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INDIAN POINT GENERATING STATION
ENTRAINMENT ABUNDANCE AND OUTAGE EVALUATION

1983 ANNUAL REPORT

Consolidated Edison Company of New York, Inc.

4 IRVING PLACE
NEW YORK, NEW YORK 10003

and

New York Power Authority

10 COLUMBUS CIRCLE
NEW YORK, NEW YORK 10019

EA ENGINEERING,
SCIENCE, AND
TECHNOLOGY, INC.

EA Report CON33F

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Prepared for

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4 Irving Place
New York, New York 10003

and

New York Power Authority
10 Columbus Circle
New York, New York 10019

Prepared by

EA Engineering, Science, and Technology, Inc.
R.D. 2, Goshen Turnpike
Middletown, New York 10940

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1. INTRODUCTION

1.1 STUDY OVERVIEW

The Indian Point Generating Station employs a once-through cooling system to dissipate waste heat produced as a by-product of electric generation. In the cooling process, water from the Hudson River is pumped through condensers where heat is transferred from the exhaust steam to the cooling water; this warmed water is then returned to the river. The two electric generating units in operation at the Indian Point plant withdraw up to 6,360 m^3/minute of water from the Hudson River for cooling purposes. Within this cooling water flow, aquatic organisms, including fish eggs and larvae, small enough to pass through the intake screens (9.5-mm bar mesh) may be carried through the cooling water system where mortality due to mechanical and thermal stresses can occur. This process, known as entrainment, has been the focus of considerable regulatory concern for more than a decade, particulary for the young stages of fish of recreational and commercial importance.

This report describes the results of studies conducted during 1983 to monitor the entrainment of selected fish species within the Indian Point cooling water system. The studies addressed herein represent a continuation of a research program first conducted by New York University Medical Center from 1971 to 1977 (New York University 1973, 1974, 1976a, 1976b, 1976c, 1977, 1978) and later by EA Engineering, Science, and Technology, Inc. (EA) in 1978-1980 (EA 1980a, 1980b, 1981b). Since the Settlement Agreement of December 1980, the primary focus of studies on the Hudson River, including those at Indian Point, have shifted from impact assessment to monitoring of the efficacy of various mitigative measures as indicated in the Settlement Agreement.

The purpose of the 1983 Entrainment Abundance Program conducted at Indian Point during 1983 was four-fold. First, this program continued the monitoring of the abundance and seasonal occurrence of eggs, larvae, and early juveniles entrained at Indian Point begun in 1971. Second, comparisons were made of the abundance of juveniles of selected species collected by pump and net sampling devices. This comparison of densities continues gear evaluation studies for juveniles initiated at Indian Point in 1981 (Normandeau Associates and Con Edison 1982). Third, replicate diel samples collected over a three-week period of peak larval abundance permitted evaluation of the various components of variation in entrainment densities. These components of variation can be used to rigorously assess possible statistical designs for future entrainment sampling programs. Finally, entrainment densities were combined with plant operations data to estimate the numbers lost due to entrainment at Indian Point in 1983. Those numbers were compared to similiar estimates predicted for full flow conditions to evaluate the efficacy of the scheduled unit outage as stipulated by the Settlement Agreement.

1.2 SITE DESCRIPTION

1.2.1 The River

The Indian Point Generating Station is located on the east bank of the Hudson River, between Peekskill and Haverstraw bays, near the Town of Buchanan, New York. The plant is 69 river kilometers (43 miles) north of the Battery in New York City (Figure 1-1). In the vicinity of the Indian Point plant, the Hudson River has a surface width of approximately 1,500 m (5,000 feet) and a cross-sectional area of approximately 15,000 m^2 (160,000 ft^2). Within 60 m (200 feet) of the plant, river depths range from about 3 to 12 m (10 to 40 feet) below mean sea level.

Flow rates in this section of the river are controlled predominantly by the tides. Mean tidal flows are on the order of 4,000 m^3 per second (140,000 cfs), whereas freshwater flows typically range from about 160 m^3 per second (5,500 cfs) in August to about 900 m^3 per second (32,000 cfs) in April (Con Edison 1977a, p. 2-1).

Seasonal trends in salinity are controlled primarily by freshwater flow. The saltfront (0.01 ppt salinity) generally remains below Indian Point during the months of March, April, and May, when freshwater flows of more than 600 m^3 per second (20,000 cfs) are normally present. During the period of low runoff (generally July through October [Con Edison 1977a, Table 2-2]), the salinity in the vicinity of Indian Point may fluctuate rapidly as a function of tidal stage and height.

Ambient river temperatures in the Indian Point area typically range from 0 to 27 C over the course of a year (Con Edison 1977a, Table 2-3).

1.2.2 The Plant

The Indian Point Generating Station consists of three nuclear-fueled electric generating units. Unit 1, owned by Con Edison, has not been operated for commercial production since October 1974, although its circulating water and service water pumps are operated occasionally. Unit 2, owned and operated by Con Edison, has been in operation since 28 September 1973 and has a net rated capacity of 873 MWe. Unit 3, owned and operated by the New York Power Authority, has been in operation since 30 August 1976 and has a net rated capacity of 965 MWe. All three units use Hudson River water for once-through cooling.

Each unit has a separate shoreline intake structure for the withdrawal of water from the Hudson River (Figure 1-2). The intake structure for Unit 1 has four rectangular openings that extend 8.0 m (26 feet) below mean low water. The intake structures for Units 2 and 3 each have six intake openings extending 8.2 m (27 feet) below mean low water. The intakes to Units 1 and 2 are equipped with fixed screens at the entrance to the intake bays and vertical traveling screens located behind the fixed screens, whereas the intake to Unit 3 has only vertical traveling screens at the entrance to the intake bays. All screens are 9.5-mm (0.375-in.) square mesh.

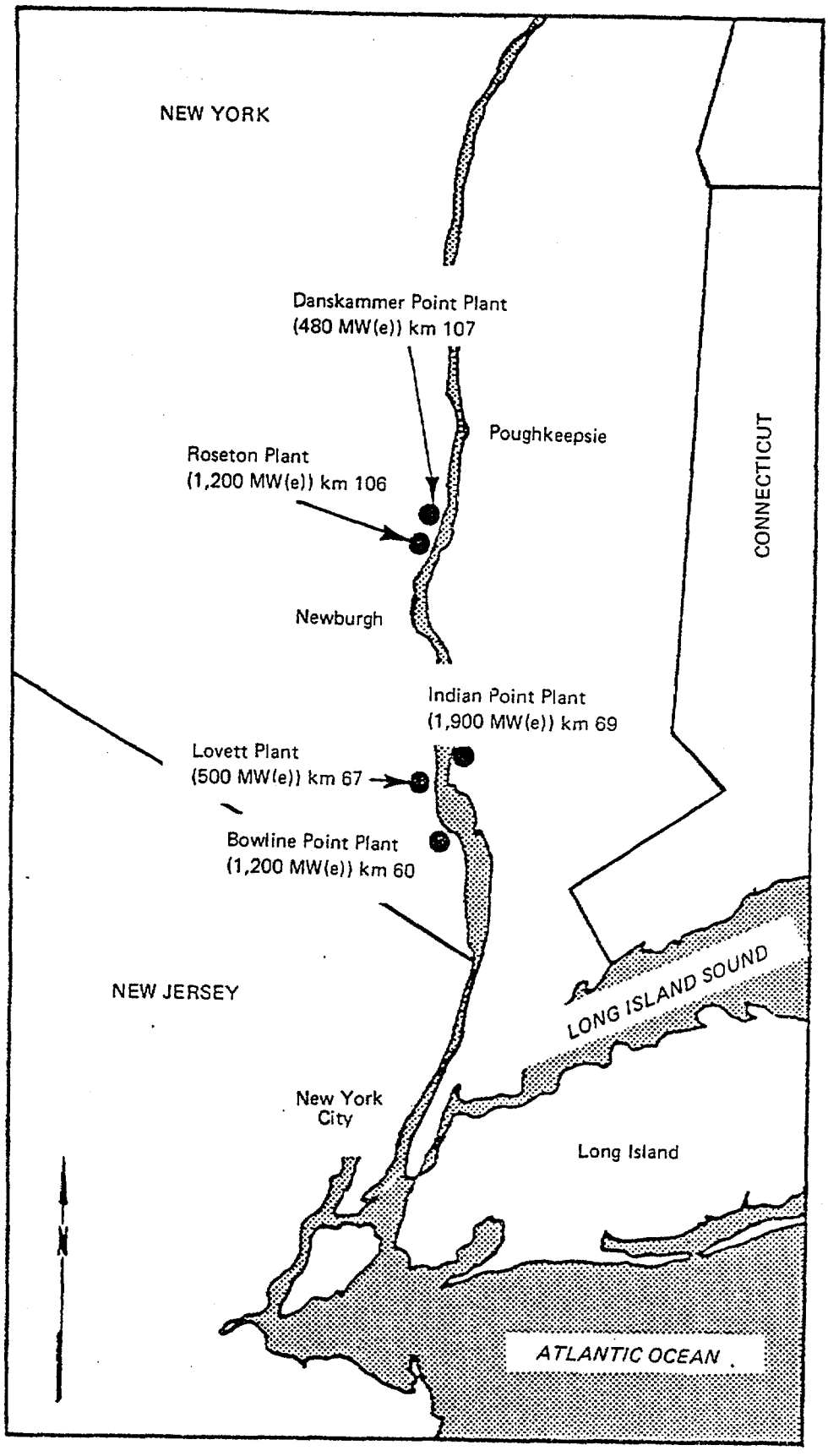


Figure 1-1. Location of the Indian Point Generating Station on the Hudson River Estuary.

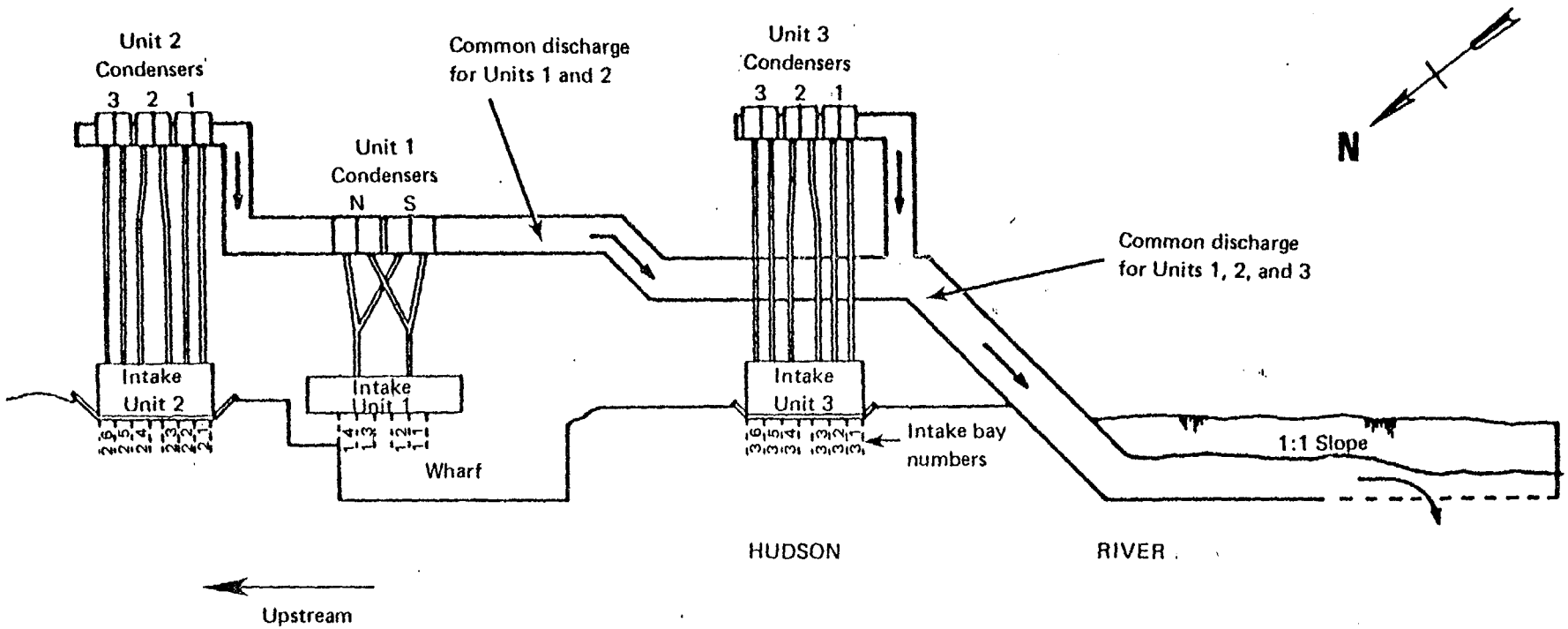


Figure 1-2. Diagram of the Indian Point Generating Station circulating water system (adapted from Con Edison 1977b).

Circulating water pumps with rated capacities of 530 m^3 per minute (140,000 gpm) are used to pump Hudson River water through the condenser cooling system of each unit. Unit 1 has two circulating water pumps with a total rated capacity of 1,060 m^3 per minute (280,000 gpm), and two service water pumps with a combined rated capacity of 144 m^3 per minute (38,000 gpm). Units 2 and 3 each have six circulating water pumps that withdraw water from separate intake bays (Figure 1-2). The circulating water systems for Units 2 and 3 are designed to operate at either 100 or 60 percent flow. When the ambient water temperature is above 4.4 C (40 F) (spring through fall), the circulating pumps are operated so that the rated maximum cooling water flow for each unit is 3,200 m^3 per minute (840,000 gpm). During the winter, 40 percent of the cooling water is returned to the circulating pumps without passing through the condenser, reducing the rated maximum intake flow for each unit to 1,900 m^3 per minute (504,000 gpm). Service water for Units 2 and 3 is drawn through a separate intake forebay located at the center of each intake; the rated maximum total service water flow for Units 2 and 3 is 114 m^3 per minute (30,000 gpm).

The cooling water and service water from all three units flow into a common discharge canal. The combined discharge is returned to the Hudson River via an outfall structure located downstream of Unit 3. The outfall structure consists of 12 ports submerged 3.6 m below the surface (12 feet from center of port to water surface) at mean low water.

Calculated transit times of cooling water traveling from intake to river outfall for Units 2 and 3, when operating at full pumping capacity is 9.7 minutes for Unit 2 and 5.6 minutes for Unit 3. The calculated transit time from the intake to the condensers is about 1.5 minutes, and the calculated transit times through the condensers is 0.14 minutes for both units. Thus, much of the total transit time through the cooling water systems of Unit 2 and Unit 3 occurs in the discharge canal. Because the discharge canal receives cooling water from all three units, transit times through the canal are dependent upon the total circulating water flow through all units combined.

Estimated velocities of the cooling water vary as a function of cross-sectional area at different locations within the Indian Point plant condenser cooling water system. Estimated flow velocities are lowest at the intakes, ranging from 0.57 ft/sec at Unit 1 (when circulating water pumps are operating) to 0.84 ft/sec at the intakes of Units 2 and 3 (NYU 1978). Estimated water velocities in the common discharge canal are consistently higher than velocities at the intakes, and vary according to the number of circulating pumps operating at each unit. At the point of sampling in the common Unit 1 and Unit 2 discharge canal (Figure 1-2), estimated maximum average velocity would be 3.85 ft/sec with all pumps operating at 100 percent at both units and 2.82 ft/sec with only Unit 2 pumps operational. At the sampling station in the canal serving all three units, maximum average velocity would be 5.14 ft/sec with all three units operating, 4.35 ft/sec with Units 2 and 3 operating, and 2.17 ft/sec with only Unit 2 or Unit 3 operating. At the discharge structure, however, gates to the submerged ports are opened or closed to maintain an estimated velocity of 10.0 ft/sec through the ports, regardless of the number of units operating.

The temperature rise (delta-T) encountered by organisms passing through the condenser cooling systems of the Indian Point plant depends on the cooling water flow rates and levels of power output (Con Edison 1977a, Tables 1-13 and 1-14). At Unit 2, with six pumps operating at full flow and the unit at 100 percent capacity, the predicted condenser temperature rise ranges from 8.8 to 8.9 C (15.8 to 16.1 F), depending upon river temperature. During full capacity winter operation, with Unit 2 circulating pumps operating at 60 percent flow capacity (i.e., 40 percent recirculation), the predicted condenser temperature rise is approximately 14.7 C (26.5 F). At Unit 3, the predicted condenser temperature rise ranges from 9.5 to 9.7 C (17.1 to 17.4 F) for 100 percent capacity with six pumps operating at full flow; during winter operation, the predicted temperature rise is approximately 16.1 C (29 F). The higher predicted condenser temperature rise for Unit 3, compared to that for Unit 2, is due to the fact that Unit 3 has a higher generating capacity than Unit 2, but uses the same volume of cooling water.

2. SUMMARY

The Entrainment Abundance Program at Indian Point conducted during 1983 was designed to collect four types of information: seasonal abundance patterns, sampling characteristics for juvenile fish, components of variation, and measures of the effectiveness of scheduled unit outages. Continuous sampling was conducted using an automated abundance sampler in the Indian Point discharge beginning 3 May and continuing through 13 August. Additional sampling of juvenile densities was conducted using one-half meter diameter plankton nets. Finally, supplemental pump sampling was conducted during the period of peak entrainment densities to assess the magnitude of selected components of variation.

Overall patterns of fish eggs and larvae entrained at Indian Point was similar to patterns observed in previous years. A total of 31 taxa, representing 21 families, comprised the 134,891 individuals collected. Post yolk-sac larvae were the most abundant life stage followed by eggs, yolk-sac larvae, and juveniles, respectively. Anchovies were the most abundant taxa followed by the herrings and the two Morone species, striped bass and white perch. Anchovies were abundant from mid-July and continued into August. Densities for this taxa group were similar to previous years. Various stages of herrings were common in entrainment samples at Indian Point throughout most of the sampling season. Peak larval herring densities occurred slightly later and were considerably higher in 1983 than during previous years. As with the herrings, the various life stages of white perch were common throughout the entrainment sampling season and densities were similar to those reported for previous years. Striped bass were also collected throughout the sampling season although post yolk-sac larvae, the dominant striped bass life stage, were collected principally between mid-June and mid-July. No egg or larval Atlantic tomcod were collected during 1983, whereas juvenile tomcod were collected only during mid-May, mid-June, and early August.

The relationship between juvenile fish densities from simultaneous AUTOSAM and net samples was extremely variable, due to small catches, particularly for the AUTOSAM samples which were a much smaller volume than the net samples. This difference in volumes, along with a relatively low density of juvenile fish resulted in highly variable sample densities. This variability and the differences in location and sampling methodology precluded a rigid statistical estimation of the relationship between density estimates for the two gear.

The study of the components of variation of abundance samples, which focused on striped bass post yolk-sac larvae, was also adversely affected by zero catches. For all four taxa analyzed, striped bass, white perch, Alosa spp., and bay anchovy, the estimate of sampling variation was substantially inflated by the presence of zero catches. Even when only a single zero value occurred (bay anchovy), the $\log_e (x + 1)$ transformation could not stabilize the variance sufficiently to avoid a large bias in the estimate of sampling error. The biased estimates of sampling error produced 95 percent confidence intervals around mean density estimates that were extremely wide, ranging from approximately a factor of 10 times the sample mean for Alosa spp. to 44 times the sample mean for white perch. An analysis of larger samples, to eliminate zero values, would eliminate the bias in the estimate of error variance and give much smaller confidence intervals.

Supplementary information is contained in the appendixes: Appendixes A and B give water quality data and ichthyoplankton densities for AUTOSAM and net coly-saions; Appendixes C and D provide length-frequency information for AUTOSAM and net collections; Appendix E provides results of flowmeter calibration tests; Appendix F gives a sample-by-sample comparison of AUTOSAM and net juvenile densities; Appendix G presents statistical results of the gear comparison for the component of variation study; Appendix H provides data and results of the outage evaluation; and Appendix I presents plant operational data.

3. METHODS

3.1 FIELD SAMPLING PROCEDURES

3.1.1 Automated Abundance Sampling

Ichthyoplankton samples were collected at the Indian Point Generating Station from 3 May through 13 August 1983 (Table 3-1). Sampling was scheduled to occur continuously throughout the period; however, gear malfunctions resulted in some variation from the schedule. Most of the voided samples were the result of temporary power interruptions which caused the control module to cease operation. Each 24-hour continuous collection effort consisted of eight discrete 3-hour samples.

Samples were collected using the automated abundance sampler (AUTOSAM) (Figure 3-1) from the discharge canal at Station D2 (Figure 3-2). The basic components of the sampler include a 7.6-cm electric pump, a cylindrical collection tank (1 m in diameter and 1.2 m in height) containing a cylindrical 500-um mesh plankton net, and a microcomputer control module. All components are housed in an enclosed trailer. The inlet of the 10.1-cm diameter intake hose consisted of a 90 degree elbow fitting positioned at middepth (approximately 3 m below the water surface of the canal) and oriented into the discharge water flow. The 10.1-cm diameter hose was reduced to connect to the 7.6-cm diameter sampling pump. The pumping rate ranged from approximately 0.7 to 1 m^3/min, however, the rate for most samples was 0.8 to 0.9 m^3/min. Variation in rate occured due to tidally induced changes in water level in the discharge canal. Average cross-sectional velocity at the mouth of the intake hose was approximately 2 m/sec.

Operational sequences of the AUTOSAM are controlled by the microcomputer module. During sampling, water is pumped into the net in the collection tank where primary concentration of the sampled organisms and detritus occurs. Filtered water passes out of the collection tank through a discharge drain pipe. Flow rate and volume are measured by an inline flowmeter mounted to the pipe that transports water from the AUTOSAM sampling pump to the collection tank. Calibration procedures for this inline flowmeter are discussed in Appendix E. At the end of the programmed sampling interval, the following automated operations occur: (1) the pump shuts off and the collection tank drains; (2) the collection net is rinsed, concentrating the sample into the bottom of the collection net; (3) the sample is washed into the secondary concentrator and then into a collection container using chilled water (4.4 C) to reduce organism decomposition; and (4) formalin is automatically injected into the collection container to achieve a 10 percent formalin to water solution. After each sample is collected, the turntable holding the collection containers rotates, and the sampling sequence automatically begins again.

Each sample can be comprised of many cycles; a cycle being defined as a sequence of pumping, net washdown, and transfer of sample contents to collection container. From 3 May through 18 May each sample was a 3-hour composite, combining 1-hour cycles (specifically, each cycle consisted of 57 minutes of sample collection and 3 minutes of net wash and sample transfer). To reduce clogging as a result of heavy detritus, samples collected after 19 May were 3-hour composites consisting of six 27-minute collections with a 3-minute wash.

TABLE 3-1 SAMPLING DATES USING AUTOSAM AT STATION D2, INDIAN POINT GENERATING STATION, 1983

Sampling Period[a]	Comments
3 MAY - 4 MAY	
5 MAY	VOID -- Power lost, volumes sampled lost
6 MAY - 9 MAY	
10 MAY	VOID -- Power lost, volumes sampled lost
11 MAY - 17 MAY	
18 MAY	VOID -- Concentrator plugged (1200 sample); power lost, volumes sampled lost
19 MAY - 30 MAY	
31 MAY	VOID -- Power lost, volumes sampled lost
1 JUN - 11 JUN	
12 JUN	VOID -- Power lost, volumes sampled lost
13 JUN - 17 JUN	
18 JUN - 19 JUN	VOID -- Power lost, volumes sampled lost; turntable did not advance
20 JUN - 10 JUL	
11 JUL - 12 JUL	VOID -- Power supply lost
13 JUL - 16 JUL	
17 JUL	VOID -- Transformer fire
18 JUL - 23 JUL	
24 JUL	VOID -- Turntable did not advance; flowmeter jammed (0900), volume inaccurate
25 JUL - 7 AUG	
8 AUG	VOID -- Recycled improperly, shut down at 0000 hours
8 AUG - 11 AUG	
11 AUG	VOID - Power supply lost (2100 hours)
12 AUG - 13 AUG	

(a) Sampling was initiated at noon each day.

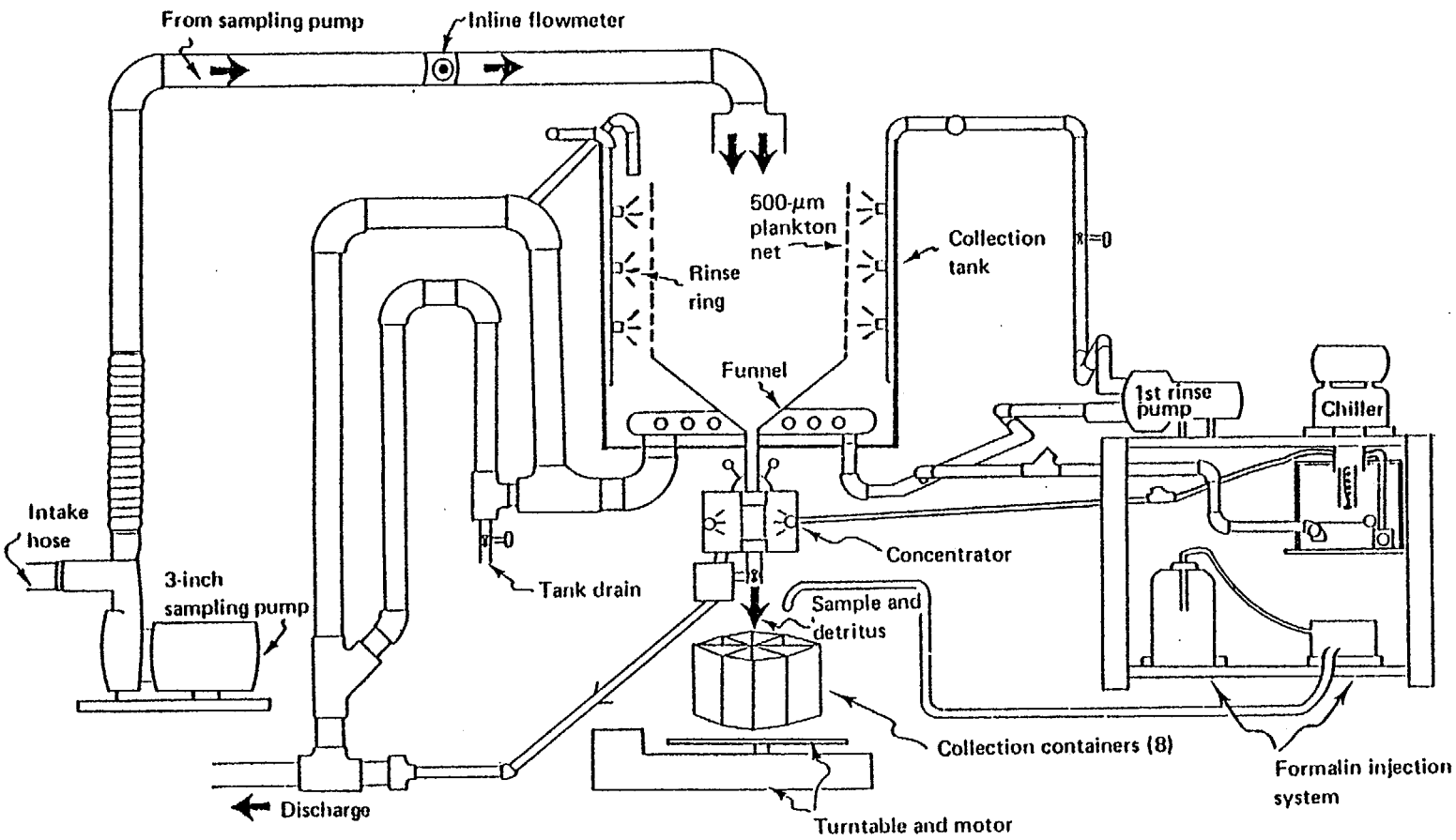


Figure 3-1. Schematic diagram of sampling components of EA's automated abundance sampling system - AUTOSAM (U.S. Patent No. 4, 145, 925).

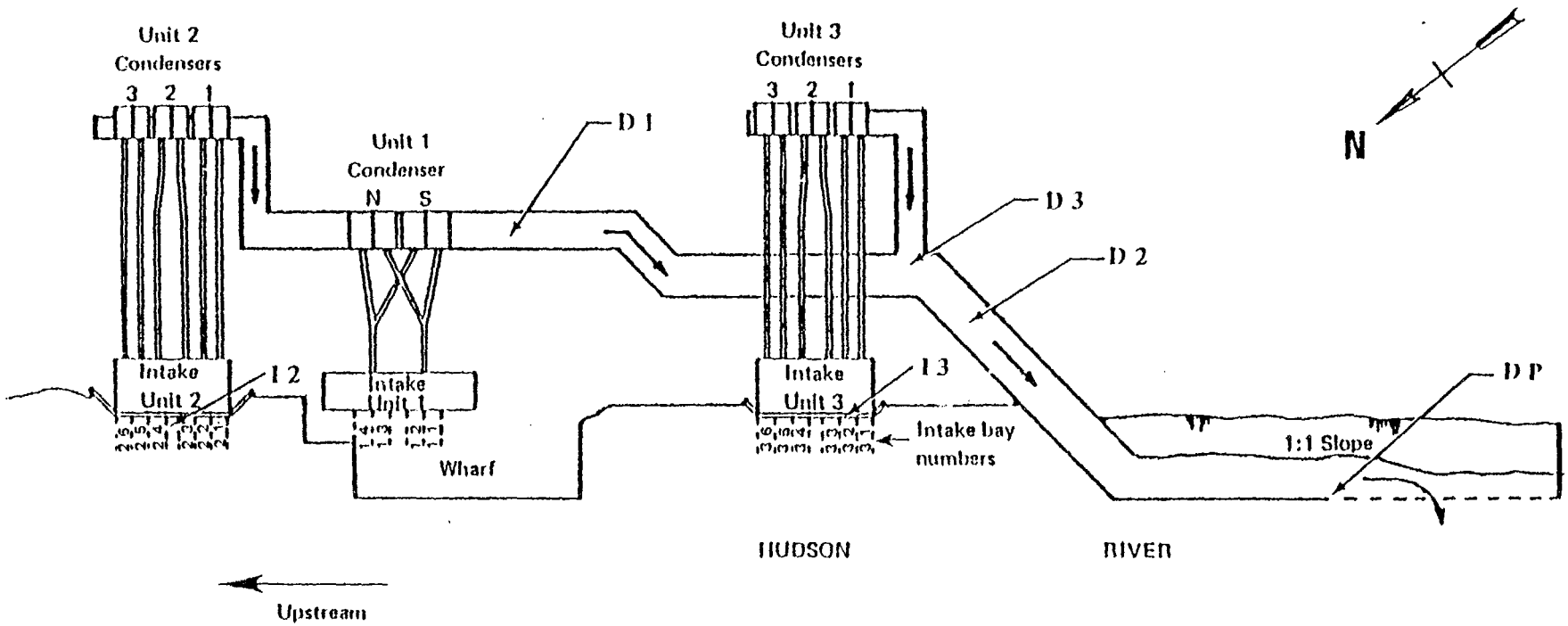


Figure 3-2. Diagram of the Indian Point Generating Station circulating water system showing location of sampling stations.

All preserved samples collected via AUTOSAM were retrieved and transferred into sample jars with inside and outside inventory labels. All collection information (collection time, volume filtered, number of cycles, etc.) was obtained from the AUTOSAM memory and transferred onto data sheets.

3.1.2 Manual Pump/Net Sampling

Ichthyoplankton samples were collected using the manual pump/net abundance sampler from 17 June through 8 July 1983 (Table 3-2). Sampling was scheduled to occur Monday, Wednesday, and Friday throughout the period. Similar to AUTOSAM collections, each sampling event was a 24-hour continuous collection effort separated into eight discrete 3-hour samples.

Two manual pump/net samplers were used to collect samples from the discharge canal at Station D2 (Figure 3-3). The pumps were 4-in. gas-powered Homelite trash pumps (Model 160 TP4-1). Inlets for the two 10.1-cm diameter intake hoses were located in the discharge canal, adjacent to the inlet of the AUTOSAM intake line. Inlets were at middepth and oriented into the discharge water flow. Each pump sampled a measured volume of water that was recorded by an inline 4-in. Sparling (Master Flo) flowmeter. Calibration procedures of these flowmeters are discussed in Appendix E. The samples were pumped into a modified 500-um mesh collection net (0.6-m diameter, 1.2-m long) suspended in a collection barrel (Figure 3-4). (Samples collected prior to 1 July were collected with a 333-um mesh net.) At the end of the sampling interval, the pump was shut off, the collection barrel allowed to drain, and the ichthyoplankton and detritus were concentrated in a codend.

Similar to AUTOSAM collections, each sample was a 3-hour composite combining one-hour collections (for the manual pump/net system, each sample collection was approximately 50-55 minutes in duration with 5-10 minutes of net washdown). After each 1-hour collection, the sample was transferred to the sample jar having both inside and outside labels, and preserved with 10 percent formalin. All collection information was recorded by field crews onto standard data sheets.

3.1.3 Juvenile Net Abundance Sampling

From 15 June through 9 August 1983, juvenile fish were collected using the net sampler apparatus located at Station D1 in the discharge canal at Indian Point (Figures 3-2 and 3-5). Throughout this period, net collections were scheduled three days per week on a random basis (Table 3-3). Net collections also occurred continuously over a 24-hour period, and consisted of eight 3-hour samples.

Net samples were collected using a 0.5-m diameter conical plankton net (571-um mesh, 1.8-m long) mounted to a vertical frame which could be raised above or lowered beneath the water surface by an electric winch. During sampling the net was lowered to within 0.5 m of the bottom, then raised in a controlled step-wise manner to provide samples that were evenly distributed throughout the water column. Flow was recorded from two General Oceanics (GO) flowmeters (Model 2030), one positioned in the center of the net's mouth and the other located outside, but close to, the net. A comparison of the sample volumes estimated by the two flowmeters for each sample is in Appendix E. Flowmeters were changed between each sample in a 24-hour period.

TABLE 3-2 SAMPLING DATES USING THE MANUAL PUMP/NET SAMPLING GEAR, INDIAN POINT GENERATING STATION, 1983

FRI	17 JUN
MON	20 JUN[a]
WED	22 JUN
FRI	24 JUN
MON	27 JUN
WED	29 JUN
FRI	1 JUL
MON	4 JUL
TUE	5 JUL[b]
WED	6 JUL
FRI	8 JUL

(a) Site access denied due to strike; sampling canceled.
(b) Sampling rescheduled from 27 JUN when one of the flowmeters had jammed.

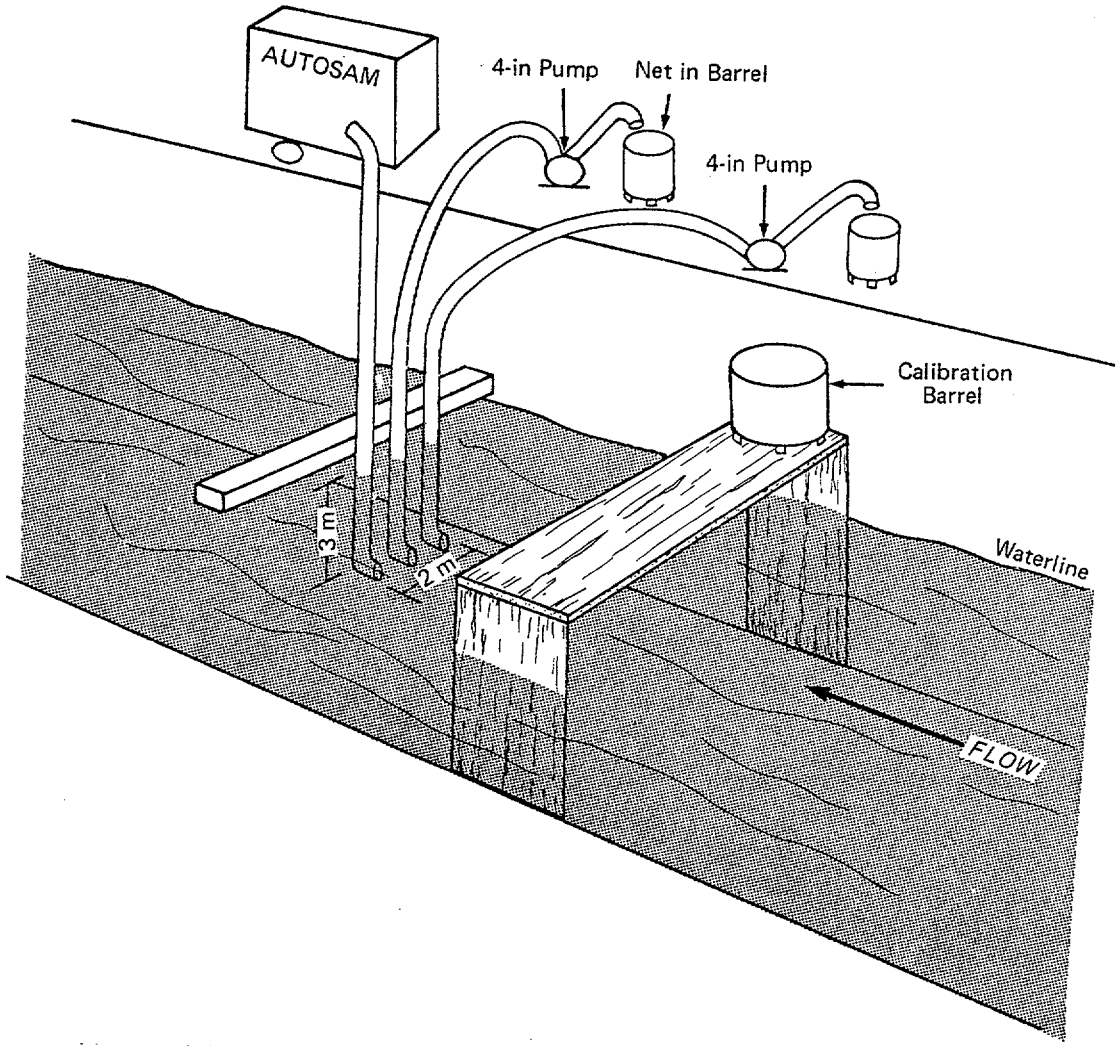


Figure 3-3. Generalized view of manual pump/net abundance and AUTOSAM collection systems used at D2 at the Indian Point Generating Station in 1983.

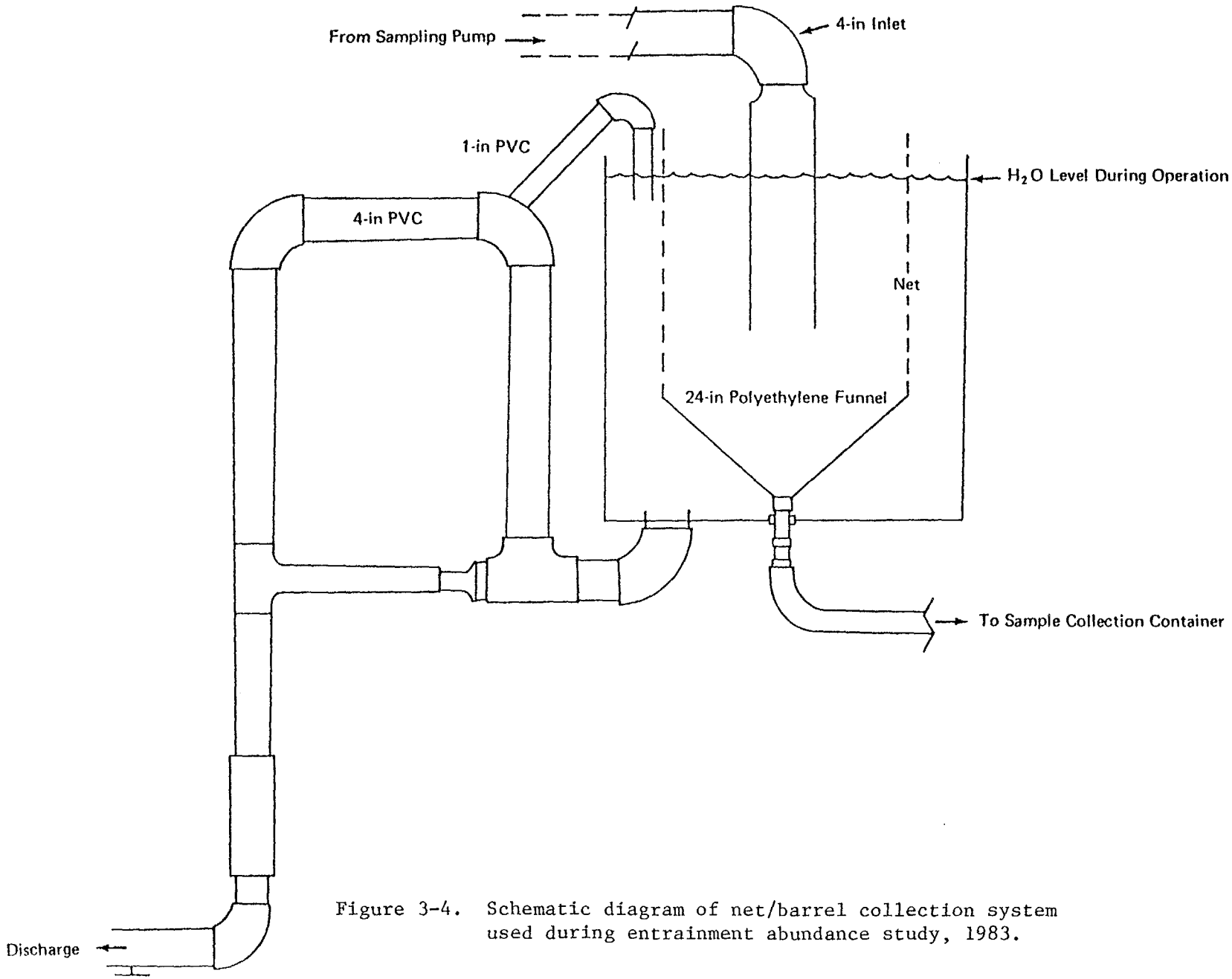


Figure 3-4. Schematic diagram of net/barrel collection system used during entrainment abundance study, 1983.

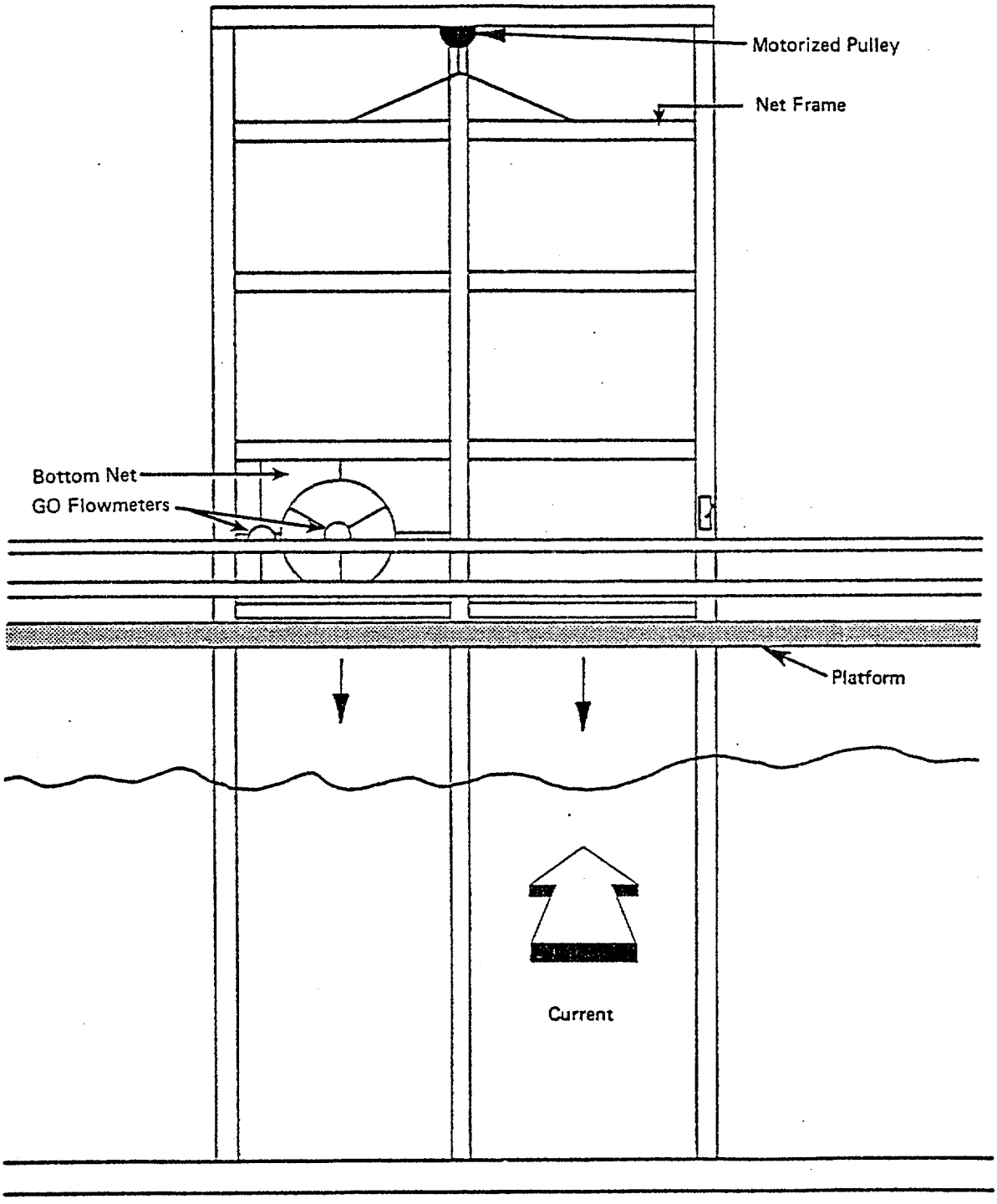


Figure 3-5. Net sampling apparatus at discharge canal Station D1, Indian Point Generating Station.

TABLE 3-3 SAMPLING DATES[a] FOR JUVENILE NET ENTRAINMENT ABUNDANCE AT STATION D1, INDIAN POINT GENERATING STATION, 1983

JUN	JUL	AUG
WED - 15	FRI - 1	MON - 1
SAT - 18[b]	MON - 4	WED - 3
SUN - 19[b]	TUE - 5	FRI - 5
THU - 23	THU - 7	SUN - 7
FRI - 24	MON - 11[c]	MON - 8
SAT - 25	FRI - 15	TUE - 9
TUE - 28	SAT - 16	
WED - 29	SUN - 17	
	MON - 18[d]	
	SAT - 23	
	MON - 25	
	TUE - 26	
	FRI - 29	

(a) Dates were selected randomly, stratified by week (three days per week).
(b) Electrical disruptions precluded sampling.
(c) Scheduled sampling canceled; net destroyed during first sample.
(d) Scheduled sampling canceled; electrical problems with automatic winch system.

During sampling, the net frame was first lowered to the bottom of the discharge canal, and then intermittently raised by an electric winch so that a series of depths from bottom to surface were equally sampled (the net was raised 0.5 m at 2-minute intervals over a 12-minute period). To prevent net clogging, the net was washed down at the end of each 12-minute period. The sample was rinsed into the codend located at the apex of the net. After every fourth washdown, the sample was transferred to the sample jar (labeled inside and out) and preserved with 10 percent formalin (during periods of high detritus, the sample was transferred more frequently than after every fourth washdown).

Each net sample was a 3-hour composite, similar to both AUTOSAM and the manual pump/net samples; however, in the case of the net collections, twelve 15-minute cycles were combined (specifically, each cycle consisted of 12 minutes of sample collection and 3 minutes of net wash and sample transfer). All collection information was recorded onto standard data sheets by field personnel.

3.1.4 Water Quality Measurements

Measurements of selected water quality parameters were made using Hydrolab equipment and automated data loggers. Temperature (C), dissolved oxygen (ppm), conductivity (umho/cm), and pH were measured from water pumped continuously from middepth (4 m) at Station I3 to the Hydrolab sonde unit located near Station D2. Measurements were recorded once during each 3-hour interval. Temperature (C) was also measured in sample water from middepth at Station D2. Tidal height relative to mean tide level was recorded on the tide chart located at EA's Verplanck Striped Bass Hatchery, approximately 1 km south of Indian Point.

3.2 LABORATORY PROCEDURES

Preserved entrainment abundance samples were transported to EA's Central Laboratory in Middletown, New York. From the AUTOSAM and the manual pump/net samples, all ichthyoplankton were sorted, identified to species and life stage, and counted. Samples were not split. In addition, a maximum of 30 individuals per sample from each taxon and life stage identified were measured to the nearest 0.1 mm. From net samples, all ichthyoplankton greater than or equal to 12 mm were sorted and identified to species, and the number of post yolk-sac larvae and juveniles for each taxon determined. Length measurements to the nearest 1.0 mm were made for all post yolk-sac larvae and juveniles collected in net samples on or before 16 July, and for a maximum of 30 of each life stage and taxon collected in net samples after 16 July. All laboratory data was recorded on data sheets and transmitted to the EA Data Center for computer processing.

3.3 ANALYTICAL PROCEDURES

3.3.1 Summary Statistics

Daily average densities (no./1,000 m^3) used to describe seasonal abundance patterns were calculated for each life stage of seven selected taxa; striped bass, white perch, Atlantic tomcod, bay anchovy, *Alosa* spp., American shad, and rainbow smelt, and for all ichthyoplankton combined. These daily average

densities were determined by dividing the total number of each taxon-life stage category collected by the total volume of water sampled by that gear type for each sample date (noon on the starting date to noon on the following date):

$$\bar{x}_i = \frac{\Sigma x_{ij}}{\Sigma v_j}$$

where

$\bar{x}_i$ = daily average density for taxon-life stage i
x_{ij} = sample count for taxon-life stage i in sample j
v_j = volume for sample j.

For eggs and larvae, AUTOSAM data were used to calculate densities. Net data were used for juveniles. Densities for missed samples were obtained by linear interpolation from adjacent sample periods.

Water quality parameters (temperature, dissolved oxygen, pH, conductivity) were measured with each 3-hour sample from 27 May through 13 August, except for 1-6 July when instrument malfunction occurred. Daily average water quality values were calculated from noon - noon to correspond to daily average density of ichthyoplankton. Due to periodic malfunctions of the pH recording instrument pH values ≤ 6.0 or ≥ 8.0 were excluded from these analyses.

3.3.2 Effect of Outages as a Mitigative Measure During 1983

Estimates of the number of each life stage of striped bass, white perch, bay anchovy, Atlantic tomcod, American shad, and other clupeids entrained at Indian Point Units 2 and 3 under actual and full plant operating conditions were calculated for each entrainment sampling period by multiplying the density of each life stage for each entrainment sample by the actual or full cooling water flow for the corresponding time periods. Densities for egg, yolk-sac, and post yolk-sac larvae stages were based upon AUTOSAM collections, whereas juvenile densities were based on the one-half-meter diameter plankton net collections. Except for the period 3 May - 8 May when sampling was on a 24-hour basis, all sampling consisted of eight 3-hour periods each day. Entrainment densities for void or missing samples were set equal to the mean of densities from comparable time periods in adjacent days. Actual plant cooling water flow for each unit were obtained from plant operating logs and summed for the appropriate time periods. Actual plant flows corresponding to the daily entrainment sampling period are in Appendix Table H-1. Plant cooling water flow under full operating conditions was assumed to be 3,180 m^3 per minute (840,000 gpm) for each unit. In all cases, densities were assumed to be identical under both actual and full plant operating conditions.

Estimates of the number of each life stage cropped by entrainment under actual and full plant operating conditions were calculated by multiplying estimated numbers entrained by estimated entrainment mortality for each sampling period. For the more delicate species such as bay anchovy, American shad, and other clupeids, entrainment mortality was assumed to be 100 percent. For the other species, entrainment mortality was separated into discrete mechanical and thermal components. Mechanical mortality can be attributed to physical damage due to passage through the plant pumps and cooling water system. Estimates of

mechanical mortality were derived from entrainment survival samples collected when discharge temperatures were less than those necessary to induce thermal mortality (Appendix Table H-2).

For striped bass, white perch, and Atlantic tomcod, estimates of thermal mortality for each life stage were developed from predictive thermal mortality equations using measurements of ambient and discharge temperatures, transit times, and median lengths from each sampling period for both actual and full plant operating conditions. These predictive thermal mortality equations (Appendix Table H-3) are statistical models developed from extensive laboratory based thermal mortality studies. Actual ambient and discharge temperatures were obtained from plant operating logs. Plant temperature data were selected rather than EA temperature data because plant data were more complete and the array of temperature probes at Station D2 may provide a better estimate of average discharge temperature than the single measurement taken from water sampled by AUTOSAM. Hourly temperature measurements were averaged for each sample period. Ambient temperatures under full operating conditions were assumed to be identical to those under actual operating conditions. Discharge temperatures under full operating conditions were calculated by adding the ambient temperature to 1.07 times a delta-T predicted from a multiple regression equation applied to design specifications provided by Con Edison:

$$\text{delta-T} = 0.23676\ (\%\text{GENCAP}) - 0.04325(\text{FLOW}) + 0.00781(\text{INTEMP}) + 28.96247$$

where

delta-T = temperature rise across the condensers (F)
INTEMP = Actual average intake temperature (F)
% GENCAP = percent of the net generating capacity (MWe) at Unit 3; e.g., Net Generating Load/965 MWe = % GENCAP. Full generating capacity is 873 MWe at Unit 2 and 965 MWe at Unit 3.
FLOW = unit-specific hourly flow rates in thousands of gallons per minute.

The multiplier 1.07 accounts for an assumed 7 percent recirculation of heated effluent in the Indian Point cooling water intake (LaSalle 1976).

Actual transit times were calculated from actual plant flows using the following regression equations based on design specifications provided by Con Edison:

<u>For Unit 2</u>

$$\text{Transit Time (minutes)} = [-8.275907 \times 10^{-4} + 1.088640 \times 10^{-4}(\text{U2FR}) + 0.3650407 \times 10^{-4}(\text{U3FR})]^{-1}$$

<u>For Unit 3</u>

$$\text{Transit Time (minutes)} = [36.45829 \times 10^{-4} + 1.525479 \times 10^{-4}(\text{U3FR}) + 1.306958 \times 10^{-4}(\text{U2FR})]^{-1}$$

where

U2FR = flow rate at unit 2 (gpm x 103)
U3FR = flow rate at unit 3 (gpm x 103).

Transit times under full plant operations were assumed to be 8.2 and 4.1 minutes for Unit 2 and Unit 3, respectively. Median length estimates were obtained from the actual entrainment samples. For void or missing samples, median lengths were assumed equivalent to the average of median lengths from the nearest comparable periods with catch of that life stage.

Estimates of thermal mortality calculated from these data were then combined with the estimates of mechanical mortality to provide total entrainment mortality estimates as follows:

$$M_e = 1 - (1-M_t)(1-M_m)$$

where

M_e = total entrainment mortality
M_t = thermal mortality
M_m = mechanical mortality.

The total entrainment mortality estimates were multiplied by estimated numbers entrained for each sampling period to provide estimates of the number of each life stage and species cropped by entrainment at Indian Point. The estimated numbers cropped for each life stage under both actual and full plant operation conditions were then summed across the entire entrainment sampling season, 3 May - 13 August. Comparison of the resulting sums between the two plant operating modes provides a measure of the relative effectiveness of the prescribed unit outage in reducing entrainment losses of selected species at Indian Point.

4. RESULTS AND DISCUSSION

4.1 WATER CHEMISTRY

Daily average water temperature at I3 ranged from 16.0 C on 27 May to 28.6 C on 8 August (Figure 4-1). The rate of temperature increase was rapid through June but gradual in July and early August. Daily average temperature at D2 showed a similar seasonal pattern and ranged from 24.2 C on 31 May to 38.6 C on 19 July.

Conductivity increased gradually through June and early July, before a period of more rapid increase in late July to approximately 4,000 umho/cm (2 ppt salinity).

Dissolved oxygen declined from 8.5 mg/liter on 27 May to a minimum of 4.2 mg/liter on 2 August, then began to increase. This seasonal pattern is typical for the Hudson River and reflects the decreased solubility of oxygen and perhaps a higher biological oxygen demand at higher temperatures.

Hydrogen ion concentration (pH) ranged from 7.7 to 6.4. This narrow range is typical for the Hudson River (TI 1976), which is a highly buffered system.

4.2 CHARACTERISTICS OF ENTRAINED POPULATIONS

4.2.1 Species Composition

Thirty-one ichthyoplankton taxa, representing 21 families, were collected during entrainment abundance sampling at Indian Point during 1983 (Table 4-1). The taxa collected were comparable to those observed during AUTOSAM sampling since 1979. Fourspot flounder, collected in 1981, was the only species not observed in the 1983 collections. A total of ten taxa were collected at Indian Point in 1983 which were not observed in 1979-1981 collections; these taxa included white sucker, *Ictalurus* spp., white catfish, Atlantic needlefish, inland silverside, Atlantic silverside, butterfish, searobin, smallmouth flounder, and windowpane. Over 94 percent of the total belong to three families (anchovies, herrings, and temperate basses) (Table 4-2). Abundance patterns for these three families and Atlantic tomcod, historically one of the designated key Hudson River fish species (Con Edison 1984), were examined in detail. Among the ichthyoplankton life stages occurring in the AUTOSAM samples, post yolk-sac larvae were predominant, accounting for 79.5 percent of 134,891 individuals collected (Table 4-2). Next most abundant were eggs (10.7 percent), followed by yolk-sac larvae (4.0 percent) and juveniles (1.1 percent).

Most abundant in the AUTOSAM samples were bay anchovy and ichthyoplankton identifiable to the anchovy family (Engraulidae) (Table 4-2). Combined they represented over half (51.6 percent) of those collected, most of which were post yolk-sac larvae. Eggs accounted for 19 percent of the anchovies observed. In 1980 and 1981, anchovies also dominated AUTOSAM collections representing 71 and 85 percent, respectively, of the total catch (Con Edison, 1982, 1984). In 1979, they accounted for 0.1 percent of the total (EA 1981b), reflective, most probably, of the fact sampling ended in mid-June prior to the time anchovies are usually abundant in the Indian Point area. Herrings (Clupeidae and *Alosa* spp.) were next most common representing almost 30 percent of the catch.

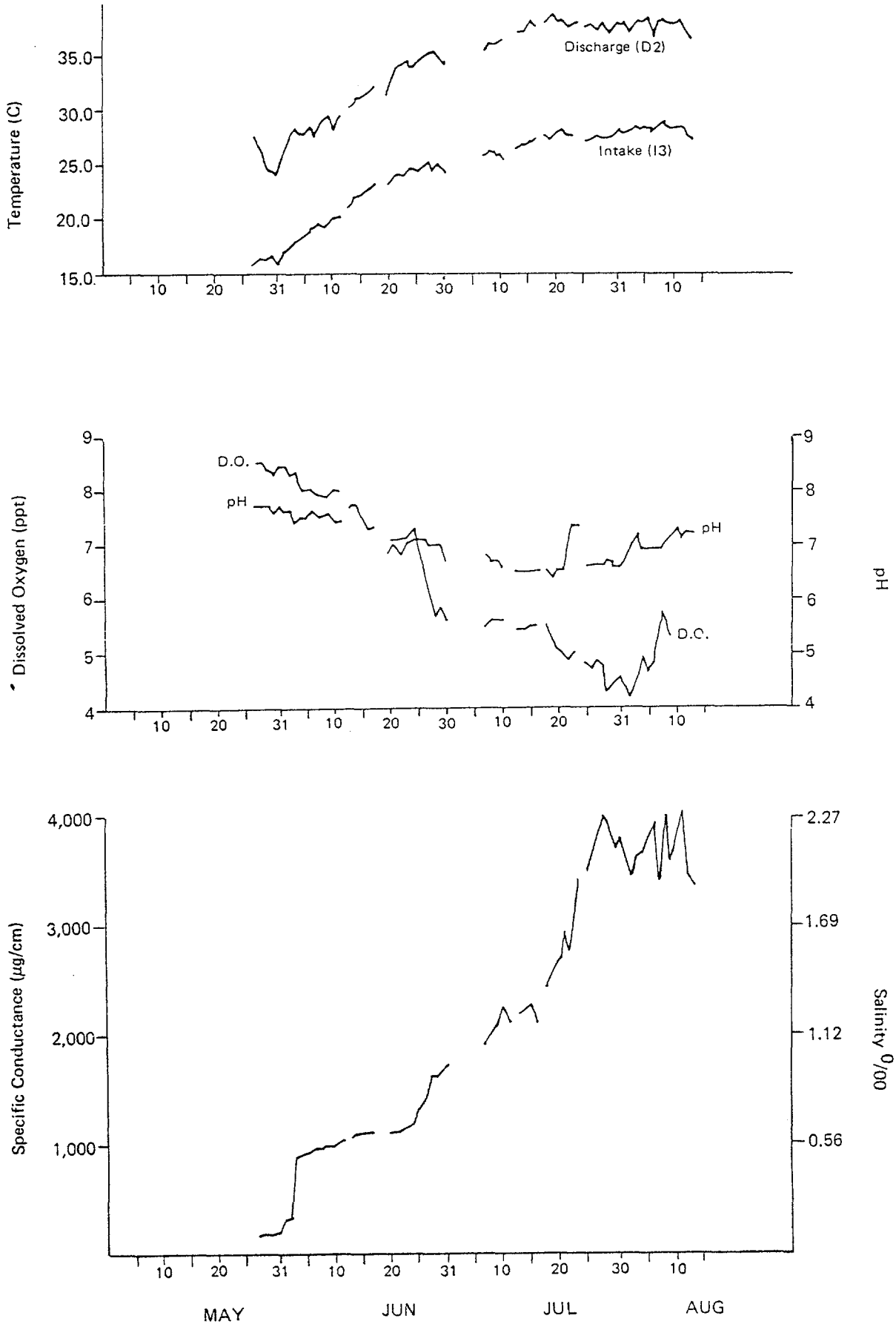


Figure 4-1. Temperature, dissolved oxygen, pH, and conductivity at Station I3, and temperature at Station D2, Indian Point Generating Station, 27 May – 13 August, 1983.

TABLE 4-1 ICHTHYOPLANKTON PRESENT IN ENTRAINMENT ABUNDANCE SAMPLES AT THE INDIAN POINT GENERATING STATION, 1983[a]

Family	Species Collected	
	Scientific Name	Common Name
Anguillidae	*Anguilla rostrata*	American eel
Clupeidae	*Alosa* spp.	Herring
	Alosa aestivalis	Blueback herring
	Alosa sapidissima	American shad
	Alosa pseudoharengus	Alewife
Engraulidae	*Anchoa mitchilli*	Bay anchovy
Osmeridae	*Osmerus mordax*	Rainbow smelt
Cyprinidae	*Notropis hudsonius*	Spottail shiner
Catostomidae	*Catostomus commersoni*	White sucker
Ictaluridae	*Ictalurus* spp.	Bullhead catfish
	Ictalurus catus	White catfish
Gadidae	*Microgadus tomcod*	Atlantic tomcod
Belonidae	*Strongylura marina*	Atlantic needlefish
Cyprinodontidae	*Fundulus* spp.	Killifish
Atherinidae	*Menidia* spp.	Silverside
	Menidia beryllina	Inland silverside
	Menidia menidia	Atlantic silverside
Gasterosteidae	*Apeltes quadracus*	Fourspine stickleback
Syngnathidae	*Syngnathus fuscus*	Northern pipefish
Percichthyidae	*Morone* spp.	Temperate bass
	Morone americana	White perch
	Morone saxatilis	Striped bass
Centrarchidae(b)		Sunfish
Percidae	*Perca flavescens*	Yellow perch
	Etheostoma olmstedi	Tessellated darter
Sciaenidae	*Cynoscion regalis*	Weakfish

(a) Reflects sampling from 3 May through 13 August 1983; all gear types compiled.
(b) No specimens were identified to a species level.

