

PROGRESS REPORT FOR THE NINETEENTH QUARTER

on

WOODBORER STUDY ASSOCIATED WITH THE
OYSTER CREEK GENERATING STATION

to

JERSEY CENTRAL POWER & LIGHT COMPANY

March 7, 1980

by

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INTRODUCTION

The William F. Clapp Laboratories of Battelle's Columbus Laboratories is conducting an investigation to determine whether the generating station is affecting the resident marine borer population in Oyster Creek to the extent that that population is contributing significantly to marine borer-caused damage in Barnegat Bay.

A description of the program and procedures used may be found in the Draft Annual Report on Woodborer Study Associated with the Oyster Creek Generating Station, Report 14968, dated February 9, 1980.

This report presents the summary data for the nineteenth quarterly period from November 9, 1979 through February 8, 1980.

PROCEDURES AND INTERIM DATA

Exposure Panels

The long-term and short-term exposure panels were retrieved and replaced with new untreated pre-soaked (for two weeks) panels at the 20 exposure sites in Barnegat Bay and adjacent waters (Figure 1) during the periods of December 12-13, 1979, January 7-9, and February 5-6, 1980. Long-term and short-term panels at all stations were retrieved and replaced.

Table 1 describes the geographical locations of the exposure sites. The summary data for the laboratory examination of the panels may be found in Tables 2 through 5.

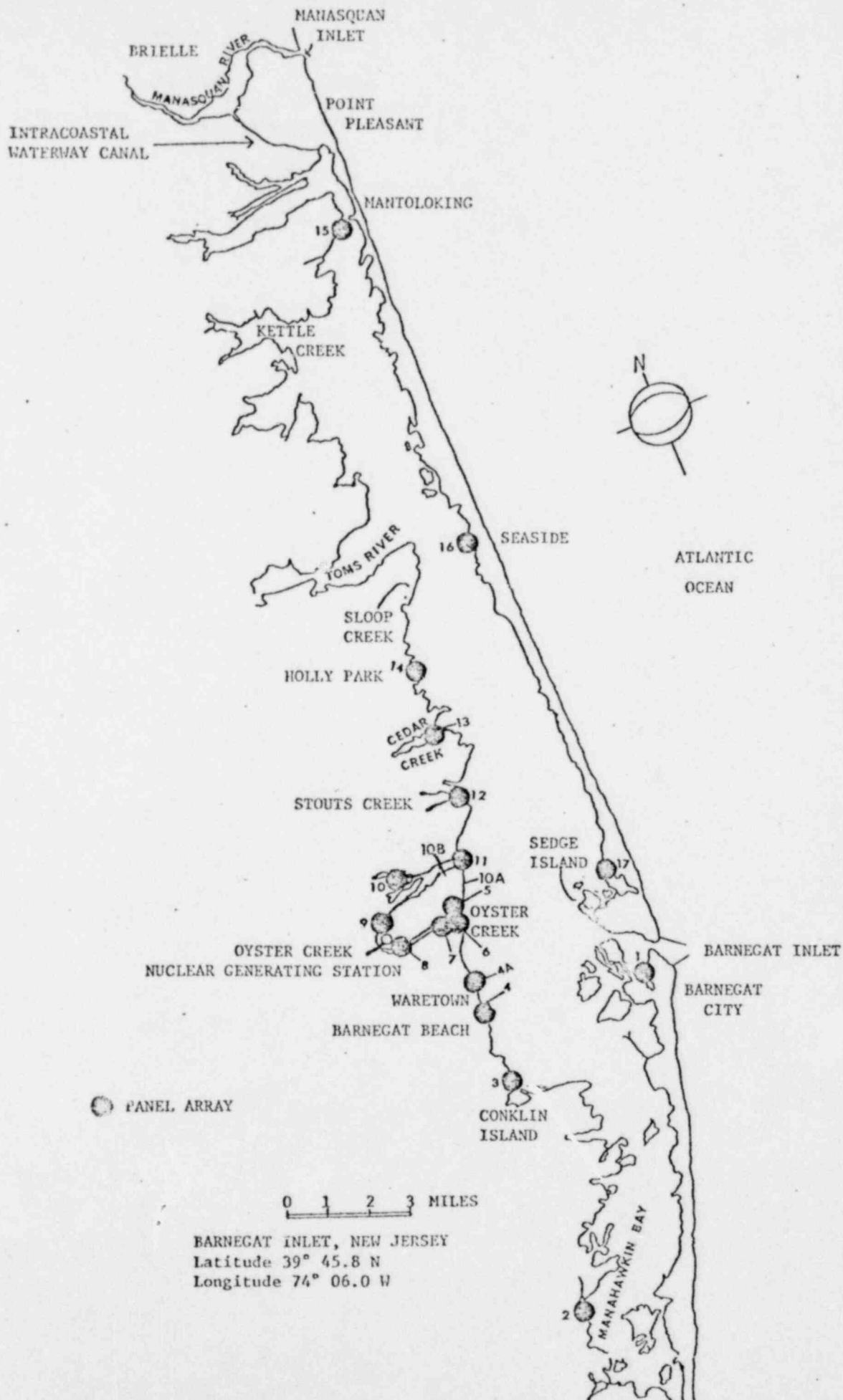


FIGURE 1. OUTLINE OF BARNEGAT BAY SHOWING GEOGRAPHICAL LOCATIONS OF EXPOSURE PANELS

TABLE 1. GEOGRAPHICAL LOCATIONS OF WILLIAM F. CLAPP LABORATORIES' EXPOSURE
PANEL ARRAYS SUBMERGED JUNE, 1975, BARNEGAT BAY, NEW JERSEY

