NOAA Technical Memorandum NMFS-F/NEC-19

Northeast Monitoring Program

Environmental Benchmark Studies in Casco Bay—Portland Harbor, Maine, April 1980

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Center
Woods Hole, Massachusetts

January 1983

NOAA TECHNICAL MEMORANDUM NMFS-F/NEC

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6. *Economic and Biological Data Needs for Fisheries Management, With Particular Reference to the New England and Mid-Atlantic Areas.* By Guy D. Marchesseault, Joseph J. Mueller, and Ivar E. Strand, Jr. December 1980. v + 10 p., 1 fig., 3 tables.

7. *Methodology for Identification and Analysis of Fishery Management Options.* By Brian J. Rothschild, Richard C. Hennemuth, Jacob J. Dykstra, Leo C. Murphy, Jr., John C. Bryson, and James D. Ackert. December 1980. v + 10 p., 5 figs., 1 app.

8. *Phytoplankton Community Structure in Northeastern Coastal Waters of the United States. I. October 1978.* By Harold G. Marshall and Myra S. Cohn. August 1981. Revised and reprinted October 1981. v + 14 p., 4 figs., 1 app.

(continued on inside back cover)

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Environmental Benchmark Studies in Casco Bay—Portland Harbor, Maine, April 1980

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Woods Hole, Massachusetts

January 1983

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FOREWORD

This issue of the *NOAA Technical Memorandum NMFS-F/NEC* series is a report (Technical Report No. 22) prepared by the Bigelow Laboratory for Ocean Sciences, under Contract No. NA-80-FA-C-00008 to the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS). The contract was awarded as a part of NOAA's Northeast Monitoring Program (NEMP), and was monitored by Mr. Robert N. Reid of NMFS's Northeast Fisheries Center. The report was submitted to NEMP in September 1982 as a final report on a benchmark survey of the benthos in the Casco Bay, Maine, area.

The report has been reprinted virtually as submitted, with only minimal changes in format. References to specific trade names in this report do not imply endorsement by NOAA/NMFS.

John B. Pearce, Manager
Northeast Monitoring Program

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INTRODUCTION

Casco Bay, a large, complex bay, located on the south central coast of Maine, is noted for its scenic beauty as well as for its importance to business and commerce (Fig. 1). Within the approximately 400 square kilometers comprising Casco Bay are 300 kilometers of coastline and upwards of 400 islands (U.S. FWS, 1980). Included within Casco Bay is the city of Portland, the largest in Maine, which ranks as one of the busiest ports in New England, largely due to heavy petroleum traffic. Portland is also the largest fishing port in Maine. Presently, 27% of the coastal population of Maine is situated on Casco Bay. The growth of this segment of Maine's population will be accelerated by the increased use of Portland Harbor. Current expansion projects include a major ship building facility, a fish pier, and a containerized cargo dock. Some of the major existing facilities representing potential threats to environmental quality are located in Fig. 3. At the same time that human and industrial density is increasing in the Casco Bay region, seals, eagles, black guillemots, and other species indicative of a clean or undisturbed environment, are still found and the area remains heavily utilized for commercial fishing.

In spite of the potential for conflict between development and the traditional use of the nearshore waters for commercial fishing and recreation, little systematic environmental evaluation has been accomplished in Casco Bay. Hulburt (1968, 1970) and Hulburt and Corwin (1970) investigated several aspects of the physical oceanography and phytoplankton of the region while Jones (1980), and Parker and Garfield (1981a, b) provided background information on microplankton production

