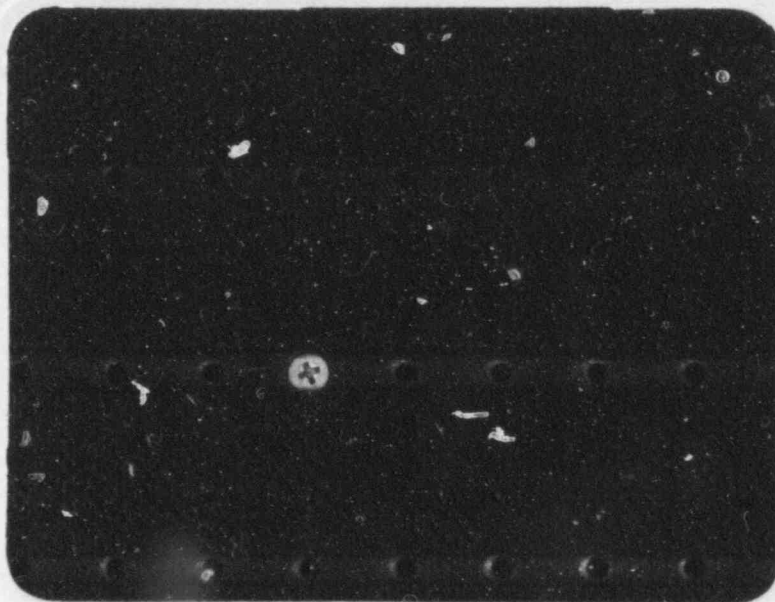




Battelle
Columbus Laboratories

Report



William F. Clapp Laboratories, Inc.
Duxbury, Massachusetts



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PROGRESS REPORT FOR THE SEVENTEENTH QUARTER

on

WOODBORER STUDY ASSOCIATED WITH THE
OYSTER CREEK GENERATING STATION

to

JERSEY CENTRAL POWER & LIGHT COMPANY

September 15, 1979

by

B.R. Richards, C.I. Belmore, and R.E. Hillman

Report No. 14932

May 5, 1979 to August 8, 1979

BATTELLE

Columbus Laboratories
William F. Clapp Laboratories
Duxbury, Massachusetts 02332

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WOODBORER STUDY ASSOCIATED WITH THE
OYSTER CREEK GENERATING STATION

by
B.R. Richards, C.I. Belmore, and R.E. Hillman

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 Annual Report on Woodborer Study Associated with the Oyster Creek Generating Station, Report No. 14893, dated February 28, 1979.

This report presents the summary data for the seventeenth quarterly period from May 5, 1979, through August 8, 1979.

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 June 4-5, July 9-10, and August 6-7, 1979. 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.

