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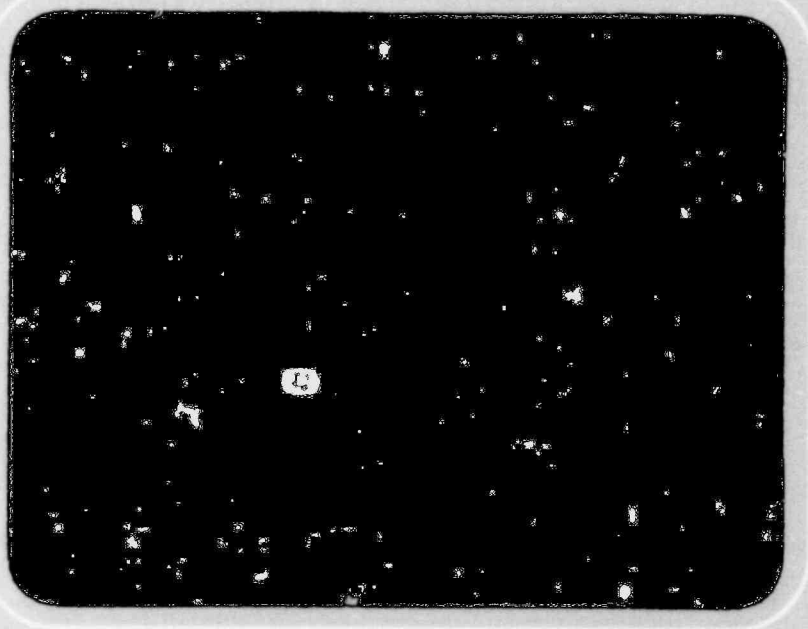
Report



William F. Clapp Laboratories, Inc.
Duxbury, Massachusetts

790129215

PROGRESS REPORT FOR THE FOURTEENTH QUARTER

on

WOODBORER STUDY ASSOCIATED WITH THE OYSTER CREEK GENERATING STATION

to

JERSEY CENTRAL POWER & LIGHT COMPANY

December 15, 1978

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

Report No. 14876

August 11 to November 10, 1978

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 First Quarterly Report on Woodborer Study Associated with the Oyster Creek Generating Station, Report No. 14647, dated October 31, 1975, with the exception that the marine borer larvae program was discontinued in November, 1977.

