2.00	0.24	-0.18
2210 Op-2	4	0.00	0.00	0.000	.	.	0.13	0.50	0.52	-0.27

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.14	1.00	0.059	0.26	0.01
Op-2	5	0.10	0.50	0.100	0.38	-0.18

Analysis of Variance for SFQ for 0480 - tunicates, colonial/social unid.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	9.34	0.0028
SEASON	1	108.000	9.54	0.0026
STATION	5	108.000	11.32	0.0000
PERIOD*SEASON	1	108.000	1.03	0.3130
STATION*PERIOD	5	108.000	0.09	0.9933
STATION*SEASON	5	108.000	0.15	0.9797
PERIOD*STATION*SEASON	5	108.000	0.52	0.7573

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	9.34	8.17	0.9181	0.8840	0.9832
STATION*PERIOD	0.46	0.00	0.1311	.	0.3737

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	0.6060	0.2343	2.586	.0110
Period in FC	0.1798	0.1058	1.699	.0921
Period in FC-S	0.1695	0.1074	1.578	.1175
Period in FC-W	0.1901	0.1823	1.043	.2995
Period in DC-S	0.3557	0.2292	1.552	.1236
Period in DC-W	0.8563	0.4088	2.095	.0385

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.022	0.0181	1.20	.2339	0.0518	-0.0084
Period Op-2	-0.109	0.0388	-2.81	.0058	-0.0448	-0.1736
Op-1 0611	0.194	0.0406	4.78	.0000	0.2615	0.1268
Op-2 0611	0.059	0.0961	0.61	.5426	0.2181	-0.1007
Op-1 0910	0.088	0.0434	2.02	.0460	0.1594	0.0156
Op-2 0910	-0.069	0.0930	-0.74	.4620	0.0857	-0.2230
Op-1 0915	0.038	0.0486	0.78	.4392	0.1183	-0.0429
Op-2 0915	-0.069	0.0961	-0.72	.4725	0.0901	-0.2287
Op-1 1015	-0.055	0.0486	-1.13	.2608	0.0257	-0.1355
Op-2 1015	-0.155	0.0961	-1.62	.1092	0.0042	-0.3146
Op-1 1210	0.140	0.0406	3.45	.0008	0.2076	0.0729
Op-2 1210	0.033	0.0930	0.36	.7219	0.1875	-0.1212
Op-1 2210	-0.274	0.0443	-6.19	.0000	-0.2009	-0.3478
Op-2 2210	-0.454	0.0961	-4.73	.0000	-0.2947	-0.6136

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1310	0.0428	3.056	.0028	0.2021	0.0599

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.1355	0.1043	1.30	.1968	0.3085	-0.0376
Station 0910	0.1562	0.1026	1.52	.1310	0.3265	-0.0141
Station 0915	0.1070	0.1077	0.99	.3225	0.2856	-0.0716
Station 1015	0.1003	0.1077	0.93	.3538	0.2789	-0.0784
Station 1210	0.1070	0.1015	1.05	.2941	0.2754	-0.0614
Station 2210	0.1798	0.1058	1.70	.0921	0.3553	0.0043

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.33	1.25	0.081	0.50	0.15	0.86	2.75	1.24	0.49
0611 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.25	0.50	0.57	-0.07
0910 Op-1	19	0.78	2.25	0.143	1.08	0.48	0.41	3.25	0.84	-0.03
0910 Op-2	5	0.45	0.75	0.122	0.79	0.11	0.00	1.00	0.62	-0.62
0915 Op-1	15	0.55	2.00	0.127	0.82	0.28	0.40	3.50	0.90	-0.10
0915 Op-2	4	0.50	0.75	0.177	1.06	-0.06	-0.19	0.75	0.31	-0.69
1015 Op-1	15	1.22	3.25	0.251	1.76	0.68	-0.27	4.25	0.29	-0.82
1015 Op-2	4	0.63	1.00	0.239	1.39	-0.14	-0.31	1.50	0.78	-1.41
1210 Op-1	20	0.46	1.75	0.091	0.65	0.27	0.73	2.50	1.07	0.38
1210 Op-2	5	0.10	0.25	0.061	0.27	-0.07	0.35	1.25	0.91	-0.21
2210 Op-1	17	3.03	4.50	0.323	3.72	2.35	-1.77	3.92	-1.21	-2.33
2210 Op-2	4	2.63	3.00	0.718	4.91	0.34	-2.31	3.25	0.13	-4.75

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.19	2.50	0.179	1.56	0.81
Op-2	5	0.45	1.00	0.166	0.91	-0.01

Analysis of Variance for SFQ for 0460 - tunicate, solitary unid.

Stations = 2210, 0611, 0910, 0915, 1015, 1210

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
PERIOD	1	108.000	4.20	0.0428
SEASON	1	108.000	0.99	0.3210
STATION	5	108.000	0.36	0.8771
PERIOD*SEASON	1	108.000	0.14	0.7107
STATION*PERIOD	5	108.000	0.13	0.9841
STATION*SEASON	5	108.000	0.10	0.9921
PERIOD*STATION*SEASON	5	108.000	0.24	0.9461

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
PERIOD	4.20	3.12	0.6526	0.5447	0.2834
STATION*PERIOD	0.67	0.00	0.1460	.	0.1145

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in DC	1.2369	0.6133	2.017	.0462
Period in FC	0.1424	0.2769	0.514	.6080
Period in FC-S	0.3317	0.2812	1.180	.2407
Period in FC-W	-0.0468	0.4772	-0.098	.9220
Period in DC-S	1.2979	0.5998	2.164	.0327
Period in DC-W	1.1759	1.0699	1.099	.2742

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.265	0.0475	5.58	.0000	0.3438	0.1861
Period Op-2	0.035	0.1016	0.35	.7307	0.2036	-0.1335
Op-1 0611	0.426	0.1063	4.01	.0001	0.6024	0.2498
Op-2 0611	0.091	0.2515	0.36	.7191	0.5079	-0.3266
Op-1 0910	0.328	0.1135	2.89	.0046	0.5164	0.1399
Op-2 0910	0.000	0.2435	0.00	1.000	0.4040	-0.4040
Op-1 0915	0.179	0.1272	1.41	.1618	0.3901	-0.0318
Op-2 0915	0.000	0.2515	0.00	1.000	0.4172	-0.4172
Op-1 1015	0.193	0.1272	1.52	.1316	0.4042	-0.0178
Op-2 1015	0.091	0.2515	0.36	.7191	0.5079	-0.3266
Op-1 1210	0.360	0.1063	3.38	.0010	0.5360	0.1833
Op-2 1210	0.068	0.2435	0.28	.7806	0.4720	-0.3360
Op-1 2210	0.103	0.1159	0.89	.3743	0.2958	-0.0889
Op-2 2210	-0.039	0.2515	-0.16	.8770	0.3782	-0.4562

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2299	0.1122	2.050	.0428	0.4160	0.0438

Paired comparisons of least square means for stations between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Station 0611	0.3354	0.2730	1.23	.2219	0.7884	-0.1175
Station 0910	0.3281	0.2686	1.22	.2246	0.7738	-0.1176
Station 0915	0.1791	0.2818	0.64	.5264	0.6467	-0.2884
Station 1015	0.1025	0.2818	0.36	.7167	0.5701	-0.3650
Station 1210	0.2917	0.2657	1.10	.2748	0.7324	-0.1491
Station 2210	0.1424	0.2769	0.51	.6080	0.6019	-0.3170

Station-period means and deltas from original data where control n=1

Station-Period	N	Station Mean	Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
0611 Op-1	20	0.08	0.50	0.037	0.15	-0.00	0.43	1.50	0.68	0.17
0611 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
0910 Op-1	19	0.13	0.75	0.062	0.26	0.00	0.36	2.00	0.59	0.12
0910 Op-2	5	0.05	0.25	0.050	0.19	-0.09	0.00	0.50	0.22	-0.22
0915 Op-1	15	0.10	0.25	0.033	0.17	0.03	0.23	1.75	0.48	-0.01
0915 Op-2	4	0.06	0.25	0.063	0.26	-0.14	0.00	0.00	.	.
1015 Op-1	15	0.10	0.50	0.041	0.19	0.01	0.23	1.25	0.43	0.03
1015 Op-2	4	0.00	0.00	0.000	.	.	0.06	0.25	0.26	-0.14
1210 Op-1	20	0.23	1.25	0.092	0.42	0.03	0.28	1.00	0.43	0.12
1210 Op-2	5	0.00	0.00	0.000	.	.	0.05	0.25	0.19	-0.09
2210 Op-1	17	0.28	1.25	0.080	0.45	0.11	0.25	2.25	0.57	-0.08
2210 Op-2	4	0.13	0.50	0.125	0.52	-0.27	-0.06	0.75	0.44	-0.56

Period means and deltas from original control data where n=1

Period	N	Station Mean	Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.50	2.00	0.128	0.77	0.23
Op-2	5	0.05	0.25	0.050	0.19	-0.09

APPENDIX E5 – ANOVA Test Results

Subtidal Fishes

Benthic Transectsnce for SPO for 1020 - Artedius spp.

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1.	20.000	0.04	0.8532
PERIOD	1	20.000	0.94	0.3444
AREA*PERIOD	1	20.000	1.01	0.3271

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.01	0.00	0.2545	.	0.1086
PERIOD	0.94	0.00	0.2441	.	0.2881

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.0009	0.0361	-0.026	.9799
Period in SDC	0.0503	0.0361	1.395	.1783

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.004	0.0147	0.26	.7939	0.0293	-0.0215
Period Op-2	-0.021	0.0208	-1.00	.3298	0.0151	-0.0567
Op-1 NDC	-0.007	0.0208	-0.31	.7574	0.0294	-0.0424
Op-2 NDC	-0.006	0.0294	-0.19	.8511	0.0452	-0.0564
Op-1 SDC	0.014	0.0208	0.69	.4996	0.0502	-0.0216
Op-2 SDC	-0.036	0.0294	-1.22	.2358	0.0148	-0.0868

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0247	0.0255	0.968	.3444	0.0687	-0.0193

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.0009	0.0361	-0.03	.9799	0.0613	-0.0631
Area SDC	0.0503	0.0361	1.40	.1783	0.1125	-0.0119

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.15	0.25	0.030	0.22	0.08	-0.02	0.46	0.12	-0.15
NDC Op-2	4	0.12	0.19	0.045	0.26	-0.03	-0.01	0.25	0.17	-0.20
SDC Op-1	8	0.09	0.14	0.020	0.14	0.05	0.04	0.46	0.17	-0.09
SDC Op-2	4	0.20	0.21	0.046	0.34	0.05	-0.09	0.42	0.19	-0.38

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.13	0.50	0.034	0.20	0.06
Op-2	7	0.12	0.25	0.040	0.22	0.02

Midwater Transectsce for SFO,for 0582 - Atherinidae unid.

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.83	0.3719
PERIOD	1	20.000	9.25	0.0064
AREA*PERIOD	1	20.000	0.21	0.6509

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.21	0.00	0.1333	.	0.1022
PERIOD	9.25	7.33	0.9017	0.8336	0.1081

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	1.0151	0.5559	1.826	.0828
Period in SDC	1.3762	0.5559	2.476	.0224

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.432	0.2269	-1.90	.0716	-0.0403	-0.8231
Period Op-2	-1.627	0.3209	-5.07	.0001	-1.0738	-2.1809
Op-1 NDC	-0.701	0.3209	-2.19	.0409	-0.1480	-1.2550
Op-2 NDC	-1.717	0.4539	-3.78	.0012	-0.9337	-2.4994
Op-1 SDC	-0.162	0.3209	-0.50	.6194	0.3916	-0.7155
Op-2 SDC	-1.538	0.4539	-3.39	.0029	-0.7553	-2.3209

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	1.1956	0.3931	3.042	.0064	1.8735	0.5177

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	1.0151	0.5559	1.83	.0828	1.9738	0.0563
Area SDC	1.3762	0.5559	2.48	.0224	2.3349	0.4174

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	3.42	17.97	2.212	8.65	-1.81	-3.42	17.97	1.81	-8.65
NDC Op-2	4	25.98	85.56	19.980	89.56	-37.61	-25.98	85.56	37.61	-89.56
SDC Op-1	8	0.23	1.88	0.234	0.79	-0.32	-0.23	1.88	0.32	-0.79
SDC Op-2	4	13.19	40.21	9.176	42.39	-16.01	-13.19	40.21	16.01	-42.39

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0580 - Aulorhynchus flavidus

Data transformed using log base10(x + .5)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	7.26	0.0139
PERIOD	1	20.000	2.06	0.1669
AREA*PERIOD	1	20.000	3.21	0.0885

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	3.21	1.89	0.5343	0.3768	0.1596
PERIOD	2.06	0.85	0.3990	0.2313	0.2461

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0610	0.2420	0.252	.8035
Period in SDC	-0.5518	0.2420	-2.281	.0337

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.286	0.0988	-2.90	.0089	-0.1158	-0.4566
Period Op-2	-0.041	0.1397	-0.29	.7733	0.2001	-0.2817
Op-1 NDC	0.098	0.1397	0.70	.4930	0.3385	-0.1434
Op-2 NDC	0.037	0.1976	0.18	.8551	0.3773	-0.3042
Op-1 SDC	-0.670	0.1397	-4.80	.0001	-0.4290	-0.9109
Op-2 SDC	-0.118	0.1976	-0.60	.5566	0.2226	-0.4589