TABLE 4-1 (Cont.)

Family	Species Collected	
	Scientific Name	Common Name
Stromateidae	*Peprilus triacanthus*	Butterfish
Triglidae	*Prionotus* spp.	Searobin
Bothidae	*Etropus microstomus*	Smallmouth flounder
	Scophthalmus aquosus	Windowpane
Soleidae	*Trinectes maculatus*	Hogchoker

TABLE 4-2 TOTAL NUMBER AND PERCENT COMPOSITION OF ICHTHYOPLANKTON TAXA AND LIFE STAGES COLLECTED IN THE INDIAN POINT GENERATING STATION DISCHARGE CANAL (STATION D2) USING AN AUTOMATED ABUNDANCE SAMPLER, 3 MAY - 13 AUGUST 1983

Taxon	Egg	Yolk-Sac Larvae	Post Yolk-Sac Larvae	Juvenile	Unidentified	Total	Percent
Bay anchovy	13,455	202	23,988	158	0	37,803	28.02
Anchovies	0	1	31,710	45	0	31,756	23.54
Herrings	1	3,995	18,431	26	0	22,453	16.65
Alosa spp.	47	0	17,068	9	0	17,124	12.69
White perch	811	130	7,835	128	0	8,904	6.60
Striped bass	14	212	4,841	81	7	5,155	3.82
Morone spp.	0	11	1,617	0	2,205	3,833	2.84
Weakfish	0	0	138	667	0	805	0.60
Carps and minnows	6	333	343	0	1	683	0.51
Tessellated darter	0	459	187	6	0	652	0.48
Hogchoker	1	1	472	3	0	477	0.35
Perches	0	19	80	0	145	244	0.18
Yellow perch	0	32	185	0	0	217	0.16
Blueback herring	0	0	31	83	0	114	0.08
American eel	0	0	0	96	0	96	0.07
Northern pipefish	0	0	0	66	0	66	0.05
Drums	0	0	24	33	2	59	0.04
American shad	6	6	41	3	1	57	0.04
Sunfishes	9	6	33	0	1	49	0.04
Atlantic tomcod	0	0	0	31	0	31	0.02
Inland silverside	0	4	15	0	0	19	0.01
Alewife	0	0	0	18	0	18	0.01
Menidia spp.	0	9	4	0	0	13	0.01
Fundulus spp.	3	3	3	0	0	9	0.01
Butterfish	0	0	0	4	0	4	<0.01
Spottail shiner	0	0	0	2	0	2	<0.01
Rainbow smelt	0	0	1	0	0	1	<0.01
White sucker	0	0	1	0	0	1	<0.01
Ictalurus spp.	0	0	1	0	0	1	<0.01
Codfishes	0	0	1	0	0	1	<0.01
Smallmouth flounder	0	0	0	1	0	1	<0.01
Mutilated or partial specimens	1	2	163	7	3,965	4,138	3.07
Unidentified	101	0	0	0	4	105	0.08
Total	14,455	5,425	107,213	1,467	6,331	134,891	100.00
Percent of Total	10.72	4.02	79.48	1.09	4.69	100.00	

In 1979, herring dominated the catch (44 percent of the total), while in 1980 and 1981, they represented only a small portion of the total (0.5 and 2.4 percent, respectively). Again post yolk-sac larvae were most numerous, and yolk-sac larvae were 10 percent of the herring observed.

The genus Morone (white perch, striped bass, and Morone spp.) accounted for 13 percent of the catch. Similar levels of Morone were observed in 1980 (14 percent) and 1981 (11 percent), while in 1979 they comprised 42 percent. White perch were more abundant than striped bass in 1983, although 21 percent of the Morone catch could not be identified to species due to damaged identification characteristics. Most of the Morone collected were post yolk-sac larvae.

In juvenile net collections, bay anchovy and anchovies were again most abundant representing almost 75 percent of the post yolk-sac larvae and juveniles identified (Table 4-3). Next most abundant were herrings (Clupeidae and Alosa spp.) which constituted slightly over 18 percent of the catch. For both families, anchovies and herrings, post yolk-sac larvae were much more abundant than juveniles. Weakfish were the most abundant taxa of juvenile fish collected, both in net and AUTOSAM samples. They accounted for 1,692 of 3,698 juvenile fish in the net samples and 667 of 1,467 juveniles in the AUTOSAM samples.

4.2.2 Patterns in Seasonal Abundance and Length Frequency

4.2.2.1 Total Ichthyoplankton

All four ichthyoplankton life stages were collected throughout the 1983 AUTOSAM entrainment sampling season (Figure 4-2; Appendix Table A-1). Eggs were most abundant in samples in July - early August with the peak density (2,304 per 1,000 m^3) occurring in mid-July. A slight increase in egg densities occurred during late May - early June. Yolk-sac larvae were most dense in early June. Post yolk-sac larvae was the most abundant life stage and peaked in sample abundance during the first half of June. Numbers of post yolk-sac larvae declined in late June, but then increased during July and remained relatively high through the month and into August. Juveniles in both AUTOSAM and net collections (Appendix Table B-1) were most abundant in late July - early August.

The seasonal abundance of ichthyoplankton entrained by the Indian Point Station during the 1983 sampling program can be compared to that of other years when the AUTOSAM was used to sample entrainment. However, sampling locations, intensity, and length of sampling season have varied over the years which makes the comparisons difficult (Table 4-4). In 1979 and 1980 sampling was conducted at sampling station D1. Sampling in 1981 occurred at station D2 which is located at a point where cooling water from Unit 3 has been added to the discharge. No sampling was conducted in 1982. In 1983, sampling was again done at D2, but Unit 3 did not operate or operated at very low levels prior to 29 May or after 21 June 1983.

Overall, the pattern of total ichthyoplankton occurrence at Indian Point during early 1983 was similar to 1979 (EA 1981b); however, larval density was greater in 1983 than in 1979. In addition, peak post yolk-sac larval density occurred approximately one week later in 1983. The timing of occurrence patterns in

TABLE 4-3 TOTAL NUMBER AND PERCENT COMPOSITION OF ICHTHYOPLANKTON AND LIFE STAGES COLLECTED DURING JUVENILE NET SAMPLING IN THE INDIAN POINT GENERATING STATION DISCHARGE CANAL (STATION D1), 15 JUNE - 9 AUGUST 1983

Taxon	Post Yolk-Sac Larvae	Juvenile	Unidentified	Total	Percent
Bay anchovy	30,151	721	0	30,872	38.97
Anchovies	28,314	120	0	28,434	35.89
Herrings	10,514	20	0	10,534	13.30
Alosa spp.	3,900	4	0	3,904	4.93
Weakfish	15	1,692	0	1,707	2.15
Striped bass	653	215	0	868	1.10
White perch	405	351	0	756	0.95
Blueback herring	0	226	0	226	0.29
Northern pipefish	0	198	0	198	0.25
Morone spp.	120	0	0	120	0.15
Atlantic tomcod	0	43	0	43	0.05
American eel	0	35	0	35	0.04
American shad	11	12	0	23	0.03
Drums	0	19	0	19	0.02
Hogchoker	1	7	0	8	0.01
Rainbow smelt	1	3	0	4	0.01
Spottail shiner	1	4	0	5	0.01
White catfish	1	4	0	5	0.01
Atlantic needlefish	0	4	0	4	0.01
Tessellated darter	0	5	0	5	0.01
Butterfish	0	4	0	4	0.01
Alewife	0	3	0	3	<0.01
Atlantic silverside	2	1	0	3	<0.01
Fourspine stickleback	0	1	0	1	<0.01
Searobin	0	1	0	1	<0.01
Smallmouth flounder	0	1	0	1	<0.01
Mutilated	7	4	1,431	1,442	1.82
Total	74,096	3,698	1,431	79,225	100.00
Percent of Total	93.53	4.67	1.81	100.00	

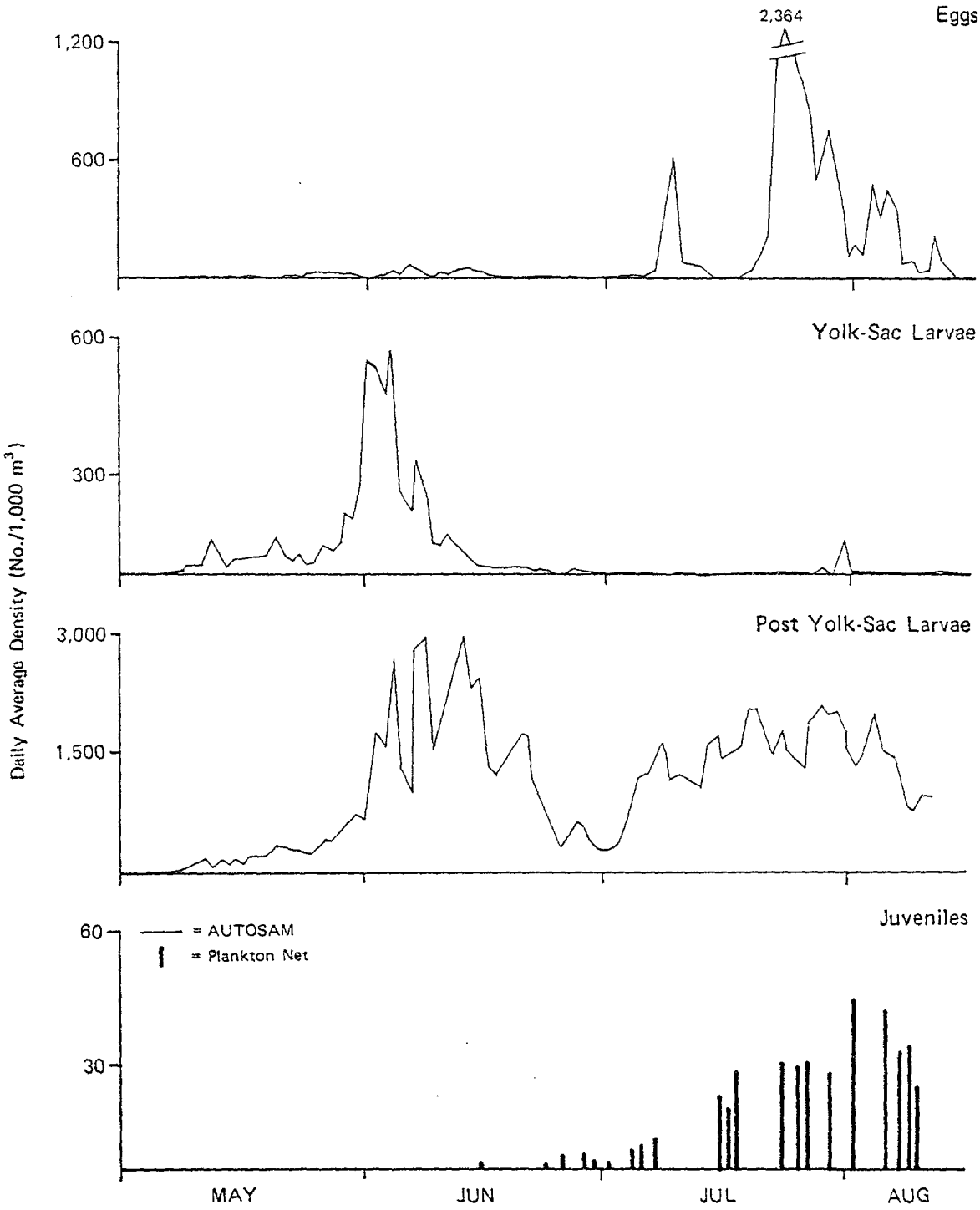


Figure 4-2. Daily average densities (No./1,000 m^3) of total ichthyoplankton collected during the entrainment abundance study, Indian Point Generating Station, 1983.

TABLE 4-4 ENTRAINMENT ABUNDANCE PUMP SAMPLING PROGRAMS CONDUCTED AT THE INDIAN POINT GENERATING STATION, 1979-1983

		1979	1980	1981	1982(a)	1983
Sampling Station		D1	D1	D2	---	D2
Season	Start	2 May	6 March	6 May		3 May
	End	14 June	31 July	30 August	---	31 August
Intensity						
	Days/Week	1	2	2	---	7
	Hours/Day	14(b)	24	12(c)	---	24

(a) No abundance sampling conducted.
(b) Approximately noon to 0200 hours.
(c) Sampling occured for 30 minutes in each hour for a total of 12 hours on each day sampled.

1980 was generally similar to 1983, with the notable absence of the June peak in post yolk-sac larvae that occurred in 1983 (primarily herring and Morone spp.), and the presence of a June peak in Atlantic tomcod juvenile abundance in 1980 (Con Edison 1982). Densities of all life stages were substantially lower in 1980 than in 1983.

Data for 1981 are most readily compared to 1983 since sampling location and duration of the sampling season were similar (Table 4-4). Egg densities were higher in 1981 with major peaks (bay anchovy) in mid-June and mid-July (Con Edison 1984). Only the July peak was evident in 1983. The peak in yolk-sac larvae, mostly Morone spp. and herrings, occurred earlier in 1981 but densities were much lower than in 1983. Post yolk-sac larvae showed three peaks in 1981, late-May (Morone spp. and herring), late-June (Morone spp. and bay anchovy), and July (bay anchovy). Peak juvenile densities were about the same magnitude in both years, however, in 1981 Atlantic tomcod were common in samples in late-May.

4.2.2.2 Bay Anchovy

The eggs of bay anchovy, a summer spawning marine species, were primarily collected in July and early August (Figure 4-3, Table A-2). (Since Engraulids other than bay anchovy are very uncommon in the Hudson River, all subsequent analysis will be for the combined groups identified as bay anchovy and anchovies.) A minor peak in abundance on 9 July was followed by a major peak on 23 July when 2,364 eggs/1,000 m^3 were collected. Water temperature was 29.2 C on 23 July. While densities declined in late July, eggs continued to be collected through the end of the sampling season.

Bay anchovy yolk-sac larvae were collected during late July and into August. This life stage was most abundant on 31 July when density reached 85/1,000 m^3. The low sample densities of yolk-sac larvae, compared to the densities of bay anchovy eggs and post yolk-sac larvae, reflects a combination of the extremely short life stage duration (12-18 hours) and small size at hatching, about 2 mm (Wang and Kernehan 1979), which would make them subject to extrusion through the normal 500-um mesh sampling gear (O'Gorman 1984).

Post yolk-sac larval anchovies were extremely abundant in the entrainment samples during most of July and into August. The highest density (2,048 organisms/1,000 m^3) occurred on 20 July.

Bay anchovy juveniles were collected in late July and early August. Juveniles were most abundant on 5 August when 24.5 individuals/1,000 m^3 were captured in net collections (Table B-2).

Typically, anchovy abundance in the Indian Point vicinity increases during mid- or late summer when saline water intrudes into the area. During 1983 and 1979-1981 (EA 1981b, Con Edison 1982, 1984), few bay anchovy were collected during May - early June, prior to saltfront intrusion. Peak daily average densities of eggs and post yolk-sac larvae fell within the range of the peak weekly densities of these life stages observed in 1980 and 1981 (113-7,871/1,000 m^3). In previous years (1980 and 1981), yolk-sac larvae were collected in lower numbers (mean weekly densities of <3 and <2/1,000 m^3, respectively) and during a much shorter time period (i.e., during one week in June).

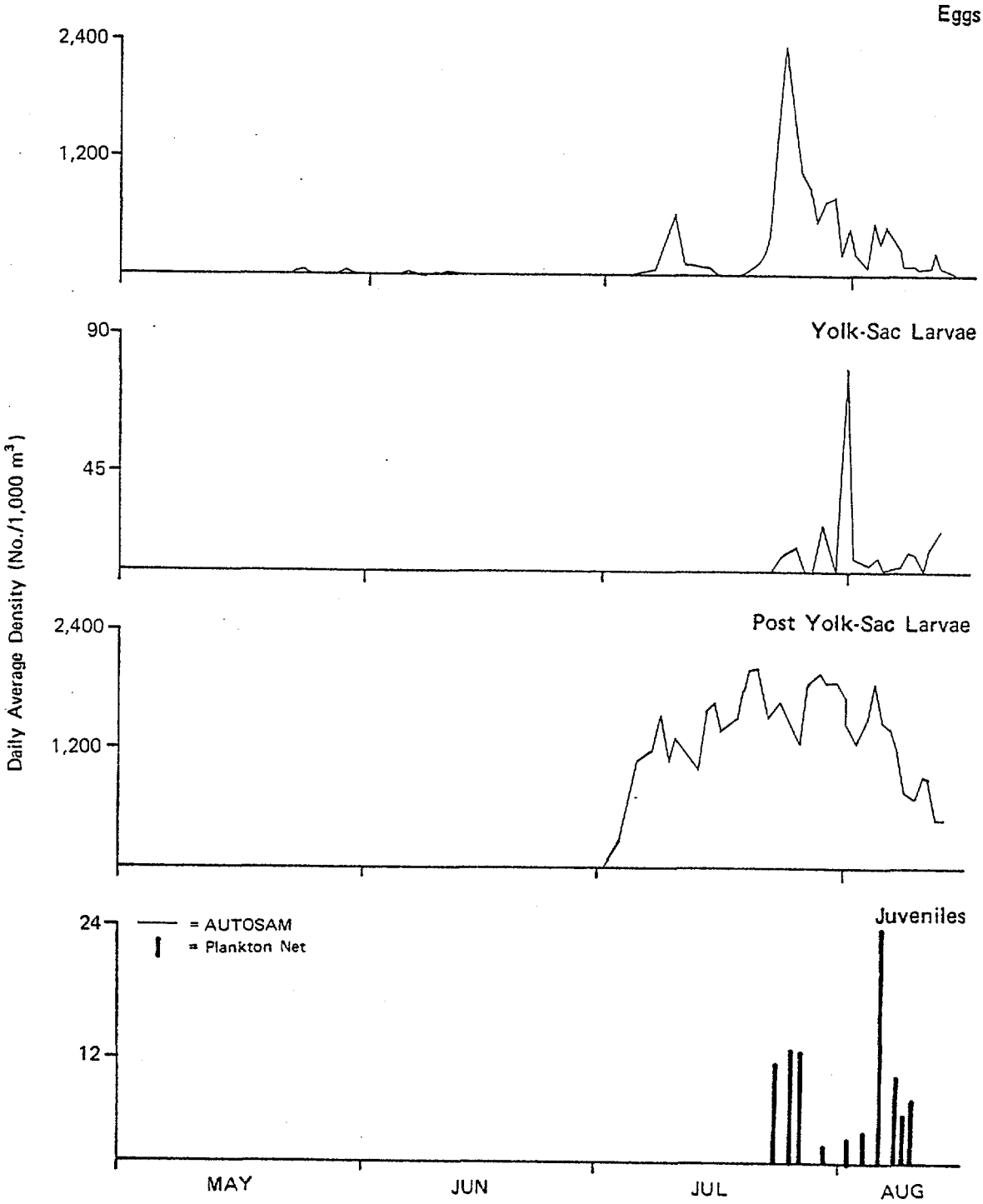


Figure 4-3. Daily average densities (No./1,000 m^3) of bay anchovy collected during the entrainment abundance study, Indian Point Generating Station, 1983.

Larval and juvenile anchovies collected by AUTOSAM ranged from 2- to 74-mm long (Appendix Table C-1). In juvenile net collections, individuals up to 83 mm in length were collected (Appendix Table D-1). Individuals in the 13-13.9 mm (TL) length interval were most abundant, although individuals in all length categories were common. During any single sampling period, anchovies exhibited a wide range in lengths reflecting the extended spawning period for this species.

4.2.2.3 Herrings

Low density (0-7/1,000 m^3) of herring eggs occurred in 1983 AUTOSAM samples at Indian Point. These eggs, collected from early May through mid-June when water temperatures reached 25.5 C (Figure 4-4, Table A-3), indicate herring spawning activity either within the area or close enough that eggs could drift into the area in the approximate 1-week incubation period. In previous years (1979-1981), mean weekly densities of eggs ranged from 0 to 2.2/1,000 m^3.

Yolk-sac larval herring were collected primarily during May and early June. Peak density (554/1,000 m^3) occurred on 4 June. Yolk-sac larval densities were higher in 1983 than in 1979 when only 3 yolk-sac larvae were collected and 1980 when only a single larva was collected (EA 1981b, Con Edison 1982) and in 1981 when the mean weekly density was 4.7/1,000 m^3 (Con Edison 1984).

Post yolk-sac larvae, the predominant herring life stage, were collected throughout most of May and June. Peak densities occurred during the first half of June when water temperatures ranged from 20.7 to 23.5 C. Densities of post yolk-sac larvae were low during May and late June. Although the pattern of seasonal occurrence of herring post yolk-sac larvae was similar in early 1983 and 1979, peak densities occurred about one week later in 1983 and were about double in magnitude. Weekly average densities reported for 1980 and 1981 (Con Edison 1982, 1984) indicate peaks in post yolk-sac abundance occurred approximately three weeks earlier in both years and were of much lower magnitude, 15/1,000 m^3 in 1980 and 238/1,000 m^3 in 1981.

Juvenile herrings were collected in juvenile net (Table B-3) samples from late June into mid-August with peak densities occurring during late-July and early August when water temperatures were 29.1-29.9 C. The nearly two-month-long period between the peak occurence of post yolk-sac larvae and juveniles (Figure 4-4) suggests that most of the juveniles entrained are fish that were spawned further upstream and then dispersed downstream into the Indian Point area.

Larval and juvenile herrings (excluding American shad) in AUTOSAM samples ranged in length from 4.1 to 72.0 mm with over half the individuals being 5.0-9.9 mm long (Table C-2). Fish up to 60-mm long were collected by the net sampler (Table D-2) with most being 12.0-17.9 mm.

While the occurrence of American shad in 1983 AUTOSAM samples was similar to that of other herring, only a few American shad were collected (Figure 4-5, Tables 4-2 and A-4). Post yolk-sac larval shad, totaling 41 individuals, were

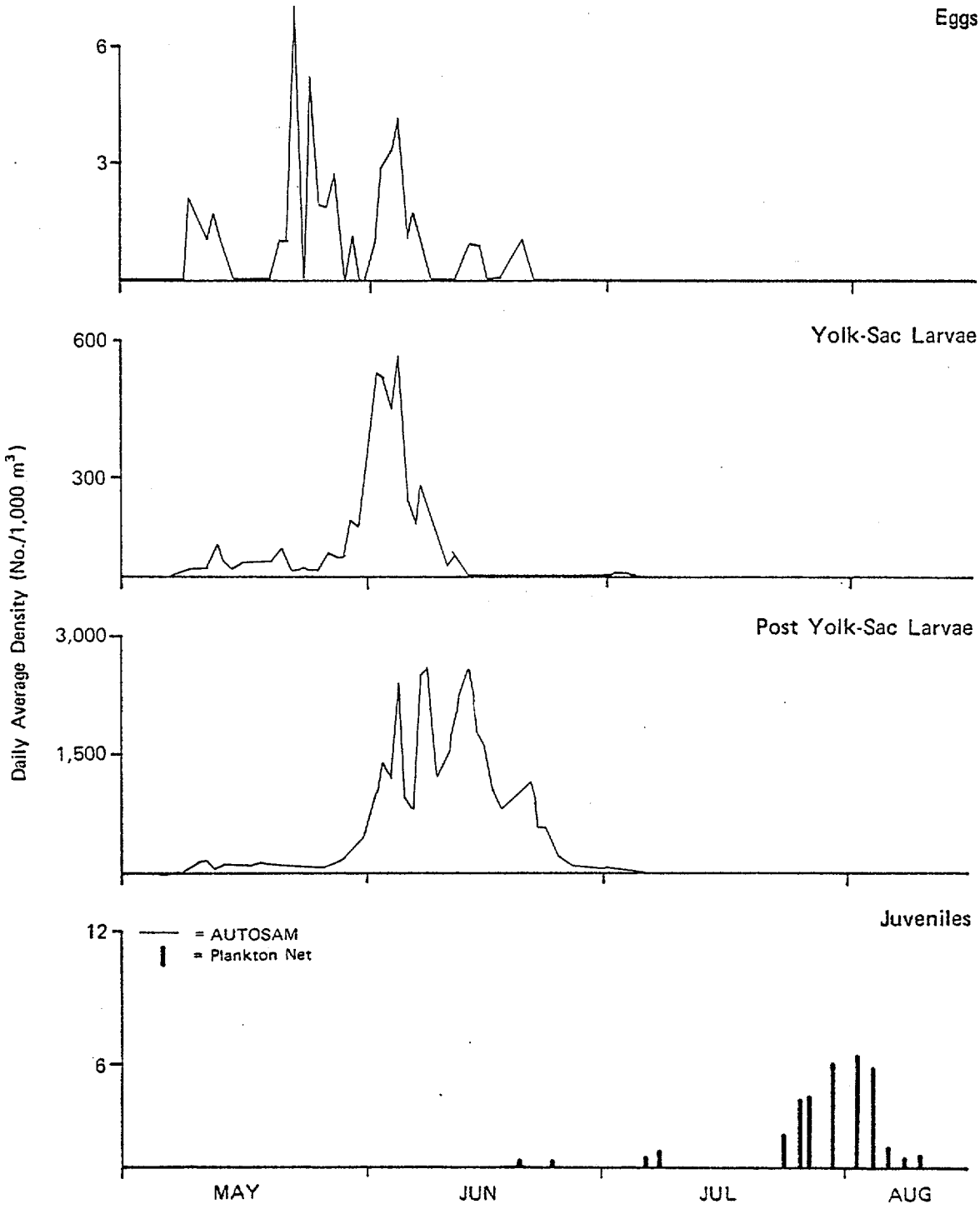


Figure 4-4. Daily average densities (No./1,000 m^3) of herrings (excluding American shad) collected during the entrainment abundance study, Indian Point Generating Station, 1983.

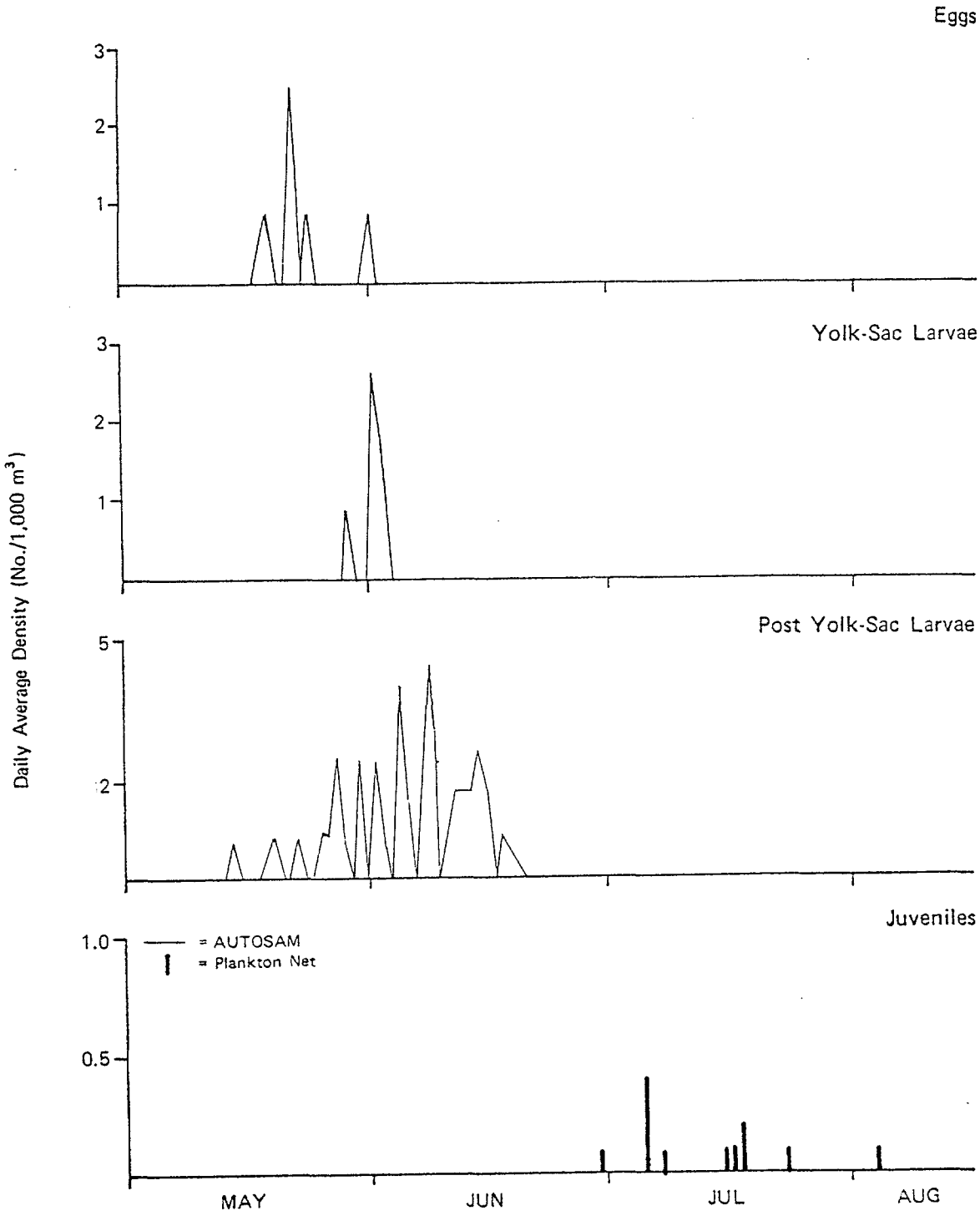


Figure 4-5. Daily average densities (No./1,000 m^3) of American shad collected during the entrainment abundance study, Indian Point Generating Station, 1983.

most abundant (4.5/1,000 m^3) in early June. A total of six eggs and six yolk-sac larvae were collected. Three juveniles were collected in AUTOSAM samples and 12 in net samples (Table B-4).

American shad larvae and juveniles collected by the AUTOSAM ranged in length from 7.1 to 51.0 mm, although individuals 10.0-11.9 mm (TL) were most numerous (Table C-3). The lengths of shad collected in juvenile net collections ranged from 21.0 to 60.0 mm (Table D-3).

4.2.2.4 White Perch

White perch eggs were collected from early May through early July (Figure 4-6, Table A-5). Abundance of eggs increased during late May and peaked during the first half of June. During this part of June, water temperatures were mostly within the temperature range (16-22 C) that has been observed to correspond with peak spawning in the Hudson River (McFadden 1978). The peak density of eggs was similar to that observed in 1979, but higher than the peaks obtained in 1980 (14/1,000 m^3) and in 1981 (5/1,000 m^3).

Yolk-sac larval white perch were collected in low numbers from early May through mid-June. An early peak occurred in mid-May and a second peak occurred in early June. Peak densities were comparable to those seen in 1980 and 1981, but lower than the peak observed in 1979.

White perch post yolk-sac larvae were more abundant in entrainment samples than eggs or yolk-sac larvae. Post yolk-sac larvae were first collected in mid-May and peak density occurred in early June when water temperature was 20.7 C. Through June, density declined and by late July post yolk-sac larvae were no longer collected. Overall, the peak density of white perch post yolk-sac larvae at Indian Point in 1983 was on the high end of the range of densities observed in prior years (63-403/1,000 m^3).

The occurence of a late peak in egg densities after larval peaks is probably due to the white perch's prolonged spawning season (TI 1981) and preference for spawning in tributary streams rather than in the channel(TI 1981, Wallace 1971). Tributary spawning generally keeps eggs out of the river proper and thus egg densities in entrainment samples are usually low. However, high flow events in the tributaries can flush eggs into the river (TI 1981) where they would be subject to entrainment. The late peak in egg densities could thus be due to eggs flushed out of the tributaries during the latter part of the spawning season.

Juvenile white perch were collected from late June through the end of sampling in mid-August in both AUTOSAM and juvenile net collections (Table B-5). Peak densities occurred in mid-July when water temperatures were 27.7-28.6 C. Overall, the density of white perch collected at Indian Point in early 1983 was similar to 1979 (EA 1981b).

White perch larvae and juveniles collected by AUTOSAM ranged in length from 2.5 to 48.6 mm (Table C-4). Larvae 3.0-4.9 were most abundant although individuals up to 17.9 mm were commonly collected. In juvenile net collections, larvae and juveniles up to 48 mm were observed, and fish 12-13 mm in length were most frequent (Table D-4).

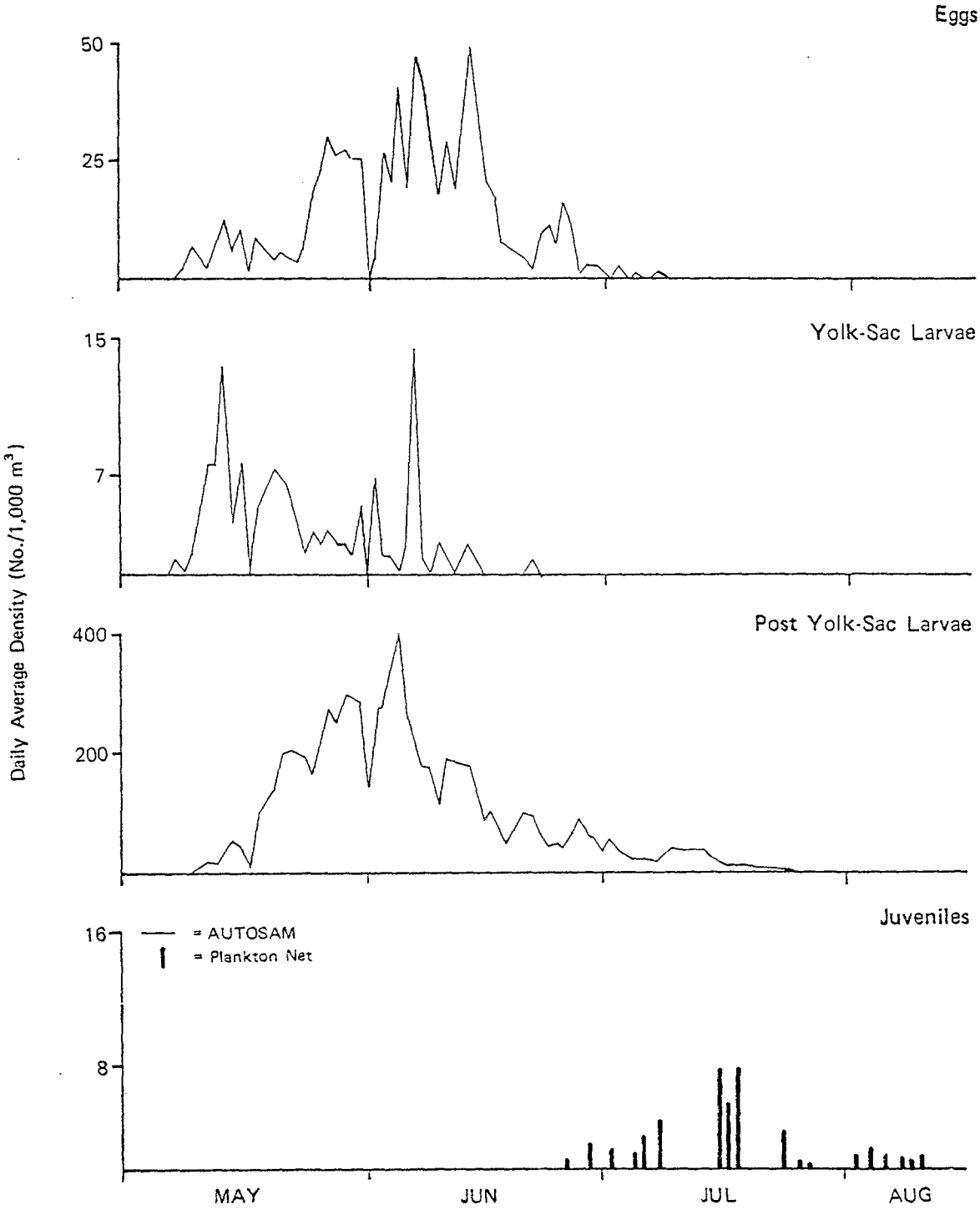


Figure 4-6. Daily average densities (No./1,000 m^3) of white perch collected during the entrainment abundance study, Indian Point Generating Station, 1983.

4.2.2.5 Striped Bass

Striped bass eggs were caught in AUTOSAM entrainment samples from mid-May through early June (Figure 4-7, Table A-6). Mean water temperatures recorded during this period were within the temperature range for peak spawning activity (15.4-19.6 C) (McFadden 1978). In 1979-1981, eggs were collected earlier, and for a shorter duration, reflective of the earlier and more rapid rise in water temperature in those years (EA 1981; Con Edison 1982, 1984).

Striped bass yolk-sac larvae were collected from early May through early July (Figure 4-7). Peak density was in mid-June when water temperature was 23.5 C. As with eggs, the period of occurence of this life stage in previous years was shorter and the peak density occured earlier. Peak densities were highest in 1979, however since sampling was not done on a 24-hour basis, data are not easily comparable to later years when sampling was equally distributed throughout the daily cycle. The peak densities for 1983 (418.8/1,000 m^3) was about equal to the 1980 peak, and about one-half as high as 1981.

Post yolk-sac larvae, the most frequently collected striped bass life stage, first appeared on 15 May, but were then absent from AUTOSAM samples until 25 May. In June, post yolk-sac larval densities increased and were highest during the last half of the month. During the period of peak numbers, water temperatures were 25.5-27 C. Post yolk-sac larvae were caught through 20 July. Peak densities of post yolk-sac larvae generally occurred by mid-June in 1979-1981 and magnitude of the peak was similar in 1979, 1981, and 1983. Peak density in 1980 was about one-third as high as in the other three years.

Juvenile striped bass were collected in nets in late June, July, and through early August (Table B-6). Juveniles were most abundant in early July, however, densities remained high into the third week of the month. The pattern and magnitude of juvenile entrainment densities (based on pump collections) was similar in 1980, but in 1981 the peak density was much higher and period of occurence shorter. In 1979 sampling ended before the juvenile life stage occurred in entrainment samples.

Larval and juvenile striped bass collected in the 1983 AUTOSAM samples ranged in length from 3.3 to 46.6 mm (Table C-5). Most were less than 13 mm long with 6.0-6.9 mm being the most frequent length interval. In juvenile net samples, striped bass up to 52-mm long were collected, however, over half were 12 and 13 mm in length (Table D-5).

4.2.2.6 Atlantic Tomcod

No eggs or larval Atlantic tomcod were collected during 1983 (Figure 4-8, Tables A-7 and B-7). Juveniles were most numerous in AUTOSAM samples during mid-May, however, peak density (4.1/1,000 m^3) was lower than in 1979-1981. (AUTOSAM data were used to calculate Atlantic tomcod densities because no net sampling was done early in summer when Atlantic tomcod juveniles commonly occur.) During the first half of August, juvenile tomcod were collected in both AUTOSAM and net samples although densities were low (0.1-1.5/1,000 m^3).

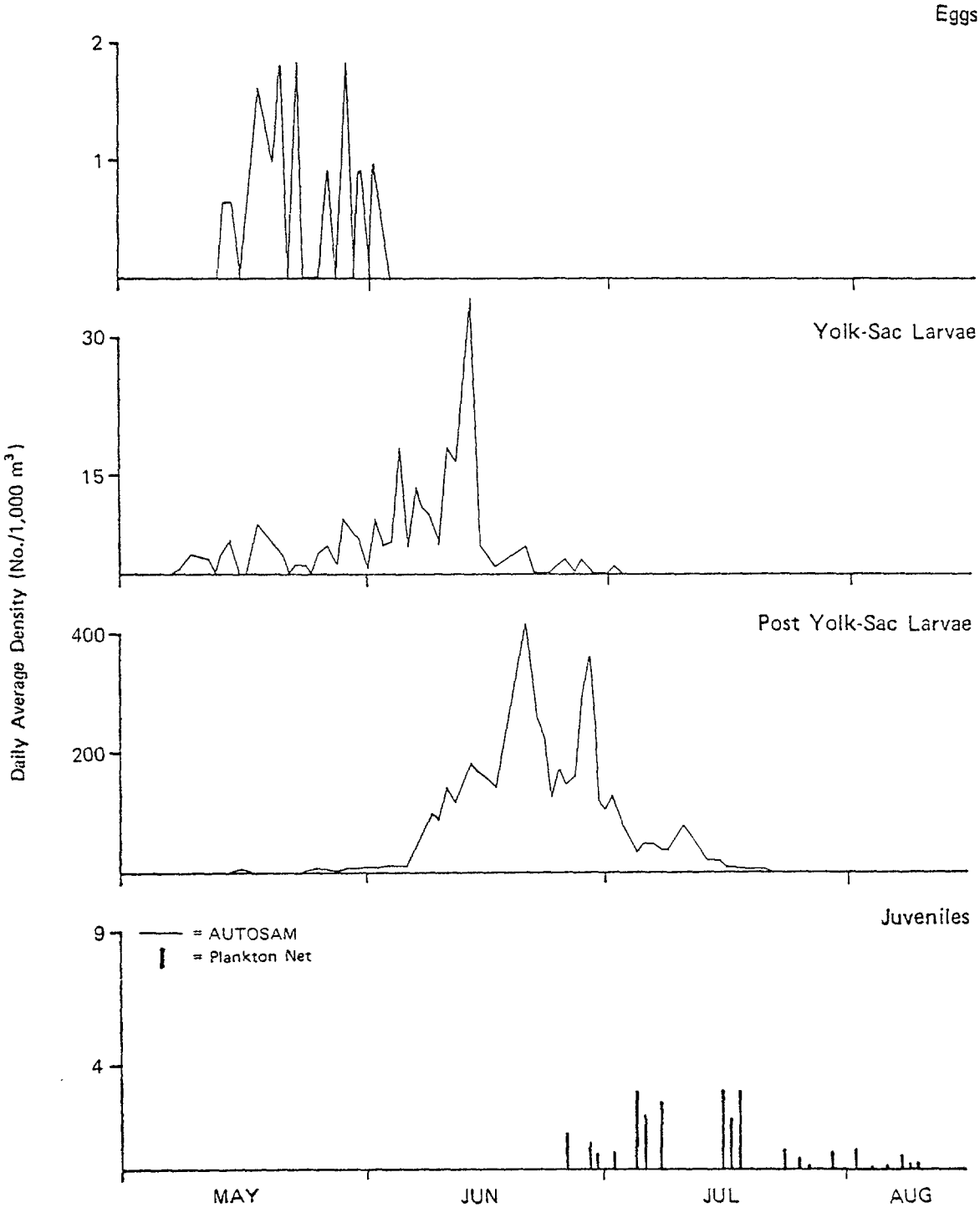


Figure 4-7. Daily average densities (No./1,000 m^3) of striped bass collected during the entrainment abundance study, Indian Point Generating Station, 1983.

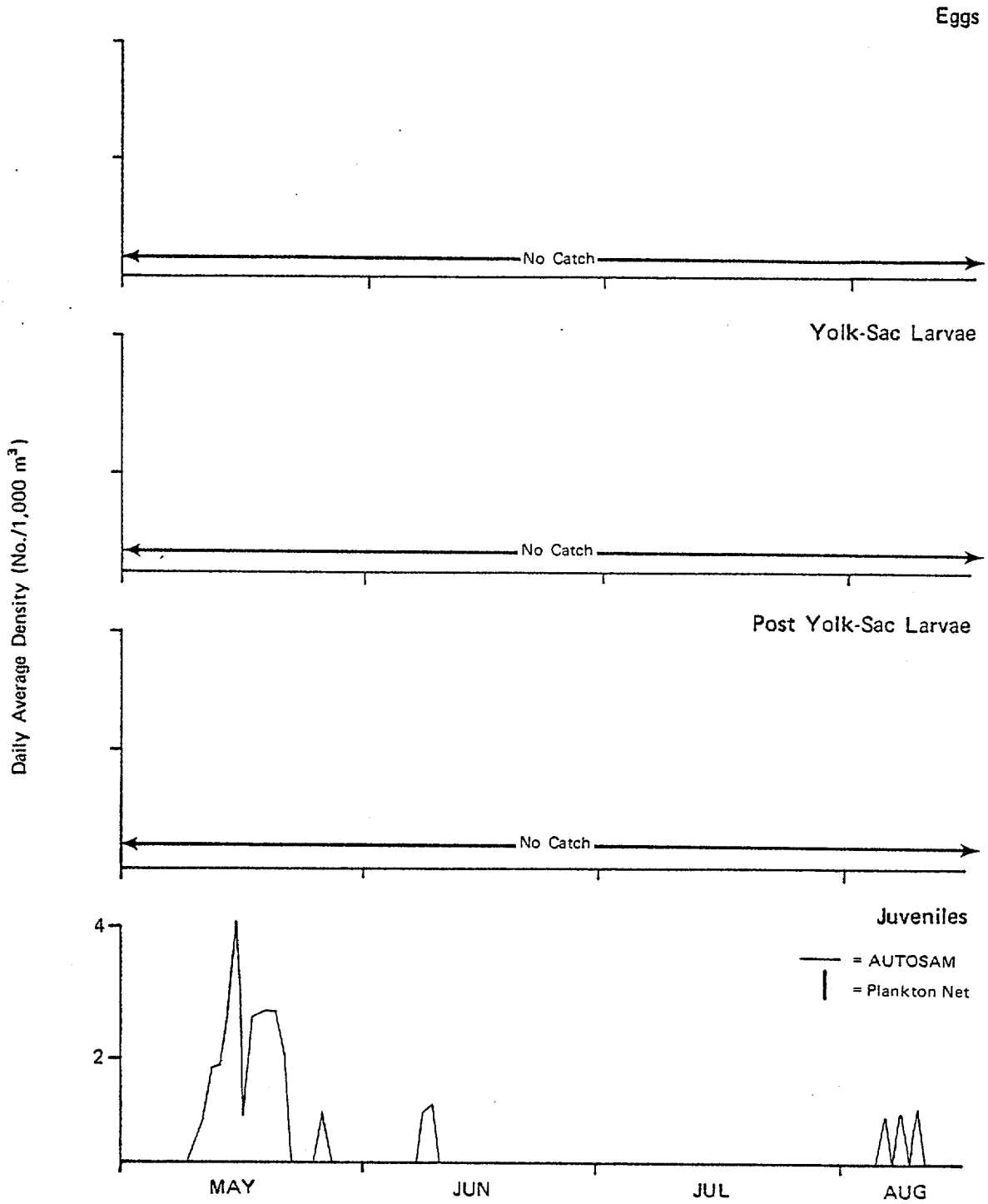


Figure 4-8. Daily average densities (No./1,000 m^3) of Atlantic tomcod collected during the entrainment abundance study, Indian Point Generating Station, 1983.

4.3 COMPARISON OF JUVENILE DENSITY ESTIMATES

4.3.1 Introduction

Selection of the most accurate device for sampling fish eggs, larvae, and early juveniles entrained within power plant cooling water systems has received considerable attention in recent years. From 1973 through 1979, entrainment sampling in the Indian Point discharge was conducted using stationary nets (0.5-m diameter) while relatively low volume pumps were used in 1979 and 1980. To address concerns over possible differences in the efficiencies between pump and net samplers, numerous direct comparison studies have been conducted both at Indian Point and other power plants. Early studies, focusing on the egg and, to a greater degree, larval stages, found no significant differences between net and pump density estimates (EA 1978, 1979, 1981a; ESEERCO 1979; King et al. 1980; Leithiser and Davidson 1980). Other studies found that pumps may occasionally be more effective than nets for these younger stages (EA 1981a; Leithser et al. 1979). In 1981, a special study focusing on the juvenile stages was conducted in the Indian Point discharge canal (Normandeau Associates and Con Edison 1982). This study compared densities among three sampling devices, a high volume pump, a 1.0-m^2 plankton net, and a 0.5-m diameter plankton net. In this study, juvenile densities estimated by the pump sampler were found to be significantly lower than densities from either plankton net. This study concluded that the 0.5-m diameter net is the preferred sampling gear for use under normal circumstances since it would capture the largest number of larvae and early juveniles.

The purpose of this investigation was to qualitatively compare juvenile densities collected by the primary pump sampling gear, AUTOSAM, in the common discharge for all units with densities from a 0.5-m diameter plankton net in the Units 1 and 2 discharge.

4.3.2 Study Design

Net samples at Station D1 were taken in a step-oblique manner from bottom to surface during eight 3-hour periods within a 24-hour period on three days per week from 15 June through 9 August 1983. Specific sampling methodologies are detailed in Section 3. AUTOSAM samples collected at middepth at station D2 during the same time period as the net samples were selected for direct comparison.

Comparisons of the two density estimates were made using a scatter plot. These comparisons were restricted to those 3-hour periods where juveniles of the selected species were collected in either sampling device. This restriction limited comparisons to those periods when juveniles of each species were present within the Indian Point discharge. Juveniles of only four of the seven taxa selected for analysis (striped bass, white perch, bay anchovy, and *Alosa* spp.) were collected frequently enough to permit comparison.

4.3.3 Results and Discussion

A total of 156 paired AUTOSAM and plankton net samples were collected for comparison. Actual numbers of paired samples used for the plots was 52 for striped bass, 83 for white perch, 53 for bay anchovy, and 48 for *Alosa* spp. (Appendix Tables F-1 through F-4).

For the four taxa selected for comparison, densities in the AUTOSAM and net samples do not appear to be closely related (Figures 4-9 and 4-10). Generally, the AUTOSAM samples, which were approximately one-tenth as large as the net samples, had a much higher frequency of zero catches. Striped bass, white perch, bay anchovy, and Alosa spp. had 39, 66, 31, and 24 zero catches, respectively in AUTOSAM collections, while net collections produced only 7, 6, 4, and 8 zero catches. The great difference in sample volumes would be expected to cause a greater incidence of zero catches, particularly if densities are low and expected catches (true mean density x sample volume) are less than about 5. Actual catches in the AUTOSAM samples seldom exceeded 5 of any taxon. (Each organism in an AUTOSAM sample was approximately equivalent to 6.5 density units, thus a catch of 5 would correspond to a density of about 33/1,000 m^3.)

Although the volume differences alone make rigorous statistical camparison of the two gears inappropriate, the qualitative comparison is also confounded by the differences in location and depth of sampling. Nets were used at Station D1 and sampled water from Unit 2, while the AUTOSAM was deployed at D2 and sampled water from both Units 2 and 3 when pumps were running. The step-oblique nature of the net samples may also differ in effectiveness from the middepth samples of the AUTOSAM. Normandeau Associates and Con Edison (1982) found significant differences in samples taken at surface, middepth, and bottom in 1981.

4.4 COMPONENTS OF VARIATION

4.4.1 Introduction

Precision of entrainment abundance sampling programs is tied directly to the component sources of variation in sample densities. In 1983, a study was conducted to determine the magnitude of the components of variation due to differences in density between days, within days, and sampling error.

4.4.2 Study Design

The study combined the routine AUTOSAM monitoring sampling (daily, continuous sampling partitioned into eight 3-hour periods) with replicate pump samples collected concurrently on nine days over the period of peak occurence of striped bass post yolk-sac larvae. Similar to the AUTOSAM, the pump samples were also composited into eight 3-hour periods for each sampling occasion. Pump samples were taken at the same depth as the AUTOSAM samples and volume of all samples was kept as uniform as possible.

The study design was to provide three replicate samples (one from AUTOSAM and two from manually-operated pumps) in each of the eight sampling periods on nine days for a total of 216 samples. A total of 201 samples were actually collected, however, there was at least one sample collected in each of the 72 sample periods (an additional 14 samples were collected following the completion of the ninth day of sampling). Laboratory analysis was conducted as described previously.

Data analysis was conducted in two phases. First, the three sampling apparati were compared with a randomized complete block analysis of variance to determine whether the three gear could validly be considered replicates. Each

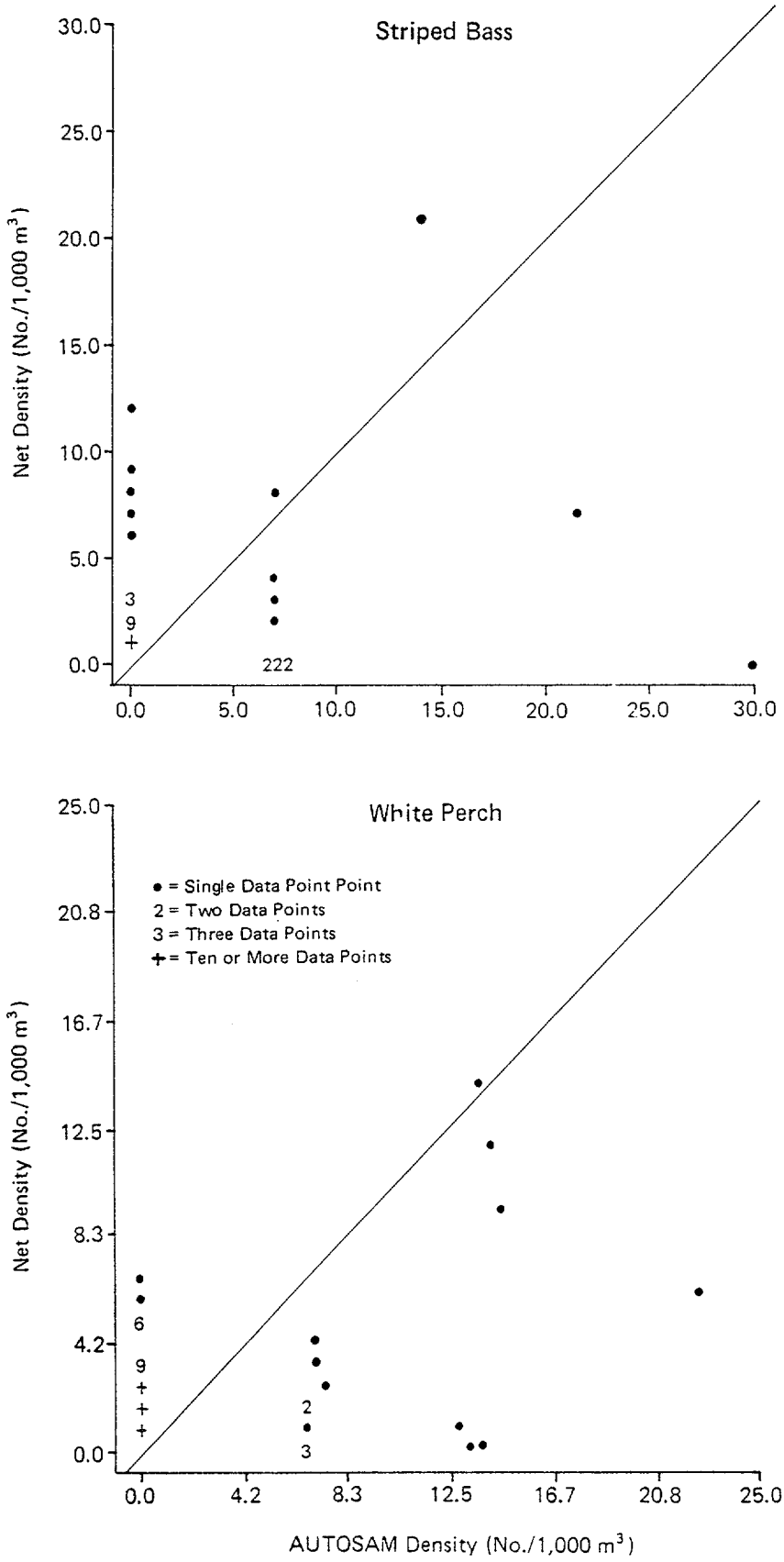
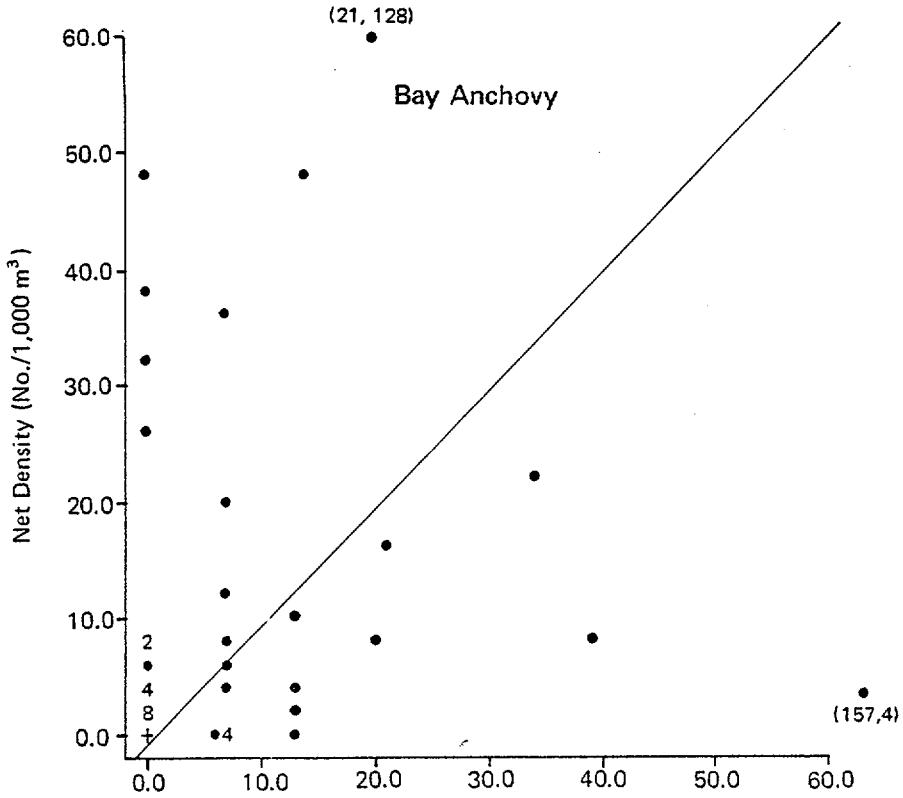


Figure 4-9. Comparison of density (No./1,000 m^3) of juvenile striped bass and white perch captured in simultaneous net and AUTOSAM samples, Indian Point Generating Station, 1983.



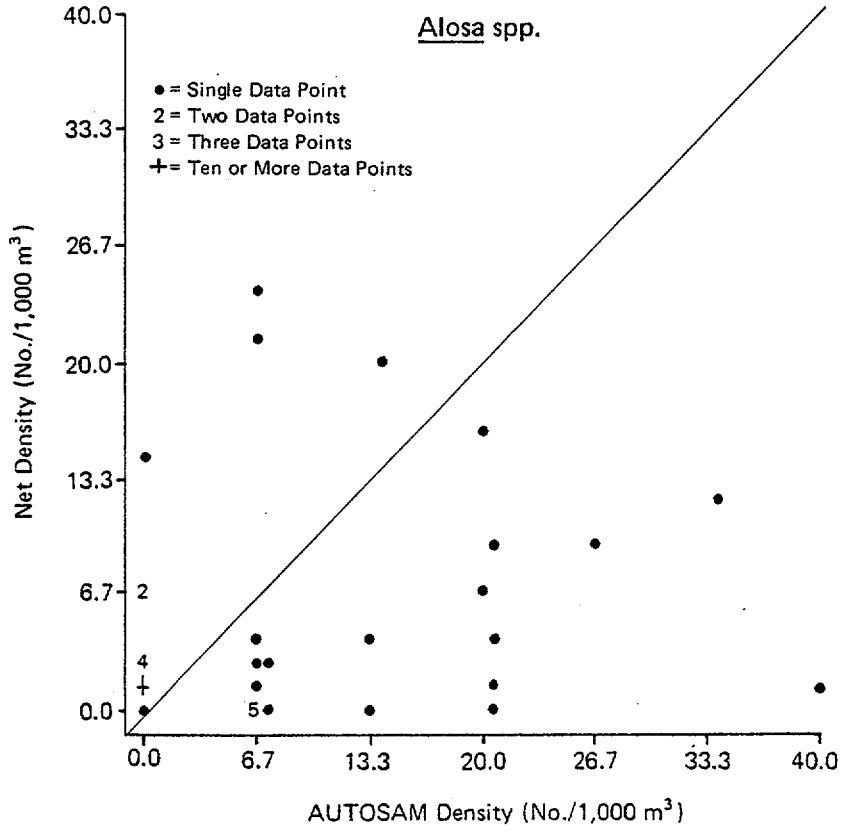


Figure 4-10. Comparison of density (No./1,000 m³) of juvenile bay anchovy and Alosa spp. captured in simultaneous net and AUTOSAM samples, Indian Point Generating Station, 1983.

3-hour sampling period was treated as a separate block. For this analysis, data were censored to include only those sample periods in which the taxon-life stage being analyzed was caught in all three samples since comparisons involving zero catches provide very little information about the magnitude of gear differences. The additional samples taken on 7 and 8 July were also included when this criterion was met. Sample densities (number per 1,000 m^3) were transformed by $\log_e$ to stabilize the variance and induce additivity of effects. The ANOVA procedure of SAS (Helwig and Council 1979) was implemented for the analysis.

The second phase of data analysis, estimation of variance components, was conducted using the NESTED procedure in SAS. This procedure is a nested design analysis of variance. Data were analyzed using the model:

$$Y_{jkl} = u + B_j + C_{jk} + e_{jkl}$$

where

Y_{jkl} = transformed sample density for replicate l during period k on day j
u = population mean density
B_j = random effect of day j
C_{jk} = random effect of period k in day j
e_{jkl} = sampling error.

The nested design was chosen over a two-way factorial design. For the nested design, the sample periods were considered to be a random selection of the available 3-hour periods within each day. The identity of the periods was not considered in the analysis. If a two-way design had been used, the effect of each particular level of sample period could have been estimated, but the effect of tide stage, which has a longer periodic cycle, would have confounded the analysis. The sampling error term in the design provided an estimate of the combined variance due to true sampling error and the differences in the sampling gears. The consequences of this combination are discussed in the results.

For this phase of analysis, dates were selected for each taxon based on abundance. For striped bass and white perch all nine days were included, for Alosa spp. the first six days were included, and for bay anchovy only the final three days were included. Density values were transformed by $\log_e (x + 1)$ to stabilize the variance and induce addivity.

4.4.3 Results and Discussion

Only four taxa, post yolk-sac larvae of striped bass, white perch, bay anchovy, and Alosa spp., were found in samples in sufficient frequency to conduct further analysis. Even these taxa, whose mean density during the dates when they were present in the samples ranged from 41.9 per 1,000 m^3 (white perch) to 1125.1 per 1,000 m^3 (bay anchovy), were frequently missing in one or more of the three simultaneous samples (Table 4-4).