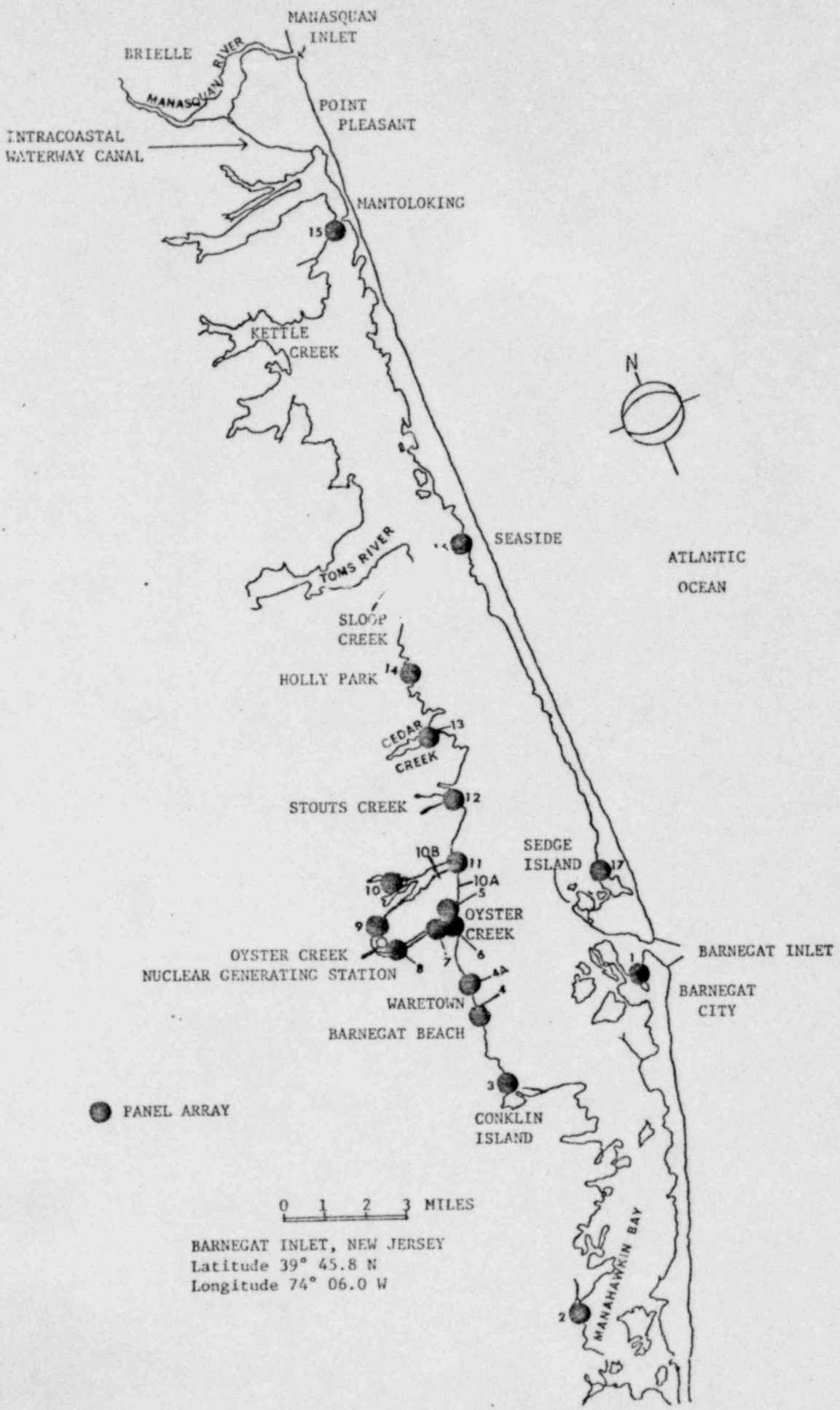
This report presents the summary data for the fourteenth quarterly period from August 11 through November 10, 1978.

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 weeks of September 5-8, October 2-4, and November 7-10. 1978. 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.



BARNEGAT INLET, NEW JERSEY
Latitude 39° 45.8 N
Longitude 74° 06.0 W

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.	Rochnak'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

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 SEPTEMBER 6-7, 1978

Site	Panel	No. of Specimens±	Percent Filled	Size Range in mm.	Species Identification	Remarks
1	P	130	25	<1-80	*T. navalis*	Larvae present
	C	330	5	<1-14		
2	P	1	<1	13	*Teredo* spp.	
	C	1	<1	4	*Teredo* spp.	
4	P	1	1	65	*B. gouldi*	
	C	0				
5	P	121	20	<1-100	91 *T. bartschi*	Umbonate larvae present
	C	18	<1	<1-10	1 *T. bartschi*	
6	P	1	<1	2		
	C	2	<1	<1		
7	P	567	98	1-150	1 *B. gouldi*, 536 *T. bartschi*	Umbonate larvae present
	C	1104	10	<1-10	4 *T. bartschi*, 150 *Teredo* spp.	
10A	P*	2	8	100-170	*B. gouldi*	1 with ripe gonads
	C	0				
11	P	14	22	17-145	*B. gouldi*	
	C	0				
13	P	7	12	26-88	*B. gouldi*	
	C	4	<1	<1-3	1 *Bankia* spp.	
14	P	9	17	45-120	*B. gouldi*	
	C	7	1	<1-27	*B. gouldi*	
17	P	1	<1	24	*T. navalis*	
	C	0				

Sites 3, 4A, 8-10, 10, 11, 12, 15, 16, no Teredinidae present.
P = Long-term panel, submerged March, 1978 - unless otherwise noted.
C = Short-term panel, submerged August, 1978.
* = Submerged 5 months.