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2454	0.1711	-1.434	.1669	0.0497	-0.5405

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0610	0.2420	0.25	.8035	0.4783	-0.3563
Area SDC	-0.5518	0.2420	-2.28	.0337	-0.1345	-0.9691

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.20	0.88	0.106	0.45	-0.05	0.36	2.66	1.13	-0.41
NDC Op-2	4	0.90	2.34	0.544	2.63	-0.83	-0.11	2.68	2.03	-2.25
SDC Op-1	8	5.88	20.83	2.444	11.66	0.10	-5.32	19.13	0.11	-10.75
SDC Op-2	4	2.29	7.63	1.818	8.08	-3.50	-1.50	7.63	4.19	-7.19

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.59	6.83	0.371	1.36	-0.19
Op-2	7	0.71	1.75	0.322	1.50	-0.07

Midwater Transectsce for SFO for 0592 - Brachyistius frenatus

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	1.31	0.2664
PERIOD	1	20.000	14.90	0.0010
AREA*PERIOD	1	20.000	0.34	0.5642

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.34	0.00	0.1540	.	0.1019
PERIOD	14.90	12.41	0.9813	0.9604	0.1503

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.8806	0.2801	3.144	.0051
Period in SDC	0.6484	0.2801	2.315	.0313

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.138	0.1143	-1.20	.2427	0.0596	-0.3348
Period Op-2	-0.902	0.1617	-5.58	.0000	-0.6232	-1.1810
Op-1 NDC	-0.193	0.1617	-1.19	.2471	0.0861	-0.4716
Op-2 NDC	-1.073	0.2287	-4.69	.0001	-0.6790	-1.4677
Op-1 SDC	-0.082	0.1617	-0.51	.6155	0.1964	-0.3614
Op-2 SDC	-0.731	0.2287	-3.20	.0045	-0.3365	-1.1252

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.7645	0.1980	3.860	.0010	1.1060	0.4229

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.8806	0.2801	3.14	.0051	1.3636	0.3976
Area SDC	0.6484	0.2801	2.32	.0313	1.1314	0.1653

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.17	0.66	0.084	0.37	-0.03	-0.13	0.75	0.08	-0.35
NDC Op-2	4	2.86	8.19	1.863	8.79	-3.07	-2.85	8.19	3.09	-8.79
SDC Op-1	8	0.11	0.63	0.075	0.29	-0.07	-0.07	0.71	0.13	-0.26
SDC Op-2	4	0.66	1.29	0.276	1.53	-0.22	-0.65	1.29	0.24	-1.53

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.04	0.25	0.017	0.08	0.01
Op-2	7	0.01	0.08	0.012	0.04	-0.02

Benthic Transectance for SFQ for 0643 - Cebidichthys violaceus

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	9.79	0.0053
PERIOD	1	20.000	0.00	0.9723
AREA*PERIOD	1	20.000	2.55	0.1261

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	2.55	1.29	0.4597	0.2955	0.1347
PERIOD	0.00	0.00	0.1002	.	0.6815

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0964	0.0873	1.104	.2828
Period in SDC	-0.1007	0.0873	-1.153	.2623

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.086	0.0356	-2.40	.0263	-0.0240	-0.1470
Period Op-2	-0.083	0.0504	-1.65	.1139	0.0036	-0.1703
Op-1 NDC	-0.133	0.0504	-2.64	.0159	-0.0459	-0.2197
Op-2 NDC	-0.229	0.0713	-3.22	.0043	-0.1062	-0.3521
Op-1 SDC	-0.038	0.0504	-0.76	.4574	0.0487	-0.1251
Op-2 SDC	0.063	0.0713	0.88	.3910	0.1854	-0.0604

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0022	0.0617	-0.035	.9723	0.1043	-0.1086

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0964	0.0873	1.10	.2828	0.2469	-0.0542
Area SDC	-0.1007	0.0873	-1.15	.2623	0.0499	-0.2513

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.27	0.63	0.070	0.43	0.10	-0.13	0.50	0.00	-0.27
NDC Op-2	4	0.31	0.34	0.073	0.55	0.08	-0.23	0.29	0.01	-0.47
SDC Op-1	8	0.17	0.33	0.045	0.28	0.07	-0.04	0.40	0.07	-0.14
SDC Op-2	4	0.02	0.08	0.021	0.09	-0.05	0.06	0.25	0.24	-0.11

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.15	0.83	0.043	0.24	0.06
Op-2	7	0.10	0.25	0.034	0.18	0.01

Benthic Transectsnce for SFO for 0652 - Cephaloscyllium ventriosum

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.01	0.9119
PERIOD	1	20.000	0.11	0.7390
AREA*PERIOD	1	20.000	0.01	0.9119

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.01	0.00	0.1020	.	0.1000
PERIOD	0.11	0.00	0.1180	.	0.1000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.0298	0.1864	-0.160	.8747
Period in SDC	-0.0593	0.1864	-0.318	.7537

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.135	0.0761	1.78	.0908	0.2665	0.0040
Period Op-2	0.180	0.1076	1.67	.1104	0.3654	-0.0059
Op-1 NDC	0.135	0.1076	1.26	.2234	0.3209	-0.0504
Op-2 NDC	0.165	0.1522	1.08	.2912	0.4275	-0.0975
Op-1 SDC	0.135	0.1076	1.26	.2234	0.3209	-0.0504
Op-2 SDC	0.195	0.1522	1.28	.2159	0.4571	-0.0680

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0445	0.1318	-0.338	.7390	0.1828	-0.2719

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.0298	0.1864	-0.16	.8747	0.2917	-0.3513
Area SDC	-0.0593	0.1864	-0.32	.7537	0.2622	-0.3808

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.00	0.00	0.000	.	.	0.06	0.29	0.16	-0.04
NDC Op-2	4	0.01	0.03	0.008	0.03	-0.02	0.12	0.53	0.52	-0.29
SDC Op-1	8	0.00	0.00	0.000	.	.	0.06	0.29	0.16	-0.04
SDC Op-2	4	0.00	0.00	0.000	.	.	0.13	0.50	0.52	-0.27

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.06	0.50	0.036	0.14	-0.01
Op-2	7	0.07	0.50	0.071	0.25	-0.10

Midwater Transectsce for SFO for 1183 - Chromis punctipinnis

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	3.06	0.0956
PERIOD	1	20.000	2.21	0.1528
AREA*PERIOD	1	20.000	1.61	0.2185

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.61	0.45	0.3402	0.1708	0.1742
PERIOD	2.21	0.99	0.4183	0.2515	0.2027

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.1700	0.0872	-1.949	.0654
Period in SDC	-0.0133	0.0872	-0.153	.8802

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.106	0.0356	-2.99	.0073	-0.0450	-0.1678
Period Op-2	-0.015	0.0503	-0.29	.7724	0.0721	-0.1016
Op-1 NDC	-0.200	0.0503	-3.96	.0008	-0.1127	-0.2863
Op-2 NDC	-0.030	0.0712	-0.41	.6828	0.0933	-0.1523
Op-1 SDC	-0.013	0.0503	-0.26	.7942	0.0735	-0.1001
Op-2 SDC	0.000	0.0712	0.00	1.000	0.1228	-0.1228

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0916	0.0617	-1.486	.1528	0.0147	-0.1980

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.1700	0.0872	-1.95	.0654	-0.0196	-0.3204
Area SDC	-0.0133	0.0872	-0.15	.8802	0.1371	-0.1637

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.08	0.25	0.036	0.17	-0.00	-0.08	0.25	0.00	-0.17
NDC Op-2	4	0.01	0.03	0.008	0.03	-0.02	-0.01	0.03	0.02	-0.03
SDC Op-1	8	0.00	0.03	0.003	0.01	-0.00	-0.00	0.03	0.00	-0.01
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0647 - Citharichthys spp.

Data transformed using log base10(x + .5)

Satterthwaite's Adjustment for Degrees
of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	29.65	0.0000
PERIOD	1	20.000	0.73	0.4014
AREA*PERIOD	1	20.000	1.11	0.3046

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.11	0.00	0.2693	.	0.2660
PERIOD	0.73	0.00	0.2138	.	0.2660

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0251	0.1807	0.139	.8909
Period in SDC	-0.2442	0.1807	-1.351	.1917

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.390	0.0738	-5.29	.0000	-0.2629	-0.5174
Period Op-2	-0.281	0.1043	-2.69	.0141	-0.1006	-0.4606
Op-1 NDC	0.025	0.1043	0.24	.8123	0.2051	-0.1549
Op-2 NDC	0.000	0.1476	0.00	1.000	0.2545	-0.2545
Op-1 SDC	-0.805	0.1043	-7.72	.0000	-0.6254	-0.9854
Op-2 SDC	-0.561	0.1476	-3.80	.0011	-0.3067	-0.8157

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1096	0.1278	-0.857	.4014	0.1108	-0.3300

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0251	0.1807	0.14	.8909	0.3368	-0.2866
Area SDC	-0.2442	0.1807	-1.35	.1917	0.0675	-0.5559

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.00	0.00	0.000	.	.	0.03	0.08	0.07	-0.00
NDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-1	8	4.98	17.61	2.102	9.95	0.01	-4.95	17.53	-0.00	-9.90
SDC Op-2	4	1.88	4.54	1.068	5.27	-1.52	-1.88	4.54	1.52	-5.27

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.03	0.17	0.014	0.05	-0.00
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0620 - Coryphopterus nicholsii

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	36.33	0.0000
PERIOD	1	20.000	0.41	0.5278
AREA*PERIOD	1	20.000	2.80	0.1099

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	2.80	1.52	0.4891	0.3272	0.3671
PERIOD	0.41	0.00	0.1647	.	0.7513

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.1604	0.0979	-1.637	.1172
Period in SDC	0.0713	0.0979	0.729	.4747

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.185	0.0400	-4.62	.0002	-0.1157	-0.2536
Period Op-2	-0.140	0.0565	-2.48	.0222	-0.0427	-0.2377
Op-1 NDC	-0.451	0.0565	-7.98	.0000	-0.3538	-0.5488
Op-2 NDC	-0.291	0.0800	-3.64	.0016	-0.1531	-0.4289
Op-1 SDC	0.082	0.0565	1.45	.1628	0.1795	-0.0156
Op-2 SDC	0.011	0.0800	0.13	.8960	0.1485	-0.1273

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0445	0.0692	-0.643	.5278	0.0749	-0.1639

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.1604	0.0979	-1.64	.1172	0.0086	-0.3293
Area SDC	0.0713	0.0979	0.73	.4747	0.2403	-0.0976

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	4.03	8.19	0.923	6.21	1.85	-3.28	6.81	-1.38	-5.19
NDC Op-2	4	1.47	1.13	0.234	2.21	0.73	-1.22	1.29	-0.35	-2.09
SDC Op-1	8	0.38	0.81	0.086	0.58	0.17	0.38	1.67	1.00	-0.24
SDC Op-2	4	0.25	0.79	0.182	0.83	-0.33	0.00	0.88	0.64	-0.64

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.86	2.38	0.186	1.25	0.47
Op-2	7	0.25	0.50	0.063	0.40	0.10

Benthic Transectsnce for SFO for 2068 - Cottidae unid.

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.77	0.3912
PERIOD	1	20.000	4.97	0.0373
AREA*PERIOD	1	20.000	0.04	0.8524

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.04	0.00	0.1056	.	0.1055
PERIOD	4.97	3.48	0.6947	0.5623	0.2811

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0510	0.0353	1.444	.1643
Period in SDC	0.0604	0.0353	1.710	.1027

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.031	0.0144	2.18	.0415	0.0563	0.0066
Period Op-2	-0.024	0.0204	-1.19	.2477	0.0109	-0.0595
Op-1 NDC	0.040	0.0204	1.96	.0638	0.0752	0.0048
Op-2 NDC	-0.011	0.0288	-0.38	.7073	0.0388	-0.0607
Op-1 SDC	0.023	0.0204	1.12	.2762	0.0580	-0.0123
Op-2 SDC	-0.038	0.0288	-1.30	.2074	0.0122	-0.0874

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0557	0.0250	2.230	.0373	0.0988	0.0126

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0510	0.0353	1.44	.1643	0.1120	-0.0099
Area SDC	0.0604	0.0353	1.71	.1027	0.1214	-0.0005

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.09	0.15	0.018	0.14	0.05	0.11	0.48	0.24	-0.02
NDC Op-2	4	0.08	0.13	0.030	0.17	-0.02	-0.03	0.23	0.13	-0.19
SDC Op-1	8	0.14	0.46	0.050	0.26	0.02	0.06	0.63	0.23	-0.10
SDC Op-2	4	0.15	0.13	0.027	0.23	0.06	-0.09	0.25	0.10	-0.28

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.22	0.63	0.044	0.32	0.13
Op-2	7	0.06	0.17	0.030	0.13	-0.01

Midwater Transectsce for SFO for 0645 - Cymatogaster aggregata

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.00	0.9977
PERIOD	1	20.000	2.36	0.1404
AREA*PERIOD	1	20.000	0.00	0.9977

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.00	0.00	0.1000	.	0.1002
PERIOD	2.36	1.12	0.4366	0.2709	0.1111

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.6023	0.5538	-1.088	.2897
Period in SDC	-0.6000	0.5538	-1.083	.2915