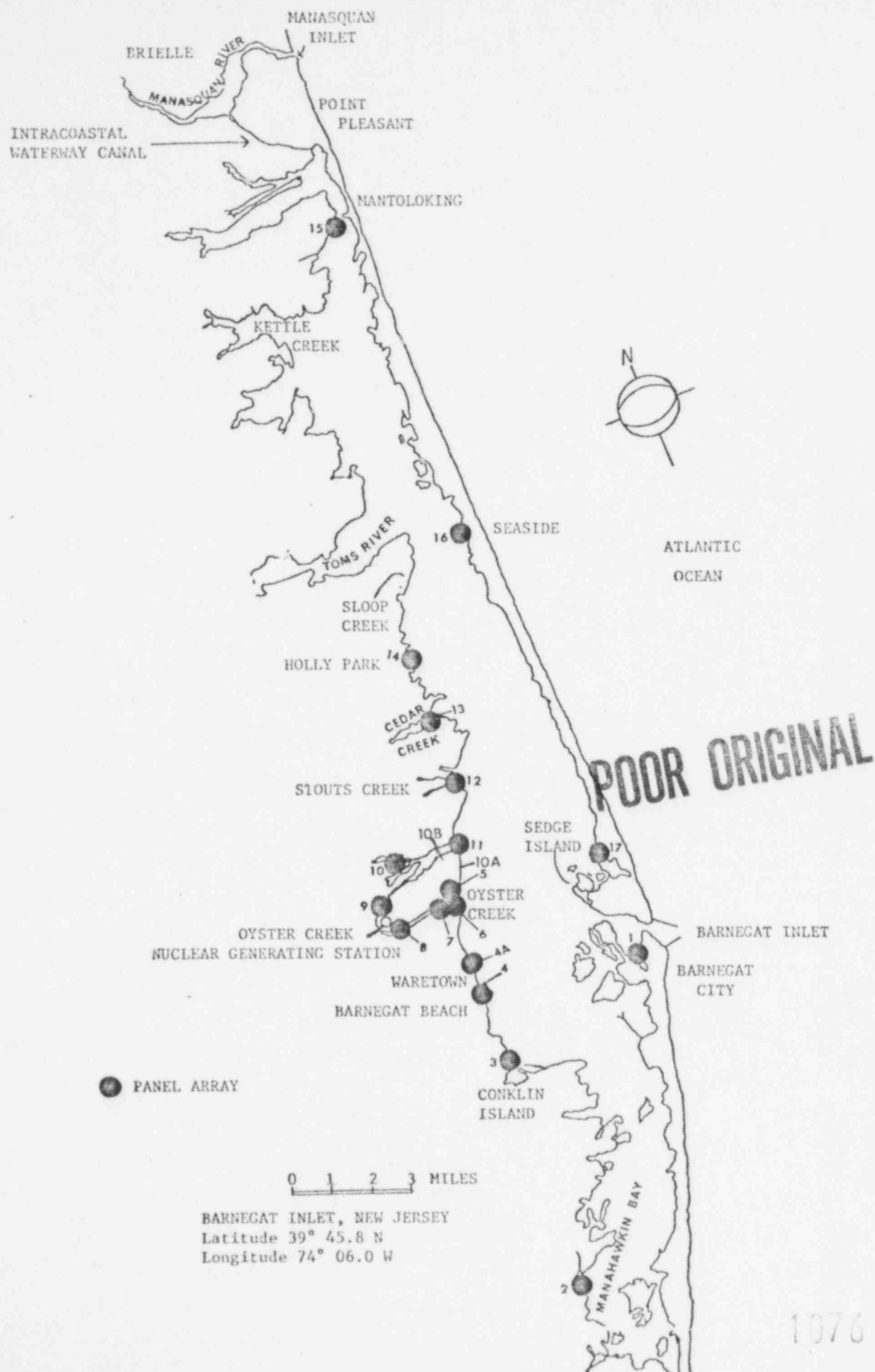


FIGURE 1. OUTLINE OF BARNEGAT BAY SHOWING GEOGRAPHICAL LOCATIONS OF EXPOSURE PANELS

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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'.
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

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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 1507 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

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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

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 JUNE 4-5, 1979

Site	Panel	No. of Specimens†	Percent Filled	Size Range in mm.	Species Identification	Remarks
1-17						No Teredinidae Present

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TABLE 3. SUMMARY DATA FOR INCIDENCE OF TEREDINIDAE IN PANELS REMOVED JULY 9-10, 1979

Site	Panel	No. of Specimens ²	Percent Filled	Size Range in mm.	Species Identification	Remarks
2	P	1	<1	8	1 <i>Teredo</i> spp.	Pallets broken.
	C	2	<1	16,19	2 <i>Teredo</i> spp.	
4	P	0				
	C	3	<1	<1-1		
4A	P	0				
	C	1	<1	2		
5	P	23	<1	<1-3	1 <i>B. gouldi</i> ; 4 <i>Teredo</i> spp.; 7 Teredinidae	
	C	12	<1	<1-11		
6	P	0				
	C	1	<1	2		
7	P	96	1	<1-10	4 <i>Teredo</i> spp.; 92 Teredinidae	
	C	76	<1	<1-3	1 <i>Teredo</i> spp.; 75 Teredinidae	
10	P	1	<1	1	1 <i>B. gouldi</i> ; 3 Teredinidae	
	C	4	<1	<1-5		
10A	P	4	<1	4-12	1 <i>B. gouldi</i> ; 3 <i>Teredo</i> spp.	
	C	2	<1	1-3		
10B	P	0				
	C	4	<1	1-7	1 <i>B. gouldi</i> ; 3 Teredinidae	
11	P	101	6	<1-42	28 <i>B. gouldi</i> ; 19 <i>T. navalis</i> ; 9 <i>Teredo</i> spp.; 45 Teredinidae	
	C	68	2	<1-7	10 <i>B. gouldi</i> ; 18 <i>Teredo</i> spp.; 40 Teredinidae	
12	P	0				
	C	3	<1	1-2		
13	P	4	<1	<1-2		
	C	8	<1	<1-2		

TABLE 3. Continued.