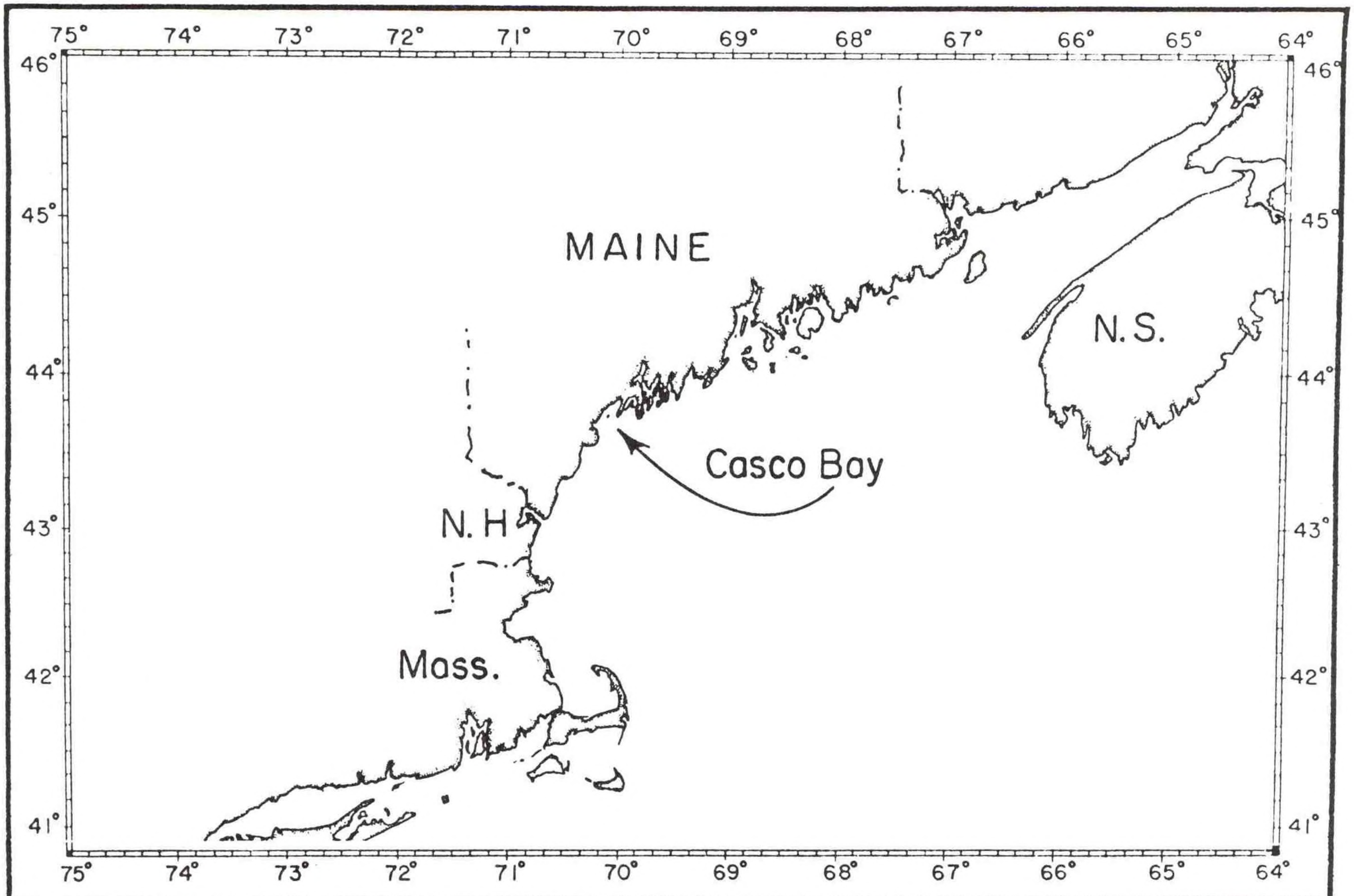


Fig. 1. The location of Casco Bay

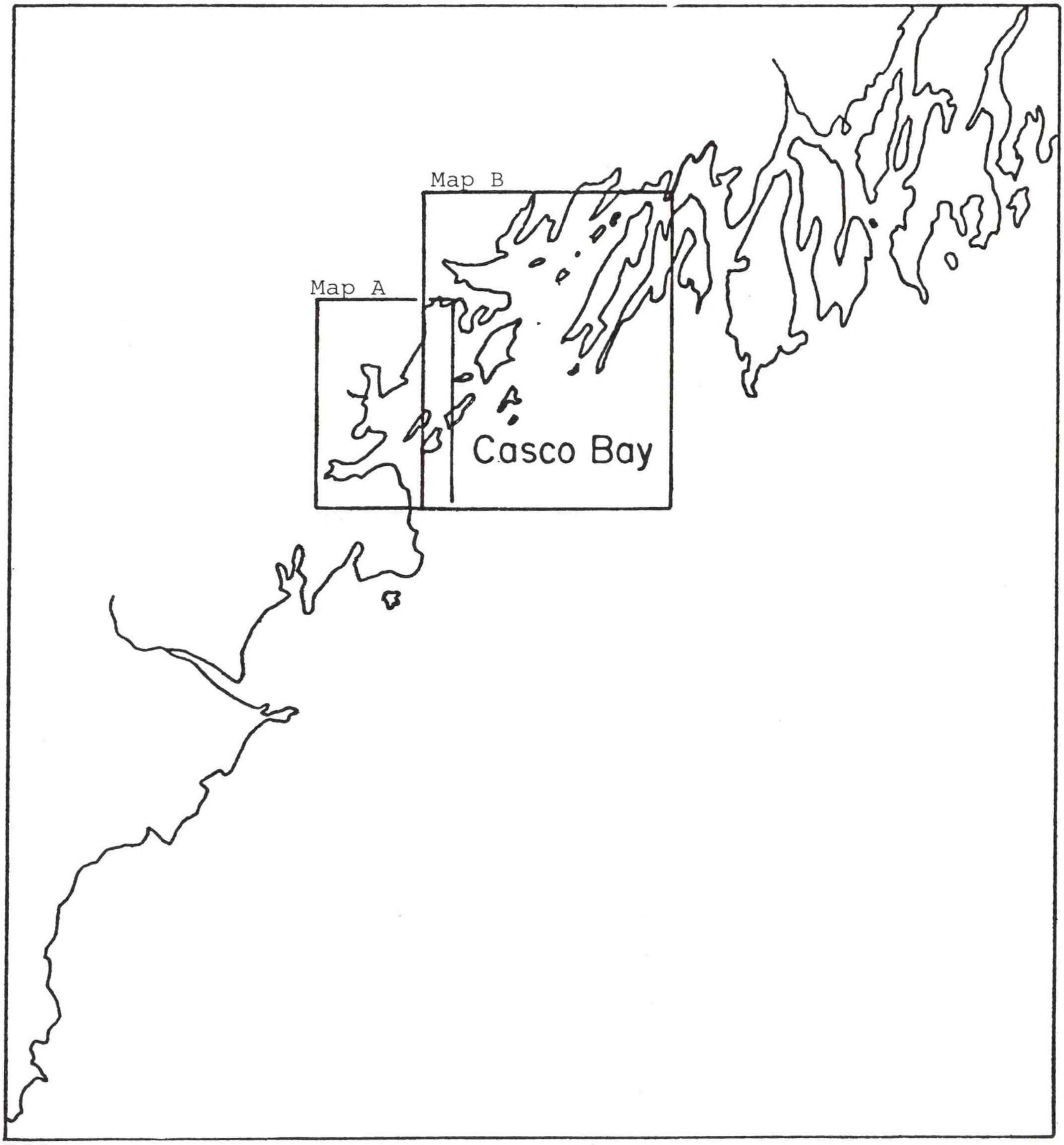
