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National Oceanic and Atmospheric Administration
National Marine Fisheries Service

Abundance and Distribution of Inshore Benthic Fauna off Southwestern Long Island, N.Y.

FRANK W. STEIMLE, JR. and RICHARD B. STONE

SEATTLE, WA
CEMBER 1973

National Marine Fisheries Service, Special Scientific Report--Fisheries Series

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NOAA Technical Report NMFS SSRF-673

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Abundance and Distribution of Inshore Benthic Fauna off Southwestern Long Island, N.Y.[1]

FRANK W. STEIMLE, JR.[2] and RICHARD B. STONE[3]

ABSTRACT

This paper describes a qualitative and quantitative census of the inshore benthic fauna off southwest Long Island over the period February 1966 through January 1967, prior to construction of an ocean sewer outfall in the general vicinity. Preliminary analyses of data indicate the presence of three distinct communities: 1) an inshore medium to coarse grain sand community dominated by the bivalve, *Tellina agilis*, the amphipod, *Protohaustorius deichmannae*, and the echinoderm, *Echinarachnius parma;* 2) an offshore silty fine sand community dominated by the bivalve, *Nucula proxima*, and the polychaete, *Nephtys incisa;* and 3) a community dominated by the blue mussel, *Mytilus edulis*.

INTRODUCTION

In 1966, the Sandy Hook Laboratory, Middle Atlantic Coastal Fisheries Center, made a census of the benthic fauna off the southwest coast of Long Island. The objective was to collect quantitative and qualitative data on benthic biota in an attempt to evaluate the extent of existing pollution and to provide baseline data that could be used to determine effects of future domestic waste disposal in these waters (Stone and Steimle, 1966).

One method to study the effects of pollution in the aquatic environment is to investigate changes in benthic faunal species composition, distribution, and numbers. Reish (1957, 1959, 1960), Filice (1959), and Kitamori, Kobayashi, and Nagota (1959) stressed the importance of bottom-dwelling organisms to the study of water quality in the marine environment. Marine benthic populations, especially polychaetes (Reish, 1970) and amphipods (J. B. Pearce, National Marine Fisheries Service, Sandy Hook Laboratory, Highlands, N.J., pers. comm., 1972), have shown to be altered in the vicinity of a pollution source, e.g., domestic sewer outfall. This alteration may be evident as a change in community composition and species abundance.

In this paper, we present a preliminary analysis of data, which includes 11 cruises of the RV *Challenger* over transects from Rockaway Inlet to Fire Island during the period February 1966 through January 1967. The data analyzed are derived from 423 grab collections of benthic and epibenthic fauna. This study represents the first such benthic census in this part of the New York Bight, although work has been done in adjacent estuaries (Townes, 1939).

METHODS

We established 39 sampling stations along seven transects normal to the adjacent beach (Fig. 1). The transects ranged over proposed sewage outfall locations near Jones Inlet, Long Island, N.Y. Each transect began at a point as near shore as water depths and surf conditions would normally allow the *Challenger* to enter and extended seaward from 7.4 to 11.1 km. We spaced the sampling stations at 1.8 km intervals along the seven transects, except for Station D1, which was moved east 0.5 km because of a dangerous shoal. Station depths ranged from 4.9 to 25.2 m. Station coordinates are given to the nearest 0.1 nautical mile in Appendix Table 1.

Each station was sampled once a month from February 1966 through January 1967, except the December 1966 cruise which was cancelled because of adverse weather conditions. The interval between starting dates was 30 days and all stations were sampled within 5 days.

[1] This survey was funded by Manganaro, Martin and Lincoln, Consulting Engineers, New York, N.Y.

[2] Sandy Hook Laboratory, Middle Atlantic Coastal Fisheries Center, NMFS, NOAA, Highlands, NJ 07732.

[3] Atlantic Estuarine Fisheries Center, National Marine Fisheries Service, NOAA, Beaufort, NC 28516.

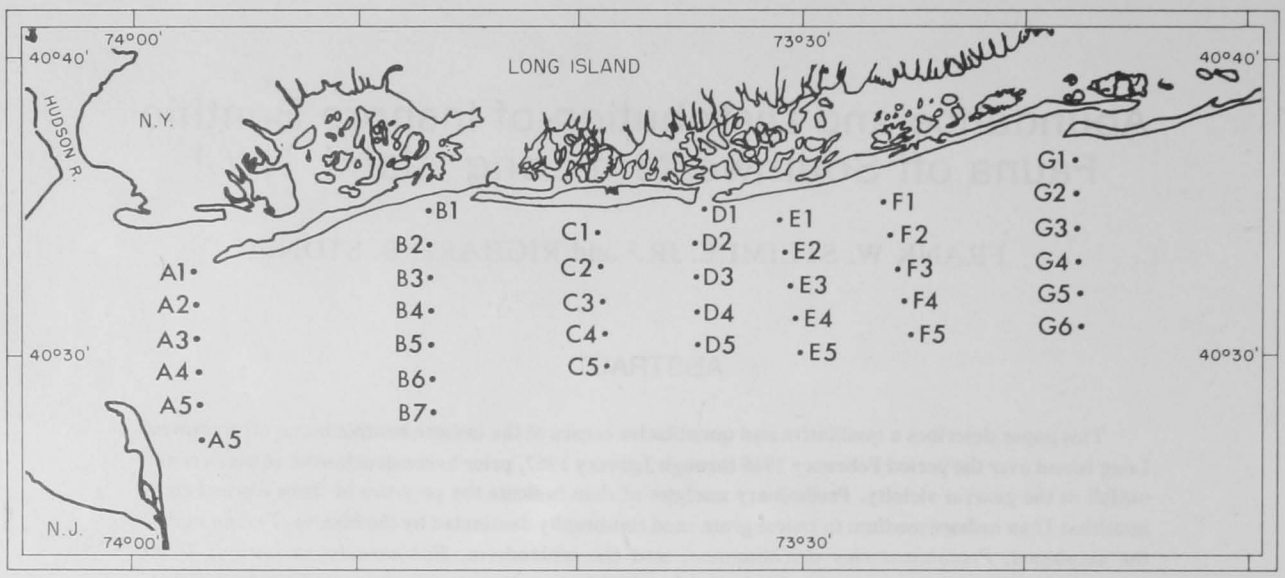

Figure 1.—RV *Challenger* survey, 1966-67. Locations of transects and collecting stations. Station D-1 is at the mouth of Jones' Inlet.

We used a 0.0624 m^2 Petersen grab (Fig. 2) to collect samples at each station. Each sample was washed through two screens, with 2- and 1-mm mesh openings. All organisms collected on both screens were stored together in a jar and fixed with 10% Formalin buffered with borax. Later the samples were transferred to 70% ethanol for permanent preservation.

Loran navigation was the principal method used for positioning the *Challenger* on collecting stations. We increased accuracy when possible, by use of radar, land ranges, and by visual sightings of buoys and light towers.

After primary sorting into major phyletic groups, each sample was processed separately and organisms identified to species, whenever possible, and counted. The responsibility of species identification was assumed by the senior author with the aid of authorities listed in the acknowledgment. Alpine Geophysical Associates, Inc., Norwood, N.J., analyzed sediments collected at each station during the period June through September.

RESULTS

Hydrography

Monthly mean values (bottom and surface) for water temperatures, salinity, and dissolved oxygen for the survey transects, available for the period February to November 1966 (Alpine Geophysical Associates, 1967) are nearly constant on all transects with the exception of salinity values on A transect. Mean bottom water temperature ranged seasonally from a minimum of 1.5°C in February to a maximum of 20.0°C in September and declined to 11.1°C in November. The salinity near the bottom was generally uniform east of Rockaway Inlet, ranging from 31.0 to 32.3‰ during the 10-mo survey. Bottom salinities obtained from the far western part of the survey area, including A transect (near the mouth of the Hudson River), were consistently lower and fluctuated from month to month; bottom salinity there ranged from 27.3 to31.2 ‰ during the 10 mo sampled. Dissolved oxygen values of the bottom water ranged from a high of 7.5 ppm (parts per million) in February to a low of 4.2 ppm in July, then rising slowly to 5.6 ppm in November. The dissolved oxygen values for the western transects were generally lower than those of the eastern portion during the summer months, July and August, with a low value of 3.5 ppm found on Transect A during July.

Sediments

Analysis showed a predominantly medium to coarse sand bottom at most stations with the exception of Transect B where all of the stations were characterized by finer sediments (Appendix Table 2).