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.601	0.2261	-2.66	.0151	-0.2112	-0.9911
Period Op-2	-0.000	0.3197	-0.00	1.000	0.5514	-0.5514
Op-1 NDC	-0.602	0.3197	-1.88	.0742	-0.0509	-1.1538
Op-2 NDC	-0.000	0.4522	-0.00	1.000	0.7798	-0.7798
Op-1 SDC	-0.600	0.3197	-1.88	.0752	-0.0486	-1.1514
Op-2 SDC	0.000	0.4522	0.00	1.000	0.7798	-0.7798

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.6012	0.3916	-1.535	.1404	0.0742	-1.2765

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.6023	0.5538	-1.09	.2897	0.3528	-1.5574
Area SDC	-0.6000	0.5538	-1.08	.2915	0.3551	-1.5551

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	4.36	21.88	2.968	11.38	-2.66	-4.36	21.88	2.66	-11.38
NDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-1	8	11.89	88.08	10.919	37.71	-13.93	-11.89	88.08	13.93	-37.71
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0585 - Damalichthys vacca

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	3.94	0.0610
PERIOD	1	20.000	1.21	0.2848
AREA*PERIOD	1	20.000	0.75	0.3963

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.75	0.00	0.2163	.	0.1025
PERIOD	1.21	0.09	0.2833	0.1138	0.5213

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0436	0.2656	0.164	.8713
Period in SDC	0.3692	0.2656	1.390	.1798

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.203	0.1084	-1.87	.0755	-0.0163	-0.3903
Period Op-2	-0.410	0.1533	-2.67	.0147	-0.1452	-0.6741
Op-1 NDC	-0.471	0.1533	-3.07	.0060	-0.2067	-0.7356
Op-2 NDC	-0.515	0.2168	-2.37	.0278	-0.1407	-0.8887
Op-1 SDC	0.065	0.1533	0.42	.6782	0.3290	-0.1999
Op-2 SDC	-0.305	0.2168	-1.40	.1754	0.0694	-0.6786

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2064	0.1878	1.099	.2848	0.5303	-0.1175

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0436	0.2656	0.16	.8713	0.5016	-0.4145
Area SDC	0.3692	0.2656	1.39	.1798	0.8272	-0.0889

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	4.11	7.00	0.780	5.95	2.26	-2.53	6.26	-0.87	-4.18
NDC Op-2	4	3.44	2.00	0.519	5.09	1.78	-2.34	1.82	-1.06	-3.63
SDC Op-1	8	1.75	7.94	0.919	3.93	-0.42	-0.17	11.61	2.60	-2.94
SDC Op-2	4	4.68	14.46	3.386	15.45	-6.10	-3.58	12.92	5.94	-13.11

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.46	9.83	0.505	2.52	0.41
Op-2	7	1.15	3.00	0.367	2.05	0.26

Benthic Transectsnce for SFO for PDIV - Diversity wo/Oxy. cal.

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	10.59	0.0040
PERIOD	1	20.000	10.61	0.0039
AREA*PERIOD	1	20.000	0.30	0.5872

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.30	0.00	0.1479	.	0.1021
PERIOD	10.61	8.55	0.9331	0.8805	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.1059	0.0553	1.913	.0702
Period in SDC	0.1491	0.0553	2.693	.0140

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.153	0.0226	6.77	.0000	0.1920	0.1140
Period Op-2	0.026	0.0320	0.80	.4335	0.0807	-0.0296
Op-1 NDC	0.079	0.0320	2.46	.0232	0.1337	0.0234
Op-2 NDC	-0.027	0.0452	-0.60	.5521	0.0506	-0.1053
Op-1 SDC	0.227	0.0320	7.12	.0000	0.2826	0.1724
Op-2 SDC	0.078	0.0452	1.74	.0981	0.1564	0.0005

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1275	0.0391	3.257	.0039	0.1950	0.0600

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.1059	0.0553	1.91	.0702	0.2013	0.0104
Area SDC	0.1491	0.0553	2.69	.0140	0.2445	0.0536

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	2.18	1.13	0.158	2.55	1.80	0.44	1.96	0.94	-0.06
NDC Op-2	4	2.32	0.45	0.105	2.66	1.99	-0.14	0.70	0.34	-0.62
SDC Op-1	8	1.50	0.64	0.075	1.68	1.32	1.11	1.54	1.51	0.71
SDC Op-2	4	1.81	0.71	0.152	2.30	1.33	0.37	0.93	1.02	-0.28

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	2.68	2.31	0.143	2.98	2.38
Op-2	7	2.15	1.07	0.135	2.48	1.82

Midwater Transectsce for SPO for PDIV - Diversity wo/Oxy. cal.

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	3.83	0.0645
PERIOD	1	20.000	8.15	0.0098
AREA*PERIOD	1	20.000	2.39	0.1380

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	2.39	1.15	0.4404	0.2749	0.2087
PERIOD	8.15	6.33	0.8667	0.7838	0.8306

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0493	0.0533	0.926	.3656
Period in SDC	0.1658	0.0533	3.111	.0055

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.041	0.0218	1.87	.0756	0.0783	0.0033
Period Op-2	-0.067	0.0308	-2.17	.0422	-0.0137	-0.1199
Op-1 NDC	-0.025	0.0308	-0.82	.4225	0.0279	-0.0783
Op-2 NDC	-0.075	0.0435	-1.71	.1022	0.0005	-0.1496
Op-1 SDC	0.107	0.0308	3.47	.0024	0.1598	0.0537
Op-2 SDC	-0.059	0.0435	-1.36	.1901	0.0160	-0.1341

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1076	0.0377	2.854	.0098	0.1726	0.0426

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0493	0.0533	0.93	.3656	0.1413	-0.0426
Area SDC	0.1658	0.0533	3.11	.0055	0.2577	0.0739

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.83	0.81	0.104	1.07	0.58	-0.11	0.91	0.16	-0.39
NDC Op-2	4	0.78	0.14	0.030	0.87	0.68	-0.27	0.47	0.04	-0.59
SDC Op-1	8	0.35	0.54	0.071	0.51	0.18	0.37	0.83	0.66	0.08
SDC Op-2	4	0.74	0.77	0.164	1.26	0.22	-0.24	0.77	0.29	-0.76

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.73	1.78	0.091	0.92	0.54
Op-2	7	0.50	0.87	0.105	0.76	0.24

Benthic Transectsnce for SFO for 0595 - Embiotoca jacksoni

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	26.87	0.0000
PERIOD	1	20.000	1.09	0.3091
AREA*PERIOD	1	20.000	0.22	0.6424

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.22	0.00	0.1350	.	0.1150
PERIOD	1.09	0.00	0.2662	.	0.9003

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0598	0.1478	0.404	.6901
Period in SDC	0.1583	0.1478	1.071	.2968

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.003	0.0603	0.06	.9566	0.1074	-0.1007
Period Op-2	-0.106	0.0853	-1.24	.2297	0.0414	-0.2529
Op-1 NDC	-0.292	0.0853	-3.42	.0027	-0.1450	-0.4394
Op-2 NDC	-0.352	0.1207	-2.92	.0085	-0.1438	-0.5601
Op-1 SDC	0.299	0.0853	3.50	.0022	0.4460	0.1517
Op-2 SDC	0.141	0.1207	1.16	.2580	0.3486	-0.0676

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1091	0.1045	1.044	.3091	0.2893	-0.0712

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0598	0.1478	0.40	.6901	0.3147	-0.1951
Area SDC	0.1583	0.1478	1.07	.2968	0.4132	-0.0966

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	2.88	2.92	0.322	3.64	2.12	-1.45	2.49	-0.65	-2.26
NDC Op-2	4	3.28	2.22	0.494	4.85	1.71	-1.84	2.27	-0.36	-3.32
SDC Op-1	8	0.85	2.08	0.261	1.47	0.23	0.58	1.88	1.13	0.03
SDC Op-2	4	1.30	2.88	0.662	3.41	-0.81	0.14	1.96	1.50	-1.23

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.48	2.67	0.182	1.86	1.10
Op-2	7	1.48	2.17	0.294	2.20	0.76

Benthic Transectsnce for SFO for 0604 - Bmbiotoca lateralis

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	24.97	0.0001
PERIOD	1	20.000	0.25	0.6207
AREA*PERIOD	1	20.000	0.04	0.8478

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.04	0.00	0.1060	.	0.1292
PERIOD	0.25	0.00	0.1398	.	0.6696

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0400	0.1837	0.218	.8297
Period in SDC	0.0905	0.1837	0.493	.6274

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.551	0.0750	7.34	.0000	0.6800	0.4214
Period Op-2	0.485	0.1060	4.58	.0002	0.6683	0.3026
Op-1 NDC	0.214	0.1060	2.01	.0576	0.3965	0.0307
Op-2 NDC	0.174	0.1500	1.16	.2607	0.4322	-0.0851
Op-1 SDC	0.888	0.1060	8.37	.0000	1.0707	0.7049
Op-2 SDC	0.797	0.1500	5.32	.0000	1.0559	0.5387

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0653	0.1299	0.503	.6207	0.2893	-0.1587

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0400	0.1837	0.22	.8297	0.3568	-0.2767
Area SDC	0.0905	0.1837	0.49	.6274	0.4073	-0.2262

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	1.77	2.46	0.269	2.41	1.14	1.00	2.71	1.79	0.21
NDC Op-2	4	1.45	1.31	0.281	2.34	0.55	1.00	3.70	3.61	-1.61
SDC Op-1	8	0.34	0.89	0.104	0.59	0.09	2.43	1.92	2.97	1.90
SDC Op-2	4	0.41	1.08	0.238	1.16	-0.35	2.04	2.46	4.03	0.06

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	2.72	4.42	0.252	3.25	2.19
Op-2	7	2.62	4.00	0.573	4.02	1.22

Midwater Transectsce for SFO for 0919 - Engraulis mordax

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.51	0.4852
PERIOD	1	20.000	0.48	0.4983
AREA*PERIOD	1	20.000	0.51	0.4852

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.51	0.00	0.1790	.	0.1299
PERIOD	0.48	0.00	0.1743	.	0.1299

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.4167	27.4514	0.015	.9880
Period in SDC	-27.1910	27.4514	-0.991	.3338

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-13.387	11.2070	-1.19	.2462	5.9417	-32.7161
Period Op-2	-0.000	15.8491	-0.00	1.000	27.3352	-27.3352
Op-1 NDC	0.417	15.8491	0.03	.9793	27.7519	-26.9185
Op-2 NDC	-0.000	22.4140	-0.00	1.000	38.6578	-38.6578
Op-1 SDC	-27.191	15.8491	-1.72	.1017	0.1442	-54.5262
Op-2 SDC	-0.000	22.4140	-0.00	1.000	38.6578	-38.6578

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-13.3872	19.4111	-0.690	.4983	20.0915	-46.8658

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.4167	27.4514	0.02	.9880	47.7626	-46.9293
Area SDC	-27.1910	27.4514	-0.99	.3338	20.1550	-74.5369

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.00	0.00	0.000	.	.	0.42	3.33	1.40	-0.57
NDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-1	8	27.61	214.58	26.722	90.80	-35.58	-27.19	217.89	36.15	-90.53
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.50	10.00	0.500	1.55	-0.55
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectance for SFO for 0581 - Gibbonsia spp.

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.10	0.1626
PERIOD	1	20.000	0.31	0.5844
AREA*PERIOD	1	20.000	0.17	0.6863

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.17	0.00	0.1265	.	0.1093
PERIOD	0.31	0.00	0.1486	.	0.9635

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.0045	0.0438	-0.103	.9188
Period in SDC	-0.0299	0.0438	-0.683	.5025

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.079	0.0179	-4.41	.0003	-0.0480	-0.1097
Period Op-2	-0.062	0.0253	-2.44	.0242	-0.0180	-0.1052
Op-1 NDC	-0.095	0.0253	-3.76	.0012	-0.0514	-0.1385
Op-2 NDC	-0.090	0.0357	-2.53	.0199	-0.0288	-0.1521
Op-1 SDC	-0.063	0.0253	-2.48	.0220	-0.0192	-0.1063
Op-2 SDC	-0.033	0.0357	-0.92	.3691	0.0288	-0.0945

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0172	0.0310	-0.556	.5844	0.0362	-0.0706

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.0045	0.0438	-0.10	.9188	0.0710	-0.0800
Area SDC	-0.0299	0.0438	-0.68	.5025	0.0456	-0.1054

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.68	0.60	0.081	0.87	0.49	-0.34	0.65	-0.14	-0.54
NDC Op-2	4	0.45	0.75	0.190	1.05	-0.16	-0.30	0.88	0.33	-0.93
SDC Op-1	8	0.56	0.63	0.072	0.73	0.39	-0.22	0.54	-0.05	-0.38
SDC Op-2	4	0.24	0.33	0.073	0.47	0.01	-0.09	0.33	0.14	-0.33

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.35	1.13	0.055	0.46	0.23
Op-2	7	0.13	0.25	0.036	0.22	0.04

Benthic Transectsnce for SFO for 0637 - Girella nigricans

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	50.16	0.0000
PERIOD	1	20.000	0.01	0.9326
AREA*PERIOD	1	20.000	0.01	0.9326

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.01	0.00	0.1012	.	0.2582
PERIOD	0.01	0.00	0.1012	.	0.2582