TABLE 3. SUMMARY DATA FOR INCIDENCE OF TEREDINIDAE IN PANELS REMOVED OCTOBER 2-3, 1978

Site	Panel	No. of Specimens[+]	Percent Filled	Size Range in mm.	Species Identification	Remarks
1	P	364	80	<1-100	*T. navalis*	
	C	31	<1	<1		
2	P	3	15	70-185	*T. [illegible]ilis*	
	C	0				
4	P	4	7	30-100	*B. gouldi*	
	C	0				
4A	P	1	1	37	*B. gouldi*	
	C	0				
5	P	171	25	<1-160	1 *B. gouldi*, 90 *T. bartschi*	Umbonate larvae present
	C	53	<1	<1-1		
6	P	15	1	<1-57	1 *T. bartschi*	Umbonate larvae present
	C	11	<1	<1-1		
7	P	360	99	<1-80	*T. bartschi*	
	C	21	<1	<1-3		
10A	P	5	25	140-200	*B. gouldi*	
	C	0				
10B	P	2	12	185-260	*B. gouldi*	
	C	0				
11	P	33	50	<1-140	30 *B. gouldi*, 1 *T. navalis*	
	C	0				
12	P	2	5	80-110	*B. gouldi*	
	C	0				
13	P	6	14	16-150	*B. gouldi*	
	C	0				
14	P	9	25	75-165	*B. gouldi*	
	C	0				

TABLE 3. Continued

Site	Panel	No. of Specimens±	Percent Filled	Size Range in mm.	Species Identification	Remarks
15	P	1	2	95	*B. gouldi*	
	C	0				
17	P	2	<1	<1-1		
	C	0				

Sites 3, 8-10, 16 - no Teredinidae present.
P = Long-term panel, submerged April, 1978.
C = Short-term panel, submerged September, 1978.

TABLE 4. SUMMARY DATA FOR INCIDENCE OF TEREDINIDAE IN PANELS REMOVED NOVEMBER 8-9, 1978

Site	Panel	No. of Specimens±	Percent Filled	Size Range in mm.	Species Identification	Remarks
1	P	430	98	<1-150	*T. navalis*	
	C	650	1	<1-1		
2	P	5	17	63-175	*T. navalis*	1 with ripe gonads
	C	0				
4	P	1	4	155	*B. gouldi*	
	C	0				
5	P	680	50	<1-220	1 *B. gouldi*, 79 *T. bartschi*	Larvae present
	C	0				
6	P	58	15	<1-52	22 *T. bartschi*	Umbonate larvae present
	C	0				
7	P	2400	99	<1-115	2 *B. gouldi*, 300± *T. bartschi*	Several releasing larvae
	C	0				
8	P	1	13	450	*B. gouldi*	
	C	0				
10A	P	3	15	130-245	*B. gouldi*	
	C	0				
11	P	12	45	11-200	10 *B. gouldi*, 2 *T. navalis*	
	C	0				
13	P	8	45	120-250	*B. gouldi*	
	C	0				
14	P	13	70	115-255	*B. gouldi*	
	C	0				
17	P	5	15	60-180	1 *B. gouldi*, 4 *T. navalis*	
	C	0				

Sites 3, 4A, 9-10, 10B, 12, 15-16 - no Teredinidae present.
P = Long-term panel, submerged May, 1978.
C = Short-term panel, submerged October, 1978.

TABLE 5. SUMMARY DATA FOR INCIDENCE OF *Limnoria tripunctata* IN PANELS REMOVED SEPTEMBER, OCTOBER, AND NOVEMBER, 1978

		September		October		November	
Site	Panel	No. of Tunnels	No. of Specimens	No. of Tunnels	No. of Specimens	No. of Tunnels	No. of Specimens
1	P	245	280	260	300	97	81
	C	1	1	0	0	0	0
2	P	950	1100	1000	1300	900	950
	C	9	10	0	0	0	0
3	P	14	12	0	0	0	0
	C	0	0	0	0	0	0
4	P	515	300	475	350	360	410
	C	0	0	0	0	0	0
4A	P	1800	2000	1250	1500	900	800
	C	1	2	0	0	0	0

Sites 5-17, no *Limnoria* present.
Gravid females and juveniles present at all locations.