Site No.	Site	Structure to be used for Suspension of Rack	Nearest Previous Data Stations	Approximate Latitude and Longitude
1.	Barnegat Coast Guard Station, Barnegat Inlet	Finger Pier	WC 1 WFCL 1948-1967	Lat. 39° 45.8'N Long. 74° 06.5'W
2.	Ashton Marina 1450 Bay Ave. Manahawkin	Bulkhead	WC 13,14	Lat. 39° 40'N Long. 74° 13'W
3.	Iggie's Marina East Bay Ave. Barnegat (Conklin Island)	Bulkhead	WC 16,17,18,19	Lat. 39° 45'N Long. 74° 12.5'W
4.	Liberty Harbor Marina Washington Ave. Waretown	Bulkhead	WC 21 R. Turner Rutgers U.	Lat. 39° 47'N Long. 74° 11'W
4-A*.	Holiday Harbor Marina Lighthouse Drive Waretown	Bulkhead	WC 21 R. Turner Rutgers U.	Lat. 39° 48'N Long. 74° 11'N
5.	Mouth of Oyster Creek, Lot 4, Compass Road Offshore End	Dock	WC 29,30 Rutgers U.	Lat. 39° 48.5'N Long. 74° 10.3'W
6.	Oyster Creek #1 Lagoon, Inshore End 37 Capstan Drive	Dock		Lat. 39° 48.5'N Long. 74° 10.35'W
7.	Private Dock Dock Ave. Oyster Creek Sands Pt. Harbor Waretown	End of Dock	WC 27,28 R. Turner Rutgers U.	Lat. 39° 48.5'N Long. 74° 11.1'W

TABLE 1. (continued)

Site No.	Site	Structure to be used for Suspension of Rack	Nearest Previous Data Stations	Approximate Latitude and Longitude
8.	Oyster Creek-R.R. Bridge Discharge Canal	Cross Member Bridge	WC 26 Rutgers U.	Lat. 39° 48.7'N Long. 74° 12'W
9.	Forked River South Branch Intake Canal	Cross Member R.R. Bridge	WC 31 Rutgers U.	Lat 39° 49.2'N Long. 74° 12.2'W
10.	Teds Marina Bay Ave. Forked River	Pier	WC 33,34	Lat. 39° 50.1'N Long. 74° 11.6'W
10A*.	Private Dock 1-16 Aquarius Ct. Forked River	Under Dock		Lat. 39° 49'N Long. 74° 10'W
10B*.	Private Dock 1307 Beach Blvd. Forked River	Under Dock		Lat. 39° 49.4'N Long. 74° 10.1'W
11.	Forked River (near mouth) 1413 River View Drive	Bulkhead	WC 35 Rutgers U.	Lat. 39° 49.7'N Long. 74° 10'W
12.	Stouts Creek 1273 Capstan Drive	Bulkhead	WC 38,40,41 R. Turner Wurtz Rutgers U.	Lat 39° 50.5'N Long. 74° 08.8'W
13.	Rocknak's Yacht Basin Seaview Ave. Lanoka Harbor Cedar Creek	End of Pier	WC 46	Lat. 39° 52'N Long. 74° 09'W

TABLE 1. (continued)

Site No.	Site	Structure to be used for Suspension of Rack	Nearest Previous Data Stations	Approximate Latitude and Longitude
14.	Dicks Landing Island Drive Bayville (Holly Park)	Pier	WC 49 R. Turner Nelson	Lat. 39° 54'W Long. 74° 08.1'W
15.	Winter Yacht Basin Inc. Rt. 528 Mantoloking Bridge W. Mantoloking	Pier	WC 57	Lat. 40° 02.5'N Long. 74° 03.5'W
16.	Berkely Yacht Basin J. Street Seaside	Pier	WC 60,61	Lat. 39° 55.9'N Long. 74° 04.9'W
17.	Island Beach State Park (Sedge Island)	Pier	WC 68	Lat. 39° 47.1'N Long. 74° 05.9'W

5

All exposure panel racks suspended in a minimum water depth at mean low water of at least three feet. Racks hung with nylon line from existing structures so the bottom panels are close to, but not touching the bottom. Racks at Forked River railroad bridge and Oyster Creek railroad bridge suspended with wire rope.

WC = Woodward-Clyde

WFCL = William F. Clapp Laboratories

*Site 4-A installed April, 1977

Sites 10 A, 10 B installed April, 1978.

TABLE 2. SUMMARY DATA FOR INCIDENCE OF TEREDINIDAE IN PANELS REMOVED DECEMBER 12-13, 1979

Site	Panel	No. of Specimens	Percent Filled	Size Range in mm.	Species Identification	Remarks
1	P*	400	99	5-75	100 <i>T. navalis</i> , 300 Teredinidae	75% of specimens dead.
	C*	0				
2	P	23	30	75-190	4 <i>T. navalis</i>	
	C	0				
3	P	2	5	105-120	1 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
4	P	6	13	50-150	6 <i>B. gouldi</i>	
	C	0				
4A	P	5	25	105-280	4 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
5	P	400	99	(Tubes broken)	10 <i>T. bartschi</i> , 39 Teredinidae	40% of panel missing. No live specimens.
	C	0				
6	P	290	50	<1-85	170 <i>T. bartschi</i> , 120 Teredinidae	
	C	0				
7	P	400	99	4-80	14 <i>T. bartschi</i> , 386 Teredinidae	10% of panel missing. No live specimens.
	C	0				
8	P	3	20	240-360	3 <i>B. gouldi</i>	
	C	0				
9	P	3	15	90-280	3 <i>T. navalis</i>	
	C	0				
10	P	3	9	145-220	2 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
10A	P	70	97	13-190	23 <i>B. gouldi</i> , 47 <i>T. bartschi</i>	
	C	0				