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0242	0.1995	0.121	.9047
Period in SDC	-0.0000	0.1995	-0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.493	0.0814	-6.06	.0000	-0.3530	-0.6339
Period Op-2	-0.506	0.1152	-4.39	.0003	-0.3069	-0.7041
Op-1 NDC	-0.987	0.1152	-8.57	.0000	-0.7882	-1.1855
Op-2 NDC	-1.011	0.1629	-6.21	.0000	-0.7301	-1.2919
Op-1 SDC	-0.000	0.1152	-0.00	1.000	0.1986	-0.1986
Op-2 SDC	0.000	0.1629	0.00	1.000	0.2809	-0.2809

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0121	0.1410	0.086	.9326	0.2553	-0.2312

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0242	0.1995	0.12	.9047	0.3682	-0.3198
Area SDC	-0.0000	0.1995	-0.00	1.000	0.3440	-0.3440

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	1.39	3.88	0.451	2.46	0.32	-1.39	3.88	-0.32	-2.46
NDC Op-2	4	1.28	2.47	0.559	3.06	-0.50	-1.28	2.47	0.50	-3.06
SDC Op-1	8	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SPO for 0648 - Heterostichus rostratus

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.41	0.1365
PERIOD	1	20.000	0.98	0.3343
AREA*PERIOD	1	20.000	2.01	0.1719

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	2.01	0.81	0.3926	0.2246	0.1001
PERIOD	0.98	0.00	0.2501	.	0.1319

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.0250	0.0828	-0.302	.7656
Period in SDC	0.1409	0.0828	1.702	.1043

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.029	0.0338	-0.86	.4017	0.0293	-0.0873
Period Op-2	-0.087	0.0478	-1.82	.0841	-0.0044	-0.1694
Op-1 NDC	-0.025	0.0478	-0.52	.6063	0.0574	-0.1075
Op-2 NDC	0.000	0.0676	0.00	1.000	0.1166	-0.1166
Op-1 SDC	-0.033	0.0478	-0.69	.4993	0.0496	-0.1154
Op-2 SDC	-0.174	0.0676	-2.57	.0183	-0.0572	-0.2905

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0579	0.0586	0.989	.3343	0.1590	-0.0431

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.0250	0.0828	-0.30	.7656	0.1178	-0.1679
Area SDC	0.1409	0.0828	1.70	.1043	0.2838	-0.0019

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.01	0.04	0.006	0.03	-0.00	-0.01	0.08	0.01	-0.03
NDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-1	8	0.02	0.08	0.011	0.04	-0.01	-0.01	0.13	0.02	-0.04
SDC Op-2	4	0.07	0.25	0.060	0.26	-0.12	-0.07	0.25	0.12	-0.26

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.08	0.004	0.01	-0.00
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0601 - Hexagrammos decagrammus

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.63	0.4350
PERIOD	1	20.000	13.27	0.0016
AREA*PERIOD	1	20.000	0.01	0.9163

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.01	0.00	0.1018	.	0.1069
PERIOD	13.27	10.95	0.9693	0.9393	0.1095

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0935	0.0353	2.651	.0153
Period in SDC	0.0882	0.0353	2.501	.0212

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.149	0.0144	10.38	.0000	0.1742	0.1246
Period Op-2	0.059	0.0204	2.88	.0093	0.0937	0.0234
Op-1 NDC	0.141	0.0204	6.92	.0000	0.1759	0.1057
Op-2 NDC	0.047	0.0288	1.64	.1161	0.0970	-0.0024
Op-1 SDC	0.158	0.0204	7.76	.0000	0.1931	0.1229
Op-2 SDC	0.070	0.0288	2.42	.0249	0.1195	0.0202

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0908	0.0249	3.643	.0016	0.1338	0.0478

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0935	0.0353	2.65	.0153	0.1543	0.0327
Area SDC	0.0882	0.0353	2.50	.0212	0.1490	0.0274

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.04	0.08	0.009	0.07	0.02	0.42	0.77	0.60	0.23
NDC Op-2	4	0.05	0.13	0.032	0.16	-0.05	0.12	0.25	0.31	-0.06
SDC Op-1	8	0.00	0.03	0.003	0.01	-0.00	0.46	0.79	0.65	0.26
SDC Op-2	4	0.00	0.00	0.000	.	.	0.18	0.21	0.32	0.03

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.48	1.00	0.065	0.61	0.34
Op-2	7	0.19	0.42	0.057	0.33	0.05

Midwater Transectsce for SFO for 1272 - larval/post-larval fish, unid.

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.00	0.9665
PERIOD	1	20.000	1.35	0.2596
AREA*PERIOD	1	20.000	0.30	0.5893

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.30	0.00	0.1473	.	0.1007
PERIOD	1.35	0.21	0.3030	0.1333	0.1661

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.2019	0.1671	1.208	.2410
Period in SDC	0.0723	0.1671	0.432	.6700

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.014	0.0682	0.21	.8380	0.1318	-0.1035
Period Op-2	-0.123	0.0965	-1.27	.2171	0.0434	-0.2894
Op-1 NDC	0.044	0.0965	0.46	.6530	0.2104	-0.1224
Op-2 NDC	-0.158	0.1364	-1.16	.2608	0.0774	-0.3932
Op-1 SDC	-0.016	0.0965	-0.16	.8717	0.1506	-0.1822
Op-2 SDC	-0.088	0.1364	-0.65	.5261	0.1473	-0.3234

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1371	0.1182	1.160	.2596	0.3409	-0.0667

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.2019	0.1671	1.21	.2410	0.4901	-0.0863
Area SDC	0.0723	0.1671	0.43	.6700	0.3605	-0.2159

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	6.84	53.13	6.616	22.48	-8.81	-2.67	51.56	9.57	-14.91
NDC Op-2	4	0.82	3.28	0.820	3.43	-1.79	-0.82	3.28	1.79	-3.43
SDC Op-1	8	6.03	38.75	4.820	17.43	-5.37	-1.86	29.25	5.28	-9.01
SDC Op-2	4	0.31	1.25	0.313	1.31	-0.68	-0.31	1.25	0.68	-1.31

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	3.33	33.33	2.041	7.61	-0.94
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 1279 - Hyperprosopon anale

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	1.10	0.3065
PERIOD	1	20.000	1.10	0.3065
AREA*PERIOD	1	20.000	1.10	0.3065

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.10	0.00	0.2680	.	0.1647
PERIOD	1.10	0.00	0.2680	.	0.1647

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.4479	0.3018	-1.484	.1534
Period in SDC	-0.0000	0.3018	-0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.224	0.1232	-1.82	.0841	-0.0115	-0.4365
Period Op-2	0.000	0.1742	0.00	1.000	0.3005	-0.3005
Op-1 NDC	-0.448	0.1742	-2.57	.0182	-0.1474	-0.7484
Op-2 NDC	0.000	0.2464	0.00	1.000	0.4250	-0.4250
Op-1 SDC	-0.000	0.1742	-0.00	1.000	0.3005	-0.3005
Op-2 SDC	0.000	0.2464	0.00	1.000	0.4250	-0.4250

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.2240	0.2134	-1.049	.3065	0.1441	-0.5920

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.4479	0.3018	-1.48	.1534	0.0726	-0.9684
Area SDC	-0.0000	0.3018	-0.00	1.000	0.5205	-0.5205

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.45	1.94	0.295	1.14	-0.25	-0.45	1.94	0.25	-1.14
NDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-1	8	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectance for SFO for 0583 - Hypsurus caryi

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	4.27	0.0520
PERIOD	1	20.000	1.38	0.2537
AREA*PERIOD	1	20.000	1.06	0.3147

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.06	0.00	0.2625	.	0.1548
PERIOD	1.38	0.24	0.3080	0.1383	0.2750

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0202	0.1987	0.102	.9199
Period in SDC	0.3101	0.1987	1.560	.1344

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.011	0.0811	-0.14	.8916	0.1287	-0.1511
Period Op-2	-0.176	0.1147	-1.54	.1399	0.0215	-0.3742
Op-1 NDC	-0.229	0.1147	-1.99	.0599	-0.0310	-0.4267
Op-2 NDC	-0.249	0.1622	-1.54	.1404	0.0308	-0.5289
Op-1 SDC	0.206	0.1147	1.80	.0871	0.4043	0.0086
Op-2 SDC	-0.104	0.1622	-0.64	.5303	0.1762	-0.3834

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1651	0.1405	1.175	.2537	0.4075	-0.0772

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0202	0.1987	0.10	.9199	0.3629	-0.3225
Area SDC	0.3101	0.1987	1.56	.1344	0.6528	-0.0327

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.35	0.75	0.088	0.56	0.14	-0.17	0.97	0.09	-0.43
NDC Op-2	4	0.08	0.03	0.009	0.11	0.05	-0.08	0.03	-0.05	-0.11
SDC Op-1	8	0.07	0.38	0.049	0.19	-0.04	0.11	0.68	0.30	-0.09
SDC Op-2	4	0.03	0.08	0.020	0.09	-0.03	-0.03	0.08	0.03	-0.09

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.20	0.88	0.065	0.34	0.06
Op-2	7	0.00	0.00	0.000	.	.

Midwater Transectsce for SPO for 1266 - Medialuna californiensis

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.29	0.1456
PERIOD	1	20.000	0.13	0.7235
AREA*PERIOD	1	20.000	0.13	0.7235

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.13	0.00	0.1203	.	0.1517
PERIOD	0.13	0.00	0.1203	.	0.1517

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.0534	0.1052	-0.508	.6173
Period in SDC	0.0000	0.1052	0.000	1.000

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.070	0.0429	-1.62	.1204	0.0044	-0.1437
Period Op-2	-0.043	0.0607	-0.71	.4874	0.0618	-0.1477
Op-1 NDC	-0.139	0.0607	-2.29	.0327	-0.0346	-0.2441
Op-2 NDC	-0.086	0.0859	-1.00	.3290	0.0622	-0.2341
Op-1 SDC	0.000	0.0607	0.00	1.000	0.1047	-0.1047
Op-2 SDC	0.000	0.0859	0.00	1.000	0.1481	-0.1481

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0267	0.0744	-0.359	.7235	0.1016	-0.1550

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.0534	0.1052	-0.51	.6173	0.1280	-0.2348
Area SDC	0.0000	0.1052	0.00	1.000	0.1814	-0.1814

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.14	0.78	0.096	0.37	-0.09	-0.14	0.78	0.09	-0.37
NDC Op-2	4	0.09	0.31	0.076	0.33	-0.16	-0.09	0.31	0.16	-0.33
SDC Op-1	8	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Midwater Transectsce for SFO for 1171 - Myliobatis californica

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	1.41	0.2488
PERIOD	1	20.000	1.68	0.2101
AREA*PERIOD	1	20.000	0.13	0.7186

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.13	0.00	0.1211	.	0.1193
PERIOD	1.68	0.51	0.3488	0.1795	0.3983

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.1544	0.1315	-1.174	.2541
Period in SDC	-0.0864	0.1315	-0.657	.5185

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.290	0.0537	-5.41	.0000	-0.1977	-0.3829
Period Op-2	-0.170	0.0759	-2.24	.0368	-0.0389	-0.3008
Op-1 NDC	-0.363	0.0759	-4.77	.0001	-0.2316	-0.4934
Op-2 NDC	-0.208	0.1074	-1.94	.0669	-0.0229	-0.3933
Op-1 SDC	-0.218	0.0759	-2.87	.0094	-0.0871	-0.3490
Op-2 SDC	-0.132	0.1074	-1.23	.2345	0.0536	-0.3168

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1204	0.0930	-1.295	.2101	0.0400	-0.2808

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.1544	0.1315	-1.17	.2541	0.0724	-0.3812
Area SDC	-0.0864	0.1315	-0.66	.5185	0.1404	-0.3132

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.15	0.38	0.041	0.25	0.06	-0.15	0.38	-0.06	-0.25
NDC Op-2	4	0.08	0.22	0.049	0.23	-0.08	-0.08	0.22	0.08	-0.23
SDC Op-1	8	0.09	0.36	0.044	0.20	-0.01	-0.09	0.36	0.01	-0.20
SDC Op-2	4	0.04	0.08	0.024	0.12	-0.03	-0.04	0.08	0.03	-0.12

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SPO for 0603 - Ophiodon elongatus

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.12	0.7299
PERIOD	1	20.000	2.36	0.1404
AREA*PERIOD	1	20.000	0.09	0.7627

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.09	0.00	0.1148	.	0.1048
PERIOD	2.36	1.12	0.4367	0.2709	0.1566

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.1304	0.1500	0.869	.3951
Period in SDC	0.1953	0.1500	1.302	.2077

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.205	0.0612	3.35	.0032	0.3108	0.0995
Period Op-2	0.042	0.0866	0.49	.6308	0.1917	-0.1071
Op-1 NDC	0.170	0.0866	1.97	.0633	0.3197	0.0210
Op-2 NDC	0.040	0.1225	0.33	.7478	0.2512	-0.1713
Op-1 SDC	0.240	0.0866	2.77	.0118	0.3893	0.0906
Op-2 SDC	0.045	0.1225	0.36	.7196	0.2559	-0.1667

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1629	0.1061	1.535	.1404	0.3458	-0.0201

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.1304	0.1500	0.87	.3951	0.3891	-0.1283
Area SDC	0.1953	0.1500	1.30	.2077	0.4541	-0.0634

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.05	0.15	0.017	0.09	0.01	0.07	0.21	0.12	0.02
NDC Op-2	4	0.06	0.09	0.022	0.13	-0.01	0.04	0.29	0.27	-0.18
SDC Op-1	8	0.03	0.13	0.016	0.07	-0.01	0.09	0.26	0.16	0.02
SDC Op-2	4	0.06	0.13	0.027	0.15	-0.02	0.04	0.38	0.31	-0.23