Water Quality

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

Teredinid Gonadal Development Studies

Table 9 shows the gonad condition of the teredinid borers collected from September through November, 1978. Included are results from special long-term panels exposed for a 12-month period.

TABLE 6. WATER QUALITY AT EXPOSURE PANEL STATIONS, SEPTEMBER, 1978

Station	Date	Time	Depth in Feet	Salinity - o/oo	Temp.-°C	O_2	pH
1	9/7/78	0930	6.0	21.0	23.3	8.4	7.8
2	9/7/78	0955	2.0	19.0	24.0	7.3	7.5
3	9/7/78	1025	3.0	19.9	23.7	6.8	7.7
4	9/7/78	1040	3.0	20.4	24.0	5.0	7.4
4A	9/7/78	1055	3.0	19.5	24.5	5.4	7.5
5	9/7/78	1110	4.0	15.8	27.0	6.8	7.7
6	9/7/78	1120	4.0	15.8	25.8	7.7	7.6
7	9/7/78	1128	3.0	17.0	27.4	6.5	7.3
8	9/7/78	1151	6.0	15.8	26.0	6.2	7.4
9	9/7/78	1204	6.0	17.0	24.0	6.7	7.7
10	9/7/78	1403	3.0	11.8	25.0	7.0	7.2
10A	9/7/78	1237	3.0	17.0	24.0	7.4	7.8
10B	9/7/78	1250	3.0	17.0	24.5	8.1	7.7
11	9/7/78	1303	4.0	17.2	24.5	7.8	7.8
12	9/7/78	1427	3.0	17.2	24.5	6.5	7.7
13	9/7/78	1453	3.0	19.2	24.0	7.4	7.2
14	9/7/78	1523	3.0	13.1	25.0	8.4	7.9
15	9/7/78	1621	3.0	13.8	24.5	8.4	8.1
16	9/6/78	1600	4.0	14.6	24.3	8.3	8.2
17	9/6/78	1645	2.0	27.4	22.6	8.2	8.8

TABLE 7. WATER QUALITY AT EXPOSURE PANEL STATIONS, OCTOBER, 1978

Station	Date	Time	Depth in Feet	Salinity - o/oo	Temp.-°C	O_2	pH
1	10/3/78	0915	6.0	29.9	18.2	8.7	8.1
2	10/3/78	0950	2.0	23.3	17.7	8.1	8.4
3	10/3/78	1030	3.0	22.7	18.1	8.1	8.4
4	10/3/78	1047	3.5	22.7	17.8	7.8	8.5
4A	10/3/78	1100	3.5	22.7	18.3	8.4	8.7
5	10/3/78	1115	4.0	17.9	19.0	8.7	8.7
6	10/3/78	1130	4.0	17.7	18.7	9.5	8.7
7	10/3/78	1140	3.0	17.9	17.3	8.8	8.6
8	10/3/78	1155	6.0	19.2	17.5	8.8	8.7
9	10/3/78	1206	6.0	19.9	18.0	9.2	8.8
10	10/3/78	1411	3.0	19.9	19.0	7.7	9.1
10A	10/3/78	1320	3.5	20.6	18.5	9.4	9.1
10B	10/3/78	1343	3.5	22.7	19.0	8.9	9.1
11	10/3/78	1350	4.0	18.5	18.5	8.0	9.3
12	10/3/78	1423	3.5	17.2	20.0	8.4	9.2
13	10/3/78	1447	3.0	17.2	19.5	8.5	9.2
14	10/3/78	1508	3.0	15.2	18.5	8.4	9.2
15	10/3/78	1600	3.5	22.0	18.7	8.4	9.5
16	10/2/78	1602	4.5	20.6	19.7	8.4	9.4
17	10/2/78	1645	1.5	27.0	20.5	8.6	8.1