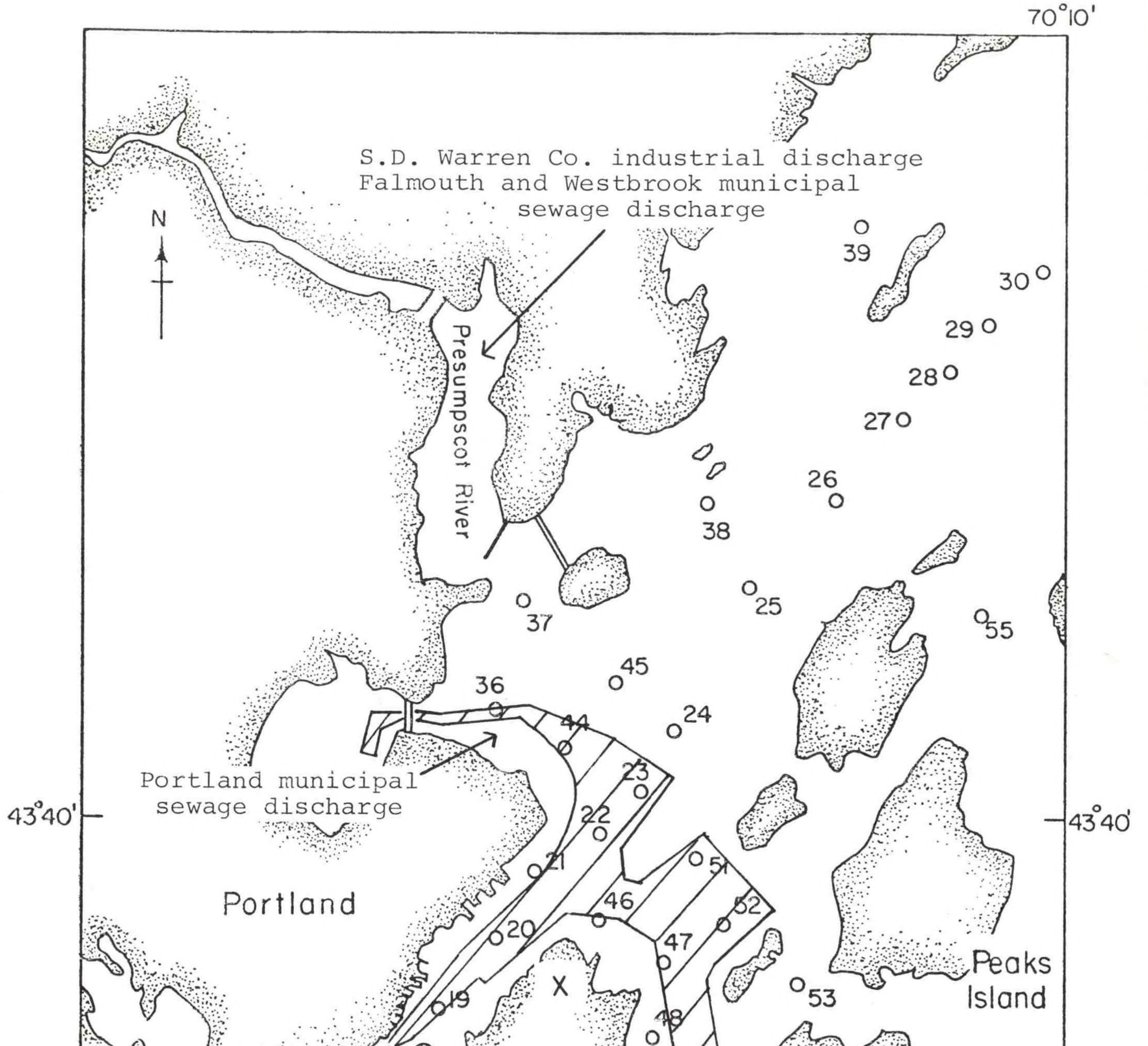


Fig. 2. Key to maps of upper and lower Casco Bay.