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.13	0.63	0.035	0.20	0.05
Op-2	7	0.12	0.33	0.051	0.24	-0.01

Midwater Transectsce for SPO for 0587 - Oxyjulis californica

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.09	0.7637
PERIOD	1	20.000	8.26	0.0094
AREA*PERIOD	1	20.000	0.05	0.8258

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.05	0.00	0.1079	.	0.1000
PERIOD	8.26	6.43	0.8706	0.7893	0.6333

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.4330	0.2310	1.874	.0756
Period in SDC	0.5058	0.2310	2.190	.0406

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.072	0.0943	-0.76	.4553	0.0909	-0.2345
Period Op-2	-0.541	0.1334	-4.06	.0006	-0.3112	-0.7712
Op-1 NDC	-0.065	0.1334	-0.49	.6306	0.1649	-0.2952
Op-2 NDC	-0.498	0.1886	-2.64	.0157	-0.1728	-0.8234
Op-1 SDC	-0.078	0.1334	-0.59	.5629	0.1516	-0.3085
Op-2 SDC	-0.584	0.1886	-3.10	.0057	-0.2590	-0.9096

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.4694	0.1634	2.873	.0094	0.7511	0.1876

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.4330	0.2310	1.87	.0756	0.8314	0.0345
Area SDC	0.5058	0.2310	2.19	.0406	0.9043	0.1074

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	17.49	19.22	2.338	23.02	11.96	0.97	42.31	12.31	-10.37
NDC Op-2	4	12.69	7.94	1.968	18.95	6.42	-8.89	8.21	-3.07	-14.70
SDC Op-1	8	19.55	34.42	3.948	28.88	10.21	-1.08	69.08	17.39	-19.55
SDC Op-2	4	16.85	21.67	4.815	32.18	1.53	-13.05	23.33	3.44	-29.55

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	17.33	63.21	3.759	25.20	9.46
Op-2	7	4.26	6.50	0.949	6.58	1.94

Benthic Transectsnce for SFO for 0594 - Orthonopias triacis

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	3.79	0.0659
PERIOD	1	20.000	17.98	0.0004
AREA*PERIOD	1	20.000	0.18	0.6755

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.18	0.00	0.1285	.	0.1265
PERIOD	17.98	15.18	0.9928	0.9828	0.1453

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.3875	0.1175	3.299	.0036
Period in SDC	0.3169	0.1175	2.698	.0138

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.496	0.0480	10.35	.0000	0.5789	0.4135
Period Op-2	0.144	0.0678	2.12	.0463	0.2610	0.0271
Op-1 NDC	0.433	0.0678	6.39	.0000	0.5500	0.3161
Op-2 NDC	0.046	0.0959	0.48	.6395	0.2110	-0.1198
Op-1 SDC	0.559	0.0678	8.25	.0000	0.6764	0.4424
Op-2 SDC	0.243	0.0959	2.53	.0200	0.4079	0.0771

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3522	0.0831	4.240	.0004	0.4954	0.2089

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.3875	0.1175	3.30	.0036	0.5900	0.1849
Area SDC	0.3169	0.1175	2.70	.0138	0.5195	0.1143

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.04	0.09	0.012	0.07	0.02	0.25	0.36	0.35	0.15
NDC Op-2	4	0.07	0.19	0.041	0.20	-0.06	0.03	0.20	0.17	-0.10
SDC Op-1	8	0.01	0.04	0.005	0.02	-0.01	0.29	0.35	0.38	0.19
SDC Op-2	4	0.00	0.00	0.000	.	.	0.10	0.25	0.30	-0.09

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.31	0.75	0.041	0.39	0.22
Op-2	7	0.12	0.50	0.072	0.30	-0.06

Midwater Transectsce for SFO for 1166 - Paralabrax clathratus

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.00	0.1731
PERIOD	1	20.000	16.43	0.0006
AREA*PERIOD	1	20.000	0.45	0.5100

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.45	0.00	0.1704	.	0.1067
PERIOD	16.43	13.79	0.9883	0.9737	0.1067

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.3557	0.1065	3.341	.0033
Period in SDC	0.2547	0.1065	2.392	.0267

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.028	0.0435	-0.64	.5277	0.0470	-0.1029
Period Op-2	-0.333	0.0615	-5.42	.0000	-0.2271	-0.4392
Op-1 NDC	-0.056	0.0615	-0.91	.3742	0.0502	-0.1619
Op-2 NDC	-0.412	0.0869	-4.73	.0001	-0.2617	-0.5616
Op-1 SDC	0.000	0.0615	0.00	1.000	0.1060	-0.1060
Op-2 SDC	-0.255	0.0869	-2.93	.0083	-0.1048	-0.4047

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3052	0.0753	4.054	.0006	0.4351	0.1754

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.3557	0.1065	3.34	.0033	0.5394	0.1721
Area SDC	0.2547	0.1065	2.39	.0267	0.4384	0.0711

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.02	0.06	0.008	0.04	-0.00	-0.02	0.06	0.00	-0.04
NDC Op-2	4	0.20	0.34	0.085	0.47	-0.07	-0.20	0.34	0.07	-0.47
SDC Op-1	8	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-2	4	0.11	0.29	0.071	0.34	-0.11	-0.11	0.29	0.11	-0.34

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0584 - Oxylebius pictus

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	18.31	0.0004
PERIOD	1	20.000	17.81	0.0004
AREA*PERIOD	1	20.000	1.19	0.2881

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.19	0.07	0.2810	0.1114	0.4782
PERIOD	17.81	15.03	0.9924	0.9820	0.6147

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	1.2292	0.5556	2.212	.0388
Period in SDC	2.0868	0.5556	3.756	.0012

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	2.500	0.2268	11.02	.0000	2.8917	2.1092
Period Op-2	0.842	0.3208	2.63	.0162	1.3957	0.2892
Op-1 NDC	1.445	0.3208	4.51	.0002	1.9986	0.8920
Op-2 NDC	0.216	0.4537	0.48	.6389	0.9986	-0.5663
Op-1 SDC	3.556	0.3208	11.08	.0000	4.1088	3.0023
Op-2 SDC	1.469	0.4537	3.24	.0041	2.2512	0.6863

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	1.6580	0.3929	4.220	.0004	2.3356	0.9804

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	1.2292	0.5556	2.21	.0388	2.1875	0.2708
Area SDC	2.0868	0.5556	3.76	.0012	3.0451	1.1285

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	2.34	2.66	0.310	3.08	1.61	1.45	1.96	2.06	0.83
NDC Op-2	4	2.02	1.97	0.465	3.50	0.54	0.22	1.33	1.10	-0.67
SDC Op-1	8	0.23	0.40	0.055	0.36	0.10	3.56	3.71	4.63	2.48
SDC Op-2	4	0.77	1.54	0.360	1.92	-0.38	1.47	0.67	1.96	0.98

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	3.93	6.58	0.410	4.78	3.07
Op-2	7	2.35	2.83	0.387	3.29	1.40

Benthic Transectsnce for SFO for 0638 - Phanerodon furcatus

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.03	0.8636
PERIOD	1	20.000	1.25	0.2765
AREA*PERIOD	1	20.000	0.03	0.8636

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.03	0.00	0.1048	.	0.1002
PERIOD	1.25	0.13	0.2896	0.1199	0.1223

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.1282	0.1919	-0.668	.5118
Period in SDC	-0.1754	0.1919	-0.914	.3716

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.152	0.0784	-1.94	.0669	-0.0167	-0.2870
Period Op-2	0.000	0.1108	0.00	1.000	0.1911	-0.1911
Op-1 NDC	-0.128	0.1108	-1.16	.2609	0.0629	-0.3193
Op-2 NDC	-0.000	0.1567	-0.00	1.000	0.2703	-0.2703
Op-1 SDC	-0.175	0.1108	-1.58	.1291	0.0157	-0.3666
Op-2 SDC	0.000	0.1567	0.00	1.000	0.2703	-0.2703

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.1518	0.1357	-1.119	.2765	0.0823	-0.3859

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.1282	0.1919	-0.67	.5118	0.2028	-0.4592
Area SDC	-0.1754	0.1919	-0.91	.3716	0.1556	-0.5065

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.09	0.71	0.088	0.30	-0.12	-0.09	0.71	0.12	-0.30
NDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-1	8	0.20	1.53	0.190	0.65	-0.25	-0.20	1.53	0.25	-0.65
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 3107 - Pleuronichthys spp.

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	20.42	0.0002
PERIOD	1	20.000	6.11	0.0226
AREA*PERIOD	1	20.000	0.95	0.3418

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.95	0.00	0.2456	.	0.2046
PERIOD	6.11	4.50	0.7710	0.6568	0.2381

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0999	0.0943	1.059	.3021
Period in SDC	0.2297	0.0943	2.436	.0243

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.120	0.0385	-3.11	.0055	-0.0532	-0.1860
Period Op-2	-0.284	0.0544	-5.22	.0000	-0.1905	-0.3783
Op-1 NDC	-0.001	0.0544	-0.03	.9789	0.0924	-0.0953
Op-2 NDC	-0.101	0.0770	-1.32	.2030	0.0314	-0.2341
Op-1 SDC	-0.238	0.0544	-4.37	.0003	-0.1439	-0.3317
Op-2 SDC	-0.468	0.0770	-6.07	.0000	-0.3347	-0.6003

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1648	0.0667	2.472	.0226	0.2798	0.0498

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0999	0.0943	1.06	.3021	0.2625	-0.0627
Area SDC	0.2297	0.0943	2.44	.0243	0.3924	0.0671

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.00	0.03	0.004	0.01	-0.01	-0.00	0.06	0.01	-0.01
NDC Op-2	4	0.03	0.09	0.022	0.10	-0.04	-0.03	0.09	0.04	-0.10
SDC Op-1	8	0.10	0.29	0.038	0.19	0.01	-0.10	0.29	-0.01	-0.18
SDC Op-2	4	0.21	0.25	0.054	0.38	0.04	-0.21	0.25	-0.04	-0.38

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.08	0.004	0.01	-0.00
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0586 - Rhacochilus toxotes

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	4.34	0.0502
PERIOD	1	20.000	0.26	0.6129
AREA*PERIOD	1	20.000	0.12	0.7319

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.12	0.00	0.1191	.	0.1133
PERIOD	0.26	0.00	0.1416	.	0.1801

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.1172	0.1924	0.609	.5493
Period in SDC	0.0227	0.1924	0.118	.9075

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.024	0.0786	0.31	.7627	0.1595	-0.1114
Period Op-2	-0.046	0.1111	-0.41	.6840	0.1457	-0.2375
Op-1 NDC	-0.094	0.1111	-0.85	.4069	0.0975	-0.2857
Op-2 NDC	-0.211	0.1571	-1.35	.1936	0.0596	-0.4823
Op-1 SDC	0.142	0.1111	1.28	.2152	0.3338	-0.0494
Op-2 SDC	0.120	0.1571	0.76	.4556	0.3905	-0.1514

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0699	0.1361	0.514	.6129	0.3046	-0.1647

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.1172	0.1924	0.61	.5493	0.4491	-0.2147
Area SDC	0.0227	0.1924	0.12	.9075	0.3545	-0.3092

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.25	1.35	0.161	0.63	-0.14	-0.16	1.40	0.23	-0.54
NDC Op-2	4	0.55	1.34	0.294	1.49	-0.38	-0.29	1.30	0.67	-1.26
SDC Op-1	8	0.03	0.08	0.013	0.06	0.00	0.06	0.25	0.12	-0.01
SDC Op-2	4	0.22	0.71	0.165	0.74	-0.31	0.04	0.83	0.60	-0.52

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.09	0.50	0.027	0.15	0.03
Op-2	7	0.30	1.00	0.135	0.63	-0.03

Benthic Transectsnce for SFO for 0599 - Scorpaenichthys marmoratus

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.33	0.1426
PERIOD	1	20.000	2.85	0.1069
AREA*PERIOD	1	20.000	0.39	0.5389

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.39	0.00	0.1613	.	0.1471
PERIOD	2.85	1.57	0.4950	0.3336	0.7931

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0301	0.0401	0.752	.4609
Period in SDC	0.0655	0.0401	1.636	.1175

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.070	0.0164	4.27	.0004	0.0981	0.0417
Period Op-2	0.022	0.0231	0.95	.3512	0.0620	-0.0178
Op-1 NDC	0.039	0.0231	1.70	.1037	0.0793	-0.0005
Op-2 NDC	0.009	0.0327	0.28	.7787	0.0657	-0.0471
Op-1 SDC	0.100	0.0231	4.34	.0003	0.1402	0.0605
Op-2 SDC	0.035	0.0327	1.07	.2995	0.0912	-0.0216

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0478	0.0283	1.688	.1069	0.0967	-0.0010

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0301	0.0401	0.75	.4609	0.0992	-0.0390
Area SDC	0.0655	0.0401	1.64	.1175	0.1346	-0.0036

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.47	0.81	0.093	0.69	0.25	0.15	0.54	0.31	-0.02
NDC Op-2	4	0.18	0.25	0.052	0.34	0.02	0.03	0.54	0.41	-0.35
SDC Op-1	8	0.27	0.50	0.058	0.40	0.13	0.35	0.56	0.54	0.16
SDC Op-2	4	0.11	0.29	0.064	0.32	-0.09	0.09	0.54	0.45	-0.26