TABLE 8. WATER QUALITY AT EXPOSURE PANEL STATIONS, NOVEMBER, 1978

Station	Date	Time	Depth in Feet	Salinity - o/oo	Temp.-°C	O_2	pH
1	11/9/78	0930	6.0	29.1	12.7	10.8	7.9
2	11/9/78	1000	2.0	23.6	11.7	10.2	8.4
3	11/9/78	1030	3.0	24.2	11.3	10.4	8.5
4	11/9/78	1055	3.5	25.6	13.3	9.6	8.5
4A	11/9/78	1107	3.5	23.4	12.3	10.1	8.7
5	11/9/78	1125	4.0	20.2	13.0	11.0	8.7
6	11/9/78	1135	4.0	19.9	12.4	10.0	8.7
7	11/9/78	1140	3.0	19.9	12.5	10.0	8.5
8	11/9/78	1200	6.0	22.7	12.5	10.0	8.8
9	11/9/78	1220	6.0	24.1	12.5	11.5	8.9
10	11/9/78	1445	3.0	22.0	13.5	11.5	8.8
10A	11/9/78	1345	3.5	23.4	12.5	10.0	9.0
10B	11/9/78	1415	3.5	23.4	12.5	10.0	9.1
11	11/9/78	1430	4.0	25.6	13.0	11.0	9.2
12	11/9/78	1510	3.5	22.0	13.5	10.0	8.9
13	11/9/78	1535	3.0	18.5	14.0	12.5	9.0
14	11/9/78	1600	3.0	23.4	13.5	12.5	9.1
15	11/8/78	1620	3.5	17.7	12.0	10.9	8.5
16	11/9/78	1620	4.5	17.7	13.5	11.0	9.1
17	11/8/78	1710	1.5	27.2	12.5	10.8	8.6

TABLE 9. CONDITION OF GONADS OF TEREDINID BORERS REMOVED FROM EXPOSURE PANELS IN BARNEGAT BAY FROM SEPTEMBER THROUGH NOVEMBER, 1978

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

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
389	7	Sep 78	6	*Bankia gouldi*	F	PS	
390a	7	Sep 78	6	*Teredo bartschi*	H	PS	Larvae in brood pouch.
b				*Teredo bartschi*	H	S	
c				*Teredo bartschi*	H	R	
d				*Teredo bartschi*	H	PS	
e				*Teredo bartschi*	H	PS	
f				*Teredo bartschi*	H	PS	Leukocytosis; dense connective tissue formation in mantle
g				*Teredo bartschi*	H	PS	
h				*Teredo bartschi*	H	PS	Dense connective tissue formation in mantle
i				*Teredo bartschi*	H	S	
391a	14	Sep 78	1	*Bankia gouldi*	M	EA	
b					M	EA	
392	4	Sep 78	6	*Bankia gouldi*			No discernable gonad
393	17	Sep 78	6	*Teredo navalis*	M	EA	
394a	10A	Sep 78	5	*Bankia gouldi*	M	P	Possible cysts; leukocytosis
b				*Bankia gouldi*	F	S	
395	17	Sep 78	12	*Teredo navalis*	F	EA	Special panel
396	17	Sep 78	12	*Bankia gouldi*	F	S	Special panel
397a	5	Sep 78	6	*Teredo bartschi*			No discernable gonad
b				*Teredo bartschi*	H	S	Leukocytosis in mantle; abnormal nuclei in some leukocytes
c				*Teredo bartschi*			No discernable gonad
d				*Teredo bartschi*	H	PS	
e				*Teredo bartschi*	H	PS	
f				*Teredo bartschi*	H	S	
g				*Teredo bartschi*			No discernable gonad
h				*Teredo bartschi*	H	EA	
i				*Teredo bartschi*			No discernable gonad