Site	Panel	No. of Specimens ⁺	Percent Filled	Size Range in mm.	Species Identification	Remarks
14	P	27	<1	<1-5		
	C	56	1	<1-2		
17	P	1	<1	1		
	C	2	<1	1-4	1 <i>Teredo</i> spp.; 1 Teredinidae	

Sites 1, 3, 8, 9, 15, 16 - no Teredinidae present.

P = Long-term panel, submerged January 9-10, 1979

C = Short-term panel, submerged June 4-5, 1979

TABLE 4. SUMMARY DATA FOR INCIDENCE OF TEREDINIDAE IN PANELS REMOVED AUGUST 6-7, 1979

Site	Panel	No. of Specimens	Percent Filled	Size Range in mm.	Species Identification	Remarks
1	P	130	15	<1-85	47 <i>T. navalis</i> ; 83 Teredinidae	Ripening gonads.
	C	190	5	<1-10	17 <i>T. navalis</i> ; 173 Teredinidae	
2	P	1	1	63	1 <i>T. navalis</i>	
	C					
3	P	1	<1	1		
	C	1	<1	1		
4	P	6	<1	<1-12	1 <i>B. gouldi</i> ; 5 Teredinidae	
	C	0				
4A	P	0				
	C	5	<1	<1-1		
5	P	100	15	<1-135	2 <i>B. gouldi</i> ; 17 <i>T. bartschi</i> ; 1 <i>T. navalis</i> ; 80 Teredinidae	Ripening gonads and larvae.
	C	154	1	<1-4		
6	P	0				
	C	4	<1	<1-1		
7	P	700	75	<1-70	160 <i>T. bartschi</i> ; 540 Teredinidae	Ripening gonads and larvae.
	C	2700	2	<1-3		
9	P	1	<1	7	1 <i>Teredo</i> spp.	
	C	1	<1	14	1 <i>T. navalis</i>	
10	P	1	2	85	1 <i>B. gouldi</i>	
	C	0				
10A	P	4	2	1-65	2 <i>B. gouldi</i> ; 2 Teredinidae	
	C	3	<1	<1-4	1 <i>Bankia</i> spp.; 2 Teredinidae	
10B	P	1	1	65	1 <i>B. gouldi</i>	
	C	2	<1	1-2		
11	P	320	90	<1-130	130 <i>B. gouldi</i> ; 160 <i>T. navalis</i> ; 30 Teredinidae	Ripening gonads and larvae.
	C	165	10	<1-28	40 <i>T. navalis</i> ; 125 Teredinidae	

TABLE 4. Continued.

Site	Panel	No. of Specimens	Percent Filled	Size Range in mm.	Species Identification	Remarks
12	P	5	2	1-55	2 <i>B. gouldi</i> ; 3 Teredinidae	
	C	3	<1	1-2		
13	P	11	15	10-110	11 <i>B. gouldi</i>	
	C	7	<1	<1-2		
14	P	54	35	1-105	29 <i>B. gouldi</i> ; 2 <i>T. navalis</i> ; 23 Teredinidae	
	C	1	<1	<1		
15	P	2	<1	<1		
	C	3	<1	1-2		
17	P	1	<1	20	1 <i>T. navalis</i>	
	C	1	<1	2		

Sites 8 and 16 - no Teredinidae present.

Site 8 - panel submerged April 30, 1979.

P = Long-term panel, submerged February 5-6, 1979.

C = Short-term panel, submerged July 9-10, 1979.

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TABLE 5. SUMMARY DATA FOR INCIDENCE OF *Limnoria tripunctata* IN PANELS REMOVED JUNE, JULY, AND AUGUST, 1979

Site	Panel	June		July		August	
		No. of Tunnels	No. of Specimens	No. of Tunnels	No. of Specimens*	No. of Tunnels	No. of Specimens**
1	P	11	12	24	29	48	61
	C	3	1	5	6	0	0
2	P	93	115	345	550	410	435
	C	36	31	11	19	8	9
3	P	0	0	0	0	13	12
	C	0	0	0	0	0	0
4	P	19	18	51	30	110	130
	C	0	0	5	2	0	0
4A	P	46	59	186	260	2500 [±]	3000 [±]
	C	0	0	0	0	14	9

Sites 5 through 17 - no *Limnoria* present.