Comparison of the three samplers indicated significant differences in densities among the gear for striped bass and Alosa but not for white perch and bay anchovy (Figure 4-11, Table G-1). For striped bass there was approximately a two-fold difference between the mean density in AUTOSAM samples and the mean

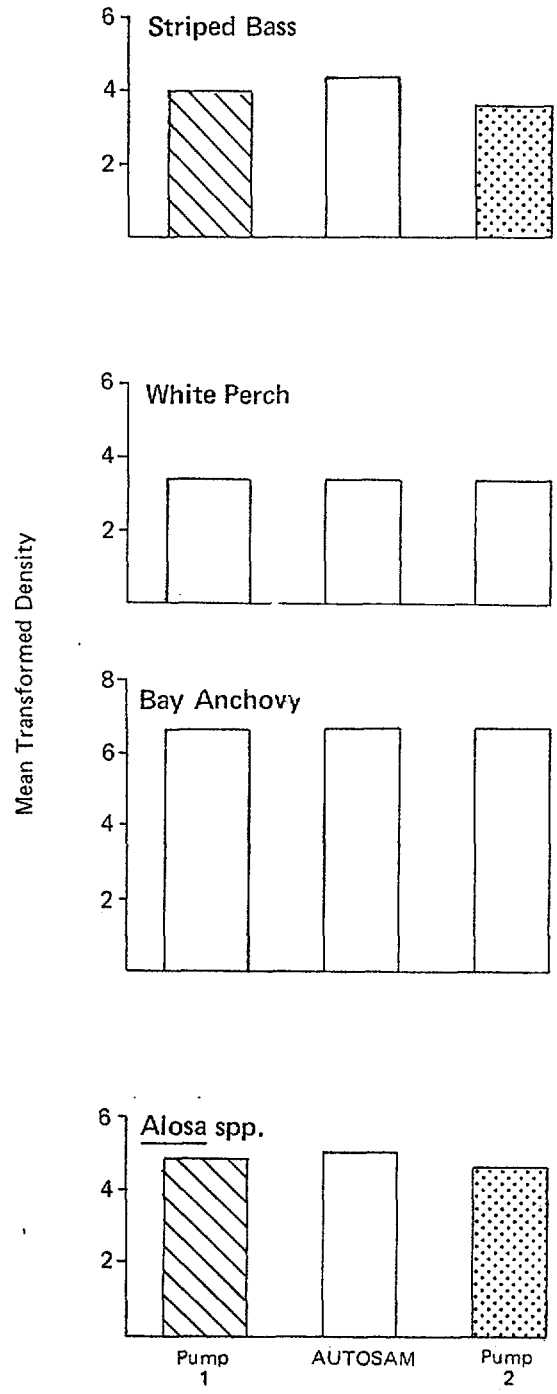


Figure 4-11. Mean density ($\log_e$ transformed) for four taxa of post yolk-sac larvae captured in components of variation study at Indian Point Generating Station, 1983. Shadings indicate that means are significantly different (Duncan's Multiple Range Test, $\alpha = 0.05$).

density in one of the pumps. For Alosa, the difference in means was only about 50 percent. The cause of the apparent differences among sampling gear for these taxa is not known but could possibly be related to flow patterns within the discharge canal at D2 which resulted in differences in water velocities at the intakes of the sampling hoses. Flow patterns at D2 are quite variable and change substantially with changes in pump operation at Units 2 and 3. Thus, the difference may be due to location rather than type of sample. The significant gear/location effect for striped bass and Alosa indicated that these taxa may have error variance components in the nested ANOVA that would be inflated by these differences.

Prior to conducting the nested ANOVA, the homogeneity of the error variance was examined by plotting the variance of the sample densities against the mean density for each 3-hour period. The variance tended to increase with an increase in the mean density (Figure 4-12). The pattern shown by white perch was typical for all four taxa. After transformation by $\log_e (x + 1)$, the variance had been substantially stabilized (Figure 4-13), however, relatively high variances were found for low density samples. These high variance cells corresponded to time periods in which zero catches occurred. For white perch, two distinct groups of high variance samples were apparent. The first group (Group A in Figure 4-13) corresponds to periods with only two samples, one of which had no catch. The second group (Group B) consisted of periods with three samples, one of which had no catch. These anomolous variances illustrate the difficulty of finding a suitable transformation for data sets containing a substantial number of zeros.

Hayman and Lowe (1961) encountered a similar problem with count data for cabbage aphids and were unable to find a transformation that could eliminate the anomolous high variance caused by zero counts. They concluded that a logarithmic transformation was as good as other transformations (fractional power and inverse hyperbolic sine) at reducing variance hetorgeneity and since it also induces additivity of effects in the transformed domain it is most commonly selected.

The variance inflation due to zero catches was most severe for white perch but far less for bay anchovy which had only one zero catch during the days selected for analysis (Table 4-4). Thus, when data are transformed, the error variance term for striped bass and white perch may be artificially large while, for Alosa and bay anchovy, far less bias would be expected. Since a bias in the error variance for striped bass and Alosa spp. would already be expected due to the significant gear/location effect, the results of the ANOVA must be viewed with caution, particularly with respect to tests of significance.

Striped bass post yolk-sac larvae exhibited significant difference across days but variation due to periods within days was not significant (Table 4-5). Estimates of the components of variation were 0.36 due to day, 0.33 due to period within day, and 2.21 due to error. As noted, the estimate of S_e^2 may be biased high due to the differences among the three samples and/or the effect of zero catches.

For white perch also, day was a significant source of variation but period within day was not (Table 4-5). The component of variation due to error was 2.32, slightly larger than for striped bass, which suggests that the zero catches have far more effect on the variance than the difference in samplers.

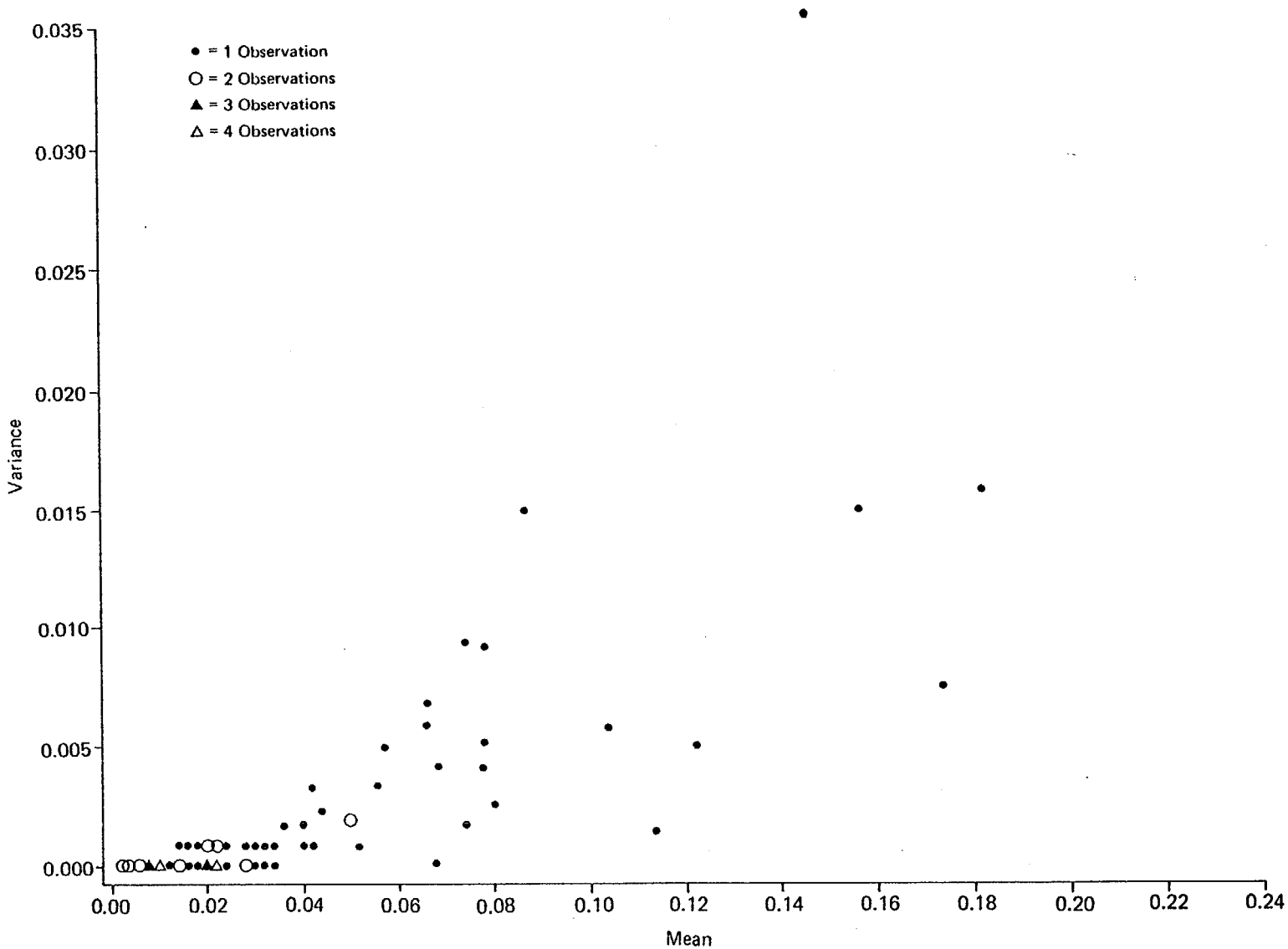


Figure 4-12. Relationship of sample period variances and mean for density of white perch post yolk-sac larvae, Indian Point Generating Station, 1983 (untransformed data).

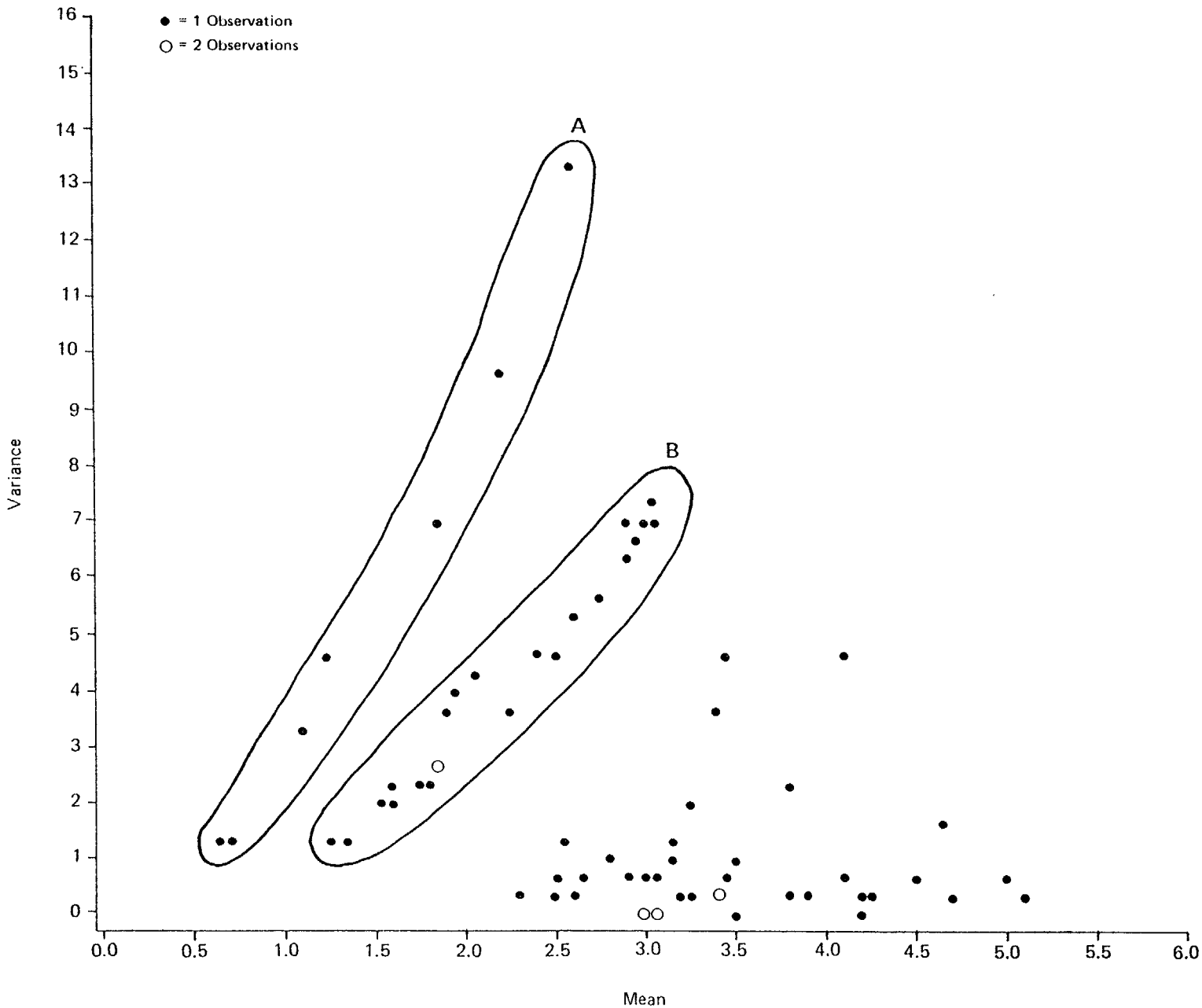


Figure 4-13. Relationship of sample period variances and mean for density of white perch post

TABLE 4-5 SUMMARY OF SAMPLING EFFORT AND OCCURRENCE IN SAMPLES FOR POST YOLK-SAC LARVAE OF STRIPED BASS, WHITE PERCH, *ALOSA* SPP., AND BAY ANCHOVY DURING COMPONENTS OF VARIATION STUDY AT INDIAN POINT GENERATING STATION, 1983

		Number of Samples with Zero Counts			
Date	Total Samples	Striped Bass	White Perch	Bay Anchovy	*Alosa* spp.
17-18 JUN	20	3	4	(a)	0
22-23 JUN	23	0	2	(a)	0
24-25 JUN	22	3	4	(a)	0
27-28 JUN	21	1	4	(a)	1
29-30 JUN	24	5	7	(a)	5
01-02 JUL	20	0	2	(a)	4
04-05 JUL	24	3	5	1	(a)
05-06 JUL	23	3	3	0	(a)
07-08 JUL	24	5	4	0	(a)
Total	201	23	35	1	10
Mean Density[b]		93.9	41.9	1125.1	271.2

(a) Taxon was not present in any samples.
(b) Mean density (no./1,000 m^3) for days when taxon was present.

Note: D.F. - degree of freedom
SS - sum of squares
MS - mean square
F - ratio of mean squares
S^2 - estimate of variance component

Estimates for components of variation due to day (0.13) and period within day (0.12) were smaller than for striped bass indicating smaller between and within day variation in abundance (Figure 4-14 and 4-15).

Alosa spp. had highly significant effects due to day and period within day (Table 4-5). The day effect was due to the extreme change in abundance over the six days that were analyzed for this taxon (Figure 4-14). Alosa spp. also exhibited a large degree of variation within days (Figure 4-15). Higher densities were found at night (2100, 0000, and 0300) than during daylight hours. The error variance component was only 0.81 (Table 4-5), the smallest for any taxon, further supporting the hypothesis that the significant gear/location effect for Alosa spp. and striped bass had a negligible effect on the estimate of sampling variation.

For bay anchovy, the period within day effect was significant but days were not (Table 4-5). The three days analyzed for bay anchovy all had relatively high abundance (Figure 4-14), however, a selection of days spread over a longer time interval would certainly have shown more daily variability. Estimates of variance components due to days, periods within days, and error were 0.17, 0.43, and 0.98, respectively.

Application of results of this study can be made to estimate precision of existing abundance sampling programs and in design of sampling programs. The estimates of error variance are translatable to confidence limits (Elliot 1977).

$$L_1 = \bar{x} \,/\, \exp\left[t \sqrt{\frac{s_e^2}{n}}\right]$$

$$L_2 = \bar{x} \cdot \exp\left[t \sqrt{\frac{s_e^2}{n}}\right]$$

where

L_1 and L_2 = lower and upper confidence limits
$\bar{x}$ = mean sample density
t = Student's t for appropriate α level and degree of freedom
s_e^2 = error variance
n = number of samples.

For example, if a 95 percent confidence interval for mean density of Alosa spp. was desired for one of the 3-hour periods:

$$L_1 = \bar{x} \,/\, \exp\left[4.303 \sqrt{\frac{0.81}{3}}\right] = \bar{x} \,/\, 9.34$$

$$L_2 = \bar{x} \cdot 9.34$$

For the other three taxa, the corresponding factors to multiply or divide the mean are 40.17 for striped bass, 43.99 for white perch, and 11.74 for bay anchovy. The extreme width of these confidence intervals is due to the

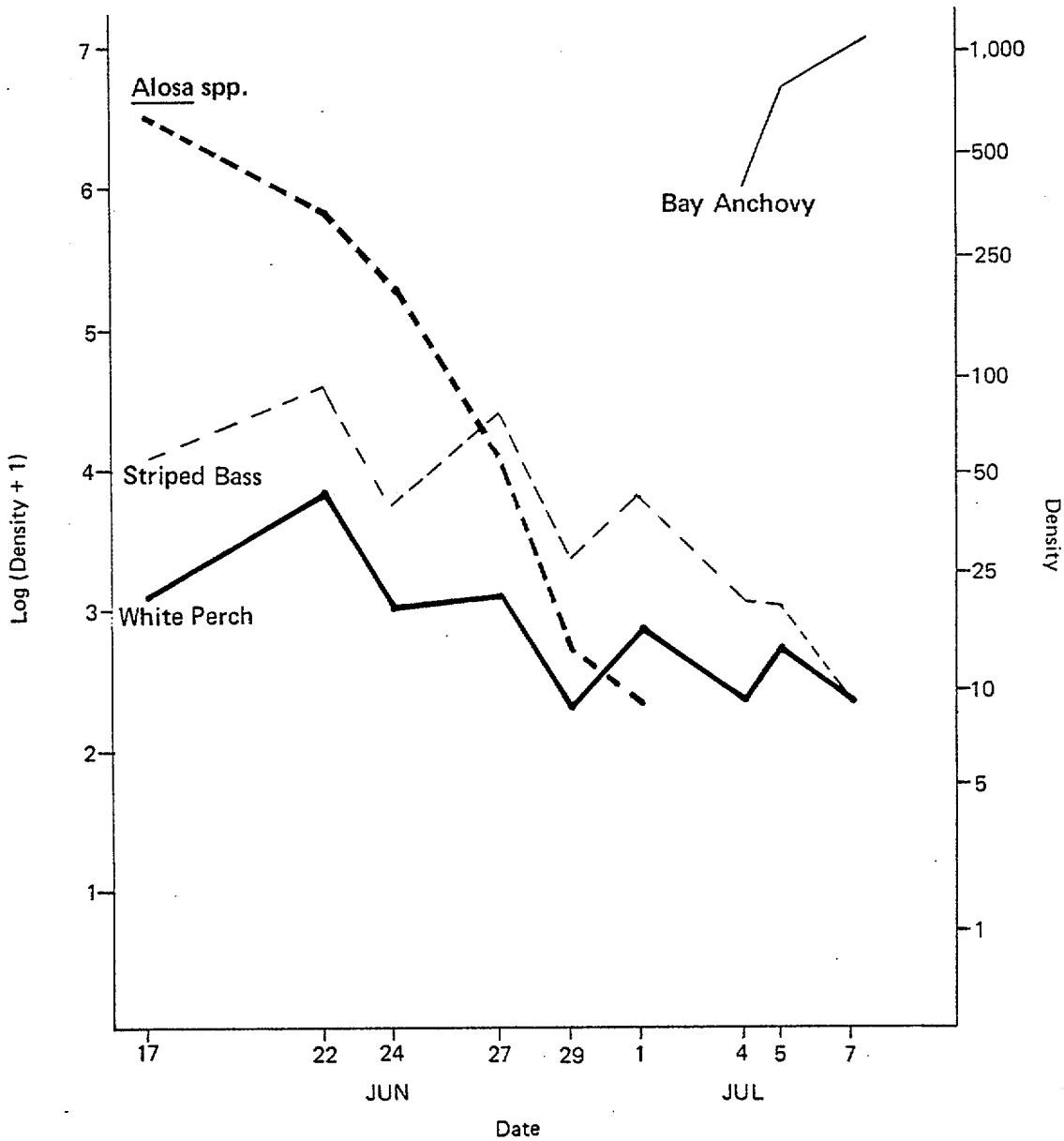


Figure 4-14. Geometric mean daily density of post yolk-sac larvae for striped bass, white perch, Alosa spp., and bay anchovy, Indian Point Generating Station, 1983.

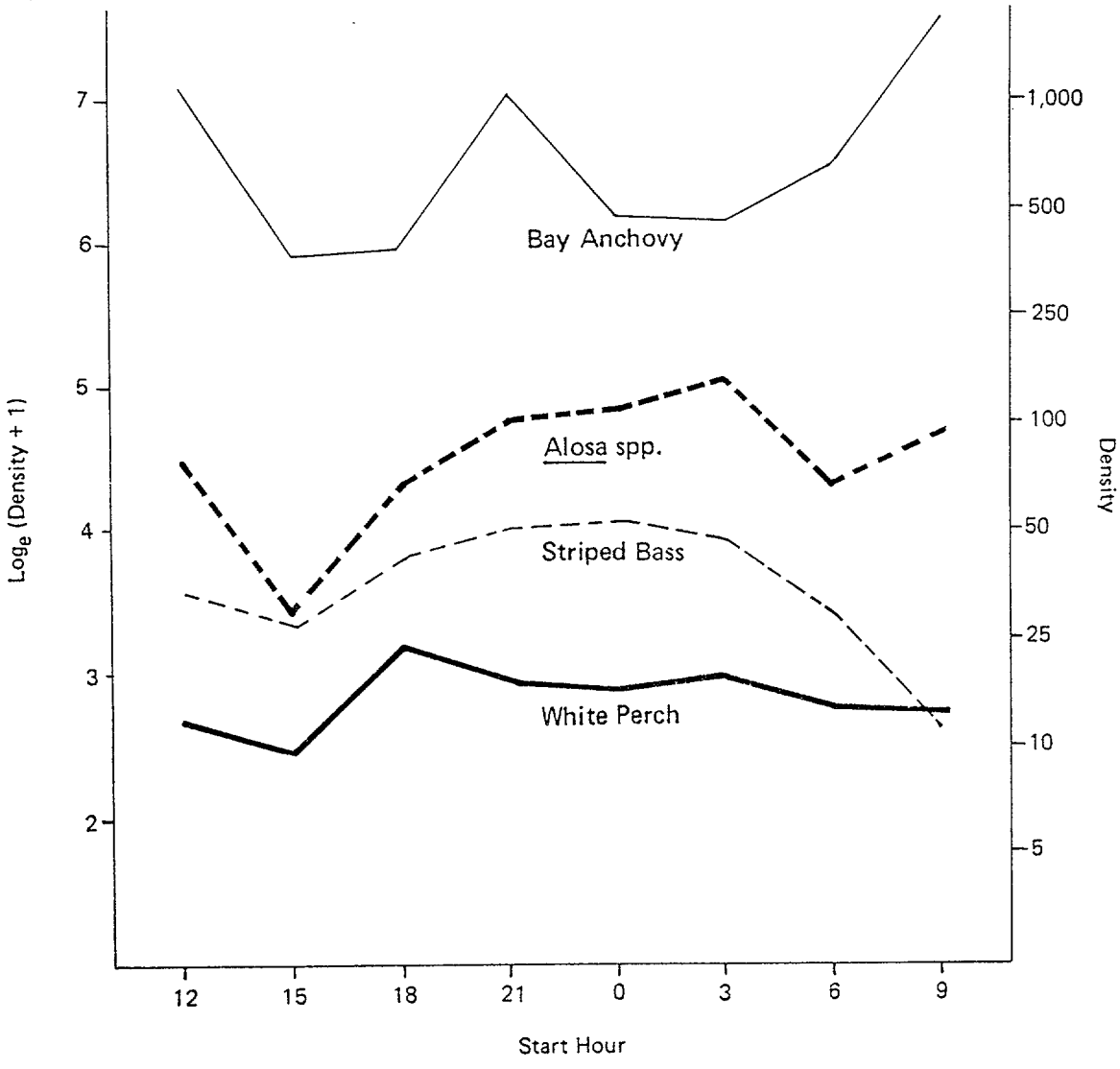


Figure 4-15. Geometric mean sample period density of post yolk-sac larvae for striped bass, white perch, Alosa spp., and bay anchovy, Indian Point Generating Station, 1983.

previously discussed bias in the estimates of the error variance as a result of the inability of the transformation to adequately stabilize the variance for samples containing zero counts. Sample periods containing only two samples also often had high variances. Frequency distributions for the cell variances clearly demonstrate the effect of zero counts and two-sample cells on the estimate of error variance (Figure 4-16). Even bay anchovy, which had only one zero catch, can be seen to have a highly biased estimate of error variance. The bias in the error variance associated with the zero catches could be reduced by sampling a larger volume, i.e., increasing the pumping rate, so that the probability of catching low density taxa in a 3-hour period is high enough that some organisms are always present in the sample.

This study illustrates the importance of taking samples that are efficient and/or large enough to have few or no zero catch samples. The effect of zero catches on the precision of sample means is extreme and is not easily removed through transformation. As is typical of plankton catches, these data showed a strong positive relationship between mean catch and variance prior to transformation, and a negative relationship after transformation. Although there may be other transformations that stabilize the variance better than the log transformation, it also induces additivity of effects, and therefore is most commonly used for ANOVA applications.

4.5 EFFECT OF OUTAGES AS A MITIGATIVE MEASURE DURING 1983

During the entrainment outage evaluation period (3 May through 13 August), Indian Point Unit 2 operated at or near full flow whereas the Unit 3 cooling water system operated only during the period 29 May through 14 July (Appendix Table H-1). However, only a single pump operated at Unit 3 after 21 June. Total actual plant flow during the entrainment sampling season was 554 million cubic meters whereas without the mitigation outage, total cooling water flow would have been 857 million cubic meters. Thus, the outage at Indian Point Unit 3 produced a 35.4 percent reduction in total cooling water flow at Indian Point during the period 3 May - 13 August 1983.

Estimates of the numbers actually cropped at Indian Point ranged from slightly less than 7,000 for Atlantic tomcod to nearly 332 million for bay anchovy (Table 4-6). Only clupeids were also cropped in large numbers (285 million). Without the mitigative outages, numbers entrained followed a similar pattern among species ranging from 10,000 for Atlantic tomcod to more than 632 million for bay anchovy. For most species, post yolk-sac larvae were the most frequent life stage cropped by entrainment. Juveniles were the only life stage of Atlantic tomcod entrained at Indian Point during the outage evaluation period.

For the three species with an assumed 100 percent entrainment mortality (bay anchovy, American shad, and clupeids), reductions in the numbers cropped attributed to the mitigative outage ranged from less than 8 to more than 47 percent. Differences among species and life stages reflect the seasonal pattern of occurrence for each species and life stage with respect to the seasonal pattern of total cooling water flow. Species and life stages which occurred principally during the period when both Unit 2 and Unit 3 cooling

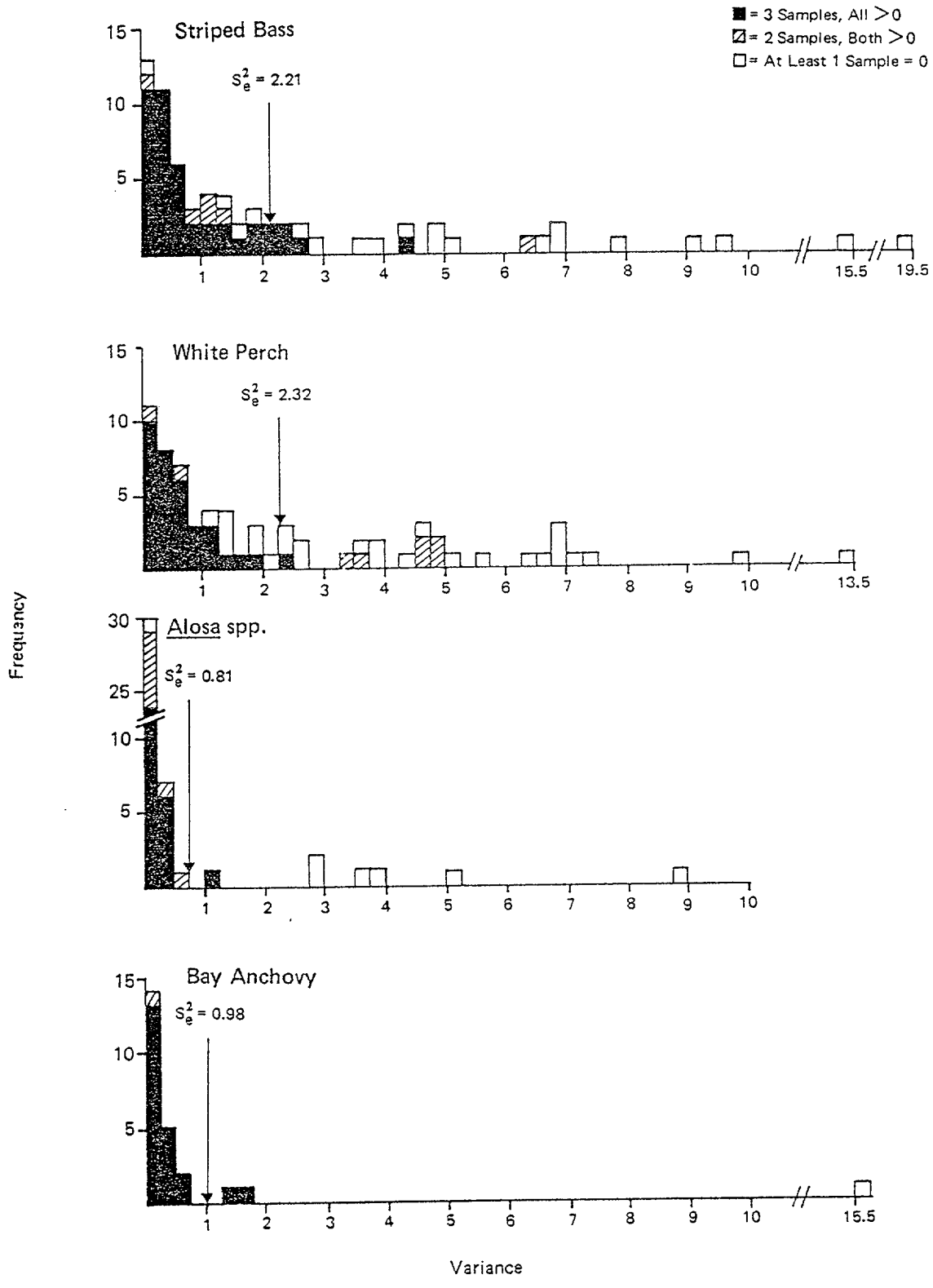


Figure 4-16. Frequency distribution of 3-hour period variances of transformed densities for striped bass, white perch, Alosa spp., and bay anchovy, and estimate of error variance (S_e^2) from nested ANOVA. (Width of bars is 0.25).

TABLE 4-6 ESTIMATES OF NUMBERS CROPPED BY ENTRAINMENT AT INDIAN POINT UNITS 2 AND 3 COMBINED DURING THE PERIOD 3 MAY - 13 AUGUST 1983

Species	Life Stage	Estimated Numbers Cropped (In thousands)[a] With Mitigation	Without Mitigation	Percent Reduction
Striped bass	EGG	30	53	43.1
	YSL	467	535	12.7
	PYSL	7,409	12,288	39.7
	JUV	91	142	35.5
	TOTAL	7,997	13,017	38.6
White perch	EGG	2,171	2,689	19.2
	YSL	204	316	35.5
	PYSL	1,781	3,990	55.4
	JUV	305	556	45.2
	TOTAL	4,461	7,551	40.9
Bay anchovy	EGG	63,087	123,292	48.8
	YSL	872	1,639	46.8
	PYSL	267,056	506,004	47.2
	JUV	847	1,605	47.2
	TOTAL	331,862	632,540	47.5
American shad	EGG	30	52	41.8
	YSL	42	42	0.0
	PYSL	279	317	12.0
	JUV	21	39	45.1
	TOTAL	372	450	17.3
Clupeids	EGG	251	372	32.6
	YSL	24,758	27,612	10.3
	PYSL	259,967	280,195	7.2
	JUV	304	600	49.3
	TOTAL	285,280	308,779	7.6
Atlantic tomcod	JUV	7	10	30.9

(a) Summarized from Appendix Tables H-4 through H-24.

water systems operated had lower reductions in numbers cropped from full flow conditions than those species which occurred principally during periods of single unit operation.

For the other three species (striped bass, white perch, and Atlantic tomcod) numbers cropped were based on plant flows, densities, estimates of mechanical mortality, and estimates of thermal mortality developed from plant operation information. Since mechanical mortality estimates are assumed to be constant, differences in reductions in numbers cropped due to entrainment reflect an interaction of plant operation (i.e., temperature and transit time) with seasonal patterns in densities and lengths of entrained organisms. Estimates of the reduction in numbers cropped at Indian Point for these three species ranged from 31 percent for Atlantic tomcod (juveniles only) to 41 percent for white perch.

Overall, estimates of reductions in numbers of organisms cropped by entrainment at Indian Point due to the outage at Unit 3 varied considerably among species and life stages. The outage was clearly most effective for bay anchovy, striped bass, and white perch, and least effective for clupeids. For American shad, clupeids, and Atlantic tomcod, the percentage reduction in numbers entrained was less than the reduction in total cooling water flow. This pattern is due to the operations of Unit 3 pumps during the period 29 May - 21 June 1983, a period of peak entrainment at Indian Point for these species.

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APPENDIX A

AUTOSAM
DATA SUMMARY TABLES
INDIAN POINT ENTRAINMENT ABUNDANCE
1983

LIST OF TABLES

Number	Title
A-1	Daily average density (No./1,000 m^3) of total ichthyoplankton collected at Station D2 using AUTOSAM, Indian Point Generating Station, 3 May - 13 August 1983.
A-2	Daily average density (No./1,000 m^3) of bay anchovy collected at Station D2 using AUTOSAM, Indian Point Generating Station, 3 May - 13 August 1983.
A-3	Daily average density (no./1,000 m^3) of herrings collected at Station D2 using AUTOSAM, Indian Point Generating Station, 3 May - 13 August 1983.
A-4	Daily average density (No./1,000 m^3) of American shad collected at Station D2 using AUTOSAM, Indian Point Generating Station, 3 May - 13 August 1983.
A-5	Daily average density (No./1,000 m^3) of white perch collected at Station D2 using AUTOSAM, Indian Point Generating Station, 3 May - 13 August 1983.
A-6	Daily average density (No./1,000 m^3) of striped bass collected at Station D2 using AUTOSAM, Indian Point Generating Station, 3 May - 13 August 1983.
A-7	Daily average density (No./1,000 m^3) of Atlantic tomcod collected at Station D2 using AUTOSAM, Indian Point Generating Station, 3 May - 13 August 1983.

TABLE A-1 DAILY AVERAGE DENSITY (NO./1,000 M3) OF TOTAL ICHTHYOPLANKTON COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 3 MAY - 13 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
03MAY83	1119.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04MAY83	1130.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06MAY83	1197.2	.	.	0.0	1.7	0.0	1.7	0.8	4.2
07MAY83	1191.1	.	.	0.0	3.4	2.5	1.7	1.7	9.2
08MAY83	1186.2	.	.	1.7	1.7	26.1	3.4	5.1	36.3
09MAY83	909.0	.	.	8.8	25.3	88.0	4.4	8.8	126.5
11MAY83	1177.2	.	.	3.4	25.5	212.4	6.8	24.6	269.3
12MAY83	1179.8	.	.	9.3	94.9	81.4	10.2	39.0	225.5
13MAY83	1189.6	.	.	15.1	66.4	162.2	6.7	53.8	289.2
14MAY83	1210.5	.	.	7.4	30.6	137.1	9.9	62.0	239.6
15MAY83	1208.5	.	.	9.9	43.0	163.0	10.8	40.5	257.3
16MAY83	1207.3	.	.	0.0	42.2	93.6	6.6	18.2	160.7
17MAY83	1193.8	.	.	11.7	46.1	227.0	5.9	52.8	331.7
19MAY83	1145.6	.	.	7.9	54.1	206.9	3.5	60.2	324.7
20MAY83	1135.6	.	.	9.7	94.2	317.0	5.3	87.2	503.7
21MAY83	1132.6	.	.	5.3	52.1	303.7	7.9	53.0	416.7
22MAY83	1135.6	.	.	16.7	39.6	269.5	0.9	50.2	360.2
23MAY83	1143.2	.	.	14.0	52.5	269.4	2.6	43.7	368.3
24MAY83	1135.0	.	.	22.9	28.2	234.4	1.8	24.7	289.0
25MAY83	1137.7	.	.	24.6	43.9	259.3	2.6	50.1	356.0
26MAY83	1131.2	.	.	36.2	78.7	373.9	1.8	53.9	508.3
27MAY83	1130.9	16.0	195	29.2	62.8	385.5	2.7	69.0	519.9
28MAY83	1135.1	16.2	189	37.0	79.3	463.4	0.9	81.0	624.6
29MAY83	1141.4	16.2	189	30.7	157.7	549.3	0.0	83.2	790.3
30MAY83	1138.3	16.4	187	27.2	145.0	707.2	0.9	111.6	964.6
31MAY83	138.0	16.0	187	0.0	253.6	666.5	7.2	58.0	985.3
01JUN83	1126.8	16.9	304	7.1	543.1	1243.4	0.9	188.1	1975.6
02JUN83	1122.8	17.4	327	29.4	526.4	1721.6	0.0	165.7	2413.6
03JUN83	964.6	17.7	863	24.9	438.5	1542.6	0.0	101.6	2082.8
04JUN83	968.4	18.0	885	47.5	586.6	2845.0	1.0	90.9	3523.5
05JUN83	1141.4	18.5	920	19.3	215.5	1275.6	0.9	90.2	1582.3
06JUN83	1144.1	19.1	945	76.9	153.0	958.8	0.0	106.6	1218.4
07JUN83	1119.9	19.4	966	42.9	293.8	2811.0	0.0	198.2	3303.0
08JUN83	1113.3	19.4	977	31.4	216.5	3010.1	0.9	150.0	3377.4
09JUN83	975.8	19.5	983	16.4	79.9	1346.5	2.0	165.0	1593.5
10JUN83	1117.2	20.0	1008	32.2	76.1	1804.5	0.0	283.7	2164.3
11JUN83	1107.1	20.2	1025	26.2	103.9	2185.0	1.8	259.2	2550.0
13JUN83	1116.3	21.1	1065	58.2	52.9	2994.8	0.0	233.8	3281.4
14JUN83	1121.8	21.9	1093	46.4	30.3	2256.2	0.9	165.8	2453.2

TABLE A-1 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
15JUN83	1128.3	22.2	1092	23.0	14.2	2417.8	0.9	156.0	2588.8
16JUN83	1141.9	22.5	1102	17.5	17.5	1325.0	0.0	148.0	1490.5
17JUN83	1146.7	23.0	1117	8.7	12.2	1206.0	0.0	65.4	1283.7
20JUN83	976.6	23.3	1110	7.2	23.6	1707.9	0.0	185.3	1916.8
21JUN83	1083.8	23.7	1119	2.8	17.5	1692.2	0.9	93.2	1803.9
22JUN83	1116.3	23.9	1126	9.9	10.7	1064.2	1.8	200.7	1277.5
23JUN83	1116.5	24.1	1152	15.2	18.8	814.1	0.0	70.8	903.7
24JUN83	1116.0	24.6	1196	7.2	6.3	544.8	1.8	58.2	611.1
25JUN83	1127.0	24.3	1330	16.0	4.4	386.0	3.5	32.8	426.8
26JUN83	1134.9	24.5	1431	10.6	0.9	408.0	1.8	48.5	459.1
27JUN83	1127.0	25.0	1623	1.8	7.1	567.0	0.9	34.6	609.6
28JUN83	1151.5	24.5	1607	2.6	2.6	573.1	3.5	40.8	620.0
29JUN83	1134.4	24.9	1668	2.6	0.0	318.8	0.9	45.0	364.7
30JUN83	1109.7	24.3	1733	0.9	0.9	220.8	0.0	28.8	250.5
01JUL83	1150.9	.	.	0.0	2.6	233.7	1.7	19.1	257.2
02JUL83	1137.1	.	.	1.8	0.9	255.9	11.4	39.6	307.8
03JUL83	1132.6	.	.	0.0	0.0	400.8	5.3	42.4	448.5
04JUL83	1137.9	.	.	11.4	0.0	719.8	0.0	35.2	754.9
05JUL83	1141.4	.	.	4.4	1.8	1185.4	5.3	36.8	1229.2
06JUL83	1135.5	.	.	18.5	2.6	1182.8	8.8	40.5	1234.7
07JUL83	1140.0	25.7	1883	50.0	0.9	1249.1	3.5	36.8	1290.3
08JUL83	1132.9	26.0	1989	300.1	0.0	1659.5	10.6	58.3	1728.3
09JUL83	1135.5	25.8	2075	650.8	0.0	1143.1	15.0	24.7	1182.7
10JUL83	1138.3	25.7	2243	79.9	0.9	1454.8	23.7	31.6	1511.0
13JUL83	1128.9	26.5	2184	53.1	0.0	1039.0	21.3	23.9	1084.2
14JUL83	1128.3	26.7	2221	8.9	0.0	1562.5	23.0	13.3	1598.8
15JUL83	1115.2	26.9	2251	6.3	0.0	1704.6	26.9	17.9	1749.4
16JUL83	559.3	27.2	2113	7.2	0.0	1376.8	14.3	25.0	1416.2
18JUL83	979.4	27.5	2403	16.3	0.0	1533.6	42.9	42.9	1619.4
19JUL83	1116.2	27.4	2549	41.2	0.9	1979.9	38.5	22.4	2041.8
20JUL83	1116.5	27.9	2683	109.3	0.0	2058.3	41.2	37.6	2137.1
21JUL83	1102.9	27.8	2920	233.9	0.0	1730.9	30.8	17.2	1779.0
22JUL83	1103.4	27.5	2751	1102.1	0.0	1487.2	31.7	9.1	1528.0
23JUL83	1122.0	27.5	3461	2364.4	4.5	1750.4	32.1	30.3	1817.2
25JUL83	1175.6	27.1	3449	1040.3	8.5	1375.4	56.1	34.9	1475.0
26JUL83	1174.0	27.2	3623	846.7	0.0	1250.4	65.6	31.5	1347.5
27JUL83	1178.1	27.4	3859	477.9	0.0	1875.9	43.3	38.2	1957.4
28JUL83	1175.4	27.4	3984	651.7	17.9	2032.4	39.1	26.4	2115.8
29JUL83	1162.8	27.4	3923	778.3	10.3	1919.5	32.7	25.8	1988.3

TABLE A-1 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
30JUL83	1172.3	27.6	3709	118.6	0.0	1962.0	37.5	29.0	2028.6
31JUL83	1176.8	28.1	3788	435.1	85.8	1805.7	57.8	22.1	1971.4
01AUG83	1184.5	27.9	3653	176.4	4.2	1489.3	43.1	84.4	1621.0
02AUG83	1170.7	28.0	3481	88.0	4.3	1243.7	29.0	12.0	1289.0
03AUG83	1182.6	28.3	3613	502.3	5.9	1513.6	31.3	23.7	1574.5
04AUG83	1179.6	28.2	3676	282.3	5.9	1965.1	26.3	41.5	2038.9
05AUG83	1185.2	28.2	3765	455.6	0.0	1484.2	45.6	46.4	1576.2
06AUG83	1182.9	28.2	3928	381.3	1.7	1462.5	54.1	42.3	1560.5
07AUG83	588.4	28.5	3438	81.6	1.7	1237.2	27.2	27.2	1293.3
08AUG83	1173.6	28.6	3998	96.3	6.8	765.2	43.5	30.7	846.1
09AUG83	1178.5	28.3	3583	32.2	7.6	705.2	27.2	14.4	754.4
10AUG83	885.3	28.1	3760	48.6	2.3	920.6	40.7	29.4	992.9
11AUG83	422.0	28.1	4043	227.5	9.5	924.2	28.4	9.5	971.6
12AUG83	1193.0	27.3	3503	60.4	13.4	488.7	33.5	15.9	551.6
13AUG83	1206.3	27.1	3413	29.0	0.0	475.8	45.6	18.2	539.7

TABLE A-2 DAILY AVERAGE DENSITY (NO./1,000 M3) OF BAY ANCHOVY COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 3 MAY - 13 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
03MAY83	1119.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04MAY83	1130.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06MAY83	1197.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07MAY83	1191.1	.	.	0.0	0.0	0.0	0.0	0.0	0.0
08MAY83	1186.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
09MAY83	909.0	.	.	0.0	0.0	0.0	0.0	0.0	0.0
11MAY83	1177.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
12MAY83	1179.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
13MAY83	1189.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
14MAY83	1210.5	.	.	0.0	0.0	0.0	0.0	0.0	0.0
15MAY83	1208.5	.	.	0.0	0.0	0.0	0.0	0.0	0.0
16MAY83	1207.3	.	.	0.0	0.0	0.0	0.0	0.0	0.0
17MAY83	1193.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
19MAY83	1145.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
20MAY83	1135.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
21MAY83	1132.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
22MAY83	1135.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
23MAY83	1143.2	.	.	3.5	0.0	0.0	0.0	0.0	0.0
24MAY83	1135.0	.	.	0.0	0.0	0.0	0.0	0.0	0.0
25MAY83	1137.7	.	.	0.0	0.0	0.0	0.0	0.0	0.0
26MAY83	1131.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
27MAY83	1130.9	16.0	195	0.0	0.0	0.0	0.0	0.0	0.0
28MAY83	1135.1	16.2	189	6.2	0.0	0.0	0.0	0.0	0.0
29MAY83	1141.4	16.2	189	0.0	0.0	0.0	0.0	0.0	0.0
30MAY83	1138.3	16.4	187	1.8	0.0	0.0	0.0	0.0	0.0
31MAY83	138.0	16.0	187	0.0	0.0	0.0	0.0	0.0	0.0
01JUN83	1126.8	16.9	304	0.0	0.0	0.0	0.0	0.0	0.0
02JUN83	1122.8	17.4	327	0.0	0.0	0.0	0.0	0.0	0.0
03JUN83	964.6	17.7	863	0.0	0.0	0.0	0.0	0.0	0.0
04JUN83	968.4	18.0	885	0.0	0.0	0.0	0.0	0.0	0.0
05JUN83	1141.4	18.5	920	0.9	0.0	0.0	0.0	0.0	0.0
06JUN83	1144.1	19.1	945	0.0	0.0	0.0	0.0	0.0	0.0
07JUN83	1119.9	19.4	966	0.9	0.0	0.0	0.0	0.0	0.0
08JUN83	1113.3	19.4	977	0.9	0.0	0.0	0.0	0.0	0.0
09JUN83	975.8	19.5	983	0.0	0.0	0.0	0.0	0.0	0.0
10JUN83	1117.2	20.0	1008	1.8	0.0	0.0	0.0	0.0	0.0
11JUN83	1107.1	20.2	1025	0.0	0.0	0.0	0.0	0.0	0.0
13JUN83	1116.3	21.1	1065	2.7	0.0	0.0	0.0	0.0	0.0
14JUN83	1121.8	21.9	1093	6.2	0.0	0.0	0.0	0.0	0.0

TABLE A-2 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
15JUN83	1128.3	22.2	1092	0.0	0.0	0.0	0.0	0.0	0.0
16JUN83	1141.9	22.5	1102	0.0	0.0	0.0	0.0	0.0	0.0
17JUN83	1146.7	23.0	1117	0.0	0.0	0.0	0.0	0.0	0.0
20JUN83	976.6	23.3	1110	0.0	0.0	0.0	0.0	0.0	0.0
21JUN83	1083.8	23.7	1119	0.0	0.0	0.0	0.0	0.0	0.0
22JUN83	1116.3	23.9	1126	0.9	0.0	0.0	0.0	0.0	0.0
23JUN83	1116.5	24.1	1152	0.0	0.0	0.0	0.0	0.0	0.0
24JUN83	1116.0	24.6	1196	0.0	0.0	0.0	0.0	0.0	0.0
25JUN83	1127.0	24.3	1330	0.0	0.0	0.0	0.0	0.0	0.0
26JUN83	1134.9	24.5	1431	0.0	0.0	0.0	0.0	0.0	0.0
27JUN83	1127.0	25.0	1623	0.0	0.0	0.0	0.0	0.0	0.0
28JUN83	1151.5	24.5	1607	0.0	0.0	0.0	0.0	0.0	0.0
29JUN83	1154.4	24.9	1668	0.0	0.0	0.0	0.0	0.0	0.0
30JUN83	1109.7	24.3	1733	0.0	0.0	3.6	0.0	0.0	3.6
01JUL83	1150.9	.	.	0.0	0.0	11.3	0.0	0.0	11.3
02JUL83	1137.1	.	.	0.0	0.0	102.9	0.0	0.0	102.9
03JUL83	1132.6	.	.	0.0	0.0	273.7	0.0	0.0	273.7
04JUL83	1137.9	.	.	9.7	0.0	654.7	0.0	0.0	654.7
05JUL83	1141.4	.	.	3.5	0.0	1069.7	0.0	0.0	1069.7
06JUL83	1135.5	.	.	18.5	0.0	1098.2	0.0	0.0	1098.2
07JUL83	1140.0	25.7	1883	49.1	0.0	1196.5	0.0	0.0	1196.5
08JUL83	1132.9	26.0	1989	300.1	0.0	1588.9	0.0	0.0	1588.9
09JUL83	1135.5	25.8	2075	650.8	0.0	1049.7	0.9	0.0	1050.6
10JUL83	1138.3	25.7	2243	79.9	0.0	1330.9	0.0	0.0	1330.9
13JUL83	1128.9	26.5	2184	53.1	0.0	980.6	0.0	0.0	980.6
14JUL83	1128.3	26.7	2221	8.9	0.0	1516.4	0.0	0.0	1516.4
15JUL83	1115.2	26.9	2251	6.3	0.0	1682.1	0.0	0.0	1682.1
16JUL83	559.3	27.2	2113	7.2	0.0	1367.9	0.0	0.0	1367.9
18JUL83	979.4	27.5	2403	16.3	0.0	1508.1	1.0	0.0	1509.1
19JUL83	1116.2	27.4	2549	41.2	0.0	1965.6	0.0	0.0	1965.6
20JUL83	1116.5	27.9	2683	109.3	0.0	2047.6	2.7	0.0	2050.2
21JUL83	1102.9	27.8	2920	233.9	0.0	1710.1	1.8	0.0	1711.9
22JUL83	1103.4	27.5	2751	1102.1	0.0	1463.7	1.8	0.0	1465.5
23JUL83	1122.0	27.5	3461	2364.4	4.5	1717.4	2.7	0.0	1724.5
25JUL83	1175.6	27.1	3449	1039.5	8.5	1361.0	11.9	0.0	1381.4
26JUL83	1174.0	27.2	3623	846.7	0.0	1234.3	12.8	0.0	1247.0
27JUL83	1178.1	27.4	3859	477.9	0.0	1854.7	17.0	0.0	1871.6
28JUL83	1175.4	27.4	3984	651.7	17.9	1968.6	4.3	0.0	1990.7
29JUL83	1162.8	27.4	3923	778.3	10.3	1876.5	3.4	0.0	1890.3

TABLE A-2 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
30JUL83	1172.3	27.6	3709	118.6	0.0	1877.6	1.7	0.0	1879.3
31JUL83	1176.8	28.1	3788	435.1	85.0	1758.1	0.8	0.0	1843.9
01AUG83	1184.5	27.9	3653	176.4	4.2	1430.2	3.4	0.0	1437.8
02AUG83	1170.7	28.0	3481	88.0	2.6	1208.7	1.7	0.0	1212.9
03AUG83	1182.6	28.3	3613	502.3	2.5	1466.3	6.8	0.0	1475.6
04AUG83	1179.6	28.2	3676	280.6	5.1	1915.1	8.5	0.0	1928.7
05AUG83	1185.2	28.2	3765	455.6	0.0	1462.2	22.8	0.0	1485.0
06AUG83	1182.9	28.2	3928	381.3	1.7	1449.8	16.9	0.0	1468.4
07AUG83	588.4	28.5	3438	81.6	1.7	1225.3	5.1	0.0	1232.1
08AUG83	1173.6	28.6	3998	95.4	6.8	757.5	2.6	0.0	766.9
09AUG83	1178.5	28.3	3583	32.2	5.9	697.5	8.5	0.0	711.9
10AUG83	885.3	28.1	3760	48.6	0.0	917.2	3.4	0.0	920.6
11AUG83	422.0	28.1	4043	227.5	9.5	914.7	0.0	0.0	924.2
12AUG83	1193.0	27.3	3503	60.4	13.4	484.5	13.4	0.0	511.3
13AUG83	1206.3	27.1	3413	28.2	0.0	470.9	19.9	0.0	490.7

TABLE A-3 DAILY AVERAGE DENSITY (NO./1,000 M3) OF HERRINGS(a) COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 3 MAY - 13 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
03MAY83	1119.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04MAY83	1130.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06MAY83	1197.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07MAY83	1191.1	.	.	0.0	2.5	2.5	0.0	0.0	5.0
08MAY83	1186.2	.	.	0.0	0.8	9.3	0.0	0.0	10.1
09MAY83	909.0	.	.	2.2	13.2	71.5	0.0	0.0	84.7
11MAY83	1177.2	.	.	0.8	14.4	156.3	0.0	0.0	170.7
12MAY83	1179.8	.	.	1.7	84.8	48.3	0.0	0.0	133.1
13MAY83	1189.6	.	.	0.8	42.0	118.5	0.0	0.0	160.6
14MAY83	1210.5	.	.	0.0	19.0	71.0	0.0	0.0	90.0
15MAY83	1208.5	.	.	0.0	30.6	89.4	0.0	0.0	120.0
16MAY83	1207.3	.	.	0.0	38.9	74.5	0.0	0.0	113.5
17MAY83	1193.8	.	.	0.0	33.5	117.3	0.0	0.0	150.8
19MAY83	1145.6	.	.	0.0	31.4	57.6	0.0	0.0	89.0
20MAY83	1135.6	.	.	0.9	59.9	99.5	0.0	0.0	159.4
21MAY83	1132.6	.	.	0.9	20.3	88.3	0.0	0.0	108.6
22MAY83	1135.6	.	.	7.0	10.6	64.3	0.0	0.0	74.8
23MAY83	1143.2	.	.	0.0	14.0	61.2	0.0	0.0	75.2
24MAY83	1135.0	.	.	5.3	10.6	71.4	0.0	0.0	81.9
25MAY83	1137.7	.	.	1.8	14.9	38.7	0.0	0.0	53.6
26MAY83	1131.2	.	.	1.8	53.0	76.9	0.0	0.0	129.9
27MAY83	1130.9	16.0	195	2.7	42.4	122.9	0.0	0.0	165.4
28MAY83	1135.1	16.2	189	0.0	49.3	143.6	0.0	0.0	192.9
29MAY83	1141.4	16.2	189	0.9	135.8	246.2	0.0	0.0	382.0
30MAY83	1138.3	16.4	187	0.0	122.1	406.7	0.0	0.0	528.9
31MAY83	138.0	16.0	187	0.0	253.6	521.6	0.0	0.0	775.2
01JUN83	1126.8	16.9	304	0.9	510.3	951.4	0.0	0.0	1461.7
02JUN83	1122.8	17.4	327	2.7	507.7	1407.2	0.0	0.0	1914.8
03JUN83	964.6	17.7	863	3.1	418.8	1177.7	0.0	0.0	1596.6
04JUN83	968.4	18.0	885	4.1	553.5	2413.4	1.0	0.0	2967.9
05JUN83	1141.4	18.5	920	0.9	191.9	970.7	0.0	0.0	1162.6
06JUN83	1144.1	19.1	945	1.7	104.0	697.5	0.0	0.0	801.5
07JUN83	1119.9	19.4	966	0.9	240.2	2545.8	0.0	0.0	2786.0
08JUN83	1113.3	19.4	977	0.0	152.7	2715.4	0.0	0.0	2868.1
09JUN83	975.8	19.5	983	0.0	30.7	1113.9	0.0	0.0	1144.7
10JUN83	1117.2	20.0	1008	0.0	31.3	1459.9	0.0	0.0	1491.2
11JUN83	1107.1	20.2	1025	0.0	47.9	1872.5	0.9	0.0	1921.3
13JUN83	1116.3	21.1	1065	0.9	6.3	2603.3	0.0	0.0	2609.6
14JUN83	1121.8	21.9	1093	0.9	0.0	1896.1	0.0	0.0	1896.1

(a) Excluding American shad.