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
398	2	Sep 78	6	*Teredo* spp.			No discernable gonad
399a	7	Sep 78	1	*Teredo bartschi*			No discernable gonad
b		Sep 78		*Teredo bartschi*			No discernable gonad
400a	1	Sep 78	6	*Teredo navalis*	F	R	
b				*Teredo navalis*	F	R	
c				*Teredo navalis*	M	PS	
401a	4	Oct 78	6	*Bankia gouldi*			No discernable gonad
b				*Bankia gouldi*	M	LA	
c				*Bankia gouldi*	M	EA	Fibrous connectice tissue throughout gonad area
402a	10A	Oct 78	6	*Bankia gouldi*	F	EA	Leukocytosis of gonad and under mantle epithelium; mass of necrotic debris in gut area; dense connective tissue
b				*Bankia gouldi*	M	EA	
c				*Bankia gouldi*			No discernable gonad; eosinophelic material in enlarged phagocytes
d				*Bankia gouldi*			No discernable gonad
403	5	Oct 78	6	*Bankia gouldi*	F	S	
404	15	Oct 78	6	*Bankia gouldi*	M	EA	
405a	5	Oct 78	6	*Teredo bartschi*	H	PS	
b				*Teredo bartschi*			Larvae in brood pouch; no other discernable gonad
c				*Teredo bartschi*	H	PS	
d				*Teredo bartschi*	H	PS	
e				*Teredo bartschi*	H	S	
406	4A	Oct 78	6	*Bankia gouldi*	F	EA	
407	6	Oct 78	6	*Teredo bartschi*	F	PS	Larvae in brood pouch
408	17	Oct 78	12	*Teredo navalis*	M	EA	Special panel

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
409a	11	Oct 78	6	*Bankia gouldi*	M	EA	
b				*Bankia gouldi*			No discernable gonad
c				*Bankia gouldi*	M	EA	
d				*Bankia gouldi*			No discernable gonad
e				*Bankia gouldi*	M	EA	
f				*Bankia gouldi*	F	LA	
g				*Bankia gouldi*	M	EA	
h				*Bankia gouldi*	M	EA	
i				*Bankia gouldi*	M	EA	
j				*Bankia gouldi*			No discernable gonad
410a	1	Oct 78	6	*Teredo navalis*	M	EA	*Minchinia* spores
b				*Teredo navalis*	F	EA	*Minchinia* spores
c				*Teredo navalis*	M	EA	*Minchinia* plasmodia
d				*Teredo navalis*	F	PS	*Minchinia*
e				*Teredo navalis*	F	EA	*Minchinia*
f				*Teredo navalis*	M	EA	
g				*Teredo navalis*	F	EA	*Minchinia*
h				*Teredo navalis*	H	LA	*Minchinia*
i				*Teredo navalis*	H	EA	*Minchinia*
j				*Teredo navalis*	H	EA	*Minchinia*
411a	10B	Oct 78	6	*Bankia gouldi*	M	EA	Cysts in typhlosole; fibrous connective tissue
b				*Bankia gouldi*	F	EA	
412a	2	Oct 78	6	*Teredo navalis*	F	EA	
b				*Teredo navalis*	F	EA	
c				*Teredo navalis*	F	EA	
413a	14	Nov 78	6	*Bankia gouldi*	M	EA	
b				*Bankia gouldi*	M	EA	
c				*Bankia gouldi*	M	EA	
d				*Bankia gouldi*	M	EA	
e				*Bankia gouldi*	M	EA	
f				*Bankia gouldi*	M	EA	
g				*Bankia gouldi*	M	EA	Concentration of fibroblasts in gonad
h				*Bankia gouldi*	M	EA	
i				*Bankia gouldi*	M	EA	
j				*Bankia gouldi*	M	EA	
k				*Bankia gouldi*	M	EA	

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
414a	7	Nov 78	6	*Bankia gouldi*	M	EA	Concentration of fibroblasts
b				*Bankia gouldi*	M	EA	
415a	7	Nov 78	6	*Teredo bartschi*	H	S	
b				*Teredo bartschi*	H	S	
c				*Teredo bartschi*	H	PS	
d				*Teredo bartschi*	H	PS	
e				*Teredo bartschi*	H	PS	
f				*Teredo bartschi*	H	PS	
g				*Teredo bartschi*			No gonad; larvae in brood pouch
h				*Teredo bartschi*	H	PS	Ciliates in mantle cavity
i				*Teredo bartschi*	H	S	
416a	13	Nov 78	6	*Bankia gouldi*	M	EA	Leukocytosis in digestive gland
b				*Bankia gouldi*			No discernable gonad. Some sort of growths in digestive gland area; may be plasmodia but does not resemble *Minchinia*
c				*Bankia gouldi*	M	EA	
d				*Bankia gouldi*	M	EA	
e				*Bankia gouldi*	M	EA	
f				*Bankia gouldi*	M	EA	
g				*Bankia gouldi*	M	EA	
417a	11	Nov 78	6	*Bankia gouldi*	M	EA	Leukocytosis in gonad and typhlosole
b				*Bankia gouldi*	M	EA	
c				*Bankia gouldi*	M	EA	
d				*Bankia gouldi*	M	EA	
e				*Bankia gouldi*	M	EA	
f				*Bankia gouldi*	M	EA	
g				*Bankia gouldi*	M	EA	Fragmentation of typhlosole epithelium
h				*Bankia gouldi*	F	LA	Eggs undergoing lysis; specimen probably did not spawn
418	11	Nov 78	6	*Teredo navalis*			No discernable gonad; very young specimen