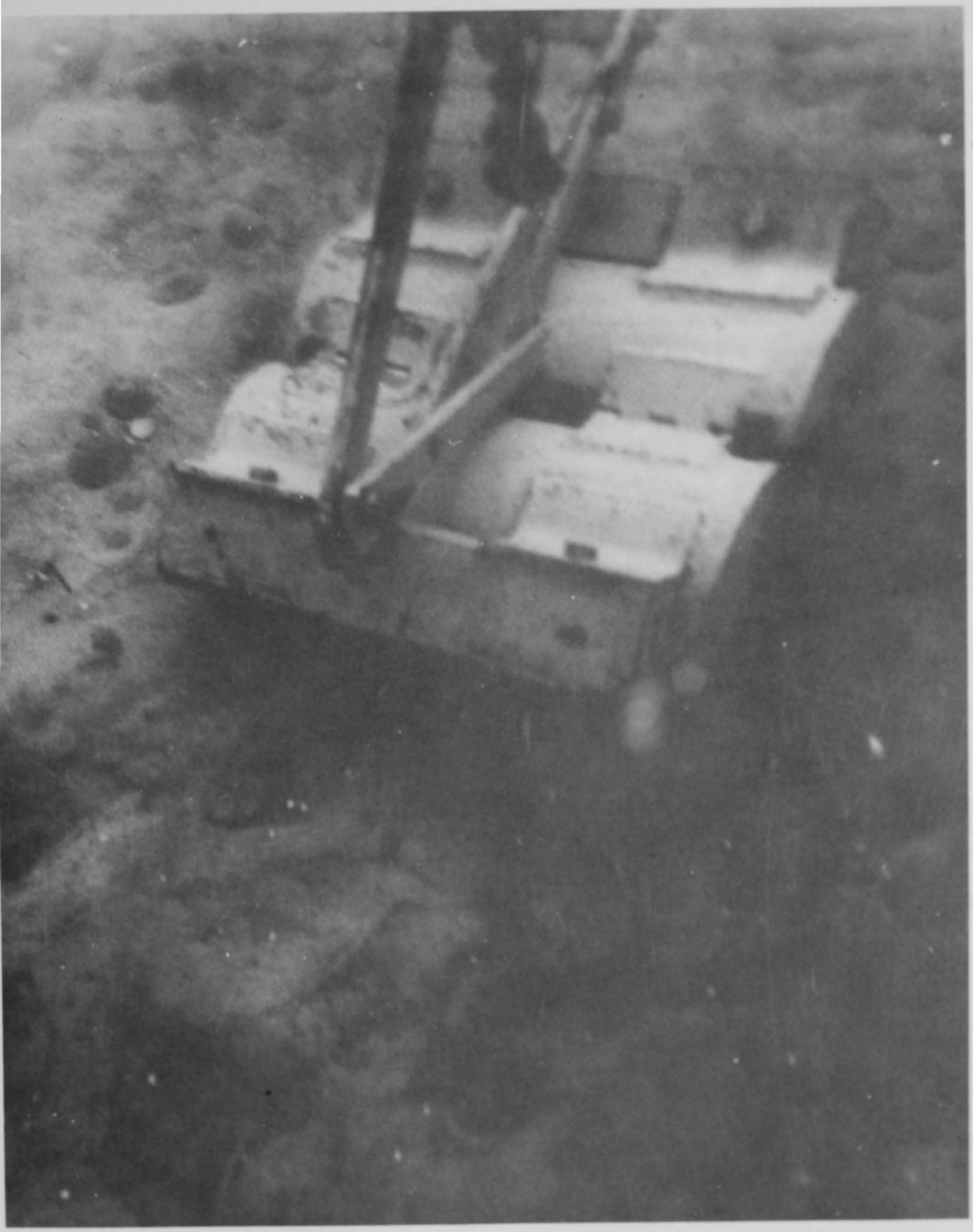

Figure 2.—The Petersen grab sampling a medium sand bottom station; sand dollars, *Echinarchnius parma*, are evident on surface.

Biota

We recorded 145 invertebrate species representing nine phyla in the study area (Appendix Table 3). Our preliminary analysis of the species composition at all stations (Appendix Table 4) indicates that the benthic fauna in the survey area can be separated into at least two distinct assemblages. Two of these assemblages show a strong association with sediment types (medium to coarse sand and fine sand mixed with silt) as well as with depth. A third assemblage dominated by apparently unattached clumps of the blue mussel, *Mytilus edulis*, was collected on both mud and hard sand sediments and showed no particular association with sediment type.

The medium sand assemblage.—This assemblage was found at all stations except B6 and B7. The dominant organisms were the bivalve, *Tellina agilis;* the burrowing amphipod, *Protohaustorius deichmannae;* the sand dollar, *Echinarachius parma;* the tube-dwelling amphipod, *Unciola irrorata;* and the surf clam, *Spisula solidissima*. Other invertebrates commonly collected as part of this assemblage were the cumacean, *Leptocuma minor;* the amphipods, *Acanthohaustorius millsi, Trichophoxus epistomus,* and *Monoculodes edwardsi;* and the polychaetes, *Sthenelais limicola, Lumbrineris fragilis,* and *Spiophanes bombyx*.

The mean number of organisms collected from the medium sand sediment ranged from 49 animals/m², Station E1, to 2,030 animals/m², Station E3 (Appendix Table 5). The total number of species generally increased with depth from a low of 11 at Station E1 to a high of 54 at Station D5 (Appendix Table 5).

The fine silty sand assemblage.—This assemblage was evident offshore mainly at Stations B6 and B7 and occasionally at the offshore stations of the D, E, and G transects. The dominant organisms were the bivalve, *Nucula proxima,* and the polychaete, *Nephtys incisa,* with other polychaetes, *Pherusa affinis* and *Clymenella torquata,* and the amphipod, *Leptocheirus pinguis,* also abundant. The average density at Station B7, the only station not transitional with the medium sand assemblage, was 1,440 animals/m² (Appendix Table 5). A total of 50 species were collected from this station (Appendix Table 5).

Aggregations of *Mytilus edulis*.—Clumps of blue mussels unattached to a substratum, were found on Stations A1, A2, and A5 during June through September (Appendix Table 4). These clumps consisted of variable size mussels from 1 to 5 cm in length; the 1-cm-size group included approximately 95% of all individuals. These clumps were situated on a medium to coarse sand bottom; a solid substrate, usually necessary for *Mytilus* attachment and development, was absent. Commonly found within the *Mytilus* clumps were the polychaetes, *Harmothoe extenuata, H. imbricata, Nereis succinea,* and *Lepidonatus squamatus*. The brachyuran crab, *Neopanope texana,* and the anemone, *Metridium senile,* were also abundant. The fauna in the sand underlying the clumps was typical of the *Tellina-Protohaustorius-Echinarachnius* medium-sand assemblage. Where these clumps originated is unknown. They may have been broken away by storm surges from mussel beds that are known to be nearby. It is possible that our sampling in the spring and fall missed the clumps which are present throughout the year.

DISCUSSION

It is apparent from Appendix Tables 4 and 5 that the relative abundance and diversity of species vary. In general, an increase in total numbers of species collected per station is directly related to an increase in water depth. For example, the average total number of species collected on the 11 stations in less than 10 m in depth was 20.8 species, on the 21 stations between 10 and 20 m. the average total was 27.9 species, and on the 7 stations in water greater than 20 m the average total was 45.7 species. No correlation between total number of organisms collected and depth could be detected. Many of the most abundant species appear to be distributed contagiously (Fager, 1966) on the bottom, especially: *Unciola irrorata, Echinarachnius parma, Spiophanes bombyx,* and *Spisula solidissima*. It is possible that this contagion is the result of inadequate sampling.

The fine silty sand assemblage, dominated by *Nucula proxima* and *Nephtys incisa,* is similar to the soft bottom community in Buzzards Bay, Mass., and Long Island Sound (Sanders, 1956, 1958). Sanders reported that *Nucula proxima* and *Nephtys incisa* made up 57% and 17% respectively of the total number of organisms collected in Buzzards Bay. At

Station B7, in this study, these species made up 47% and 10% respectively of the total number collected. The sediments at this station visibly contained large amounts of finer sediment material, silt, not measured in the sediment analysis.

Individual rock crabs, *Cancer irroratus,* were generally found infrequently throughout the survey area. During the summer, however, juveniles were collected in abundance throughout the study area. This can be attributed to the settling of larvae in June. The large numbers collected in July consisted principally of juveniles (0.5-1.5 cm carapace width). The number declined rapidly after July, probably due to predation by fish and other predators.

Of the organisms collected in lesser numbers two are of particular interest. Both of these are polychaetous annelids that have only been reported from areas far distant from the New York Bight. In April 1966, on Station C3, four specimens of *Pisione* sp. were collected. This genus had previously been described from South African waters (M. Simpson, Adelphi University, Garden City, Long Island, N.Y., pers. comm., 1969). The second species was tentatively identified as *Magalone riojae,* previously known from Pacific waters (Simpson, pers. comm., 1969). This specimen was collected at Station D4 during the January 1967 cruise. Both species were sent to authorities at the Smithsonian Institution, Washington, D.C. for verification.

ACKNOWLEDGMENTS

We appreciate the cooperation of colleagues who assisted in the identification of benthic forms: Edward L. Bousfield, National Museum of Natural Sciences, Ottawa, Canada; and Margaret Simpson, Adelphi University, Garden City, Long Island, N.Y.

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APPENDIX TABLES

Appendix Table 1.--Locations of collecting stations. Locations are given by coordinates of North latitudes over West longitude, listed to the nearest 0.1 nautical mile.

TRANSECT	STATION						
	1	2	3	4	5	6	7
A	40°32.5' 73°58.1'	40°31.6' 73°57.9'	40°30.6' 73°57.9'	40°29.8' 73°57.8'	40°28.6' 73°57.7'	40°27.5' 73°57.5'	
B	40°34.9' 73°46.8'	40°34.0' 73°46.8'	40°32.9' 73°46.5'	40°31.9' 73°46.3'	40°30.8' 73°46.1'	40°29.8' 73°45.9'	40°28.8' 73°45.8'
C	40°33.8' 73°38.9'	40°32.8' 73°38.7'	40°31.8' 73°38.4'	40°30.9' 73°38.2'	40°30.0' 73°38.0'		
D	40°34.3' 73°35.1'	40°33.1' 73°35.5'	40°32.4' 73°34.9'	40°31.4' 73°34.7'	40°30.4' 73°34.6'		
E	40°34.9' 73°31.0'	40°34.0' 73°30.8'	40°33.0' 73°30.5'	40°31.9' 73°30.3'	40°31.0' 73°30.1'		
F	40°35.4' 73°26.6'	40°34.4' 73°26.3'	40°33.4' 73°26.0'	40°32.4' 73°25.7'	40°31.4' 73°25.4'		
G	40°37.0' 73°18.3'	40°36.0' 73°18.1'	40°35.0' 73°17.9'	40°34.1' 73°17.7'	40°33.2' 73°17.6'	40°32.2' 73°17.4'	

Appendix Table 2.--Water depth and sediment types at collecting stations. Sediment values are averages of samples collected in June-September 1966 and are in accordance with the Inman System of Sediment Analysis (Inman, 1952); $\emptyset = \log_2$ of the diameter of particles in millimeters.