TABLE A-3 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
15JUN83	1128.3	22.2	1092	0.0	0.0	2096.0	0.0	0.0	2096.0
16JUN83	1141.9	22.5	1102	0.0	0.0	1048.2	0.0	0.0	1048.2
17JUN83	1146.7	23.0	1117	0.0	0.0	879.0	0.0	0.0	879.0
20JUN83	976.6	23.3	1110	1.0	0.0	1074.1	0.0	0.0	1074.1
21JUN83	1083.8	23.7	1119	0.0	0.0	1202.3	0.0	0.0	1202.3
22JUN83	1116.3	23.9	1126	0.0	0.0	589.5	0.0	0.0	589.5
23JUN83	1116.5	24.1	1152	0.0	0.0	546.3	0.0	0.0	546.3
24JUN83	1116.0	24.6	1196	0.0	0.0	262.5	0.9	0.0	263.4
25JUN83	1127.0	24.3	1330	0.0	0.0	152.6	0.9	0.0	153.5
26JUN83	1134.9	24.5	1431	0.0	0.0	120.7	0.0	0.0	120.7
27JUN83	1127.0	25.0	1623	0.0	0.0	100.3	0.0	0.0	100.3
28JUN83	1151.5	24.5	1607	0.0	0.0	77.3	0.9	0.0	78.2
29JUN83	1154.4	24.9	1668	0.0	0.0	39.0	0.0	0.0	39.0
30JUN83	1109.7	24.3	1733	0.0	0.0	48.7	0.0	0.0	48.7
01JUL83	1130.9	.	.	0.0	0.0	14.8	0.0	0.0	14.8
02JUL83	1137.1	.	.	0.0	0.9	19.3	0.9	0.0	21.1
03JUL83	1132.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04JUL83	1137.9	.	.	0.0	0.0	0.9	0.0	0.0	0.9
05JUL83	1141.4	.	.	0.0	0.0	27.2	0.0	0.0	27.2
06JUL83	1135.5	.	.	0.0	0.0	0.0	0.9	0.0	0.9
07JUL83	1140.0	25.7	1883	0.0	0.0	0.0	0.9	0.0	0.9
08JUL83	1132.9	26.0	1989	0.0	0.0	0.0	1.8	0.0	1.8
09JUL83	1135.5	25.8	2075	0.0	0.0	0.0	0.9	0.0	0.9
10JUL83	1138.3	25.7	2243	0.0	0.0	0.0	0.9	0.0	0.9
13JUL83	1128.9	26.5	2184	0.0	0.0	0.0	1.8	0.0	1.8
14JUL83	1128.3	26.7	2221	0.0	0.0	0.0	0.0	0.0	0.0
15JUL83	1115.2	26.9	2251	0.0	0.0	0.0	0.9	0.0	0.9
16JUL83	559.3	27.2	2113	0.0	0.0	0.0	0.0	0.0	0.0
18JUL83	979.4	27.5	2403	0.0	0.0	0.0	2.0	0.0	2.0
19JUL83	1116.2	27.4	2549	0.0	0.0	0.0	0.0	0.0	0.0
20JUL83	1116.5	27.9	2683	0.0	0.0	0.0	1.8	0.0	1.8
21JUL83	1102.9	27.8	2920	0.0	0.0	0.0	5.4	0.0	5.4
22JUL83	1103.4	27.5	2751	0.0	0.0	0.0	4.5	0.0	4.5
23JUL83	1122.0	27.5	3461	0.0	0.0	0.0	3.6	0.0	3.6
25JUL83	1175.6	27.1	3449	0.0	0.0	0.0	5.1	0.0	5.1
26JUL83	1174.0	27.2	3623	0.0	0.0	0.0	3.4	0.0	3.4
27JUL83	1178.1	27.4	3859	0.0	0.0	0.0	7.6	0.0	7.6
28JUL83	1175.4	27.4	3984	0.0	0.0	0.0	11.1	0.0	11.1
29JUL83	1162.8	27.4	3923	0.0	0.0	0.0	5.2	0.0	5.2

TABLE A-3 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
30JUL83	1172.3	27.6	3709	0.0	0.0	0.0	6.8	0.0	6.8
31JUL83	1176.8	28.1	3788	0.0	0.0	0.0	11.0	0.0	11.0
01AUG83	1184.5	27.9	3653	0.0	0.0	0.0	6.8	0.0	6.8
02AUG83	1170.7	28.0	3481	0.0	0.0	0.0	5.1	0.0	5.1
03AUG83	1182.6	28.3	3613	0.0	0.0	0.0	10.1	0.0	10.1
04AUG83	1179.6	28.2	3676	0.0	0.0	0.0	3.4	0.0	3.4
05AUG83	1185.2	28.2	3765	0.0	0.0	0.0	5.1	0.0	5.1
06AUG83	1182.9	28.2	3928	0.0	0.0	0.0	0.8	0.0	0.8
07AUG83	588.4	28.5	3438	0.0	0.0	0.0	0.0	0.0	0.0
08AUG83	1173.6	28.6	3998	0.0	0.0	0.0	0.9	0.0	0.9
09AUG83	1178.5	28.3	3583	0.0	0.0	0.0	0.8	0.0	0.8
10AUG83	885.3	28.1	3760	0.0	0.0	0.0	1.1	0.0	1.1
11AUG83	422.0	28.1	4043	0.0	0.0	0.0	2.4	0.0	2.4
12AUG83	1193.0	27.3	3503	0.0	0.0	0.0	0.8	0.0	0.8
13AUG83	1206.3	27.1	3413	0.0	0.0	0.0	0.8	0.0	0.8

TABLE A-4 DAILY AVERAGE DENSITY (NO./1,000 M3) OF AMERICAN SHAD COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 3 MAY - 13 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
03MAY83	1119.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04MAY83	1130.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06MAY83	1197.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07MAY83	1191.1	.	.	0.0	0.0	0.0	0.0	0.0	0.0
08MAY83	1186.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
09MAY83	909.0	.	.	0.0	0.0	0.0	0.0	0.0	0.0
11MAY83	1177.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
12MAY83	1179.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
13MAY83	1189.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
14MAY83	1210.5	.	.	0.0	0.0	0.8	0.0	0.0	0.8
15MAY83	1208.5	.	.	0.0	0.0	0.0	0.0	0.0	0.0
16MAY83	1207.3	.	.	0.0	0.0	0.0	0.0	0.0	0.0
17MAY83	1193.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
19MAY83	1145.6	.	.	0.9	0.0	0.9	0.0	0.0	0.9
20MAY83	1135.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
21MAY83	1132.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
22MAY83	1135.6	.	.	2.6	0.0	0.9	0.0	0.0	0.9
23MAY83	1143.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
24MAY83	1135.0	.	.	0.9	0.0	0.0	0.0	0.0	0.0
25MAY83	1137.7	.	.	0.0	0.0	0.9	0.0	0.0	0.9
26MAY83	1131.2	.	.	0.0	0.0	0.9	0.0	0.0	0.9
27MAY83	1130.9	16.0	195	0.0	0.0	2.7	0.0	0.0	2.7
28MAY83	1135.1	16.2	189	0.0	0.0	0.9	0.0	0.0	0.9
29MAY83	1141.4	16.2	189	0.0	0.9	0.0	0.0	0.0	0.9
30MAY83	1138.3	16.4	187	0.0	0.0	2.6	0.0	0.0	2.6
31MAY83	138.0	16.0	187	0.0	0.0	0.0	0.0	0.0	0.0
01JUN83	1126.8	16.9	304	0.9	2.7	2.7	0.0	0.9	6.2
02JUN83	1122.8	17.4	327	0.0	1.8	0.9	0.0	0.0	2.7
03JUN83	964.6	17.7	863	0.0	0.0	0.0	0.0	0.0	0.0
04JUN83	968.4	18.0	885	0.0	0.0	4.1	0.0	0.0	4.1
05JUN83	1141.4	18.5	920	0.0	0.0	1.8	0.0	0.0	1.8
06JUN83	1144.1	19.1	945	0.0	0.0	0.0	0.0	0.0	0.0
07JUN83	1119.9	19.4	966	0.0	0.0	2.7	0.0	0.0	2.7
08JUN83	1113.3	19.4	977	0.0	0.0	4.5	0.0	0.0	4.5
09JUN83	975.8	19.5	983	0.0	0.0	0.0	0.0	0.0	0.0
10JUN83	1117.2	20.0	1008	0.0	0.0	0.9	0.0	0.0	0.9
11JUN83	1107.1	20.2	1025	0.0	0.0	1.8	0.0	0.0	1.8
13JUN83	1116.3	21.1	1065	0.0	0.0	1.8	0.0	0.0	1.8
14JUN83	1121.8	21.9	1093	0.0	0.0	2.7	0.0	0.0	2.7

TABLE A-4 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
15JUN83	1128.3	22.2	1092	0.0	0.0	1.8	0.0	0.0	1.8
16JUN83	1141.9	22.5	1102	0.0	0.0	0.0	0.0	0.0	0.0
17JUN83	1146.7	23.0	1117	0.0	0.0	0.9	0.0	0.0	0.9
20JUN83	976.6	23.3	1110	0.0	0.0	0.0	0.0	0.0	0.0
21JUN83	1083.8	23.7	1119	0.0	0.0	0.0	0.0	0.0	0.0
22JUN83	1116.3	23.9	1126	0.0	0.0	0.0	0.0	0.0	0.0
23JUN83	1116.5	24.1	1152	0.0	0.0	0.0	0.0	0.0	0.0
24JUN83	1116.0	24.6	1196	0.0	0.0	0.0	0.0	0.0	0.0
25JUN83	1127.0	24.3	1330	0.0	0.0	0.0	0.0	0.0	0.0
26JUN83	1134.9	24.5	1431	0.0	0.0	0.0	0.9	0.0	0.9
27JUN83	1127.0	25.0	1623	0.0	0.0	0.0	0.0	0.0	0.0
28JUN83	1151.5	24.5	1607	0.0	0.0	0.0	0.9	0.0	0.9
29JUN83	1154.4	24.9	1668	0.0	0.0	0.0	0.0	0.0	0.0
30JUN83	1109.7	24.3	1733	0.0	0.0	0.0	0.0	0.0	0.0
01JUL83	1150.9	.	.	0.0	0.0	0.0	0.0	0.0	0.0
02JUL83	1137.1	.	.	0.0	0.0	0.0	0.0	0.0	0.0
03JUL83	1132.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04JUL83	1137.9	.	.	0.0	0.0	0.0	0.0	0.0	0.0
05JUL83	1141.4	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06JUL83	1135.5	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07JUL83	1140.0	25.7	1883	0.0	0.0	0.0	0.0	0.0	0.0
08JUL83	1132.9	26.0	1989	0.0	0.0	0.0	0.0	0.0	0.0
09JUL83	1135.5	25.8	2075	0.0	0.0	0.0	0.0	0.0	0.0
10JUL83	1138.3	25.7	2243	0.0	0.0	0.0	0.0	0.0	0.0
13JUL83	1128.9	26.5	2184	0.0	0.0	0.0	0.0	0.0	0.0
14JUL83	1128.3	26.7	2221	0.0	0.0	0.0	0.0	0.0	0.0
15JUL83	1115.2	26.9	2251	0.0	0.0	0.0	0.0	0.0	0.0
16JUL83	559.3	27.2	2113	0.0	0.0	0.0	0.0	0.0	0.0
18JUL83	979.4	27.5	2403	0.0	0.0	0.0	0.0	0.0	0.0
19JUL83	1116.2	27.4	2549	0.0	0.0	0.0	0.0	0.0	0.0
20JUL83	1116.5	27.9	2683	0.0	0.0	0.0	0.0	0.0	0.0
21JUL83	1102.9	27.8	2920	0.0	0.0	0.0	0.0	0.0	0.0
22JUL83	1103.4	27.5	2751	0.0	0.0	0.0	0.0	0.0	0.0
23JUL83	1122.0	27.5	3461	0.0	0.0	0.0	0.0	0.0	0.0
25JUL83	1175.6	27.1	3449	0.0	0.0	0.0	0.0	0.0	0.0
26JUL83	1174.0	27.2	3623	0.0	0.0	0.0	0.0	0.0	0.0
27JUL83	1178.1	27.4	3859	0.0	0.0	0.0	0.0	0.0	0.0
28JUL83	1175.4	27.4	3984	0.0	0.0	0.0	0.0	0.0	0.0
29JUL83	1162.8	27.4	3923	0.0	0.0	0.0	0.0	0.0	0.0

TABLE B-4 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
30JUL83	1172.3	27.6	3709	0.0	0.0	0.0	0.0	0.0	0.0
31JUL83	1176.8	28.1	3788	0.0	0.0	0.0	0.0	0.0	0.0
01AUG83	1184.5	27.9	3653	0.0	0.0	0.0	0.0	0.0	0.0
02AUG83	1170.7	28.0	3481	0.0	0.0	0.0	0.0	0.0	0.0
03AUG83	1182.6	28.3	3613	0.0	0.0	0.0	0.0	0.0	0.0
04AUG83	1179.6	28.2	3676	0.0	0.0	0.0	0.8	0.0	0.8
05AUG83	1185.2	28.2	3765	0.0	0.0	0.0	0.0	0.0	0.0
06AUG83	1182.9	28.2	3928	0.0	0.0	0.0	0.0	0.0	0.0
07AUG83	588.4	28.5	3438	0.0	0.0	0.0	0.0	0.0	0.0
08AUG83	1173.6	28.6	3998	0.0	0.0	0.0	0.0	0.0	0.0
09AUG83	1178.5	28.3	3583	0.0	0.0	0.0	0.0	0.0	0.0
10AUG83	885.3	28.1	3760	0.0	0.0	0.0	0.0	0.0	0.0
11AUG83	422.0	28.1	4043	0.0	0.0	0.0	0.0	0.0	0.0
12AUG83	1193.0	27.3	3503	0.0	0.0	0.0	0.0	0.0	0.0
13AUG83	1206.3	27.1	3413	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-5 DAILY AVERAGE DENSITY (NO./1,000 M3) OF WHITE PERCH COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 3 MAY - 13 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
03MAY83	1119.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04MAY83	1130.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06MAY83	1197.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07MAY83	1191.1	.	.	0.0	0.8	0.0	0.0	0.0	0.8
08MAY83	1186.2	.	.	1.7	0.0	0.0	0.0	0.0	0.0
09MAY83	909.0	.	.	6.6	1.1	0.0	0.0	0.0	1.1
11MAY83	1177.2	.	.	1.7	6.8	16.1	0.0	0.0	22.9
12MAY83	1179.8	.	.	5.9	6.8	10.2	0.0	0.0	17.0
13MAY83	1189.6	.	.	11.8	13.5	32.8	0.0	0.0	46.2
14MAY83	1210.5	.	.	5.0	2.5	47.9	0.0	0.0	50.4
15MAY83	1208.5	.	.	9.9	7.4	38.9	0.0	0.0	46.3
16MAY83	1207.3	.	.	0.0	0.0	9.9	0.0	0.0	9.9
17MAY83	1193.8	.	.	8.4	3.4	98.0	0.0	0.0	101.4
19MAY83	1145.6	.	.	3.5	6.1	137.9	0.0	0.0	144.0
20MAY83	1135.6	.	.	5.3	6.2	199.9	0.0	0.0	206.1
21MAY83	1132.6	.	.	3.5	5.3	206.6	0.0	0.0	211.9
22MAY83	1135.6	.	.	2.6	3.5	197.2	0.0	0.0	200.8
23MAY83	1143.2	.	.	6.1	0.9	193.3	0.0	0.0	194.2
24MAY83	1135.0	.	.	16.7	2.6	157.7	0.0	0.0	160.3
25MAY83	1137.7	.	.	21.1	1.8	208.3	0.0	0.0	210.1
26MAY83	1131.2	.	.	29.2	2.7	278.5	0.0	0.0	281.1
27MAY83	1130.9	16.0	195	25.6	1.8	246.7	0.0	0.0	248.5
28MAY83	1135.1	16.2	189	26.4	1.8	300.4	0.0	0.0	302.2
29MAY83	1141.4	16.2	189	24.5	0.9	293.5	0.0	0.0	294.4
30MAY83	1138.3	16.4	187	24.6	4.4	283.8	0.0	0.0	288.2
31MAY83	138.0	16.0	187	0.0	0.0	137.7	7.2	0.0	144.9
01JUN83	1126.8	16.9	304	4.4	6.2	274.2	0.0	0.0	280.4
02JUN83	1122.8	17.4	327	26.7	0.9	276.1	0.0	0.0	277.0
03JUN83	964.6	17.7	863	19.7	1.0	341.1	0.0	0.0	342.1
04JUN83	968.4	18.0	885	42.3	0.0	405.8	0.0	0.0	405.8
05JUN83	1141.4	18.5	920	16.6	1.8	268.1	0.0	0.0	269.8
06JUN83	1144.1	19.1	945	46.3	15.7	207.1	0.0	0.0	222.9
07JUN83	1119.9	19.4	966	41.1	0.9	172.3	0.0	0.0	173.2
08JUN83	1113.3	19.4	977	29.6	0.0	172.5	0.0	0.0	172.5
09JUN83	975.8	19.5	983	16.4	2.0	101.5	0.0	0.0	103.5
10JUN83	1117.2	20.0	1008	29.5	0.9	184.4	0.0	0.0	185.3
11JUN83	1107.1	20.2	1025	18.1	0.0	182.5	0.0	0.0	182.5
13JUN83	1116.3	21.1	1065	48.4	1.8	173.8	0.0	0.0	175.6
14JUN83	1121.8	21.9	1093	36.5	0.9	130.1	0.0	0.0	131.0

TABLE A-5 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
15JUN83	1128.3	22.2	1092	20.4	0.0	80.7	0.0	0.0	80.7
16JUN83	1141.9	22.5	1102	17.5	0.0	95.5	0.0	0.0	95.5
17JUN83	1146.7	23.0	1117	7.0	0.0	45.3	0.0	0.0	45.3
20JUN83	976.6	23.3	1110	4.1	0.0	95.2	0.0	0.0	95.2
21JUN83	1083.8	23.7	1119	1.8	0.9	92.3	0.9	0.0	94.1
22JUN83	1116.3	23.9	1126	9.0	0.0	57.3	0.0	0.0	57.3
23JUN83	1116.5	24.1	1152	10.7	0.0	41.2	0.0	0.0	41.2
24JUN83	1116.0	24.6	1196	6.3	0.0	44.8	0.0	0.0	44.8
25JUN83	1127.0	24.3	1330	16.0	0.0	35.5	0.0	0.0	35.5
26JUN83	1134.9	24.5	1431	9.7	0.0	52.9	0.0	0.0	52.9
27JUN83	1127.0	25.0	1623	0.9	0.0	87.8	0.9	0.0	88.7
28JUN83	1151.5	24.5	1607	2.6	0.0	56.4	0.0	0.0	56.4
29JUN83	1154.4	24.9	1668	2.6	0.0	48.5	0.9	0.0	49.4
30JUN83	1109.7	24.3	1733	0.9	0.0	31.5	0.0	0.0	31.5
01JUL83	1150.9	.	.	0.0	0.0	51.3	0.9	0.0	52.1
02JUL83	1137.1	.	.	1.8	0.0	29.9	0.9	0.0	30.8
03JUL83	1132.6	.	.	0.0	0.0	22.1	0.9	0.0	23.0
04JUL83	1137.9	.	.	0.9	0.0	14.9	0.0	0.0	14.9
05JUL83	1141.4	.	.	0.0	0.0	17.5	0.9	0.0	18.4
06JUL83	1135.5	.	.	0.0	0.0	15.9	3.5	0.0	19.4
07JUL83	1140.0	25.7	1883	0.9	0.0	10.5	0.0	0.0	10.5
08JUL83	1132.9	26.0	1989	0.0	0.0	22.1	5.3	0.0	27.4
09JUL83	1135.5	25.8	2075	0.0	0.0	35.2	7.0	0.0	42.3
10JUL83	1138.3	25.7	2243	0.0	0.0	29.9	15.8	0.0	45.7
13JUL83	1128.9	26.5	2184	0.0	0.0	34.5	12.4	0.0	46.9
14JUL83	1128.3	26.7	2221	0.0	0.0	15.1	16.0	0.0	31.0
15JUL83	1115.2	26.9	2251	0.0	0.0	7.2	8.1	0.0	15.2
16JUL83	559.3	27.2	2113	0.0	0.0	3.6	1.8	0.0	5.4
18JUL83	979.4	27.5	2403	0.0	0.0	6.1	7.1	0.0	13.3
19JUL83	1116.2	27.4	2549	0.0	0.0	3.6	4.5	0.0	8.1
20JUL83	1116.5	27.9	2683	0.0	0.0	0.0	5.4	0.0	5.4
21JUL83	1102.9	27.8	2920	0.0	0.0	1.8	1.8	0.0	3.6
22JUL83	1103.4	27.5	2751	0.0	0.0	0.9	0.9	0.0	1.8
23JUL83	1122.0	27.5	3461	0.0	0.0	0.0	2.7	0.0	2.7
25JUL83	1175.6	27.1	3449	0.0	0.0	0.0	3.4	0.0	3.4
26JUL83	1174.0	27.2	3623	0.0	0.0	0.0	0.9	0.0	0.9
27JUL83	1178.1	27.4	3859	0.0	0.0	0.0	0.8	0.0	0.8
28JUL83	1175.4	27.4	3984	0.0	0.0	0.0	0.0	0.0	0.0
29JUL83	1162.8	27.4	3923	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-5 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
30JUL83	1172.3	27.6	3709	0.0	0.0	0.0	0.0	0.0	0.0
31JUL83	1176.8	28.1	3788	0.0	0.0	0.0	0.0	0.0	0.0
01AUG83	1184.5	27.9	3653	0.0	0.0	0.0	0.8	0.0	0.8
02AUG83	1170.7	28.0	3481	0.0	0.0	0.0	0.0	0.0	0.0
03AUG83	1182.6	28.3	3613	0.0	0.0	0.0	0.0	0.0	0.0
04AUG83	1179.6	28.2	3676	0.0	0.0	0.0	0.0	0.0	0.0
05AUG83	1185.2	28.2	3765	0.0	0.0	0.0	2.5	0.0	2.5
06AUG83	1182.9	28.2	3928	0.0	0.0	0.0	2.5	0.0	2.5
07AUG83	588.4	28.5	3438	0.0	0.0	0.0	0.0	0.0	0.0
08AUG83	1173.6	28.6	3998	0.0	0.0	0.0	0.0	0.0	0.0
09AUG83	1178.5	28.3	3583	0.0	0.0	0.0	1.7	0.0	1.7
10AUG83	885.3	28.1	3760	0.0	0.0	0.0	1.1	0.0	1.1
11AUG83	422.0	28.1	4043	0.0	0.0	0.0	2.4	0.0	2.4
12AUG83	1193.0	27.3	3503	0.0	0.0	0.0	0.0	0.0	0.0
13AUG83	1206.3	27.1	3413	0.0	0.0	0.0	0.8	0.0	0.8

TABLE A-6 DAILY AVERAGE DENSITY (NO./1,000 M3) OF STRIPED BASS COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 3 MAY - 13 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
03MAY83	1119.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04MAY83	1130.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06MAY83	1197.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07MAY83	1191.1	.	.	0.0	0.0	0.0	0.0	0.0	0.0
08MAY83	1186.2	.	.	0.0	0.8	0.0	0.0	0.0	0.8
09MAY83	909.0	.	.	0.0	2.2	0.0	0.0	0.0	2.2
11MAY83	1177.2	.	.	0.0	1.7	0.0	0.0	0.0	1.7
12MAY83	1179.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
13MAY83	1189.6	.	.	0.8	2.5	0.0	0.0	0.0	2.5
14MAY83	1210.5	.	.	0.8	4.1	0.0	0.0	0.0	4.1
15MAY83	1208.5	.	.	0.0	0.0	2.5	0.0	0.0	2.5
16MAY83	1207.3	.	.	0.0	0.0	0.0	0.0	0.0	0.0
17MAY83	1193.8	.	.	1.7	6.7	0.0	0.0	0.0	6.7
19MAY83	1145.6	.	.	0.9	3.5	0.0	0.0	0.0	3.5
20MAY83	1135.6	.	.	1.8	2.6	0.0	0.0	0.0	2.6
21MAY83	1132.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
22MAY83	1135.6	.	.	1.8	0.9	0.0	0.0	0.0	0.9
23MAY83	1143.2	.	.	0.0	0.9	0.0	0.0	0.0	0.9
24MAY83	1135.0	.	.	0.0	0.0	0.0	0.0	0.0	0.0
25MAY83	1137.7	.	.	0.0	2.6	0.9	0.0	0.0	3.5
26MAY83	1131.2	.	.	0.9	3.5	0.9	0.0	0.0	4.4
27MAY83	1130.9	16.0	195	0.0	0.9	0.0	0.0	0.0	0.9
28MAY83	1135.1	16.2	189	1.8	7.0	6.2	0.0	0.0	13.2
29MAY83	1141.4	16.2	189	0.0	5.3	1.8	0.0	0.0	7.0
30MAY83	1138.3	16.4	187	0.9	4.4	1.8	0.0	0.0	6.1
31MAY83	138.0	16.0	187	0.0	0.0	7.2	0.0	0.0	7.2
01JUN83	1126.8	16.9	304	0.9	7.1	0.9	0.0	0.0	8.0
02JUN83	1122.8	17.4	327	0.0	3.6	7.1	0.0	0.0	10.7
03JUN83	964.6	17.7	863	0.0	4.1	10.4	0.0	0.0	14.5
04JUN83	968.4	18.0	885	0.0	16.5	10.3	0.0	0.0	26.8
05JUN83	1141.4	18.5	920	0.0	2.6	4.4	0.0	0.0	7.0
06JUN83	1144.1	19.1	945	0.0	10.5	32.3	0.0	0.0	42.8
07JUN83	1119.9	19.4	966	0.0	8.0	55.4	0.0	3.6	67.0
08JUN83	1113.3	19.4	977	0.0	7.2	97.9	0.0	2.7	107.8
09JUN83	975.8	19.5	983	0.0	3.1	86.1	0.0	0.0	89.2
10JUN83	1117.2	20.0	1008	0.0	16.1	134.3	0.0	0.0	150.4
11JUN83	1107.1	20.2	1025	0.0	14.5	107.5	0.0	0.0	121.9
13JUN83	1116.3	21.1	1065	0.0	32.2	184.5	0.0	0.0	216.8
14JUN83	1121.8	21.9	1093	0.0	3.6	163.1	0.0	0.0	166.7

TABLE A-6 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
15JUN83	1128.3	22.2	1092	0.0	1.8	154.2	0.0	0.0	156.0
16JUN83	1141.9	22.5	1102	0.0	0.9	102.5	0.0	0.0	103.3
17JUN83	1146.7	23.0	1117	0.0	1.7	184.9	0.0	0.0	186.6
20JUN83	976.6	23.3	1110	0.0	3.1	418.8	0.0	0.0	421.9
21JUN83	1083.8	23.7	1119	0.0	0.0	273.1	0.0	0.0	273.1
22JUN83	1116.3	23.9	1126	0.0	0.0	233.8	0.0	0.0	233.8
23JUN83	1116.5	24.1	1152	0.0	0.0	108.4	0.0	0.0	108.4
24JUN83	1116.0	24.6	1196	0.0	0.9	178.3	0.9	0.0	180.1
25JUN83	1127.0	24.3	1330	0.0	1.8	142.9	0.0	0.0	144.6
26JUN83	1134.9	24.5	1431	0.0	0.0	157.7	0.0	0.0	157.7
27JUN83	1127.0	25.0	1623	0.0	1.8	283.9	0.0	0.0	285.7
28JUN83	1151.5	24.5	1607	0.0	0.0	373.4	1.7	0.0	375.1
29JUN83	1154.4	24.9	1668	0.0	0.0	122.1	0.0	0.0	122.1
30JUN83	1109.7	24.3	1733	0.0	0.0	93.7	0.0	0.0	93.7
01JUL83	1150.9	.	.	0.0	0.9	122.5	0.9	0.0	124.2
02JUL83	1137.1	.	.	0.0	0.0	80.9	8.8	0.0	89.7
03JUL83	1132.6	.	.	0.0	0.0	58.3	1.8	0.0	60.0
04JUL83	1137.9	.	.	0.0	0.0	30.8	0.0	0.0	30.8
05JUL83	1141.4	.	.	0.0	0.0	43.8	3.5	0.0	47.3
06JUL83	1135.5	.	.	0.0	0.0	44.9	2.6	0.0	47.6
07JUL83	1140.0	25.7	1883	0.0	0.0	30.7	0.9	0.0	31.6
08JUL83	1132.9	26.0	1989	0.0	0.0	34.4	3.5	0.0	38.0
09JUL83	1135.5	25.8	2075	0.0	0.0	48.4	5.3	0.0	53.7
10JUL83	1138.3	25.7	2243	0.0	0.0	74.7	7.0	0.0	81.7
13JUL83	1128.9	26.5	2184	0.0	0.0	19.5	5.3	0.0	24.8
14JUL83	1128.3	26.7	2221	0.0	0.0	18.6	2.7	0.0	21.3
15JUL83	1115.2	26.9	2251	0.0	0.0	7.2	6.3	0.0	13.4
16JUL83	559.3	27.2	2113	0.0	0.0	3.6	1.8	0.0	5.4
18JUL83	979.4	27.5	2403	0.0	0.0	3.1	7.1	0.0	10.2
19JUL83	1116.2	27.4	2549	0.0	0.0	4.5	3.6	0.0	8.1
20JUL83	1116.5	27.9	2683	0.0	0.0	5.4	0.9	0.0	6.3
21JUL83	1102.9	27.8	2920	0.0	0.0	0.0	0.0	0.0	0.0
22JUL83	1103.4	27.5	2751	0.0	0.0	0.0	1.8	0.0	1.8
23JUL83	1122.0	27.5	3461	0.0	0.0	0.0	0.9	0.0	0.9
25JUL83	1175.6	27.1	3449	0.0	0.0	0.0	0.0	0.0	0.0
26JUL83	1174.0	27.2	3623	0.0	0.0	0.0	2.6	0.0	2.6
27JUL83	1178.1	27.4	3859	0.0	0.0	0.0	0.8	0.0	0.8
28JUL83	1175.4	27.4	3984	0.0	0.0	0.0	1.7	0.0	1.7
29JUL83	1162.8	27.4	3923	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-6 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
30JUL83	1172.3	27.6	3709	0.0	0.0	0.0	0.0	0.0	0.0
31JUL83	1176.8	28.1	3788	0.0	0.0	0.0	0.8	0.0	0.8
01AUG83	1184.5	27.9	3653	0.0	0.0	0.0	0.0	0.0	0.0
02AUG83	1170.7	28.0	3481	0.0	0.0	0.0	0.0	0.0	0.0
03AUG83	1182.6	28.3	3613	0.0	0.0	0.0	0.0	0.0	0.0
04AUG83	1179.6	28.2	3676	0.0	0.0	0.0	0.0	0.0	0.0
05AUG83	1185.2	28.2	3765	0.0	0.0	0.0	0.0	0.0	0.0
06AUG83	1182.9	28.2	3928	0.0	0.0	0.0	0.0	0.0	0.0
07AUG83	588.4	28.5	3438	0.0	0.0	0.0	0.0	0.0	0.0
08AUG83	1173.6	28.6	3998	0.0	0.0	0.0	0.0	0.0	0.0
09AUG83	1178.5	28.3	3583	0.0	0.0	0.0	0.0	0.0	0.0
10AUG83	885.3	28.1	3760	0.0	0.0	0.0	0.0	0.0	0.0
11AUG83	422.0	28.1	4043	0.0	0.0	0.0	0.0	0.0	0.0
12AUG83	1193.0	27.3	3503	0.0	0.0	0.0	0.0	0.0	0.0
13AUG83	1206.3	27.1	3413	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-7 DAILY AVERAGE DENSITY (NO./1,000 M3) OF ATLANTIC TOMCOD COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 3 MAY - 13 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
03MAY83	1119.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04MAY83	1130.8	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06MAY83	1197.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07MAY83	1191.1	.	.	0.0	0.0	0.0	0.0	0.0	0.0
08MAY83	1186.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
09MAY83	909.0	.	.	0.0	0.0	0.0	0.0	0.0	0.0
11MAY83	1177.2	.	.	0.0	0.0	0.0	0.8	0.0	0.8
12MAY83	1179.8	.	.	0.0	0.0	0.0	1.7	0.0	1.7
13MAY83	1189.6	.	.	0.0	0.0	0.0	1.7	0.0	1.7
14MAY83	1210.5	.	.	0.0	0.0	0.0	2.5	0.0	2.5
15MAY83	1208.5	.	.	0.0	0.0	0.0	4.1	0.0	4.1
16MAY83	1207.3	.	.	0.0	0.0	0.0	0.8	0.0	0.8
17MAY83	1193.8	.	.	0.0	0.0	0.0	2.5	0.0	2.5
19MAY83	1145.6	.	.	0.0	0.0	0.0	2.6	0.0	2.6
20MAY83	1135.6	.	.	0.0	0.0	0.0	2.6	0.0	2.6
21MAY83	1132.6	.	.	0.0	0.0	0.0	1.8	0.0	1.8
22MAY83	1135.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
23MAY83	1143.2	.	.	0.0	0.0	0.0	0.0	0.0	0.0
24MAY83	1135.0	.	.	0.0	0.0	0.0	0.0	0.0	0.0
25MAY83	1137.7	.	.	0.0	0.0	0.0	0.0	0.0	0.0
26MAY83	1131.2	.	.	0.0	0.0	0.0	0.9	0.0	0.9
27MAY83	1130.9	16.0	195	0.0	0.0	0.0	0.0	0.0	0.0
28MAY83	1135.1	16.2	189	0.0	0.0	0.0	0.0	0.0	0.0
29MAY83	1141.4	16.2	189	0.0	0.0	0.0	0.0	0.0	0.0
30MAY83	1138.3	16.4	187	0.0	0.0	0.0	0.0	0.0	0.0
31MAY83	138.0	16.0	187	0.0	0.0	0.0	0.0	0.0	0.0
01JUN83	1126.8	16.9	304	0.0	0.0	0.0	0.0	0.0	0.0
02JUN83	1122.8	17.4	327	0.0	0.0	0.0	0.0	0.0	0.0
03JUN83	964.6	17.7	863	0.0	0.0	0.0	0.0	0.0	0.0
04JUN83	968.4	18.0	885	0.0	0.0	0.0	0.0	0.0	0.0
05JUN83	1141.4	18.5	920	0.0	0.0	0.0	0.0	0.0	0.0
06JUN83	1144.1	19.1	945	0.0	0.0	0.0	0.0	0.0	0.0
07JUN83	1119.9	19.4	966	0.0	0.0	0.0	0.0	0.0	0.0
08JUN83	1113.3	19.4	977	0.0	0.0	0.0	0.9	0.0	0.9
09JUN83	975.8	19.5	983	0.0	0.0	0.0	1.0	0.0	1.0
10JUN83	1117.2	20.0	1008	0.0	0.0	0.0	0.0	0.0	0.0
11JUN83	1107.1	20.2	1025	0.0	0.0	0.0	0.0	0.0	0.0
13JUN83	1116.3	21.1	1065	0.0	0.0	0.0	0.0	0.0	0.0
14JUN83	1121.8	21.9	1093	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-7 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
15JUN83	1128.3	22.2	1092	0.0	0.0	0.0	0.0	0.0	0.0
16JUN83	1141.9	22.5	1102	0.0	0.0	0.0	0.0	0.0	0.0
17JUN83	1146.7	23.0	1117	0.0	0.0	0.0	0.0	0.0	0.0
20JUN83	976.6	23.3	1110	0.0	0.0	0.0	0.0	0.0	0.0
21JUN83	1083.8	23.7	1119	0.0	0.0	0.0	0.0	0.0	0.0
22JUN83	1116.3	23.9	1126	0.0	0.0	0.0	0.0	0.0	0.0
23JUN83	1116.5	24.1	1152	0.0	0.0	0.0	0.0	0.0	0.0
24JUN83	1116.0	24.6	1196	0.0	0.0	0.0	0.0	0.0	0.0
25JUN83	1127.0	24.3	1330	0.0	0.0	0.0	0.0	0.0	0.0
26JUN83	1134.9	24.5	1431	0.0	0.0	0.0	0.0	0.0	0.0
27JUN83	1127.0	25.0	1623	0.0	0.0	0.0	0.0	0.0	0.0
28JUN83	1151.5	24.5	1607	0.0	0.0	0.0	0.0	0.0	0.0
29JUN83	1154.4	24.9	1668	0.0	0.0	0.0	0.0	0.0	0.0
30JUN83	1109.7	24.3	1733	0.0	0.0	0.0	0.0	0.0	0.0
01JUL83	1150.9	.	.	0.0	0.0	0.0	0.0	0.0	0.0
02JUL83	1137.1	.	.	0.0	0.0	0.0	0.0	0.0	0.0
03JUL83	1132.6	.	.	0.0	0.0	0.0	0.0	0.0	0.0
04JUL83	1137.9	.	.	0.0	0.0	0.0	0.0	0.0	0.0
05JUL83	1141.4	.	.	0.0	0.0	0.0	0.0	0.0	0.0
06JUL83	1135.5	.	.	0.0	0.0	0.0	0.0	0.0	0.0
07JUL83	1140.0	25.7	1883	0.0	0.0	0.0	0.0	0.0	0.0
08JUL83	1132.9	26.0	1989	0.0	0.0	0.0	0.0	0.0	0.0
09JUL83	1135.5	25.8	2075	0.0	0.0	0.0	0.0	0.0	0.0
10JUL83	1138.3	25.7	2243	0.0	0.0	0.0	0.0	0.0	0.0
13JUL83	1128.9	26.5	2184	0.0	0.0	0.0	0.0	0.0	0.0
14JUL83	1128.3	26.7	2221	0.0	0.0	0.0	0.0	0.0	0.0
15JUL83	1115.2	26.9	2251	0.0	0.0	0.0	0.0	0.0	0.0
16JUL83	559.3	27.2	2113	0.0	0.0	0.0	0.0	0.0	0.0
18JUL83	979.4	27.5	2403	0.0	0.0	0.0	0.0	0.0	0.0
19JUL83	1116.2	27.4	2549	0.0	0.0	0.0	0.0	0.0	0.0
20JUL83	1116.5	27.9	2683	0.0	0.0	0.0	0.0	0.0	0.0
21JUL83	1102.9	27.8	2920	0.0	0.0	0.0	0.0	0.0	0.0
22JUL83	1103.4	27.5	2751	0.0	0.0	0.0	0.0	0.0	0.0
23JUL83	1122.0	27.5	3461	0.0	0.0	0.0	0.0	0.0	0.0
25JUL83	1175.6	27.1	3449	0.0	0.0	0.0	0.0	0.0	0.0
26JUL83	1174.0	27.2	3623	0.0	0.0	0.0	0.0	0.0	0.0
27JUL83	1178.1	27.4	3859	0.0	0.0	0.0	0.0	0.0	0.0
28JUL83	1175.4	27.4	3984	0.0	0.0	0.0	0.0	0.0	0.0
29JUL83	1162.8	27.4	3923	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-7 (Cont.)

DATE	TOTAL VOLUME (CU M)	AVERAGE TEMPERATURE (C)	AVERAGE CONDUCTIVITY (UMHO/CM)	EGG	YOLK-SAC LARVAE	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL (NON-EGG)
30JUL83	1172.3	27.6	3709	0.0	0.0	0.0	0.0	0.0	0.0
31JUL83	1176.8	28.1	3788	0.0	0.0	0.0	0.0	0.0	0.0
01AUG83	1184.5	27.9	3653	0.0	0.0	0.0	0.0	0.0	0.0
02AUG83	1170.7	28.0	3481	0.0	0.0	0.0	0.0	0.0	0.0
03AUG83	1182.6	28.3	3613	0.0	0.0	0.0	0.0	0.0	0.0
04AUG83	1179.6	28.2	3676	0.0	0.0	0.0	0.0	0.0	0.0
05AUG83	1185.2	28.2	3765	0.0	0.0	0.0	0.0	0.0	0.0
06AUG83	1182.9	28.2	3928	0.0	0.0	0.0	0.8	0.0	0.8
07AUG83	588.4	28.5	3438	0.0	0.0	0.0	0.0	0.0	0.0
08AUG83	1173.6	28.6	3998	0.0	0.0	0.0	0.9	0.0	0.9
09AUG83	1178.5	28.3	3583	0.0	0.0	0.0	0.0	0.0	0.0
10AUG83	885.3	28.1	3760	0.0	0.0	0.0	1.1	0.0	1.1
11AUG83	422.0	28.1	4043	0.0	0.0	0.0	0.0	0.0	0.0
12AUG83	1193.0	27.3	3503	0.0	0.0	0.0	0.0	0.0	0.0
13AUG83	1206.3	27.1	3413	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX B

JUVENILE NET COLLECTIONS
DATA SUMMARY TABLES
INDIAN POINT ENTRAINMENT ABUNDANCE
1983

LIST OF TABLES

Number	Title
B-1	Daily average density (No./1,000 m^3) of total ichthyoplankton collected at Station D1 using the net sampler, Indian Point Generating Station, 15 June - 9 August 1983.
B-2	Daily average density (No./1,000 m^3) of bay anchovy collected at Station D1 using the net sampler, Indian Point Generating Station, 15 June - 9 August 1983.
B-3	Daily average density (No./1,000 m^3) of herrings collected at Station D1 using the net sampler, Indian Point Generating Station, 15 June - 9 August 1983.
B-4	Daily average density (No./1,000 m^3) of American shad collected at Station D1 using the net sampler, Indian Point Generating Station, 15 June - 9 August 1983.
B-5	Daily average density (No./1,000 m^3) of white perch collected at Station D1 using the net sampler, Indian Point Generating Station, 15 June - 9 August 1983.
B-6	Daily average density (No./1,000 m^3) of striped bass collected at Station D1 using the net sampler, Indian Point Generating Station, 15 June - 9 August 1983.
B-7	Daily average density (No./1,000 m^3) of Atlantic tomcod collected at Station D1 using the net sampler, Indian Point Generating Station, 15 June - 9 August 1983.

TABLE B-1 DAILY AVERAGE DENSITY (NO./1,000 M^3) OF TOTAL ICHTHYOPLANKTON COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 15 JUNE - 9 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL
15JUN83	6024.4	820.3	0.7	26.1	847.1
16JUN83	1116.5	1183.2	0.0	5.4	1188.5
23JUN83	8202.1	500.1	0.7	4.3	505.1
24JUN83	9924.1	201.5	0.2	4.6	206.4
25JUN83	9351.1	137.2	2.4	2.5	142.0
28JUN83	9201.9	85.2	3.2	3.8	92.2
29JUN83	8218.3	51.3	1.7	3.4	56.5
01JUL83	7054.6	24.8	1.7	2.3	28.8
04JUL83	9635.7	165.1	5.5	4.4	175.0
05JUL83	9936.6	192.0	5.9	2.7	200.7
07JUL83	7228.2	404.4	7.9	3.2	415.5
15JUL83	9697.6	375.5	18.7	6.6	400.7
16JUL83	10491.2	305.7	15.5	14.8	336.0
17JUL83	10889.2	476.5	23.7	4.0	504.3
23JUL83	9618.8	578.3	27.6	5.8	611.7
25JUL83	6064.1	385.2	26.4	9.1	420.7
26JUL83	9553.0	394.2	27.5	2.6	424.4
29JUL83	10802.7	420.4	24.7	10.7	455.8
01AUG83	8775.8	395.5	41.8	29.9	467.2
03AUG83	8076.1	551.0	24.6	5.0	580.6
05AUG83	9861.3	526.6	40.0	8.3	574.9
07AUG83	11438.5	386.1	29.7	2.4	418.1
08AUG83	11475.2	345.4	30.1	2.9	378.3
09AUG83	11611.3	250.5	20.5	2.9	274.0

TABLE B-2 DAILY AVERAGE DENSITY (NO./1,000 M^3) OF BAY ANCHOVY COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 15 JUNE - 9 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL
15JUN83	6024.4	0.0	0.0	0.0	0.0
16JUN83	1116.5	0.0	0.0	0.0	0.0
23JUN83	8202.1	0.0	0.0	0.0	0.0
24JUN83	9924.1	0.0	0.0	0.0	0.0
25JUN83	9351.1	0.0	0.0	0.0	0.0
28JUN83	9201.9	0.0	0.0	0.0	0.0
29JUN83	8218.3	0.0	0.0	0.0	0.0
01JUL83	7054.6	4.5	0.0	0.0	4.5
04JUL83	9635.7	156.2	0.1	0.0	156.3
05JUL83	9936.6	169.2	0.0	0.0	169.2
07JUL83	7228.2	389.0	0.0	0.0	389.0
15JUL83	9697.6	365.3	0.0	0.0	365.3
16JUL83	10491.2	300.4	0.2	0.0	300.6
17JUL83	10889.2	472.8	0.0	0.0	472.8
23JUL83	9618.8	578.1	10.1	0.0	588.2
25JUL83	6064.1	384.9	11.4	0.0	396.3
26JUL83	9553.0	394.2	11.2	0.0	405.4
29JUL83	10802.7	419.7	1.9	0.0	421.7
01AUG83	8775.8	395.3	2.3	0.0	397.6
03AUG83	8076.1	550.8	3.5	0.0	554.2
05AUG83	9861.3	526.6	24.5	0.0	551.1
07AUG83	11438.5	386.0	9.0	0.0	395.0
08AUG83	11475.2	345.4	6.6	0.0	352.0
09AUG83	11611.3	250.5	6.5	0.0	257.0

TABLE B-3 DAILY AVERAGE DENSITY (NO./1,000 M^3) OF HERRINGS[a] COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 15 JUNE - 9 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL
15JUN83	6024.4	820.2	0.0	0.0	820.2
16JUN83	1116.5	1182.3	0.0	0.0	1182.3
23JUN83	8202.1	495.1	0.1	0.0	495.2
24JUN83	9924.1	193.9	0.0	0.0	193.9
25JUN83	9351.1	121.8	0.0	0.0	121.8
28JUN83	9201.9	59.7	0.0	0.0	59.7
29JUN83	8218.3	40.0	0.0	0.0	40.0
01JUL83	7054.6	8.8	0.1	0.0	8.9
04JUL83	9635.7	0.4	0.0	0.0	0.4
05JUL83	9936.6	8.6	0.3	0.0	8.9
07JUL83	7228.2	0.0	0.7	0.0	0.7
15JUL83	9697.6	0.0	0.0	0.0	0.0
16JUL83	10491.2	0.0	0.0	0.0	0.0
17JUL83	10889.2	0.0	0.0	0.0	0.0
23JUL83	9618.8	0.0	1.7	0.0	1.7
25JUL83	6064.1	0.0	3.1	0.0	3.1
26JUL83	9553.0	0.0	3.8	0.0	3.8
29JUL83	10802.7	0.0	5.4	0.0	5.4
01AUG83	8775.8	0.0	5.7	0.0	5.7
03AUG83	8076.1	0.0	5.3	0.0	5.3
05AUG83	9861.3	0.0	0.9	0.0	0.9
07AUG83	11438.5	0.0	0.3	0.0	0.3
08AUG83	11475.2	0.0	0.3	0.0	0.3
09AUG83	11611.3	0.0	0.5	0.0	0.5

(a) Excluding American shad.

TABLE B-4 DAILY AVERAGE DENSITY (NO./1,000 M^3) OF AMERICAN SHAD COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 15 JUNE - 9 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL
15JUN83	6024.4	0.2	0.0	0.0	0.2
16JUN83	1116.5	0.0	0.0	0.0	0.0
23JUN83	8202.1	0.1	0.0	0.0	0.1
24JUN83	9924.1	0.1	0.0	0.0	0.1
25JUN83	9351.1	0.1	0.0	0.0	0.1
28JUN83	9201.9	0.8	0.0	0.0	0.8
29JUN83	8218.3	0.0	0.1	0.0	0.1
01JUL83	7054.6	0.0	0.0	0.0	0.0
04JUL83	9635.7	0.0	0.0	0.0	0.0
05JUL83	9936.6	0.0	0.4	0.0	0.4
07JUL83	7228.2	0.0	0.1	0.0	0.1
15JUL83	9697.6	0.0	0.1	0.0	0.1
16JUL83	10491.2	0.0	0.1	0.0	0.1
17JUL83	10889.2	0.0	0.2	0.0	0.2
23JUL83	9618.8	0.0	0.1	0.0	0.1
25JUL83	6064.1	0.0	0.0	0.0	0.0
26JUL83	9553.0	0.0	0.0	0.0	0.0
29JUL83	10802.7	0.0	0.0	0.0	0.0
01AUG83	8775.8	0.0	0.0	0.0	0.0
03AUG83	8076.1	0.0	0.1	0.0	0.1
05AUG83	9861.3	0.0	0.0	0.0	0.0
07AUG83	11438.5	0.0	0.0	0.0	0.0
08AUG83	11475.2	0.0	0.0	0.0	0.0
09AUG83	11611.3	0.0	0.0	0.0	0.0

TABLE B-5 DAILY AVERAGE DENSITY (NO./1,000 M^3) OF WHITE PERCH COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 15 JUNE - 9 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL
15JUN83	6024.4	0.0	0.0	0.0	0.0
16JUN83	1116.5	0.0	0.0	0.0	0.0
23JUN83	8202.1	2.0	0.0	0.0	2.0
24JUN83	9924.1	2.2	0.0	0.0	2.2
25JUN83	9351.1	6.8	0.5	0.0	7.4
28JUN83	9201.9	4.9	1.4	0.0	6.3
29JUN83	8218.3	4.9	0.9	0.0	5.7
01JUL83	7054.6	1.6	0.9	0.0	2.4
04JUL83	9635.7	1.6	1.2	0.0	2.8
05JUL83	9936.6	3.2	2.2	0.0	5.4
07JUL83	7228.2	4.6	3.2	0.0	7.7
15JUL83	9697.6	6.3	6.6	0.0	12.9
16JUL83	10491.2	3.3	4.6	0.0	7.9
17JUL83	10889.2	2.7	7.0	0.0	9.6
23JUL83	9618.8	0.0	2.2	0.0	2.2
25JUL83	6064.1	0.3	0.5	0.0	0.8
26JUL83	9553.0	0.0	0.2	0.0	0.2
29JUL83	10802.7	0.0	0.6	0.0	0.6
01AUG83	8775.8	0.0	0.9	0.0	0.9
03AUG83	8076.1	0.0	0.9	0.0	0.9
05AUG83	9861.3	0.0	0.8	0.0	0.8
07AUG83	11438.5	0.0	0.7	0.0	0.7
08AUG83	11475.2	0.0	0.3	0.0	0.3
09AUG83	11611.3	0.0	0.7	0.0	0.7

TABLE B-6 DAILY AVERAGE DENSITY (NO./1,000 M^3) OF STRIPED BASS COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 15 JUNE - 9 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL
15JUN83	6024.4	0.0	0.0	0.0	0.0
16JUN83	1116.5	0.9	0.0	0.0	0.9
23JUN83	8202.1	2.0	0.0	0.0	2.0
24JUN83	9924.1	2.8	0.0	0.0	2.8
25JUN83	9351.1	6.6	1.3	0.0	7.9
28JUN83	9201.9	16.5	1.0	0.0	17.5
29JUN83	8218.3	5.5	0.6	0.0	6.1
01JUL83	7054.6	9.5	0.6	0.0	10.1
04JUL83	9635.7	6.2	2.9	0.0	9.1
05JUL83	9936.6	9.9	2.0	0.0	11.9
07JUL83	7228.2	8.4	2.6	0.0	11.1
15JUL83	9697.6	3.5	2.9	0.0	6.4
16JUL83	10491.2	1.4	2.7	0.0	4.1
17JUL83	10889.2	1.1	2.8	0.0	3.9
23JUL83	9618.8	0.2	0.6	0.0	0.8
25JUL83	6064.1	0.0	0.3	0.0	0.3
26JUL83	9553.0	0.0	0.2	0.0	0.2
29JUL83	10802.7	0.0	0.6	0.0	0.6
01AUG83	8775.8	0.0	0.7	0.0	0.7
03AUG83	8076.1	0.0	0.1	0.0	0.1
05AUG83	9861.3	0.0	0.1	0.0	0.1
07AUG83	11438.5	0.0	0.4	0.0	0.4
08AUG83	11475.2	0.0	0.1	0.0	0.1
09AUG83	11611.3	0.0	0.1	0.0	0.1

TABLE B-7 DAILY AVERAGE DENSITY (NO./1,000 M^3) OF ATLANTIC TOMCOD COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 15 JUNE - 9 AUGUST 1983

DATE	TOTAL VOLUME (CU M)	LARVAE	JUVENILE	UNIDENTIFIED	TOTAL
15JUN83	6024.4	0.0	0.2	0.0	0.2
16JUN83	1116.5	0.0	0.0	0.0	0.0
23JUN83	8202.1	0.0	0.0	0.0	0.0
24JUN83	9924.1	0.0	0.0	0.0	0.0
25JUN83	9351.1	0.0	0.1	0.0	0.1
28JUN83	9201.9	0.0	0.0	0.0	0.0
29JUN83	8218.3	0.0	0.0	0.0	0.0
01JUL83	7054.6	0.0	0.1	0.0	0.1
04JUL83	9635.7	0.0	0.2	0.0	0.2
05JUL83	9936.6	0.0	0.0	0.0	0.0
07JUL83	7228.2	0.0	0.0	0.0	0.0
15JUL83	9697.6	0.0	0.0	0.0	0.0
16JUL83	10491.2	0.0	0.0	0.0	0.0
17JUL83	10889.2	0.0	0.0	0.0	0.0
23JUL83	9618.8	0.0	0.0	0.0	0.0
25JUL83	6064.1	0.0	0.0	0.0	0.0
26JUL83	9553.0	0.0	0.0	0.0	0.0
29JUL83	10802.7	0.0	0.1	0.0	0.1
01AUG83	8775.8	0.0	0.0	0.0	0.0
03AUG83	8076.1	0.0	0.1	0.0	0.1
05AUG83	9861.3	0.0	0.0	0.0	0.0
07AUG83	11438.5	0.0	0.4	0.0	0.4
08AUG83	11475.2	0.0	1.2	0.0	1.2
09AUG83	11611.3	0.0	1.5	0.0	1.5

APPENDIX C

AUTOSAM
LENGTH-FREQUENCY DATA
INDIAN POINT ENTRAINMENT ABUNDANCE
1983

LIST OF TABLES

Number	Title
C-1	Length-frequency distribution of bay anchovy collected at Station D2 using AUTOSAM, Indian Point Generating Station, 1983.
C-2	Length-frequency distribution of herrings collected at Station D2 using AUTOSAM, Indian Point Generating Station, 1983.
C-3	Length-frequency distribution of American shad collected at Station D2 using AUTOSAM, Indian Point Generating Station, 1983.
C-4	Length-frequency distribution of white perch collected at Station D2 using AUTOSAM, Indian Point Generating Station, 1983.
C-5	Length-frequency distribution of striped bass collected at Station D2 using AUTOSAM, Indian Point Generating Station, 1983.
C-6	Length-frequency distribution of Atlantic tomcod collected at Station D2 using AUTOSAM, Indian Point Generating Station, 1983.

TABLE C-1 LENGTH-FREQUENCY DISTRIBUTION OF BAY ANCHOVY COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 2.0 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9
01MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26JUN83	0	0	0	1	3	5	7	6	5	5	7	9	1	2
03JUL83	0	1	4	27	57	79	106	112	84	98	85	89	71	57
10JUL83	1	1	9	26	57	51	63	81	54	72	69	76	74	83
17JUL83	2	4	4	20	42	79	96	103	74	80	76	79	86	68
24JUL83	12	35	31	43	51	75	86	109	81	121	119	98	85	80
31JUL83	26	33	20	62	69	91	112	98	110	128	119	133	132	112
07AUG83	16	42	45	78	68	62	49	41	44	50	76	99	89	100
TOTAL	57	116	113	257	347	442	519	550	452	554	551	583	538	502

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9+	MIN	MED	MAX
01MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
08MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
15MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
22MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
29MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
05JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
12JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
19JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
26JUN83	54	80	10.8	2.8	1	2	0	0	0	0	0	5.0	10.8	17.0
03JUL83	970	6910	11.2	3.7	38	31	19	2	2	5	3	3.3	11.0	64.0
10JUL83	918	6056	12.4	4.1	56	40	44	24	16	11	10	2.9	12.0	26.0
17JUL83	1231	10170	13.9	5.7	57	53	47	42	60	51	108	2.5	13.0	68.0
24JUL83	1490	10544	13.4	6.1	63	64	55	57	37	52	136	2.0	12.6	70.0
31JUL83	1705	11105	13.0	6.0	89	74	63	49	40	30	115	2.1	12.6	74.0
07AUG83	1116	3755	12.5	6.7	74	48	30	23	11	13	58	2.2	12.5	61.0
				TOTAL	378	312	258	197	166	162	430			

NOTE: N=number of lengths; P=number not measured; X=mean length; SD=standard deviation; MIN=minimum length; MED=median length; MAX=maximum length.

TABLE C-2 LENGTH-FREQUENCY DISTRIBUTION OF HERRINGS(a) COLLECTED AT STATION D2 USING AUTOSAN, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9	17.0 17.9
01MAY83	2	1	0	0	0	0	0	0	0	0	0	0	0	0
08MAY83	28	187	180	6	0	0	1	0	0	0	0	0	0	0
15MAY83	12	162	224	28	0	0	0	0	0	0	0	0	0	0
22MAY83	3	82	240	99	13	3	1	1	1	0	0	0	0	0
29MAY83	3	163	593	327	115	41	7	0	0	0	0	0	0	0
05JUN83	2	48	211	387	358	286	133	67	18	8	10	2	1	1
12JUN83	0	1	3	8	14	50	89	175	180	143	95	62	27	13
19JUN83	0	0	0	0	5	5	9	38	66	119	123	109	111	91
26JUN83	0	5	3	3	3	2	2	8	10	11	23	22	22	29
03JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	50	649	1454	858	508	387	242	289	275	281	251	195	161	134

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9	23.0 23.9	24.0 24.9+	MIN	MED	MAX
01MAY83	3	3	4.3	0.6	0	0	0	0	0	0	0	4.1	4.3	5.2
08MAY83	402	345	5.8	0.6	0	0	0	0	0	0	0	4.3	5.9	10.0
15MAY83	426	442	6.0	0.6	0	0	0	0	0	0	0	4.2	6.1	7.9
22MAY83	443	435	6.5	0.8	0	0	0	0	0	0	0	4.4	6.5	12.1
29MAY83	1250	8106	6.9	1.3	0	0	0	0	0	0	1	4.6	6.7	38.5
05JUN83	1532	11935	8.4	1.6	0	0	0	0	0	0	0	4.6	8.2	17.0
12JUN83	869	8741	12.4	2.1	7	1	1	0	0	0	0	5.3	12.1	20.5
19JUN83	834	3253	15.3	2.7	72	47	20	11	4	0	4	8.0	15.0	30.0
26JUN83	224	256	16.1	3.9	17	27	22	7	3	2	3	5.7	16.5	27.5
03JUL83	5	32	32.5	3.2	0	0	0	0	0	0	5	30.0	31.0	37.5
10JUL83	3	1	48.3	2.1	0	0	0	0	0	0	3	46.0	49.0	50.0
17JUL83	15	4	49.5	7.4	0	0	0	0	0	0	15	43.0	48.0	72.0
24JUL83	39	7	46.2	3.3	0	0	0	0	0	0	39	40.5	46.3	57.0
31JUL83	39	11	47.8	5.1	0	0	0	0	0	0	39	39.0	47.0	65.0
07AUG83	3	3	50.8	6.2	0	0	0	0	0	0	3	45.0	50.0	57.4
				TOTAL	96	75	43	18	7	2	112			

(a) Excluding American Shad.

NOTE: N=number of lengths; P=number not measured; X=mean length; SD=standard deviation; MIN=minimum length; MED=median length; MAX=maximum length.

TABLE C-3 LENGTH-FREQUENCY DISTRIBUTION OF AMERICAN SHAD COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9
01MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08MAY83	0	1	0	0	0	0	0	0	0	0	0	0	0	0
15MAY83	0	0	0	0	1	0	0	0	0	0	0	0	0	0
22MAY83	0	0	1	2	1	0	0	0	0	0	0	0	0	0
29MAY83	4	3	0	1	7	0	0	0	0	0	0	0	0	0
05JUN83	0	0	3	6	0	0	1	1	2	0	0	0	0	0
12JUN83	0	0	0	0	1	0	0	0	1	3	2	0	1	0
19JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4	4	4	9	10	0	1	1	3	3	2	0	1	0

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 21.0 21.9	22.0 22.9+	MIN	MED	MAX
01MAY83	0	0	0.0	0.0	0	0	0.0	0.0	0.0
08MAY83	1	0	8.4	0.0	0	0	8.4	8.4	8.4
15MAY83	1	0	11.0	0.0	0	0	11.0	11.0	11.0
22MAY83	4	3	10.5	1.1	0	0	9.4	10.3	11.9
29MAY83	15	3	9.7	1.8	0	0	7.1	10.9	11.8
05JUN83	13	0	11.4	2.1	0	0	9.1	10.7	15.0
12JUN83	8	0	16.2	2.3	0	0	11.3	16.3	19.0
19JUN83	0	0	0.0	0.0	0	0	0.0	0.0	0.0
26JUN83	2	0	29.5	6.4	0	2	25.0	29.5	34.0
03JUL83	0	0	0.0	0.0	0	0	0.0	0.0	0.0
10JUL83	0	0	0.0	0.0	0	0	0.0	0.0	0.0
17JUL83	0	0	0.0	0.0	0	0	0.0	0.0	0.0
24JUL83	0	0	0.0	0.0	0	0	0.0	0.0	0.0
31JUL83	1	0	51.0	0.0	0	1	51.0	51.0	51.0
07AUG83	0	0	0.0	0.0	0	0	0.0	0.0	0.0
				TOTAL	0	3			

NOTE: N=number of lengths; P=number not measured; X=mean length; SD=standard deviation; MIN=minimum length; MED=median length; MAX=maximum length.

TABLE C-4 LENGTH-FREQUENCY DISTRIBUTION OF WHITE PERCH COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 2.0 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9
01MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08MAY83	0	68	57	2	0	0	0	0	0	0	0	0	0	0
15MAY83	0	171	393	2	0	0	0	0	0	0	0	0	0	0
22MAY83	0	272	877	4	1	0	0	0	0	0	0	0	0	0
29MAY83	3	282	873	35	2	0	0	0	0	0	0	0	0	0
05JUN83	0	221	490	238	68	25	4	0	0	0	0	0	0	0
12JUN83	1	27	80	177	64	32	20	18	12	0	1	0	0	0
19JUN83	1	15	65	86	36	23	20	26	30	17	17	7	2	1
26JUN83	0	12	50	56	31	27	21	34	25	41	34	34	15	6
03JUL83	0	4	8	4	4	3	2	6	13	21	32	29	16	3
10JUL83	0	0	1	1	0	2	0	1	3	16	40	28	24	16
17JUL83	0	0	0	0	0	0	0	0	0	0	5	7	3	4
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	1	0
31JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	5	1072	2894	605	206	112	67	85	83	95	129	105	61	30

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9+	MIN	MED	MAX
01MAY83	0	1	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
08MAY83	127	37	3.9	0.4	0	0	0	0	0	0	0	3.0	3.9	5.8
15MAY83	566	262	4.1	0.3	0	0	0	0	0	0	0	3.0	4.1	5.0
22MAY83	1154	659	4.2	0.3	0	0	0	0	0	0	0	3.0	4.2	6.5
29MAY83	1196	838	4.2	1.7	0	0	0	0	0	0	1	2.5	4.2	62.0
05JUN83	1046	413	4.7	0.9	0	0	0	0	0	0	0	3.0	4.5	8.0
12JUN83	432	163	5.9	1.6	0	0	0	0	0	0	0	2.6	5.6	12.0
19JUN83	346	49	7.2	2.7	0	0	0	0	0	0	0	2.9	6.0	15.2
26JUN83	391	21	8.8	3.5	1	1	0	1	0	0	2	3.3	8.9	25.0
03JUL83	166	11	12.4	4.7	4	4	0	1	0	1	11	3.6	12.4	29.5
10JUL83	157	3	13.8	3.6	7	6	1	1	3	2	5	4.2	13.0	32.5
17JUL83	34	3	17.4	5.9	2	2	2	0	0	2	7	12.0	15.0	31.0
24JUL83	6	0	28.5	8.9	0	0	0	0	0	0	5	14.0	28.5	41.6
31JUL83	7	0	33.2	4.5	0	0	0	0	0	0	7	28.0	34.0	40.5
07AUG83	5	0	39.0	9.3	0	0	0	0	0	0	5	27.0	37.0	48.6
				TOTAL	14	13	3	3	3	5	43			

NOTE: N=number of lengths; P=number not measured; X=mean length; SD=standard deviation; MIN=minimum length; MED=median length; MAX=maximum length.

TABLE C-5 LENGTH-FREQUENCY DISTRIBUTION OF STRIPED BASS COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 1983

	LENGTH INTERVALS (MM)													
DATE	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9
01MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08MAY83	0	8	0	1	0	0	0	0	0	0	0	0	0	0
15MAY83	1	8	0	2	0	0	0	0	0	0	0	0	0	0
22MAY83	3	8	1	7	2	0	0	0	0	0	0	0	0	0
29MAY83	9	20	15	15	3	1	0	0	0	0	0	0	0	0
05JUN83	9	9	198	239	66	13	2	4	1	0	0	0	0	0
12JUN83	2	3	74	161	127	136	95	49	17	7	1	1	1	0
19JUN83	0	5	145	221	171	154	98	82	61	36	13	3	1	1
26JUN83	0	3	68	124	169	140	121	80	70	67	25	20	7	11
03JUL83	0	0	6	4	7	5	16	31	61	85	50	22	15	5
10JUL83	0	0	0	1	0	3	2	8	20	28	31	20	14	5
17JUL83	0	0	0	0	0	0	0	0	1	3	2	6	1	3
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	24	64	507	775	545	452	334	254	231	226	122	72	39	25

					LENGTH INTERVALS (MM)									
DATE	N	P	X	SD	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9	23.0 23.9+	MIN	MED	MAX
01MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
08MAY83	9	4	4.5	0.8	0	0	0	0	0	0	0	4.0	4.3	6.6
15MAY83	11	7	4.6	1.0	0	0	0	0	0	0	0	3.6	4.4	6.9
22MAY83	21	6	5.2	1.3	0	0	0	0	0	0	0	3.3	4.5	7.5
29MAY83	63	14	5.3	1.1	0	0	0	0	0	0	0	3.4	5.1	8.1
05JUN83	541	101	6.2	0.9	0	0	0	0	0	0	0	3.4	6.1	11.0
12JUN83	674	263	7.8	1.7	0	0	0	0	0	0	0	3.4	7.7	15.0
19JUN83	993	461	8.0	2.1	1	0	0	1	0	0	0	4.3	7.6	20.0
26JUN83	921	502	9.1	2.7	7	2	3	1	1	1	1	4.4	8.6	23.0
03JUL83	330	21	12.5	3.7	4	2	3	4	2	1	7	5.3	12.0	46.6
10JUL83	157	6	14.5	5.0	5	1	4	1	0	1	13	6.5	13.0	36.0
17JUL83	27	2	18.4	6.9	2	0	1	0	1	0	7	11.0	16.0	33.0
24JUL83	6	0	30.0	7.1	0	0	1	0	0	0	5	19.0	32.6	37.0
31JUL83	1	0	29.0	0.0	0	0	0	0	0	0	1	29.0	29.0	29.0
07AUG83	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0
				TOTAL	19	5	12	7	4	3	34			

NOTE: N=number of lengths; P=number not measured; X=mean length; SD=standard deviation; MIN=minimum length; MED=median length; MAX=maximum length.

TABLE C-6 LENGTH-FREQUENCY DATA OF ATLANTIC TOMCOD COLLECTED AT STATION D2 USING AUTOSAM, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 26.0 26.9	27.0 27.9	28.0 28.9	29.0 29.9	30.0 30.9	31.0 31.9	32.0 32.9	33.0 33.9	34.0 34.9	35.0 35.9	36.0 36.9	37.0 37.9	38.0 38.9	39.0 39.9
01MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08MAY83	0	0	0	0	0	0	0	0	1	1	0	1	1	0
15MAY83	1	1	0	0	1	1	0	0	1	0	1	1	1	0
22MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29MAY83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1	1	0	0	1	1	0	0	2	1	1	2	2	0

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 40.0 40.9	41.0 41.9	42.0 42.9	43.0 43.9	44.0 44.9	45.0 45.9	46.0 46.9	47.0 47.9	48.0 48.9+	MIN	MED	MAX
01MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
08MAY83	6	2	37.8	3.3	1	0	0	1	0	0	0	0	0	34.0	37.5	43.0
15MAY83	16	1	38.1	6.9	2	0	0	2	2	1	0	0	1	26.5	39.0	50.0
22MAY83	1	0	45.0	0.0	0	0	0	0	0	1	0	0	0	45.0	45.0	45.0
29MAY83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
05JUN83	2	0	48.0	8.5	0	0	1	0	0	0	0	0	1	42.0	48.0	54.0
12JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
19JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
26JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
03JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
10JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
17JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
24JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
31JUL83	1	0	73.0	0.0	0	0	0	0	0	0	0	0	1	73.0	73.0	73.0
07AUG83	1	1	64.0	0.0	0	0	0	0	0	0	0	0	1	64.0	64.0	64.0
				TOTAL	3	0	1	3	2	2	0	0	4			

NOTE: N=number of lengths; P=number not measured; X=mean length; SD=standard deviation; MIN=minimum length; MED=median length; MAX=maximum length.