P = Long-term panel, submerged 6 months.

C = Short-term panel, submerged 1 month.

* - Gravid females present.

** - Gravid females and juveniles present.

Water Quality

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

Teredinid Gonadal Development Studies

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

TABLE 6. WATER QUALITY AT EXPOSURE PANEL STATION, JUNE, 1979

Station	Date	Time	Depth in Feet	Salinity-o/oo	Temp.-°C	O ₂	pH
1	6/5/79	0945	6.0	20.2	16.3	8.0	8.2
2	6/5/79	1030	2.0	17.9	19.2	7.4	7.7
3	6/5/79	1100	3.0	17.2	19.7	8.0	7.7
4	6/5/79	1125	3.5	18.5	19.7	5.7	7.5
4A	6/5/79	1140	3.5	17.9	19.7	7.3	7.7
5	6/5/79	1200	4.0	15.3	23.2	8.7	7.7
6	6/5/79	1215	4.0	8.7	22.5	8.5	7.7
7	6/5/79	1230	3.0	15.2	23.5	8.0	7.9
8	6/5/79	1325	6.0	15.8	24.5	9.2	8.1
9	6/5/79	1347	6.0	17.2	21.0	8.8	8.3
10	6/5/79	1515	3.0	6.9	21.0	7.6	6.9
10A	6/5/79	1420	3.5	15.8	23.0	9.4	8.1
10B	6/5/79	1440	3.5	17.2	22.5	8.9	8.2
11	6/5/79	1453	4.0	18.5	22.0	9.0	8.3
12	6/5/79	1540	3.5	9.2	21.5	8.9	7.8
13	6/5/79	1607	3.0	5.8	22.5	8.0	6.7
14	6/5/79	1631	3.0	13.1	21.5	8.4	8.1
15	6/4/79	1515	3.5	13.8	19.0	8.6	8.1
16	6/4/79	1535	4.5	14.5	20.0	8.7	8.2
17	6/4/79	1555	1.5	17.2	18.0	8.5	8.0

TABLE 7. WATER QUALITY AT EXPOSURE PANEL STATIONS, JULY, 1979

Station	Date	Time	Depth in Feet	Salinity-o/oo	Temp.-°C	O ₂	pH
1	7/10/79	0950	3.0	29.9	19.0	6.9	8.1
2	7/10/79	1020	2.0	23.4	22.3	6.2	8.3
3	7/10/79	1100	3.0	22.7	23.0	7.9	8.7
4	7/10/79	1125	3.5	22.7	23.5	9.2	8.8
4A	7/10/79	1145	3.5	23.4	23.7	8.7	8.7
5	7/10/79	1200	4.0	18.5	27.2	8.4	8.6
6	7/10/79	1210	4.0	19.9	27.2	7.9	8.7
7	7/10/79	1220	3.0	20.0	27.9	7.5	8.6
8	7/10/79	1340	6.0	19.9	27.0	9.0	8.8
9	7/10/79	1400	6.0	20.6	24.0	8.5	9.0
10	7/10/79	1535	3.0	9.2	24.5	8.8	8.2
10A	7/10/79	1445	3.5	14.5	27.5	9.2	8.9
10B	7/10/79	1501	3.5	20.6	26.0	9.6	9.0
11	7/10/79	1510	4.0	17.2	25.0	8.4	8.9
12	7/10/79	1555	3.5	13.5	24.5	9.2	9.0
13	7/10/79	1615	3.0	13.8	25.0	7.5	8.4
14	7/10/79	1647	3.0	15.2	24.0	8.5	9.0
15	7/9/79	1610	3.5	10.2	23.0	6.1	8.2
16	7/10/79	1735	4.5	11.1	22.5	5.6	8.1
17	7/9/79	1700	1.5	16.6	24.0	7.2	8.1