Station	Station Depth (m)	Sediment Description	Mean (MØ)	Sorting Ø
A1	7.0	Silty Brown Sand with Shell Fragments	1.36	.49
A2	6.4	Silty Brown Sand with Shell Fragments	1.71	.78
A3	4.9	Coarse Brown Sand	1.21	.56
A4	8.5	Coarse Brown Sand	.97	.54
A5	7.0	Coarse Brown Sand with Gravel	1.06	.71
A6	6.4	Coarse Brown Sand with Gravel	.97	.56
B1	6.4	Fine Brown Sand with Shell Fragments	1.84	.56
B2	10.7	Fine Brown Sand with Shell Fragments	2.31	.75
B3	14.0	Fine Brown Sand with Shell Fragments	2.23	.74
B4	16.8	Fine Brown Sand with Shell Fragments	2.23	.72
B5	20.1	Fine Brown Sand with Shell Fragments	2.01	.76
B6	22.9	Very Fine Dark Organic Sand with Shell Fragments	2.03	.76
B7	25.0	Very Fine Dark Organic Sand with Shell Fragments	2.19	.91
C1	9.8	Coarse Light Brown Sand with Gravel	.14	1.30
C2	11.9	Coarse Tan Sand with Gravel	.75	.86

Appendix Table 2.--Continued.

Station	Station Depth (m)	Sediment Description	Mean (Mφ)	Sorting φ
C3	15.5	Mixed Sand and Gravel	.35	.49
C4	16.8	Coarse Brown Sand	.41	.56
C5	17.4	Coarse Brown Sand	.96	.65
D1	6.7	Coarse Gray Sand	1.00	.47
D2	11.6	Medium Gray-Brown Sand	1.61	.69
D3	14.0	Medium Gray-Brown Sand with Shell Fragments	1.45	.91
D4	19.2	Coarse Gray-Tan Sand with Gravel and Clay Lumps	1.00	1.06
D5	20.1	Medium Gray-Tan Sand and Gravel	1.76	.69
E1	7.0	Medium Gray-Tan Sand with Shell Fragments	1.71	.68
E2	11.6	Coarse Gray-Tan Sand with Shell Fragments	1.07	.41
E3	14.9	Medium Gray-Tan Sand with Shell Fragments	1.52	.59
E4	17.7	Medium Gray-Tan Sand with Shell Fragments	1.17	.75
E5	18.0	Medium Gray-Tan Sand with Shell Fragments	1.59	.44
F1	11.3	Medium Tan Sand with Shell Fragments	1.51	.60
F2	14.3	Medium Tan Sand with Shell Fragments	1.61	.54
F3	15.8	Medium Brown Sand with Shell Fragments	1.42	.62
F4	17.1	Coarse Brown Sand with Shell Fragments	1.18	.55

ppendix Table 2.--Continued.

tation	Station Depth (m)	Sediment Description	Mean (Mϕ)	Sorting ϕ
F5	17.7	Medium Brown Sand with Shell Fragments	1.27	.41
G1	9.1	Fine Brown Sand with Shell Fragments	2.34	.54
G2	15.2	Coarse Tan Sand with Gravel	1.12	.48
G3	18.6	Medium Brown Sand with Gravel	2.02	.56
G4	21.6	Medium Brown Sand with Gravel	1.10	.62
G5	20.7	Medium Brown Sand with Gravel	1.37	.66
G6	22.6	Medium Tan Sand with Gravel	1.41	.46

Appendix Table 3.--List of species collected on survey.

Cnidaria (Coelenterata):
- Hydrozoa:
  - Pennaria sp.
  - Obelia sp.
- Anthozoa:
  - Cerianthus americanus (Verrill, 1866)
  - Metridium senile (Linnaeus)
  - Sagarta modesta (Verrill, 1866)

Platyhleminthes:
- Turbellaria:
  - unidentified sp.

Nemertea:
- unidentified sp.

Aschelminthes:
- Nematoda:
  - unidentified sp.

Annelida:
- Oligochaeta:
  - unidentified sp.
- Polychaeta:
  - Polynoidae:
    - Harmothoe extenuata (Grube, 1840)
    - Harmothoe imbricata (Linnaeus, 1767)
    - Lepidonotus squamatus (Linnaeus, 1758)
  - Lumbrineridae:
    - Lumbrineris fragilis (O. F. Muller, 1776)
    - Lumbrineris impatiens (Claparede, 1868)
    - Lumbrineris tenuis (Verrill, 1873)
    - Lumbrineris acuta (Verrill, 1875)
    - Ninoe nigripes Verrill, 1873
  - Orbinidae:
    - Orbinia (Phylo) kupfferi (Ehlers, 1875)
    - Orbinia swani Pettibone, 1957
    - Scoloplos robustus (Verrill, 1873)
    - Scoloplos sp.
  - Spionidae:
    - Polydora ligni Webster, 1879
    - Polydora sp.
    - Prionospio malmgreni Claparede
    - Scolelepis squamata (O. F. Muller, 1789)
    - Spio setosa Verrill, 1873
    - Spiophanes bombyx (Claparede, 1870)
  - Magelonidae:
    - Magelona riojae Jones, 1963
  - Cirratulidae:
    - Cirratulus grandis Verrill, 1873
    - Cirratulus sp.
    - Tharyx acutus Webster and Benedict, 1887
  - Flabelligeridae:
    - Pherusa affinis (Leidy, 1855)
  - Opheliidae:
    - Ophelia bicornis Savigny, 1818
    - Ophelia denticulata Verrill, 1875
    - Travisia carnea Verrill, 1873
  - Scalibregmidae:
    - Scalibregma inflatum Rathke, 1843
  - Capitellidae
    - Capitella capitata (Fabricius, 1780)
  - Maldanidae:
    - Clymenella torquata (Leidy, 1855)
  - Ampharetidae:
    - Ampharete arcitica (Malmgren, 1866)
    - Asabellides oculata (Webster, 1879)
  - Sigalionidae:
    - Sthenelais limicola (Ehlers, 1864)
    - Sigalion arenicola Verrill, 1879
  - Phyllodocidae:
    - Eteone flava (Fabricius, 1780)
    - Eumida sanguinea (Oersted, 1843)
    - Paranaitis kosteriensis (Malmgren, 1867)
    - Phyllodoce mucosa Oersted, 1843
  - Pisionidae:
    - Pisione sp.
  - Syllidae:
    - Autolytus cornutus A. Agassix, 1863
  - Paraonidae:
    - Paraonis lyra Southern, 1914
  - Nereidae:
    - Nereis grayi Pettibone, 1956
    - Nereis pelagica Linnaeus, 1758
    - Nereis succinea (Frey and Leuckart, 1847)
    - Nereis virens Sars, 1835
    - Nereis sp.
  - Nephtyidae:
    - Aglaophamus circinata (Verrill, 1874)
    - Nephtys bucera Ehlers, 1868
    - Nephtys incisa Malmgren, 1865
    - Nephtys picta Ehlers, 1868
  - Goniadidae:
    - Goniadella gracilis Verrill, 1873
  - Glyceridae:
    - Glycera dibranchiata Ehlers, 1868
    - Hemipodus sp.
  - Dorvilleidae:
    - Protodorvillea gracilis (Hartman, 1938)
  - Onuphidae:
    - Diopatra cuprea (Bosc, 1802)
    - Onuphis eremita Audouin and M. Edwards, 1833
  - Arabellidae:
    - Drilonereis longa (Webster, 1879)
    - Notocirrus spiniferus (Moore, 1906)
  - Terebellidae:
    - Nicolea venustula (Montagu, 1818)
    - Polycirrus phosphoreus Verrill, 1880
  - Sabellidae:
    - Euchone rubrocincta (Sars, 1861)
    - Potamilla reniformis (Linnaeus, 1788)
  - Exogoninae:
    - Exogone sp.
    - Unidentified (Fabriciinae?)

Arthropoda - Crustacea:
- Isopoda:
  - Edotea triloba (Say, 1818)
  - Chiridotea tuftsi (Stimpson, 1883)
  - Cirolana concharum (Stimpson, 1853)
- Mysidocea:
  - Neomysis americana (S. I. Smith, 1873)
  - Heteromysis formosa S. I. Smith, 1873)
- Cumacea:
  - Leptocuma minor Calman, 1912
  - Diastylis sculpta G. O. Sars, 1871
  - Diastylis polita S. I. Smith, 1879
- Amphipoda:
  - Grammaridae:
    - Elasmopus laevis (Smith, 1873)
  - Lysianassidae:
    - Tmetonyx nobilis Stimpson, 1853
    - Hippomedon serratus (Holmes)
    - Anonyx sarsi Steele and Brunel
  - Ampeliscidae:
    - Ampelisca vadorum Mills, 1963
    - Ampelisca macrocephala
    - Byblis serrata Smith, 1873
  - Haustoriidae:
    - Protohaustorius deichmannae Bousfield, 1965
    - Protohaustorius wigleyi Bousfield, 1965
    - Acanthohaustorius millsi Bousfield, 1965
    - Acanthohaustorius spinosus Bousfield, 1962
    - Acanthohaustorius intermedius Bousfield, 1965
    - Parahaustorius attenuatus Bousfield, 1965
    - Parahaustorius holmesi Bousfield, 1965
    - Parahaustorius longimerus Bousfield, 1965
    - Pseudohaustorius borealis Bousfield, 1965
    - Bathyporeia quoddyensis Shoemaker, 1949
  - Phoxocephalidae:
    - Trichophoxus epistomus Shoemaker
    - Phoxocephalus holbolli (Kroyer, 1842)
  - Oedicerotidae:
    - Monoculodes edwardsi Holmes, 1903