TABLE 2. (Continued)

site	Panel	No. of Specimens	Percent Filled	Size Range in mm.	Species Identification	Remarks
10B	P	9	55	140-330	7 <i>B. gouldi</i> , 2 <i>T. navalis</i>	
	C	0				
11	P	400	99	(Tubes broken)	7 <i>B. gouldi</i> , 393 Teredinidae	30% of panel missing. 1 live specimen. Rest dead.
	C	0				
12	P	21	85	85-220	21 <i>B. gouldi</i>	
	C	0				
13	P	57	97	22-240	57 <i>B. gouldi</i>	
	C	0				
14	P	64	99	50-145	64 <i>B. gouldi</i>	
	C	0				
15	P	2	7	140-160	1 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
17	P	3	6	40-175	3 <i>T. navalis</i>	
	C	0				

Site 16 - no Teredinidae present.

*P = Long-term panel, submerged June 4-5, 1979

*C = Short-term panel, submerged November 5-6, 1979

TABLE 3. SUMMARY DATA FOR INCIDENCE OF TEREDINIDAE IN PANELS REMOVED JANUARY 7-9, 1980

Site	Panel	No. of Specimens	Percent Filled	Size Range in mm.	Species Identification	Remarks
1	P*	400	99	8-80	220 <i>T. navalis</i> , 180 Teredinidae	30% of panel missing.
	C*	0				
2	P	15	35	45-190	13 <i>T. navalis</i> , 2 Teredinidae	
	C	0				
3	P	5	15	70-140	4 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
4	P	3	6	60-100	2 <i>B. gouldi</i> , 1 Teredinidae	
	C	0				
4A	P	6	25	65-195	4 <i>B. gouldi</i> , 2 <i>T. navalis</i>	
	C	0				
5	P	393	99	7-190	3 <i>B. gouldi</i> , 390 <i>T. bartschi</i>	
	C	0				
6	P	84	25	<1-130	39 <i>T. bartschi</i> , 45 Teredinidae	1 <i>T. bartschi</i> with umbonate larvae.
	C	0				
7	P	405	99	3-85	5 <i>B. gouldi</i> , 200 <i>T. bartschi</i> , 200 Teredinidae	15% of panel missing. No live specimens.
	C	0				
9	P	1	6	230	1 <i>T. navalis</i>	
	C	0				
10A	P	58	95	20-290	23 <i>B. gouldi</i> , 34 <i>T. bartschi</i> , 1 <i>T. navalis</i>	1 <i>T. bartschi</i> dead.
	C	0				

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TABLE 3. (Continued)

Site	Panel	No. of Specimens	Percent Filled	Size Range in mm.	Species Identification	Remarks
10B	P	5	15	25-230	3 <i>B. gouldi</i> , 1 <i>T. bartschi</i> , 1 <i>T. navalis</i>	
	C	0				
11	P	284	99	12-130	4 <i>B. gouldi</i> , 110 <i>T. navalis</i> , 170 Teredinidae	40% of panel missing.
	C	0				
12	P	29	90	40-255	28 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
13	P	12	45	70-170	12 <i>B. gouldi</i>	
	C	0				
14	P	14	30	20-120	12 <i>B. gouldi</i> , 2 Teredinidae	3 dead.
	C	0				
15	P	11	35	60-90	3 <i>B. gouldi</i> , 7 <i>T. navalis</i> , 1 Teredinidae	
	C	0				
17	P	7	12	30-115	7 <i>T. navalis</i>	
	C	0				

Sites 8, 10, and 16 - no Teredinidae present.

*P = Long-term panel, submerged July 9-10, 1979

*C = Short-term panel, submerged December 12-13, 1979

TABLE 4. SUMMARY DATA FOR INCIDENCE OF TEREDINIDAE IN PANELS REMOVED FEBRUARY 5-6, 1980

Site	Panel	No. of Specimens	Percent Filled	Size Range in mm.	Species Identification	Remarks
1	P*	500	99	<1-34	300 <i>T. navalis</i> , 200 Teredinidae	40% dead. 1 <i>T. navalis</i> with ripening gonads.
	C*	0				
2	P	13	35	95-190	12 <i>T. navalis</i> , 1 Teredinidae	
	C	0				
4	P	5	9	42-105	2 <i>B. gouldi</i> , 3 <i>T. navalis</i>	
	C	0				
4A	P	3	9	115-150	2 <i>T. navalis</i> , 1 Teredinidae	
	C	0				
5	F	450	99	5-50	1 <i>B. gouldi</i> , 449 <i>T. bartschi</i>	None live.
	C	0				
6	P	150	15	<1-105	21 <i>T. bartschi</i> , 1 <i>T. navalis</i> , 128 Teredinidae	None live. 4 <i>T. bartschi</i> with dead larvae remaining in tubes.
	C	0				
7	P	500	99	6-45	55 <i>T. bartschi</i> , 445 Teredinidae	None live.
	C	0				
8	P	2	5	45-225	1 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
9	P	2	10	235	1 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				
10A	P	97	35	<1-200	31 <i>T. bartschi</i> , 1 <i>T. navalis</i> , 65 Teredinidae	60% of <i>T. bartschi</i> dead. 2 tubes with dead larvae remaining.
	C	0				
10B	P	4	13	25-195	3 <i>B. gouldi</i> , 1 <i>T. navalis</i>	
	C	0				