APPENDIX D

JUVENILE NET COLLECTIONS
LENGTH-FREQUENCY DATA
INDIAN POINT GENERATING STATION
1983

LIST OF TABLES

Number	Title
D-1	Length-frequency distribution of bay anchovy collected at Station D1 using the net sampler, Indian Point Generating Station, 1983.
D-2	Length-frequency distribution of herrings collected at Station D1 using the net sampler, Indian Point Generating Station, 1983.
D-3	Length-frequency distribution of American shad collected at Station D1 using the net sampler, Indian Point Generating Station, 1983.
D-4	Length-frequency distribution of white perch collected at Station D1 using the net sampler, Indian Point Generating Station, 1983.
D-5	Length-frequency distribution of striped bass collected at Station D1 using the net sampler, Indian Point Generating Station, 1983.
D-6	Length-frequency distribution of Atlantic tomcod collected at Station D1 using the net sampler, Indian Point Generating Station, 1983.

TABLE D-1 LENGTH-FREQUENCY DISTRIBUTION OF BAY ANCHOVY COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9	23.0 23.9	24.0 24.9	25.0 25.9
12JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26JUN83	3	3	2	0	2	4	0	0	0	0	0	0	0	0
03JUL83	302	312	199	155	86	56	27	10	7	5	0	1	0	0
10JUL83	243	314	312	273	209	157	96	51	53	26	27	12	6	4
17JUL83	28	65	61	49	58	37	37	35	28	36	14	16	15	8
24JUL83	121	102	79	65	38	35	21	24	20	18	16	20	13	11
31JUL83	104	85	91	71	49	39	28	26	32	21	13	14	11	14
07AUG83	147	142	103	92	68	43	27	18	12	8	8	5	8	8
TOTAL	948	1023	847	705	510	371	236	164	152	114	78	68	53	45

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 26.0 26.9	27.0 27.9	28.0 28.9	29.0 29.9	30.0 30.9	31.0 31.9	32.0 32.9	33.0 33.9	34.0 34.9+	MIN	MED	MAX
12JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
19JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
26JUN83	14	18	14.5	2.1	0	0	0	0	0	0	0	0	0	12.0	14.0	17.0
03JUL83	1161	4838	13.9	2.5	0	0	0	0	0	0	0	0	1	12.0	13.0	75.0
10JUL83	1786	4911	15.1	3.1	1	0	0	0	0	0	0	0	2	12.0	15.0	73.0
17JUL83	545	10261	18.4	6.9	17	14	2	6	7	2	2	1	7	12.0	17.0	78.0
24JUL83	691	10140	17.7	6.8	31	32	20	8	2	5	0	2	8	12.0	15.0	81.0
31JUL83	706	12694	18.6	8.8	14	21	12	13	7	7	5	1	28	12.0	16.0	79.0
07AUG83	843	10698	18.8	10.6	17	14	8	9	12	10	8	9	67	12.0	15.0	83.0
				TOTAL	80	81	42	36	28	24	15	13	113			

NOTE: N = Number of lengths; P = Number not measured; X = Mean length; SD = Standard deviation; MIN = Minimum length; MED = Median length; MAX = Maximum length.

TABLE D-2 LENGTH-FREQUENCY DISTRIBUTION OF HERRINGS(a) COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9	23.0 23.9	24.0 24.9	25.0 25.9
12JUN83	290	319	192	59	20	4	6	5	1	0	0	0	0	0
19JUN83	139	204	348	390	407	364	266	159	96	49	19	12	3	0
26JUN83	13	24	36	30	54	69	91	60	72	34	13	5	1	1
03JUL83	14	12	5	1	0	0	2	1	1	1	4	1	0	0
10JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	456	559	581	480	481	437	365	225	170	84	36	18	4	1

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 26.0 26.9	27.0 27.9	28.0 28.9	29.0 29.9	30.0 30.9	31.0 31.9	32.0 32.9	33.0 33.9	34.0 34.9+	MIN	MED	MA
12JUN83	896	5365	13.2	1.2	0	0	0	0	0	0	0	0	0	12.0	13.0	20.
19JUN83	2459	4666	16.0	2.4	2	0	0	0	0	0	0	0	1	12.0	16.0	45.
26JUN83	504	437	17.6	2.5	1	0	0	0	0	0	0	0	0	12.0	18.0	26.
03JUL83	46	51	16.0	5.7	1	1	0	0	0	1	0	0	1	12.0	13.0	36.
10JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.
17JUL83	14	2	44.6	1.8	0	0	0	0	0	0	0	0	14	41.0	44.5	48.
24JUL83	98	15	45.5	3.0	0	0	0	0	0	0	0	0	98	39.0	45.0	60.
31JUL83	97	5	45.3	2.2	0	0	0	0	0	0	0	0	97	40.0	45.0	54.
07AUG83	9	3	47.3	3.3	0	0	0	0	0	0	0	0	9	42.0	47.0	52.
				TOTAL	4	1	0	0	0	1	0	0	220			

(a) Excluding American shad.

NOTE: N = Number of lengths; P = Number not measured; X = Mean length; SD = Standard deviation; MIN = Minimum length; MED = Median length; MAX = Maximum length.

TABLE D-3 LENGTH-FREQUENCY DISTRIBUTION OF AMERICAN SHAD COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9	23.0 23.9	24.0 24.9	25.0 25.9
12JUN83	0	0	0	0	0	0	0	0	0	1	0	0	0	0
19JUN83	0	0	0	0	0	0	0	0	0	0	1	0	1	0
26JUN83	0	0	0	0	0	0	0	0	0	1	0	2	2	2
03JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	2	1	2	3	2

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 26.0 26.9	27.0 27.9	28.0 28.9	29.0 29.9	30.0 30.9	31.0 31.9	32.0 32.9	33.0 33.9	34.0 34.9+	MIN	MED	MAX
12JUN83	1	0	21.0	0.0	0	0	0	0	0	0	0	0	0	21.0	21.0	21.0
19JUN83	3	0	24.0	2.0	1	0	0	0	0	0	0	0	0	22.0	24.0	26.0
26JUN83	8	0	23.9	1.6	1	0	0	0	0	0	0	0	0	21.0	24.0	26.0
03JUL83	5	0	34.0	3.3	0	0	0	0	0	2	0	0	3	31.0	34.0	39.0
10JUL83	2	0	51.5	2.1	0	0	0	0	0	0	0	0	2	50.0	51.5	53.0
17JUL83	2	1	56.0	5.7	0	0	0	0	0	0	0	0	2	52.0	56.0	60.0
24JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
31JUL83	1	0	53.0	0.0	0	0	0	0	0	0	0	0	1	53.0	53.0	53.0
07AUG83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
				TOTAL	2	0	0	0	0	2	0	0	8			

NOTE: N = Number of lengths; P = Number not measured; X = Mean length; SD = Standard deviation; MIN = Minimum length; MED = Median length; MAX = Maximum length.

TABLE D-4 LENGTH-FREQUENCY DISTRIBUTION OF WHITE PERCH COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9	23.0 23.9	24.0 24.9	25.0 25.9
12JUN83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19JUN83	71	23	9	1	2	1	0	0	0	0	0	0	0	0
26JUN83	54	31	18	6	3	2	3	1	0	0	0	0	0	0
03JUL83	52	35	11	13	7	2	2	0	2	2	1	0	1	2
10JUL83	56	56	24	27	9	2	4	1	3	0	2	0	1	3
17JUL83	15	31	19	14	6	2	0	0	2	0	0	3	0	5
24JUL83	2	0	0	0	0	0	1	0	1	0	0	1	0	1
31JUL83	0	0	0	0	0	0	0	0	0	0	2	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	250	176	81	61	27	9	10	2	8	2	5	4	2	11

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 26.0 26.9	27.0 27.9	28.0 28.9	29.0 29.9	30.0 30.9	31.0 31.9	32.0 32.9	33.0 33.9	34.0 34.9+	MIN	MED	MA
12JUN83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.
19JUN83	107	0	12.5	0.9	0	0	0	0	0	0	0	0	0	12.0	12.0	17.
26JUN83	118	4	13.1	1.5	0	0	0	0	0	0	0	0	0	12.0	13.0	19.
03JUL83	132	5	14.0	3.2	1	0	0	0	0	0	1	0	0	12.0	13.0	32.
10JUL83	195	13	14.5	3.8	0	2	1	0	1	1	2	0	0	12.0	13.0	32.
17JUL83	117	9	17.2	6.3	3	3	1	6	2	1	1	2	1	12.0	14.0	34.
24JUL83	14	0	26.2	8.4	0	0	2	0	2	0	0	1	3	12.0	28.0	40.
31JUL83	21	2	35.2	6.0	0	0	0	1	1	1	1	1	14	22.0	37.0	44.
07AUG83	19	0	38.5	6.0	0	0	0	0	0	3	2	1	13	31.0	38.0	48.
				TOTAL	4	5	4	7	6	6	7	5	31			

NOTE: N = Number of lengths; P = Number not measured; X = Mean length; SD = Standard deviation; MIN = Minimum length; MED = Median length; MAX = Maximum length.

TABLE D-5 LENGTH-FREQUENCY DISTRIBUTION OF STRIPED BASS COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 12.0 12.9	13.0 13.9	14.0 14.9	15.0 15.9	16.0 16.9	17.0 17.9	18.0 18.9	19.0 19.9	20.0 20.9	21.0 21.9	22.0 22.9	23.0 23.9	24.0 24.9	25.0 25.9
12JUN83	0	1	0	0	0	0	0	0	0	0	0	0	0	0
19JUN83	47	21	17	11	5	6	5	0	0	1	0	0	0	0
26JUN83	108	85	41	23	8	2	2	3	2	1	0	0	1	1
03JUL83	76	44	21	23	10	14	7	5	6	7	5	3	3	1
10JUL83	13	8	10	4	4	3	5	3	5	5	1	7	1	1
17JUL83	5	7	1	1	1	1	3	2	2	3	0	2	5	3
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	0	0	1	0	0	0
07AUG83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	249	166	90	62	28	26	22	13	15	17	7	12	10	6

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 26.0 26.9	27.0 27.9	28.0 28.9	29.0 29.9	30.0 30.9	31.0 31.9	32.0 32.9	33.0 33.9	34.0 34.9+	MIN	MED	MAX
12JUN83	1	0	13.0	0.0	0	0	0	0	0	0	0	0	0	13.0	13.0	13.0
19JUN83	114	4	13.7	2.3	0	1	0	0	0	0	0	0	0	12.0	13.0	27.0
26JUN83	277	5	13.3	1.8	0	0	0	0	0	0	0	0	0	12.0	13.0	25.0
03JUL83	228	58	14.8	3.4	1	2	0	0	0	0	0	0	0	12.0	13.0	27.0
10JUL83	94	11	19.9	7.0	6	5	3	2	1	1	2	0	4	12.0	18.5	44.0
17JUL83	49	2	20.9	6.5	4	2	0	1	3	1	1	0	1	12.0	21.0	35.0
24JUL83	9	1	34.2	6.3	1	0	1	0	1	1	0	0	5	26.0	34.0	44.0
31JUL83	7	1	33.6	9.1	0	1	1	0	0	0	0	0	4	22.0	35.0	50.0
07AUG83	7	0	39.4	7.8	0	0	0	0	1	0	1	0	5	30.0	39.0	52.0
				TOTAL	12	11	5	3	6	3	4	0	19			

NOTE: N = Number of lengths; P = Number not measured; X = Mean length; SD = Standard deviation; MIN = Minimum length; MED = Median length; MAX = Maximum length.

TABLE D-6 LENGTH-FREQUENCY DISTRIBUTION OF ATLANTIC TOMCOD COLLECTED AT STATION D1 USING THE NET SAMPLER, INDIAN POINT GENERATING STATION, 1983

DATE	LENGTH INTERVALS (MM) 51.0 51.9	52.0 52.9	53.0 53.9	54.0 54.9	55.0 55.9	56.0 56.9	57.0 57.9	58.0 58.9	59.0 59.9	60.0 60.9	61.0 61.9	62.0 62.9	63.0 63.9	64.0 64.9
12JUN83	0	0	0	0	0	0	0	0	1	0	0	0	0	0
19JUN83	0	0	0	0	0	0	0	0	0	1	0	0	0	0
26JUN83	0	0	0	0	0	0	0	0	0	0	0	0	1	0
03JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUL83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL83	0	0	0	0	0	0	0	0	1	0	0	0	0	0
07AUG83	1	1	0	0	2	0	1	2	1	1	1	2	1	3
TOTAL	1	1	0	0	2	0	1	2	3	2	1	2	2	3

DATE	N	P	X	SD	LENGTH INTERVALS (MM) 65.0 65.9	66.0 66.9	67.0 67.9	68.0 68.9	69.0 69.9	70.0 70.9	71.0 71.9	72.0 72.9	73.0 73.9+	MIN	MED	MA
12JUN83	1	0	59.0	0.0	0	0	0	0	0	0	0	0	0	59.0	59.0	59.
19JUN83	1	0	60.0	0.0	0	0	0	0	0	0	0	0	0	60.0	60.0	60.
26JUN83	1	0	63.0	0.0	0	0	0	0	0	0	0	0	0	63.0	63.0	63.
03JUL83	2	0	74.0	5.7	0	0	0	0	0	1	0	0	1	70.0	74.0	78.
10JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.
17JUL83	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.
24JUL83	1	0	73.0	0.0	0	0	0	0	0	0	0	0	1	73.0	73.0	73.
31JUL83	1	0	59.0	0.0	0	0	0	0	0	0	0	0	0	59.0	59.0	59.
07AUG83	34	2	66.2	8.4	1	1	1	3	1	0	3	0	8	51.0	65.5	85.
				TOTAL	1	1	1	3	1	1	3	0	10			

NOTE: N = Number of lengths; P = Number not measured; X = Mean length; SD = Standard deviation; MIN = Minimum length; MED = Median length; MAX = Maximum length.

APPENDIX E

FLOWMETER PERFORMANCE EVALUATION

APPENDIX E
FLOWMETER PERFORMANCE EVALUATION

E.1 INTRODUCTION

The purpose of this portion of the study was to evaluate the accuracy and, to a lesser extent, precision of the flowmeters used to estimate the volume sampled with each entrainment abundance collection. Clearly, determination of the magnitude of entrainment abundance at Indian Point is critically dependent upon accurate estimates of the volumes sampled. Potential biases in these estimates of volume could have a major effect of the projected magnitude of entrainment and consequently on the evaluation of mitigative outages at Indian Point.

Three separate flowmeter evaluations were conducted during this sampling season; one for each gear utilized. Flowmeter estimated volumes from the automated abundance sampler (AUTOSAM), the primary sampling gear, were compared to volumes discharged into a calibrated barrel. Flowmeter estimated volumes for the manual pump sampler were also compared to volumes discharged into a calibrated barrel. Finally, flowmeters were placed both inside and outside the 1/2-meter diameter nets, used to estimate juvenile abundance, to compare flowmeter performance and to evaluate possible effects of clogging on net filtration. The results of these evaluations were considered in the estimation of entrainment densities.

E.2 METHODS AND MATERIALS

E.2.1 AUTOSAM Calibration Procedures

The automated abundance sampler (AUTOSAM) was equipped with a Signet flowsensor (Model MK 315) used to measure the flow rate and volume of water being pumped through the system. The flowsensor was mounted inline in the pipe that transported water from the AUTOSAM sampling pump to the collection tank (Figure 3-1). Field calibration of the Signet flowsensor was accomplished by comparing volume readings for a 1-minute sample from the flowsensor and from a calibration tank.

With the system completely drained, the AUTOSAM discharge line was placed in a 1,200-liter calibration tank (marked in 150-liter increments) which was located on the catwalk over the discharge canal. AUTOSAM was activated, the sample was timed for 1 minute, and then the sample pump was shut off at the control panel. The volume was read from the LED display in units of cubic meters (in 0.1 cubic meter increments) and recorded in the calibration log. When flow to the calibration tank stopped, the volume of sample was read from the tank and also recorded in the calibration log. Finally, the discharge line was removed from the calibration tank and AUTOSAM was reactivated to continue routine sampling. Since flowmeter estimated values were recorded in 0.1 cubic meter increments, 0.05 was added to each volume estimated to more accurately reflect the true volume sampled.

E.2.2 Manual Pump Sampler Calibration Procedures

During manual pump sampling, the flow rate and volume of water being pumped was measured with a Sparling Masterflow 4-in. flowmeter mounted inline between the pump and the collection barrel. Results of manufacturer calibration of the Sparling flowmeters used at Indian Point are presented in Table E-1. In addition, field calibration of the Sparling flowmeter was done by comparing volume readings for a 1 minute sample from the flowmeter and from the calibration tank.

The discharge line from the collection barrel was placed in the same calibration tank used for the AUTOSAM calibration. The pump was started, the sample timed for 1-minute, and the sample pump shut off. The volume was read from the flowmeter to the nearest 0.1 cubic meter, estimated to the nearest 0.01 cubic meter, and recorded. When flow to the calibration tank stopped, the volume of sample was read from the tank to the nearest 0.01 cubic meter and also recorded.

E.2.3 Net Flowmeter Evaluation

General Oceanics (GO) flowmeters (Model 2030) were used to estimate sample volumes during juvenile net entrainment abundance sampling. Two GO flowmeters were used; one located in the center of the net's mouth and the other located outside in close proximity to the net (Figure 3-4). Prior to site assignment, GO flowmeters were sent to the Johns Hopkins University High Turbulence Flume for calibration. Data from the flume calibrations were used to assess the precision of each individual flowmeter. To be acceptable for field use, a flowmeter had to have a precision estimate equal to or less than $\pm$ 15 cubic meters. In addition, results of these flume calibrations were used to convert flowmeter revolutions to estimates of volumes sampled.

E.3 RESULTS AND DISCUSSION

E.3.1 AUTOSAM

A total of 91 independent tests were conducted as a part of this study (Table E-2). Except for the first two tests which were close to 2.0 cubic meters, volumes estimated with the AUTOSAM's Signet flowmeter ranged from 0.85 to 1.15 cubic meters. During the same tests, volumes sampled estimated with the calibrated barrel ranged from 0.70 to 1.13 cubic meters. The two volume estimates were highly correlated ($r = 0.93$), however in every test, the volume estimated using the Signet flowsensor was equal to or higher than the volume estimated using the calibrated barrel. The differences between the two volume estimates were generally small, averaging less than 0.14 cubic meter (maximum of 0.30 cubic meter), and were significantly different from zero ($\alpha = 0.05$).

The results of this flowmeter evaluation strongly suggest that the Signet flowsensor readings from the AUTOSAM used in the 1983 Entrainment Abundance Program consistently overestimated the true volume sampled. This consistent bias is undoubtedly related to the difficulty in determining the true relationship between the volume pumped and flowmeter revolutions as installed in the sampling device. Volumes estimated by the AUTOSAM are based on factory derived flowmeter curves which were developed under ideal conditions. The degree to

TABLE E-1 RESULTS OF MANUFACTURER CALIBRATION OF SPARLING FLOWMETER

Serial No.	Volume Reading (gal) Tank	Meter	Accuracy	Time (sec)	gpm
109469	209	211.5	101.2	30	418
	205	208	101.5	60	205
	120	121	100.8	120	60
106486	203	203	100.0	30	406
	204	206	101.1	60	204
	120	118.9	99.1	120	60

TABLE E-2 COMPARISON OF ESTIMATED VOLUMES SAMPLED BASED ON AUTOSAM AND CALIBRATED BARREL AT INDIAN POINT DISCHARGE, 1983

AUTOSAM	Calibrated Barrel	Difference	Ratio Barrel/AUTOSAM
1.95	1.86	0.09	0.95385
1.95	1.80	0.15	0.92308
1.05	0.90	0.15	0.85714
1.05	0.95	0.10	0.90476
1.15	0.95	0.20	0.82609
1.05	0.85	0.20	0.80952
1.05	0.95	0.10	0.90476
1.05	0.85	0.20	0.80952
1.15	1.13	0.02	0.98261
1.05	0.95	0.10	0.90476
1.15	0.85	0.30	0.73913
1.15	0.85	0.30	0.73913
1.05	0.85	0.20	0.80952
1.05	0.89	0.16	0.84762
0.95	0.85	0.10	0.89474
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
1.05	1.00	0.05	0.95238
1.15	0.90	0.25	0.78261
1.05	0.94	0.11	0.89524
1.05	0.90	0.15	0.85714
1.05	0.93	0.12	0.88571
1.05	0.93	0.12	0.88571
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
0.95	0.85	0.10	0.89474
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
1.05	0.85	0.20	0.80952
1.05	0.85	0.20	0.80952
0.95	0.90	0.05	0.94737
0.95	0.85	0.10	0.89474
1.05	0.85	0.20	0.80952
0.95	0.90	0.05	0.94737
0.95	0.85	0.10	0.89474
1.05	0.95	0.10	0.90476
1.05	0.90	0.15	0.85714
1.05	0.90	0.15	0.85714
0.95	0.82	0.13	0.86316
1.05	0.90	0.15	0.85714
1.05	0.91	0.14	0.86667
1.05	0.95	0.10	0.90476
0.95	0.90	0.05	0.94737
1.05	0.90	0.15	0.85714

TABLE E-2 (Cont.)

AUTOSAM	Calibrated Barrel	Difference	Ratio Barrel/AUTOSAM
0.85	0.75	0.10	0.88235
0.85	0.73	0.12	0.85882
1.05	0.91	0.14	0.86667
1.05	0.90	0.15	0.85714
0.95	0.85	0.10	0.89474
1.05	0.90	0.15	0.85714
0.95	0.85	0.10	0.89474
1.15	1.03	0.12	0.89565
0.85	0.75	0.10	0.88235
0.95	0.85	0.10	0.89474
0.85	0.85	0.00	1.00000
1.05	0.90	0.15	0.85714
1.15	1.00	0.15	0.86957
1.05	0.98	0.07	0.93333
1.05	0.90	0.15	0.85714
0.95	0.85	0.10	0.89474
0.95	0.90	0.05	0.94737
1.05	0.85	0.20	0.80952
0.95	0.85	0.10	0.89474
1.15	0.95	0.20	0.82609
1.05	0.95	0.10	0.90476
1.15	1.00	0.15	0.86957
1.05	0.90	0.15	0.85714
1.05	0.91	0.14	0.86667
1.05	0.90	0.15	0.85714
1.15	1.00	0.15	0.86957
1.05	0.90	0.15	0.85714
1.05	0.85	0.20	0.80952
1.05	0.95	0.10	0.90476
1.15	0.90	0.25	0.78261
0.85	0.70	0.15	0.82353
1.05	0.90	0.15	0.85714
1.05	0.85	0.20	0.80952
1.05	0.95	0.10	0.90476
0.95	0.95	0.00	1.00000
1.05	0.90	0.15	0.85714
0.95	0.81	0.14	0.85263
1.15	0.95	0.20	0.82609
1.15	0.90	0.25	0.78261
1.05	0.90	0.15	0.85714
1.05	0.95	0.10	0.90476
1.15	0.95	0.20	0.82609
1.05	0.95	0.10	0.90476

which actual conditions as installed deviate from ideal conditions will affect the accuracy of the estimated volumes sampled. Previous AUTOSAM flowmeter evaluations have demonstrated that the bias can be in either direction and the magnitude is unit specific, depending on exact plumbing and flowmeter location.

The ratio of the volume estimated by the calibrated barrel to the volume estimated by the Signet flowsensor ranged from 0.74 to 1.0. Overall, these ratios averaged 0.869 (S.E. = 0.005) with a median of 0.85 and a trimmed mean of 0.869. The ratio of the sum of the barrel estimated volumes to the sum of the flowmeter estimated volume was also 0.869. The remarkable consistency of the four estimates of the relationship (three out of four identical to three decimal places) combined with the low variability (C.V. <6 percent) suggest that an adjustment to the estimated volumes sampled can be made to improve accuracy with little loss in precision. Based on the results of these evaluations, an adjustment factor of 0.87 was selected. This adjustment factor was then multiplied by each Signet flowsensor estimated volume to better approximate the true volume sampled.

In summary, the results of this evaluation indicate that the Signet flowmeter as used in the AUTOSAM system provides a sufficiently precise measure of flow, however, estimated volumes sampled were slightly biased. This bias results from the peculiar flow pattern within each unique sampling system. An adjustment factor of 0.87 was applied to all estimated volumes to more accurately reflect the amount of water sampled.

E.3.2 Manual Pump Sampler

A total of eleven independent evaluations were made of one Sparling flowmeter and ten of the other (Table E-3). For both samplers, differences between the flowmeter estimated volumes and the barrel estimated volumes were quite small and not significantly different from zero ($P \geq 0.05$). The maximum difference between the two estimates was 0.12, although all others were 0.05 or less. Mean differences between the two estimates were less than 0.01 for both flowmeters.

The results of these comparisons suggest that both Sparling flowmeters, used in the manual pump samplers, provide appropriately accurate and precise measurements of the volume sampled. There was no evidence of any bias in the volume estimates and, consequently, no volume correction was deemed necessary.

E.3.3 Net Samples

Estimates of the volume sampled ranged from 535 to 1,734 m^3 for the inside flowmeter and from 186 to 2,119 m^3 for the outside flowmeter. A single volume estimate of 4,810 m^3 was clearly in error and eliminated from further analysis. The mean volume sampled at 1,250 m^3 (S.D. = 221) for the inside flowmeter was slightly less than the mean volume of 1,320 m^3 (S.D. = 247) for the outside flowmeter. This difference was significant (paired "t" = 3.42, P <.001) although the differences exhibited considerable variability, ranging from -880 to 1,182 (Table E-4), and appeared symetrically distributed (Figure E-1).

TABLE E-3 RESULTS OF THE SPARLING FLOWMETER CALIBRATION TESTS

Flowmeter 1			Flowmeter 2		
Sparling Volume	Barrel Volume	Difference	Sparling Volume	Barrel Volume	Difference
0.98	1.10	-0.12	1.00	0.95	0.05
1.10	1.15	-0.05	0.95	1.00	-0.05
0.90	0.88	0.02	1.00	0.95	0.05
1.25	1.20	0.05	0.95	0.95	0.00
---	---	---	1.00	1.05	-0.05
1.10	1.05	0.05	0.90	0.90	0.00
1.03	1.00	0.03	0.92	0.95	-0.03
0.95	0.93	0.02	0.90	0.85	0.05
1.05	1.00	0.05	0.85	0.90	-0.05
1.20	1.15	0.05	0.90	0.90	0.00
0.96	1.00	-0.04	1.00	1.05	-0.05

TABLE E-4 ESTIMATES OF VOLUME SAMPLED BASED ON FLOWMETERS INSIDE AND OUTSIDE A PLANKTON NET IN THE INDIAN POINT DISCHARGE, 1983

OBS	SER NO	VOLUME ESTIMATES (M^3) INSIDE	OUTSIDE	DIFF	RATIO (b)
1	BFHA0001	673.552	1280.325	-606.77	1.90086
2	BFHA0004	1064.948	444.792	620.16	0.41767
3	BFHA0005	1069.865	1212.881	-143.02	1.13368
4	BFHA0006	1069.093	1160.154	-91.06	1.08518
5	BFHA0007	990.839	1287.740	-296.90	1.29965
6	BFHA0008	694.342	1172.492	-478.15	1.68864
7	BFHA0009	1116.508	1314.971	-198.46	1.17775
8	BFHA0010	1184.419	868.038	316.38	0.73288
9	BFHA0011	534.631	1263.189	-728.56	2.36273
10	BFHA0012	1122.280	1225.726	-103.45	1.09218
11	BFHA0013	983.633	1198.402	-214.77	1.21834
12	BFHA0014	1146.622	1338.939	-192.32	1.16773
13	BFHA0015	1087.419	1201.848	-114.43	1.10523
14	BFHA0016	1009.082	1211.437	-202.35	1.20053
15	BFHA0017	1133.977	1305.171	-171.19	1.15097
16	BFHA0018	1697.834	1142.027	555.81	0.67264
17	BFHA0019	1102.111	1590.371	-488.26	1.44302
18	BFHA0020	1258.290	1376.518	-118.23	1.09396
19	BFHA0021	1086.377	1293.308	-206.93	1.19048
20	BFHA0022	1198.646	1454.903	-256.26	1.21379
21	BFHA0023	1183.034	1398.589	-215.56	1.18221
22	BFHA0024	1199.798	815.285	384.51	0.67952
23	BFHA0025	1198.041	1252.581	-54.54	1.04552
24	BFHA0026	1218.082	1364.841	-146.76	1.12048
25	BFHA0027	1233.214	1337.281	-104.07	1.08439
26	BFHA0028	1284.434	1515.569	-231.13	1.17995
27	BFHA0029	1052.672	1324.696	-272.02	1.25841
28	BFHA0030	1085.621	1293.911	-208.29	1.19186
29	BFHA0031	1108.131	1291.491	-183.36	1.16547
30	BFHA0032	1216.098	1313.571	-97.47	1.08015
31	BFHA0033	1152.818	1320.851	-168.03	1.14576
32	BFHA0034	1243.352	1332.647	-89.29	1.07182
33	BFHA0035	1513.787	1418.726	95.06	0.93720
34	BFHA0036	857.706	1104.828	-247.12	1.28812
35	BFHA0037	1586.311	.	.	.
36	BFHA0038	954.679	1321.922	-367.24	1.38468
37	BFHA0039	980.593	1045.267	-64.67	1.06595
38	BFHA0040	1061.728	1168.601	-106.87	1.10066
39	BFHA0041	1003.709	1294.753	-291.04	1.28997
40	BFHA0042	1421.898	1548.026	-126.13	1.08870
41	BFHA0044	874.562	1341.732	-467.17	1.53418
42	BFHA0045	1031.562	1411.430	-379.87	1.36824
43	BFHA0046	1209.887	1290.598	-80.71	1.06671
44	BFHA0047	1028.446	1185.775	-157.33	1.15298

a. DIFF = Difference
b. Ratio = Outside Volume/Inside Volume

TABLE E-4 (Cont.)

OBS	SER NO	VOLUME ESTIMATES (M^3) INSIDE	OUTSIDE	DIFF	RATIO (b)
45	BFHA0048	1164.860	1155.391	9.47	0.99187
46	BFHA0049	1487.066	864.067	623.00	0.58105
47	BFHA0050	1159.245	1600.216	-440.97	1.38040
48	BFHA0051	1290.626	1370.392	-79.77	1.06180
49	BFHA0054	1205.912	1517.655	-311.74	1.25851
50	BFHA0055	923.078	1168.732	-245.65	1.26612
51	BFHA0056	1298.929	1413.981	-115.05	1.08857
52	BFHA0057	1176.840	1305.087	-128.25	1.10898
53	BFHA0058	1102.027	1223.779	-121.75	1.11048
54	BFHA0059	1255.837	1394.455	-138.62	1.11038
55	BFHA0060	945.002	1123.482	-178.48	1.18887
56	BFHA0061	1392.850	1501.673	-108.82	1.07813
57	BFHA0062	1341.467	1368.257	-26.79	1.01997
58	BFHA0063	959.695	1074.012	-114.32	1.11912
59	BFHA0064	1255.777	1348.477	-92.70	1.07382
60	BFHA0065	1383.033	1414.763	-31.73	1.02294
61	BFHA0066	1098.844	1226.190	-127.35	1.11589
62	BFHA0067	1292.602	1404.341	-111.74	1.08645
63	BFHA0068	1468.063	1595.219	-127.16	1.08662
64	BFHA0069	1380.003	1483.666	-103.66	1.07512
65	BFHA0070	1228.231	1447.477	-219.25	1.17851
66	BFHA0071	1230.585	1285.084	-54.50	1.04429
67	BFHA0072	1100.427	1350.000	-249.57	1.22680
68	BFHA0073	1137.816	1335.798	-197.98	1.17400
69	BFHA0075	1389.334	1467.007	-77.67	1.05591
70	BFHA0077	1191.320	1353.535	-162.21	1.13616
71	BFHA0078	1338.912	1465.697	-126.78	1.09469
72	BFHA0079	845.159	877.792	-32.63	1.03861
73	BFHA0080	1131.554	1224.576	-93.02	1.08221
74	BFHA0081	1331.873	1441.970	-110.10	1.08266
75	BFHA0082	1438.796	1466.842	-28.05	1.01949
76	BFHA0083	1310.407	1422.980	-112.57	1.08591
77	BFHA0084	1170.420	1271.051	-100.63	1.08598
78	BFHA0085	866.402	1449.163	-582.76	1.67262
79	BFHA0086	1152.398	581.149	571.25	0.50430
80	BFHA0087	1243.775	1175.691	68.08	0.94526
81	BFHA0088	1258.376	1284.439	-26.06	1.02071
82	BFHA0089	1257.050	1350.947	-93.90	1.07470
83	BFHA0090	1226.554	1423.730	-197.18	1.16076
84	BFHA0091	1634.989	1271.226	363.76	0.77751
85	BFHA0092	1308.434	1479.204	-170.77	1.13051
86	BFHA0093	1470.258	1672.416	-202.16	1.13750
87	BFHA0094	1372.551	1389.593	-17.04	1.01242
88	BFHA0095	1047.905	588.101	459.80	0.56122
89	BFHA0096	1077.411	1237.100	-159.69	1.14822
90	BFHA0097	1353.119	1340.773	12.35	0.99088
91	BFHA0098	1317.614	1318.790	-1.18	1.00089
92	BFHA0099	1368.715	186.473	1182.24	0.13624

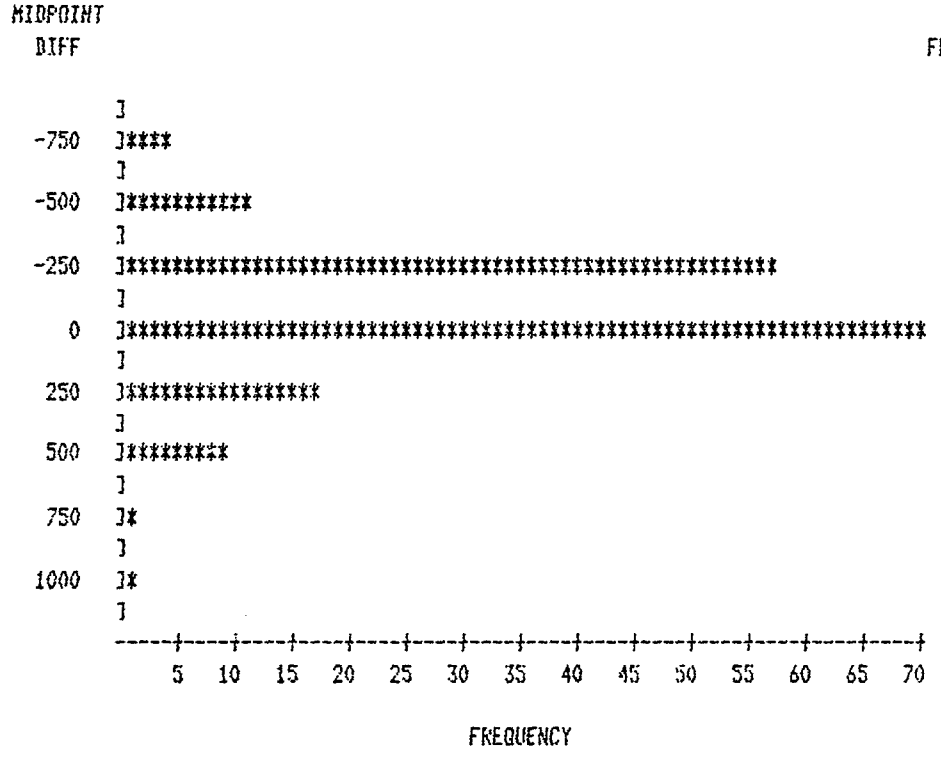
TABLE E-4 (Cont.)

OBS	SER NO	VOLUME ESTIMATES (M^3) INSIDE	OUTSIDE	DIFF	RATIO (b)
93	BFHA0100	1371.107	1409.637	-38.53	1.02810
94	BFHA0101	1503.526	1606.509	-102.98	1.06849
95	BFHA0102	1302.941	1467.571	-164.63	1.12635
96	BFHA0103	1389.474	1453.290	-63.82	1.04593
97	BFHA0104	1203.957	1304.105	-100.15	1.08318
98	BFHA0105	1431.825	1618.517	-186.69	1.13039
99	BFHA0110	1528.600	1571.502	-42.90	1.02807
100	BFHA0111	910.044	1463.630	-553.59	1.60831
101	BFHA0112	997.548	1319.381	-321.83	1.32262
102	BFHA0113	1150.052	1434.573	-284.52	1.24740
103	BFHA0114	1599.819	1452.450	147.37	0.90788
104	BFHA0115	754.054	1203.071	-449.02	1.59547
105	BFHA0116	1418.646	1570.873	-152.23	1.10730
106	BFHA0117	1260.047	1115.658	144.39	0.88541
107	BFHA0118	934.228	1379.810	-445.58	1.47695
108	BFHA0120	1063.537	831.524	232.01	0.78185
109	BFHA0122	1362.477	1345.899	16.58	0.98783
110	BFHA0124	1352.350	1093.692	258.66	0.80873
111	BFHA0125	1351.477	1201.919	149.56	0.88934
112	BFHA0126	1333.808	1387.042	-53.23	1.03991
113	BFHA0127	1135.016	1468.410	-333.39	1.29374
114	BFHA0128	1571.620	1483.418	88.20	0.94388
115	BFHA0130	1728.586	1268.503	460.08	0.73384
116	BFHA0131	1359.496	1453.348	-93.85	1.06903
117	BFHA0132	1063.660	1374.171	-310.51	1.29193
118	BFHA0133	1360.828	1459.904	-99.08	1.07281
119	BFHA0134	1362.206	1491.206	-129.00	1.09470
120	BFHA0135	1362.242	1468.578	-106.34	1.07806
121	BFHA0136	1410.388	1581.873	-171.49	1.12159
122	BFHA0137	1185.376	1179.327	6.05	0.99490
123	BFHA0138	1246.289	1035.459	210.83	0.83083
124	BFHA0139	1329.035	1171.905	157.13	0.88177
125	BFHA0140	1653.033	1535.712	117.32	0.92903
126	BFHA0141	1254.147	1279.945	-25.80	1.02057
127	BFHA0142	1024.498	1005.764	18.73	0.98171
128	BFHA0144	1496.863	1089.283	407.58	0.72771
129	BFHA0145	1166.898	1391.607	-224.71	1.19257
130	BFHA0146	1194.999	1297.816	-102.82	1.08604
131	BFHA0147	1260.040	1500.142	-240.10	1.19055
132	BFHA0148	1109.483	1100.641	8.84	0.99203
133	BFHA0149	1523.060	1233.724	289.34	0.81003
134	BFHA0150	768.309	187.387	580.92	0.24390
135	BFHA0152	1074.121	1358.571	-284.45	1.26482
136	BFHA0153	757.335	1547.973	-790.64	2.04397
137	BFHA0154	1208.469	1615.936	-407.47	1.33718
138	BFHA0155	1523.084	1745.750	-222.67	1.14619
139	BFHA0156	1309.116	1274.951	34.17	0.97390
140	BFHA0157	1435.653	1353.907	81.75	0.94306
141	BFHA0158	1734.356	1392.520	341.84	0.80290

TABLE E-4 (Cont.)

OBS	SER NO	VOLUME ESTIMATES (M^3) INSIDE	OUTSIDE	DIFF	RATIO (b)
142	BFHA0160	1513.588	1503.100	10.49	0.99307
143	BFHA0161	1442.186	1478.132	-35.95	1.02492
144	BFHA0162	1364.312	1625.157	-260.84	1.19119
145	BFHA0163	1032.129	1912.547	-880.42	1.85301
146	BFHA0164	1456.219	1597.316	-141.10	1.09689
147	BFHA0165	1318.479	1299.993	18.49	0.98598
148	BFHA0166	1453.803	1618.058	-164.25	1.11298
149	BFHA0167	1481.585	1178.650	302.93	0.79553
150	BFHA0168	1491.181	1610.538	-119.36	1.08004
151	BFHA0169	1368.815	1428.559	-59.74	1.04365
152	BFHA0170	1609.361	1338.016	271.34	0.83140
153	BFHA0171	1472.330	2119.293	-646.96	1.43941
154	BFHA0172	1215.478	1134.175	81.30	0.93311
155	BFHA0173	1345.979	1355.377	-9.40	1.00698
156	BFHA0174	1518.622	1501.389	17.23	0.98865
157	BFHA0175	1489.404	1616.221	-126.82	1.08515
158	BFHA0176	1613.629	1567.705	45.92	0.97154
159	BFHA0177	1306.905	1195.432	111.47	0.91470
160	BFHA0178	1639.186	1447.949	191.24	0.88333
161	BFHA0179	1054.488	1222.538	-168.05	1.15937
162	BFHA0180	1429.277	1290.735	138.54	0.90307
163	BFHA0181	1423.672	1264.705	158.97	0.88834
164	BFHA0182	1513.809	1350.739	163.07	0.89228
165	BFHA0183	1379.247	1526.920	-147.67	1.10707
166	BFHA0184	1685.245	1595.833	89.41	0.94694
167	BFHA0185	1235.311	1392.811	-157.50	1.12750
168	BFHA0186	1361.934	1335.817	26.12	0.98082
169	BFHA0187	1357.208	1274.524	82.684	0.939078
170	BFHA0188	1669.155	877.487	791.668	0.525707
171	BFHA0189	1409.435	1358.880	50.555	0.964131

FREQUENCY BAR CHART



MIDPOINT DIFF	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
-750	4	4	2.35	2.35
-500	11	15	6.47	8.82
-250	57	72	33.53	42.35
0	70	142	41.18	83.53
250	17	159	10.00	93.53
500	9	168	5.29	98.82
750	1	169	0.59	99.41
1000	1	170	0.59	100.00

Figure E-1. Frequency distribution of differences between volume estimates based on flowmeters inside and outside a plankton net in the Indian Point discharge, 1983.

The mean difference between the two flowmeters (71 m^3) is only 5.6 percent of the volume estimated by the inside flowmeter. This difference is probably related to back pressure within the sampling net.

Despite the significant difference between the two volume estimates, the results of this analysis provide no evidence that the inside flowmeter cannot be used as a valid measure of the volume sampled. The difference between the two volume estimates is relatively small (<6 percent) and can be explained by differences in back pressure due to the sampling device. The wide variation in differences between inside and outside flowmeter volume estimates appears related to differences in flow patterns within and around the sampling devices. Except for the single extreme value dropped from this analysis, all volume estimates used to calculate sample densities were based on inside flowmeter readings.

APPENDIX F

JUVENILE DENSITY COMPARISON TABLES

LIST OF TABLES

Number	Title
F-1	Estimated densities (No./m^3) of juvenile striped bass collected in paired pump and net samplers in the Indian Point discharge, 1983.
F-2	Estimated densities (No./m^3) of juvenile white perch collected in paired pump and net samplers in the Indian Point discharge, 1983.
F-3	Estimated densities (No./m^3) of juvenile bay anchovy collected in paired pump and net samplers in the Indian Point discharge, 1983.
F-4	Estimated densities (No./m^3) of juvenile *Alosa* spp. collected in paired pump and net samplers in the Indian Point discharge, 1983.

TABLE F-1 ESTIMATED DENSITIES (No./m^3) OF JUVENILE STRIPED BASS COLLECTED IN PAIRED PUMP AND NET SAMPLERS IN THE INDIAN POINT DISCHARGE, 1983

DIEL	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
25JUN83:03	0.00000	0.00727
26JUN83:03	0.00829	0.00000
26JUN83:06	0.00271	0.00000
28JUN83:15	0.00161	0.00000
28JUN83:21	0.00233	0.00000
29JUN83:00	0.00000	0.00667
29JUN83:03	0.00314	0.00680
29JUN83:06	0.00204	0.00000
30JUN83:03	0.00083	0.00000
30JUN83:06	0.00097	0.00000
30JUN83:09	0.00258	0.00000
02JUL83:03	0.00249	0.00676
02JUL83:06	0.00108	0.00000
05JUL83:00	0.00718	0.00000
05JUL83:03	0.01193	0.00000
05JUL83:06	0.00208	0.00000
06JUL83:00	0.00652	0.02157
06JUL83:03	0.00814	0.00699
06JUL83:06	0.00081	0.00000
08JUL83:00	0.00923	0.00000
08JUL83:03	0.00149	0.00000

TABLE F-1 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
08JUL83:06	0.00592	0.00000
08JUL83:09	0.00088	0.00000
15JUL83:18	0.00076	0.00000
15JUL83:21	0.00000	0.02991
16JUL83:00	0.02078	0.01419
16JUL83:03	0.00434	0.00691
16JUL83:06	0.00241	0.00000
16JUL83:09	0.00079	0.00000
16JUL83:18	0.00061	0.00000
16JUL83:21	0.00000	0.00741
18JUL83:15	0.00070	0.00000
24JUL83:00	0.00000	0.00700
24JUL83:03	0.00250	0.00000
24JUL83:09	0.00070	0.00000
25JUL83:12	0.00079	0.00000
26JUL83:03	0.00147	0.00000
26JUL83:18	0.00000	0.00703
26JUL83:21	0.00000	0.00664
27JUL83:03	0.00058	0.00000
27JUL83:06	0.00074	0.00000
29JUL83:21	0.00071	0.00000

TABLE F-1 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
30JUL83:03	0.00160	0.00000
30JUL83:06	0.00150	0.00000
30JUL83:09	0.00060	0.00000
01AUG83:21	0.00067	0.00000
02AUG83:03	0.00167	0.00000
02AUG83:06	0.00238	0.00000
04AUG83:00	0.00132	0.00000
06AUG83:06	0.00097	0.00000
09AUG83:00	0.00077	0.00000
10AUG83:03	0.00073	0.00000

TABLE F-2 ESTIMATED DENSITIES (No./m^3) OF JUVENILE WHITE PERCH COLLECTED IN PAIRED PUMP AND NET SAMPLERS IN THE INDIAN POINT DISCHARGE, 1983

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
26JUN83:03	0.00184	0.00000
26JUN83:06	0.00271	0.00000
28JUN83:15	0.00161	0.00000
28JUN83:21	0.00583	0.00000
29JUN83:00	0.00126	0.00000
29JUN83:03	0.00105	0.00000
29JUN83:06	0.00306	0.00000
29JUN83:21	0.00343	0.00000
30JUN83:00	0.00000	0.00671
30JUN83:03	0.00083	0.00000
30JUN83:09	0.00258	0.00000
01JUL83:15	0.00086	0.00000
02JUL83:03	0.00332	0.00000
02JUL83:06	0.00108	0.00000
05JUL83:00	0.00144	0.00000
05JUL83:03	0.00373	0.00000
05JUL83:06	0.00208	0.00000
05JUL83:12	0.00217	0.00000
05JUL83:15	0.00364	0.00693
05JUL83:18	0.00232	0.00000
06JUL83:00	0.00217	0.00000

TABLE F-2 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
06JUL83:03	0.00326	0.00000
06JUL83:06	0.00488	0.00000
06JUL83:09	0.00182	0.00000
07JUL83:18	0.00072	0.00000
08JUL83:00	0.00504	0.00000
08JUL83:03	0.00672	0.00000
08JUL83:06	0.00473	0.00000
08JUL83:09	0.00265	0.00000
15JUL83:15	0.00487	0.00000
15JUL83:18	0.00916	0.01441
15JUL83:21	0.00598	0.02243
16JUL83:00	0.01154	0.01419
16JUL83:03	0.01388	0.01383
16JUL83:06	0.00161	0.00000
16JUL83:09	0.00477	0.00000
16JUL83:12	0.00318	0.00000
16JUL83:15	0.00163	0.00000
16JUL83:18	0.00306	0.00000
16JUL83:21	0.00229	0.00741
18JUL83:15	0.00349	0.00000
23JUL83:15	0.00065	0.00000

TABLE F-2 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
23JUL83:18	0.00220	0.00000
23JUL83:21	0.00000	0.01365
24JUL83:00	0.00435	0.00700
24JUL83:03	0.00500	0.00000
24JUL83:09	0.00211	0.00000
25JUL83:12	0.00159	0.00000
25JUL83:15	0.00107	0.00000
25JUL83:21	0.00188	0.00000
26JUL83:03	0.00000	0.00682
26JUL83:09	0.00000	0.01348
26JUL83:18	0.00000	0.00703
26JUL83:21	0.00064	0.00000
27JUL83:03	0.00058	0.00000
29JUL83:15	0.00147	0.00000
30JUL83:00	0.00169	0.00000
30JUL83:03	0.00080	0.00000
30JUL83:06	0.00150	0.00000
02AUG83:00	0.00257	0.00000
02AUG83:03	0.00000	0.00656
02AUG83:06	0.00159	0.00000
02AUG83:09	0.00180	0.00000

TABLE F-2 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
02AUG83:12	0.00066	0.00000
03AUG83:21	0.00186	0.00000
04AUG83:00	0.00264	0.00000
04AUG83:03	0.00083	0.00000
04AUG83:09	0.00153	0.00000
05AUG83:21	0.00066	0.01309
06AUG83:00	0.00208	0.00687
06AUG83:03	0.00073	0.00000
06AUG83:09	0.00137	0.00000
06AUG83:12	0.00076	0.00000
07AUG83:15	0.00069	0.00000
07AUG83:18	0.00067	0.00000
07AUG83:21	0.00067	0.00000
08AUG83:12	0.00149	0.00000
09AUG83:00	0.00153	0.00000
09AUG83:12	0.00070	0.00000
09AUG83:21	0.00059	0.00651
10AUG83:00	0.00324	0.00000
10AUG83:03	0.00147	0.00684
10AUG83:06	0.00074	0.00000

TABLE F-3 ESTIMATED DENSITIES (No./m^3) OF JUVENILE BAY ANCHOVY COLLECTED IN PAIRED PUMP AND NET SAMPLERS IN THE INDIAN POINT DISCHARGE, 1983

DIEL	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
05JUL83:00	0.00072	0.00000
23JUL83:15	0.00196	0.00000
24JUL83:00	0.02000	0.00700
24JUL83:03	0.03563	0.00733
24JUL83:06	0.01194	0.00732
24JUL83:09	0.00070	0.00000
25JUL83:12	0.00317	0.00000
25JUL83:15	0.00107	0.00000
25JUL83:21	0.00000	0.00654
26JUL83:03	0.04844	0.01364
26JUL83:09	0.00148	0.00000
26JUL83:15	0.00075	0.00000
26JUL83:21	0.00064	0.00000
27JUL83:03	0.02198	0.03396
27JUL83:06	0.04708	0.00000
27JUL83:09	0.00188	0.00000
27JUL83:12	0.00073	0.00000
30JUL83:00	0.00169	0.01328
30JUL83:03	0.01043	0.01337
30JUL83:06	0.00451	0.00000
01AUG83:21	0.00200	0.00000

TABLE F-3 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
02AUG83:03	0.00418	0.01312
02AUG83:06	0.00397	0.00000
02AUG83:09	0.00451	0.00700
02AUG83:12	0.00131	0.00000
03AUG83:15	0.00000	0.00667
03AUG83:21	0.00559	0.00674
04AUG83:00	0.01585	0.02079
04AUG83:03	0.00745	0.00671
04AUG83:12	0.00070	0.00000
05AUG83:21	0.00396	0.15713
06AUG83:00	0.12758	0.02060
06AUG83:03	0.02639	0.00000
06AUG83:06	0.00775	0.00000
06AUG83:09	0.00481	0.00000
06AUG83:12	0.00076	0.00000
07AUG83:15	0.00069	0.00000
07AUG83:21	0.00000	0.00647
08AUG83:12	0.00074	0.00000
08AUG83:18	0.00067	0.00000
09AUG83:00	0.00842	0.01980
09AUG83:03	0.03233	0.00000

TABLE F-3 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
09AUG83:06	0.00853	0.00000
09AUG83:09	0.00070	0.00000
09AUG83:12	0.00070	0.00000
09AUG83:15	0.00066	0.00703
09AUG83:18	0.00000	0.00702
09AUG83:21	0.00059	0.01303
10AUG83:00	0.00890	0.03900
10AUG83:03	0.03745	0.00000
10AUG83:06	0.00516	0.00000
10AUG83:09	0.00120	0.00000
10AUG83:15	0.00142	0.00000

TABLE F-4 ESTIMATED DENSITIES (No./m^3) OF JUVENILE *ALOSA* SPP. COLLECTED IN PAIRED PUMP AND NET SAMPLERS IN THE INDIAN POINT DISCHARGE, 1983

DIEL	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
24JUN83:03	0.00087	0.00000
25JUN83:03	0.00000	0.00727
25JUN83:21	0.00000	0.00686
28JUN83:21	0.00000	0.00688
02JUL83:03	0.00083	0.00000
06JUL83:03	0.00081	0.00000
06JUL83:09	0.00091	0.00000
06JUL83:12	0.00088	0.00000
08JUL83:03	0.00224	0.00000
08JUL83:09	0.00177	0.00000
16JUL83:03	0.00000	0.00691
24JUL83:00	0.00000	0.02099
24JUL83:03	0.00688	0.00000
24JUL83:06	0.00265	0.00732
24JUL83:09	0.00211	0.00000
26JUL83:03	0.01174	0.03410
26JUL83:12	0.00222	0.00000
27JUL83:03	0.00405	0.01358
27JUL83:06	0.01986	0.01409
27JUL83:09	0.00188	0.00000
29JUL83:21	0.00000	0.00695

TABLE F-4 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
30JUL83:00	0.00928	0.02656
30JUL83:03	0.02086	0.00668
30JUL83:06	0.01505	0.00000
30JUL83:09	0.00060	0.00000
01AUG83:15	0.00195	0.00653
01AUG83:21	0.00200	0.00000
02AUG83:00	0.00428	0.02044
02AUG83:03	0.00669	0.01967
02AUG83:06	0.02381	0.00672
02AUG83:09	0.00180	0.00000
03AUG83:21	0.00186	0.04044
04AUG83:00	0.00924	0.02079
04AUG83:03	0.01655	0.02013
04AUG83:06	0.00197	0.00000
04AUG83:09	0.00687	0.00000
04AUG83:12	0.00139	0.00000
05AUG83:21	0.00000	0.01309
06AUG83:00	0.00416	0.00687
06AUG83:03	0.00147	0.02083
06AUG83:12	0.00076	0.00000
09AUG83:00	0.00077	0.00000

TABLE F-4 (Cont.)

	NET JUVENILE DENSITY	AUTOSAM JUVENILE DENSITY
DIEL		
09AUG83:06	0.00095	0.00000
09AUG83:09	0.00000	0.00659
09AUG83:12	0.00070	0.00000
10AUG83:00	0.00162	0.00000
10AUG83:03	0.00220	0.00684
10AUG83:06	0.00074	0.00000

APPENDIX G

ANALYSIS OF GEAR EFFECTS FOR COMPONENTS OF VARIATION

LIST OF TABLES

Number	Title
G-1	Summary of analysis of variance for gear differences during components of variation study at Indian Point Generating Station, 1983.

TABLE G-1 SUMMARY OF ANALYSIS OF VARIANCE FOR GEAR DIFFERENCES DURING COMPONENTS OF VARIATION STUDY AT INDIAN POINT GENERATING STATION, 1983

Taxon	Sample Period		Gear		Error		Test for Gear	
	DF	SS	DF	SS	DF	SS	F	P
Striped bass	47	93.88	2	14.60	94	70.68	9.71	0.0001
White perch	34	54.74	2	0.05	68	47.33	0.04	0.9635
Bay anchovy	25	67.37	2	0.07	50	17.48	0.10	0.9059
Alosa sp.	29	186.97	2	2.55	58	8.20	9.03	0.0004

DF = degrees of freedom.
SS = sum of squares.
F = ratio of mean squares
P = probability of greater F

APPENDIX H

UNIT OUTAGE EVALUATION

LIST OF TABLES

Number	Table
H-1	Unit flow in thousand of cubic meters with and without mitigative outages indian point units 2 and 3, 1983.
H-2	Estimates of mechanical mortality for calculating the number of individuals cropped by entrainment at Indian Point.
H-3	Equations and restrictions employed to predict mortality from thermal stress.
H-4	Daily estimates of the number of clupeid eggs entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-5	Daily estimates of the number of clupeid yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-6	Daily estimates of the number of clupeid post yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-7	Daily estimates of the number of clupeid juvenile entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-8	Daily estimates of the number of American shad eggs entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-9	Daily estimates of the number of American shad yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-10	Daily estimates of the number of American shad post yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-11	Daily estimates of the number of American shad juvenile entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-12	Daily estimates of the number of bay anchovy eggs entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-13	Daily estimates of the number of bay anchovy yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-14	Daily estimates of the number of bay anchovy post yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-15	Daily estimates of the number of bay anchovy juvenile entrained and cropped at Indian Point Units 2 and 3 during 1983.

LIST OF TABLES (Cont.)

Number	Table
H-16	Daily estimates of the number of Atlantic tomcod juvenile entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-17	Daily estimates of the number of white perch eggs entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-18	Daily estimates of the number of white perch yolk-sac larvae eggs entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-19	Daily estimates of the number of white perch post yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-20	Daily estimates of the number of white perch juveniles entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-21	Daily estimates of the number of striped bass eggs entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-22	Daily estimates of the number of striped bass yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-23	Daily estimates of the number of striped bass post yolk-sac larvae entrained and cropped at Indian Point Units 2 and 3 during 1983.
H-24	Daily estimates of the number of striped bass juvenile entrained and cropped at Indian Point Units 2 and 3 during 1983.

TABLE H-1 UNIT FLOW IN THOUSAND OF CUBIC METERS WITH AND WITHOUT MITIGATIVE OUTAGES INDIAN POINT UNITS 2 AND 3, 1983

		With Mitigation			Without Mitigation		
OBS	Date (a)	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1	03MAY83	3497.7	0.0	3497.70	4388.4	0.0	4388.40
2	04MAY83	4178.2	0.0	4178.20	4452.0	0.0	4452.00
3	05MAY83	4446.5	0.0	4446.47	4446.5	0.0	4446.47
4	06MAY83	4579.2	0.0	4579.20	4579.2	0.0	4579.20
5	07MAY83	4579.2	0.0	4579.20	4579.2	0.0	4579.20
6	08MAY83	4579.2	0.0	4579.20	4579.2	0.0	4579.20
7	09MAY83	3434.4	0.0	3434.40	3434.4	2289.6	5724.00
8	10MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
9	11MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
10	12MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
11	13MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
12	14MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
13	15MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
14	16MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
15	17MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
16	18MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
17	19MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
18	20MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
19	21MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
20	22MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
21	23MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
22	24MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
23	25MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
24	26MAY83	4579.2	0.0	4579.20	4579.2	4579.2	9158.40
25	27MAY83	4261.2	0.0	4261.20	4261.2	4579.2	8840.40
26	28MAY83	4452.0	0.0	4452.00	4452.0	4579.2	9031.20
27	29MAY83	4579.2	1653.6	6232.80	4579.2	2194.2	6773.40
28	30MAY83	4579.2	2289.6	6868.80	4579.2	2289.6	6868.80
29	31MAY83	4579.2	2257.8	6837.00	4579.2	2257.8	6837.00
30	01JUN83	4579.2	1526.4	6105.60	4579.2	1526.4	6105.60
31	02JUN83	4515.6	1526.4	6042.00	4515.6	1526.4	6042.00
32	03JUN83	4324.8	1526.4	5851.20	4324.8	1526.4	5851.20
33	04JUN83	4579.2	1717.2	6296.40	4579.2	1717.2	6296.40
34	05JUN83	4579.2	2289.6	6868.80	4579.2	2289.6	6868.80
35	06JUN83	4515.6	2830.2	7345.80	4515.6	2830.2	7345.80
36	07JUN83	4388.4	2480.4	6868.80	4388.4	2480.4	6868.80
37	08JUN83	4515.6	2385.0	6900.60	4515.6	2385.0	6900.60

(a) Date on which sample or samples were initiated. Flows generally are summarized on a noon-to-noon basis. From 3 May through 8 May, flows are for a 24-hour period beginning at approximately 1800 hours. On 9 May, flow is for an 18-hour period beginning at 1800 hours. From 10 May through 15 August, flows are for a 24-hour period beginning at 1200 noon.

TABLE H-1 (Cont.)

OBS	Date (a)	With Mitigation Unit 2	With Mitigation Unit 3	With Mitigation Total	Without Mitigation Unit 2	Without Mitigation Unit 3	Without Mitigation Total
38	09JUN83	4388.4	3052.8	7441.20	4388.4	3052.8	7441.20
39	10JUN83	4483.8	3052.8	7536.60	4483.8	3052.8	7536.60
40	11JUN83	4579.2	3052.8	7632.00	4579.2	3052.8	7632.00
41	12JUN83	4579.2	3084.6	7663.80	4579.2	3084.6	7663.80
42	13JUN83	4579.2	3052.8	7632.00	4579.2	3052.8	7632.00
43	14JUN83	4547.4	3116.4	7663.80	4547.4	3116.4	7663.80
44	15JUN83	4579.2	4006.8	8586.00	4579.2	4006.8	8586.00
45	16JUN83	4579.2	4261.2	8840.40	4579.2	4261.2	8840.40
46	17JUN83	4579.2	4579.2	9158.40	4579.2	4579.2	9158.40
47	18JUN83	4579.2	3720.6	8299.80	4579.2	3720.6	8299.80
48	19JUN83	4579.2	2289.6	6868.80	4579.2	2289.6	6868.8
49	20JUN83	4452.0	2226.0	6678.00	4452.0	2575.8	7027.80
50	21JUN83	4579.2	763.2	5342.40	4579.2	4579.2	9158.40
51	22JUN83	4388.4	763.2	5151.60	4388.4	4579.2	8967.60
52	23JUN83	4483.8	763.2	5247.00	4483.8	4579.2	9063.00
53	24JUN83	4579.2	763.2	5342.40	4579.2	4579.2	9158.40
54	25JUN83	4579.2	763.2	5342.40	4579.2	4579.2	9158.40
55	26JUN83	4579.2	763.2	5342.40	4579.2	4579.2	9158.40
56	27JUN83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
57	28JUN83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
58	29JUN83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
59	30JUN83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
60	01JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
61	02JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
62	03JUL83	4452.0	763.2	5215.2	4452.0	4579.2	9031.2
63	04JUL83	4483.8	763.2	5247.0	4483.8	4579.2	9063.0
64	05JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
65	06JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
66	07JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
67	08JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
68	09JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
69	10JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
70	11JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
71	12JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
72	13JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
73	14JUL83	4579.2	763.2	5342.4	4579.2	4579.2	9158.4
74	15JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
75	16JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
76	17JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
77	18JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
78	19JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
79	20JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
80	21JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
81	22JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
82	23JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
83	24JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
84	25JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
85	26JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
86	27JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4

TABLE H-1 (Cont.)