Corophiidae:
Unciola irrorata Say, 1818
Corophium tuberculatum Shoemaker
Photidae:
Leptocheirus pinguis (Stimpson, 1853)
Photis macrocoxa Shoemaker
Podoceropsis nitrida Stimpson
Ischyroceridae:
Ischyrocerus anguipes Kroyer
Jassa falcata (Montagu, 1808)
Sthenothoodae:
Stenothoe sp.
Caprellidea:
Aeginella longicornis Kroyer
Decapoda:
Caridea:
Crangon septemspinosus Say, 1818
Brachyura:
Libinia emarginata Leach, 1815
Cancer irroratus Say, 1817
Cancer borealis Stimpson, 1859
Neopanope texana Smith, 1869
Ovalipes ocellatus (Herbst, 1799)
Anomura:
Pagurus longicarpus Say, 1817
Pagurus pollicaris Say, 1817
Mollusca:
Gastropoda:
Prosobranchia:
Crucibulum striatum (Say)
Crepidula fornicata (L.)
Crepidula plana Say
Lunatia heros (Say)
Lacuna vincta (Montagu)
Mitrella lunata (Say)
Nassarius trivittatus (Say)
Turbonilla elegantula
Opisthobranchia:
Acanthodoris pilosa (Abildgaard, 1789)
Bivalvia:
Protobranchia:
Nucula proxima (Say)
Yoldia limatula (Say)
Lamellibranchia:
Mytilus edulis L.
Ensis directus (Conrad)
Siliqua costata (Say)
Tellina agilis Stimpson
Lyonsia hyalina (Conrad)
Pandora gouldiana (Dall)
Mercenaria mercenaria (L.)
Astarte castanea (Say)
Astarte undata Gould
Spisula solidissima (Dillwyn)
Artica (Cyprima) islandica (L.)
Cerastoderma pinnulatum (Conrad)
Crenulla decussata Montagu
Solen viridis Say
Ectoprocta:
unidentified species
Echinodermata:
Asteroidae:
Asterias forbesi (Desor, 1848)
Echinoidea:
Echinarachnius parma (Lamarck, 1816)

Appendix Table 4.--RV Challenger survey, 1966-67. Benthic grab collection records.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN
Station: A1											
Mytilus edulis	1		276	245	992	5795	1881	161		1	
Harmothoe extenuata					5	31					
Cancer irroratus						36					
Protohaustorius deichmannae	14										
Nereis succinea	1						10				
Trichophoxus epistomus	8										
Harmothoe imbricata						4	4				
Nereis pelagica						6					
Tellina agilis	4					1					
Neopanope texana							4	1			
Lepidonotus squamata							4				
Phyllodoce mucosa						3					
Parahaustorius holmesi	2										
Spio setosa						2					
Unciola irrorata			1								
Metridium senile					1						
Scolelepsis squamata	1										
Autolytus cornatus			1								
Ischyroceros anquipes					1						
TOTAL	31	0	278	245	999	5878	1903	162	0	1	
Station: A2											
Mytilus edulis			1	11	350	3774	2269	692	38		
Cancer irroratus						22	16	3	1		
Harmothoe extenuata					2	8	13	3			
Protohaustorius deichmannae				10							
Nereis succinea							4	4			
Elasmopus laevis									6		
Parahaustorius attenuatus				4							
Jassa falcata					1	1					

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Unident. nemertean	1					1					
Heteromysis formosa									1		
Lunatia heros								1			
Tellina agilis							1				
Pherusa affinis							1				
Chiridotea tuftsi				1							
Lumbrineris sp.				1							
Nephtys bucera										1	
Parahaustorius holmesi		1									
Acanthohaustorius millsi				1							
Polycirrus phosphoreus						1					
Eumida sanguinea							1				
Cirratulus grandis								1			
TOTAL	1	1	1	28	353	3811	2305	700	46	1	0
Station: A3											
Protohaustorius deichmannae	1	2	6	5	12	15		2	2		
Mytilus edulis	20			1	2				7		
Spisula solidissima					2	3	24				
Tellina agilis				7		2	10	2			
Acanthohaustorius millsi			4	1			5				
Crepidula plana				9							
Lunatia heros						1		1	2		
Nephtys picta				2	1						
Leptocuma minor				2							
Elasmopus laevis				2							
Spio setosa				1		1					
Lumbrineris fragilis	1										
Pagurus pollicaris				1							
Unident. nemertean				1							
Tharyx acutus					1						
Ovalipes ocellatus							1				
Chiridotea tuftsi							1				
Lyonsia hyalina							1				

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Sigalion arenecola							1				
Cancer irroratus								1			
Spiophanes bombyx			1								
Parahaustorius attenuatus								1			
Parahaustorius holmesi										1	
Harmothoe extenuata				1							
Hemipodus sp.						1					
TOTAL	22	2	11	33	18	23	43	7	11	1	0
Station: A4											
Mytilus edulis			15		1	1			15		
Spio setosa			20			4					
Protohaustorius deichmannae		8			5		5	2			
Echinarachnius parma		20									
Acanthohaustorius millsi				3	1		11				
Parahaustorius longimerus					8		6				
Tellina agilis		6			1	5					
Unciola irrorata						11					
Spisula solidissima				1	3		2				
Jassa falcata						6					
Lunatia heros						3			1		
Parahaustorius holmesi		2		2							
Crangon septemspinosus						2				1	
Chiridotea tuftsi						2					
Parahaustorius attenuatus							2				
Ophelia bicornis	2										
Glycera dibranchiata			1								
Lumbrineris fragilis		1									
Sthenelais limicola							1				
Nereis succinea								1			
Cancer irroratus						1					
Leptocuma minor						1					
Neptys picta						1					
Harmothoe extenuata						1					
Lumbrineris tenuis						1					
TOTAL	2	37	36	6	19	39	27	3	16	1	0

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: A5											
Mytilus edulis					65	3853	1894	511		19	181
Harmothoe extenuata						122	48				3
Cancer irroratus						36	19	9			1
Nereis succinea						38	12	3			
Harmothoe imbricata						49	2				
Lepidonotus squamata						17	10				
Polydora ligni						21					
Neopanope texana						8	4	1			
Jassa falcata						12					
Metridium senile						11					
Crepidula fornicata						9					
Elasmopus laevis						1	1	6			
Spisula solidissima				1		5					
Parahaustorius holmesi				4							
Protohaustorius deichmannae				2	2						
Acanthohaustorius spinosus				4							
Parahaustorius longimerus				3							
Acanthohaustorius millsi				3							
Lunatia heros								1		1	
Crangon septemspinosus		1				1					
Unciola irrorata							2				
Eumida sanguinea						2					
Unident. nemertean						1					
Cirratulus imbricata							1				
Ovalipes ocellatus									1		
Lumbrineris fragilis				1							
Asterias forbesi						1					
Mitrella lunata						1					
Tellina agilis						1					
Tharyx acutus						1					
Polydora sp.						1					
Unident. oligochaete						1					
Cirratulus sp.							1				
Glycera dibranchiata							1				
Nereis grayi									1		
TOTAL	0	1	0	17	67	4192	1995	531	2	20	185

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: A6											
Crangon septemspinosus						11					
Tellina agilis					2	9					
Acanthohaustorius millsi					7				1		
Parahaustorius holmesi		4					3				
Protohaustorius deichmannae			2			3			1		
Cancer irroratus						4	1				
Nephtys picta									1		4
Diastylis polita						3					
Asabellides oculata						3					
Parahaustorius longimerus			3								
Mytilus edulis			1		1						
Leptocuma minor						1					
Neomysis americana						1					
Unident. nemertean						1					
Lumbrineris fragilis					1						
Ophelia bicornis	1										
Sigalion arenecola										1	
Spisula solidissima										1	
Hemipodus sp.							1				
Asterias forbesi											1
Scoloplos sp.					1						
TOTAL	1	4	6	0	12	36	5	0	3	2	5
Station: B1											
Spisula solidissima			57	1	4		1	NO SAMPLES COLLECTED		11	
Asabellides oculata					9	13	3			5	
Cancer irroratus						2	7				
Tellina agilis		2				2	1				
Sthenelais limicola	3				1						1
Protohaustorius deichmannae		1		2							
Lunatia heros	1										

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Aeginella longicornis					1						
Pagurus longicarpus						1					
Neomysis americana						1					
Echinarachnius parma							1				
Unciola irrorata									1		
Tmetonyx nobilis					1						
TOTAL	4	3	57	3	16	19	13	NO SAMPLES COLLECTED	1	16	1
Station: B2											
Asabellides oculata				1	7	58	4				
Echinarachnius parma				14			1	6	3		
Spisula solidissima				4	1	8	1	7			1
Tellina agilis				3	3	2	6			2	2
Cancer irroratus			1			11					
Nephtys bucera				2							3
Aeginella longicornis	4				1						
Neomysis americana						4					
Spiophanes bombyx		1		2						1	
Sthenelais limicola					1		1				1
Spio setosa	2					1					
Crangon septemspinosus	1					1					
Lumbrineris fragilis						2					
Nassarius trivittatus		1	1								
Nephtys picta					1		1				
Diastylis sculpta				1	1						
Scoloplos robustus				1			1				
Leptocuma minor									1		
Unident. nemertean				1							
Unciola irrorata		1									
Asterias forbesi								1			
Glycera dibranchiata							1				
Drilonereis longa						1					
TOTAL	7	3	2	29	15	88	16	14	4	3	7

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: B3											
Asabellides oculata				1	6	79	5	3			
Tellina agilis			6	7	5	2	4	2		1	
Spiophanes bombyx	1		8	5			2	1	1		
Echinarachnius parma	3	1	1		2	1	1		3		1
Protohaustorius deichmannae		1		1	2		6			1	
Aeginella longicornis				10							
Unciola irrorata		1	1	4	1	1		1			
Cancer irroratus						9					
Scoloplos robustus			3	1	1		2				
Neomysis americana							6				
Sthenelais limicola	1		1	1	1		1				
Nephtys picta						1	1		1	1	
Nassarius trivittatus				2				1			
Spisula solidissima					1		2				
Nucula proxima									1	1	
Lumbrineris fragilis			1								
Hemipodus sp.					1						
Crangon septemspinosus								1			
Diastylis polita									1		
Chiridotea tuftsi											1
Paronis lyra	1										
Aglaophamus circinata			1								
Phoxocephalus holbolli				1							
Dioparta cuprea				1							
Harmothoe extenuata				1							
TOTAL	6	3	22	35	20	93	30	9	7	4	2