TABLE 4. (Continued)

Site	Panel	No. of Specimens	Filled	Size Range in mm.	Species Identification	Remarks
11	P	140	75	13-145	1 <i>T. bartschi</i> , 139 <i>T. navalis</i>	<i>T. bartschi</i> dead. Larvae remaining in tube.
	C	0				
12	P	2	4	115	2 <i>B. gouldi</i>	
	C	0				
13	P	2	4	130-140	2 <i>B. gouldi</i>	
	C	0				
14	P	11	30	60-205	8 <i>B. gouldi</i> , 3 <i>T. navalis</i>	
	C	0				
15	P	1	2	85	1 <i>T. navalis</i>	
	C	0				
17	P	4	4	25-85	4 <i>T. navalis</i>	
	C	0				

Sites 3, 10, and 16 - no Teredinidae present.

*P = Long-term panel, submerged August 6-7, 1979

*C = Short-term panel, submerged January 7-9, 1980

TABLE 5. SUMMARY DATA FOR INCIDENCE OF *Limnoria tripunctata* IN PANELS REMOVED DECEMBER, 1979, JANUARY AND FEBRUARY, 1980

Site	Panel	December		January		February	
		No. of Tunnels	No. of Specimens	No. of Tunnels	No. of Specimens	No. of Tunnels	No. of Specimens
1	P*	19	0	0		0	
	C*	0		0		0	
2	P	160	78	0		1	1
	C	0		0		0	
3	P	0		0		1	1
	C	0		0		0	
4	P	8	2	3	1	0	
	C	0		0		0	
4A	P	240	135	27	6	18	4
	C	0		0		0	

Sites 5-17, no *Limnoria* present.

*P = Long-term panel, submerged 6 months

C = Short-term panel, submerged 1 month

Water Quality

Salinity, water temperature, dissolved oxygen, and pH were determined with a Hydrolab (Model II B). The results for December, 1979 January, and February, 1980 may be found in Tables 6 through 8.

Teredinid Gonadal Development Studies

Table 9 shows the gonad condition of the teredinid borers collected from December, 1979 through January, 1980. Included are results from special long-term panels exposed for periods ranging from 12 to 17 months.

TABLE 6. WATER QUALITY AT EXPOSURE PANEL STATIONS, DECEMBER, 1979

Station	Date	Time	Depth in Feet	Salinity (0/00)	Temp. (°C)	O ₂ (mg/l)	pH
1	12/12/79	1010	6.0	23.6	7.3	9.8	8.5
2	12/12/79	1030	2.0	21.4	5.7	11.2	8.0
3	12/12/79	1107	3.0	15.2	6.3	11.0	8.1
4	12/12/79	1120	3.5	19.2	8.0	12.4	8.0
4A	12/12/79	1145	3.5	13.1	7.4	11.6	8.1
5	12/12/79	1207	4.0	18.5	11.7	10.0	7.9
6	12/12/79	1215	4.0	18.5	11.7	10.0	7.9
7	12/12/79	1235	3.0	17.9	13.4	10.9	7.8
8	12/12/79	1333	6.0	20.6	13.5	10.8	8.0
9	12/12/79	1347	6.0	21.3	9.5	11.4	8.1
10	12/12/79	1512	3.0	17.2	8.0	11.2	8.0
10A	12/12/79	1415	3.5	17.2	11.5	10.8	8.1
10B	12/12/79	1425	3.5	16.5	10.0	11.2	8.0
11	12/12/79	1440	4.0	19.9	10.0	13.0	8.1
12	12/12/79	1535	3.5	18.5	7.5	12.0	8.1
	12/12/79	1555	3.0	16.5	8.0	12.0	8.0
	12/12/79	1612	3.0	15.2	7.0	12.2	8.2
15	12/13/79	1430	3.5	13.8	8.3	11.4	8.0
16	12/12/79	1750	4.5	13.1	7.9	11.5	8.1
17	12/12/79	1710	1.5	24.9	8.0	11.0	8.2

TABLE 7. WATER QUALITY AT EXPOSURE PANEL STATIONS, JANUARY, 1980

Station	Date	Time	Depth in Feet	Salinity (0/00)	Temp. (°C)	O ₂ (mg/l)	pH
1	1/8/80	0840	2.0	22.0	1.5	12.5	7.4
2	1/8/80	0920	2.0	18.2	0.5	13.0	7.5
3	1/8/80	1010	2.0	22.0	1.0	13.2	8.3
4	1/8/80	1030	3.0	21.3	2.5	13.0	7.8
4A	1/8/80	1115	3.0	19.9	2.5	12.4	7.3
5	1/8/80	1200	4.0	17.2	2.5	12.6	7.6
6	1/8/80	1215	2.0	17.6	2.0	13.1	7.2
7	1/8/80	1225	3.0	17.2	2.5	12.2	7.1
8	1/8/80	1340	3.0	15.2	2.5	13.4	7.2
9	1/8/80	1408	3.0	*	2.5	14.1	7.2
10	1/8/80	1545	3.0	17.2	3.0	12.4	7.3
10A	1/8/80	1525	2.0	21.3	2.5	14.0	7.3
10B	1/8/80	1450	3.0	21.3	2.5	12.8	7.3
11	1/8/80	1505	3.0	17.2	2.5	14.2	7.2
12	1/8/80	1430	2.0	19.2	2.5	15.0	7.2
13	1/8/80	1605	3.0	11.8	3.0	12.6	7.0
14	1/8/80	1630	3.0	19.2	3.5	13.0	7.2
15	1/9/80	0750	2.0	19.2	0.5	*	7.4
16	1/9/80	0710	3.0	15.2	1.0	13.5	7.6
17	1/7/80	1600	2.0	20.6	1.0	14.4	8.1