OBS	Date (a)	With Mitigation			Without Mitigation		
		Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
87	28JUL83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
88	29JUL83	4324.8	0.0	4324.8	4324.8	4579.2	8904.0
89	30JUL83	4483.8	0.0	4483.8	4483.8	4579.2	9063.0
90	31JUL83	4483.8	0.0	4483.8	4483.8	4579.2	9063.0
91	01AUG83	4515.6	0.0	4515.6	4515.6	4579.2	9094.8
92	02AUG83	4356.6	0.0	4356.6	4356.6	4579.2	8935.8
93	03AUG83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
94	04AUG83	4388.4	0.0	4388.4	4388.4	4579.2	8967.6
95	05AUG83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
96	06AUG83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
97	07AUG83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
98	08AUG83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
99	09AUG83	4579.2	0.0	4579.2	4579.2	4579.2	9158.4
100	10AUG83	4579.2	0.0	4579.2	4579.2	2289.6	6868.8
101	11AUG83	4579.2	0.0	4579.2	4579.2	0.0	4579.2
102	12AUG83	4420.2	0.0	4420.2	4420.2	0.0	4420.2
103	13AUG83	4579.2	0.0	4579.2	4579.2	0.0	4579.2
104	14AUG83	4579.2	0.0	4579.2	4579.2	0.0	4579.2
105	15AUG83	2289.6	0.0	2289.6	2289.6	0.0	2289.6

TABLE H-2 ESTIMATES OF MECHANICAL MORTALITY FOR CALCULATING THE NUMBER OF INDIVIDUALS CROPPED BY ENTRAINMENT AT INDIAN POINT

Species	Life Stage	Mechanical Mortality
Striped bass	Egg[a]	.425
	Yolk-sac larvae[a]	.300
	Post yolk-sac larvae[a]	.220
	Juveniles	.160
White perch	Egg	.425
	Yolk-sac larvae	.300
	Post yolk-sac larvae[a]	.033
	Juveniles	.360
Atlantic tomcod	Juveniles[a]	.123

(a) EA 1982.

TABLE H-3 EQUATIONS AND RESTRICTIONS EMPLOYED TO PREDICT MORTALITY FROM THERMAL STRESS[a]

Striped Bass Yolk-Sac Larvae[b] (EA 1979b)

$$REST1 = (516.2 + 11.46\ (DISTEM))/55.26$$
$$IF\ (AMBTEM < REST1),\ THEN\ AMBTEM = REST1$$
$$IF\ (AMBTEM > 20.0),\ THEN\ AMBTEM = 20.0$$
$$THERMO = -\ 559.5 - 259.0(DISTEM) + 1.666\ (DISTEM)^2 + 11.46\ (DISTEM)(AMBTEM) + 64.33\ (TRANST)^2 + 516.2\ (AMBTEM) - 27.63\ (AMBTEM)^2$$

$$REST2 = (259.0 - 11.46\ (AMBTEM))/3.333$$
$$IF\ (DISTEM \leq REST2),\ THEN\ THERMO = 0.0$$

White Perch Yolk-Sac Larvae[b]

$$THERMO = 99.15 - 7.205\ (DISTEM)(TRANST) + 1.451\ (DISTEM)(AMBTEM) + 329.3\ (TRANST) - 59.21\ (AMBTEM)$$

Striped Bass and White Perch Post Yolk-Sac Larvae and Juveniles (EA 1979b)

$$IF\ (LENGTH > 26),\ THEN\ LENGTH = 26.0\ mm$$

$$THERMO = 22.01 + 1.601\ (DISTEM)(AMBTEM) + 3.692\ (TRANST)(LENGTH) - 47.92\ (AMBTEM) - 0.8174\ (AMBTEM)(LENGTH) + 0.2773\ (LENGTH)^2$$

Striped Bass and White Perch Eggs

$$IF\ (DISTEM < 33),\ THEN\ THERMO = 0.0$$
$$IF\ (DISTEM \geq 33),\ THEN\ THERMO = 1.00$$

Atlantic Tomcod Juveniles

$$IF\ (DISTEM < 30),\ THEN\ THERMO = 0.00$$
$$IF\ (DISTEM \geq 30),\ THEN\ THERMO = 1.00$$

where

REST1, REST2	= restrictions one and two, respectively
THERMO	= percent mortality from thermal stress
DISTEM	= discharge (exposure) temperature (C)
AMBTEM	= ambient (acclimation) temperature (C)
TRANST	= logarithm to the base 10 of transit time (exposure time) in minutes
LENGTH	= organism length (mm).

(a) When the calculated percent thermal mortality is less than zero or greater than 100, mortalities of zero and 100 percent are assigned, respectively.

(b) Thermal mortality should not be calculated when ambient temperatures are greater than or equal to 22.0 C. No *Morone* yolk-sac larvae are expected to occur.

TABLE H-4 DAILY ESTIMATES OF THE NUMBER OF CLUPEID EGG ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

OBS	Date	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Cropped With Mitigation Unit 2	Number Cropped With Mitigation Unit 3	Number Cropped With Mitigation Total	Number Cropped W/O Mitigation Unit 2	Number Cropped W/O Mitigation Unit 3	Number Cropped W/O Mitigation Total
1	03MAY83	0	0	0	0	0	0	0	0
2	04MAY83	0	0	0	0	0	0	0	0
3	05MAY83	0	0	0	0	0	0	0	0
4	06MAY83	0	0	0	0	0	0	0	0
5	07MAY83	0	0	0	0	0	0	0	0
6	08MAY83	0	0	0	0	0	0	0	0
7	09MAY83	7551	15102	7551	0	7551	7551	7551	15102
8	10MAY83	5664	11328	5664	0	5664	5664	5664	11328
9	11MAY83	3777	7554	3777	0	3777	3777	3777	7554
10	12MAY83	7741	15482	7741	0	7741	7741	7741	15482
11	13MAY83	3957	7914	3957	0	3957	3957	3957	7914
12	14MAY83	0	0	0	0	0	0	0	0
13	15MAY83	0	0	0	0	0	0	0	0
14	16MAY83	0	0	0	0	0	0	0	0
15	17MAY83	0	0	0	0	0	0	0	0
16	18MAY83	0	0	0	0	0	0	0	0
17	19MAY83	0	0	0	0	0	0	0	0
18	20MAY83	4114	8228	4114	0	4114	4114	4114	8228
19	21MAY83	3917	7834	3917	0	3917	3917	3917	7834
20	22MAY83	32675	65350	32675	0	32675	32675	32675	65350
21	23MAY83	0	0	0	0	0	0	0	0
22	24MAY83	23326	46652	23326	0	23326	23326	23326	46652
23	25MAY83	8182	16364	8182	0	8182	8182	8182	16364
24	26MAY83	8162	16324	8162	0	8162	8162	8162	16324
25	27MAY83	11816	24327	11816	0	11816	11816	12511	24327
26	28MAY83	0	0	0	0	0	0	0	0
27	29MAY83	4681	4681	4012	669	4681	4012	669	4681
28	30MAY83	0	0	0	0	0	0	0	0
29	31MAY83	2933	2933	1955	978	2933	1955	978	2933
30	01JUN83	5215	5215	3911	1304	5215	3911	1304	5215
31	02JUN83	16727	16727	12545	4182	16727	12545	4182	16727
32	03JUN83	17582	17582	12787	4795	17582	12787	4795	17582
33	04JUN83	29321	29321	19547	9774	29321	19547	9774	29321
34	05JUN83	5849	5849	3899	1950	5849	3899	1950	5849
35	06JUN83	12269	12269	7587	4682	12269	7587	4682	12269
36	07JUN83	6007	6007	4005	2002	6007	4005	2002	6007
37	08JUN83	0	0	0	0	0	0	0	0
38	09JUN83	0	0	0	0	0	0	0	0
39	10JUN83	0	0	0	0	0	0	0	0
40	11JUN83	0	0	0	0	0	0	0	0
41	12JUN83	3477	3477	2086	1391	3477	2086	1391	3477
42	13JUN83	6955	6955	4173	2782	6955	4173	2782	6955
43	14JUN83	6308	6308	3698	2610	6308	3698	2610	6308
44	15JUN83	0	0	0	0	0	0	0	0
45	16JUN83	0	0	0	0	0	0	0	0
46	17JUN83	0	0	0	0	0	0	0	0
47	18JUN83	3151	3151	2101	1050	3151	2101	1050	3151
48	19JUN83	3151	3151	2101	1050	3151	2101	1050	3151
49	20JUN83	6303	6303	4202	2101	6303	4202	2101	6303
50	21JUN83	0	0	0	0	0	0	0	0
51	22JUN83	0	0	0	0	0	0	0	0
52	23JUN83	0	0	0	0	0	0	0	0
53	24JUN83	0	0	0	0	0	0	0	0

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
54	25JUN83	0	0	0	0	0	0	0	0
55	26JUN83	0	0	0	0	0	0	0	0
56	27JUN83	0	0	0	0	0	0	0	0
57	28JUN83	0	0	0	0	0	0	0	0
58	29JUN83	0	0	0	0	0	0	0	0
59	30JUN83	0	0	0	0	0	0	0	0
60	01JUL83	0	0	0	0	0	0	0	0
61	02JUL83	0	0	0	0	0	0	0	0
62	03JUL83	0	0	0	0	0	0	0	0
63	04JUL83	0	0	0	0	0	0	0	0
64	05JUL83	0	0	0	0	0	0	0	0
65	06JUL83	0	0	0	0	0	0	0	0
66	07JUL83	0	0	0	0	0	0	0	0
67	08JUL83	0	0	0	0	0	0	0	0
68	09JUL83	0	0	0	0	0	0	0	0
69	10JUL83	0	0	0	0	0	0	0	0
70	11JUL83	0	0	0	0	0	0	0	0
71	12JUL83	0	0	0	0	0	0	0	0
72	13JUL83	0	0	0	0	0	0	0	0
73	14JUL83	0	0	0	0	0	0	0	0
74	15JUL83	0	0	0	0	0	0	0	0
75	16JUL83	0	0	0	0	0	0	0	0
76	17JUL83	0	0	0	0	0	0	0	0
77	18JUL83	0	0	0	0	0	0	0	0
78	19JUL83	0	0	0	0	0	0	0	0
79	20JUL83	0	0	0	0	0	0	0	0
80	21JUL83	0	0	0	0	0	0	0	0
81	22JUL83	0	0	0	0	0	0	0	0
82	23JUL83	0	0	0	0	0	0	0	0
83	24JUL83	0	0	0	0	0	0	0	0
84	25JUL83	0	0	0	0	0	0	0	0
85	26JUL83	0	0	0	0	0	0	0	0
86	27JUL83	0	0	0	0	0	0	0	0
87	28JUL83	0	0	0	0	0	0	0	0
88	29JUL83	0	0	0	0	0	0	0	0
89	30JUL83	0	0	0	0	0	0	0	0
90	31JUL83	0	0	0	0	0	0	0	0
91	01AUG83	0	0	0	0	0	0	0	0
92	02AUG83	0	0	0	0	0	0	0	0
93	03AUG83	0	0	0	0	0	0	0	0
94	04AUG83	0	0	0	0	0	0	0	0
95	05AUG83	0	0	0	0	0	0	0	0
96	06AUG83	0	0	0	0	0	0	0	0
97	07AUG83	0	0	0	0	0	0	0	0
98	08AUG83	0	0	0	0	0	0	0	0
99	09AUG83	0	0	0	0	0	0	0	0
100	10AUG83	0	0	0	0	0	0	0	0
101	11AUG83	0	0	0	0	0	0	0	0
102	12AUG83	0	0	0	0	0	0	0	0
103	13AUG83	0	0	0	0	0	0	0	0

TABLE B-5 DAILY ESTIMATES OF THE NUMBER OF CLUPEID YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
104	03MAY83	0	0	0	0	0	0	0	0
105	04MAY83	0	0	0	0	0	0	0	0
106	05MAY83	0	0	0	0	0	0	0	0
107	06MAY83	0	0	0	0	0	0	0	0
108	07MAY83	11534	11534	11534	0	11534	11534	0	11534
109	08MAY83	3860	3860	3860	0	3860	3860	0	3860
110	09MAY83	44848	48623	44848	0	44848	44848	3775	48623
111	10MAY83	56163	112326	56163	0	56163	56163	56163	112326
112	11MAY83	66513	133026	66513	0	66513	66513	66513	133026
113	12MAY83	388985	777970	388985	0	388985	388985	388985	777970
114	13MAY83	191915	383830	191915	0	191915	191915	191915	383830
115	14MAY83	87440	174880	87440	0	87440	87440	87440	174880
116	15MAY83	137794	275588	137794	0	137794	137794	137794	275588
117	16MAY83	181306	362612	181306	0	181306	181306	181306	362612
118	17MAY83	153806	307612	153806	0	153806	153806	153806	307612
119	18MAY83	147634	295268	147634	0	147634	147634	147634	295268
120	19MAY83	141462	282924	141462	0	141462	141462	141462	282924
121	20MAY83	278984	557968	278984	0	278984	278984	278984	557968
122	21MAY83	93037	186074	93037	0	93037	93037	93037	186074
123	22MAY83	47506	95012	47506	0	47506	47506	47506	95012
124	23MAY83	66063	132126	66063	0	66063	66063	66063	132126
125	24MAY83	48855	97710	48855	0	48855	48855	48855	97710
126	25MAY83	67972	135944	67972	0	67972	67972	67972	135944
127	26MAY83	239280	478560	239280	0	239280	239280	239280	478560
128	27MAY83	174236	368654	174236	0	174236	174236	194418	368654
129	28MAY83	223179	453797	223179	0	223179	223179	230618	453797
130	29MAY83	883086	909933	609134	273952	883086	609134	300799	909933
131	30MAY83	849762	849762	566508	283254	849762	566508	283254	849762
132	31MAY83	2045614	2045614	1366655	678959	2045614	1366655	678959	2045614
133	01JUN83	3132021	3132021	2349016	783005	3132021	2349016	783005	3132021
134	02JUN83	3073361	3073361	2300333	773028	3073361	2300333	773028	3073361
135	03JUN83	2518685	2518685	1877650	641035	2518685	1877650	641035	2518685
136	04JUN83	3422556	3422556	2515823	906733	3422556	2515823	906733	3422556
137	05JUN83	1330127	1330127	886751	443376	1330127	886751	443376	1330127
138	06JUN83	775038	775038	478242	296796	775038	478242	296796	775038
139	07JUN83	1685715	1685715	1011270	674445	1685715	1011270	674445	1685715
140	08JUN83	1050673	1050673	685749	364924	1050673	685749	364924	1050673
141	09JUN83	282472	282472	167278	115194	282472	167278	115194	282472
142	10JUN83	231270	231270	137920	93350	231270	137920	93350	231270
143	11JUN83	365642	365642	219385	146257	365642	219385	146257	365642
144	12JUN83	207776	207776	123802	83974	207776	123802	83974	207776
145	13JUN83	47033	47033	28220	18813	47033	28220	18813	47033
146	14JUN83	0	0	0	0	0	0	0	0
147	15JUN83	0	0	0	0	0	0	0	0
148	16JUN83	0	0	0	0	0	0	0	0
149	17JUN83	0	0	0	0	0	0	0	0
150	18JUN83	0	0	0	0	0	0	0	0
151	19JUN83	0	0	0	0	0	0	0	0
152	20JUN83	0	0	0	0	0	0	0	0
153	21JUN83	0	0	0	0	0	0	0	0
154	22JUN83	0	0	0	0	0	0	0	0
155	23JUN83	0	0	0	0	0	0	0	0
156	24JUN83	0	0	0	0	0	0	0	0

TABLE H-5 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
157	25JUN83	0	0	0	0	0	0	0	0
158	26JUN83	0	0	0	0	0	0	0	0
159	27JUN83	0	0	0	0	0	0	0	0
160	28JUN83	0	0	0	0	0	0	0	0
161	29JUN83	0	0	0	0	0	0	0	0
162	30JUN83	0	0	0	0	0	0	0	0
163	01JUL83	0	0	0	0	0	0	0	0
164	02JUL83	4872	8352	4176	696	4872	4176	4176	8352
165	03JUL83	0	0	0	0	0	0	0	0
166	04JUL83	0	0	0	0	0	0	0	0
167	05JUL83	0	0	0	0	0	0	0	0
168	06JUL83	0	0	0	0	0	0	0	0
169	07JUL83	0	0	0	0	0	0	0	0
170	08JUL83	0	0	0	0	0	0	0	0
171	09JUL83	0	0	0	0	0	0	0	0
172	10JUL83	0	0	0	0	0	0	0	0
173	11JUL83	0	0	0	0	0	0	0	0
174	12JUL83	0	0	0	0	0	0	0	0
175	13JUL83	0	0	0	0	0	0	0	0
176	14JUL83	0	0	0	0	0	0	0	0
177	15JUL83	0	0	0	0	0	0	0	0
178	16JUL83	0	0	0	0	0	0	0	0
179	17JUL83	0	0	0	0	0	0	0	0
180	18JUL83	0	0	0	0	0	0	0	0
181	19JUL83	0	0	0	0	0	0	0	0
182	20JUL83	0	0	0	0	0	0	0	0
183	21JUL83	0	0	0	0	0	0	0	0
184	22JUL83	0	0	0	0	0	0	0	0
185	23JUL83	0	0	0	0	0	0	0	0
186	24JUL83	0	0	0	0	0	0	0	0
187	25JUL83	0	0	0	0	0	0	0	0
188	26JUL83	0	0	0	0	0	0	0	0
189	27JUL83	0	0	0	0	0	0	0	0
190	28JUL83	0	0	0	0	0	0	0	0
191	29JUL83	0	0	0	0	0	0	0	0
192	30JUL83	0	0	0	0	0	0	0	0
193	31JUL83	0	0	0	0	0	0	0	0
194	01AUG83	0	0	0	0	0	0	0	0
195	02AUG83	0	0	0	0	0	0	0	0
196	03AUG83	0	0	0	0	0	0	0	0
197	04AUG83	0	0	0	0	0	0	0	0
198	05AUG83	0	0	0	0	0	0	0	0
199	06AUG83	0	0	0	0	0	0	0	0
200	07AUG83	0	0	0	0	0	0	0	0
201	08AUG83	0	0	0	0	0	0	0	0
202	09AUG83	0	0	0	0	0	0	0	0
203	10AUG83	0	0	0	0	0	0	0	0
204	11AUG83	0	0	0	0	0	0	0	0
205	12AUG83	0	0	0	0	0	0	0	0
206	13AUG83	0	0	0	0	0	0	0	0

TABLE H-6 DAILY ESTIMATES OF THE NUMBER OF CLUPEID POST YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
207	03MAY83	0	0	0	0	0	0	0	0
208	04MAY83	0	0	0	0	0	0	0	0
209	05MAY83	0	0	0	0	0	0	0	0
210	06MAY83	0	0	0	0	0	0	0	0
211	07MAY83	11534	11534	11534	0	11534	11534	0	11534
212	08MAY83	42464	42464	42464	0	42464	42464	0	42464
213	09MAY83	244371	343151	244371	0	244371	244371	98780	343151
214	10MAY83	480621	961242	480621	0	480621	480621	480621	961242
215	11MAY83	706255	1412510	706255	0	706255	706255	706255	1412510
216	12MAY83	219438	438876	219438	0	219438	219438	219438	438876
217	13MAY83	540027	1080054	540027	0	540027	540027	540027	1080054
218	14MAY83	323819	647638	323819	0	323819	323819	323819	647638
219	15MAY83	408295	816590	408295	0	408295	408295	408295	816590
220	16MAY83	346115	692230	346115	0	346115	346115	346115	692230
221	17MAY83	538297	1076594	538297	0	538297	538297	538297	1076594
222	18MAY83	399464	798928	399464	0	399464	399464	399464	798928
223	19MAY83	260630	521260	260630	0	260630	260630	260630	521260
224	20MAY83	454773	909546	454773	0	454773	454773	454773	909546
225	21MAY83	402160	804320	402160	0	402160	402160	402160	804320
226	22MAY83	298964	597928	298964	0	298964	298964	298964	597928
227	23MAY83	283491	566982	283491	0	283491	283491	283491	566982
228	24MAY83	328126	656252	328126	0	328126	328126	328126	656252
229	25MAY83	178278	356556	178278	0	178278	178278	178278	356556
230	26MAY83	349745	699490	349745	0	349745	349745	349745	699490
231	27MAY83	537146	1103159	537146	0	537146	537146	566013	1103159
232	28MAY83	639219	1301022	639219	0	639219	639219	661803	1301022
233	29MAY83	1594717	1640740	1115762	478955	1594717	1115762	524978	1640740
234	30MAY83	2782657	2782657	1855105	927552	2782657	1855105	927552	2782657
235	31MAY83	4625823	4625823	3104414	1521409	4625823	3104414	1521409	4625823
236	01JUN83	5828375	5828375	4371281	1457094	5828375	4371281	1457094	5828375
237	02JUN83	8613325	8613325	6455077	2158248	8613325	6455077	2158248	8613325
238	03JUN83	6977573	6977573	5203747	1773826	6977573	5203747	1773826	6977573
239	04JUN83	14201007	14201007	10256481	3944526	14201007	10256481	3944526	14201007
240	05JUN83	6682189	6682189	4454793	2227396	6682189	4454793	2227396	6682189
241	06JUN83	5129503	5129503	3209864	1919639	5129503	3209864	1919639	5129503
242	07JUN83	17658099	17658099	11036478	6621621	17658099	11036478	6621621	17658099
243	08JUN83	18818054	18818054	12465404	6352650	18818054	12465404	6352650	18818054
244	09JUN83	8561546	8561546	5058507	3503039	8561546	5058507	3503039	8561546
245	10JUN83	11053212	11053212	6612562	4440650	11053212	6612562	4440650	11053212
246	11JUN83	14247597	14247597	8548558	5699039	14247597	8548558	5699039	14247597
247	12JUN83	17196211	17196211	10233718	6962493	17196211	10233718	6962493	17196211
248	13JUN83	19864800	19864800	11918880	7945920	19864800	11918880	7945920	19864800
249	14JUN83	14385236	14385236	8547940	5837296	14385236	8547940	5837296	14385236
250	15JUN83	17749063	17749063	9598171	8150892	17749063	9598171	8150892	17749063
251	16JUN83	9262166	9262166	4817777	4444389	9262166	4817777	4444389	9262166
252	17JUN83	8059336	8059336	4029668	4029668	8059336	4029668	4029668	8059336
253	18JUN83	8037959	8037959	4500993	3536966	8037959	4500993	3536966	8037959
254	19JUN83	6751490	6751490	4500993	2250497	6751490	4500993	2250497	6751490
255	20JUN83	7050320	7182818	4675040	2375280	7050320	4675040	2507778	7182818
256	21JUN83	6434779	11031050	5515525	919254	6434779	5515525	5515525	11031050
257	22JUN83	2932088	5166682	2485169	446919	2932088	2485169	2681513	5166682
258	23JUN83	2858004	4932035	2443198	414806	2858004	2443198	2488837	4932035
259	24JUN83	1405303	2409090	1204545	200758	1405303	1204545	1204545	2409090

TABLE B-6 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
260	25JUN83	821353	1408034	704017	117336	821353	704017	704017	1408034
261	26JUN83	647024	1109184	554592	92432	647024	554592	554592	1109184
262	27JUN83	532207	912354	456177	76030	532207	456177	456177	912354
263	28JUN83	413602	709032	354516	59086	413602	354516	354516	709032
264	29JUN83	208406	357268	178634	29772	208406	178634	178634	357268
265	30JUN83	259648	445110	222555	37093	259648	222555	222555	445110
266	01JUL83	78464	134510	67255	11209	78464	67255	67255	134510
267	02JUL83	104661	179418	89709	14952	104661	89709	89709	179418
268	03JUL83	0	0	0	0	0	0	0	0
269	04JUL83	4796	8222	4111	685	4796	4111	4111	8222
270	05JUL83	143370	245778	122889	20481	143370	122889	122889	245778
271	06JUL83	0	0	0	0	0	0	0	0
272	07JUL83	0	0	0	0	0	0	0	0
273	08JUL83	0	0	0	0	0	0	0	0
274	09JUL83	0	0	0	0	0	0	0	0
275	10JUL83	0	0	0	0	0	0	0	0
276	11JUL83	0	0	0	0	0	0	0	0
277	12JUL83	0	0	0	0	0	0	0	0
278	13JUL83	0	0	0	0	0	0	0	0
279	14JUL83	0	0	0	0	0	0	0	0
280	15JUL83	0	0	0	0	0	0	0	0
281	16JUL83	0	0	0	0	0	0	0	0
282	17JUL83	0	0	0	0	0	0	0	0
283	18JUL83	0	0	0	0	0	0	0	0
284	19JUL83	0	0	0	0	0	0	0	0
285	20JUL83	0	0	0	0	0	0	0	0
286	21JUL83	0	0	0	0	0	0	0	0
287	22JUL83	0	0	0	0	0	0	0	0
288	23JUL83	0	0	0	0	0	0	0	0
289	24JUL83	0	0	0	0	0	0	0	0
290	25JUL83	0	0	0	0	0	0	0	0
291	26JUL83	0	0	0	0	0	0	0	0
292	27JUL83	0	0	0	0	0	0	0	0
293	28JUL83	0	0	0	0	0	0	0	0
294	29JUL83	0	0	0	0	0	0	0	0
295	30JUL83	0	0	0	0	0	0	0	0
296	31JUL83	0	0	0	0	0	0	0	0
297	01AUG83	0	0	0	0	0	0	0	0
298	02AUG83	0	0	0	0	0	0	0	0
299	03AUG83	0	0	0	0	0	0	0	0
300	04AUG83	0	0	0	0	0	0	0	0
301	05AUG83	0	0	0	0	0	0	0	0
302	06AUG83	0	0	0	0	0	0	0	0
303	07AUG83	0	0	0	0	0	0	0	0
304	08AUG83	0	0	0	0	0	0	0	0
305	09AUG83	0	0	0	0	0	0	0	0
306	10AUG83	0	0	0	0	0	0	0	0
307	11AUG83	0	0	0	0	0	0	0	0
308	12AUG83	0	0	0	0	0	0	0	0
309	13AUG83	0	0	0	0	0	0	0	0

TABLE H-7 DAILY ESTIMATES OF THE NUMBER OF CLUPEID JUVENILE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
310	03MAY83	0	0	0	0	0	0	0	0
311	04MAY83	0	0	0	0	0	0	0	0
312	05MAY83	0	0	0	0	0	0	0	0
313	06MAY83	0	0	0	0	0	0	0	0
314	07MAY83	0	0	0	0	0	0	0	0
315	08MAY83	0	0	0	0	0	0	0	0
316	09MAY83	0	0	0	0	0	0	0	0
317	10MAY83	0	0	0	0	0	0	0	0
318	11MAY83	0	0	0	0	0	0	0	0
319	12MAY83	0	0	0	0	0	0	0	0
320	13MAY83	0	0	0	0	0	0	0	0
321	14MAY83	0	0	0	0	0	0	0	0
322	15MAY83	0	0	0	0	0	0	0	0
323	16MAY83	0	0	0	0	0	0	0	0
324	17MAY83	0	0	0	0	0	0	0	0
325	18MAY83	0	0	0	0	0	0	0	0
326	19MAY83	0	0	0	0	0	0	0	0
327	20MAY83	0	0	0	0	0	0	0	0
328	21MAY83	0	0	0	0	0	0	0	0
329	22MAY83	0	0	0	0	0	0	0	0
330	23MAY83	0	0	0	0	0	0	0	0
331	24MAY83	0	0	0	0	0	0	0	0
332	25MAY83	0	0	0	0	0	0	0	0
333	26MAY83	0	0	0	0	0	0	0	0
334	27MAY83	0	0	0	0	0	0	0	0
335	28MAY83	0	0	0	0	0	0	0	0
336	29MAY83	0	0	0	0	0	0	0	0
337	30MAY83	0	0	0	0	0	0	0	0
338	31MAY83	0	0	0	0	0	0	0	0
339	01JUN83	0	0	0	0	0	0	0	0
340	02JUN83	0	0	0	0	0	0	0	0
341	03JUN83	0	0	0	0	0	0	0	0
342	04JUN83	0	0	0	0	0	0	0	0
343	05JUN83	0	0	0	0	0	0	0	0
344	06JUN83	0	0	0	0	0	0	0	0
345	07JUN83	0	0	0	0	0	0	0	0
346	08JUN83	0	0	0	0	0	0	0	0
347	09JUN83	0	0	0	0	0	0	0	0
348	10JUN83	0	0	0	0	0	0	0	0
349	11JUN83	0	0	0	0	0	0	0	0
350	12JUN83	0	0	0	0	0	0	0	0
351	13JUN83	0	0	0	0	0	0	0	0
352	14JUN83	0	0	0	0	0	0	0	0
353	15JUN83	0	0	0	0	0	0	0	0
354	16JUN83	458	458	250	208	458	250	208	458
355	17JUN83	500	500	250	250	500	250	250	500
356	18JUN83	500	500	250	250	500	250	250	500
357	19JUN83	375	375	250	125	375	250	125	375
358	20JUN83	347	347	222	125	347	222	125	347
359	21JUN83	292	500	250	42	292	250	250	500
360	22JUN83	250	458	208	42	250	208	250	458
361	23JUN83	582	998	499	83	582	499	499	998
362	24JUN83	0	0	0	0	0	0	0	0

TABLE B-7 (CONT.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
363	25JUN83	0	0	0	0	0	0	0	0
364	26JUN83	0	0	0	0	0	0	0	0
365	27JUN83	0	0	0	0	0	0	0	0
366	28JUN83	0	0	0	0	0	0	0	0
367	29JUN83	0	0	0	0	0	0	0	0
368	30JUN83	277	474	237	40	277	237	237	474
369	01JUL83	554	950	475	79	554	475	475	950
370	02JUL83	277	474	237	40	277	237	237	474
371	03JUL83	277	474	237	40	277	237	237	474
372	04JUL83	0	0	0	0	0	0	0	0
373	05JUL83	1737	2978	1489	248	1737	1489	1489	2978
374	06JUL83	2207	3784	1892	315	2207	1892	1892	3784
375	07JUL83	2676	4588	2294	382	2676	2294	2294	4588
376	08JUL83	1338	2294	1147	191	1338	1147	1147	2294
377	09JUL83	1338	2294	1147	191	1338	1147	1147	2294
378	10JUL83	1338	2294	1147	191	1338	1147	1147	2294
379	11JUL83	1338	2294	1147	191	1338	1147	1147	2294
380	12JUL83	1338	2294	1147	191	1338	1147	1147	2294
381	13JUL83	1338	2294	1147	191	1338	1147	1147	2294
382	14JUL83	1338	2294	1147	191	1338	1147	1147	2294
383	15JUL83	0	0	0	0	0	0	0	0
384	16JUL83	0	0	0	0	0	0	0	0
385	17JUL83	0	0	0	0	0	0	0	0
386	18JUL83	3332	6664	3332	0	3332	3332	3332	6664
387	19JUL83	3332	6664	3332	0	3332	3332	3332	6664
388	20JUL83	3332	6664	3332	0	3332	3332	3332	6664
389	21JUL83	3332	6664	3332	0	3332	3332	3332	6664
390	22JUL83	3332	6664	3332	0	3332	3332	3332	6664
391	23JUL83	6664	13328	6664	0	6664	6664	6664	13328
392	24JUL83	15668	31336	15668	0	15668	15668	15668	31336
393	25JUL83	17091	34182	17091	0	17091	17091	17091	34182
394	26JUL83	17418	34836	17418	0	17418	17418	17418	34836
395	27JUL83	20488	40976	20488	0	20488	20488	20488	40976
396	28JUL83	20488	40976	20488	0	20488	20488	20488	40976
397	29JUL83	22381	48594	22381	0	22381	22381	26213	48594
398	30JUL83	24711	49422	24711	0	24711	24711	24711	49422
399	31JUL83	24618	49329	24618	0	24618	24618	24711	49329
400	01AUG83	23009	46218	23009	0	23009	23009	23209	46218
401	02AUG83	21171	43620	21171	0	21171	21171	22449	43620
402	03AUG83	21690	43380	21690	0	21690	21690	21690	43380
403	04AUG83	11537	24209	11537	0	11537	11537	12672	24209
404	05AUG83	3655	7310	3655	0	3655	3655	3655	7310
405	06AUG83	2409	4818	2409	0	2409	2409	2409	4818
406	07AUG83	1163	2326	1163	0	1163	1163	1163	2326
407	08AUG83	1383	2766	1383	0	1383	1383	1383	2766
408	09AUG83	2609	5218	2609	0	2609	2609	2609	5218
409	10AUG83	2609	3536	2609	0	2609	2609	927	3536
410	11AUG83	2609	2609	2609	0	2609	2609	0	2609
411	12AUG83	2506	2506	2506	0	2506	2506	0	2506
412	13AUG83	927	927	927	0	927	927	0	927

TABLE H-8 DAILY ESTIMATES OF THE NUMBER OF AMERICAN SHAD EGGS ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
413	03MAY83	0	0	0	0	0	0	0	0
414	04MAY83	0	0	0	0	0	0	0	0
415	05MAY83	0	0	0	0	0	0	0	0
416	06MAY83	0	0	0	0	0	0	0	0
417	07MAY83	0	0	0	0	0	0	0	0
418	08MAY83	0	0	0	0	0	0	0	0
419	09MAY83	0	0	0	0	0	0	0	0
420	10MAY83	0	0	0	0	0	0	0	0
421	11MAY83	0	0	0	0	0	0	0	0
422	12MAY83	0	0	0	0	0	0	0	0
423	13MAY83	0	0	0	0	0	0	0	0
424	14MAY83	0	0	0	0	0	0	0	0
425	15MAY83	0	0	0	0	0	0	0	0
426	16MAY83	0	0	0	0	0	0	0	0
427	17MAY83	0	0	0	0	0	0	0	0
428	18MAY83	1928	3856	1928	0	1928	1928	1928	3856
429	19MAY83	3856	7712	3856	0	3856	3856	3856	7712
430	20MAY83	0	0	0	0	0	0	0	0
431	21MAY83	0	0	0	0	0	0	0	0
432	22MAY83	11966	23932	11966	0	11966	11966	11966	23932
433	23MAY83	0	0	0	0	0	0	0	0
434	24MAY83	3888	7776	3888	0	3888	3888	3888	7776
435	25MAY83	0	0	0	0	0	0	0	0
436	26MAY83	0	0	0	0	0	0	0	0
437	27MAY83	0	0	0	0	0	0	0	0
438	28MAY83	0	0	0	0	0	0	0	0
439	29MAY83	0	0	0	0	0	0	0	0
440	30MAY83	0	0	0	0	0	0	0	0
441	31MAY83	3072	3072	2048	1024	3072	2048	1024	3072
442	01JUN83	5461	5461	4096	1365	5461	4096	1365	5461
443	02JUN83	0	0	0	0	0	0	0	0
444	03JUN83	0	0	0	0	0	0	0	0
445	04JUN83	0	0	0	0	0	0	0	0
446	05JUN83	0	0	0	0	0	0	0	0
447	06JUN83	0	0	0	0	0	0	0	0
448	07JUN83	0	0	0	0	0	0	0	0
449	08JUN83	0	0	0	0	0	0	0	0
450	09JUN83	0	0	0	0	0	0	0	0
451	10JUN83	0	0	0	0	0	0	0	0
452	11JUN83	0	0	0	0	0	0	0	0
453	12JUN83	0	0	0	0	0	0	0	0
454	13JUN83	0	0	0	0	0	0	0	0
455	14JUN83	0	0	0	0	0	0	0	0
456	15JUN83	0	0	0	0	0	0	0	0
457	16JUN83	0	0	0	0	0	0	0	0
458	17JUN83	0	0	0	0	0	0	0	0
459	18JUN83	0	0	0	0	0	0	0	0
460	19JUN83	0	0	0	0	0	0	0	0
461	20JUN83	0	0	0	0	0	0	0	0
462	21JUN83	0	0	0	0	0	0	0	0
463	22JUN83	0	0	0	0	0	0	0	0
464	23JUN83	0	0	0	0	0	0	0	0
465	24JUN83	0	0	0	0	0	0	0	0

TABLE A-8 (CONT.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
466	25JUN83	0	0	0	0	0	0	0	0
467	26JUN83	0	0	0	0	0	0	0	0
468	27JUN83	0	0	0	0	0	0	0	0
469	28JUN83	0	0	0	0	0	0	0	0
470	29JUN83	0	0	0	0	0	0	0	0
471	30JUN83	0	0	0	0	0	0	0	0
472	01JUL83	0	0	0	0	0	0	0	0
473	02JUL83	0	0	0	0	0	0	0	0
474	03JUL83	0	0	0	0	0	0	0	0
475	04JUL83	0	0	0	0	0	0	0	0
476	05JUL83	0	0	0	0	0	0	0	0
477	06JUL83	0	0	0	0	0	0	0	0
478	07JUL83	0	0	0	0	0	0	0	0
479	08JUL83	0	0	0	0	0	0	0	0
480	09JUL83	0	0	0	0	0	0	0	0
481	10JUL83	0	0	0	0	0	0	0	0
482	11JUL83	0	0	0	0	0	0	0	0
483	12JUL83	0	0	0	0	0	0	0	0
484	13JUL83	0	0	0	0	0	0	0	0
485	14JUL83	0	0	0	0	0	0	0	0
486	15JUL83	0	0	0	0	0	0	0	0
487	16JUL83	0	0	0	0	0	0	0	0
488	17JUL83	0	0	0	0	0	0	0	0
489	18JUL83	0	0	0	0	0	0	0	0
490	19JUL83	0	0	0	0	0	0	0	0
491	20JUL83	0	0	0	0	0	0	0	0
492	21JUL83	0	0	0	0	0	0	0	0
493	22JUL83	0	0	0	0	0	0	0	0
494	23JUL83	0	0	0	0	0	0	0	0
495	24JUL83	0	0	0	0	0	0	0	0
496	25JUL83	0	0	0	0	0	0	0	0
497	26JUL83	0	0	0	0	0	0	0	0
498	27JUL83	0	0	0	0	0	0	0	0
499	28JUL83	0	0	0	0	0	0	0	0
500	29JUL83	0	0	0	0	0	0	0	0
501	30JUL83	0	0	0	0	0	0	0	0
502	31JUL83	0	0	0	0	0	0	0	0
503	01AUG83	0	0	0	0	0	0	0	0
504	02AUG83	0	0	0	0	0	0	0	0
505	03AUG83	0	0	0	0	0	0	0	0
506	04AUG83	0	0	0	0	0	0	0	0
507	05AUG83	0	0	0	0	0	0	0	0
508	06AUG83	0	0	0	0	0	0	0	0
509	07AUG83	0	0	0	0	0	0	0	0
510	08AUG83	0	0	0	0	0	0	0	0
511	09AUG83	0	0	0	0	0	0	0	0
512	10AUG83	0	0	0	0	0	0	0	0
513	11AUG83	0	0	0	0	0	0	0	0
514	12AUG83	0	0	0	0	0	0	0	0
515	13AUG83	0	0	0	0	0	0	0	0

TABLE H-9 DAILY ESTIMATES OF THE NUMBER OF AMERICAN SHAD YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
516	03MAY83	0	0	0	0	0	0	0	0
517	04MAY83	0	0	0	0	0	0	0	0
518	05MAY83	0	0	0	0	0	0	0	0
519	06MAY83	0	0	0	0	0	0	0	0
520	07MAY83	0	0	0	0	0	0	0	0
521	08MAY83	0	0	0	0	0	0	0	0
522	09MAY83	0	0	0	0	0	0	0	0
523	10MAY83	0	0	0	0	0	0	0	0
524	11MAY83	0	0	0	0	0	0	0	0
525	12MAY83	0	0	0	0	0	0	0	0
526	13MAY83	0	0	0	0	0	0	0	0
527	14MAY83	0	0	0	0	0	0	0	0
528	15MAY83	0	0	0	0	0	0	0	0
529	16MAY83	0	0	0	0	0	0	0	0
530	17MAY83	0	0	0	0	0	0	0	0
531	18MAY83	0	0	0	0	0	0	0	0
532	19MAY83	0	0	0	0	0	0	0	0
533	20MAY83	0	0	0	0	0	0	0	0
534	21MAY83	0	0	0	0	0	0	0	0
535	22MAY83	0	0	0	0	0	0	0	0
536	23MAY83	0	0	0	0	0	0	0	0
537	24MAY83	0	0	0	0	0	0	0	0
538	25MAY83	0	0	0	0	0	0	0	0
539	26MAY83	0	0	0	0	0	0	0	0
540	27MAY83	0	0	0	0	0	0	0	0
541	28MAY83	0	0	0	0	0	0	0	0
542	29MAY83	5748	5748	3832	1916	5748	3832	1916	5748
543	30MAY83	0	0	0	0	0	0	0	0
544	31MAY83	9216	9216	6144	3072	9216	6144	3072	9216
545	01JUN83	16384	16384	12288	4096	16384	12288	4096	16384
546	02JUN83	10949	10949	8212	2737	10949	8212	2737	10949
547	03JUN83	0	0	0	0	0	0	0	0
548	04JUN83	0	0	0	0	0	0	0	0
549	05JUN83	0	0	0	0	0	0	0	0
550	06JUN83	0	0	0	0	0	0	0	0
551	07JUN83	0	0	0	0	0	0	0	0
552	08JUN83	0	0	0	0	0	0	0	0
553	09JUN83	0	0	0	0	0	0	0	0
554	10JUN83	0	0	0	0	0	0	0	0
555	11JUN83	0	0	0	0	0	0	0	0
556	12JUN83	0	0	0	0	0	0	0	0
557	13JUN83	0	0	0	0	0	0	0	0
558	14JUN83	0	0	0	0	0	0	0	0
559	15JUN83	0	0	0	0	0	0	0	0
560	16JUN83	0	0	0	0	0	0	0	0
561	17JUN83	0	0	0	0	0	0	0	0
562	18JUN83	0	0	0	0	0	0	0	0
563	19JUN83	0	0	0	0	0	0	0	0
564	20JUN83	0	0	0	0	0	0	0	0
565	21JUN83	0	0	0	0	0	0	0	0
566	22JUN83	0	0	0	0	0	0	0	0
567	23JUN83	0	0	0	0	0	0	0	0
568	24JUN83	0	0	0	0	0	0	0	0

TABLE X (CONT.)

OBS	DATE	Number Entrained With Mitis.	Number Entrained Without Mitis.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
569	25JUN83	0	0	0	0	0	0	0	0
570	26JUN83	0	0	0	0	0	0	0	0
571	27JUN83	0	0	0	0	0	0	0	0
572	28JUN83	0	0	0	0	0	0	0	0
573	29JUN83	0	0	0	0	0	0	0	0
574	30JUN83	0	0	0	0	0	0	0	0
575	01JUL83	0	0	0	0	0	0	0	0
576	02JUL83	0	0	0	0	0	0	0	0
577	03JUL83	0	0	0	0	0	0	0	0
578	04JUL83	0	0	0	0	0	0	0	0
579	05JUL83	0	0	0	0	0	0	0	0
580	06JUL83	0	0	0	0	0	0	0	0
581	07JUL83	0	0	0	0	0	0	0	0
582	08JUL83	0	0	0	0	0	0	0	0
583	09JUL83	0	0	0	0	0	0	0	0
584	10JUL83	0	0	0	0	0	0	0	0
585	11JUL83	0	0	0	0	0	0	0	0
586	12JUL83	0	0	0	0	0	0	0	0
587	13JUL83	0	0	0	0	0	0	0	0
588	14JUL83	0	0	0	0	0	0	0	0
589	15JUL83	0	0	0	0	0	0	0	0
590	16JUL83	0	0	0	0	0	0	0	0
591	17JUL83	0	0	0	0	0	0	0	0
592	18JUL83	0	0	0	0	0	0	0	0
593	19JUL83	0	0	0	0	0	0	0	0
594	20JUL83	0	0	0	0	0	0	0	0
595	21JUL83	0	0	0	0	0	0	0	0
596	22JUL83	0	0	0	0	0	0	0	0
597	23JUL83	0	0	0	0	0	0	0	0
598	24JUL83	0	0	0	0	0	0	0	0
599	25JUL83	0	0	0	0	0	0	0	0
600	26JUL83	0	0	0	0	0	0	0	0
601	27JUL83	0	0	0	0	0	0	0	0
602	28JUL83	0	0	0	0	0	0	0	0
603	29JUL83	0	0	0	0	0	0	0	0
604	30JUL83	0	0	0	0	0	0	0	0
605	31JUL83	0	0	0	0	0	0	0	0
606	01AUG83	0	0	0	0	0	0	0	0
607	02AUG83	0	0	0	0	0	0	0	0
608	03AUG83	0	0	0	0	0	0	0	0
609	04AUG83	0	0	0	0	0	0	0	0
610	05AUG83	0	0	0	0	0	0	0	0
611	06AUG83	0	0	0	0	0	0	0	0
612	07AUG83	0	0	0	0	0	0	0	0
613	08AUG83	0	0	0	0	0	0	0	0
614	09AUG83	0	0	0	0	0	0	0	0
615	10AUG83	0	0	0	0	0	0	0	0
616	11AUG83	0	0	0	0	0	0	0	0
617	12AUG83	0	0	0	0	0	0	0	0
618	13AUG83	0	0	0	0	0	0	0	0

TABLE H-10 DAILY ESTIMATES OF THE NUMBER OF AMERICAN SHAD POST YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
619	03MAY83	0	0	0	0	0	0	0	0
620	04MAY83	0	0	0	0	0	0	0	0
621	05MAY83	0	0	0	0	0	0	0	0
622	06MAY83	0	0	0	0	0	0	0	0
623	07MAY83	0	0	0	0	0	0	0	0
624	08MAY83	0	0	0	0	0	0	0	0
625	09MAY83	0	0	0	0	0	0	0	0
626	10MAY83	0	0	0	0	0	0	0	0
627	11MAY83	0	0	0	0	0	0	0	0
628	12MAY83	0	0	0	0	0	0	0	0
629	13MAY83	0	0	0	0	0	0	0	0
630	14MAY83	3687	7374	3687	0	3687	3687	3687	7374
631	15MAY83	0	0	0	0	0	0	0	0
632	16MAY83	0	0	0	0	0	0	0	0
633	17MAY83	0	0	0	0	0	0	0	0
634	18MAY83	1974	3948	1974	0	1974	1974	1974	3948
635	19MAY83	3948	7896	3948	0	3948	3948	3948	7896
636	20MAY83	0	0	0	0	0	0	0	0
637	21MAY83	0	0	0	0	0	0	0	0
638	22MAY83	4239	8478	4239	0	4239	4239	4239	8478
639	23MAY83	0	0	0	0	0	0	0	0
640	24MAY83	0	0	0	0	0	0	0	0
641	25MAY83	4002	8004	4002	0	4002	4002	4002	8004
642	26MAY83	4165	8330	4165	0	4165	4165	4165	8330
643	27MAY83	11241	23382	11241	0	11241	11241	12141	23382
644	28MAY83	3997	7994	3997	0	3997	3997	3997	7994
645	29MAY83	0	0	0	0	0	0	0	0
646	30MAY83	18063	18063	12042	6021	18063	12042	6021	18063
647	31MAY83	18113	18113	12229	5884	18113	12229	5884	18113
648	01JUN83	16555	16555	12416	4139	16555	12416	4139	16555
649	02JUN83	5329	5329	3997	1332	5329	3997	1332	5329
650	03JUN83	0	0	0	0	0	0	0	0
651	04JUN83	21773	21773	16330	5443	21773	16330	5443	21773
652	05JUN83	11985	11985	7990	3995	11985	7990	3995	11985
653	06JUN83	0	0	0	0	0	0	0	0
654	07JUN83	17978	17978	11985	5993	17978	11985	5993	17978
655	08JUN83	31416	31416	20944	10472	31416	20944	10472	31416
656	09JUN83	0	0	0	0	0	0	0	0
657	10JUN83	7120	7120	4272	2848	7120	4272	2848	7120
658	11JUN83	14015	14015	8409	5606	14015	8409	5606	14015
659	12JUN83	13959	13959	8308	5651	13959	8308	5651	13959
660	13JUN83	13678	13678	8207	5471	13678	8207	5471	13678
661	14JUN83	21891	21891	12572	9319	21891	12572	9319	21891
662	15JUN83	14881	14881	8117	6764	14881	8117	6764	14881
663	16JUN83	0	0	0	0	0	0	0	0
664	17JUN83	7770	7770	3885	3885	7770	3885	3885	7770
665	18JUN83	3886	3886	1943	1943	3886	1943	1943	3886
666	19JUN83	2914	2914	1943	971	2914	1943	971	2914
667	20JUN83	0	0	0	0	0	0	0	0
668	21JUN83	0	0	0	0	0	0	0	0
669	22JUN83	0	0	0	0	0	0	0	0
670	23JUN83	0	0	0	0	0	0	0	0
671	24JUN83	0	0	0	0	0	0	0	0

TABLE 10 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
672	25JUN83	0	0	0	0	0	0	0	0
673	26JUN83	0	0	0	0	0	0	0	0
674	27JUN83	0	0	0	0	0	0	0	0
675	28JUN83	0	0	0	0	0	0	0	0
676	29JUN83	0	0	0	0	0	0	0	0
677	30JUN83	0	0	0	0	0	0	0	0
678	01JUL83	0	0	0	0	0	0	0	0
679	02JUL83	0	0	0	0	0	0	0	0
680	03JUL83	0	0	0	0	0	0	0	0
681	04JUL83	0	0	0	0	0	0	0	0
682	05JUL83	0	0	0	0	0	0	0	0
683	06JUL83	0	0	0	0	0	0	0	0
684	07JUL83	0	0	0	0	0	0	0	0
685	08JUL83	0	0	0	0	0	0	0	0
686	09JUL83	0	0	0	0	0	0	0	0
687	10JUL83	0	0	0	0	0	0	0	0
688	11JUL83	0	0	0	0	0	0	0	0
689	12JUL83	0	0	0	0	0	0	0	0
690	13JUL83	0	0	0	0	0	0	0	0
691	14JUL83	0	0	0	0	0	0	0	0
692	15JUL83	0	0	0	0	0	0	0	0
693	16JUL83	0	0	0	0	0	0	0	0
694	17JUL83	0	0	0	0	0	0	0	0
695	18JUL83	0	0	0	0	0	0	0	0
696	19JUL83	0	0	0	0	0	0	0	0
697	20JUL83	0	0	0	0	0	0	0	0
698	21JUL83	0	0	0	0	0	0	0	0
699	22JUL83	0	0	0	0	0	0	0	0
700	23JUL83	0	0	0	0	0	0	0	0
701	24JUL83	0	0	0	0	0	0	0	0
702	25JUL83	0	0	0	0	0	0	0	0
703	26JUL83	0	0	0	0	0	0	0	0
704	27JUL83	0	0	0	0	0	0	0	0
705	28JUL83	0	0	0	0	0	0	0	0
706	29JUL83	0	0	0	0	0	0	0	0
707	30JUL83	0	0	0	0	0	0	0	0
708	31JUL83	0	0	0	0	0	0	0	0
709	01AUG83	0	0	0	0	0	0	0	0
710	02AUG83	0	0	0	0	0	0	0	0
711	03AUG83	0	0	0	0	0	0	0	0
712	04AUG83	0	0	0	0	0	0	0	0
713	05AUG83	0	0	0	0	0	0	0	0
714	06AUG83	0	0	0	0	0	0	0	0
715	07AUG83	0	0	0	0	0	0	0	0
716	08AUG83	0	0	0	0	0	0	0	0
717	09AUG83	0	0	0	0	0	0	0	0
718	10AUG83	0	0	0	0	0	0	0	0
719	11AUG83	0	0	0	0	0	0	0	0
720	12AUG83	0	0	0	0	0	0	0	0
721	13AUG83	0	0	0	0	0	0	0	0

TABLE H-11 DAILY ESTIMATAES OF THE NUMBER OF AMERICAN SHAD JUVENILE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Cropped With Mitigation Unit 2	Number Cropped With Mitigation Unit 3	Number Cropped With Mitigation Total	Number Cropped W/O Mitigation Unit 2	Number Cropped W/O Mitigation Unit 3	Number Cropped W/O Mitigation Total
722	03MAY83	0	0	0	0	0	0	0	0
723	04MAY83	0	0	0	0	0	0	0	0
724	05MAY83	0	0	0	0	0	0	0	0
725	06MAY83	0	0	0	0	0	0	0	0
726	07MAY83	0	0	0	0	0	0	0	0
727	08MAY83	0	0	0	0	0	0	0	0
728	09MAY83	0	0	0	0	0	0	0	0
729	10MAY83	0	0	0	0	0	0	0	0
730	11MAY83	0	0	0	0	0	0	0	0
731	12MAY83	0	0	0	0	0	0	0	0
732	13MAY83	0	0	0	0	0	0	0	0
733	14MAY83	0	0	0	0	0	0	0	0
734	15MAY83	0	0	0	0	0	0	0	0
735	16MAY83	0	0	0	0	0	0	0	0
736	17MAY83	0	0	0	0	0	0	0	0
737	18MAY83	0	0	0	0	0	0	0	0
738	19MAY83	0	0	0	0	0	0	0	0
739	20MAY83	0	0	0	0	0	0	0	0
740	21MAY83	0	0	0	0	0	0	0	0
741	22MAY83	0	0	0	0	0	0	0	0
742	23MAY83	0	0	0	0	0	0	0	0
743	24MAY83	0	0	0	0	0	0	0	0
744	25MAY83	0	0	0	0	0	0	0	0
745	26MAY83	0	0	0	0	0	0	0	0
746	27MAY83	0	0	0	0	0	0	0	0
747	28MAY83	0	0	0	0	0	0	0	0
748	29MAY83	0	0	0	0	0	0	0	0
749	30MAY83	0	0	0	0	0	0	0	0
750	31MAY83	0	0	0	0	0	0	0	0
751	01JUN83	0	0	0	0	0	0	0	0
752	02JUN83	0	0	0	0	0	0	0	0
753	03JUN83	0	0	0	0	0	0	0	0
754	04JUN83	0	0	0	0	0	0	0	0
755	05JUN83	0	0	0	0	0	0	0	0
756	06JUN83	0	0	0	0	0	0	0	0
757	07JUN83	0	0	0	0	0	0	0	0
758	08JUN83	0	0	0	0	0	0	0	0
759	09JUN83	0	0	0	0	0	0	0	0
760	10JUN83	0	0	0	0	0	0	0	0
761	11JUN83	0	0	0	0	0	0	0	0
762	12JUN83	0	0	0	0	0	0	0	0
763	13JUN83	0	0	0	0	0	0	0	0
764	14JUN83	0	0	0	0	0	0	0	0
765	15JUN83	0	0	0	0	0	0	0	0
766	16JUN83	0	0	0	0	0	0	0	0
767	17JUN83	0	0	0	0	0	0	0	0
768	18JUN83	0	0	0	0	0	0	0	0
769	19JUN83	0	0	0	0	0	0	0	0
770	20JUN83	0	0	0	0	0	0	0	0
771	21JUN83	0	0	0	0	0	0	0	0
772	22JUN83	0	0	0	0	0	0	0	0
773	23JUN83	0	0	0	0	0	0	0	0

TABLE II (CONT.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
775	25JUN83	0	0	0	0	0	0	0	0
776	26JUN83	0	0	0	0	0	0	0	0
777	27JUN83	0	0	0	0	0	0	0	0
778	28JUN83	0	0	0	0	0	0	0	0
779	29JUN83	573	982	491	82	573	491	491	982
780	30JUN83	287	492	246	41	287	246	246	492
781	01JUL83	0	0	0	0	0	0	0	0
782	02JUL83	0	0	0	0	0	0	0	0
783	03JUL83	0	0	0	0	0	0	0	0
784	04JUL83	0	0	0	0	0	0	0	0
785	05JUL83	2300	3942	1971	329	2300	1971	1971	3942
786	06JUL83	1545	2648	1324	221	1545	1324	1324	2648
787	07JUL83	1094	1876	938	156	1094	938	938	1876
788	08JUL83	1084	1858	929	155	1084	929	929	1858
789	09JUL83	1084	1858	929	155	1084	929	929	1858
790	10JUL83	1084	1858	929	155	1084	929	929	1858
791	11JUL83	1084	1858	929	155	1084	929	929	1858
792	12JUL83	1084	1858	929	155	1084	929	929	1858
793	13JUL83	1084	1858	929	155	1084	929	929	1858
794	14JUL83	1084	1858	929	155	1084	929	929	1858
795	15JUL83	661	1322	661	0	661	661	661	1322
796	16JUL83	531	1062	531	0	531	531	531	1062
797	17JUL83	820	1640	820	0	820	820	820	1640
798	18JUL83	659	1318	659	0	659	659	659	1318
799	19JUL83	659	1318	659	0	659	659	659	1318
800	20JUL83	659	1318	659	0	659	659	659	1318
801	21JUL83	659	1318	659	0	659	659	659	1318
802	22JUL83	659	1318	659	0	659	659	659	1318
803	23JUL83	498	996	498	0	498	498	498	996
804	24JUL83	249	498	249	0	249	249	249	498
805	25JUL83	249	498	249	0	249	249	249	498
806	26JUL83	249	498	249	0	249	249	249	498
807	27JUL83	249	498	249	0	249	249	249	498
808	28JUL83	249	498	249	0	249	249	249	498
809	29JUL83	0	0	0	0	0	0	0	0
810	30JUL83	0	0	0	0	0	0	0	0
811	31JUL83	0	0	0	0	0	0	0	0
812	01AUG83	0	0	0	0	0	0	0	0
813	02AUG83	237	474	237	0	237	237	237	474
814	03AUG83	474	948	474	0	474	474	474	948
815	04AUG83	197	434	197	0	197	197	237	434
816	05AUG83	0	0	0	0	0	0	0	0
817	06AUG83	0	0	0	0	0	0	0	0
818	07AUG83	0	0	0	0	0	0	0	0
819	08AUG83	0	0	0	0	0	0	0	0
820	09AUG83	0	0	0	0	0	0	0	0
821	10AUG83	0	0	0	0	0	0	0	0
822	11AUG83	0	0	0	0	0	0	0	0
823	12AUG83	0	0	0	0	0	0	0	0
824	13AUG83	0	0	0	0	0	0	0	0

TABLE H-12 DAILY ESTIMATES OF THE NUMBER OF BAY ANCHOVY EGGS ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
825	03MAY83	0	0	0	0	0	0	0	0
826	04MAY83	0	0	0	0	0	0	0	0
827	05MAY83	0	0	0	0	0	0	0	0
828	06MAY83	0	0	0	0	0	0	0	0
829	07MAY83	0	0	0	0	0	0	0	0
830	08MAY83	0	0	0	0	0	0	0	0
831	09MAY83	0	0	0	0	0	0	0	0
832	10MAY83	0	0	0	0	0	0	0	0
833	11MAY83	0	0	0	0	0	0	0	0
834	12MAY83	0	0	0	0	0	0	0	0
835	13MAY83	0	0	0	0	0	0	0	0
836	14MAY83	0	0	0	0	0	0	0	0
837	15MAY83	0	0	0	0	0	0	0	0
838	16MAY83	0	0	0	0	0	0	0	0
839	17MAY83	0	0	0	0	0	0	0	0
840	18MAY83	0	0	0	0	0	0	0	0
841	19MAY83	0	0	0	0	0	0	0	0
842	20MAY83	0	0	0	0	0	0	0	0
843	21MAY83	0	0	0	0	0	0	0	0
844	22MAY83	0	0	0	0	0	0	0	0
845	23MAY83	15560	31120	15560	0	15560	15560	15560	31120
846	24MAY83	0	0	0	0	0	0	0	0
847	25MAY83	0	0	0	0	0	0	0	0
848	26MAY83	0	0	0	0	0	0	0	0
849	27MAY83	0	0	0	0	0	0	0	0
850	28MAY83	27804	55608	27804	0	27804	27804	27804	55608
851	29MAY83	0	0	0	0	0	0	0	0
852	30MAY83	12109	12109	8073	4036	12109	8073	4036	12109
853	31MAY83	0	0	0	0	0	0	0	0
854	01JUN83	0	0	0	0	0	0	0	0
855	02JUN83	0	0	0	0	0	0	0	0
856	03JUN83	0	0	0	0	0	0	0	0
857	04JUN83	0	0	0	0	0	0	0	0
858	05JUN83	6243	6243	4162	2081	6243	4162	2081	6243
859	06JUN83	0	0	0	0	0	0	0	0
860	07JUN83	6174	6174	4116	2058	6174	4116	2058	6174
861	08JUN83	6174	6174	3528	2646	6174	3528	2646	6174
862	09JUN83	9474	9474	5414	4060	9474	5414	4060	9474
863	10JUN83	13687	13687	8212	5475	13687	8212	5475	13687
864	11JUN83	0	0	0	0	0	0	0	0
865	12JUN83	10538	10538	6323	4215	10538	6323	4215	10538
866	13JUN83	21076	21076	12646	8430	21076	12646	8430	21076
867	14JUN83	51191	51191	29590	21601	51191	29590	21601	51191
868	15JUN83	0	0	0	0	0	0	0	0
869	16JUN83	0	0	0	0	0	0	0	0
870	17JUN83	0	0	0	0	0	0	0	0
871	18JUN83	0	0	0	0	0	0	0	0
872	19JUN83	0	0	0	0	0	0	0	0
873	20JUN83	0	0	0	0	0	0	0	0
874	21JUN83	0	0	0	0	0	0	0	0
875	22JUN83	4880	8366	4183	697	4880	4183	4183	8366
876	23JUN83	0	0	0	0	0	0	0	0
877	24JUN83	0	0	0	0	0	0	0	0

TABLE H-12 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
878	25JUN83	0	0	0	0	0	0	0	0
879	26JUN83	0	0	0	0	0	0	0	0
880	27JUN83	0	0	0	0	0	0	0	0
881	28JUN83	0	0	0	0	0	0	0	0
882	29JUN83	0	0	0	0	0	0	0	0
883	30JUN83	0	0	0	0	0	0	0	0
884	01JUL83	0	0	0	0	0	0	0	0
885	02JUL83	0	0	0	0	0	0	0	0
886	03JUL83	0	0	0	0	0	0	0	0
887	04JUL83	49256	86975	41712	7544	49256	41712	45263	86975
888	05JUL83	18512	31734	15867	2645	18512	15867	15867	31734
889	06JUL83	96547	165510	82755	13792	96547	82755	82755	165510
890	07JUL83	263776	452188	226094	37682	263776	226094	226094	452188
891	08JUL83	1633677	2800590	1400295	233382	1633677	1400295	1400295	2800590
892	09JUL83	3409322	5844552	2922276	487046	3409322	2922276	2922276	5844552
893	10JUL83	428238	734122	367061	61177	428238	367061	367061	734122
894	11JUL83	354893	608388	304194	50699	354893	304194	304194	608388
895	12JUL83	354893	608388	304194	50699	354893	304194	304194	608388
896	13JUL83	281549	482656	241328	40221	281549	241328	241328	482656
897	14JUL83	47616	81628	40814	6802	47616	40814	40814	81628
898	15JUL83	29448	58896	29448	0	29448	29448	29448	58896
899	16JUL83	58831	117662	58831	0	58831	58831	58831	117662
900	17JUL83	52597	105194	52597	0	52597	52597	52597	105194
901	18JUL83	67254	134508	67254	0	67254	67254	67254	134508
902	19JUL83	186759	373518	186759	0	186759	186759	186759	373518
903	20JUL83	497191	994382	497191	0	497191	497191	497191	994382
904	21JUL83	1039233	2078466	1039233	0	1039233	1039233	1039233	2078466
905	22JUL83	4977059	9954118	4977059	0	4977059	4977059	4977059	9954118
906	23JUL83	10875848	21751696	10875848	0	10875848	10875848	10875848	21751696
907	24JUL83	7816379	15632758	7816379	0	7816379	7816379	7816379	15632758
908	25JUL83	4756912	9513824	4756912	0	4756912	4756912	4756912	9513824
909	26JUL83	3930132	7860264	3930132	0	3930132	3930132	3930132	7860264
910	27JUL83	2177474	4354948	2177474	0	2177474	2177474	2177474	4354948
911	28JUL83	2987828	5975656	2987828	0	2987828	2987828	2987828	5975656
912	29JUL83	3561392	7146758	3561392	0	3561392	3561392	3585366	7146758
913	30JUL83	540839	1082357	540839	0	540839	540839	541518	1082357
914	31JUL83	1976629	3953935	1976629	0	1976629	1976629	1977306	3953935
915	01AUG83	764501	1566629	764501	0	764501	764501	802128	1566629
916	02AUG83	393840	788325	393840	0	393840	393840	394485	788325
917	03AUG83	2237054	4474108	2237054	0	2237054	2237054	2237054	4474108
918	04AUG83	1219488	2476371	1219488	0	1219488	1219488	1256883	2476371
919	05AUG83	2031443	4062886	2031443	0	2031443	2031443	2031443	4062886
920	06AUG83	1711160	3422320	1711160	0	1711160	1711160	1711160	3422320
921	07AUG83	478878	957756	478878	0	478878	478878	478878	957756
922	08AUG83	441422	882844	441422	0	441422	441422	441422	882844
923	09AUG83	149143	298286	149143	0	149143	149143	149143	298286
924	10AUG83	197249	338088	197249	0	197249	197249	140839	338088
925	11AUG83	419734	419734	419734	0	419734	419734	0	419734
926	12AUG83	258336	258336	258336	0	258336	258336	0	258336
927	13AUG83	129368	129368	129368	0	129368	129368	0	129368