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: B4											
Asabellides oculata					15	16	22	27		1	2
Tellina agilis	2		4	10	7	9	8	13	2		
Echinarachnius parma				23					1		1
Spiophanes bombyx			2		5	1	8	1		1	
Unciola irrorata	2				1	2	1	9			
Lumbrineris fragilis		2	2	1	2		2				1
Nephtys picta	2		1	1	4				1		
Scoloplos robustus	1				3		5				
Spisula solidissima			1		2		4				
Cancer irroratus						7					
Crangon septemspinosus			1		1		3				
Aglaophamus circinata	1	1					3				
Trichophoxus epistomus				3						1	
Ampelisca macrocephala	1		2								
Glycera dibranchiata		1				1					1
Scoloplos sp.						1					1
Nucula proxima				1			1				
Siliqua costata					1		1				
Lunatia heros				1	1						
Neomysis americana							1				
Leptocuma minor					1						
Diastylis polita					1						
Unident. nemertean					1						
Nephtys bucera				1							
Ischyroceropus anguipes										1	
Edotea triloba							1				
Onuphis eremita							1				
Eteone flava						1					
Stenothoe sp.					1						
TOTAL	9	4	13	41	46	38	61	50	4	4	6

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: B5											
Asabellides oculata						17	17	13			
Echinarachnius parma		14		14							
Tellina agilis			2	7		2	6				
Lumbrineris fragilis			2	3	3		2	2	1		
Unciola irrorata	2					1	2	3	4		
Nephtys picta				2	3	1		2	2		
Cancer irroratus						4	3	3			
Trichophoxus epistomus		6	1		1			1			
Protohaustorius deichmannae	2		2		2		2				
Aglaophamus circinata				1				5			2
Nephtys incisa							8				
Scoloplos robustus			2	1	3			1			1
Spisula solidissima				1		2	4				
Ampelisca macrocephala	1				1		3		1		
Spiophanes bombyx		1			1	1	2				
Unident. nemertean	1	1			2						
Nucula proxima							2	2			
Sthenelais limicola		1	1	1							
Monoculodes edwardsi			1	2							
Glycera dibranchiata			1					1			1
Astarte castanea				1				1			
Ensis directus							1	1			
Siliqua costata								2			
Lumbrineris tenuis				1		1					
Leptocuma minor				1							
Aeginella longicornis							1				
Crangon septemspinosus							1				
Lyonsia hyalina							1				
Ampharete arctica									1		
Pagurus longicarpus											1
Nereis grayi							1				
Spio setosa							1				
Ninoe nigripes								1			
TOTAL	6	23	12	35	16	29	47	38	9	0	5

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: B6											
Unciola irrorata	15		4	2	8		1	8		4	
Asabelllides oculata						13	7			4	1
Nephtys incisa	2		1		2			19			
Nucula proxima			13					8			
Clymenella torquata			1					13		5	
Spio setosa	1							12		4	
Pherusa affinis			2					14			
Lumbrineris fragilis		2	1	1	6	1	3	1			
Leptocheirus pinguis					8			6			
Trichophoxus epistomus				1		7	5				
Aglaophamus circinata		2	3	1					5	1	
Crepidula plana						11					
Ninoe nigripes	3		3						3	1	
Nephtys picta					2	1			1		4
Tellina agilis			1	1		4	2				
Glycera dibranchiata		1					3		1	3	
Unident. nemertean	1		1				1	3		1	2
Prionospio malmgreni			7								
Yoldia limatula			4		1			2			
Ampelisca macrocephala						1			4		
Ampelisca vadorum			2		2				1		
Scoloplos robustus							3		1		
Astarte undata		2		1						1	
Asterias forbesi						4					
Spiophanes bombyx				1		3					
Drilonereis longa							2	1			
Cancer irroratus							2			1	
Artica islandica			1		1			1			
Monoculodes edwardsi			3								
Lumbrineris impatiens						1		1			
Lumbrineris tenuis	1								1		
Nereis grayi								1		1	
Cerastoderma pinnulatum			1	1							

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Siliqua costata						1	1				
Acanthodoris pilosa							2				
Nassarius trivittatus					1						1
Scalibregma inflatum									1		
Sagartia modesta								1			
Hippomedon serratus							1				
Astarte castanea						1					
Sthenelais limicola						1					
Echinarchnius parma				1							
Turbonilla elegantula			1								
Capitella capitata			1								
Tharyx acutus			1								
Euchone rubrocincta			1								
TOTAL	23	7	51	10	31	49	32	91	18	26	8
Station: B7											
Nucula proxima	49	50	245	1	20	9	5	29	1	29	
Nephtys incisa	18	7	22		5	27	13			10	
Pherusa affinis	3	22	31	1	10	4			3		
Unciola irrorata	1	2	8	20	8		3	5	2		
Leptocheirus pinguis	15	6	2		7	2	1	3	1		
Spio setosa	1	3	26					1	4		
Asabellides oculata	3	1		4	1	5	5		3	5	
Sagartia modesta	3	3	11		4	3	1	1			
Clymenella torquata		2	19			2	1	1			
Spiophanes bombyx			6	6	6	3					
Ninoe nigripes		2		1			1	1	6	1	
Prionospio malmgreni			3	7				2			
Yoldia limatula	3		3			3	1	1			
Lumbrineris fragilis		1		2	2			2	1		1
Tellina agilis		1	6		2						
Artica islandica	2	2	3			1					
Nassarius trivittatus	2	2				1	2		1		
Drilonereis longa			2	1		1	1		1		

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Cancer irroratus						1			1	3	1
Nereis grayi				2				1	2		
Lumbrineris tenuis			1	3		1					
Unident. nemertean	1				2		1		1		
Scalibregma inflatum	3									1	
Cirratulus sp.			4								
Glycera dibranchiata				1				1	1		1
Monoculodes edwardsi			2	2							
Ampelisca vadorum				3				1			
Ampharete arctica				1					3		
Tharyx acutus	3										
Exogone sp.				1							2
Astarte undata			1					1	1		
Crucibulum striatum			2								
Photis macrocoxa			1	1							
Lumbrineris impatiens			1	1				1			
Pandora gouldiana						1	1				
Cerastoderma pinnulatum								2			
Pagurus longicarpus								1	1		
Ensis directus			1				1				
Polydora sp.							1				
Aeginella longicornis					1						
Spisula solidissima									1		
Turbonilla elegantula	1										
Metridium senile		1									
Edotea triloba				1							
Nephtys picta				1							
Sthenelais limicola				1							
Cerianthus sp.	1										
Euchone rubrocincta			1								
Aglaophamus circincta				1							
TOTAL	109	105	401	62	68	64	38	54	34	49	5

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: C1											
Unciola irrorata	12				1		3	1		16	
Protohaustorius deichmannae										25	
Spisula solidissima	3	7				1				6	
Tellina agilis			12	3						1	
Asabellides oculata							13				
Monoculodes edwardsi			1		2						
Cancer irroratus							1	1			
Spiophanes bombyx			1			1					
Paraonis lyra	2										
Tharyx acutus			1					1			
Acanthohaustorius millsi										2	
Pagurus longicarpus									1		
Asterias forbesi								1			
Nephtys bucera					1						
Edotea triloba			1								
Echinarachnius parma	1										
Lunatia heros	1										
Drilonereis longa			1								
Trichophoxus epistomus										1	
Acanthohaustorius intermedius										1	
TOTAL	19	7	17	3	4	2	17	4	1	52	0
Station: C2											
Protohaustorius deichmannae				72	3				4	22	
Acanthohaustorius millsi				53						4	
Echinarachnius parma	1	1		3	3		11		8	21	1
Tellina agilis				11	1	1	2		4	15	
Spisula solidissima				2	1		1			4	
Trichophoxus epistomus				2	2					1	
Unciola irrorata			1	1	1	1	1				
Cancer irroratus						3	2				
Diastylis polita				2						1	

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Leptocuma minor				1						1	
Astarte castanae	1	1									
Tharyx acutus			1	1							
Lumbrineris sp.	1										
Nereis grayi			1								
Nephtys picta				1							
Siliqua costata					1						
Neomysis americana					1						
Pagurus longicarpus						1					
Edotea triloba										1	
Unident. nemertean	1										
TOTAL	4	2	3	149	13	6	17	0	16	70	1
Station: C3											
Unciola irrorata				1	3	30	5				
Echinarachnius parma		1		11							
Lumbrineris fragilis					1	3	3		1		
Tellina agilis				5							
Cancer irroratus						1	4				
Pisione sp.			4								
Unident. nemertean			2	1							
Astarte castanea				1				1			
Hemipodus sp.						2					
Lumbrineris impatiens					1						
Scoloplos robustus				1							
Sigalion arenecola							1				
Protodorvillea gracilis			1								
Monoculodes edwardsi				1							
Harmothoe extenuata							1				
Glycera dibranchiata									1		
Unident. ectoprocta	1										
TOTAL	1	1	7	21	5	36	14	1	2	0	0

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: C4											
Echinarachnius parma		114				5				2	
Unciola irrorata						2	3				
Unident. oligochaete			5								
Cancer irroratus						4					
Protohaustorius deichmannae		1			2	1					
Sigalion arenecola				4							
Lumbrineris fragilis			1	1	1		1				
Glycera dibranchiata	1						2				
Tharyx acutus	3										
Unident. nemertean			1				1				
Sthenelais limicola					1						
Harmothoe extenuata							1				
Clymenella torquata							1				
Spisula solidissima							1				
Nephtys bucera					1						
Tellina agilis				1							
Pagurus longicarpus	1										
Cirolana concharum										1	
Spio setosa			1								
Trichophoxus epistomus					1						
Ampharete arctica						1					
Eumida sanguinea							1				
Leptocuma minor					1						
TOTAL	5	115	8	6	7	13	11	0	0	3	0