* - Not taken

TABLE 8. WATER QUALITY AT EXPOSURE PANEL STATIONS, FEBRUARY, 1980

Station	Date	Time	Depth in Feet	Salinity (0/00)	Temp. (°C)	O ₂ (mg/l)	pH
1	2/6/80	0925	6.0	25.6	-0.2	13.1	8.2
2	2/6/80	0950	2.0	15.8	1.5	12.0	7.4
3	2/6/80	1030	3.0	13.8	-1.0	14.0	7.7
4	2/6/80	1115	3.5	21.3	-0.5	14.6	7.8
4A	2/6/80	1135	3.5	22.0	-0.5	15.6	8.1
5	2/6/80	1205	4.0	8.7	0.0	*	6.7
6	2/6/80	1210	4.0	15.8	-1.0	*	6.8
7	2/6/80	1230	3.0	19.9	0.0	14.2	8.0
8	2/6/80	1245	6.0	19.2	0.0	*	8.2
9	2/6/80	1300	6.0	19.9	0.1	*	8.1
10	2/6/80	1500	3.0	4.1	1.0	14.0	7.4
10A	2/6/80	1400	3.5	13.8	-0.5	12.2	7.5
10B	2/6/80	1415	3.5	9.2	-1.0	*	8.0
11	2/6/80	1420	4.0	15.8	-1.5	*	8.1
12	2/6/80	1440	3.5	11.8	-0.5	12.4	7.3
13	2/6/80	1510	3.0	18.5	1.0	15.4	7.9
14	2/6/80	1515	3.0	15.8	1.0	15.4	8.0
15	2/6/80	1600	3.5	20.6	0.0	15.0	8.2
16	2/5/80	1710	4.5	13.8	-0.2	13.0	7.9
17	2/5/80	1415	1.5	19.9	-0.1	12.8	7.6

* - Hydrolab malfunctioning

TABLE 9. CONDITION OF GONADS OF TEREDINID BORERS REMOVED FROM EXPOSURE PANELS IN
BARNEGAT BAY FROM DECEMBER, 1979 THROUGH JANUARY, 1980

EA = Early Active; LA = Late Active; R = Ripe; PS = Partially Spawned
S = Spent; M = Male; F = Female; H = Hermaphrodite

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
648a	14	Dec 79	6	<i>Bankia gouldi</i>	M	S	Many cysts; ciliates on gills.
b				<i>Bankia gouldi</i>	M	S	Many ciliates on gills.
c				<i>Bankia gouldi</i>	M	S	Cysts; many ciliates on gills.
d				<i>Bankia gouldi</i>			No discernable gonad; necrosis, mataplasia of digestive tubule epithelium; ciliates.
e				<i>Bankia gouldi</i>	M	S	Cysts; eosinophilic leukocytes.
f				<i>Bankia gouldi</i>	M	S	Cyst in gonad.
g				<i>Bankia gouldi</i>	F	LA	
h				<i>Bankia gouldi</i>	M	S	
649a	10B	Dec 79	6	<i>Bankia gouldi</i>	M	S	
b				<i>Bankia gouldi</i>	M	S	Necrosis; leukocytosis.
c				<i>Bankia gouldi</i>			No discernable gonad.
d				<i>Bankia gouldi</i>	M	S	
650	10B	Dec 79	6	<i>Teredo navalis</i>	F	S	<i>Minchinia</i> ; abscesses; metaplasia of digestive tubules.
651	10	Dec 79	6	<i>Teredo navalis</i>	F	R	Unspawned; eggs undergoing cytolysis.
652	10	Dec 79	6	<i>Bankia gouldi</i>	M	S	Leukocytosis; necrosis, metaplasia of digestive tubules.
653a	17	Dec 79	6	<i>Teredo navalis</i>	H	S	
b				<i>Teredo navalis</i>	M	LA	Necrotic.
c				<i>Teredo navalis</i>	H	LA	Necrotic; metaplasia of digestive tubules.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
654a	13	Dec 79	6	<i>Bankia gouldi</i>			No discernable gonad; necrotic.
b				<i>Bankia gouldi</i>	M	S	Necrotic; granulocytomas.
c				<i>Bankia gouldi</i>	M	S	
d				<i>Bankia gouldi</i>	M	LA	Cysts; sperm undergoing cytolysis; unidentified cells.
655a	4A	Dec 79	6	<i>Bankia gouldi</i>			No discernable gonad.
b				<i>Bankia gouldi</i>	M	S	Necrotic digestive tubules.
c				<i>Bankia gouldi</i>			No discernable gonad.
d				<i>Bankia gouldi</i>	M	S	
656	4A	Dec 79	6	<i>Teredo navalis</i>	H	LA	
657a	12	Dec 79	6	<i>Bankia gouldi</i>	M	S	Necrotic.
b				<i>Bankia gouldi</i>	M	S	
c				<i>Bankia gouldi</i>			No discernable gonad.
d				<i>Bankia gouldi</i>			No discernable gonad.
e				<i>Bankia gouldi</i>	M	S	
658a	6	Dec 79	6	<i>Teredo navalis</i>			No discernable gonad; larvae in brood pouch.
b				<i>Teredo navalis</i>			No discernable gonad; necrotic.
c				<i>Teredo navalis</i>			No discernable gonad; larvae in brood pouch.
659a	2	Dec 79	12	<i>Teredo navalis</i>	F	S	Special panel; <i>Minchinia</i> ; necrotic; metaplasia of digestive tubules.
b				<i>Teredo navalis</i>	M	S	<i>Minchinia</i> ; necrotic.
c				<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> ; leukocytosis; cytolysis of gametes.
d				<i>Teredo navalis</i>	F	A	<i>Minchinia</i> ; necrotic; metaplasia of digestive tubules.