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.66	1.50	0.092	0.85	0.46
Op-2	7	0.23	0.50	0.067	0.39	0.06

Benthic Transectsnce for SFO for 0602 - Sebastes atrovirens

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	3.17	0.0903
PERIOD	1	20.000	7.77	0.0113
AREA*PERIOD	1	20.000	0.08	0.7752

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.08	0.00	0.1133	.	0.1213
PERIOD	7.77	6.00	0.8525	0.7642	0.2728

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.4011	0.1843	2.176	.0417
Period in SDC	0.3256	0.1843	1.767	.0925

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.289	0.0752	3.85	.0010	0.4192	0.1597
Period Op-2	-0.074	0.1064	-0.69	.4955	0.1096	-0.2574
Op-1 NDC	0.192	0.1064	1.81	.0857	0.3758	0.0088
Op-2 NDC	-0.209	0.1505	-1.39	.1807	0.0508	-0.4682
Op-1 SDC	0.387	0.1064	3.63	.0017	0.5701	0.2031
Op-2 SDC	0.061	0.1505	0.41	.6896	0.3205	-0.1985

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3633	0.1303	2.788	.0113	0.5881	0.1386

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.4011	0.1843	2.18	.0417	0.7189	0.0832
Area SDC	0.3256	0.1843	1.77	.0925	0.6435	0.0078

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.18	0.31	0.035	0.27	0.10	0.14	0.35	0.23	0.05
NDC Op-2	4	0.69	1.25	0.282	1.59	-0.21	-0.38	1.63	0.71	-1.46
SDC Op-1	8	0.12	0.50	0.068	0.28	-0.04	0.20	0.79	0.41	-0.00
SDC Op-2	4	0.26	0.38	0.079	0.51	0.01	0.05	0.13	0.15	-0.05

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.33	1.00	0.053	0.44	0.22
Op-2	7	0.33	0.67	0.079	0.53	0.14

Midwater Transectsce for SFO for 1314 - Sebastes atrovirens (yoy)

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.18	0.6775
PERIOD	1	20.000	5.78	0.0260
AREA*PERIOD	1	20.000	0.02	0.8826

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.02	0.00	0.1035	.	0.1001
PERIOD	5.78	4.20	0.7506	0.6311	0.1342

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.5191	0.3257	1.594	.1266
Period in SDC	0.5880	0.3257	1.805	.0861

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.069	0.1330	-0.52	.6076	0.1600	-0.2987
Period Op-2	-0.623	0.1880	-3.31	.0035	-0.2986	-0.9472
Op-1 NDC	-0.038	0.1880	-0.20	.8419	0.2863	-0.3623
Op-2 NDC	-0.557	0.2659	-2.09	.0491	-0.0985	-1.0157
Op-1 SDC	-0.101	0.1880	-0.54	.5981	0.2236	-0.4250
Op-2 SDC	-0.689	0.2659	-2.59	.0175	-0.2301	-1.1474

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5536	0.2303	2.404	.0260	0.9507	0.1564

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.5191	0.3257	1.59	.1266	1.0808	-0.0426
Area SDC	0.5880	0.3257	1.81	.0861	1.1497	0.0263

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	1.20	8.63	1.066	3.72	-1.32	-0.61	4.94	0.77	-1.99
NDC Op-2	4	2.67	10.22	2.527	10.71	-5.37	-2.59	9.99	5.28	-10.45
SDC Op-1	8	2.54	19.42	2.413	8.24	-3.17	-1.95	15.74	2.60	-6.49
SDC Op-2	4	0.95	2.04	0.433	2.33	-0.43	-0.86	1.88	0.38	-2.11

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.50	8.08	0.403	1.35	-0.34
Op-2	7	0.10	0.50	0.071	0.27	-0.08

Benthic Transectsnce for SFO for 0600 - Sebastes chrysomelas/S. carnatus (juv.)

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.03	0.8721
PERIOD	1	20.000	13.92	0.0013
AREA*PERIOD	1	20.000	0.27	0.6100

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.27	0.00	0.1423	.	0.1000
PERIOD	13.92	11.52	0.9747	0.9486	0.3876

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.7447	0.2479	3.004	.0070
Period in SDC	0.5630	0.2479	2.271	.0343

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.200	0.1012	1.97	.0624	0.3743	0.0252
Period Op-2	-0.454	0.1431	-3.17	.0048	-0.2072	-0.7009
Op-1 NDC	0.231	0.1431	1.61	.1223	0.4777	-0.0159
Op-2 NDC	-0.514	0.2024	-2.54	.0196	-0.1647	-0.8628
Op-1 SDC	0.169	0.1431	1.18	.2525	0.4155	-0.0782
Op-2 SDC	-0.394	0.2024	-1.95	.0655	-0.0453	-0.7434

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.6538	0.1753	3.730	.0013	0.9561	0.3515

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.7447	0.2479	3.00	.0070	1.1722	0.3171
Area SDC	0.5630	0.2479	2.27	.0343	0.9905	0.1355

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.72	3.24	0.379	1.62	-0.17	0.37	1.49	0.80	-0.05
NDC Op-2	4	11.96	30.53	7.165	34.76	-10.84	-5.77	15.70	4.73	-16.28
SDC Op-1	8	0.72	1.54	0.211	1.22	0.22	0.38	2.08	0.96	-0.21
SDC Op-2	4	10.50	27.58	6.121	29.98	-8.98	-4.31	8.54	2.69	-11.32

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.04	3.17	0.272	1.61	0.47
Op-2	7	6.96	37.33	5.176	19.63	-5.70

Benthic Transectsnce for SFO for 0654 - Sebastes chrysomelas

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	55.57	0.0000
PERIOD	1	20.000	23.69	0.0001
AREA*PERIOD	1	20.000	3.84	0.0643

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	3.84	2.45	0.5976	0.4482	0.4929
PERIOD	23.69	20.32	0.9989	0.9966	0.6442

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	1.6580	0.3435	4.827	.0001
Period in SDC	0.7066	0.3435	2.057	.0530

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	1.466	0.1402	10.45	.0000	1.7080	1.2243
Period Op-2	0.284	0.1983	1.43	.1678	0.6259	-0.0582
Op-1 NDC	0.799	0.1983	4.03	.0007	1.1407	0.4566
Op-2 NDC	-0.859	0.2805	-3.06	.0061	-0.3756	-1.3431
Op-1 SDC	2.134	0.1983	10.76	.0000	2.4757	1.7916
Op-2 SDC	1.427	0.2805	5.09	.0001	1.9108	0.9433

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	1.1823	0.2429	4.867	.0001	1.6012	0.7634

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	1.6580	0.3435	4.83	.0001	2.2504	1.0655
Area SDC	0.7066	0.3435	2.06	.0530	1.2991	0.1141

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	1.49	1.09	0.138	1.82	1.17	0.80	1.20	1.17	0.43
NDC Op-2	4	2.52	2.50	0.518	4.16	0.87	-0.86	1.21	0.04	-1.76
SDC Op-1	8	0.16	0.29	0.039	0.25	0.07	2.13	1.88	2.67	1.60
SDC Op-2	4	0.23	0.29	0.065	0.44	0.02	1.43	1.33	2.38	0.47

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	2.33	3.33	0.187	2.72	1.94
Op-2	7	1.60	1.67	0.227	2.15	1.04

Benthic Transectsnce for SFO for 1184 - Sebastes melanops (juv.)

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.18	0.6737
PERIOD	1	20.000	0.09	0.7729
AREA*PERIOD	1	20.000	0.01	0.9391

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.01	0.00	0.1009	.	0.1002
PERIOD	0.09	0.00	0.1135	.	0.1312

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0369	0.2426	0.152	.8806
Period in SDC	0.0634	0.2426	0.261	.7964

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.235	0.0990	2.38	.0277	0.4060	0.0644
Period Op-2	0.185	0.1401	1.32	.2013	0.4266	-0.0565
Op-1 NDC	0.192	0.1401	1.37	.1857	0.4335	-0.0496
Op-2 NDC	0.155	0.1981	0.78	.4430	0.4967	-0.1866
Op-1 SDC	0.279	0.1401	1.99	.0606	0.5201	0.0370
Op-2 SDC	0.215	0.1981	1.09	.2905	0.5567	-0.1265

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0502	0.1715	0.292	.7729	0.3460	-0.2457

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0369	0.2426	0.15	.8806	0.4553	-0.3815
Area SDC	0.0634	0.2426	0.26	.7964	0.4818	-0.3550

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.44	2.79	0.348	1.26	-0.38	0.26	2.80	0.95	-0.42
NDC Op-2	4	0.05	0.22	0.055	0.23	-0.12	0.12	0.41	0.43	-0.19
SDC Op-1	8	0.23	1.75	0.217	0.75	-0.28	0.47	2.83	1.29	-0.35
SDC Op-2	4	0.02	0.08	0.021	0.09	-0.05	0.16	0.54	0.57	-0.26

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.67	3.92	0.291	1.27	0.06
Op-2	7	0.20	1.17	0.163	0.60	-0.20

Midwater Transectsce for SFO for 0597 - Sebastes mystinus

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	5.82	0.0256
PERIOD	1	20.000	3.83	0.0646
AREA*PERIOD	1	20.000	0.00	0.9463

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.00	0.00	0.1007	.	0.1425
PERIOD	3.83	2.44	0.5968	0.4472	0.1425

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.3517	0.2635	1.335	.1969
Period in SDC	0.3771	0.2635	1.431	.1677

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.852	0.1076	7.93	.0000	1.0379	0.6669
Period Op-2	0.488	0.1521	3.21	.0044	0.7503	0.2256
Op-1 NDC	0.621	0.1521	4.08	.0006	0.8837	0.3590
Op-2 NDC	0.270	0.2151	1.25	.2245	0.6407	-0.1014
Op-1 SDC	1.083	0.1521	7.12	.0000	1.3458	0.8211
Op-2 SDC	0.706	0.2151	3.28	.0037	1.0773	0.3353

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3644	0.1863	1.956	.0646	0.6858	0.0431

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.3517	0.2635	1.33	.1969	0.8061	-0.1027
Area SDC	0.3771	0.2635	1.43	.1677	0.8316	-0.0773

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.24	0.50	0.065	0.39	0.08	1.42	3.67	2.64	0.20
NDC Op-2	4	0.27	0.75	0.166	0.79	-0.26	0.19	0.67	0.74	-0.35
SDC Op-1	8	0.00	0.00	0.000	.	.	1.65	3.63	2.87	0.44
SDC Op-2	4	0.00	0.00	0.000	.	.	0.46	0.50	0.82	0.10

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.64	10.38	0.533	2.75	0.52
Op-2	7	0.44	1.08	0.150	0.81	0.07

Midwater Transectsce for SFO for 0598 - Sebastes mystinus (juv.)

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees
of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.99	0.3320
PERIOD	1	20.000	5.35	0.0315
AREA*PERIOD	1	20.000	0.99	0.3320

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.99	0.00	0.2515	.	0.1183
PERIOD	5.35	3.82	0.7222	0.5959	0.1183

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.3284	0.3520	0.933	.3620
Period in SDC	0.8233	0.3520	2.339	.0298

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.614	0.1437	4.27	.0004	0.8615	0.3658
Period Op-2	0.038	0.2032	0.19	.8543	0.3883	-0.3127
Op-1 NDC	0.366	0.2032	1.80	.0867	0.7167	0.0157
Op-2 NDC	0.038	0.2874	0.13	.8966	0.5335	-0.4579
Op-1 SDC	0.861	0.2032	4.24	.0004	1.2116	0.5106
Op-2 SDC	0.038	0.2874	0.13	.8966	0.5335	-0.4579

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5758	0.2489	2.314	.0315	1.0051	0.1466

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.3284	0.3520	0.93	.3620	0.9354	-0.2787
Area SDC	0.8233	0.3520	2.34	.0298	1.4304	0.2162

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.58	3.29	0.396	1.52	-0.36	1.08	3.90	2.21	-0.05
NDC Op-2	4	0.00	0.00	0.000	.	.	0.01	0.04	0.04	-0.02
SDC Op-1	8	0.00	0.00	0.000	.	.	1.66	4.14	3.12	0.20
SDC Op-2	4	0.00	0.00	0.000	.	.	0.01	0.04	0.04	-0.02

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.76	6.67	0.500	2.81	0.72
Op-2	7	0.01	0.08	0.012	0.04	-0.02

Midwater Transectsce for SFO for 0642 - Sebastes paucispinus (juv.)