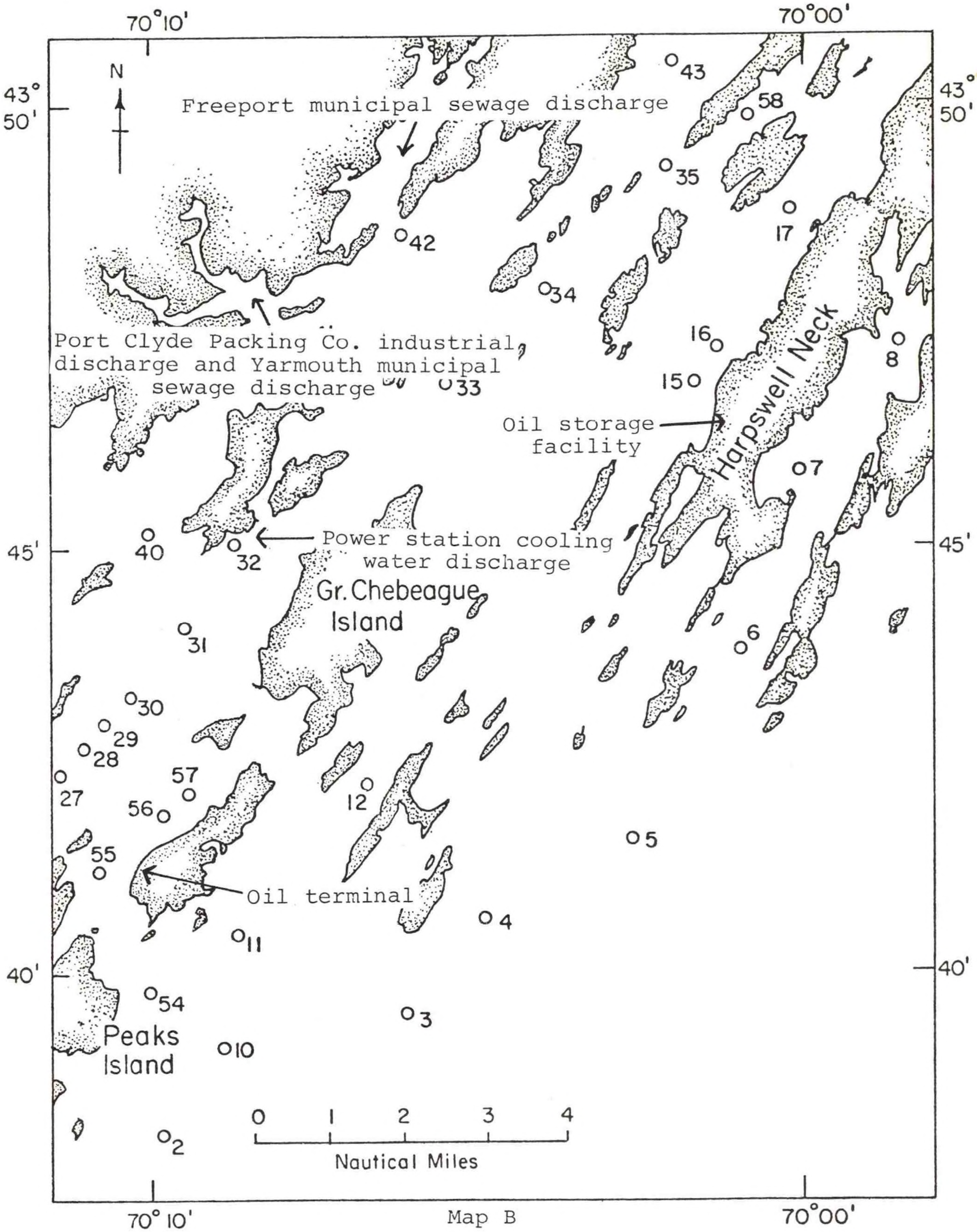
Fig. 3. Some of the major existing facilities representing threats to environmental quality in lower Casco Bay.



Map A

X Oil and gasoline tank farm

Dredged area


70°10'
70°00'
N
43° 50'
45'
40'
Freeport municipal sewage discharge
Port Clyde Packing Co. industrial discharge and Yarmouth municipal sewage discharge
Oil storage facility
Harpswell Neck
Power station cooling water discharge
Gr. Chebeague Island
Oil terminal
Peaks Island
43
58
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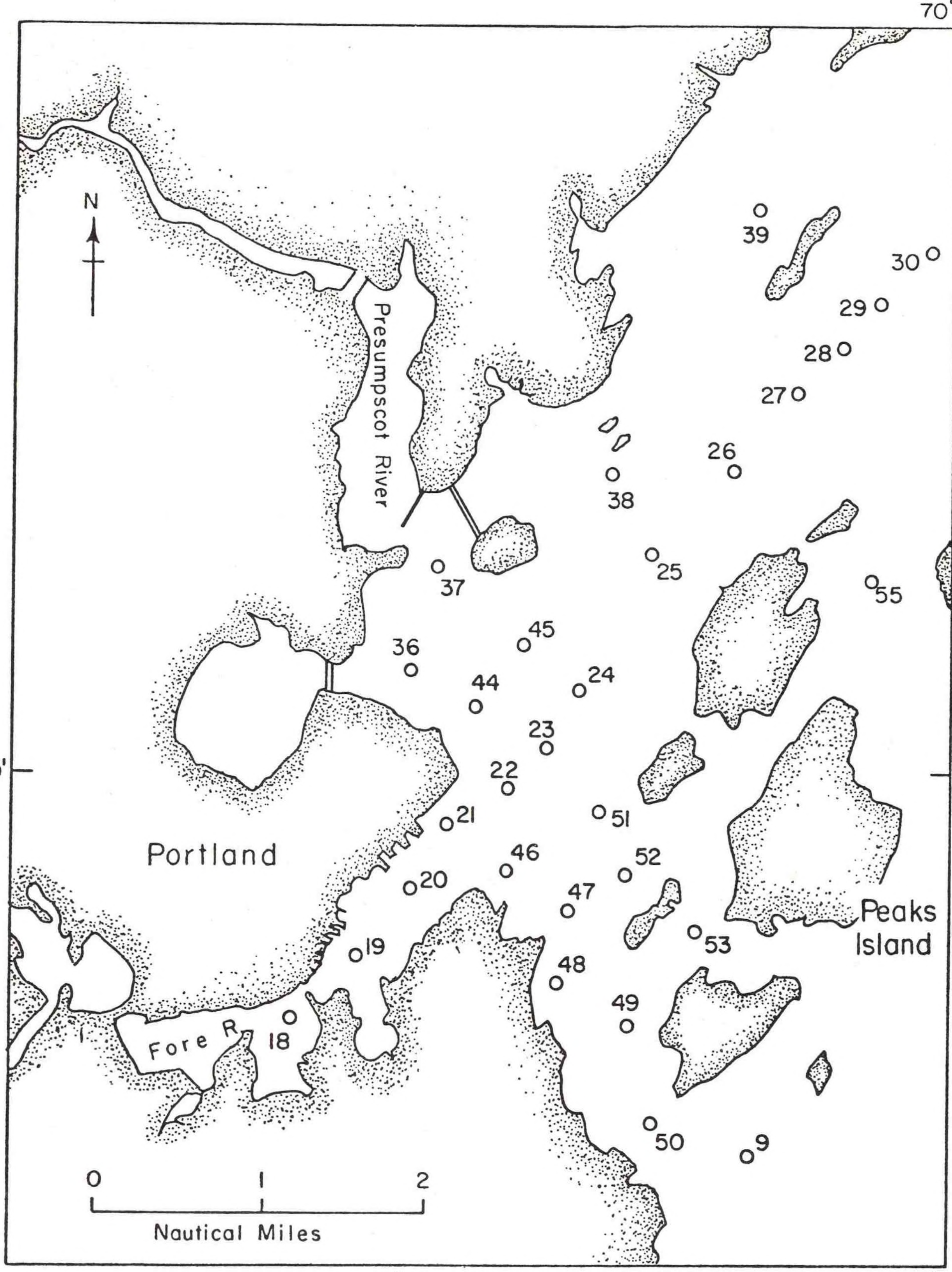
0 1 2 3 4
Nautical Miles
Map B