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
419a	6	Nov 78	6	*Teredo bartschi*	M	S	
b				*Teredo bartschi*	M	PS	
c				*Teredo bartschi*	M	PS	
d				*Teredo bartschi*	H	PS	
e				*Teredo bartschi*	H	PS	
420	8	Nov 78	6	*Bankia gouldi*			No discernable gonad
421	17	Nov 78	6	*Bankia gouldi*	M	EA	
422a	10A	Nov 78	6	*Bankia gouldi*			No discernable gonad
b				*Bankia gouldi*	M	EA	
423a	5	Nov 78	6	*Teredo bartschi*	H	S	
b				*Teredo bartschi*	H	PS	
c				*Teredo bartschi*			No discernable gonad
d				*Teredo bartschi*	H	R	Possible gregarine in tissue
e				*Teredo bartschi*	H	PS	
f				*Teredo bartschi*	H	R	
g				*Teredo bartschi*			No discernable gonad; larvae in brood pouch
h				*Teredo bartschi*			No discernable gonad
i				*Teredo bartschi*			No discernable gonad; larvae in brood pouch; ciliates in mantle cavity
424	4	Nov 78	6	*Bankia gouldi*	M	EA	
425a	17	Nov 78	6	*Teredo navalis*	F	R	*Minchinia*
b				*Teredo navalis*	F	LA	
c				*Teredo navalis*	F	LA	Digestive gland necrotic; *Minchinia*
d				*Teredo navalis*	H	LA	*Minchinia*
426	5	Nov 78	6	*Bankia gouldi*			No discernable gonad; leukocytosis
427a	2	Nov 78	6	*Teredo navalis*	F	LA	Eggs being lysed; specimen probably did not spawn
b				*Teredo navalis*	H	LA	Same as above
c				*Teredo navalis*	H	LA	*Minchinia*
d				*Teredo navalis*	F	LA	

TABLE 9. Continued

Specimen No.	Station	Month Removed	No. Months Exposed	Species	Sex	Gonad Condition	Comments
428a	1	Nov 78	6	*Teredo navalis*	F	EA	*Minchinia*; possible metaplasia of digestive gland
b				*Teredo navalis*	F	EA	*Minchinia*
c				*Teredo navalis*	M	EA	*Minchinia*
d				*Teredo navalis*	F	EA	*Minchinia*
e				*Teredo navalis*	M	EA	
f				*Teredo navalis*	H	EA	*Minchinia*
g				*Teredo navalis*	H	EA	*Minchinia*
h				*Teredo navalis*	F	EA	*Minchinia*; extensive leukocytosis of gonad area and digestive gland
i				*Teredo navalis*	H	EA	*Minchinia*
j				*Teredo navalis*	M	LA	*Minchinia* (heavy)
k				*Teredo navalis*	F	LA	*Minchinia*
l				*Teredo navalis*	M	LA	
m				*Teredo navalis*	M	LA	
n				*Teredo navalis*	H	LA	*Minchinia*
o				*Teredo navalis*	M	LA	*Minchinia* (heavy)
429	17	Nov 78	12	*Teredo navalis*	M	EA	Special panel. Extremely heavy infection of *Minchinia*; hyperplasia and leukocytosis of typhlosole
430	2	Nov 78	12	*Teredo navalis*	M	EA	Special panel