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	1.52	0.2324
PERIOD	1	20.000	0.31	0.5859
AREA*PERIOD	1	20.000	3.07	0.0952

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	3.07	1.76	0.5191	0.3600	0.1587
PERIOD	0.31	0.00	0.1482	.	0.2320

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.1677	0.1029	-1.630	.1188
Period in SDC	0.0872	0.1029	0.847	.4071

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.021	0.0420	-0.51	.6163	0.0511	-0.0939
Period Op-2	0.019	0.0594	0.32	.7536	0.1214	-0.0836
Op-1 NDC	-0.130	0.0594	-2.19	.0408	-0.0274	-0.2324
Op-2 NDC	0.038	0.0840	0.45	.6575	0.1827	-0.1071
Op-1 SDC	0.087	0.0594	1.47	.1580	0.1896	-0.0153
Op-2 SDC	0.000	0.0840	0.00	1.000	0.1449	-0.1449

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0403	0.0728	-0.554	.5859	0.0852	-0.1658

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.1677	0.1029	-1.63	.1188	0.0098	-0.3452
Area SDC	0.0872	0.1029	0.85	.4071	0.2647	-0.0904

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.13	0.47	0.061	0.28	-0.01	-0.08	0.44	0.04	-0.21
NDC Op-2	4	0.00	0.00	0.000	.	.	0.01	0.04	0.04	-0.02
SDC Op-1	8	0.02	0.14	0.017	0.06	-0.02	0.03	0.08	0.06	0.00
SDC Op-2	4	0.01	0.04	0.010	0.04	-0.02	0.00	0.08	0.05	-0.05

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.05	0.58	0.030	0.11	-0.01
Op-2	7	0.01	0.08	0.012	0.04	-0.02

Midwater Transectsce for SFO for 0593 - Sebastes serranoides

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	5.55	0.0289
PERIOD	1	20.000	1.64	0.2151
AREA*PERIOD	1	20.000	1.35	0.2583

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.35	0.22	0.3041	0.1344	0.1182
PERIOD	1.64	0.48	0.3436	0.1743	0.1249

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0748	0.0433	1.728	.0994
Period in SDC	0.0036	0.0433	0.083	.9350

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.018	0.0177	1.04	.3094	0.0489	-0.0120
Period Op-2	-0.021	0.0250	-0.83	.4160	0.0223	-0.0639
Op-1 NDC	0.000	0.0250	0.01	.9938	0.0433	-0.0429
Op-2 NDC	-0.075	0.0353	-2.11	.0476	-0.0136	-0.1356
Op-1 SDC	0.037	0.0250	1.47	.1579	0.0798	-0.0064
Op-2 SDC	0.033	0.0353	0.94	.3603	0.0941	-0.0279

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0392	0.0306	1.280	.2151	0.0920	-0.0136

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0748	0.0433	1.73	.0994	0.1495	0.0001
Area SDC	0.0036	0.0433	0.08	.9350	0.0782	-0.0711

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.10	0.50	0.058	0.24	-0.03	-0.00	0.81	0.19	-0.19
NDC Op-2	4	0.34	1.09	0.261	1.17	-0.49	-0.26	0.89	0.40	-0.92
SDC Op-1	8	0.01	0.06	0.007	0.02	-0.01	0.09	0.38	0.20	-0.01
SDC Op-2	4	0.00	0.00	0.000	.	.	0.08	0.25	0.26	-0.10

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.10	0.42	0.033	0.16	0.03
Op-2	7	0.06	0.25	0.035	0.15	-0.03

Midwater Transectsce for SFO for 0579 - Sebastes serranoides/S. flavidus (juv.)

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.21	0.1524
PERIOD	1	20.000	0.25	0.6195
AREA*PERIOD	1	20.000	0.00	0.9642

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.00	0.00	0.1003	.	0.1074
PERIOD	0.25	0.00	0.1400	.	0.2289

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.1154	0.3555	0.325	.7489
Period in SDC	0.1382	0.3555	0.389	.7015

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.095	0.1451	-0.66	.5194	0.1551	-0.3455
Period Op-2	-0.222	0.2052	-1.08	.2924	0.1320	-0.5759
Op-1 NDC	-0.288	0.2052	-1.40	.1761	0.0661	-0.6418
Op-2 NDC	-0.403	0.2902	-1.39	.1800	0.0974	-0.9038
Op-1 SDC	0.098	0.2052	0.48	.6398	0.4515	-0.2564
Op-2 SDC	-0.041	0.2902	-0.14	.8899	0.4599	-0.5412

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1268	0.2513	0.504	.6195	0.5603	-0.3067

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.1154	0.3555	0.32	.7489	0.7284	-0.4977
Area SDC	0.1382	0.3555	0.39	.7015	0.7513	-0.4749

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	1.87	3.97	0.560	3.19	0.54	-0.74	5.72	0.77	-2.24
NDC Op-2	4	0.21	0.28	0.060	0.40	0.02	-0.19	0.20	-0.06	-0.33
SDC Op-1	8	1.73	6.42	0.981	4.05	-0.60	-0.60	9.54	2.24	-3.43
SDC Op-2	4	0.04	0.17	0.042	0.17	-0.09	-0.02	0.25	0.15	-0.19

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.14	5.83	0.428	2.03	0.24
Op-2	7	0.01	0.08	0.012	0.04	-0.02

Midwater Transectsce for SFO for 1121 - Sebastes spp.

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.00	0.9906
PERIOD	1	20.000	3.32	0.0832
AREA*PERIOD	1	20.000	0.00	0.9906

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.00	0.00	0.1000	.	0.1000
PERIOD	3.32	1.99	0.5466	0.3906	0.1019

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.2005	0.1545	1.298	.2092
Period in SDC	0.1979	0.1545	1.281	.2149

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.199	0.0631	3.16	.0049	0.3080	0.0904
Period Op-2	0.000	0.0892	0.00	1.000	0.1539	-0.1539
Op-1 NDC	0.201	0.0892	2.25	.0360	0.3544	0.0467
Op-2 NDC	0.000	0.1262	0.00	1.000	0.2176	-0.2176
Op-1 SDC	0.198	0.0892	2.22	.0383	0.3518	0.0441
Op-2 SDC	0.000	0.1262	0.00	1.000	0.2176	-0.2176

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1992	0.1093	1.823	.0832	0.3877	0.0108

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.2005	0.1545	1.30	.2092	0.4670	-0.0660
Area SDC	0.1979	0.1545	1.28	.2149	0.4644	-0.0686

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.02	0.08	0.011	0.04	-0.01	0.20	0.77	0.46	-0.06
NDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-1	8	0.02	0.17	0.021	0.07	-0.03	0.20	0.67	0.44	-0.05
SDC Op-2	4	0.00	0.00	0.000	.	.	0.00	0.00	.	.

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.25	2.25	0.143	0.55	-0.05
Op-2	7	0.00	0.00	0.000	.	.

Benthic Transectsnce for SFO for 0589 - Sebastes rastrelliger

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	1.00	0.3283
PERIOD	1	20.000	0.69	0.4152
AREA*PERIOD	1	20.000	1.91	0.1823

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.91	0.72	0.3797	0.2113	0.1831
PERIOD	0.69	0.00	0.2074	.	0.7879

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.0603	0.1553	-0.389	.7017
Period in SDC	0.2431	0.1553	1.565	.1332

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.002	0.0634	-0.04	.9703	0.1069	-0.1117
Period Op-2	-0.094	0.0896	-1.05	.3081	0.0609	-0.2484
Op-1 NDC	-0.133	0.0896	-1.49	.1528	0.0214	-0.2879
Op-2 NDC	-0.073	0.1268	-0.58	.5716	0.1457	-0.2916
Op-1 SDC	0.128	0.0896	1.43	.1673	0.2831	-0.0261
Op-2 SDC	-0.115	0.1268	-0.90	.3769	0.1041	-0.3332

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0914	0.1098	0.832	.4152	0.2807	-0.0980

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.0603	0.1553	-0.39	.7017	0.2075	-0.3281
Area SDC	0.2431	0.1553	1.57	.1332	0.5109	-0.0247

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.58	0.75	0.106	0.83	0.33	-0.13	0.54	0.02	-0.29
NDC Op-2	4	0.22	0.41	0.095	0.52	-0.08	-0.07	0.49	0.27	-0.42
SDC Op-1	8	0.32	0.35	0.043	0.42	0.22	0.13	1.04	0.40	-0.14
SDC Op-2	4	0.26	0.33	0.080	0.52	0.00	-0.11	0.46	0.26	-0.49

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.50	2.13	0.118	0.74	0.25
Op-2	7	0.14	0.25	0.043	0.25	0.04

Benthic Transectsnce for SFO for 0593 - Sebastes serranoides

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	12.11	0.0024
PERIOD	1	20.000	2.73	0.1140
AREA*PERIOD	1	20.000	0.02	0.8760

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.02	0.00	0.1040	.	0.1886
PERIOD	2.73	1.46	0.4814	0.3188	0.2247

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.1880	0.1779	1.057	.3031
Period in SDC	0.2278	0.1779	1.281	.2150

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.168	0.0726	2.32	.0311	0.2937	0.0432
Period Op-2	-0.039	0.1027	-0.38	.7046	0.1377	-0.2166
Op-1 NDC	-0.060	0.1027	-0.59	.5631	0.1167	-0.2375
Op-2 NDC	-0.248	0.1453	-1.71	.1027	0.0021	-0.4989
Op-1 SDC	0.397	0.1027	3.87	.0010	0.5744	0.2201
Op-2 SDC	0.169	0.1453	1.17	.2571	0.4200	-0.0811

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.2079	0.1258	1.653	.1140	0.4249	-0.0090

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.1880	0.1779	1.06	.3031	0.4949	-0.1188
Area SDC	0.2278	0.1779	1.28	.2150	0.5346	-0.0790

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.26	0.75	0.082	0.45	0.06	-0.05	0.63	0.13	-0.23
NDC Op-2	4	0.21	0.50	0.118	0.59	-0.16	-0.16	0.58	0.27	-0.59
SDC Op-1	8	0.01	0.04	0.006	0.02	-0.01	0.20	0.46	0.32	0.07
SDC Op-2	4	0.00	0.00	0.000	.	.	0.05	0.08	0.12	-0.01

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.21	0.88	0.063	0.35	0.08
Op-2	7	0.06	0.17	0.030	0.13	-0.01

Benthic Transectsnce for SPO for 0579 - Sebastes serranoides/S. flavidus (juv.)

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	3.70	0.0688
PERIOD	1	20.000	0.78	0.3886
AREA*PERIOD	1	20.000	2.60	0.1224

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	2.60	1.34	0.4661	0.3023	0.1090
PERIOD	0.78	0.00	0.2201	.	0.4681

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.1213	0.2345	-0.517	.6106
Period in SDC	0.4136	0.2345	1.764	.0931

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.145	0.0957	-1.52	.1448	0.0198	-0.3104
Period Op-2	-0.291	0.1354	-2.15	.0437	-0.0579	-0.5250
Op-1 NDC	-0.439	0.1354	-3.24	.0041	-0.2050	-0.6720
Op-2 NDC	-0.317	0.1915	-1.66	.1132	0.0131	-0.6475
Op-1 SDC	0.148	0.1354	1.09	.2876	0.3815	-0.0856
Op-2 SDC	-0.266	0.1915	-1.39	.1805	0.0646	-0.5960

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1462	0.1658	0.881	.3886	0.4322	-0.1399

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.1213	0.2345	-0.52	.6106	0.2832	-0.5258
Area SDC	0.4136	0.2345	1.76	.0931	0.8181	0.0091

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	3.49	6.84	0.810	5.41	1.58	-1.26	12.48	1.73	-4.25
NDC Op-2	4	0.35	0.78	0.177	0.92	-0.21	-0.22	0.32	0.02	-0.46
SDC Op-1	8	1.01	2.53	0.376	1.90	0.12	1.22	10.29	3.85	-1.41
SDC Op-2	4	0.51	1.29	0.315	1.51	-0.49	-0.38	0.83	0.32	-1.07

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	2.12	16.17	0.873	3.95	0.30
Op-2	7	0.15	0.50	0.082	0.36	-0.05

Benthic Transectsnce for SFO for 1267 - Semicossyphus pulcher

Data transformed using log base10(x + .1)

Satterthwaite's Adjustment for Degrees of Freedom used in Analysis of Variance.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	38.06	0.0000
PERIOD	1	20.000	0.05	0.8212
AREA*PERIOD	1	20.000	1.97	0.1762

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.97	0.77	0.3872	0.2190	0.2362
PERIOD	0.05	0.00	0.1083	.	0.3097

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.1729	0.2084	-0.830	.4166
Period in SDC	0.2403	0.2084	1.153	.2623

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.421	0.0851	-4.95	.0001	-0.2744	-0.5678
Period Op-2	-0.455	0.1203	-3.78	.0012	-0.2473	-0.6623
Op-1 NDC	-0.979	0.1203	-8.14	.0000	-0.7714	-1.1863
Op-2 NDC	-0.806	0.1701	-4.74	.0001	-0.5126	-1.0994
Op-1 SDC	0.137	0.1203	1.14	.2692	0.3442	-0.0708
Op-2 SDC	-0.104	0.1701	-0.61	.5493	0.1898	-0.3970

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0337	0.1473	0.229	.8212	0.2878	-0.2204

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.1729	0.2084	-0.83	.4166	0.1865	-0.5322
Area SDC	0.2403	0.2084	1.15	.2623	0.5997	-0.1190

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	2.18	4.08	0.587	3.57	0.79	-2.10	4.01	-0.74	-3.47
NDC Op-2	4	0.59	0.75	0.156	1.09	0.10	-0.59	0.75	-0.10	-1.09
SDC Op-1	8	0.02	0.08	0.011	0.04	-0.01	0.06	0.25	0.13	-0.02
SDC Op-2	4	0.03	0.08	0.020	0.09	-0.03	-0.03	0.08	0.03	-0.09

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.08	0.38	0.025	0.13	0.03
Op-2	7	0.00	0.00	0.000	.	.