and hydrography of Casco Bay, respectively. To date, the most comprehensive faunal records are from the early surveys of Verrill (1874) and Kingsley (1901). Few quantitative studies of the shallow-water marine benthic communities in the boreal zone of the eastern United States exist (Dexter, 1944, 1947; Hanks, 1964; Shorey, 1973; Bilyard, 1974; Larsen, 1979), and none consider the Casco Bay region.

In April 1980, we undertook a broad scale benthic survey of Casco Bay for the purpose of establishing an environmental benchmark against which subsequent natural and man-induced fluctuations could be measured. Due to the complex topography, hydrography and anthropogenic inputs, great care was taken to insure that all possible variations in the soft bottom habitat were included. Based on the results of this survey, a long-term monitoring program of selected stations was instituted, and the results of this effort will be presented in forthcoming documents. This present report summarizes the physical and biological data from the 1980 broadscale survey.

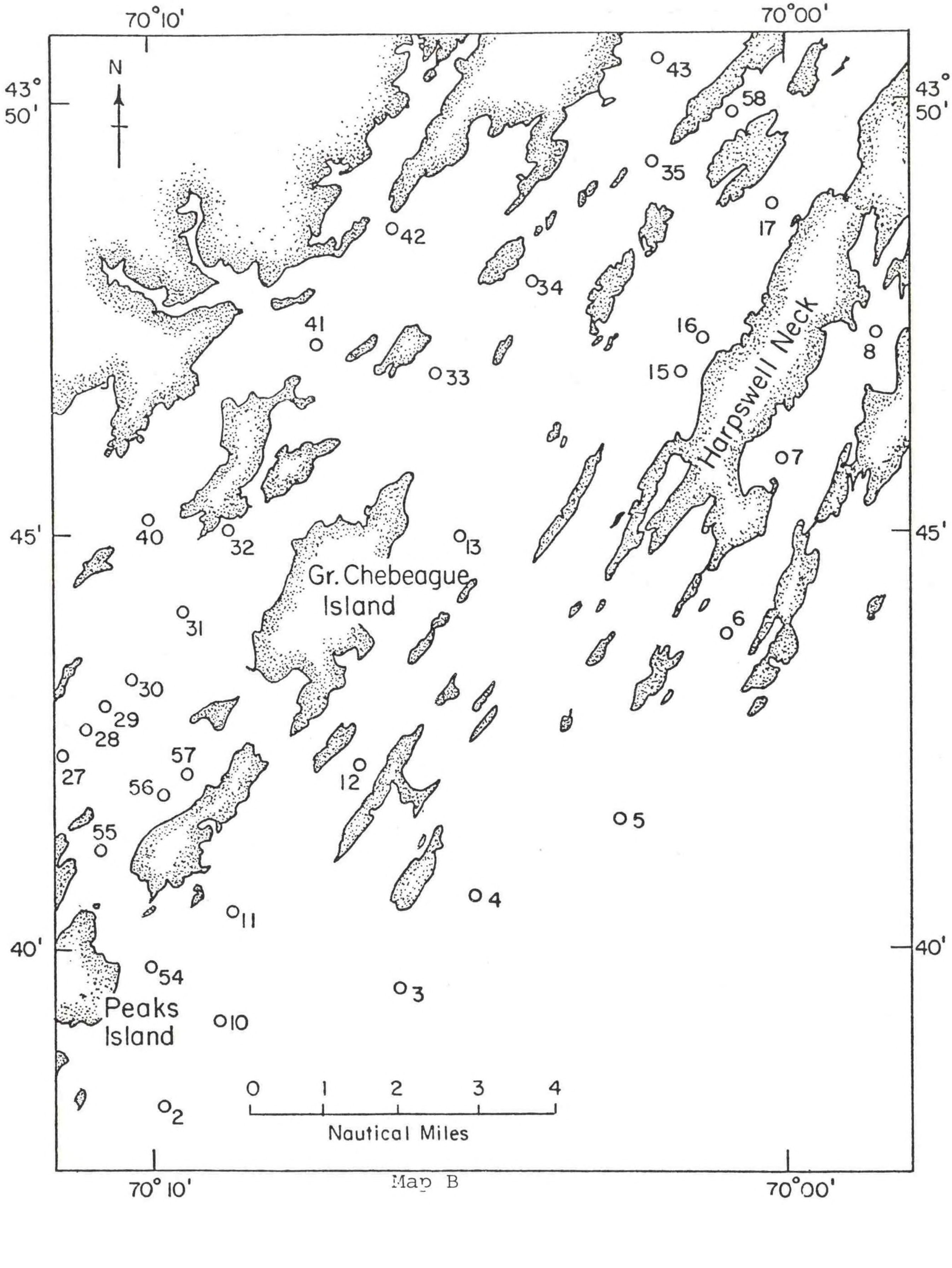
METHODS

The basic sampling design involves four transects along the long axis of Casco Bay with additional stations placed in areas of interest, such as the major sounds between the islands and near potential point sources of pollution. Station density is highest near Portland where steep environmental gradients might be expected due to freshwater inflow and more concentrated development. Station locations are presented in Fig. 4.