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: C5											
Echinarachnius parma	62			195	22	2	3	79	72	58	4
Asabellides oculata							21			4	
Cancer irroratus							7	3			
Lumbrineris fragilis			2	2		1	3	1			1
Protohaustorius deichmannae	3			1	1			3	1	4	
Acanthohaustorius millsi								5			
Trichophoxus epistomus					1				1	2	
Sthenelais limicola			1			2		1			
Unciola irrorata							3				
Clymenella torquata						1	1				
Spisula solidissima							1		1		
Nassarius trivittatus	1		1								
Pherusa affinis			2								
Lumbrineris acutus						1	1				
Astarte castanea							1			1	
Scoloplos robustus			1					1			
Sigalion arenecola										2	
Leptocuma minor	1										
Monoculodes edwardsi				1							
Unident. nemertean				1							
Orbinia kufferi											1
Nephtys bucera		1									
Lunatia heros			1								
Tellina agilis				1							
Lumbrineris impatiens						1					
Nephtys picta							1				
Hippomedon serratus								1			
Tharyx acutus									1		
TOTAL	67	1	8	201	24	8	42	94	76	71	6

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: D1											
Parahaustorius longimerus			1	13	2	32			6	32	1
Spisula solidissima	10	40	8		1				1		
Protohaustorius deichmannae						1			1		1
Tellina agilis								1	1		
Echinarachnius parma								2			
Nephtys bucera			1			1					
Parahaustorius holmesi			1			1					
Acanthohaustorius millsi						2					
Diastylis polita									1		
Crangon septemspinosus						1					
Chiridotea tuftsi						1					
Tharyx acutus						1					
Asabellides oculata						1					
Leptocuma minor					1						
Tmetonyx nobilis							1				
Unident. nemertean									1		
Ophelia bicornis											1
TOTAL	10	40	11	13	4	41	1	3	11	32	3
Station: D2											
Asabellides oculata	15	1				38	7	3			
Echinarachnius parma	10	7	2		13			8	8	2	
Tellina agilis			2	3	10	5	2	5	1	1	
Spisula solidissima	1		16	4	1	2	1	3			
Protohaustorius deichmannae	1	1		1		1			7	7	3
Cancer irroratus						8	4	1			
Nephtys picta		1	1			1	2	2	1	2	
Tharyx acutus	1		3	3							
Sthenelais limicola	3		3	1							
Unciola irrorata	4		1				1	1			
Crangon septemspinosus			1				2				
Unident. nemertean						1	1			1	

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Spio setosa						3					
Spiophanes bombyx			1								
Pagurus longicarpus	1										
Lunatia heros					1						
Neomysis americana							1				
Trichophoxus epistomus							1				
Leptocuma minor									1		
Nephtys bucera											1
Tmetonyx nobilis	1										
Acanthohaustorius millsi	1										
Eumida sanguinea						1					
Aglaophamus circinata											1
TOTAL	38	10	30	12	25	60	22	23	18	13	5
Station: D3											
Echinarachnius parma	14				4			2	20	3	35
Unciola irrorata			24	6	7	3					1
Tellina agilis			3		4	2		8	1		
Protohaustorius deichmannae		2	2	1					6	1	2
Spiophanes bombyx		5		2	1	2		1			
Asabellides oculata					3	7		1			
Cancer irroratus						7		2			
Spisula solidissima	6				2			1			
Acanthohaustorius millsi	1		6					1			1
Tharyx acutus	1	7									
Sthenelais limicola	1			1	4			2			
Siliqua costata					5						
Nephtys picta					2	1		1			1
Hippomedon serratus	2								1		1
Spio setosa						4					
Lumbrineris fragilis		1		1	1	1					
Monoculodes edwardsi	1		1								1
Trichophoxus epistomus								1	2		
Orbinia swani	1				2						

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Nephtys bucera	1			1							
Sigalion arenicola									1		1
Ampelisca macrocephala	2										
Diastylis sculpta					1						
Neomysis americana					1						
Pagurus longicarpus						1					
Aeginella longicornis						1					
Ensis directus						1					
Lumbrineris tenuis								1			
Glycera dibranchiata									1		
Unident. nemertean	1										
Chiridotea tuftsi			1								
Edotea triloba			1								
Drilonereis longa	1										
Ischyrocerus anguipes				1							
Ophelia denticulata									1		
Aglaophamus circinata										1	
TOTAL	32	15	38	13	37	30	---	21	33	5	43
Station: D4											
Echinarachnius parma	8	7		3		151		15	120	6	17
Spiophanes bombyx		7	1		65						
Tellina agilis	5			4		4			2	2	2
Trichophoxus epistomus									2	2	15
Protohaustorius deichmannae				3				1	1	1	6
Unciola irrorata		2		1	8						
Nephtys picta	1					1		3	3		1
Astarte castanea	1					3			1		
Acanthohaustorius millsi					6						
Lumbrineris tenuis								5			
Phoxocephalus holbolli					5						
Aeginella longicornia		5									
Pherusa affinis			1		3						
Scoloplos robustus								4			

NO SAMPLES COLLECTED

NO SAMPLES COLLECTED

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Sthenelais limicola	1		1								2
Asterias forbesi		1							2		
Nassarius trivittatus	1					2					
Leptocheirus pinguis					3						
Spisula solidissima	1	1		1							
Lumbrineris fragilis	1					1		1			
Ampelisca vadorum				1	2						
Sigalion arenecola						2					
Aglaophamus circinata											2
Photis macrocoxa					1						
Spio setosa						1					
Notocirrus spiniferus								1			
Magelona riojae											1
Cancer irroratus									1		
Nucula proxima					1						
Clymenella torquata					1						
Leptocuma minor				1							
Ampharete arctica	1										
TOTAL	20	23	3	14	95	165	--	30	132	11	46
Station: D5											
Ampelisca macrocephala		68		114		151		7		110	
Echinarachnius parma			7		48	1	107		2		
Unciola irrorata		7		26	14	47		6		26	
Spiophanes bombyx		1		6		5	7	5			
Nephtys picta		2		3		6		2	1	2	6
Nereis grayi						5		3		1	
Ampelisca vadorum				8				1			
Scoloplos robustus			1	1	1	3		2			1
Cancer irroratus						4		3		1	
Sthenelais limicola			2	2	1	3					
Clymenella torquata				1		6		1			
Lumbrineris fragilis	2	1	1			3					
Asabellides oculata				2		4					
Monoculodes edwardsi			3	3							

NO SAMPLES COLLECTED

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Spio setosa	4					2					
Trichophoxus epistomus				1	1				1		2
Yoldia limatula				2		2		1			
Spisula solidissima			1		1	2		1			
Lumbrineris tenuis						4		1			
Glycera dibranchiata	1							3			
Prionospio malmgreni										3	
Diastylis sculpta		2				1					
Cerastoderma pinnulatum				1				2			
Pagurus longicarpus					1			2			
Unident. nemertean		1			1	1					
Protohaustorius deichmannae			1								2
Leptocheirus pinguis				3							
Notocirrus spiniferus						2		1			
Nephtys incisa								2			
Siliqua costate			1		1						
Crangon septemspinosus						1		1			
Drilonereis longa						1				1	
Ampharete arctica						2					
Pherusa affinis								2			
Artica islandia				2							
Lumbrineris acutus				2							
Leptocuma minor					2						
Tharyx acuta											2
Acanthohaustorius millsi				1	1						
Photis macrocoxa				2							
Cirratulus grandis										1	
Scoloplos fragilis										1	
Lumbrineris impatiens								1			
Euchone rubrocincta						1					
Phyllodoce mucosa						1					
Sthenothoe sp.						1					
Ensis directus						1					

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Phoxocephalus holbolli	1										
Lacuna vincta				1							
Nassarius trivittatus				1							
Aeginella longicornis				1							
Asterias forbesi	1										
Astarte castanea											1
Diastylis polita				1							
TOTAL	9	82	17	184	72	260	114	47	4	146	14
Station: E1											
Protohaustorius deichmannae		1		1	6	2		1		1	
Spisula solidissima				1		3			2	1	
Asabellides oculata						1	1			1	
Nephtys picta					1	1				1	
Unciola irrorata		2									
Tellina agilis						1				1	
Crangon septemspinosus							1				
Nephtys bucera			1								
Parahaustorius holmesi									1		
Diastylis polita											1
Cancer irroratus				1							
TOTAL	0	3	1	3	7	8	2	1	3	5	1
Station: E2											
Unciola irrorata	334	10	2	19	65	19		11			
Acanthohaustorius millsi		3	1	65	1			3			
Tellina agilis	6		1	8	10	4	1	4	10	1	
Protohaustorius deichmannae		8	1	14			4	6	8		3
Tmetonyx nobilis		2							37	1	1
Echinarachnius parma		2	2				1			2	3
Trichophoxus epistomus	1			1		1	1	3		1	
Nephtys picta	1			1		1			3		1
Asabellides oculata		1	2							2	

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Sthenelais limicola		3	1								
Spiophanes bombyx			1						1	1	
Leptocuma minor				1	2						
Orbinia swani				2							
Spisula solidissima					1				1		
Nephtys bucera					1						1
Chiridotea tuftsi			1								
Astarte castanea					1						
Cirolana concharum					1						
Cancer irroratus								1			
Phoxocephala holbolli	1										
Harmothoe extenuata						1					
Nephtys incisa								1			
Sigalion arenecola								1			
TOTAL	343	29	12	111	82	26	7	30	60	8	9
Station: E3											
Unciola irrorata	280	183	14	148	77	12	1	1	34	48	36
Acanthohaustorius millsi	40	3	18	8	37	2			4	14	
Tellina agilis	5		3	12	14	29	19	8	4	3	
Protohaustorius deichmannae	8		26	2	3	1	8			1	
Asabellides oculata						1	25				
Trichophoxus epistomus				4	15	1			1	5	
Spisula solidissima	1		2	1	1		2	4		1	
Leptocuma minor	4	3		4	1						
Cancer irroratus						8	3				
Nephtys picta					1		7		2		1
Spiophanes bombyx					4	2	2				
Echinarachnius parma		4			1			1			
Tharyx acuta				3							
Hippomedon serratus	1						1			1	
Lunatia heros			1		1						
Edotea triloba			1		1						
Pagurus lonicarpus	1								1		
Glycera dibranchiata							2				