Midwater Transectsce for SFO.for FSPP - Spp. Richness

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	12.88	0.0018
PERIOD	1	20.000	14.86	0.0010
AREA*PERIOD	1	20.000	1.81	0.1939

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.81	0.63	0.3663	0.1974	0.1453
PERIOD	14.86	12.38	0.9810	0.9600	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.1081	0.0609	1.775	.0910
Period in SDC	0.2239	0.0609	3.677	.0015

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.019	0.0249	0.77	.4517	0.0620	-0.0238
Period Op-2	-0.147	0.0352	-4.18	.0005	-0.0863	-0.2075
Op-1 NDC	-0.087	0.0352	-2.48	.0223	-0.0265	-0.1477
Op-2 NDC	-0.195	0.0497	-3.93	.0008	-0.1095	-0.2809
Op-1 SDC	0.125	0.0352	3.56	.0019	0.1859	0.0646
Op-2 SDC	-0.099	0.0497	-1.98	.0612	-0.0129	-0.1843

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.1660	0.0431	3.855	.0010	0.2402	0.0917

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.1081	0.0609	1.78	.0910	0.2131	0.0031
Area SDC	0.2239	0.0609	3.68	.0015	0.3289	0.1189

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	5.35	2.63	0.335	6.14	4.56	-1.13	2.58	-0.31	-1.96
NDC Op-2	4	5.91	3.00	0.656	7.99	3.82	-2.49	1.67	-1.32	-3.66
SDC Op-1	8	2.97	2.67	0.362	3.83	2.12	1.24	4.22	2.41	0.07
SDC Op-2	4	4.54	2.17	0.515	6.18	2.90	-1.12	1.50	0.18	-2.43

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	4.27	9.83	0.458	5.22	3.31
Op-2	7	3.24	3.33	0.502	4.47	2.01

Benthic Transectsnce for SFO for FSPP - Spp. Richness

Data transformed using log base10(x + 1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	16.82	0.0006
PERIOD	1	20.000	4.39	0.0490
AREA*PERIOD	1	20.000	0.51	0.4832

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.51	0.00	0.1797	.	0.1050
PERIOD	4.39	2.95	0.6479	0.5066	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0398	0.0407	0.977	.3403
Period in SDC	0.0809	0.0407	1.987	.0608

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.053	0.0166	3.20	.0045	0.0818	0.0245
Period Op-2	-0.007	0.0235	-0.30	.7637	0.0334	-0.0477
Op-1 NDC	-0.016	0.0235	-0.69	.5000	0.0244	-0.0567
Op-2 NDC	-0.056	0.0332	-1.68	.1081	0.0014	-0.1132
Op-1 SDC	0.122	0.0235	5.21	.0000	0.1630	0.0819
Op-2 SDC	0.042	0.0332	1.25	.2253	0.0989	-0.0157

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0603	0.0288	2.096	.0490	0.1099	0.0107

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0398	0.0407	0.98	.3403	0.1099	-0.0304
Area SDC	0.0809	0.0407	1.99	.0608	0.1510	0.0107

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	17.54	5.33	0.679	19.15	15.94	-0.65	6.92	1.30	-2.59
NDC. Op-2	4	16.03	4.63	0.998	19.21	12.86	-1.99	3.50	0.56	-4.54
SDC Op-1	8	12.49	3.50	0.564	13.83	11.16	4.40	6.17	6.20	2.61
SDC Op-2	4	12.63	4.17	0.878	15.42	9.83	1.42	7.83	7.11	-4.28

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	17.20	12.17	0.741	18.75	15.65
Op-2	7	14.24	7.33	1.018	16.73	11.75

Midwater Transectsce for SFO for FTOT - Tot. Count

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	0.24	0.6324
PERIOD	1	20.000	4.64	0.0437
AREA*PERIOD	1	20.000	0.87	0.3626

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.87	0.00	0.2337	.	0.1000
PERIOD	4.64	3.17	0.6683	0.5306	0.6190

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.5616	0.2574	2.182	.0412
Period in SDC	0.2224	0.2574	0.864	.3979

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.112	0.1051	-1.06	.3003	0.0695	-0.2930
Period Op-2	-0.504	0.1486	-3.39	.0029	-0.2474	-0.7601
Op-1 NDC	-0.071	0.1486	-0.48	.6373	0.1852	-0.3275
Op-2 NDC	-0.633	0.2102	-3.01	.0069	-0.2702	-0.9953
Op-1 SDC	-0.152	0.1486	-1.02	.3176	0.1040	-0.4087
Op-2 SDC	-0.375	0.2102	-1.78	.0898	-0.0122	-0.7372

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.3920	0.1820	2.153	.0437	0.7059	0.0780

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.5616	0.2574	2.18	.0412	1.0056	0.1176
Area SDC	0.2224	0.2574	0.86	.3979	0.6664	-0.2216

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	39.19	42.96	5.582	52.39	25.99	-6.10	70.56	12.58	-24.78
NDC Op-2	4	83.47	87.25	19.173	144.49	22.45	-58.24	83.08	2.11	-118.59
SDC Op-1	8	71.49	231.17	27.929	137.53	5.45	-38.40	245.75	27.62	-104.43
SDC Op-2	4	43.08	32.13	6.585	64.04	22.13	-17.85	61.17	29.52	-65.23

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	31.20	68.58	4.389	40.38	22.01
Op-2	7	22.02	66.75	9.856	46.14	-2.09

Benthic Transectsnce for SFO for FTOT - Tot. Count

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.74	0.1137
PERIOD	1	20.000	0.08	0.7842
AREA*PERIOD	1	20.000	0.30	0.5924

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.30	0.00	0.1465	.	0.1000
PERIOD	0.08	0.00	0.1122	.	0.9977

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	-0.0651	0.1120	-0.581	.5677
Period in SDC	0.0211	0.1120	0.188	.8524

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	-0.190	0.0457	-4.15	.0005	-0.1109	-0.2686
Period Op-2	-0.168	0.0646	-2.60	.0173	-0.0563	-0.2792
Op-1 NDC	-0.277	0.0646	-4.28	.0004	-0.1653	-0.3882
Op-2 NDC	-0.212	0.0914	-2.32	.0313	-0.0540	-0.3694
Op-1 SDC	-0.103	0.0646	-1.59	.1277	0.0088	-0.2142
Op-2 SDC	-0.124	0.0914	-1.35	.1907	0.0338	-0.2815

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	-0.0220	0.0792	-0.278	.7842	0.1146	-0.1585

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	-0.0651	0.1120	-0.58	.5677	0.1280	-0.2581
Area SDC	0.0211	0.1120	0.19	.8524	0.2142	-0.1720

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	83.69	92.66	10.279	108.00	59.38	-39.28	78.71	-14.49	-64.06
NDC Op-2	4	51.32	56.78	13.225	93.41	9.23	-19.99	24.73	-2.34	-37.64
SDC Op-1	8	56.68	61.75	7.019	73.27	40.08	-12.27	74.29	8.04	-32.57
SDC Op-2	4	41.80	38.58	8.437	68.65	14.95	-10.47	30.46	16.26	-37.20

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	43.40	122.08	6.051	56.07	30.74
Op-2	7	33.17	56.33	7.179	50.73	15.60

Midwater Transectsce for SFO for TDIV - Tot. Diversity

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	2.83	0.1080
PERIOD	1	20.000	10.01	0.0049
AREA*PERIOD	1	20.000	2.60	0.1226

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	2.60	1.34	0.4658	0.3020	0.2558
PERIOD	10.01	8.01	0.9207	0.8616	0.8691

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.2817	0.2567	1.098	.2855
Period in SDC	0.8668	0.2567	3.377	.0030

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.197	0.1048	1.88	.0753	0.3773	0.0159
Period Op-2	-0.378	0.1482	-2.55	.0191	-0.1221	-0.6332
Op-1 NDC	-0.102	0.1482	-0.69	.4975	0.1532	-0.3580
Op-2 NDC	-0.384	0.2096	-1.83	.0818	-0.0226	-0.7455
Op-1 SDC	0.496	0.1482	3.34	.0032	0.7511	0.2400
Op-2 SDC	-0.371	0.2096	-1.77	.0917	-0.0098	-0.7327

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.5742	0.1815	3.164	.0049	0.8873	0.2612

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.2817	0.2567	1.10	.2855	0.7243	-0.1610
Area SDC	0.8668	0.2567	3.38	.0030	1.3095	0.4241

Area-period means and deltas from original data

Area-Period	N	Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	1.15	1.07	0.136	1.47	0.83	-0.10	1.05	0.24	-0.44
NDC Op-2	4	1.10	0.29	0.063	1.30	0.90	-0.38	0.66	0.08	-0.84
SDC Op-1	8	0.55	0.82	0.101	0.79	0:31	0.50	1.10	0.86	0.13
SDC Op-2	4	1.09	1.10	0.236	1.84	0.34	-0.37	1.23	0.43	-1.18

Period means and deltas from original control data

Period	N	Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	1.06	2.09	0.110	1.29	0.82
Op-2	7	0.73	1.14	0.146	1.08	0.37

Benthic Transectsnce for SPO for TDIV - Tot. Diversity

Data transformed using log base10(x + .1)

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	13.20	0.0017
PERIOD	1	20.000	6.30	0.0208
AREA*PERIOD	1	20.000	0.10	0.7582

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	0.10	0.00	0.1154	.	0.1016
PERIOD	6.30	4.67	0.7818	0.6707	1.0000

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	0.0738	0.0475	1.554	.1359
Period in SDC	0.0947	0.0475	1.995	.0598

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.122	0.0194	6.29	.0000	0.1553	0.0884
Period Op-2	0.038	0.0274	1.37	.1850	0.0849	-0.0096
Op-1 NDC	0.056	0.0274	2.03	.0559	0.1029	0.0084
Op-2 NDC	-0.018	0.0388	-0.47	.6452	0.0487	-0.0850
Op-1 SDC	0.188	0.0274	6.86	.0000	0.2353	0.1408
Op-2 SDC	0.093	0.0388	2.41	.0258	0.1602	0.0265

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.0842	0.0336	2.509	.0208	0.1421	0.0263

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	0.0738	0.0475	1.55	.1359	0.1556	-0.0081
Area SDC	0.0947	0.0475	2.00	.0598	0.1766	0.0128

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	2.60	1.21	0.173	3.00	2.19	0.34	1.80	0.85	-0.16
NDC Op-2	4	2.74	0.42	0.096	3.04	2.43	-0.11	0.75	0.40	-0.61
SDC Op-1	8	1.87	0.89	0.089	2.08	1.66	1.07	1.13	1.39	0.74
SDC Op-2	4	2.11	0.70	0.160	2.62	1.60	0.52	1.12	1.27	-0.23

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	3.00	2.20	0.133	3.28	2.73
Op-2	7	2.59	0.94	0.132	2.91	2.27

Midwater Transectsce for SFO for 1165 - Trachurus symmetricus

Data not transformed.

Results for Analysis of Variance

Source	Source df	Error df	F-value	Prob.
AREA	1	20.000	1.83	0.1912
PERIOD	1	20.000	2.61	0.1216
AREA*PERIOD	1	20.000	1.83	0.1912

Results for Power Analysis
Power at alpha = .1

Source	Non-Centrality Parameter	Adjusted non-Centrality Parameter	Power	Adjusted Power	Power to Detect 50% Change
AREA*PERIOD	1.83	0.65	0.3693	0.2006	.
PERIOD	2.61	1.35	0.4676	0.3040	.

Estimates for contrasts on combinations of interaction terms

Source	Difference	Std. Err.	T-value	Prob.
Period in NDC	1.1719	0.5581	2.100	.0486
Period in SDC	0.1042	0.5581	0.187	.8538

Least square means & confidence intervals from analysis of variance

Source	LS Mean	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period Op-1	0.000	0.2278	0.00	1.000	0.3929	-0.3929
Period Op-2	-0.638	0.3222	-1.98	.0616	-0.0823	-1.1937
Op-1 NDC	0.000	0.3222	0.00	1.000	0.5557	-0.5557
Op-2 NDC	-1.172	0.4557	-2.57	.0182	-0.3860	-1.9578
Op-1 SDC	0.000	0.3222	0.00	1.000	0.5557	-0.5557
Op-2 SDC	-0.104	0.4557	-0.23	.8215	0.6817	-0.8900

Paired comparisons of least square means between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Period	0.6380	0.3946	1.617	.1216	1.3186	-0.0426

Paired comparisons of least square means for areas between periods

Source	Difference	Std. Err.	T-value	Prob.	Upper 95%	Lower 95%
Area NDC	1.1719	0.5581	2.10	.0486	2.1344	0.2094
Area SDC	0.1042	0.5581	0.19	.8538	1.0667	-0.8583

Area-period means and deltas from original data

Area-Period	N	Area Mean	Area Range	Standard Error	Upper 95% c.i.	Lower 95% c.i.	Mean Delta	Delta Range	Upper 95% CIi.	Lower 95% C.I.
NDC Op-1	8	0.00	0.00	0.000	.	.	0.00	0.00	.	.
NDC Op-2	4	1.17	4.69	1.172	4.90	-2.56	-1.17	4.69	2.56	-4.90
SDC Op-1	8	0.00	0.00	0.000	.	.	0.00	0.00	.	.
SDC Op-2	4	0.10	0.42	0.104	0.44	-0.23	-0.10	0.42	0.23	-0.44

Period means and deltas from original control data

Period	N	Area Mean	Area Range	Standard Error	Upper 95% C.I.	Lower 95% C.I.
Op-1	20	0.00	0.00	0.000	.	.
Op-2	7	0.00	0.00	0.000	.	.