Map A

Fig. 4. Locations of the 56 benthic stations sampled in Casco Bay, April, 1980.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Harpswell Neck
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Gr. Chebeague Island
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3
Peaks Island
10
2
0 1 2 3 4
Nautical Miles

Map B

A single 0.1 m^2 Smith-McIntyre grab sample was taken at each station. Subsamples for sediment grain size, organic carbon and Kjeldahl nitrogen analyses were removed from each grab. At 32 stations additional subsamples were removed for heavy metal and hydrocarbon analyses. In each case, prescribed procedures for the preparation of subsample containers and the subsampling process were followed, and the subsamples were frozen for delivery to the appropriate analytical laboratory. Sediment grain size, organic carbon and Kjeldahl nitrogen analyses were done by GEOMET Technologies, Inc., Melville, New York, and heavy metal and hydrocarbon analyses were done by the National Marine Fisheries Service. The main-body of the sample was sieved on nested 0.5 and 1.0 mm screens. The debris remaining on the screens was fixed in 5% buffered formalin and returned to the laboratory for faunal analysis. Bottom temperature and salinity were determined at each station using a Beckman RS5-3 portable salinometer.

In the laboratory all organisms were transferred to 70% ethanol, removed from the 1.0 mm size fraction and identified to the lowest taxonomic level possible. Wet weight biomass was determined for the major taxonomic groupings.

All data were entered and processed by the University of Maine Computer Center through the Bigelow Laboratory Computer Center. Data analyses included informational diversity and its components, calculated by standard formulas given by Margalef (1958) and Pielou (1970), and numerical classification in both the normal and inverse modes. The Canberra metric dissimilarity index and the flexible sorting clustering strategy were used in the latter procedure because of their demonstrated success in marine benthic studies. The data were log transformed.

Nodal analysis, for both constancy and fidelity, was applied to interface the results of the two classifications. Following the convention presented in Boesch (1977), a constancy index was calculated as $C_{ij} = a_{ij}/(n_i n_j)$, where a_{ij} is the number of occurrences of Species-Group i in Site-Group j and n_i and n_j are the numbers of entities in each group considered. The fidelity index was calculated as $F_{ij} = (a_{ij} \sum_j n_j)/(n_j \sum_j a_{ij})$, the symbols having the same meaning as above. Fidelity values less than 1 suggest a negative relationship and values of over 1 a positive relationship between a species-group and a site-group.

RESULTS AND DISCUSSION

Depth, Temperature and Salinity

The depths of the 56 stations sampled range from 7 to 140 feet, i.e. 2-43 m (Table 1). All stations exceeding 70 feet in depth are offshore of the outer islands and most inner Bay stations are in the 25-50 foot depth range (Fig. 5). Depths are measured by fathometer and are not corrected for tidal stage.

Bottom water temperatures in April range from 2.9 to 6.3^{o}C with most stations being between 3.0 and 5.0^{o}C. Statistical analysis of water temperature and depth indicates that vernal warming of surface waters is already well progressed by April. This is a very highly significant relationship, $p > .9999$, with a correlation coefficient of -0.60222. With the exception of two stations, salinity throughout the Bay varied within the narrow range of 30.3 - 32.9 $^{o}/oo$ (Table 1). The two stations outside of this range are the relatively shallow stations 35 and 41 with salinities of 25.6 and 19.8 $^{o}/oo$, respectively. Heavy

Table 1. Location, depth, bottom temperature and salinity of stations sampled in Casco Bay, April, 1980.

EX 8001 April 1980

Station Number	Latitude	Longitude	Depth (m)	Temp °C	Sal (o/oo)
2	43°37'.97	70°09'.34	30.5	3.6	32.3
3	43°39'.69	70°05'.82	33.6	3.7	31.9
4	43°40'.88	70°04'.70	33.6	3.6	32.1
5	43°41'.06	70°02'.57	42.7	3.4	32.9
6	43°43'.68	70°00'.64	19.8	2.9	
7	43°45'.81	69°59'.56	11.3	4.0	31.6
8	43°47'.00	69°58'.54	15.3	3.7	32.1
9	43°37'.54	70°11'.91	16.8	4.2	31.0
10	43°39'.15	70°08'.40	38.1	3.6	32.1
11	43°40'.95	70°08'.26	24.4	3.1	32.7
12	43°42'.11	70°06'.66	20.4	3.3	32.5
13	43°45'.02	70°04'.94	14.6	3.8	32.2
15	43°46'.47	70°01'.83	17.1	3.5	32.3
16	43°47'.20	70°01'.13	15.3	3.7	
17	43°48'.84	69°59'.83	11.3	4.8	
18	43°38'.61	70°15'.73	13.7	4.6	31.1
19	43°38'.98	70°15'.18	13.7	4.5	31.0
20	43°39'.48	70°14'.56	10.4	4.4	31.1
21	43°39'.69	70°14'.41	7.6	4.6	30.5
22	43°39'.93	70°13'.79	12.2	4.9	30.6
23	43°40'.16	70°13'.62	7.6	5.2	30.4
24	43°40'.55	70°13'.30	18.3	4.7	31.0
25	43°41'.11	70°12'.68	9.2	4.3	31.1
26	43°41'.75	70°12'.08	9.2	4.2	31.5
27	43°41'.97	70°11'.53	13.1	4.6	31.6
28	43°41'.36	70°11'.04	14.6	4.4	31.7
29	43°42'.88	70°10'.51	13.7	4.5	31.7
30	43°43'.29	70°09'.96	12.2	4.4	31.7
31	43°43'.99	70°08'.95	12.2	6.3	
32	43°44'.97	70°08'.17	7.6	4.6	31.3
33	43°46'.12	70°05'.65	11.6	4.0	32.0
34	43°47'.69	70°03'.54	10.7	4.0	32.2
35	43°49'.20	70°01'.86	7.6	4.9	25.6
36	43°40'.66	70°14'.44	7.9	4.5	30.7