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Monoculodes edwardsi			1	1							
Ischycerus anguipes						2					
Nephtys bucera									1		
Astarte castanea						1					
Nucula proxima						1					
Crangon septemspinosus					1						
Unident. nemertean					1						
Aeginella longicornis				1							
Diastylis polita				1							
Neomysis americana				1							
Orbinia swani										1	
Bathyporea quoddyensis	1										
Nereis grayi		1									
Onuphis eremita			1								
Nephtys incisa										1	
TOTAL	341	194	67	186	158	60	70	14	47	75	37
Station: E4											
Protohaustorius deichmannae	19			26	48	4	1		39		
Acanthohaustorius millsi				6	58	8		1	1		
Tellina agilis	2			12	24	6	1	6	6		
Echinarachnius parma	10		1	4	14	2		5	4		3
Trichophoxus epistomus	3			4	11	2			11		
Nephtys picta	4	5	1	2	2	3	1		2		
Unciola irroata		3		9	6			1			
Spisula solidissima	4			8	4			1	1		
Asabellides oculata				1		2		8			
Cancer irroratus						8	1	1			
Sthenelais limicola				2	2	2			1		
Spiophanes bombyx	1	3	1		1						
Leptocuma minor	1			2					1		
Diastylis polita				1							
Scoloplos robustus	1					2					
Pherusa affinis	1	2									
Lunatia heros			1						1		

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Lumbrineris impatiens			1	1							
Nassarius trivittatus				1					1		
Siliqua costate					1	1					
Drilonereis longa						2					
Nereis grayi		1									
Astarte castanea											2
Ampelisca vadorum		2									
Monoculodes edwardsi			1		1						
Ampharete arctica			1				1				
Edotea triloba					1						
Spio setosa		1									
Hippomedon serratus						1					
Heteromysis formosa								1			
Unident. nemertean										1	
Crucibulum sp.											1
Phoxocephalus holbolli						1					
Orbinia swani							1				
Potamilla reniformis										1	
TOTAL	46	17	7	83	173	44	6	24	68	2	6
Station: E5											
Echinarachnius parma		41	39	9	6	22	28	8	2	4	3
Protohaustorius deichmannae			4	7	21	13	3	2	35		1
Unciola irrorata	20		34	4		3	6				
Ampelisca vadorum	38										
Acanthohaustorius millsi		5		21		9			1		
Asabellides oculata	14						12				
Leptocheirus pinguis	22										
Pherusa affinis	21										
Tellina agilis			1	5	1	7	1	1	1		
Trichophoxus epistomus				3	4	3	1		6		
Astarte castanea		1					6			5	1
Leptocuma minor			4	2	2	3			1		
Nephtys picta	1			1	1	3	3	2			

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Spisula solidissima				3	1	5					
Cancer irroratus						5	2	1			
Polydora sp.	7										
Sthenelais limicola	1		2		2				1		
Clymenella torquata	6										
Lumbrineris fragilis	4				1		1				
Prionospio malmgreni	5										
Lumbrineris tenuis	4										
Spiophanes bombyx	1		1					1			
Sigalion arenecola						1		2			
Ninoe nigripes	3										
Lunatia heros	2										
Hippomedon serratus			1			1					
Monoculodes edwardsi					1	1					
Scoloplos robustus					1	1					
Bathyporea quoddyensis						2					
Nephtys bucera						1			1		
Unident. nemertean					1		1				
Spio setosa	2										
Asterias forbesi	1										
Cerastoderma pinnulatum	1										
Phoxocephala holbolli					1						
Orbinia swani								1			
Nassarius trivittatus	1										
Aeginella longicornis	1										
Pagurus pollicaris	1										
Siliqua costata					1						
Edotea triloba					1						
Chiridotea tuftsi				1							
Diastylis polita				1							

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Ampharete arctica	1										
Nereis grayi	1										
Harmothoe extenuata	1										
Stenothoe sp.	1										
Glycera dibranchiata	1										
Cirratulus sp.	1										
Parahaustorius holmesi		1									
TOTAL	162	48	86	57	45	80	64	18	48	9	5
Station: F1											
Unciola irrorata	26	35			10		6			5	15
Protohaustorius deichmannae	15					24		1		2	2
Tmetonyx nobilis											24
Echinarachnius parma						8	4		6		
Acanthohaustorius millsi							1			3	4
Tellina agilis					1		5		1		
Cancer irroratus						2	2			1	
Spisula solidissima				1			1	1			
Sthenelais limicola				1							2
Acanthohaustorius intermedius										1	2
Leptocuma minor					1						1
Diastylis sculpta						1					1
Lunatia heros						1				1	
Hippomedon serratus							1				
Unident. nemertean	1										
Mitrella lunata						1					
Unident. turbellarian						1					
Nassarius trivittatus								1			
Trichophoxus epistomus							1				
TOTAL	42	35	---	2	12	38	21	3	7	13	51

NO SAMPLES COLLECTED

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: F2											
Unciola irrorata	30	15	46	1		1		3		247	
Echinarachnius parma	9	3	2	8	3	4	20	10		2	11
Protohaustorius deichmannae				32			10	1			1
Tellina agilis					4	5	3	22		2	
Trichophoxus epistomus	11						3	1		1	
Acanthohaustorius millsi	2	1	2					6			
Spisula solidissima				3		2	1	4			
Cancer irroratus						2	3		1		1
Crepidula plana						6					
Asabellides oculata			1				2	2			
Sthenelais limicola			3	2							
Astarte castanea							1		1	3	
Spiophanes bombyx					1	1		2			
Circolana concharum	1					3					
Leptocuma minor			1			1	1			1	
Tharyx acutus					3						
Orbinia swani							2				
Nephtys picta				2							
Pandora gouldiana								1			
Crangon septemspinosus								1			
Pagurus pollicaris						1					
Crepidula fornicata						1					
Lunatia heros						1					
Siliqua costata					1						
Unident. nemertean			1								
Edotea triloba	1										
Monoculodes edwardsi			1								
Acanthohaustorius intermedius								1			
Onuphis eremita								1			
TOTAL	54	19	57	48	12	28	46	55	2	256	13

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: F3											
Unciola irrorata			36	113	1					39	
Echinarachnius parma		1	9	1	24	1	15	7	2	4	20
Protohaustorius deichmannae			8	5	23	4	13		1	3	1
Tellina agilis			3	6	10			10	1	1	
Acanthohaustorius millsi		2	11	11	1			1			
Trichophoxus epistomus			1	16	1			1		5	
Astarte castanea			3				2		3	1	4
Sthenelais limicola				1	4			1			
Spisula solidissima				4		1	1				
Diastylis polita				4							
Monoculodes edwardsi		1		3							
Leptocuma minor				2	1						
Lumbrineris fragilis						2					
Orbinia kufferi					1	1					
Nephtys bucera						2					
Edotea triloba			2								
Bathyporea quoddyensis				2							
Sigalion arencola									1		
Pagurus longicarpus					1						
Nephtys picta										1	
Cancer irroratus						1					
Crenulla decussata							1				
Unident. turbellarian							1				
Asabellides oculata								1			
Tmetonyx nobilis									1		
Aeginella longicornis				1							
Unident. nemertean				1							
TOTAL	---	4	73	170	67	12	33	21	9	54	25

NO SAMPLES COLLECTED

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: F4											
Echinarachnius parma	3	9	10	16	1	2	12	3	3	6	11
Protohaustorius deichmannae	2	1	11	1	7	2	17		1		1
Tellina agilis			2	16	6	4				1	
Trichophoxus epistomus			3	9	7	1	3				
Unciola irrorata			2	3	7		3				
Astarte castanea	2						6			1	6
Spisula solidissima			4		7		1				
Diastylis polita				2	10						
Nephtys picta						2	1		1	3	
Sthenelais limicola			2	2	1		1				
Cancer irrorata							1	3	1		
Asabellides oculata			2	1					1	1	
Nassarius trivittatus			1			1					
Tharyx acutus				2							
Unident. nemertean				1						1	
Clymenella sp.						1					1
Acanthohaustorius millsi			2								
Ampharete arctica						1					
Edotea triloba					1						
Nephtys incisa					1						
Aeginella longicornis			1								
Pherusa affinis			1								
Onuphis ermeita		1									
Cirolana concharum	1										
Hippomedon serratus								1			
Lumbrineris fragilis								1			
Ampelisca macrocephala						1					
Leptocuma minor						1					
Monoculodes edwardsi					1						
TOTAL	8	11	41	53	49	16	45	8	7	13	19

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: F5											
Echinarachnius parma	12	9	16	6	13	28	4	25	1	17	2
Protohaustorius deichmannae	7	1	1			12	21	13		10	3
Astarte castanea	2		3	4		11	1	3	1	1	6
Unciola irrorata		10		6	1	2			1		1
Trichophoxus epistomus					1		1	4		5	
Acanthohaustorius millsi		2			4			1		4	
Nephtys picta	1	1			2					4	1
Hippomedon serratus	1	2					2			2	
Sthenelais limicola			2	1	1					2	
Cancer irroratus						5					
Sigalion arenecola			1			2	1			1	
Tellina agilis					2			1		1	
Spisula solidissima		1				1					1
Orbinia swani					1					2	
Unident. nemertean							1			2	
Parahaustorius attenuatus							3				
Unident. turbellaria	1						1				
Crenulla decussata		1		1							
Chiridotea tuftsi								2			
Travisia carnea						1				1	
Neomysis americana					1						
Edotea triloba							1				
Diastylis polita							1				
Leptocuma minor								1			
Siliqua costata							1				
Phoxocephala holbolli									1		
Lumbrineris fragilis	1										
Crangon septemspinosus		1									
Pagurus longicarpus				1							
Bathyporea quoddyensis		1									
Monoculodes edwardsi					1						
Ampharete arctica								1			
TOTAL	25	29	22	19	27	62	38	51	4	52	14