TABLE H-13 DAILY ESTIMATES OF THE NUMBER OF BAY ANCHOVY YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
928	03MAY83	0	0	0	0	0	0	0	0
929	04MAY83	0	0	0	0	0	0	0	0
930	05MAY83	0	0	0	0	0	0	0	0
931	06MAY83	0	0	0	0	0	0	0	0
932	07MAY83	0	0	0	0	0	0	0	0
933	08MAY83	0	0	0	0	0	0	0	0
934	09MAY83	0	0	0	0	0	0	0	0
935	10MAY83	0	0	0	0	0	0	0	0
936	11MAY83	0	0	0	0	0	0	0	0
937	12MAY83	0	0	0	0	0	0	0	0
938	13MAY83	0	0	0	0	0	0	0	0
939	14MAY83	0	0	0	0	0	0	0	0
940	15MAY83	0	0	0	0	0	0	0	0
941	16MAY83	0	0	0	0	0	0	0	0
942	17MAY83	0	0	0	0	0	0	0	0
943	18MAY83	0	0	0	0	0	0	0	0
944	19MAY83	0	0	0	0	0	0	0	0
945	20MAY83	0	0	0	0	0	0	0	0
946	21MAY83	0	0	0	0	0	0	0	0
947	22MAY83	0	0	0	0	0	0	0	0
948	23MAY83	0	0	0	0	0	0	0	0
949	24MAY83	0	0	0	0	0	0	0	0
950	25MAY83	0	0	0	0	0	0	0	0
951	26MAY83	0	0	0	0	0	0	0	0
952	27MAY83	0	0	0	0	0	0	0	0
953	28MAY83	0	0	0	0	0	0	0	0
954	29MAY83	0	0	0	0	0	0	0	0
955	30MAY83	0	0	0	0	0	0	0	0
956	31MAY83	0	0	0	0	0	0	0	0
957	01JUN83	0	0	0	0	0	0	0	0
958	02JUN83	0	0	0	0	0	0	0	0
959	03JUN83	0	0	0	0	0	0	0	0
960	04JUN83	0	0	0	0	0	0	0	0
961	05JUN83	0	0	0	0	0	0	0	0
962	06JUN83	0	0	0	0	0	0	0	0
963	07JUN83	0	0	0	0	0	0	0	0
964	08JUN83	0	0	0	0	0	0	0	0
965	09JUN83	0	0	0	0	0	0	0	0
966	10JUN83	0	0	0	0	0	0	0	0
967	11JUN83	0	0	0	0	0	0	0	0
968	12JUN83	0	0	0	0	0	0	0	0
969	13JUN83	0	0	0	0	0	0	0	0
970	14JUN83	0	0	0	0	0	0	0	0
971	15JUN83	0	0	0	0	0	0	0	0
972	16JUN83	0	0	0	0	0	0	0	0
973	17JUN83	0	0	0	0	0	0	0	0
974	18JUN83	0	0	0	0	0	0	0	0
975	19JUN83	0	0	0	0	0	0	0	0
976	20JUN83	0	0	0	0	0	0	0	0
977	21JUN83	0	0	0	0	0	0	0	0
978	22JUN83	0	0	0	0	0	0	0	0
979	23JUN83	0	0	0	0	0	0	0	0
980	24JUN83	0	0	0	0	0	0	0	0

TABLE H-13 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
981	25JUN83	0	0	0	0	0	0	0	0
982	26JUN83	0	0	0	0	0	0	0	0
983	27JUN83	0	0	0	0	0	0	0	0
984	28JUN83	0	0	0	0	0	0	0	0
985	29JUN83	0	0	0	0	0	0	0	0
986	30JUN83	0	0	0	0	0	0	0	0
987	01JUL83	0	0	0	0	0	0	0	0
988	02JUL83	0	0	0	0	0	0	0	0
989	03JUL83	0	0	0	0	0	0	0	0
990	04JUL83	0	0	0	0	0	0	0	0
991	05JUL83	0	0	0	0	0	0	0	0
992	06JUL83	0	0	0	0	0	0	0	0
993	07JUL83	0	0	0	0	0	0	0	0
994	08JUL83	0	0	0	0	0	0	0	0
995	09JUL83	0	0	0	0	0	0	0	0
996	10JUL83	0	0	0	0	0	0	0	0
997	11JUL83	0	0	0	0	0	0	0	0
998	12JUL83	0	0	0	0	0	0	0	0
999	13JUL83	0	0	0	0	0	0	0	0
1000	14JUL83	0	0	0	0	0	0	0	0
1001	15JUL83	0	0	0	0	0	0	0	0
1002	16JUL83	0	0	0	0	0	0	0	0
1003	17JUL83	0	0	0	0	0	0	0	0
1004	18JUL83	0	0	0	0	0	0	0	0
1005	19JUL83	0	0	0	0	0	0	0	0
1006	20JUL83	0	0	0	0	0	0	0	0
1007	21JUL83	0	0	0	0	0	0	0	0
1008	22JUL83	0	0	0	0	0	0	0	0
1009	23JUL83	20354	40708	20354	0	20354	20354	20354	40708
1010	24JUL83	30069	60138	30069	0	30069	30069	30069	60138
1011	25JUL83	39784	79568	39784	0	39784	39784	39784	79568
1012	26JUL83	0	0	0	0	0	0	0	0
1013	27JUL83	0	0	0	0	0	0	0	0
1014	28JUL83	83604	167208	83604	0	83604	83604	83604	167208
1015	29JUL83	47584	97069	47584	0	47584	47584	49485	97069
1016	30JUL83	0	0	0	0	0	0	0	0
1017	31JUL83	399758	799516	399758	0	399758	399758	399758	799516
1018	01AUG83	19225	38450	19225	0	19225	19225	19225	38450
1019	02AUG83	12072	24144	12072	0	12072	12072	12072	24144
1020	03AUG83	11285	22570	11285	0	11285	11285	11285	22570
1021	04AUG83	22473	44946	22473	0	22473	22473	22473	44946
1022	05AUG83	0	0	0	0	0	0	0	0
1023	06AUG83	7420	14840	7420	0	7420	7420	7420	14840
1024	07AUG83	3950	7900	3950	0	3950	3950	3950	7900
1025	08AUG83	31488	62976	31488	0	31488	31488	31488	62976
1026	09AUG83	28176	56352	28176	0	28176	28176	28176	56352
1027	10AUG83	7504	15008	7504	0	7504	7504	7504	15008
1028	11AUG83	44615	44615	44615	0	44615	44615	0	44615
1029	12AUG83	63045	63045	63045	0	63045	63045	0	63045
1030	13AUG83	0	0	0	0	0	0	0	0

TABLE H-14 DAILY ESTIMATES OF THE NUMBER OF BAY ANCHOVY POST YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1031	03MAY83	0	0	0	0	0	0	0	0
1032	04MAY83	0	0	0	0	0	0	0	0
1033	05MAY83	0	0	0	0	0	0	0	0
1034	06MAY83	0	0	0	0	0	0	0	0
1035	07MAY83	0	0	0	0	0	0	0	0
1036	08MAY83	0	0	0	0	0	0	0	0
1037	09MAY83	0	0	0	0	0	0	0	0
1038	10MAY83	0	0	0	0	0	0	0	0
1039	11MAY83	0	0	0	0	0	0	0	0
1040	12MAY83	0	0	0	0	0	0	0	0
1041	13MAY83	0	0	0	0	0	0	0	0
1042	14MAY83	0	0	0	0	0	0	0	0
1043	15MAY83	0	0	0	0	0	0	0	0
1044	16MAY83	0	0	0	0	0	0	0	0
1045	17MAY83	0	0	0	0	0	0	0	0
1046	18MAY83	0	0	0	0	0	0	0	0
1047	19MAY83	0	0	0	0	0	0	0	0
1048	20MAY83	0	0	0	0	0	0	0	0
1049	21MAY83	0	0	0	0	0	0	0	0
1050	22MAY83	0	0	0	0	0	0	0	0
1051	23MAY83	0	0	0	0	0	0	0	0
1052	24MAY83	0	0	0	0	0	0	0	0
1053	25MAY83	0	0	0	0	0	0	0	0
1054	26MAY83	0	0	0	0	0	0	0	0
1055	27MAY83	0	0	0	0	0	0	0	0
1056	28MAY83	0	0	0	0	0	0	0	0
1057	29MAY83	0	0	0	0	0	0	0	0
1058	30MAY83	0	0	0	0	0	0	0	0
1059	31MAY83	0	0	0	0	0	0	0	0
1060	01JUN83	0	0	0	0	0	0	0	0
1061	02JUN83	0	0	0	0	0	0	0	0
1062	03JUN83	0	0	0	0	0	0	0	0
1063	04JUN83	0	0	0	0	0	0	0	0
1064	05JUN83	0	0	0	0	0	0	0	0
1065	06JUN83	0	0	0	0	0	0	0	0
1066	07JUN83	0	0	0	0	0	0	0	0
1067	08JUN83	0	0	0	0	0	0	0	0
1068	09JUN83	0	0	0	0	0	0	0	0
1069	10JUN83	0	0	0	0	0	0	0	0
1070	11JUN83	0	0	0	0	0	0	0	0
1071	12JUN83	0	0	0	0	0	0	0	0
1072	13JUN83	0	0	0	0	0	0	0	0
1073	14JUN83	0	0	0	0	0	0	0	0
1074	15JUN83	0	0	0	0	0	0	0	0
1075	16JUN83	0	0	0	0	0	0	0	0
1076	17JUN83	0	0	0	0	0	0	0	0
1077	18JUN83	0	0	0	0	0	0	0	0
1078	19JUN83	0	0	0	0	0	0	0	0
1079	20JUN83	0	0	0	0	0	0	0	0
1080	21JUN83	0	0	0	0	0	0	0	0
1081	22JUN83	0	0	0	0	0	0	0	0
1082	23JUN83	0	0	0	0	0	0	0	0

TABLE H-14 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1084	25JUN83	0	0	0	0	0	0	0	0
1085	26JUN83	0	0	0	0	0	0	0	0
1086	27JUN83	0	0	0	0	0	0	0	0
1087	28JUN83	0	0	0	0	0	0	0	0
1088	29JUN83	0	0	0	0	0	0	0	0
1089	30JUN83	19115	32768	16384	2731	19115	16384	16384	32768
1090	01JUL83	60222	103238	51619	8603	60222	51619	51619	103238
1091	02JUL83	552636	947376	473688	78948	552636	473688	473688	947376
1092	03JUL83	1390689	2440416	1180744	209945	1390689	1180744	1259672	2440416
1093	04JUL83	3355102	5894655	2847192	507910	3355102	2847192	3047463	5894655
1094	05JUL83	5705780	9781338	4890669	815111	5705780	4890669	4890669	9781338
1095	06JUL83	5875612	10072478	5036239	839373	5875612	5036239	5036239	10072478
1096	07JUL83	6421707	11008640	5504320	917387	6421707	5504320	5504320	11008640
1097	08JUL83	8602868	14747774	7373887	1228981	8602868	7373887	7373887	14747774
1098	09JUL83	5664710	9710932	4855466	809244	5664710	4855466	4855466	9710932
1099	10JUL83	7126484	12216830	6108415	1018069	7126484	6108415	6108415	12216830
1100	11JUL83	6194098	10618454	5309227	884871	6194098	5309227	5309227	10618454
1101	12JUL83	6194098	10618454	5309227	884871	6194098	5309227	5309227	10618454
1102	13JUL83	5261714	9020082	4510041	751673	5261714	4510041	4510041	9020082
1103	14JUL83	8156420	13982434	6991217	1165203	8156420	6991217	6991217	13982434
1104	15JUL83	7761411	15522822	7761411	0	7761411	7761411	7761411	15522822
1105	16JUL83	7814384	15628768	7814384	0	7814384	7814384	7814384	15628768
1106	17JUL83	7188436	14376872	7188436	0	7188436	7188436	7188436	14376872
1107	18JUL83	7588122	15176244	7588122	0	7588122	7588122	7588122	15176244
1108	19JUL83	9033591	18067182	9033591	0	9033591	9033591	9033591	18067182
1109	20JUL83	9437660	18875320	9437660	0	9437660	9437660	9437660	18875320
1110	21JUL83	7873473	15746946	7873473	0	7873473	7873473	7873473	15746946
1111	22JUL83	6782851	13565702	6782851	0	6782851	6782851	6782851	13565702
1112	23JUL83	7870555	15741110	7870555	0	7870555	7870555	7870555	15741110
1113	24JUL83	7059114	14118228	7059114	0	7059114	7059114	7059114	14118228
1114	25JUL83	6247674	12495348	6247674	0	6247674	6247674	6247674	12495348
1115	26JUL83	5667473	11334946	5667473	0	5667473	5667473	5667473	11334946
1116	27JUL83	8520506	17041012	8520506	0	8520506	8520506	8520506	17041012
1117	28JUL83	9076816	18153632	9076816	0	9076816	9076816	9076816	18153632
1118	29JUL83	8473708	17213589	8473708	0	8473708	8473708	8739881	17213589
1119	30JUL83	8174072	16869488	8174072	0	8174072	8174072	8695416	16869488
1120	31JUL83	7980225	16074832	7980225	0	7980225	7980225	8094607	16074832
1121	01AUG83	6476322	13058290	6476322	0	6476322	6476322	6581968	13058290
1122	02AUG83	5280855	10856614	5280855	0	5280855	5280855	5575759	10856614
1123	03AUG83	6751786	13503572	6751786	0	6751786	6751786	6751786	13503572
1124	04AUG83	8453566	17269903	8453566	0	8453566	8453566	8816337	17269903
1125	05AUG83	6754977	13509954	6754977	0	6754977	6754977	6754977	13509954
1126	06AUG83	6680015	13360030	6680015	0	6680015	6680015	6680015	13360030
1127	07AUG83	5074166	10148332	5074166	0	5074166	5074166	5074166	10148332
1128	08AUG83	3478600	6957200	3478600	0	3478600	3478600	3478600	6957200
1129	09AUG83	3230485	6460970	3230485	0	3230485	3230485	3230485	6460970
1130	10AUG83	4051894	5988385	4051894	0	4051894	4051894	1936491	5988385
1131	11AUG83	3330827	3330827	3330827	0	3330827	3330827	0	3330827
1132	12AUG83	2189965	2189965	2189965	0	2189965	2189965	0	2189965
1133	13AUG83	2171568	2171568	2171568	0	2171568	2171568	0	2171568

TABLE H-15 DAILY ESTIMATES OF THE NUMBER OF BAY ANCHOVY JUVENILE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1134	03MAY83	0	0	0	0	0	0	0	0
1135	04MAY83	0	0	0	0	0	0	0	0
1136	05MAY83	0	0	0	0	0	0	0	0
1137	06MAY83	0	0	0	0	0	0	0	0
1138	07MAY83	0	0	0	0	0	0	0	0
1139	08MAY83	0	0	0	0	0	0	0	0
1140	09MAY83	0	0	0	0	0	0	0	0
1141	10MAY83	0	0	0	0	0	0	0	0
1142	11MAY83	0	0	0	0	0	0	0	0
1143	12MAY83	0	0	0	0	0	0	0	0
1144	13MAY83	0	0	0	0	0	0	0	0
1145	14MAY83	0	0	0	0	0	0	0	0
1146	15MAY83	0	0	0	0	0	0	0	0
1147	16MAY83	0	0	0	0	0	0	0	0
1148	17MAY83	0	0	0	0	0	0	0	0
1149	18MAY83	0	0	0	0	0	0	0	0
1150	19MAY83	0	0	0	0	0	0	0	0
1151	20MAY83	0	0	0	0	0	0	0	0
1152	21MAY83	0	0	0	0	0	0	0	0
1153	22MAY83	0	0	0	0	0	0	0	0
1154	23MAY83	0	0	0	0	0	0	0	0
1155	24MAY83	0	0	0	0	0	0	0	0
1156	25MAY83	0	0	0	0	0	0	0	0
1157	26MAY83	0	0	0	0	0	0	0	0
1158	27MAY83	0	0	0	0	0	0	0	0
1159	28MAY83	0	0	0	0	0	0	0	0
1160	29MAY83	0	0	0	0	0	0	0	0
1161	30MAY83	0	0	0	0	0	0	0	0
1162	31MAY83	0	0	0	0	0	0	0	0
1163	01JUN83	0	0	0	0	0	0	0	0
1164	02JUN83	0	0	0	0	0	0	0	0
1165	03JUN83	0	0	0	0	0	0	0	0
1166	04JUN83	0	0	0	0	0	0	0	0
1167	05JUN83	0	0	0	0	0	0	0	0
1168	06JUN83	0	0	0	0	0	0	0	0
1169	07JUN83	0	0	0	0	0	0	0	0
1170	08JUN83	0	0	0	0	0	0	0	0
1171	09JUN83	0	0	0	0	0	0	0	0
1172	10JUN83	0	0	0	0	0	0	0	0
1173	11JUN83	0	0	0	0	0	0	0	0
1174	12JUN83	0	0	0	0	0	0	0	0
1175	13JUN83	0	0	0	0	0	0	0	0
1176	14JUN83	0	0	0	0	0	0	0	0
1177	15JUN83	0	0	0	0	0	0	0	0
1178	16JUN83	0	0	0	0	0	0	0	0
1179	17JUN83	0	0	0	0	0	0	0	0
1180	18JUN83	0	0	0	0	0	0	0	0
1181	19JUN83	0	0	0	0	0	0	0	0
1182	20JUN83	0	0	0	0	0	0	0	0
1183	21JUN83	0	0	0	0	0	0	0	0
1184	22JUN83	0	0	0	0	0	0	0	0
1185	23JUN83	0	0	0	0	0	0	0	0
1186	24JUN83	0	0	0	0	0	0	0	0

TABLE B-15 (CONT.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1187	25JUN83	0	0	0	0	0	0	0	0
1188	26JUN83	0	0	0	0	0	0	0	0
1189	27JUN83	0	0	0	0	0	0	0	0
1190	28JUN83	0	0	0	0	0	0	0	0
1191	29JUN83	0	0	0	0	0	0	0	0
1192	30JUN83	239	410	205	34	239	205	205	410
1193	01JUL83	239	410	205	34	239	205	205	410
1194	02JUL83	239	410	205	34	239	205	205	410
1195	03JUL83	239	410	205	34	239	205	205	410
1196	04JUL83	479	822	411	68	479	411	411	822
1197	05JUL83	0	0	0	0	0	0	0	0
1198	06JUL83	0	0	0	0	0	0	0	0
1199	07JUL83	0	0	0	0	0	0	0	0
1200	08JUL83	0	0	0	0	0	0	0	0
1201	09JUL83	0	0	0	0	0	0	0	0
1202	10JUL83	0	0	0	0	0	0	0	0
1203	11JUL83	0	0	0	0	0	0	0	0
1204	12JUL83	0	0	0	0	0	0	0	0
1205	13JUL83	0	0	0	0	0	0	0	0
1206	14JUL83	0	0	0	0	0	0	0	0
1207	15JUL83	0	0	0	0	0	0	0	0
1208	16JUL83	806	1612	806	0	806	806	806	1612
1209	17JUL83	0	0	0	0	0	0	0	0
1210	18JUL83	21009	42018	21009	0	21009	21009	21009	42018
1211	19JUL83	21009	42018	21009	0	21009	21009	21009	42018
1212	20JUL83	21009	42018	21009	0	21009	21009	21009	42018
1213	21JUL83	21009	42018	21009	0	21009	21009	21009	42018
1214	22JUL83	21009	42018	21009	0	21009	21009	21009	42018
1215	23JUL83	42017	84034	42017	0	42017	42017	42017	84034
1216	24JUL83	49558	99116	49558	0	49558	49558	49558	99116
1217	25JUL83	52283	104566	52283	0	52283	52283	52283	104566
1218	26JUL83	48027	96054	48027	0	48027	48027	48027	96054
1219	27JUL83	31394	62788	31394	0	31394	31394	31394	62788
1220	28JUL83	31394	62788	31394	0	31394	31394	31394	62788
1221	29JUL83	8077	17598	8077	0	8077	8077	9521	17598
1222	30JUL83	9270	18603	9270	0	9270	9270	9333	18603
1223	31JUL83	9333	18666	9333	0	9333	9333	9333	18666
1224	01AUG83	9081	18226	9081	0	9081	9081	9145	18226
1225	02AUG83	12632	25669	12632	0	12632	12632	13037	25669
1226	03AUG83	16929	33858	16929	0	16929	16929	16929	33858
1227	04AUG83	53336	110813	53336	0	53336	53336	57477	110813
1228	05AUG83	98024	196048	98024	0	98024	98024	98024	196048
1229	06AUG83	68346	136692	68346	0	68346	68346	68346	136692
1230	07AUG83	38667	77334	38667	0	38667	38667	38667	77334
1231	08AUG83	29398	58796	29398	0	29398	29398	29398	58796
1232	09AUG83	31700	63400	31700	0	31700	31700	31700	63400
1233	10AUG83	31700	37515	31700	0	31700	31700	5815	37515
1234	11AUG83	31700	31700	31700	0	31700	31700	0	31700
1235	12AUG83	31077	31077	31077	0	31077	31077	0	31077
1236	13AUG83	5815	5815	5815	0	5815	5815	0	5815

TABLE H-16 DAILY ESTIMATES OF THE NUMBER OF ATLANTIC TOMCOD JUVENILE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Cropped With Mitigation Unit 2	Number Cropped With Mitigation Unit 3	Number Cropped With Mitigation Total	Number Cropped W/O Mitigation Unit 2	Number Cropped W/O Mitigation Unit 3	Number Cropped W/O Mitigation Total
1237	03MAY83	0	0	0	0	0	0	0	0
1238	04MAY83	0	0	0	0	0	0	0	0
1239	05MAY83	0	0	0	0	0	0	0	0
1240	06MAY83	0	0	0	0	0	0	0	0
1241	07MAY83	0	0	0	0	0	0	0	0
1242	08MAY83	0	0	0	0	0	0	0	0
1243	09MAY83	0	0	0	0	0	0	0	0
1244	10MAY83	0	0	0	0	0	0	0	0
1245	11MAY83	0	0	0	0	0	0	0	0
1246	12MAY83	0	0	0	0	0	0	0	0
1247	13MAY83	0	0	0	0	0	0	0	0
1248	14MAY83	0	0	0	0	0	0	0	0
1249	15MAY83	0	0	0	0	0	0	0	0
1250	16MAY83	0	0	0	0	0	0	0	0
1251	17MAY83	0	0	0	0	0	0	0	0
1252	18MAY83	0	0	0	0	0	0	0	0
1253	19MAY83	0	0	0	0	0	0	0	0
1254	20MAY83	0	0	0	0	0	0	0	0
1255	21MAY83	0	0	0	0	0	0	0	0
1256	22MAY83	0	0	0	0	0	0	0	0
1257	23MAY83	0	0	0	0	0	0	0	0
1258	24MAY83	0	0	0	0	0	0	0	0
1259	25MAY83	0	0	0	0	0	0	0	0
1260	26MAY83	0	0	0	0	0	0	0	0
1261	27MAY83	0	0	0	0	0	0	0	0
1262	28MAY83	0	0	0	0	0	0	0	0
1263	29MAY83	0	0	0	0	0	0	0	0
1264	30MAY83	0	0	0	0	0	0	0	0
1265	31MAY83	0	0	0	0	0	0	0	0
1266	01JUN83	0	0	0	0	0	0	0	0
1267	02JUN83	0	0	0	0	0	0	0	0
1268	03JUN83	0	0	0	0	0	0	0	0
1269	04JUN83	0	0	0	0	0	0	0	0
1270	05JUN83	0	0	0	0	0	0	0	0
1271	06JUN83	0	0	0	0	0	0	0	0
1272	07JUN83	0	0	0	0	0	0	0	0
1273	08JUN83	0	0	0	0	0	0	0	0
1274	09JUN83	0	0	0	0	0	0	0	0
1275	10JUN83	0	0	0	0	0	0	0	0
1276	11JUN83	892	892	66	44	110	66	44	110
1277	12JUN83	892	892	66	44	110	66	44	110
1278	13JUN83	892	892	66	44	110	66	44	110
1279	14JUN83	862	862	67	47	114	67	47	114
1280	15JUN83	981	981	66	55	121	66	55	121
1281	16JUN83	491	491	35	29	64	35	29	64
1282	17JUN83	536	536	33	33	66	33	33	66
1283	18JUN83	536	536	33	33	66	33	33	66
1284	19JUN83	402	402	33	16	49	33	16	49
1285	20JUN83	372	372	29	16	45	29	16	45
1286	21JUN83	313	536	35	6	41	35	35	70
1287	22JUN83	268	491	29	6	35	29	35	64
1288	23JUN83	0	0	0	0	0	0	0	0
1289	24JUN83	0	0	0	0	0	0	0	0

TABLE H-10 (CONT.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1290	25JUN83	603	1034	68	11	79	68	68	136
1291	26JUN83	301	516	34	6	40	34	34	68
1292	27JUN83	301	516	34	6	40	34	34	68
1293	28JUN83	0	0	0	0	0	0	0	0
1294	29JUN83	0	0	0	0	0	0	0	0
1295	30JUN83	277	474	31	5	36	31	31	62
1296	01JUL83	554	950	63	10	73	63	63	126
1297	02JUL83	792	1358	89	15	104	89	89	178
1298	03JUL83	779	1345	88	15	103	88	89	177
1299	04JUL83	1030	1766	116	19	135	116	116	232
1300	05JUL83	0	0	0	0	0	0	0	0
1301	06JUL83	0	0	0	0	0	0	0	0
1302	07JUL83	0	0	0	0	0	0	0	0
1303	08JUL83	0	0	0	0	0	0	0	0
1304	09JUL83	0	0	0	0	0	0	0	0
1305	10JUL83	0	0	0	0	0	0	0	0
1306	11JUL83	0	0	0	0	0	0	0	0
1307	12JUL83	0	0	0	0	0	0	0	0
1308	13JUL83	0	0	0	0	0	0	0	0
1309	14JUL83	0	0	0	0	0	0	0	0
1310	15JUL83	0	0	0	0	0	0	0	0
1311	16JUL83	0	0	0	0	0	0	0	0
1312	17JUL83	0	0	0	0	0	0	0	0
1313	18JUL83	0	0	0	0	0	0	0	0
1314	19JUL83	0	0	0	0	0	0	0	0
1315	20JUL83	0	0	0	0	0	0	0	0
1316	21JUL83	0	0	0	0	0	0	0	0
1317	22JUL83	0	0	0	0	0	0	0	0
1318	23JUL83	0	0	0	0	0	0	0	0
1319	24JUL83	0	0	0	0	0	0	0	0
1320	25JUL83	0	0	0	0	0	0	0	0
1321	26JUL83	0	0	0	0	0	0	0	0
1322	27JUL83	228	456	30	0	30	30	30	60
1323	28JUL83	228	456	30	0	30	30	30	60
1324	29JUL83	456	912	60	0	60	60	60	120
1325	30JUL83	190	418	25	0	25	25	30	55
1326	31JUL83	228	456	30	0	30	30	30	60
1327	01AUG83	0	0	0	0	0	0	0	0
1328	02AUG83	177	376	23	0	23	23	26	49
1329	03AUG83	399	798	53	0	53	53	53	106
1330	04AUG83	199	398	26	0	26	26	26	52
1331	05AUG83	0	0	0	0	0	0	0	0
1332	06AUG83	1112	2224	145	0	145	145	147	292
1333	07AUG83	2225	4450	293	0	293	293	293	586
1334	08AUG83	5639	11278	743	0	743	743	743	1486
1335	09AUG83	6588	13176	868	0	868	868	868	1736
1336	10AUG83	6588	7418	868	0	868	868	109	977
1337	11AUG83	6588	6588	868	0	868	868	0	868
1338	12AUG83	6588	6588	868	0	868	868	0	868
1339	13AUG83	830	830	109	0	109	109	0	109

TABLE H-17 DAILY ESTIMATES OF THE NUMBER OF WHITE PERCH EGGS ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1340	03MAY83	0	0	0	0	0	0	0	0
1341	04MAY83	0	0	0	0	0	0	0	0
1342	05MAY83	0	0	0	0	0	0	0	0
1343	06MAY83	0	0	0	0	0	0	0	0
1344	07MAY83	0	0	0	0	0	0	0	0
1345	08MAY83	7721	7721	3281	0	3281	3281	0	3281
1346	09MAY83	22616	34046	9612	0	9612	9612	4858	14470
1347	10MAY83	16215	32430	6892	0	6892	6892	6892	13784
1348	11MAY83	7885	15770	3351	0	3351	3351	3351	6702
1349	12MAY83	27086	54172	11512	0	11512	11512	11512	23024
1350	13MAY83	53884	107768	22901	0	22901	22901	22901	45802
1351	14MAY83	22397	44794	9519	0	9519	9519	9519	19038
1352	15MAY83	45947	91894	19527	0	19527	19527	19527	39054
1353	16MAY83	0	0	0	0	0	0	0	0
1354	17MAY83	39337	78674	16718	0	16718	16718	16718	33436
1355	18MAY83	27707	55414	11775	0	11775	11775	11775	23550
1356	19MAY83	16077	32154	6833	0	6833	6833	6833	13666
1357	20MAY83	24267	48534	10313	0	10313	10313	10313	20626
1358	21MAY83	16130	32260	6855	0	6855	6855	6855	13710
1359	22MAY83	11962	23924	5084	0	5084	5084	5084	10168
1360	23MAY83	27478	54956	11678	0	11678	11678	11678	23356
1361	24MAY83	74335	148670	31592	0	31592	31592	31592	63184
1362	25MAY83	94325	188650	40088	0	40088	40088	40088	80176
1363	26MAY83	134379	268758	57111	0	57111	57111	57111	114222
1364	27MAY83	109484	230588	46531	0	46531	46531	51469	98000
1365	28MAY83	119507	240389	50790	0	50790	50790	51375	102165
1366	29MAY83	136303	209174	48335	9594	57929	48335	40564	88899
1367	30MAY83	171168	171168	48497	24249	72746	48497	24249	72746
1368	31MAY83	83560	83560	24290	11223	35513	24290	11223	35513
1369	01JUN83	27589	27589	8794	2931	11725	8794	2931	11725
1370	02JUN83	165120	165120	52535	17641	70176	52535	17641	70176
1371	03JUN83	108728	108728	34259	11950	46209	34259	11950	46209
1372	04JUN83	270370	270370	80469	34438	114907	80469	34438	114907
1373	05JUN83	115140	115140	32623	16312	48935	32623	16312	48935
1374	06JUN83	336457	336457	88623	54372	142995	88623	54372	142995
1375	07JUN83	295593	295593	75295	50333	125628	75295	50333	125628
1376	08JUN83	208560	208560	58342	30296	88638	58342	30296	88638
1377	09JUN83	137459	137459	34629	23791	58420	34629	23791	58420
1378	10JUN83	225203	225203	57069	38642	95711	57069	38642	95711
1379	11JUN83	141651	141651	36121	24081	60202	36121	24081	60202
1380	12JUN83	259444	259444	65959	44305	110264	65959	44305	110264
1381	13JUN83	375670	375670	95796	63864	159660	95796	63864	159660
1382	14JUN83	294993	294993	72916	52456	125372	72916	52456	125372
1383	15JUN83	171807	171807	39671	33347	73018	39671	33347	73018
1384	16JUN83	162022	162022	35054	33806	68860	35054	33806	68860
1385	17JUN83	65416	65416	13901	13901	27802	13901	13901	27802
1386	18JUN83	44416	44416	11390	7487	18877	11390	7487	18877
1387	19JUN83	40199	40199	11390	5695	17085	11390	5695	17085
1388	20JUN83	26674	26674	7361	3976	11337	7361	3976	11337
1389	21JUN83	10053	17234	3662	610	4272	3662	3662	7324
1390	22JUN83	48412	82992	17636	2939	20575	17636	17781	35417
1391	23JUN83	57430	99102	20866	3542	24408	20866	21469	42335
1392	24JUN83	33910	58132	12353	2059	14412	12353	12497	24850

TABLE H-17 (CONT.)

OBS	DATE	Number Entrained With Mitis.	Number Entrained Without Mitis.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1393	25JUN83	87612	150192	31916	5319	37235	31916	32348	64264
1394	26JUN83	53192	91186	19377	3229	22606	19377	19639	39016
1395	27JUN83	4863	8336	1771	295	2066	1771	1795	3566
1396	28JUN83	14170	24292	5162	860	6022	5162	5162	10324
1397	29JUN83	13985	23974	5094	849	5943	5094	5163	10257
1398	30JUN83	4823	8268	1757	293	2050	1757	1781	3538
1399	01JUL83	0	0	0	0	0	0	0	0
1400	02JUL83	9135	15660	3328	555	3883	3328	3373	6701
1401	03JUL83	0	0	0	0	0	0	0	0
1402	04JUL83	4622	7924	1684	281	1965	1684	1707	3391
1403	05JUL83	0	0	0	0	0	0	0	0
1404	06JUL83	0	0	0	0	0	0	0	0
1405	07JUL83	4644	7962	1692	282	1974	1692	1715	3407
1406	08JUL83	0	0	0	0	0	0	0	0
1407	09JUL83	0	0	0	0	0	0	0	0
1408	10JUL83	0	0	0	0	0	0	0	0
1409	11JUL83	0	0	0	0	0	0	0	0
1410	12JUL83	0	0	0	0	0	0	0	0
1411	13JUL83	0	0	0	0	0	0	0	0
1412	14JUL83	0	0	0	0	0	0	0	0
1413	15JUL83	0	0	0	0	0	0	0	0
1414	16JUL83	0	0	0	0	0	0	0	0
1415	17JUL83	0	0	0	0	0	0	0	0
1416	18JUL83	0	0	0	0	0	0	0	0
1417	19JUL83	0	0	0	0	0	0	0	0
1418	20JUL83	0	0	0	0	0	0	0	0
1419	21JUL83	0	0	0	0	0	0	0	0
1420	22JUL83	0	0	0	0	0	0	0	0
1421	23JUL83	0	0	0	0	0	0	0	0
1422	24JUL83	0	0	0	0	0	0	0	0
1423	25JUL83	0	0	0	0	0	0	0	0
1424	26JUL83	0	0	0	0	0	0	0	0
1425	27JUL83	0	0	0	0	0	0	0	0
1426	28JUL83	0	0	0	0	0	0	0	0
1427	29JUL83	0	0	0	0	0	0	0	0
1428	30JUL83	0	0	0	0	0	0	0	0
1429	31JUL83	0	0	0	0	0	0	0	0
1430	01AUG83	0	0	0	0	0	0	0	0
1431	02AUG83	0	0	0	0	0	0	0	0
1432	03AUG83	0	0	0	0	0	0	0	0
1433	04AUG83	0	0	0	0	0	0	0	0
1434	05AUG83	0	0	0	0	0	0	0	0
1435	06AUG83	0	0	0	0	0	0	0	0
1436	07AUG83	0	0	0	0	0	0	0	0
1437	08AUG83	0	0	0	0	0	0	0	0
1438	09AUG83	0	0	0	0	0	0	0	0
1439	10AUG83	0	0	0	0	0	0	0	0
1440	11AUG83	0	0	0	0	0	0	0	0
1441	12AUG83	0	0	0	0	0	0	0	0
1442	13AUG83	0	0	0	0	0	0	0	0

TABLE H-18 DAILY ESTIMATES OF THE NUMBER OF WHITE PERCH YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1443	03MAY83	0	0	0	0	0	0	0	0
1444	04MAY83	0	0	0	0	0	0	0	0
1445	05MAY83	0	0	0	0	0	0	0	0
1446	06MAY83	0	0	0	0	0	0	0	0
1447	07MAY83	3845	3845	1153	0	1153	1153	0	1153
1448	08MAY83	0	0	0	0	0	0	0	0
1449	09MAY83	3775	7550	1133	0	1133	1133	1133	2266
1450	10MAY83	17363	34726	5209	0	5209	5209	5209	10418
1451	11MAY83	30951	61902	9285	0	9285	9285	9285	18570
1452	12MAY83	30483	60966	9145	0	9145	9145	9145	18290
1453	13MAY83	59434	118868	17830	0	17830	17830	17830	35660
1454	14MAY83	11165	22330	3350	0	3350	3350	3350	6700
1455	15MAY83	33803	67606	10141	0	10141	10141	10141	20282
1456	16MAY83	0	0	0	0	0	0	0	0
1457	17MAY83	15109	30218	4533	0	4533	4533	4533	9066
1458	18MAY83	21074	42148	6322	0	6322	6322	6322	12644
1459	19MAY83	27039	54078	8112	0	8112	8112	8112	16224
1460	20MAY83	28722	57444	8617	0	8617	8617	8617	17234
1461	21MAY83	24007	48014	7202	0	7202	7202	7202	14404
1462	22MAY83	15866	31732	4760	0	4760	4760	4760	9520
1463	23MAY83	3892	7784	1168	0	1168	1168	1168	2336
1464	24MAY83	11598	23196	3480	0	3480	3480	3480	6960
1465	25MAY83	7659	15318	2298	0	2298	2298	2298	4596
1466	26MAY83	12428	24856	3728	0	3728	3728	3728	7456
1467	27MAY83	8060	16352	2418	0	2418	2418	2487	4905
1468	28MAY83	7918	15836	2376	0	2376	2376	2376	4752
1469	29MAY83	5852	5852	1170	585	1755	1170	585	1755
1470	30MAY83	29857	29857	5971	2986	8957	5971	2986	8957
1471	31MAY83	35978	35978	7218	3575	10793	7218	3575	10793
1472	01JUN83	37624	37624	8465	2822	11287	8465	2822	11287
1473	02JUN83	5564	5564	1252	417	1669	1252	417	1669
1474	03JUN83	5639	5639	1269	423	1692	1269	423	1692
1475	04JUN83	0	0	0	0	0	0	0	0
1476	05JUN83	11766	11766	2353	1177	3530	2353	1177	3530
1477	06JUN83	116336	116336	21062	13839	34901	21062	13839	34901
1478	07JUN83	5922	5922	1184	592	1776	1184	592	1776
1479	08JUN83	0	0	0	0	0	0	0	0
1480	09JUN83	12318	12318	2053	1642	3695	2053	1642	3695
1481	10JUN83	6843	6843	1232	821	2053	1232	821	2053
1482	11JUN83	0	0	0	0	0	0	0	0
1483	12JUN83	6727	6727	1211	807	2018	1211	807	2018
1484	13JUN83	13455	13455	2422	1615	4037	2422	1615	4037
1485	14JUN83	6572	6572	1183	789	1972	1183	789	1972
1486	15JUN83	0	0	0	0	0	0	0	0
1487	16JUN83	0	0	0	0	0	0	0	0
1488	17JUN83	0	0	0	0	0	0	0	0
1489	18JUN83	0	0	0	0	0	0	0	0
1490	19JUN83	0	0	0	0	0	0	0	0
1491	20JUN83	0	0	0	0	0	0	0	0
1492	21JUN83	4811	8248	1237	206	1443	1237	1237	2474
1493	22JUN83	0	0	0	0	0	0	0	0
1494	23JUN83	0	0	0	0	0	0	0	0
1495	24JUN83	0	0	0	0	0	0	0	0

TABLE B-18 (CONT.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1496	25JUN83	0	0	0	0	0	0	0	0
1497	26JUN83	0	0	0	0	0	0	0	0
1498	27JUN83	0	0	0	0	0	0	0	0
1499	28JUN83	0	0	0	0	0	0	0	0
1500	29JUN83	0	0	0	0	0	0	0	0
1501	30JUN83	0	0	0	0	0	0	0	0
1502	01JUL83	0	0	0	0	0	0	0	0
1503	02JUL83	0	0	0	0	0	0	0	0
1504	03JUL83	0	0	0	0	0	0	0	0
1505	04JUL83	0	0	0	0	0	0	0	0
1506	05JUL83	0	0	0	0	0	0	0	0
1507	06JUL83	0	0	0	0	0	0	0	0
1508	07JUL83	0	0	0	0	0	0	0	0
1509	08JUL83	0	0	0	0	0	0	0	0
1510	09JUL83	0	0	0	0	0	0	0	0
1511	10JUL83	0	0	0	0	0	0	0	0
1512	11JUL83	0	0	0	0	0	0	0	0
1513	12JUL83	0	0	0	0	0	0	0	0
1514	13JUL83	0	0	0	0	0	0	0	0
1515	14JUL83	0	0	0	0	0	0	0	0
1516	15JUL83	0	0	0	0	0	0	0	0
1517	16JUL83	0	0	0	0	0	0	0	0
1518	17JUL83	0	0	0	0	0	0	0	0
1519	18JUL83	0	0	0	0	0	0	0	0
1520	19JUL83	0	0	0	0	0	0	0	0
1521	20JUL83	0	0	0	0	0	0	0	0
1522	21JUL83	0	0	0	0	0	0	0	0
1523	22JUL83	0	0	0	0	0	0	0	0
1524	23JUL83	0	0	0	0	0	0	0	0
1525	24JUL83	0	0	0	0	0	0	0	0
1526	25JUL83	0	0	0	0	0	0	0	0
1527	26JUL83	0	0	0	0	0	0	0	0
1528	27JUL83	0	0	0	0	0	0	0	0
1529	28JUL83	0	0	0	0	0	0	0	0
1530	29JUL83	0	0	0	0	0	0	0	0
1531	30JUL83	0	0	0	0	0	0	0	0
1532	31JUL83	0	0	0	0	0	0	0	0
1533	01AUG83	0	0	0	0	0	0	0	0
1534	02AUG83	0	0	0	0	0	0	0	0
1535	03AUG83	0	0	0	0	0	0	0	0
1536	04AUG83	0	0	0	0	0	0	0	0
1537	05AUG83	0	0	0	0	0	0	0	0
1538	06AUG83	0	0	0	0	0	0	0	0
1539	07AUG83	0	0	0	0	0	0	0	0
1540	08AUG83	0	0	0	0	0	0	0	0
1541	09AUG83	0	0	0	0	0	0	0	0
1542	10AUG83	0	0	0	0	0	0	0	0
1543	11AUG83	0	0	0	0	0	0	0	0
1544	12AUG83	0	0	0	0	0	0	0	0
1545	13AUG83	0	0	0	0	0	0	0	0

TABLE H-19 DAILY ESTIMATES OF THE NUMBER OF WHITE PERCH POST YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Croped With Mitigation Unit 2	Number Croped With Mitigation Unit 3	Number Croped With Mitigation Total	Number Croped W/O Mitigation Unit 2	Number Croped W/O Mitigation Unit 3	Number Croped W/O Mitigation Total
1546	03MAY83	0	0	0	0	0	0	0	0
1547	04MAY83	0	0	0	0	0	0	0	0
1548	05MAY83	0	0	0	0	0	0	0	0
1549	06MAY83	0	0	0	0	0	0	0	0
1550	07MAY83	0	0	0	0	0	0	0	0
1551	08MAY83	0	0	0	0	0	0	0	0
1552	09MAY83	0	0	0	0	0	0	0	0
1553	10MAY83	36454	72908	1203	0	1203	1203	1203	2406
1554	11MAY83	72908	145816	2406	0	2406	2406	2406	4812
1555	12MAY83	46665	93330	1540	0	1540	1540	1540	3080
1556	13MAY83	148128	296256	4888	0	4888	4888	4888	9776
1557	14MAY83	217567	435134	7180	0	7180	7180	7180	14360
1558	15MAY83	177106	354212	5845	0	5845	5845	5845	11690
1559	16MAY83	45260	90520	1494	0	1494	1494	1494	2988
1560	17MAY83	440152	880304	14525	0	14525	14525	14525	29050
1561	18MAY83	532252	1064504	17564	0	17564	17564	17564	35128
1562	19MAY83	624353	1248706	20604	0	20604	20604	20604	41208
1563	20MAY83	905322	1810644	29876	0	29876	29876	29876	59752
1564	21MAY83	933013	1866026	30789	0	30789	30789	30789	61578
1565	22MAY83	896351	1792702	29580	0	29580	29580	29580	59160
1566	23MAY83	881635	1763270	29094	0	29094	29094	29094	58188
1567	24MAY83	719460	1438920	23742	0	23742	23742	23742	47484
1568	25MAY83	956443	1912886	31563	0	31563	31563	31563	63126
1569	26MAY83	1270286	2540572	41919	0	41919	41919	41919	83838
1570	27MAY83	1066484	2185082	35194	0	35194	35194	36914	72108
1571	28MAY83	1324043	2698527	43693	0	43693	43693	45358	89051
1572	29MAY83	1800984	2000419	44045	15388	59433	44045	21969	66014
1573	30MAY83	1944198	1944198	42772	21386	64158	42772	21386	64158
1574	31MAY83	1802476	1802476	39769	19713	59482	39769	19713	59482
1575	01JUN83	1661265	1661265	41116	13705	54821	41116	13705	54821
1576	02JUN83	1676413	1676413	41412	13910	55322	41412	13910	55322
1577	03JUN83	1892339	1892339	46176	16271	62447	46176	16271	62447
1578	04JUN83	2402266	2402266	56808	22467	79275	56808	22467	79275
1579	05JUN83	1839459	1839459	40468	20234	60702	40468	20234	60702
1580	06JUN83	1490580	1490580	31137	18052	49189	31137	18052	49189
1581	07JUN83	1178354	1178354	24873	14013	38886	24873	14013	38886
1582	08JUN83	1196924	1196924	25692	13806	39498	25692	13806	39498
1583	09JUN83	855546	855546	16359	11874	28233	16359	11874	28233
1584	10JUN83	1386164	1386164	27048	18696	45744	27048	18696	45744
1585	11JUN83	1391317	1391317	27548	18365	45913	27548	18365	45913
1586	12JUN83	1372264	1372264	27108	18177	45285	27108	18177	45285
1587	13JUN83	1346843	1346843	26668	17778	44446	26668	17778	44446
1588	14JUN83	986293	986293	19456	13092	32548	19456	13092	32548
1589	15JUN83	698499	698499	12187	10863	23050	12187	10863	23050
1590	16JUN83	825186	825186	14290	12941	27231	14290	12941	27231
1591	17JUN83	417998	417998	6897	6897	13794	6897	6897	13794
1592	18JUN83	559577	559577	10313	8153	18466	10313	8153	18466
1593	19JUN83	468782	468782	10313	5157	15470	10313	5157	15470
1594	20JUN83	651017	678517	14331	7152	21483	14331	20543	34874
1595	21JUN83	499584	856430	14131	2355	16486	14131	145107	159238
1596	22JUN83	290132	505736	8151	1423	9574	8151	106646	114797
1597	23JUN83	212866	369122	5993	1031	7024	5993	44295	50288
1598	24JUN83	238485	408832	6746	1124	7870	6746	97908	104654

TABLE H-1Y (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1599	25JUN83	186538	319780	5276	879	6155	5276	32118	37394
1600	26JUN83	283827	486560	8028	1338	9366	8028	146088	154116
1601	27JUN83	469296	804508	13274	2212	15486	13274	150698	163972
1602	28JUN83	297634	510230	12162	1855	14017	12162	45324	57486
1603	29JUN83	255597	438166	7737	1277	9014	7737	35125	42862
1604	30JUN83	165830	284280	5615	915	6530	5615	73203	78818
1605	01JUL83	272252	466718	14300	2048	16348	14300	120340	134640
1606	02JUL83	159010	272588	7469	1159	8628	7469	52655	60124
1607	03JUL83	117944	202190	5876	875	6751	5876	65145	71021
1608	04JUL83	76454	134107	27806	5310	33116	27806	53025	80831
1609	05JUL83	92744	158990	2623	437	3060	2623	41990	44613
1610	06JUL83	85698	146910	7097	1151	8248	7097	21989	29086
1611	07JUL83	55706	95496	10965	1766	12731	10965	24281	35246
1612	08JUL83	117160	200846	20657	3251	23908	20657	54362	75019
1613	09JUL83	184233	315828	5870	898	6768	5870	54580	60450
1614	10JUL83	157085	269288	4705	741	5446	4705	60023	64728
1615	11JUL83	169899	291256	8597	912	9509	8597	66131	74728
1616	12JUL83	169899	291256	14655	1876	16531	14655	60765	75420
1617	13JUL83	182714	313224	17060	2096	19156	17060	113059	130119
1618	14JUL83	79352	136032	8501	911	9412	8501	52293	60794
1619	15JUL83	32468	64936	32468	0	32468	32468	25139	57607
1620	16JUL83	30524	61048	30524	0	30524	30524	29025	59549
1621	17JUL83	26379	52758	26379	0	26379	26379	26192	52571
1622	18JUL83	24212	48424	23846	0	23846	23846	23479	47325
1623	19JUL83	16666	33332	16666	0	16666	16666	16666	33332
1624	20JUL83	0	0	0	0	0	0	0	0
1625	21JUL83	8501	17002	8501	0	8501	8501	8501	17002
1626	22JUL83	4131	8262	4131	0	4131	4131	4131	8262
1627	23JUL83	0	0	0	0	0	0	0	0
1628	24JUL83	0	0	0	0	0	0	0	0
1629	25JUL83	0	0	0	0	0	0	0	0
1630	26JUL83	0	0	0	0	0	0	0	0
1631	27JUL83	0	0	0	0	0	0	0	0
1632	28JUL83	0	0	0	0	0	0	0	0
1633	29JUL83	0	0	0	0	0	0	0	0
1634	30JUL83	0	0	0	0	0	0	0	0
1635	31JUL83	0	0	0	0	0	0	0	0
1636	01AUG83	0	0	0	0	0	0	0	0
1637	02AUG83	0	0	0	0	0	0	0	0
1638	03AUG83	0	0	0	0	0	0	0	0
1639	04AUG83	0	0	0	0	0	0	0	0
1640	05AUG83	0	0	0	0	0	0	0	0
1641	06AUG83	0	0	0	0	0	0	0	0
1642	07AUG83	0	0	0	0	0	0	0	0
1643	08AUG83	0	0	0	0	0	0	0	0
1644	09AUG83	0	0	0	0	0	0	0	0
1645	10AUG83	0	0	0	0	0	0	0	0
1646	11AUG83	0	0	0	0	0	0	0	0
1647	12AUG83	0	0	0	0	0	0	0	0
1648	13AUG83	0	0	0	0	0	0	0	0

TABLE H-20 DAILY ESTIMATES OF THE NUMBER OF WHITE PERCH JUVENILES ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1649	03MAY83	0	0	0	0	0	0	0	0
1650	04MAY83	0	0	0	0	0	0	0	0
1651	05MAY83	0	0	0	0	0	0	0	0
1652	06MAY83	0	0	0	0	0	0	0	0
1653	07MAY83	0	0	0	0	0	0	0	0
1654	08MAY83	0	0	0	0	0	0	0	0
1655	09MAY83	0	0	0	0	0	0	0	0
1656	10MAY83	0	0	0	0	0	0	0	0
1657	11MAY83	0	0	0	0	0	0	0	0
1658	12MAY83	0	0	0	0	0	0	0	0
1659	13MAY83	0	0	0	0	0	0	0	0
1660	14MAY83	0	0	0	0	0	0	0	0
1661	15MAY83	0	0	0	0	0	0	0	0
1662	16MAY83	0	0	0	0	0	0	0	0
1663	17MAY83	0	0	0	0	0	0	0	0
1664	18MAY83	0	0	0	0	0	0	0	0
1665	19MAY83	0	0	0	0	0	0	0	0
1666	20MAY83	0	0	0	0	0	0	0	0
1667	21MAY83	0	0	0	0	0	0	0	0
1668	22MAY83	0	0	0	0	0	0	0	0
1669	23MAY83	0	0	0	0	0	0	0	0
1670	24MAY83	0	0	0	0	0	0	0	0
1671	25MAY83	0	0	0	0	0	0	0	0
1672	26MAY83	0	0	0	0	0	0	0	0
1673	27MAY83	0	0	0	0	0	0	0	0
1674	28MAY83	0	0	0	0	0	0	0	0
1675	29MAY83	0	0	0	0	0	0	0	0
1676	30MAY83	0	0	0	0	0	0	0	0
1677	31MAY83	0	0	0	0	0	0	0	0
1678	01JUN83	0	0	0	0	0	0	0	0
1679	02JUN83	0	0	0	0	0	0	0	0
1680	03JUN83	0	0	0	0	0	0	0	0
1681	04JUN83	0	0	0	0	0	0	0	0
1682	05JUN83	0	0	0	0	0	0	0	0
1683	06JUN83	0	0	0	0	0	0	0	0
1684	07JUN83	0	0	0	0	0	0	0	0
1685	08JUN83	0	0	0	0	0	0	0	0
1686	09JUN83	0	0	0	0	0	0	0	0
1687	10JUN83	0	0	0	0	0	0	0	0
1688	11JUN83	0	0	0	0	0	0	0	0
1689	12JUN83	0	0	0	0	0	0	0	0
1690	13JUN83	0	0	0	0	0	0	0	0
1691	14JUN83	0	0	0	0	0	0	0	0
1692	15JUN83	0	0	0	0	0	0	0	0
1693	16JUN83	0	0	0	0	0	0	0	0
1694	17JUN83	0	0	0	0	0	0	0	0
1695	18JUN83	0	0	0	0	0	0	0	0
1696	19JUN83	0	0	0	0	0	0	0	0
1697	20JUN83	0	0	0	0	0	0	0	0
1698	21JUN83	0	0	0	0	0	0	0	0
1699	22JUN83	0	0	0	0	0	0	0	0
1700	23JUN83	0	0	0	0	0	0	0	0
1701	24JUN83	0	0	0	0	0	0	0	0

TABLE H-20 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1702	25JUN83	3038	5208	937	156	1093	937	937	1874
1703	26JUN83	5795	9934	1788	298	2086	1788	1788	3576
1704	27JUN83	5795	9934	1788	298	2086	1788	1788	3576
1705	28JUN83	8552	14660	2639	440	3079	2639	2639	5278
1706	29JUN83	4563	7822	1408	235	1643	1408	1408	2816
1707	30JUN83	4518	7746	1394	232	1626	1394	1394	2788
1708	01JUL83	5139	8810	1586	264	1850	1586	1586	3172
1709	02JUL83	6047	10366	1866	311	2177	1866	1878	3744
1710	03JUL83	5943	10262	1877	315	2192	1877	2173	4050
1711	04JUL83	6288	10780	1940	323	2263	1940	2667	4607
1712	05JUL83	12077	20704	3727	621	4348	3727	4729	8456
1713	06JUL83	16292	27930	5027	838	5865	5027	6017	11044
1714	07JUL83	18101	31030	5585	931	6516	5585	5993	11578
1715	08JUL83	26208	44928	8087	1348	9435	8087	8444	16531
1716	09JUL83	26208	44928	8087	1348	9435	8087	8915	17002
1717	10JUL83	26208	44928	8087	1348	9435	8087	9904	17991
1718	11JUL83	26208	44928	8087	1348	9435	8087	9897	17984
1719	12JUL83	26208	44928	8087	1348	9435	8087	9204	17291
1720	13JUL83	26208	44928	8087	1348	9435	8087	12913	21000
1721	14JUL83	26208	44928	8088	1348	9436	8088	14455	22543
1722	15JUL83	31475	62950	29686	0	29686	29686	24357	54043
1723	16JUL83	20752	41504	19834	0	19834	19834	15370	35204
1724	17JUL83	32073	64146	32073	0	32073	32073	28588	60661
1725	18JUL83	20588	41176	17360	0	17360	17360	11452	28812
1726	19JUL83	20588	41176	15560	0	15560	15560	11046	26606
1727	20JUL83	20588	41176	15880	0	15880	15880	11863	27743
1728	21JUL83	20588	41176	15252	0	15252	15252	12296	27548
1729	22JUL83	20588	41176	12868	0	12868	12868	12594	25462
1730	23JUL83	9102	18204	4779	0	4779	4779	4056	8835
1731	24JUL83	5879	11758	2715	0	2715	2715	2474	5189
1732	25JUL83	4045	8090	2134	0	2134	2134	1456	3590
1733	26JUL83	2423	4846	1143	0	1143	1143	872	2015
1734	27JUL83	3155	6310	1658	0	1658	1658	1176	2834
1735	28JUL83	3155	6310	1801	0	1801	1801	1187	2988
1736	29JUL83	2794	5921	1235	0	1235	1235	1126	2361
1737	30JUL83	3619	7269	1632	0	1632	1632	1336	2968
1738	31JUL83	3580	7230	1907	0	1907	1907	1375	3282
1739	01AUG83	3899	7880	2487	0	2487	2487	1577	4064
1740	02AUG83	3820	7870	2076	0	2076	2076	1620	3696
1741	03AUG83	4119	8238	2630	0	2630	2630	1666	4296
1742	04AUG83	3611	7371	2137	0	2137	2137	1659	3796
1743	05AUG83	3402	6804	1797	0	1797	1797	1565	3362
1744	06AUG83	3208	6416	1359	0	1359	1359	1561	2920
1745	07AUG83	3206	6412	1800	0	1800	1800	1669	3469
1746	08AUG83	1278	2556	719	0	719	719	577	1296
1747	09AUG83	3455	6910	2152	0	2152	2152	1610	3762
1748	10AUG83	3455	5648	2635	0	2635	2635	938	3573
1749	11AUG83	3455	3455	2200	0	2200	2200	0	2200
1750	12AUG83	3193	3193	1720	0	1720	1720	0	1720
1751	13AUG83	2193	2193	835	0	835	835	0	835

TABLE H-21 DAILY ESTIMATES OF THE NUMBER OF STRIPED BASS EGGS ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1752	03MAY83	0	0	0	0	0	0	0	0
1753	04MAY83	0	0	0	0	0	0	0	0
1754	05MAY83	0	0	0	0	0	0	0	0
1755	06MAY83	0	0	0	0	0	0	0	0
1756	07MAY83	0	0	0	0	0	0	0	0
1757	08MAY83	0	0	0	0	0	0	0	0
1758	09MAY83	0	0	0	0	0	0	0	0
1759	10MAY83	0	0	0	0	0	0	0	0
1760	11MAY83	0	0	0	0	0	0	0	0
1761	12MAY83	0	0	0	0	0	0	0	0
1762	13MAY83	3995	7990	1698	0	1698	1698	1698	3396
1763	14MAY83	3883	7766	1650	0	1650	1650	1650	3300
1764	15MAY83	0	0	0	0	0	0	0	0
1765	16MAY83	0	0	0	0	0	0	0	0
1766	17MAY83	7771	15542	3303	0	3303	3303	3303	6606
1767	18MAY83	5907	11814	2511	0	2511	2511	2511	5022
1768	19MAY83	4044	8088	1719	0	1719	1719	1719	3438
1769	20MAY83	7881	15762	3350	0	3350	3350	3350	6700
1770	21MAY83	0	0	0	0	0	0	0	0
1771	22MAY83	8197	16394	3484	0	3484	3484	3484	6968
1772	23MAY83	0	0	0	0	0	0	0	0
1773	24MAY83	0	0	0	0	0	0	0	0
1774	25MAY83	0	0	0	0	0	0	0	0
1775	26MAY83	3838	7676	1631	0	1631	1631	1631	3262
1776	27MAY83	0	0	0	0	0	0	0	0
1777	28MAY83	7918	15836	3365	0	3365	3365	3365	6730
1778	29MAY83	0	0	0	0	0	0	0	0
1779	30MAY83	5838	5838	1654	827	2481	1654	827	2481
1780	31MAY83	5974	5974	1693	846	2539	1693	846	2539
1781	01JUN83	5431	5431	1731	577	2308	1731	577	2308
1782	02JUN83	0	0	0	0	0	0	0	0
1783	03JUN83	0	0	0	0	0	0	0	0
1784	04JUN83	0	0	0	0	0	0	0	0
1785	05JUN83	0	0	0	0	0	0	0	0
1786	06JUN83	0	0	0	0	0	0	0	0
1787	07JUN83	0	0	0	0	0	0	0	0
1788	08JUN83	0	0	0	0	0	0	0	0
1789	09JUN83	0	0	0	0	0	0	0	0
1790	10JUN83	0	0	0	0	0	0	0	0
1791	11JUN83	0	0	0	0	0	0	0	0
1792	12JUN83	0	0	0	0	0	0	0	0
1793	13JUN83	0	0	0	0	0	0	0	0
1794	14JUN83	0	0	0	0	0	0	0	0
1795	15JUN83	0	0	0	0	0	0	0	0
1796	16JUN83	0	0	0	0	0	0	0	0
1797	17JUN83	0	0	0	0	0	0	0	0
1798	18JUN83	0	0	0	0	0	0	0	0
1799	19JUN83	0	0	0	0	0	0	0	0
1800	20JUN83	0	0	0	0	0	0	0	0
1801	21JUN83	0	0	0	0	0	0	0	0
1802	22JUN83	0	0	0	0	0	0	0	0
1803	23JUN83	0	0	0	0	0	0	0	0
1804	24JUN83	0	0	0	0	0	0	0	0