TABLE 9. Continued

Specimen No.	Station	Month Removeu	No. Months Exposed	Species	Sex	Gonad Condition	Comments
659e	2	Dec 79	12	<i>Teredo navalis</i>	M	S	<i>Minchinia</i> .
f				<i>Teredo navalis</i>	H	S	<i>Minchinia</i> ; necrotic.
660a	4	Dec 79	6	<i>Bankia gouldi</i>	M	S	Metaplasia of digestive tubules.
b				<i>Bankia gouldi</i>	M	S	
c				<i>Bankia gouldi</i>	M	S	
d				<i>Bankia gouldi</i>	M	S	
e				<i>Bankia gouldi</i>	M	S	
f				<i>Bankia gouldi</i>	M	S	
661a	2	Dec 79	6	<i>Teredo navalis</i>	M	PS	Metaplasia of digestive tubules.
b				<i>Teredo navalis</i>	H	S	Leukocytosis; metaplasia of digestive tubules.
c				<i>Teredo navalis</i>	M	S	
d				<i>Teredo navalis</i>	H	S	Necrotic.
662a	8	Dec 79	6	<i>Bankia gouldi</i>			No discernable gonad.
b				<i>Bankia gouldi</i>	M	S	Necrotic.
c				<i>Bankia gouldi</i>			No discernable gonad.
663	3	Dec 79	6	<i>Bankia gouldi</i>	M	S	
664	3	Dec 79	6	<i>Teredo navalis</i>	H	S	
665	11	Dec 79	6	<i>Bankia gouldi</i>	M	S	
666	12	Dec 79	16	<i>Teredo navalis</i>	M	S	Special panel; some leukocytosis.
667a	12	Dec 79	16	<i>Bankia gouldi</i>	M	S	Special panel; granulocytomas.
b				<i>Bankia gouldi</i>	M	LA	
c				<i>Bankia gouldi</i>	M	S	
d				<i>Bankia gouldi</i>	M	S	Necrotic.
e				<i>Bankia gouldi</i>	M	S	Necrotic.
f				<i>Bankia gouldi</i>	M	S	Necrotic.
g				<i>Bankia gouldi</i>			No discernable gonad; necrotic.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
667h	12	Dec 79	16	<i>Bankia gouldi</i>			No discernable gonad; necrotic.
i				<i>Bankia gouldi</i>			No discernable gonad.
j				<i>Bankia gouldi</i>	M	S	Necrotic.
k				<i>Bankia gouldi</i>			No discernable gonad; necrotic.
l				<i>Bankia gouldi</i>	M	S	Leukocytosis.
m				<i>Bankia gouldi</i>	M	S	
n				<i>Bankia gouldi</i>	M	S	Necrotic.
668a	1	Dec 79	6	<i>Teredo navalis</i>	M	PS	
b				<i>Teredo navalis</i>	H	S	
c				<i>Teredo navalis</i>	M	S	
d				<i>Teredo navalis</i>	H	LA	
e				<i>Teredo navalis</i>	H	S	<i>Minchinia</i> plasmodia; metaplasia of digestive tubules.
f				<i>Teredo navalis</i>			No discernable gonad; <i>Minchinia</i> plasmodia.
669a	9	Dec 79	6	<i>Teredo navalis</i>	H	S	
b				<i>Teredo navalis</i>	H	S	<i>Minchinia</i> .
c				<i>Teredo navalis</i>	H	S	
670a	11	Dec 79	16	<i>Teredo navalis</i>	H	S	Special panel; <i>Minchinia</i> plasmodia.
b				<i>Teredo navalis</i>	H	S	<i>Minchinia</i> plasmodia.
671a	11	Dec 79	16	<i>Bankia gouldi</i>	M	S	Special panel.
b				<i>Bankia gouldi</i>	M	S	Autolysis of connective tissue; necrosis.
c				<i>Bankia gouldi</i>	M	S	Necrotic.
d				<i>Bankia gouldi</i>	M	S	Cysts; necrotic.
e				<i>Bankia gouldi</i>	M	S	Cysts; necrotic.
f				<i>Bankia gouldi</i>	M	S	Necrotic.
g				<i>Bankia gouldi</i>	M	R	
672	7	Dec 79	16	<i>Bankia gouldi</i>	M	S	Special panel.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
673a	17	Dec 79	16	<i>Teredo navalis</i>	M	EA	Special panel. <i>Minchinia</i> plasmodia. <i>Minchinia</i> plasmodia.
b				<i>Teredo navalis</i>	M	LA	
c				<i>Teredo navalis</i>	H	S	
d				<i>Teredo navalis</i>	H	S	
e				<i>Teredo navalis</i>	H	S	
674	15	Dec 79	6	<i>Bankia gouldi</i>	M	S	Granulocytomas; leukocytosis.
675a	10A	Dec 79	6	<i>Bankia gouldi</i>	M	S	
b				<i>Bankia gouldi</i>	M	S	
c				<i>Bankia gouldi</i>	M	S	
d				<i>Bankia gouldi</i>	M	S	
676	15	Dec 79	6	<i>Teredo navalis</i>	H	LA	
677a	10A	Dec 79	6	<i>Teredo bartschi</i>	H	S	No discernable gonad; larvae in brood pouch. No discernable gonad; larvae in brood pouch. No discernable gonad.
b				<i>Teredo bartschi</i>			
c				<i>Teredo bartschi</i>			
d				<i>Teredo bartschi</i>	H	S	
e				<i>Teredo bartschi</i>			
678	10B	Jan 80	6	<i>Teredo bartschi</i>	H	R	Gametes undergoing cytolysis; early larvae in brood pouch.
679a	4	Jan 80	6	<i>Bankia gouldi</i>	M	EA	
b				<i>Bankia gouldi</i>	F	EA	
680a	10B	Jan 80	6	<i>Bankia gouldi</i>	M	S	Necrotic intestinal epithelium, digestive tubules.
b				<i>Bankia gouldi</i>	M	EA	
c				<i>Bankia gouldi</i>	M	EA	