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: G1											
Protohaustorius deichmannae	29				6			12	1	10	4
Spisula solidissima		2	1	1	16		10	9			3
Tellina agilis		1	2		9	1	3	1	2		
Tmetonyx nobilis	2		1		5				1		5
Asabellides oculata		7									
Chiridotea tuftsi	7										
Acanthohaustorius millsi	1			4				1			
Parahaustorius longimerus	1			4							
Nephtys bucera	1					1					3
Nephtys picta			1					3	1		
Tharyx acutus			3								
Crangon septemspinosus	1							1			
Sthenelais limicola					2						
Leptocuma minor			1		1						
Diastylis polita											2
Monoculodes edwardsi			1								1
Mytilus edulis									1		
Nassarius trivittatus					1						
Unciola irrorata											1
Spiophanes bombyx					1						
Parahaustorius attenuatus									1		
Parahaustorius holmesi									1		
TOTAL	42	10	10	9	41	2	13	27	8	10	19
Station: G2											
Unciola irrorata	260	21	14	32	8	59	12	21		7	126
Protohaustorius deichmannae	17	4	2		7	5	1	5	6	1	11
Echinarchnius parma	3	3	7	5		5	3	6	3	1	6
Acanthohaustorius millsi	1		1		7			10			9
Tellina agilis				3	6	3	2	5	3		3
Spiophanes bombyx	3		2			10		1	1		
Trichophoxus epistomus	3		1	2		3	1	4	1		1

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Leptocuma minor				1	3	5	1	2	2		
Hippomedon serratus	2		1		1			3	1	2	
Spisula solidissima					2	4		1	1		
Cancer irroratus						5	2				1
Sthenelais limicola			1		1				3		2
Monoculodes edwardsi	1			3							1
Diastylis polita	1			1	2						
Nephtys picta				1	1			1			
Unident. nemertean	1					1		1			
Asabellides oculata		2							1		
Astarte castanea						1			2		
Neomysis americana							1				1
Cirratulus grandis								1			
Orbinia swani						1					
Unident. turbellarian								1			
Edotea triloba	1										
Lunatia heros				1							
Chiridotea tuftsi											1
TOTAL	293	30	29	49	38	102	23	62	24	11	162
Station: G3											
Protohaustorius deichmannae	9	2		28	2	19	22	21	9	3	15
Echinarachnius parma	7	10	7	18	10	9	20	4	11	7	3
Asabellides oculata	8	50				3	1			1	
Tellina agilis	1		1	11		9	2	6	2	6	1
Trichophoxus epistomus	1		1	3		11	5	9	2	5	1
Unciola irrorata	3	3	14	7		4	2				1
Acanthohaustorius millsi		1	2	17		11				2	
Sthenelais limicola	1			1			7				1
Nephtys picta				2				2	3		
Diastylis polita	1			3		1				1	1
Leptocuma minor	1	1		2			1				
Hippomedon serratus	1			1		1	1				
Monoculodes edwardsi	1			1							1
Unident. nemertean				1			1	1			

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Cancer irrorata						1	2				
Lumbrineris fragilis							2				1
Travisia carnea							3				
Nassarius trivittatus								1	1		
Spiophanes bombyx							1				
Nucula proxima						1					
Asterias forbesi		1									
Aeginella longicornia	1										
Crangon septemspinosus	1										
Harmothoe extenuata	1										
Ampharete arctica							1				
Nephtys bucera							1				
Ischyrocerus anguipes										1	
TOTAL	37	68	25	95	12	70	72	44	18	26	25
Station: G4											
Spiophanes bombyx						300	55				1
Unciola irrorata	12	1	69	13		92	76	2		5	52
Asabellides oculata	5	56		5		4	2			60	
Tellina agilis			6		6	22	5	1			1
Echinarachnius parma	2	3	2		2			4	11		4
Astarte castanea	2					10	2	8	2		3
Trichophoxus epistomus				13		2	5				1
Cancer irrorata						17		1			
Diastylis polita			1	2	13	1					
Protohaustorius deichmannae			1	1		1	1	2	3		6
Phyllodoce mucosa						12					
Hippomedon serratus	1					2	5		2		1
Tharyx sp.	7						1				
Acanthohaustorius millsi			7			1					
Sthenelais limicola				4		1				1	1
Monoculodes edwardsi		1	2	2							
Nephtys picta				1			3				
Lumbrineris fragilis		3				1					
Spisula solidissima						2	1				

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Unident. nemertean							2				1
Euchone rubrocincta						3					
Ampelisca macrocephala				3							
Nephtys incisa							3				
Leptocuma minor						1	1				
Neomysis americana			1				1				
Unident. turbellarian			2								
Nucula proxima				1	1						
Nephtys bucera	2										
Artica islandica					1		1				
Harmothoe extenuata						1	1				
Leptocheirus pinguis							1				
Aeginella longicornis		1									
Lunatia heros									1		
Exogone sp.						1					
Goniadella gracilis						1					
Orbinia swani							1				
Ampharete arctica							1				
Edotea triloba			1								
Lumbrineris acutus				1							
Crangon septemspinosus						1					
Cerastoderma pinnulatum						1					
Crenulla decussata						1					
Lyonsia hyalina						1					
Nassarius trivittatus						1					
Orbinia kupfferi											1
Orbinia sp.											1
Byblis serratus				1							
Ampelisca vadorum						1					
Sigalion arenecola									1		
Ensis directus						1					
TOTAL	31	65	92	46	23	482	158	18	20	66	73

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Station: G5											
Protohaustorius deichmannae	22		2	12	6	23	9		3		20
Unciola irrorata	5	15	5	1	24	21	4	7		2	2
Echinarachnius parma	5	1	2	6	2	1	6	1	5	13	3
Trichophoxus epistomus	3	1		5		19	1				5
Tellina agilis	1			4	1	10	1	2		1	2
Acanthohaustorius millsi	10					1					3
Nephtys picta					1	3	3	1		1	3
Cancer irroratus						6	2			2	
Sthenelais limicola			1	3		3			1		2
Hippomedon serratus		1					5		1	2	
Astarte castanea		1	2		1					4	
Leptocuma minor				2	1	1	2		1		
Lumbrineris fragilis					1	3	3				
Ampelisca macrocephala	1					5					
Monoculodes edwardsi	2		2	1							
Spiophanes bombyx				1		1		1	1		
Orbinia sp.				1				1	1		
Phoxocephala holbolli			1					2			
Tharyx acutus	1				1						
Unident. turbellarian					1		1				
Unident. nemertean				1			1				
Spisula solidissima					1						1
Lumbrineris tenuis	1					1					
Asabellides oculata	1					1					
Aglaophamus circanata						2					
Nephtys incisa					1						
Aeginella longicornis				1							
Nassarius trivittatus		1									
Edotea triloba								1			
Spio setosa										1	
Parahaustorius longimerus											1
Neomysis americana									1		
Crangon septemspinosus						1					
Cirolana concharum						1					

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Cerastoderma pinnulatum						1					
Lunatia heros						1					
Siliqua costata						1					
Crenulla decussata										1	
Nucula proxima											1
Tmetonyx nobilis											1
Harmothoe extenuata			1								
Paranaitis kostereines			1								
Drilonereis longa						1					
Scoloplos sp.						1					
TOTAL	52	20	17	38	41	108	38	16	14	27	44
Station: G6											
Protohaustorius deichmannae	9		1	12	12		10	2		5	2
Unciola irrorata	10	7		6	4	12		12	2		
Trichophoxus epistomus	6	1		8	2	1	5	8	2	5	2
Asabellides oculata	1	29	1		1		1				
Echinarachnius parma		2		8	4			8	2	8	
Tellina agilis		1		6	3		4	2	1		3
Sthenelais limicola	4	1	1	5		1	2		1		4
Cancer irroratus						12		1			
Nephtys picta	1			1			8				3
Byblis serratus	10										1
Lumbrineris fragilis			1	1			1				4
Acanthohaustorius millsi										7	
Spiophanes bombyx	2					4					
Leptocuma minor	1			3	1				1		
Hippomedon serratus				3					2	1	
Astarte castanea		1			2				1		
Ampelisca macrocephala	4										
Lunatia heros					1	2					
Siliqua costata							2	1			
Diastylis polita	1			1			1				
Spisula solidissima		2		1							
Unident. nemertean											3

Appendix Table 4.--Continued.

SPECIES	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	JAN.
Monoculoides edwardsi		1		1	1						
Unident. turbellarian		1			1						
Scoloplos robustus							1				1
Harmothoe extenuata	1	1									
Phoxocephala holbolli		2									
Bathyporea quoddyensis					2						
Parahaustorius longimerus											2
Crangon septemspinosus			1								
Pennaria sp.				1							
Nephtys bucera						1					
Nucula proxima							1				
Mitrella lunata								1			
Edotea triloba								1			
Crenulla decussata									1		
Eumida sanguinea	1										
Sigalion arenecola					1						
Lumbrineris tenuis						1					
Spio setosa						1					
Artica islandica							1				
Drilonereis longa								1			
Glycera sp.											1
TOTAL	51	49	5	57	35	35	37	37	13	26	26

Appendix Table 5.--Benthic organism abundance and diversity.

Station	Average number of animals collected per square meter	Total number of species	Station	Average number of animals collected per square meter	Total number of species
A1	15,200	19	E1	49	11
A2	10,500	21	E2	1,200	23
A3	249	25	E3	2,030	33
A4	271	25	E4	698	35
A5	10,200	35	E5	909	50
A6	108	21			
			F1	357	19
B1	213	13	F2	1,780	29
B2	273	23	F3	749	27
B3	335	25	F4	393	29
B4	401	29	F5	499	32
B5	336	33			
B6	521	46	G1	292	22
B7	1,440	50	G2	1,200	25
			G3	730	27
C1	183	20	G4	1,560	50
C2	408	20	G5	604	44
C3	127	17	G6	540	43
C4	243	23			
C5	870	28			
D1	227	17			
D2	336	24			
D3	438	36			
D4	862	32			
D5	1,996	54			