TABLE H-21 (Cont.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1805	25JUN83	0	0	0	0	0	0	0	0
1806	26JUN83	0	0	0	0	0	0	0	0
1807	27JUN83	0	0	0	0	0	0	0	0
1808	28JUN83	0	0	0	0	0	0	0	0
1809	29JUN83	0	0	0	0	0	0	0	0
1810	30JUN83	0	0	0	0	0	0	0	0
1811	01JUL83	0	0	0	0	0	0	0	0
1812	02JUL83	0	0	0	0	0	0	0	0
1813	03JUL83	0	0	0	0	0	0	0	0
1814	04JUL83	0	0	0	0	0	0	0	0
1815	05JUL83	0	0	0	0	0	0	0	0
1816	06JUL83	0	0	0	0	0	0	0	0
1817	07JUL83	0	0	0	0	0	0	0	0
1818	08JUL83	0	0	0	0	0	0	0	0
1819	09JUL83	0	0	0	0	0	0	0	0
1820	10JUL83	0	0	0	0	0	0	0	0
1821	11JUL83	0	0	0	0	0	0	0	0
1822	12JUL83	0	0	0	0	0	0	0	0
1823	13JUL83	0	0	0	0	0	0	0	0
1824	14JUL83	0	0	0	0	0	0	0	0
1825	15JUL83	0	0	0	0	0	0	0	0
1826	16JUL83	0	0	0	0	0	0	0	0
1827	17JUL83	0	0	0	0	0	0	0	0
1828	18JUL83	0	0	0	0	0	0	0	0
1829	19JUL83	0	0	0	0	0	0	0	0
1830	20JUL83	0	0	0	0	0	0	0	0
1831	21JUL83	0	0	0	0	0	0	0	0
1832	22JUL83	0	0	0	0	0	0	0	0
1833	23JUL83	0	0	0	0	0	0	0	0
1834	24JUL83	0	0	0	0	0	0	0	0
1835	25JUL83	0	0	0	0	0	0	0	0
1836	26JUL83	0	0	0	0	0	0	0	0
1837	27JUL83	0	0	0	0	0	0	0	0
1838	28JUL83	0	0	0	0	0	0	0	0
1839	29JUL83	0	0	0	0	0	0	0	0
1840	30JUL83	0	0	0	0	0	0	0	0
1841	31JUL83	0	0	0	0	0	0	0	0
1842	01AUG83	0	0	0	0	0	0	0	0
1843	02AUG83	0	0	0	0	0	0	0	0
1844	03AUG83	0	0	0	0	0	0	0	0
1845	04AUG83	0	0	0	0	0	0	0	0
1846	05AUG83	0	0	0	0	0	0	0	0
1847	06AUG83	0	0	0	0	0	0	0	0
1848	07AUG83	0	0	0	0	0	0	0	0
1849	08AUG83	0	0	0	0	0	0	0	0
1850	09AUG83	0	0	0	0	0	0	0	0
1851	10AUG83	0	0	0	0	0	0	0	0
1852	11AUG83	0	0	0	0	0	0	0	0
1853	12AUG83	0	0	0	0	0	0	0	0
1854	13AUG83	0	0	0	0	0	0	0	0

TABLE H-22 DAILY ESTIMATES OF THE NUMBER OF STRIPED BASS YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1855	03MAY83	0	0	0	0	0	0	0	0
1856	04MAY83	0	0	0	0	0	0	0	0
1857	05MAY83	0	0	0	0	0	0	0	0
1858	06MAY83	0	0	0	0	0	0	0	0
1859	07MAY83	0	0	0	0	0	0	0	0
1860	08MAY83	3860	3860	1158	0	1158	1158	0	1158
1861	09MAY83	7457	7457	2237	0	2237	2237	0	2237
1862	10MAY83	7989	15978	2397	0	2397	2397	2397	4794
1863	11MAY83	7555	15110	2266	0	2266	2266	2266	4532
1864	12MAY83	0	0	0	0	0	0	0	0
1865	13MAY83	11777	23554	3533	0	3533	3533	3533	7066
1866	14MAY83	18947	37894	5684	0	5684	5684	5684	11368
1867	15MAY83	0	0	0	0	0	0	0	0
1868	16MAY83	0	0	0	0	0	0	0	0
1869	17MAY83	30647	61294	9194	0	9194	9194	9194	18388
1870	18MAY83	23105	46210	6932	0	6932	6932	6932	13864
1871	19MAY83	15564	31128	4669	0	4669	4669	4669	9338
1872	20MAY83	12137	24274	3641	0	3641	3641	3641	7282
1873	21MAY83	0	0	0	0	0	0	0	0
1874	22MAY83	3901	7802	1170	0	1170	1170	1170	2340
1875	23MAY83	3890	7780	1167	0	1167	1167	1167	2334
1876	24MAY83	0	0	0	0	0	0	0	0
1877	25MAY83	12070	24140	3621	0	3621	3621	3621	7242
1878	26MAY83	16593	33186	4978	0	4978	4978	4978	9956
1879	27MAY83	3698	7613	1109	0	1109	1109	1175	2284
1880	28MAY83	31030	63422	9309	0	9309	9309	9718	19027
1881	29MAY83	33618	37454	7352	2733	10085	7352	3884	11236
1882	30MAY83	29464	29464	5893	2946	8839	5893	2946	8839
1883	31MAY83	38763	38763	7775	3854	11629	7775	3854	11629
1884	01JUN83	42925	42925	9658	3219	12877	9658	3219	12877
1885	02JUN83	20832	20832	4619	1631	6250	4619	1631	6250
1886	03JUN83	20319	20319	4471	1625	6096	4471	1625	6096
1887	04JUN83	86158	86158	19239	6609	25848	19239	6609	25848
1888	05JUN83	17854	17854	3571	1785	5356	3571	1785	5356
1889	06JUN83	77164	77164	14274	8875	23149	14274	8875	23149
1890	07JUN83	55163	55163	10624	5925	16549	10624	5925	16549
1891	08JUN83	50712	50712	9437	5777	15214	9437	5777	15214
1892	09JUN83	68007	68007	11834	8568	20402	11834	8568	20402
1893	10JUN83	122399	122399	21864	14856	36720	21864	14856	36720
1894	11JUN83	109150	109150	19647	13098	32745	19647	13098	32745
1895	12JUN83	179433	179433	32258	21572	53830	32258	21572	53830
1896	13JUN83	249275	249275	44869	29913	74782	44869	29913	74782
1897	14JUN83	27505	27505	4925	3327	8252	4925	3327	8252
1898	15JUN83	14881	14881	2435	2029	4464	2435	2029	4464
1899	16JUN83	7582	7582	1204	1070	2274	1204	1070	2274
1900	17JUN83	16404	16404	2461	2461	4922	2461	2461	4922
1901	18JUN83	18258	18258	3043	2435	5478	3043	2435	5478
1902	19JUN83	15214	15214	3043	1521	4564	3043	1521	4564
1903	20JUN83	17671	20171	3625	1676	5301	3625	2426	6051
1904	21JUN83	0	0	0	0	0	0	0	0
1905	22JUN83	0	0	0	0	0	0	0	0
1906	23JUN83	0	0	0	0	0	0	0	0
1907	24JUN83	4578	7848	1177	196	1373	1177	1177	2354

TABLE B-22 (CONT.)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
1908	25JUN83	9356	16038	2406	401	2807	2406	2406	4812
1909	26JUN83	0	0	0	0	0	0	0	0
1910	27JUN83	9401	16116	2417	403	2820	2417	2417	4834
1911	28JUN83	0	0	0	0	0	0	0	0
1912	29JUN83	0	0	0	0	0	0	0	0
1913	30JUN83	0	0	0	0	0	0	0	0
1914	01JUL83	4681	8024	1204	201	1405	1204	1204	2408
1915	02JUL83	0	0	0	0	0	0	0	0
1916	03JUL83	0	0	0	0	0	0	0	0
1917	04JUL83	0	0	0	0	0	0	0	0
1918	05JUL83	0	0	0	0	0	0	0	0
1919	06JUL83	0	0	0	0	0	0	0	0
1920	07JUL83	0	0	0	0	0	0	0	0
1921	08JUL83	0	0	0	0	0	0	0	0
1922	09JUL83	0	0	0	0	0	0	0	0
1923	10JUL83	0	0	0	0	0	0	0	0
1924	11JUL83	0	0	0	0	0	0	0	0
1925	12JUL83	0	0	0	0	0	0	0	0
1926	13JUL83	0	0	0	0	0	0	0	0
1927	14JUL83	0	0	0	0	0	0	0	0
1928	15JUL83	0	0	0	0	0	0	0	0
1929	16JUL83	0	0	0	0	0	0	0	0
1930	17JUL83	0	0	0	0	0	0	0	0
1931	18JUL83	0	0	0	0	0	0	0	0
1932	19JUL83	0	0	0	0	0	0	0	0
1933	20JUL83	0	0	0	0	0	0	0	0
1934	21JUL83	0	0	0	0	0	0	0	0
1935	22JUL83	0	0	0	0	0	0	0	0
1936	23JUL83	0	0	0	0	0	0	0	0
1937	24JUL83	0	0	0	0	0	0	0	0
1938	25JUL83	0	0	0	0	0	0	0	0
1939	26JUL83	0	0	0	0	0	0	0	0
1940	27JUL83	0	0	0	0	0	0	0	0
1941	28JUL83	0	0	0	0	0	0	0	0
1942	29JUL83	0	0	0	0	0	0	0	0
1943	30JUL83	0	0	0	0	0	0	0	0
1944	31JUL83	0	0	0	0	0	0	0	0
1945	01AUG83	0	0	0	0	0	0	0	0
1946	02AUG83	0	0	0	0	0	0	0	0
1947	03AUG83	0	0	0	0	0	0	0	0
1948	04AUG83	0	0	0	0	0	0	0	0
1949	05AUG83	0	0	0	0	0	0	0	0
1950	06AUG83	0	0	0	0	0	0	0	0
1951	07AUG83	0	0	0	0	0	0	0	0
1952	08AUG83	0	0	0	0	0	0	0	0
1953	09AUG83	0	0	0	0	0	0	0	0
1954	10AUG83	0	0	0	0	0	0	0	0
1955	11AUG83	0	0	0	0	0	0	0	0
1956	12AUG83	0	0	0	0	0	0	0	0
1957	13AUG83	0	0	0	0	0	0	0	0

TABLE H-23 DAILY ESTIMATES OF THE NUMBER OF STRIPED BASS POST YOLK-SAC LARVAE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
1958	03MAY83	0	0	0	0	0	0	0	0
1959	04MAY83	0	0	0	0	0	0	0	0
1960	05MAY83	0	0	0	0	0	0	0	0
1961	06MAY83	0	0	0	0	0	0	0	0
1962	07MAY83	0	0	0	0	0	0	0	0
1963	08MAY83	0	0	0	0	0	0	0	0
1964	09MAY83	0	0	0	0	0	0	0	0
1965	10MAY83	0	0	0	0	0	0	0	0
1966	11MAY83	0	0	0	0	0	0	0	0
1967	12MAY83	0	0	0	0	0	0	0	0
1968	13MAY83	0	0	0	0	0	0	0	0
1969	14MAY83	0	0	0	0	0	0	0	0
1970	15MAY83	11462	22924	2522	0	2522	2522	2522	5044
1971	16MAY83	0	0	0	0	0	0	0	0
1972	17MAY83	0	0	0	0	0	0	0	0
1973	18MAY83	0	0	0	0	0	0	0	0
1974	19MAY83	0	0	0	0	0	0	0	0
1975	20MAY83	0	0	0	0	0	0	0	0
1976	21MAY83	0	0	0	0	0	0	0	0
1977	22MAY83	0	0	0	0	0	0	0	0
1978	23MAY83	0	0	0	0	0	0	0	0
1979	24MAY83	0	0	0	0	0	0	0	0
1980	25MAY83	3906	7812	859	0	859	859	859	1718
1981	26MAY83	4106	8212	903	0	903	903	903	1806
1982	27MAY83	0	0	0	0	0	0	0	0
1983	28MAY83	27430	55080	6035	0	6035	6035	6083	12118
1984	29MAY83	11961	11961	1754	877	2631	1754	877	2631
1985	30MAY83	12206	12206	1790	895	2685	1790	895	2685
1986	31MAY83	12115	12115	1794	872	2666	1794	872	2666
1987	01JUN83	5215	5215	860	287	1147	860	287	1147
1988	02JUN83	43173	43173	7124	2375	9499	7124	2375	9499
1989	03JUN83	54909	54909	8838	3242	12080	8838	3242	12080
1990	04JUN83	59950	59950	9676	3513	13189	9676	3513	13189
1991	05JUN83	29622	29622	4345	2172	6517	4345	2172	6517
1992	06JUN83	231705	231705	32237	18738	50975	32237	18738	50975
1993	07JUN83	382327	382327	53654	30458	84112	53654	30458	84112
1994	08JUN83	674350	674350	96447	51910	148357	96447	51910	148357
1995	09JUN83	776059	776059	98659	72074	170733	98659	72074	170733
1996	10JUN83	1018041	1018041	133949	90020	223969	133949	90020	223969
1997	11JUN83	834199	834199	110114	73410	183524	110114	73410	183524
1998	12JUN83	1132490	1132490	149254	99893	249147	149254	99893	249147
1999	13JUN83	1427230	1427230	188394	125596	313990	188394	125596	313990
2000	14JUN83	1248253	1248253	162367	112248	274615	162367	112248	274615
2001	15JUN83	1311998	1311998	155356	133283	288639	155356	133283	288639
2002	16JUN83	886081	886081	102349	92589	194938	102349	92589	194938
2003	17JUN83	1670820	1670820	183790	183790	367580	183790	183790	367580
2004	18JUN83	2338941	2338941	293849	220718	514567	293849	220718	514567
2005	19JUN83	2003519	2003519	293849	146925	440774	293849	146925	440774
2006	20JUN83	2619984	2922480	390018	186379	576397	390018	252928	642946
2007	21JUN83	1453152	2491118	274023	45671	319694	274023	360441	634464
2008	22JUN83	1178989	2062853	220487	38890	259377	220487	364727	585214
2009	23JUN83	571255	985254	107460	18216	125676	107460	206251	313711
2010	24JUN83	964426	1653302	181863	30311	212174	181863	419214	601077

TABLE U223 (CONT)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
2011	25JUN83	761203	1304920	143541	23924	167465	143541	262789	406330
2012	26JUN83	836157	1433412	157675	26279	183954	157675	311587	469262
2013	27JUN83	1503464	2577366	283510	47252	330762	283510	717359	1000869
2014	28JUN83	1973606	3383324	372166	62028	434194	372166	402680	774846
2015	29JUN83	648088	1111008	122211	20368	142579	122211	254791	377002
2016	30JUN83	497587	853006	93831	15638	109469	93831	192960	286791
2017	01JUL83	652964	1119366	123130	20522	143652	123130	243392	366522
2018	02JUL83	430739	738410	81225	13538	94763	81225	202037	283262
2019	03JUL83	310398	533081	62025	10384	72409	62025	152160	214185
2020	04JUL83	160713	278551	44243	7622	51865	44243	89860	134103
2021	05JUL83	233396	400108	44998	7479	52477	44998	112629	157627
2022	06JUL83	240547	412366	45360	7560	52920	45360	97382	142742
2023	07JUL83	164219	281518	30967	5161	36128	30967	61860	92827
2024	08JUL83	188973	323954	35635	5939	41574	35635	71667	107302
2025	09JUL83	255172	437438	48118	8020	56138	48118	115654	163772
2026	10JUL83	391508	671156	73827	12305	86132	73827	155809	229636
2027	11JUL83	247366	424056	47280	7774	55054	47280	110409	157689
2028	12JUL83	247366	424056	54368	8468	62836	54368	105720	160088
2029	13JUL83	103223	176954	26261	4075	30336	26261	66453	92714
2030	14JUL83	98342	168586	24479	3632	28111	24479	64754	89233
2031	15JUL83	31897	63794	29515	0	29515	29515	29224	58739
2032	16JUL83	16642	33284	16642	0	16642	16642	15401	32043
2033	17JUL83	12402	24804	12402	0	12402	12402	11425	23827
2034	18JUL83	12265	24530	12227	0	12227	12227	11109	23336
2035	19JUL83	20243	40486	20243	0	20243	20243	18908	39151
2036	20JUL83	24692	49384	24692	0	24692	24692	24664	49356
2037	21JUL83	0	0	0	0	0	0	0	0
2038	22JUL83	0	0	0	0	0	0	0	0
2039	23JUL83	0	0	0	0	0	0	0	0
2040	24JUL83	0	0	0	0	0	0	0	0
2041	25JUL83	0	0	0	0	0	0	0	0
2042	26JUL83	0	0	0	0	0	0	0	0
2043	27JUL83	0	0	0	0	0	0	0	0
2044	28JUL83	0	0	0	0	0	0	0	0
2045	29JUL83	0	0	0	0	0	0	0	0
2046	30JUL83	0	0	0	0	0	0	0	0
2047	31JUL83	0	0	0	0	0	0	0	0
2048	01AUG83	0	0	0	0	0	0	0	0
2049	02AUG83	0	0	0	0	0	0	0	0
2050	03AUG83	0	0	0	0	0	0	0	0
2051	04AUG83	0	0	0	0	0	0	0	0
2052	05AUG83	0	0	0	0	0	0	0	0
2053	06AUG83	0	0	0	0	0	0	0	0
2054	07AUG83	0	0	0	0	0	0	0	0
2055	08AUG83	0	0	0	0	0	0	0	0
2056	09AUG83	0	0	0	0	0	0	0	0
2057	10AUG83	0	0	0	0	0	0	0	0
2058	11AUG83	0	0	0	0	0	0	0	0
2059	12AUG83	0	0	0	0	0	0	0	0
2060	13AUG83	0	0	0	0	0	0	0	0

TABLE H-24 DAILY ESTIMATES OF THE NUMBER OF STRIPED BASS JUVENILE ENTRAINED AND CROPPED AT INDIAN POINT UNITS 2 AND 3 DURING 1983

		Number Entrained		Number Cropped With Mitigation			Number Cropped W/O Mitigation		
OBS	DATE	With Mitig.	Without Mitig.	Unit 2	Unit 3	Total	Unit 2	Unit 3	Total
2061	03MAY83	0	0	0	0	0	0	0	0
2062	04MAY83	0	0	0	0	0	0	0	0
2063	05MAY83	0	0	0	0	0	0	0	0
2064	06MAY83	0	0	0	0	0	0	0	0
2065	07MAY83	0	0	0	0	0	0	0	0
2066	08MAY83	0	0	0	0	0	0	0	0
2067	09MAY83	0	0	0	0	0	0	0	0
2068	10MAY83	0	0	0	0	0	0	0	0
2069	11MAY83	0	0	0	0	0	0	0	0
2070	12MAY83	0	0	0	0	0	0	0	0
2071	13MAY83	0	0	0	0	0	0	0	0
2072	14MAY83	0	0	0	0	0	0	0	0
2073	15MAY83	0	0	0	0	0	0	0	0
2074	16MAY83	0	0	0	0	0	0	0	0
2075	17MAY83	0	0	0	0	0	0	0	0
2076	18MAY83	0	0	0	0	0	0	0	0
2077	19MAY83	0	0	0	0	0	0	0	0
2078	20MAY83	0	0	0	0	0	0	0	0
2079	21MAY83	0	0	0	0	0	0	0	0
2080	22MAY83	0	0	0	0	0	0	0	0
2081	23MAY83	0	0	0	0	0	0	0	0
2082	24MAY83	0	0	0	0	0	0	0	0
2083	25MAY83	0	0	0	0	0	0	0	0
2084	26MAY83	0	0	0	0	0	0	0	0
2085	27MAY83	0	0	0	0	0	0	0	0
2086	28MAY83	0	0	0	0	0	0	0	0
2087	29MAY83	0	0	0	0	0	0	0	0
2088	30MAY83	0	0	0	0	0	0	0	0
2089	31MAY83	0	0	0	0	0	0	0	0
2090	01JUN83	0	0	0	0	0	0	0	0
2091	02JUN83	0	0	0	0	0	0	0	0
2092	03JUN83	0	0	0	0	0	0	0	0
2093	04JUN83	0	0	0	0	0	0	0	0
2094	05JUN83	0	0	0	0	0	0	0	0
2095	06JUN83	0	0	0	0	0	0	0	0
2096	07JUN83	0	0	0	0	0	0	0	0
2097	08JUN83	0	0	0	0	0	0	0	0
2098	09JUN83	0	0	0	0	0	0	0	0
2099	10JUN83	0	0	0	0	0	0	0	0
2100	11JUN83	0	0	0	0	0	0	0	0
2101	12JUN83	0	0	0	0	0	0	0	0
2102	13JUN83	0	0	0	0	0	0	0	0
2103	14JUN83	0	0	0	0	0	0	0	0
2104	15JUN83	0	0	0	0	0	0	0	0
2105	16JUN83	0	0	0	0	0	0	0	0
2106	17JUN83	0	0	0	0	0	0	0	0
2107	18JUN83	0	0	0	0	0	0	0	0
2108	19JUN83	0	0	0	0	0	0	0	0
2109	20JUN83	0	0	0	0	0	0	0	0
2110	21JUN83	0	0	0	0	0	0	0	0
2111	22JUN83	0	0	0	0	0	0	0	0
2112	23JUN83	0	0	0	0	0	0	0	0
2113	24JUN83	0	0	0	0	0	0	0	0

TABLE D-29 (CONT'D)

OBS	DATE	Number Entrained With Mitig.	Number Entrained Without Mitig.	Number Crossed With Mitigation Unit 2	Number Crossed With Mitigation Unit 3	Number Crossed With Mitigation Total	Number Crossed W/O Mitigation Unit 2	Number Crossed W/O Mitigation Unit 3	Number Crossed W/O Mitigation Total
2114	25JUN83	7344	12590	1007	168	1175	1007	1007	2014
2115	26JUN83	6718	11516	921	154	1075	921	921	1842
2116	27JUN83	6718	11516	921	154	1075	921	921	1842
2117	28JUN83	6092	10444	835	139	974	835	835	1670
2118	29JUN83	2921	5008	401	67	468	401	401	802
2119	30JUN83	5050	8658	693	115	808	693	693	1386
2120	01JUL83	4782	8198	656	109	765	656	656	1312
2121	02JUL83	8268	14174	1134	189	1323	1134	1134	2268
2122	03JUL83	8268	14174	1134	189	1323	1134	1134	2268
2123	04JUL83	14152	24260	1941	323	2264	1941	1950	3891
2124	05JUL83	10335	17718	1417	236	1653	1417	1417	2834
2125	06JUL83	11019	18890	1511	252	1763	1511	1511	3022
2126	07JUL83	11704	20064	1605	268	1873	1605	1605	3210
2127	08JUL83	15563	26680	2134	356	2490	2134	2134	4268
2128	09JUL83	15563	26680	2134	356	2490	2134	2134	4268
2129	10JUL83	15563	26680	2134	356	2490	2134	2134	4268
2130	11JUL83	15563	26680	2134	356	2490	2134	2134	4268
2131	12JUL83	15563	26680	2134	356	2490	2134	2134	4268
2132	13JUL83	15563	26680	2134	356	2490	2134	2151	4285
2133	14JUL83	15563	26680	2134	356	2490	2134	2191	4325
2134	15JUL83	16648	33296	9406	0	9406	9406	2954	12360
2135	16JUL83	11951	23902	7681	0	7681	7681	2547	10228
2136	17JUL83	13245	26490	8656	0	8656	8656	2702	11358
2137	18JUL83	7767	15534	5348	0	5348	5348	2056	7404
2138	19JUL83	7767	15534	4280	0	4280	4280	1870	6150
2139	20JUL83	7767	15534	4512	0	4512	4512	2229	6741
2140	21JUL83	7767	15534	4154	0	4154	4154	2684	6838
2141	22JUL83	7767	15534	2949	0	2949	2949	2666	5615
2142	23JUL83	2289	4578	975	0	975	975	800	1775
2143	24JUL83	1775	3550	507	0	507	507	284	791
2144	25JUL83	1051	2102	453	0	453	453	168	621
2145	26JUL83	752	1504	205	0	205	205	120	325
2146	27JUL83	1642	3284	556	0	556	556	274	830
2147	28JUL83	1642	3284	760	0	760	760	263	1023
2148	29JUL83	2283	4815	590	0	590	590	439	1029
2149	30JUL83	2618	5236	808	0	808	808	460	1268
2150	31JUL83	2618	5236	1083	0	1083	1083	475	1558
2151	01AUG83	2682	5385	1055	0	1055	1055	631	1686
2152	02AUG83	1654	3384	396	0	396	396	413	809
2153	03AUG83	756	1512	436	0	436	436	168	604
2154	04AUG83	603	1258	329	0	329	329	151	480
2155	05AUG83	555	1110	185	0	185	185	199	384
2156	06AUG83	1255	2510	366	0	366	366	422	788
2157	07AUG83	1956	3912	744	0	744	744	714	1458
2158	08AUG83	438	876	210	0	210	210	145	355
2159	09AUG83	420	840	256	0	256	256	116	372
2160	10AUG83	420	420	288	0	288	288	0	288
2161	11AUG83	420	420	221	0	221	221	0	221
2162	12AUG83	420	420	67	0	67	67	0	67
2163	13AUG83	0	0	0	0	0	0	0	0

APPENDIX I

PLANT OPERATIONAL DATA

LIST OF TABLES

Number	Title
I-1	Plant operation data for Indian Point Generating Station during 1983.

TABLE I-1 PLANT OPERATION DATA FOR INDIAN POINT GENERATING STATION DURING 1983

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
JAN																
1	1	1	850	3	3	0	1395	0	6	0	0	27	0	4.4	4.4	0.0
2	1	1	850	3	3	0	1499	80	6	0	0	27	0	5.6	4.4	1.2
3	1	1	850	1	5	0	2243	151	6	0	0	27	0	7.1	4.4	2.7
4	1	1	850	0	6	0	2884	366	6	0	0	27	0	8.1	4.7	3.4
5	1	1	850	0	6	0	2884	291	6	0	0	27	0	7.3	4.9	2.4
6	1	1	850	2	4	0	2237	0	6	0	0	27	0	4.6	4.6	0.0
7	1	1	850	2	4	0	2027	0	6	0	0	27	0	4.4	4.4	0.0
8	1	1	850	0	6	0	2545	12	6	0	0	27	0	4.7	4.4	0.3
9	1	1	850	2	4	0	1986	0	6	0	0	27	0	4.4	4.4	0.0
10	1	1	850	2	4	0	2059	0	6	0	0	27	0	4.4	4.4	0.0
11	1	1	850	0	6	0	2751	0	6	0	0	27	0	4.4	4.4	0.0
12	1	1	850	1	5	0	2499	204	6	0	0	27	0	7.1	4.7	2.4
13	1	1	646	0	6	0	2769	386	6	0	0	27	0	10.3	4.8	5.5
14	2	0	87	0	6	0	2856	430	6	0	0	27	0	8.9	3.8	5.1
15	2	0	87	0	6	0	2856	538	6	0	0	27	0	9.6	3.9	5.7
16	2	0	87	1	5	0	2389	52	6	0	0	27	0	11.1	3.4	7.7
17	2	0	87	0	6	0	2687	445	6	0	0	27	0	3.7	3.2	0.5
18	2	0	87	0	6	0	2856	790	6	0	0	27	0	10.6	3.2	7.4
19	2	0	87	0	6	0	2856	797	6	0	0	27	0	13.6	2.5	11.1
20	2	0	87	0	6	0	2856	798	6	0	0	27	0	13.3	1.6	11.7
21	2	0	87	1	5	0	2591	800	6	0	0	27	0	14.8	2.2	12.6
22	2	0	87	1	5	0	2398	799	6	0	0	27	0	16.1	---	---
23	2	0	87	1	5	0	2398	881	6	0	0	27	0	18.4	---	---
24	2	0	87	1	5	0	2398	881	6	0	0	27	0	19.1	1.9	17.2
25	2	0	87	1	5	0	2400	884	6	0	0	27	0	19.3	2.1	17.2
26	2	0	87	1	5	0	2398	880	6	0	0	27	0	19.1	1.7	17.4
27	2	0	87	1	5	0	2403	878	6	0	0	27	0	19.2	1.9	17.3
28	2	0	87	1	5	0	2398	880	6	0	0	27	0	19.6	1.7	17.9
29	2	0	87	1	5	0	2398	873	6	0	0	27	0	19.9	1.7	18.2
30	2	0	87	1	5	0	2398	875	6	0	0	27	0	20.7	1.7	19.0
31	2	0	87	1	5	0	2398	433	6	0	0	27	0	12.6	1.7	10.9

NOTE: Dashes indicate missing data.

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
EEB																
1	2	0	87	3	3	0	1144	0	6	0	0	27	0	1.8	1.7	0.1
2	2	0	387	6	0	0	315	0	6	0	0	27	0	1.8	0.3	1.5
3	1	1	850	6	0	0	109	0	6	0	0	27	0	1.6	0.3	1.3
4	1	1	950	6	0	0	109	0	6	0	0	27	0	1.9	0.3	1.6
5	1	1	850	6	0	0	109	0	6	0	0	27	0	1.6	0.3	1.3
6	1	1	850	6	0	0	109	0	6	0	0	27	0	1.2	0.3	0.9
7	1	1	850	6	0	0	109	0	6	0	0	27	0	0.3	0.3	0.0
8	1	1	850	6	0	0	122	0	6	0	0	27	0	0.3	0.3	0.0
9	1	1	850	6	0	0	518	0	6	0	0	27	0	0.3	0.3	0.0
10	1	1	850	1	5	0	1836	0	6	0	0	27	0	0.0	0.3	-0.3
11	1	1	850	1	5	0	2398	0	6	0	0	27	0	0.0	0.3	-0.3
12	1	1	850	1	5	0	2398	0	6	0	0	27	0	0.4	0.3	0.1
13	1	1	850	1	5	0	2398	0	6	0	0	27	0	0.2	0.3	-0.1
14	1	1	850	1	5	0	2371	0	6	0	0	27	0	0.2	0.4	-0.2
15	1	1	850	1	5	0	2371	160	6	0	0	27	0	2.8	0.6	2.2
16	1	1	850	1	5	0	2371	164	6	0	0	27	0	9.1	0.6	8.5
17	1	1	850	1	5	0	2345	0	6	0	0	27	0	0.6	0.6	0.0
18	1	1	532	1	5	0	2398	0	6	0	0	28	0	0.8	0.4	0.4
19	2	0	87	1	5	0	2398	0	6	0	0	27	0	0.3	0.4	-0.1
20	2	0	87	1	5	0	2398	0	6	0	0	28	0	1.1	0.3	0.8
21	2	0	87	1	5	0	2398	768	6	0	0	27	0	16.7	0.3	16.4
22	2	0	87	1	5	0	2338	876	6	0	0	27	0	18.4	0.6	17.8
23	2	0	87	1	5	0	2398	879	6	0	0	27	0	17.9	1.0	16.9
24	2	0	87	1	5	0	2398	875	6	0	0	27	0	18.2	0.6	17.6
25	2	0	87	1	5	0	2407	879	6	0	0	27	0	19.1	0.2	18.9
26	2	0	87	1	5	0	2451	879	6	0	0	27	0	20.2	0.8	19.4
27	2	0	87	1	5	0	2407	879	6	0	0	27	0	20.1	1.1	19.0
28	2	0	87	1	5	0	2398	874	6	0	0	27	0	20.3	1.2	19.1

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
MAR																
1	2	0	87	1	5	0	2398	873	6	0	0	27	0	21.6	2.7	18.9
2	2	0	87	2	4	0	2182	790	6	0	0	27	0	23.9	1.9	22.0
3	2	0	87	2	4	0	1834	613	6	0	0	27	0	23.9	2.1	21.8
4	2	0	87	1	5	0	2398	870	6	0	0	27	0	23.8	2.6	21.2
5	2	0	87	1	5	0	2408	873	6	0	0	27	0	24.4	2.7	21.7
6	2	0	87	1	5	0	2398	863	6	0	0	27	0	24.6	2.4	22.2
7	2	0	87	1	5	0	2398	866	6	0	0	27	0	24.4	2.5	21.9
8	2	0	87	1	5	0	2412	868	6	0	0	27	0	23.9	2.2	21.7
9	2	0	87	1	5	0	2426	865	6	0	0	27	0	24.6	2.7	21.9
10	2	0	87	1	5	0	2413	865	6	0	0	27	0	24.8	3.2	21.6
11	2	0	87	1	5	0	2398	863	6	0	0	27	0	24.9	3.3	21.6
12	2	0	87	1	5	0	2398	857	6	0	0	27	0	26.2	3.7	22.5
13	2	0	87	1	5	0	2398	604	6	0	0	27	0	26.6	4.0	22.6
14	2	0	87	1	5	0	2398	817	6	0	0	27	0	25.9	3.0	22.9
15	2	0	87	1	5	0	2398	808	6	0	0	27	0	28.4	6.7	21.7
16	2	0	87	1	5	0	2296	768	6	0	0	27	0	28.6	6.8	21.8
17	2	0	87	1	5	0	2211	784	6	0	0	27	0	23.5	4.2	19.3
18	2	0	87	2	4	0	1987	740	6	0	0	27	0	25.2	3.9	21.3
19	2	0	87	1	5	0	2228	799	6	0	0	27	0	26.4	4.4	22.0
20	2	0	87	1	5	0	2251	788	6	0	0	27	0	25.4	5.0	20.4
21	2	0	87	1	5	0	2162	375	6	0	0	27	0	17.7	5.4	12.3
22	2	0	87	0	6	0	2838	867	6	0	0	27	0	21.7	5.6	16.1
23	2	0	87	0	6	0	2807	871	6	0	0	27	0	22.6	5.1	17.5
24	2	0	87	0	6	0	2841	843	6	0	0	27	0	20.4	4.4	16.0
25	2	0	87	0	6	0	2856	880	6	0	0	27	0	20.6	4.0	16.6
26	2	0	87	0	6	0	2856	81	6	0	0	27	0	6.3	3.3	3.0
27	2	0	87	0	6	0	2856	501	6	0	0	27	0	15.3	3.6	11.7
28	2	0	87	0	6	0	2792	866	6	0	0	27	0	25.4	4.2	21.2
29	2	0	87	0	6	0	2787	877	6	0	0	27	0	26.6	5.5	21.1
30	2	0	87	0	6	0	2767	880	6	0	0	28	0	24.2	5.6	18.6
31	2	0	87	0	6	0	2767	877	6	0	0	27	0	19.5	6.0	13.5

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
APR																
1	2	0	87	0	6	0	2853	885	6	0	0	27	0	17.9	6.6	11.3
2	2	0	87	0	6	0	2856	880	6	0	0	27	0	19.1	6.6	12.5
3	2	0	87	0	6	0	2856	886	6	0	0	27	0	19.2	6.5	12.7
4	2	0	87	0	6	0	2713	875	6	0	0	27	0	20.3	6.5	13.8
5	2	0	87	0	6	0	2641	872	6	0	0	27	0	20.6	6.7	13.9
6	2	0	87	0	6	0	2660	886	6	0	0	27	0	19.4	6.3	13.1
7	2	0	87	0	6	0	2856	883	6	0	0	27	0	18.1	7.1	11.0
8	2	0	87	0	6	0	2669	880	6	0	0	27	0	19.6	7.5	12.1
9	2	0	87	0	6	0	2856	880	6	0	0	27	0	18.8	7.8	11.0
10	2	0	87	0	6	0	2856	886	6	0	0	27	0	18.8	8.0	10.8
11	2	0	87	0	6	0	2729	878	6	0	0	27	0	21.4	8.0	13.4
12	2	0	87	0	6	0	2626	874	6	0	0	27	0	20.8	7.9	12.9
13	2	0	87	0	6	0	2649	876	6	0	0	32	0	20.3	7.8	12.5
14	2	0	87	0	6	0	2673	876	6	0	0	27	0	20.3	7.7	12.6
15	2	0	87	0	6	0	2650	879	6	0	0	27	0	20.7	8.0	12.7
16	2	0	87	0	6	0	2630	876	6	0	0	27	0	20.9	8.0	12.9
17	2	0	87	0	6	0	2806	880	6	0	0	27	0	20.2	8.7	11.5
18	2	0	87	0	6	0	2856	880	6	0	0	27	0	19.8	8.7	11.1
19	2	0	87	0	6	0	2808	879	6	0	0	27	0	20.3	9.1	11.2
20	2	0	87	0	6	0	2856	880	6	0	0	27	0	18.7	8.3	10.4
21	2	0	87	0	6	0	2856	885	6	0	0	27	0	18.6	6.9	11.7
22	2	0	87	0	6	0	2856	862	6	0	0	27	0	18.6	8.3	10.3
23	2	0	87	0	6	0	2856	877	6	0	0	27	0	19.4	8.3	11.1
24	2	0	87	0	6	0	2856	882	6	0	0	27	0	20.0	8.6	11.4
25	2	0	87	0	6	0	2777	878	6	0	0	16	0	20.6	10.9	9.7
26	2	0	87	0	6	0	2818	879	6	0	0	27	0	19.7	8.4	11.3
27	2	0	87	0	6	0	2835	795	6	0	0	27	0	18.1	7.9	10.2
28	2	0	87	0	6	0	2866	803	6	0	0	27	0	19.1	8.2	10.9
29	2	0	87	0	6	0	2788	880	6	0	0	27	0	21.9	7.9	14.0
30	2	0	87	0	6	0	2853	880	6	0	0	27	0	22.7	9.7	13.0

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
MAY																
1	2	0	87	0	6	0	2847	883	6	0	0	27	0	23.1	10.0	13.1
2	2	0	87	0	6	0	2802	875	6	0	0	27	0	23.7	10.2	13.5
3	2	0	87	0	5	1	3156	880	6	0	0	27	0	23.2	10.5	12.7
4	2	0	87	0	3	3	3778	886	6	0	0	27	0	23.2	11.6	11.6
5	2	0	87	0	1	5	4379	884	6	0	0	27	0	22.8	12.7	10.1
6	2	0	87	0	0	6	4671	793	6	0	0	27	0	22.1	13.8	8.3
7	2	0	87	0	0	6	4688	530	6	0	0	27	0	19.2	14.0	5.2
8	2	0	87	0	0	6	4688	89	6	0	0	27	0	15.2	14.2	1.0
9	2	0	87	0	0	6	4688	478	6	0	0	27	0	19.1	14.4	4.7
10	2	0	87	0	0	6	4688	881	6	0	0	40	0	23.5	14.5	9.0
11	2	0	87	0	0	6	4688	879	6	0	0	29	0	23.6	14.3	9.3
12	2	0	87	0	0	6	4688	881	6	0	0	27	0	23.7	14.4	9.3
13	2	0	87	0	0	6	4536	884	6	0	0	27	0	23.8	14.4	9.4
14	2	0	87	0	0	6	4688	877	6	0	0	27	0	23.6	14.7	8.9
15	2	0	87	0	0	6	4688	881	6	0	0	27	0	23.9	14.9	9.0
16	2	0	87	0	0	6	4669	888	6	0	0	27	0	23.7	14.8	8.9
17	2	0	87	0	0	6	4688	880	6	0	0	28	0	23.7	15.0	8.7
18	2	0	87	0	0	6	4688	881	6	0	0	39	0	23.9	14.8	9.1
19	2	0	87	0	0	6	4682	882	6	0	0	34	0	23.9	14.9	9.0
20	2	0	87	0	0	6	4688	881	6	0	0	55	0	23.9	15.2	8.7
21	2	0	87	0	0	6	4685	880	6	0	0	55	0	24.2	15.1	9.1
22	2	0	87	0	0	6	4688	882	6	0	0	55	0	24.6	15.1	9.5
23	2	0	87	0	0	6	4688	883	6	0	0	55	0	24.9	15.4	9.5
24	2	0	87	0	0	6	4692	881	6	0	0	55	0	24.6	15.6	9.0
25	2	0	87	0	0	6	4693	884	6	0	0	55	0	24.9	15.7	9.2
26	2	0	87	0	0	6	4692	883	6	0	0	55	0	25.5	18.0	7.5
27	2	0	87	0	0	6	4595	883	6	0	0	55	0	26.1	16.4	9.7
28	2	0	87	0	0	6	4328	879	6	0	0	55	0	26.4	16.3	10.1
29	2	0	87	0	0	6	4681	884	6	0	0	564	0	24.7	16.4	8.3
30	2	0	87	0	0	6	4688	883	4	0	2	2344	0	22.9	16.4	6.5
31	2	0	87	0	0	6	4680	886	4	0	2	2344	0	23.2	16.4	6.8

TABLE I-1 (Cont.)

No.	Unit 1 No. of Pumps Off	Unit 1 No. of Pumps On	Unit 1 Total Volume Pumped (m3x1,000)	Unit 2 No. of Pumps Off	Unit 2 No. of Pumps On 60%	Unit 2 No. of Pumps On 100%	Unit 2 Total Volume Pumped (m3x1,000)	Unit 2 Mean Elec. Output (Mw)	Unit 3 No. of Pumps Off	Unit 3 No. of Pumps On 60%	Unit 3 No. of Pumps On 100%	Unit 3 Total Volume Pumped (m3x1,000)	Unit 3 Mean Elec. Output (Mw)	Plant Temperatures Disch. Temp. (C)	Plant Temperatures Intake Temp. (C)	Plant Temperatures Delta-T (C)
RUN																
1	2	0	87	0	0	6	4707	884	4	0	2	1905	0	23.6	16.6	7.0
2	2	0	87	0	0	6	4586	880	4	0	2	1581	0	25.4	17.1	8.3
3	2	0	87	0	0	6	4458	879	4	0	2	1581	0	26.3	17.4	8.9
4	2	0	87	0	0	6	4663	878	4	0	2	1590	0	25.8	17.8	8.0
5	2	0	87	0	0	6	4668	853	3	0	3	2187	0	25.3	18.0	7.3
6	2	0	87	0	0	6	4690	878	3	0	3	2510	0	25.9	18.6	7.3
7	2	0	87	0	0	6	4401	870	2	0	4	2593	0	26.4	19.2	7.2
8	2	0	87	0	0	6	4674	879	3	0	3	2383	74	27.0	19.3	7.7
9	2	0	87	0	0	6	4439	873	2	0	4	2873	210	28.0	19.2	8.8
10	2	0	87	0	0	6	4508	873	2	0	4	3162	83	26.8	19.5	7.3
11	2	0	87	0	0	6	4671	870	2	0	4	3178	172	27.8	19.9	7.9
12	2	0	87	0	0	6	4682	873	2	0	4	3197	216	28.2	20.2	8.0
13	2	0	87	0	0	6	4675	870	2	0	4	3189	213	28.9	20.7	8.2
14	2	0	87	0	0	6	4676	868	2	0	4	3189	217	29.3	21.4	7.9
15	2	0	87	0	0	6	4688	871	1	0	5	3762	288	29.7	22.0	7.7
16	2	0	87	0	0	6	4663	870	1	0	5	4201	377	30.3	22.6	7.7
17	2	0	87	0	0	6	4688	868	0	0	6	4474	446	29.4	22.2	7.2
18	2	0	87	0	0	6	4688	630	0	0	6	4742	559	27.7	21.7	6.0
19	2	0	87	0	0	6	4688	0	3	0	3	2608	0	26.9	22.1	4.8
20	2	0	87	0	0	6	4614	865	3	0	3	2401	0	28.2	22.2	6.0
21	2	0	87	0	0	6	4640	859	5	0	1	1565	0	28.9	22.2	6.7
22	2	0	87	0	0	6	4590	857	5	0	1	899	0	30.0	22.5	7.5
23	2	0	87	0	0	6	4480	854	5	0	1	866	0	30.3	22.7	7.6
24	2	0	87	0	0	6	4695	871	5	0	1	845	0	30.4	22.9	7.5
25	2	0	87	0	0	6	4714	858	5	0	1	845	0	30.6	23.3	7.3
26	2	0	87	0	0	6	4656	869	5	0	1	845	0	30.6	23.2	7.4
27	2	0	87	0	0	6	4704	867	5	0	1	830	0	30.7	23.6	7.1
28	2	0	87	0	0	6	4723	864	5	0	1	818	0	30.6	23.1	7.5
29	2	0	87	0	0	6	4715	0	5	0	1	818	0	30.8	22.7	8.1
30	2	0	87	0	0	6	4715	0	5	0	1	818	0	31.4	23.6	7.8

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
JUL																
1	2	0	87	0	0	6	4715	864	5	0	1	818	0	31.4	23.6	7.8
2	2	0	87	0	0	6	4715	864	5	0	1	818	0	31.8	24.3	7.5
3	2	0	87	0	0	6	4715	861	5	0	1	818	0	32.2	24.4	7.8
4	2	0	87	0	0	6	4517	855	5	0	1	818	0	33.2	25.0	8.2
5	2	0	87	0	0	6	4718	859	5	0	1	818	0	32.8	24.7	8.1
6	2	0	87	0	0	6	4715	864	5	0	1	818	0	32.8	24.7	8.1
7	2	0	87	0	0	6	4715	861	5	0	1	820	0	32.8	24.7	8.1
8	2	0	87	0	0	6	4715	861	5	0	1	818	0	32.8	24.6	8.2
9	2	0	87	0	0	6	4715	861	5	0	1	818	0	32.8	24.6	8.2
10	2	0	87	0	0	6	4715	860	5	0	1	818	0	32.9	24.9	8.0
11	2	0	87	0	0	6	4715	860	5	0	1	818	0	33.1	24.9	8.2
12	2	0	87	0	0	6	4715	860	5	0	1	818	0	33.1	24.7	8.4
13	2	0	87	0	0	6	4715	866	5	0	1	790	0	33.6	25.4	8.2
14	2	0	87	0	0	6	4729	861	5	0	1	790	0	33.8	25.8	8.0
15	2	0	87	0	0	6	4742	863	6	0	0	401	0	35.3	26.2	9.1
16	2	0	87	0	0	6	4742	862	6	0	0	27	0	36.9	26.2	10.7
17	2	0	87	0	0	6	4742	861	6	0	0	55	0	36.8	26.6	10.2
18	2	0	87	0	0	6	4742	859	6	0	0	55	0	37.1	26.8	10.3
19	2	0	87	0	0	6	4742	859	6	0	0	55	0	36.8	26.7	10.1
20	2	0	87	0	0	6	4742	855	6	0	0	55	0	36.9	26.9	10.0
21	2	0	87	0	0	6	4742	860	6	0	0	54	0	36.8	27.1	9.7
22	2	0	87	0	0	6	4742	860	6	0	0	55	0	36.7	26.8	9.9
23	2	0	87	0	0	6	4742	858	6	0	0	55	0	36.4	27.2	9.2
24	2	0	87	0	0	6	4742	863	6	0	0	55	0	36.4	27.1	9.3
25	2	0	87	0	0	6	4742	861	6	0	0	55	0	36.4	26.6	9.8
26	2	0	87	0	0	6	4735	861	6	0	0	55	0	36.6	26.0	10.6
27	2	0	87	0	0	6	4742	862	6	0	0	55	0	36.7	26.1	10.6
28	2	0	87	0	0	6	4742	864	6	0	0	55	0	36.4	26.3	10.1
29	2	0	87	0	0	6	4658	811	6	0	0	55	0	34.9	26.7	8.2
30	2	0	87	0	0	6	4561	790	6	0	0	55	0	34.8	26.4	8.4
31	2	0	87	0	0	6	4560	810	6	0	0	55	0	36.2	26.4	9.8

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
AUG																
1	2	0	87	0	0	6	4677	853	6	0	0	55	0	37.1	27.3	9.8
2	2	0	87	0	0	6	3960	719	6	0	0	55	0	34.4	27.5	6.9
3	2	0	87	0	0	6	4477	843	6	0	0	55	0	36.9	26.9	10.0
4	2	0	87	0	0	6	4632	847	6	0	0	55	0	36.9	26.7	10.2
5	2	0	87	0	0	6	4574	823	6	0	0	58	0	36.4	26.7	9.7
6	2	0	87	0	0	6	4742	500	6	0	0	55	0	32.4	27.7	4.7
7	2	0	87	0	0	6	4742	855	6	0	0	55	0	36.8	27.5	9.3
8	2	0	87	0	0	6	4742	859	6	0	0	55	0	36.8	27.8	9.0
9	2	0	87	0	0	6	4742	857	6	0	0	55	0	36.8	27.5	9.3
10	2	0	87	0	0	6	4742	857	6	0	0	55	0	37.3	27.4	9.9
11	2	0	87	0	0	6	4742	859	6	0	0	55	0	37.3	27.8	9.5
12	2	0	87	0	0	6	4567	822	6	0	0	55	0	36.7	27.2	9.5
13	2	0	87	0	0	6	4729	825	6	0	0	55	0	36.2	27.3	8.9
14	2	0	87	0	0	6	4715	860	6	0	0	55	0	36.2	26.9	9.3
15	2	0	87	0	0	6	4715	862	6	0	0	55	0	36.3	26.7	9.6
16	2	0	87	0	0	6	4715	861	6	0	0	55	0	36.3	26.4	9.9
17	2	0	87	0	0	6	4715	861	6	0	0	55	0	36.4	26.4	10.0
18	2	0	87	0	0	6	4715	862	6	0	0	55	0	36.3	26.4	9.9
19	2	0	87	0	0	6	4734	858	6	0	0	55	0	35.9	25.8	10.1
20	2	0	87	0	0	6	4742	857	6	0	0	54	0	36.1	25.7	10.4
21	2	0	87	0	0	6	4741	861	6	0	0	55	0	35.7	24.6	11.1
22	2	0	87	0	0	6	4742	859	6	0	0	55	0	35.5	23.7	11.8
23	2	0	87	1	0	5	4330	790	6	0	0	55	0	35.9	23.7	12.2
24	2	0	87	0	0	6	4727	861	6	0	0	55	0	35.7	24.6	11.1
25	2	0	87	0	0	6	3909	829	6	0	0	55	0	35.7	24.4	11.3
26	2	0	87	0	0	6	4742	853	6	0	0	55	0	35.7	24.6	11.1
27	2	0	87	0	0	6	4531	670	6	0	0	55	0	34.6	25.0	9.6
28	2	0	87	0	0	6	4627	0	6	0	0	55	0	26.1	23.3	2.8
29	2	0	87	0	0	6	4178	255	6	0	0	55	0	28.2	25.6	2.6
30	2	0	87	0	0	6	4686	836	6	0	0	55	0	37.1	26.4	10.7
31	2	0	87	0	0	6	4715	856	6	0	0	55	0	37.0	26.5	

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
SEP																
1	2	0	87	0	0	6	4532	806	6	0	0	55	0	37.1	26.1	11.0
2	2	0	87	0	0	6	4715	856	6	0	0	55	0	37.0	24.0	13.0
3	2	0	87	0	0	6	4715	856	6	0	0	55	0	37.1	25.9	11.2
4	2	0	87	0	0	6	4586	798	6	0	0	55	0	37.1	26.7	10.4
5	2	0	87	0	0	6	4504	807	6	0	0	55	0	37.1	26.7	10.4
6	2	0	87	1	0	5	4270	750	6	0	0	55	0	37.1	26.8	10.3
7	2	0	87	0	0	6	4566	776	6	0	0	55	0	36.1	26.8	9.3
8	2	0	87	0	0	6	4715	817	6	0	0	55	0	37.2	26.7	10.5
9	2	0	87	0	0	6	4715	857	6	0	0	55	0	37.2	26.7	10.5
10	2	0	87	0	0	6	4715	860	6	0	0	55	0	37.3	26.9	10.4
11	2	0	87	0	0	6	4715	852	6	0	0	55	0	37.4	27.3	10.1
12	2	0	87	0	0	6	4715	858	6	0	0	55	0	37.2	26.7	10.5
13	2	0	87	0	0	6	4715	861	6	0	0	55	0	37.4	27.2	10.2
14	2	0	87	0	0	6	4715	867	6	0	0	55	0	37.2	26.7	10.5
15	2	0	49	0	0	6	4715	838	6	0	0	55	0	36.6	26.3	10.3
16	2	0	87	0	0	6	4715	855	6	0	0	55	0	35.6	25.3	10.3
17	2	0	87	0	0	6	4525	795	6	0	0	55	0	34.9	25.2	9.7
18	2	0	87	0	0	6	4289	755	6	0	0	55	0	34.9	25.2	9.7
19	2	0	87	0	0	6	4729	831	6	0	0	70	0	34.9	25.5	9.4
20	2	0	87	0	0	6	4742	850	6	0	0	55	0	34.9	25.6	9.3
21	2	0	87	0	0	6	4742	840	6	0	0	55	0	34.7	24.9	9.8
22	2	0	87	0	0	6	4742	844	6	0	0	55	0	34.3	24.4	9.9
23	2	0	87	0	0	6	4742	841	6	0	0	45	0	33.9	24.1	9.8
24	2	0	87	0	0	6	4735	847	6	0	0	27	0	33.6	23.7	9.9
25	2	0	87	0	0	6	4576	802	6	0	0	27	0	33.4	23.4	10.0
26	2	0	87	0	0	6	4742	847	6	0	0	27	0	33.2	23.2	10.0
27	2	0	87	0	0	6	4583	816	6	0	0	29	0	33.2	23.2	10.0
28	2	0	87	0	0	6	4722	846	6	0	0	27	0	33.4	23.2	10.2
29	2	0	87	0	0	6	4742	846	6	0	0	27	0	33.4	23.2	10.2
30	2	0	87	0	0	6	4742	835	6	0	0	27	0	33.1	22.9	10.2

TABLE I-1 (Cont.)

No.	Unit 1 No. of Pumps Off	Unit 1 No. of Pumps On	Unit 1 Total Volume Pumped (m3x1,000)	Unit 2 No. of Pumps Off	Unit 2 No. of Pumps On 60%	Unit 2 No. of Pumps On 100%	Unit 2 Total Volume Pumped (m3x1,000)	Unit 2 Mean Elec. Output (Mw)	Unit 3 No. of Pumps Off	Unit 3 No. of Pumps On 60%	Unit 3 No. of Pumps On 100%	Unit 3 Total Volume Pumped (m3x1,000)	Unit 3 Mean Elec. Output (Mw)	Plant Temperatures Disch. Temp. (C)	Plant Temperatures Intake Temp. (C)	Plant Temperatures Delta-T (C)
OCI																
1	2	0	87	0	0	6	4628	821	6	0	0	27	0	32.8	22.6	10.2
2	2	0	87	0	0	6	4637	821	6	0	0	27	0	31.9	22.6	9.3
3	2	0	87	1	0	5	4141	820	6	0	0	27	0	33.9	22.4	11.5
4	2	0	87	3	0	3	3176	509	6	0	0	27	0	32.4	22.3	10.1
5	1	1	393	6	0	0	839	0	6	0	0	27	0	22.2	22.2	0.0
6	1	1	850	6	0	0	82	0	6	0	0	28	0	22.1	22.1	0.0
7	1	1	850	6	0	0	82	0	6	0	0	43	0	21.5	22.0	-0.5
8	1	1	850	6	0	0	83	0	6	0	0	27	0	21.3	21.9	-0.6
9	1	1	850	6	0	0	93	0	6	0	0	27	0	21.1	21.7	-0.6
10	1	1	850	6	0	0	82	0	6	0	0	27	0	20.8	22.1	-1.3
11	1	1	850	6	0	0	81	0	6	0	0	27	0	20.3	21.2	-0.9
12	1	1	850	6	0	0	99	0	6	0	0	27	0	20.7	20.9	-0.2
13	1	1	850	6	0	0	108	0	6	0	0	27	0	20.6	21.0	-0.4
14	1	1	850	6	0	0	110	0	6	0	0	27	0	20.2	20.4	-0.2
15	1	1	850	6	0	0	109	0	6	0	0	27	0	19.8	20.0	-0.2
16	1	1	850	6	0	0	109	0	6	0	0	27	0	19.4	19.4	0.0
17	1	1	850	6	0	0	123	0	6	0	0	27	0	19.2	19.4	-0.2
18	1	1	850	6	0	0	109	0	6	0	0	27	0	19.4	19.4	0.0
19	1	1	850	6	0	0	109	0	6	0	0	27	0	19.1	19.1	0.0
20	1	1	850	6	0	0	120	0	6	0	0	27	0	18.3	18.4	-0.1
21	1	1	850	6	0	0	109	0	6	0	0	23	0	17.9	18.2	-0.3
22	1	1	850	6	0	0	109	0	6	0	0	27	0	17.6	17.8	-0.2
23	1	1	850	6	0	0	109	0	6	0	0	27	0	17.2	17.8	-0.6
24	1	1	850	6	0	0	109	0	6	0	0	27	0	17.2	16.8	0.4
25	2	0	397	1	0	5	2898	0	6	0	0	27	0	16.6	16.3	0.3
26	2	0	87	3	0	3	2519	0	6	0	0	27	0	16.6	16.6	0.0
27	2	0	27	2	0	4	2685	58	6	0	0	27	0	18.1	16.3	1.8
28	2	0	27	1	0	5	3745	524	6	0	0	27	0	22.7	16.2	6.5
29	2	0	27	0	1	5	3321	856	6	0	0	27	0	27.9	16.4	11.5
30	2	0	27	0	4	2	3130	860	6	0	0	28	0	26.8	15.7	11.1
31	2	0	27	0	6	0	2821	869	6	0	0	27	0	27.8	15.3	12.5

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
NOV																
1	2	0	87	0	6	0	2884	882	6	0	0	27	0	27.4	15.2	12.2
2	2	0	87	0	6	0	2884	880	6	0	0	27	0	27.2	14.8	12.4
3	2	0	87	0	6	0	2884	883	6	0	0	27	0	27.3	14.9	12.4
4	2	0	87	0	6	0	2884	879	6	0	0	27	0	27.1	14.7	12.4
5	2	0	87	0	6	0	2884	878	6	0	0	27	0	26.6	14.3	12.3
6	2	0	87	0	6	0	2884	878	6	0	0	27	0	26.7	14.1	12.6
7	2	0	87	0	6	0	2884	880	6	0	0	27	0	26.4	14.1	12.3
8	2	0	87	0	6	0	2884	880	6	0	0	27	0	26.3	13.9	12.4
9	2	0	87	0	6	0	2891	882	6	0	0	27	0	26.3	13.9	12.4
10	2	0	87	0	6	0	2885	882	6	0	0	27	0	26.3	14.0	12.3
11	2	0	87	0	6	0	2911	878	6	0	0	27	0	26.0	14.0	12.0
12	2	0	87	0	6	0	2911	878	6	0	0	27	0	26.1	13.9	12.2
13	2	0	87	0	6	0	2911	879	6	0	0	27	0	25.3	13.0	12.3
14	2	0	87	0	6	0	2896	881	6	0	0	27	0	24.6	12.8	11.8
15	2	0	87	0	6	0	2884	880	6	0	0	27	0	24.5	12.9	11.6
16	2	0	87	0	6	0	2884	881	6	0	0	27	0	24.6	12.9	11.7
17	2	0	87	0	6	0	2884	882	6	0	0	27	0	24.4	12.6	11.8
18	2	0	87	0	6	0	2884	880	6	0	0	27	0	23.9	11.8	12.1
19	2	0	87	0	6	0	2874	882	6	0	0	27	0	23.8	11.7	12.1
20	2	0	87	0	6	0	2856	880	6	0	0	27	0	23.7	11.7	12.0
21	2	0	87	0	6	0	2864	881	6	0	0	30	0	24.0	11.8	12.2
22	2	0	87	0	6	0	2899	838	6	0	0	27	0	23.9	11.7	12.2
23	2	0	87	0	6	0	2888	443	6	0	0	28	0	17.2	11.6	5.6
24	2	0	87	0	6	0	2899	0	6	0	0	27	0	10.9	11.2	-0.3
25	2	0	87	1	5	0	2453	2	6	0	0	27	0	10.6	10.8	-0.2
26	2	0	87	1	5	0	2640	648	6	0	0	27	0	22.5	10.5	12.0
27	2	0	87	0	6	0	2911	871	6	0	0	27	0	23.6	10.4	13.2
28	2	0	87	0	6	0	2911	882	6	0	0	27	0	22.9	10.2	12.7
29	2	0	87	0	6	0	2911	883	6	0	0	27	0	23.5	10.1	13.4
30	2	0	87	0	6	0	2911	880	6	0	0	27	0	22.9	9.3	13.6

TABLE I-1 (Cont.)

	Unit 1			Unit 2					Unit 3					Plant Temperatures		
No.	No. of Pumps Off	No. of Pumps On	Total Volume Pumped (m3x1,000)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	No. of Pumps Off	No. of Pumps On 60%	No. of Pumps On 100%	Total Volume Pumped (m3x1,000)	Mean Elec. Output (Mw)	Disch. Temp. (C)	Intake Temp. (C)	Delta-T (C)
DEC																
1	2	0	87	0	6	0	2911	880	6	0	0	27	0	22.6	8.4	14.2
2	2	0	87	0	6	0	2911	863	6	0	0	27	0	22.3	8.3	14.0
3	2	0	87	0	6	0	2911	880	6	0	0	27	0	21.5	7.9	13.6
4	2	0	87	0	6	0	2911	881	6	0	0	27	0	21.4	7.6	13.8
5	2	0	87	0	6	0	2911	885	6	0	0	27	0	21.6	7.4	14.2
6	2	0	87	0	6	0	2911	883	6	0	0	27	0	21.7	7.5	14.2
7	2	0	87	0	6	0	2885	884	6	0	0	27	0	21.8	7.1	14.7
8	2	0	87	0	6	0	2884	885	6	0	0	27	0	20.5	6.5	14.0
9	2	0	87	0	6	0	2882	884	6	0	0	27	0	20.3	6.1	14.2
10	2	0	87	0	6	0	2882	883	6	0	0	27	0	20.7	6.2	14.5
11	2	0	87	0	6	0	2884	883	6	0	0	27	0	20.3	5.4	14.9
12	2	0	87	0	6	0	2911	884	6	0	0	27	0	20.7	5.6	15.1
13	2	0	87	0	6	0	2911	883	6	0	0	27	0	20.3	5.2	15.1
14	2	0	87	0	6	0	2911	883	6	0	0	29	0	19.2	4.6	14.6
15	2	0	87	0	6	0	2904	883	6	0	0	30	0	18.3	3.8	14.5
16	2	0	87	0	6	0	2884	883	6	0	0	28	0	18.1	3.4	14.7
17	2	0	87	0	6	0	2884	884	6	0	0	27	0	18.1	3.7	14.4
18	2	0	87	0	6	0	2884	885	6	0	0	27	0	18.1	4.2	13.9
19	2	0	87	0	6	0	2884	882	6	0	0	27	0	17.4	3.4	14.0
20	2	0	87	0	6	0	2884	866	6	0	0	27	0	17.1	2.9	14.2
21	2	0	87	0	6	0	2884	883	6	0	0	27	0	16.8	2.7	14.1
22	2	0	87	0	6	0	2866	806	6	0	0	27	0	16.1	2.8	13.3
23	2	0	87	0	6	0	2884	739	6	0	0	27	0	14.9	2.4	12.5
24	2	0	87	0	6	0	2884	884	6	0	0	27	0	17.3	2.6	14.7
25	2	0	87	0	6	0	2884	877	6	0	0	27	0	17.1	1.9	15.2
26	2	0	87	0	6	0	2879	882	6	0	0	27	0	17.2	1.9	15.3
27	2	0	87	0	6	0	2857	885	6	0	0	27	0	17.4	1.8	15.6
28	2	0	87	0	6	0	2856	885	6	0	0	27	0	17.4	1.9	15.5
29	2	0	87	0	6	0	2856	882	6	0	0	31	0	17.0	1.9	15.1
30	2	0	87	0	6	0	2856	885	6	0	0	14	0	16.5	1.5	15.0
31	2	0	87	0	6	0	2856	885	6	0	0	55	0	16.9	1.4	15.5