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
681a	13	Jan 80	6	<i>Bankia gouldi</i>	F	EA	Amorphous material in heart cells.
b				<i>Bankia gouldi</i>	M	EA	
c				<i>Bankia gouldi</i>	M	EA	Cyst; unidentified material in gonad; extensive leukocytosis.
d				<i>Bankia gouldi</i>			No discernable gonad.
e				<i>Bankia gouldi</i>	M	S	
f				<i>Bankia gouldi</i>	F	EA	
g				<i>Bankia gouldi</i>	F	EA	Necrotic digestive tubules, connective tissue.
h				<i>Bankia gouldi</i>			No discernable gonad.
682	10B	Jan 80	6	<i>Teredo navalis</i>	F	LA	Gametes undergoing cytolysis.
683a	3	Jan 80	6	<i>Bankia gouldi</i>	M	EA	
b				<i>Bankia gouldi</i>	M	EA	
c				<i>Bankia gouldi</i>	M	EA	
d				<i>Bankia gouldi</i>	M	EA	
684	3	Jan 80	6	<i>Teredo navalis</i>	H	LA	
685a	2	Jan 80	6	<i>Teredo navalis</i>	F	LA	<i>Minchinia</i> ; metaplasia, necrosis of digestive tubules, gametes undergoing cytolysis.
b				<i>Teredo navalis</i>	H	EA	Metaplasia, necrosis of digestive tubules; granulocytoma.
c				<i>Teredo navalis</i>	F	LA	<i>Minchinia</i> plasmodia (early); gametes undergoing cytolysis.
d				<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> plasmodia.
e				<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> plasmodia; metaplasia, necrosis of digestive tubules.
f				<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> plasmodia.
g				<i>Teredo navalis</i>	H	LA	<i>Minchinia</i> spores and plasmodia.
686	9	Jan 80	6	<i>Teredo navalis</i>	F	R	<i>Minchinia</i> plasmodia.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
687a	15	Jan 80	6	<i>Bankia gouldi</i>	M	EA	
b				<i>Bankia gouldi</i>	F	EA	
c				<i>Bankia gouldi</i>	M	S	
688a	15	Jan 80	6	<i>Teredo navalis</i>	H	LA	
b				<i>Teredo navalis</i>	H	LA	
c				<i>Teredo navalis</i>	F	LA	Gametes undergoing cytolysis.
d				<i>Teredo navalis</i>	F	R	Gametes undergoing cytolysis.
e				<i>Teredo navalis</i>	F	LA	Gametes undergoing cytolysis; metaplasia of digestive tubules.
f				<i>Teredo navalis</i>	M	LA	
g				<i>Teredo navalis</i>	H	LA	Metaplasia of digestive tubules, necrosis.
689a	14	Jan 80	6	<i>Bankia gouldi</i>			No discernable gonad.
b				<i>Bankia gouldi</i>	M	EA	
c				<i>Bankia gouldi</i>	M	EA	
d				<i>Bankia gouldi</i>			No discernable gonad.
e				<i>Bankia gouldi</i>	M	EA	
f				<i>Bankia gouldi</i>	M	EA	
g				<i>Bankia gouldi</i>	M	EA	
h				<i>Bankia gouldi</i>	M	EA	
i				<i>Bankia gouldi</i>	M	EA	
j				<i>Bankia gouldi</i>	M	EA	
k				<i>Bankia gouldi</i>	M	EA	
690a	4A	Jan 80	6	<i>Bankia gouldi</i>	M	EA	Cysts in mantle; leukocytosis.
b				<i>Bankia gouldi</i>	M	EA	Leukocytosis.
c				<i>Bankia gouldi</i>	M	EA	
d				<i>Bankia gouldi</i>	M	EA	
691a	4A	Jan 80	6	<i>Teredo navalis</i>	F	LA	Gametes undergoing cytolysis; granulocytoma.
b				<i>Teredo navalis</i>	H	LA	