TABLE 8. WATER QUALITY AT EXPOSURE PANEL STATIONS, AUGUST, 1979

Station	Date	Time	Depth in Feet	Salinity-o/oo	Temp.-°C	O ₂	pH
1	8/7/79	1000	8.0	27.7	24.0	7.4	9.2
2	8/7/79	1110	6.0	24.9	27.0	6.8	8.9
3	8/7/79	1125	4.0	22.7	26.5	7.3	9.1
4	8/7/79	1205	4.0	23.4	27.5	7.2	9.1
4A	8/7/79	1230	4.0	22.7	28.5	6.6	9.1
5	8/7/79	1258	4.0	20.6	31.5	7.5	9.1
6	8/7/79	1312	4.0	20.6	32.0	7.3	9.8
7	8/7/79	1338	4.0	20.6	31.5	7.4	9.1
8	8/7/79	1403	6.0	21.3	33.0	8.8	9.1
9	8/7/89	1437	8.0	22.7	28.5	9.0	9.3
10	8/7/79	1700	3.0	19.9	28.0	8.8	7.4
10A	8/7/79	1550	3.0	21.3	30.0	9.0	9.3
10B	8/7/79	1610	3.0	22.0	29.5	9.3	9.3
11	8/7/79	1635	3.0	22.7	28.5	8.2	9.0
12	8/7/79	1735	3.0	19.2	29.5	*	8.3
13	8/7/79	1815	4.0	14.5	25.0	*	7.8
14	8/7/79	1840	4.0	14.5	28.5	*	7.9
15	8/6/79	1640	3.0	12.5	29.0	9.4	8.7
16	8/6/79	1720	4.0	6.4	29.5	6.4	8.3
17	8/6/79	1805	2.0	28.4	27.5	7.2	9.5

* Hydrolab malfunction.

TABLE 9. CONDITION OF GONADS OF TEREDINID BORERS REMOVED FROM EXPOSURE PANELS IN BARNEGAT BAY FROM JUNE THROUGH AUGUST, 1979