EX 8001 April 1980

Station Number	Latitude	Longitude	Depth (m)	Temp ^{o}C	Sal (o/oo)
37	43°41'.12	70°14'.51	2.1	4.9	30.3
38	43°41'.75	70°12'.08	8.2	4.4	31.4
39	43°43'.34	70°11'.94	10.7	4.3	31.5
40	43°44'.94	70°10'.00	13.1	4.4	31.6
41	43°47'.04	70°07'.15	7.3	5.7	19.8
42	43°48'.22	70°05'.98	6.1	5.2	31.6
43	43°50'.06	70°01'.99	7.6	5.9	30.3
44	43°40'.51	70°13'.84	5.5	4.5	31.0
45	43°40'.80	70°13'.30	5.5	4.4	31.1
46	43°39'.50	70°13'.95	7.6	4.4	31.2
47	43°39'.36	70°13'.09	16.8	4.5	31.1
48	43°38'.70	70°13'.35	9.2	4.5	31.0
49	43°38'.51	70°12'.86	15.3	4.4	31.2
50	43°37'.87	70°12'.41	21.4	4.6	30.6
51	43°39'.61	70°12'.01	16.2	4.3	31.2
52	43°39'.45	70°12'.75	15.3	4.4	31.2
53	43°39'.31	70°12'.19	15.3	4.4	31.2
54	43°39'.25	70°09'.26	32.0	3.6	32.3
55	43°41'.18	70°10'.97	25.6	4.0	31.7
56	43°41'.90	70°09'.83	13.7	4.4	31.4
57	43°41'.99	70°09'.60	14.3	4.3	31.5
58	43°49'.93	70°00'.46	2.1	7.8	20.1