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
692a	6	Jan 80	6	<i>Teredo bartschi</i>	H	PS	
b				<i>Teredo bartschi</i>			No discernable gonad.
c				<i>Teredo bartschi</i>	M	PS	
d				<i>Teredo bartschi</i>			No discernable gonad.
e				<i>Teredo bartschi</i>	H	PS	Ciliates on gills.
693a	17	Jan 80	6	<i>Teredo navalis</i>	H	LA	<i>Minchinia</i> plasmodia.
b				<i>Teredo navalis</i>	H	LA	<i>Minchinia</i> plasmodia.
c				<i>Teredo navalis</i>	M	LA	
694a	5	Jan 80	6	<i>Teredo bartschi</i>	H	PS	Gametes undergoing cytolysis; necrotic debris.
b				<i>Teredo bartschi</i>	H	PS	Gametes undergoing cytolysis.
c				<i>Teredo bartschi</i>			No discernable gonad.
d				<i>Teredo bartschi</i>			No discernable gonad; all tissues necrotic.
695a	5	Jan 80	6	<i>Bankia gouldi</i>	M	EA	Cysts; metaplasia, necrosis of digestive tubules.
b				<i>Bankia gouldi</i>	M	EA	
c				<i>Bankia gouldi</i>	M	EA	
696a	10A	Jan 80	6	<i>Bankia gouldi</i>	M	EA	
b				<i>Bankia gouldi</i>			No discernable gonad; buildup of fibrous connective tissue.
c				<i>Bankia gouldi</i>			No discernable gonad.
d				<i>Bankia gouldi</i>			No discernable gonad; many ciliates in gut.
697a	10A	Jan 80	6	<i>Teredo bartschi</i>	H	PS	Gametes, larvae in brood pouch undergoing cytolysis; many ciliates in section.
b				<i>Teredo bartschi</i>	H	PS	Gametes undergoing cytolysis.
c				<i>Teredo bartschi</i>	H	C	

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
698a	12	Jan 80	6	<i>Bankia gouldi</i>	M	EA	No discernable gonad; fibrous connective tissue buildup.
b				<i>Bankia gouldi</i>			
c				<i>Bankia gouldi</i>			
d				<i>Bankia gouldi</i>			
e				<i>Bankia gouldi</i>			
f				<i>Bankia gouldi</i>	F	EA	No discernable gonad.
g				<i>Bankia gouldi</i>	F	EA	
h				<i>Bankia gouldi</i>	M	EA	
i				<i>Bankia gouldi</i>	M	EA	
j				<i>Bankia gouldi</i>			
k				<i>Bankia gouldi</i>	M	EA	No discernable gonad.
l				<i>Bankia gouldi</i>			
699a	7	Jan 80	6	<i>Bankia gouldi</i>			No discernable gonad.
b				<i>Bankia gouldi</i>			Cysts; center of cysts contain masses of dark granular material; ciliates in gut, mantle cavity.
700a	1	Jan 80	6	<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> plasmodia; ciliates on tissues.
b				<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> plasmodia.
c				<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> plasmodia; gonads necrotic.
d				<i>Teredo navalis</i>	M	LA	<i>Minchinia</i> plasmodia.
e				<i>Teredo navalis</i>	M	LA	
f				<i>Teredo navalis</i>	M	LA	
g				<i>Teredo navalis</i>	H	EA	
701	11	Jan 80	6	<i>Bankia gouldi</i>	M	EA	Granulocytomas; many ciliates on gills.
702a	11	Jan 80	6	<i>Teredo navalis</i>	H	LA	
b				<i>Teredo navalis</i>	M	EA	
c				<i>Teredo navalis</i>	M	EA	
d				<i>Teredo navalis</i>	M	EA	

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
703a	12	Jan 80	17	<i>Bankia gouldi</i>	M	EA	Special panel.
b				<i>Bankia gouldi</i>			No discernable gonad.
c				<i>Bankia gouldi</i>			No discernable gonad; mass of cells surrounded by fibrous material in tissue adjacent to caecum.
d				<i>Bankia gouldi</i>	M	EA	No discernable gonad.
e				<i>Bankia gouldi</i>			No discernable gonad.
f				<i>Bankia gouldi</i>			No discernable gonad.
704a	2	Jan 80	12	<i>Teredo navalis</i>	M	EA	Special panel; <i>Minchinia</i> .
b				<i>Teredo navalis</i>	H	EA	<i>Minchinia</i> .
c				<i>Teredo navalis</i>	H	LA	<i>Minchinia</i> .
d				<i>Teredo navalis</i>	H	PS	<i>Minchinia</i> plasmodia.
e				<i>Teredo navalis</i>	H	LA	<i>Minchinia</i> plasmodia.
f				<i>Teredo navalis</i>	M	EA	<i>Minchinia</i> plasmodia.
g				<i>Teredo navalis</i>	M	EA	<i>Minchinia</i> .
h				<i>Teredo navalis</i>	M	EA	<i>Minchinia</i> plasmodia.
i				<i>Teredo navalis</i>	H	EA	<i>Minchinia</i> plasmodia.
705a	17	Jan 80	12	<i>Teredo navalis</i>	H	LA	Special panel; <i>Minchinia</i> plasmodia.
b				<i>Teredo navalis</i>	H	LA	<i>Minchinia</i> .
c				<i>Teredo navalis</i>	M	EA	<i>Minchinia</i> .
706a	11	Jan 80	17	<i>Bankia gouldi</i>	M	EA	Special panel; multiple cysts.
b				<i>Bankia gouldi</i>	M	EA	
c				<i>Bankia gouldi</i>	M	S	
d				<i>Bankia gouldi</i>	F	S	Multiple cysts; tissues necrotic.
e				<i>Bankia gouldi</i>	M	EA	Metaplasia of digestive tubules; many ciliates in mantle cavity.