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
496a	14	Jun 79	12	<i>Bankia gouldi</i>	M	R	Special panel.
b				<i>Bankia gouldi</i>	F	S	
497a	2	Jun 79	12	<i>Teredo navalis</i>	F	S	Special panel; <i>Minchinia</i> .
b				<i>Teredo navalis</i>	F	PS	
c				<i>Teredo navalis</i>	F	PS	
d				<i>Teredo navalis</i>	M	PS	
498	10B	Jun 79	12	<i>Bankia gouldi</i>	H	PS	Special panel.
499	17	Jun 79	12	<i>Teredo navalis</i>	F	R	Special panel.
500a	4	Jun 79	12	<i>Bankia gouldi</i>	M	R	Special panel.
b				<i>Bankia gouldi</i>	M	R	
501	9	Jun 79	12	<i>Bankia gouldi</i>	M	PS	Special panel.
502	15	Jun 79	12	<i>Bankia gouldi</i>	H	R	Special panel; necrotic gill tissue.
503a	1	Jun 79	12	<i>Teredo navalis</i>	F	R	Special panel; stomach, intestine, typhlosole necrotic.
b				<i>Teredo navalis</i>	H	PS	Necrotic.
c				<i>Teredo navalis</i>	F	R	Portions of typhlosole necrotic.
d				<i>Teredo navalis</i>	M	PS	
e				<i>Teredo navalis</i>	F	PS	Most tissues necrotic.
f				<i>Teredo navalis</i>	F	R	Intestine necrotic.
g				<i>Teredo navalis</i>	H	PS	Typhlosole necrotic.
504a	11	Jun 79	12	<i>Bankia gouldi</i>	M	R	Special panel.
b				<i>Bankia gouldi</i>	F	PS	
c				<i>Bankia gouldi</i>	F	PS	Most tissues necrotic.
d				<i>Bankia gouldi</i>	H	PS	Some necrosis of gill.
505a	2	Jun 79	12	<i>Teredo navalis</i>	F	R	Special panel.
b				<i>Teredo navalis</i>	F	LA	
c				<i>Teredo navalis</i>	M	PS	Heavy <i>Minchinia</i> infection.
d				<i>Teredo navalis</i>	F	PS	Necrotic.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
505e				<i>Teredo navalis</i>	F	R	Necrotic.
f				<i>Teredo navalis</i>	M	PS	<i>Minchinia</i> ; necrotic tissues.
g				<i>Teredo navalis</i>	F	R	Necrotic.
h				<i>Teredo navalis</i>	F	R	Necrotic.
i				<i>Teredo navalis</i>	F	R	Necrotic.
506a	7	Jun 79	9	<i>Teredo bartschi</i>			Special panel; no discernable gonad.
b				<i>Teredo bartschi</i>	H	PS	Necrotic.
c				<i>Teredo bartschi</i>	H	S	Necrotic.
d				<i>Teredo bartschi</i>	H	S	Necrotic.
e				<i>Teredo bartschi</i>	H	S	Necrotic.
f				<i>Teredo bartschi</i>	H	S	Necrotic.
g				<i>Teredo bartschi</i>	H	S	Necrotic.
h				<i>Teredo bartschi</i>	H	S	Necrotic.
i				<i>Teredo bartschi</i>	H	S	Necrotic.
507	11	Jun 79	9	<i>Teredo navalis</i>	M	PS	Special panel.
508a	11	Jun 79	9	<i>Bankia gouldi</i>	F	PS	Special panel.
b				<i>Bankia gouldi</i>	H	PS	
c				<i>Bankia gouldi</i>	M	R	
d				<i>Bankia gouldi</i>	M	S	
509a	17	Jun 79	12	<i>Teredo navalis</i>	F	S	Special panel; <i>Minchinia</i> ; most tissues necrotic.
b				<i>Teredo navalis</i>	F	PS	<i>Minchinia</i> ; most tissues necrotic.
510	11	Jul 79	6	<i>Teredo navalis</i>	M	EA	
511	10A	Jul 79	6	<i>Bankia gouldi</i>	M	EA	
512	17	Jul 79	12	<i>Teredo navalis</i>	M	EA	Special panel.
513	11	Jul 79	11	<i>Teredo navalis</i>	F	R	Special panel.
514a	7	Jul 79	11	<i>Teredo bartschi</i>			Special panel; no discernable gonad.
b				<i>Teredo bartschi</i>	F	S	Ova undergoing autolysis.
c				<i>Teredo bartschi</i>	H	S	Larvae in brood pouch.
d				<i>Teredo bartschi</i>			No discernable gonad.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
515	2	Jul 79	12	<i>Teredo navalis</i>	F	PS	Special panel; hyperplasia of typhlosole; granulocytoma in hemolymph duct.
516a	7	Jul 79	6	<i>Teredo</i> spp.	M	EA	No discernable gonad.
b				<i>Teredo</i> spp.			
517a	2	Jul 79	1	<i>Teredo</i> spp.	M	EA	No discernable gonad.
b				<i>Teredo</i> spp.			
518a	11	Jul 79	11	<i>Bankia gouldi</i>	M	PS	Metaplasia, necrosis of digestive tubules
b				<i>Bankia gouldi</i>	F	S	
c				<i>Bankia gouldi</i>	F	S	
519	2	Jul 79	6	<i>Teredo</i> spp.			No discernable gonad.
520a	12	Aug 79	6	<i>Bankia gouldi</i>	M	LA	Portions of typhlosole necrotic.
b				<i>Bankia gouldi</i>	M	LA	
521	2	Aug 79	6	<i>Teredo navalis</i>	H	LA	
522	10	Aug 79	6	<i>Bankia gouldi</i>	F	PS	
523a	10A	Aug 79	6	<i>Bankia gouldi</i>	M	LA	
b				<i>Bankia gouldi</i>	M	LA	
524	10B	Aug 79	6	<i>Bankia gouldi</i>	M	LA	Portions of typhlosole necrotic.
525a	14	Aug 79	6	<i>Bankia gouldi</i>	M	LA	
b				<i>Bankia gouldi</i>	M	LA	
c				<i>Bankia gouldi</i>	M	LA	
d				<i>Bankia gouldi</i>	M	LA	
e				<i>Bankia gouldi</i>	M	LA	
f				<i>Bankia gouldi</i>	M	LA	
g				<i>Bankia gouldi</i>	M	PS	
h				<i>Bankia gouldi</i>	M	LA	
i				<i>Bankia gouldi</i>	M	PS	
j				<i>Bankia gouldi</i>	F	PS	
k				<i>Bankia gouldi</i>	M	PS	
l				<i>Bankia gouldi</i>	M	R	
m				<i>Bankia gouldi</i>	M	PS	
n				<i>Bankia gouldi</i>	F	PS	

TABLE 9. Continued

Specimen No.	Station	Mouth Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
526a	14	Aug 79	6	<i>Teredo navalis</i>	M	R	
b				<i>Teredo navalis</i>	M	EA	Very young specimen.
527a	11	Aug 79	1	<i>Teredo navalis</i>	H	R	
b				<i>Teredo navalis</i>	H	R	Necrotic tissues.
c				<i>Teredo navalis</i>	H	R	Portions of typhlosole necrotic.
d				<i>Teredo navalis</i>	H	R	Portions of typhlosole necrotic.
e				<i>Teredo navalis</i>	H	R	Portions of typhlosole necrotic.
f				<i>Teredo navalis</i>	M	R	Necrotic.
g				<i>Teredo navalis</i>	F	R	
528	9	Aug 79	1	<i>Teredo navalis</i>	H	S	
529a	7	Aug 79	6	<i>Teredo bartschi</i>			No discernable gonad; hyperplastic typhlosole.
b				<i>Teredo bartschi</i>			No discernable gonad.
c				<i>Teredo bartschi</i>	H	S	
d				<i>Teredo bartschi</i>	H	S	Hyperplastic typhlosole.
e				<i>Teredo bartschi</i>	H	S	
f				<i>Teredo bartschi</i>	H	S	Hyperplastic typhlosole.
g				<i>Teredo bartschi</i>	H	PS	
h				<i>Teredo bartschi</i>	H	PS	
i				<i>Teredo bartschi</i>			No discernable gonad.
j				<i>Teredo bartschi</i>			No discernable gonad; focal area of leukocytosis in connective tissue.
k				<i>Teredo bartschi</i>	M	R	Black granules in tissue.
l				<i>Teredo bartschi</i>	H	R	
m				<i>Teredo bartschi</i>	H	S	Hyperplastic typhlosole.
n				<i>Teredo bartschi</i>	H	S	
o				<i>Teredo bartschi</i>	H	PS	
p				<i>Teredo bartschi</i>	H	PS	Hyperplastic typhlosole.
q				<i>Teredo bartschi</i>	H	PS	
530a	13	Aug 79	6	<i>Bankia gouldi</i>	M	R	
b				<i>Bankia gouldi</i>	M	R	
c				<i>Bankia gouldi</i>	F	LA	
d				<i>Bankia gouldi</i>	M	PS	
e				<i>Bankia gouldi</i>	F	LA	Hyperplastic typhlosole.

TABLE . Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
530a	13	Aug 79	6	<i>Bankia gouldi</i>	M	R	
b				<i>Bankia gouldi</i>	M	R	
c				<i>Bankia gouldi</i>	F	LA	
d				<i>Bankia gouldi</i>	M	PS	
e				<i>Bankia gouldi</i>	F	LA	Hyperplastic typhlosole.
531a	17	Aug 79	12	<i>Teredo navalis</i>	F	S	Special panel; <i>Minchinia</i> ; leuko- cytosis; necrotic tissues.
b				<i>Teredo navalis</i>	M	EA	Necrotic.
532	4	Aug 79	6	<i>Bankia gouldi</i>			No discernable gonad; cysts in gill.
533	5	Aug 79	6	<i>Teredo navalis</i>	F	P	
534a	11	Aug 79	6	<i>Teredo navalis</i>	F	R	
b				<i>Teredo navalis</i>	F	R	
c				<i>Teredo navalis</i>	F	R	
d				<i>Teredo navalis</i>	M	R	
e				<i>Teredo navalis</i>	F	R	
535a	5	Aug 79	6	<i>Teredo bartschi</i>			No discernable gonad; larvae in brood pouch.
b				<i>Teredo bartschi</i>	H	PS	
c				<i>Teredo bartschi</i>			No discernable gonad; larvae in brood pouch.
d				<i>Teredo bartschi</i>			No discernable gonad.
536a	11	Aug 79	6	<i>Bankia gouldi</i>	M	PS	
b				<i>Bankia gouldi</i>	M	R	
c				<i>Bankia gouldi</i>	F	PS	
d				<i>Bankia gouldi</i>	F	S	
e				<i>Bankia gouldi</i>	M	PS	
f				<i>Bankia gouldi</i>	F	PS	
g				<i>Bankia gouldi</i>	M	R	
537a	5	Aug 79	6	<i>Bankia gouldi</i>	F	PS	
b				<i>Bankia gouldi</i>	M	R	
538a	1	Aug 79	6	<i>Teredo navalis</i>	F	R	Necrotic hepatopancreas.
b				<i>Teredo navalis</i>	F	R	Abscesses in hepatopancreas.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
539	17	Aug 79	6	<i>Teredo navalis</i>	M	EA	
540a	12	Aug 79	12	<i>Bankia gouldi</i>	M	R	Special panel; necrotic hepatopancreas; abscesses.
b				<i>Bankia gouldi</i>	M	R	Necrotic typhlosole.
c				<i>Bankia gouldi</i>	M	R	Necrotic hepatopancreas.
d				<i>Bankia gouldi</i>	M	R	Necrotic hepatopancreas.
e				<i>Bankia gouldi</i>	M	R	Necrotic hepatopancreas; abscesses.
f				<i>Bankia gouldi</i>	M	R	Necrotic hepatopancreas; abscesses.
g				<i>Bankia gouldi</i>	M	R	Metaplastic hepatopancreatic tubules.
541a	2	Aug 79	12	<i>Teredo navalis</i>	F	R	Special panel; portions of hepatopancreas necrotic.
b				<i>Teredo navalis</i>	F	R	Larvae in brood pouch
c				<i>Teredo navalis</i>	M	R	Autolysis of testis; necrotic typhlosole.
d				<i>Teredo navalis</i>	M	R	Tissues necrotic.
e				<i>Teredo navalis</i>	M	R	Thickening of connective tissue between testicular follicles.
f				<i>Teredo navalis</i>	F	R	Necrotic typhlosole.
g				<i>Teredo navalis</i>	M	R	Necrotic typhlosole; thickened connective tissue between follicles.
h				<i>Teredo navalis</i>	F	R	Larvae in brood pouch.
i				<i>Teredo navalis</i>	M	R	Thickened connective tissue between testicular follicles.
j				<i>Teredo navalis</i>			No discernable gonad; tissues necrotic.
k				<i>Teredo navalis</i>	M	R	Tissues necrotic.
542a	11	Aug 79	12	<i>Bankia gouldi</i>	M	R	Special panel; hyperplastic typhlosole.
b				<i>Bankia gouldi</i>	M	R	Necrotic stomach, hepatopancreas, typhlosole.
c				<i>Bankia gouldi</i>	M	R	Hyperplastic typhlosole.
d				<i>Bankia gouldi</i>	M	R	Hyperplastic typhlosole.
e				<i>Bankia gouldi</i>	F	PS	Most tissues necrotic; clusters of unidentified cells, cysts.

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Condition	Comments
542f	11	Aug 79	9	<i>Bankia gouldi</i>	M	R	Hyperplastic typhlosole.
g				<i>Bankia gouldi</i>	M	PS	Hyperplastic typhlosole.
h				<i>Bankia gouldi</i>	M	R	Hyperplastic typhlosole.
i				<i>Bankia gouldi</i>	M	R	Hyperplastic typhlosole.
j				<i>Bankia gouldi</i>	M	R	Necrotic tissues.
k				<i>Bankia gouldi</i>	M	R	Hyperplastic typhlosole.
l				<i>Bankia gouldi</i>	H	PS	Necrotic tissues.
543a				<i>Teredo navalis</i>	F	S	Special panel; larvae in brood pouch.
b	11	Aug 79	9	<i>Teredo navalis</i>	F	R	
c				<i>Teredo navalis</i>	F	R	
d				<i>Teredo navalis</i>	F	R	
e				<i>Teredo navalis</i>	F	R	Necrotic typhlosole.
f				<i>Teredo navalis</i>	H	R	Necrotic tissues.
g				<i>Teredo navalis</i>	F	R	Necrotic typhlosole.
h				<i>Teredo navalis</i>	H	R	Necrotic tissues.
i				<i>Teredo navalis</i>	M	R	
544a	7	Aug 79	12	<i>Teredo bartschi</i>			Special panel; no discernable gonad.
b				<i>Teredo bartschi</i>	H	S	Necrotic tissues.
c				<i>Teredo bartschi</i>	H	S	Necrotic tissues.
d				<i>Teredo bartschi</i>	H	PS	Necrotic tissues.
e				<i>Teredo bartschi</i>	H	PS	Hyperplastic typhlosole.
f				<i>Teredo bartschi</i>	H	PS	Necrotic.
g				<i>Teredo bartschi</i>	H	PS	Necrotic.
h				<i>Teredo bartschi</i>	H	R	Necrotic.
i				<i>Teredo bartschi</i>	H	PS	Necrotic.
j				<i>Teredo bartschi</i>			No discernable gonad.
k				<i>Teredo bartschi</i>			No discernable gonad.