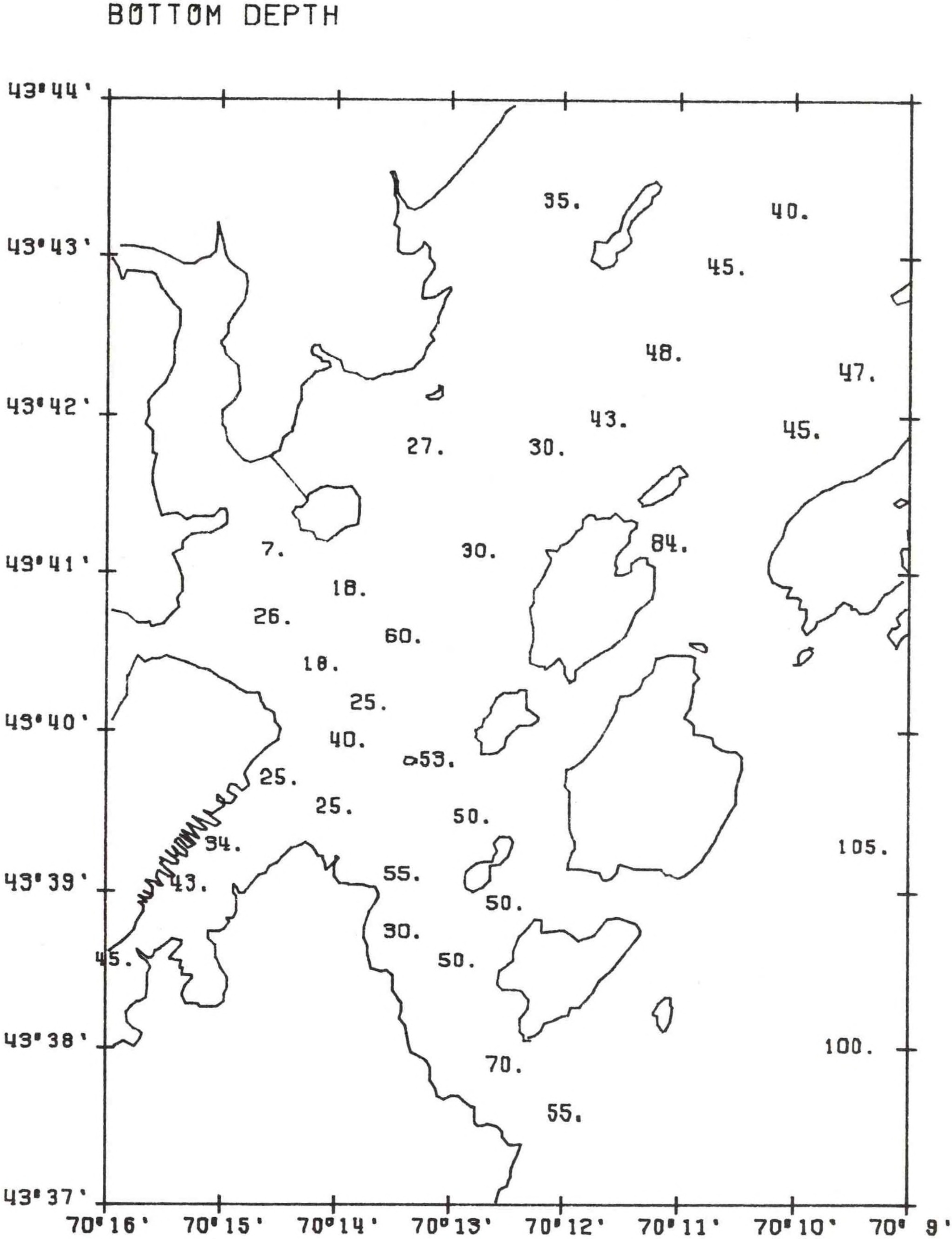
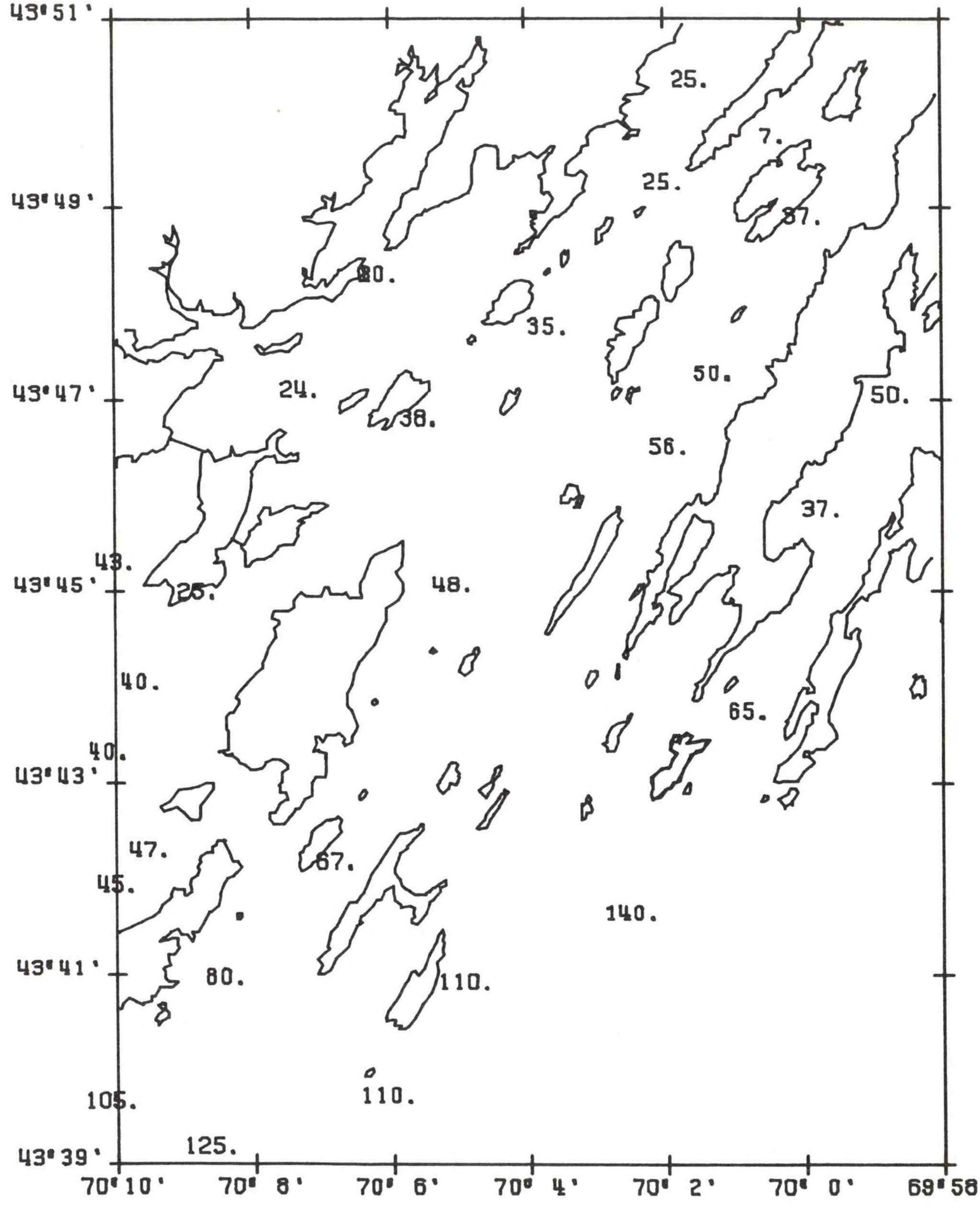


Fig. 5. Station depths in feet.

BOTTOM DEPTH



rains and the spring freshet of the Royal River presumably combined to temporarily depress the salinity at these stations.

No long-term temperature and salinity records are available for Casco Bay. Long-term records taken since 1906 at Boothbay Harbor, 30 kilometers to the east, however, are closely representative of Casco Bay (N. Garfield, personal communication). The annual temperature-salinity cycle based on monthly means of Boothbay Harbor is presented in Fig. 6. During the period of 1950 to the present, surface water temperature at Boothbay Harbor varied between the extremes of $-2.3^{\circ}C$ and $23.0^{\circ}C$, while salinity ranged from 25.0 to 33.6 $^{o}/oo$ (W.R. Welch, personal communication).

Sediments

The sediments of Casco Bay are predominantly fine (Table 2). Graphic mean grain size (Folk, 1974) ranges from -0.305 to 8.471 on the phi scale although the grand mean is in the fine silt range at 6.345. Only 8 stations have mean grain sizes in the sand range while 34 are in the silt range and 13 can be classified as clay. The sand stations are in areas of tidally scoured bottoms, such as the main approach to Casco Bay, or in areas recently dredged. Generally, coarser sediments are found offshore and in outer Portland Harbor, whereas fine sediments are characteristic of the central and upper part of the Bay (Fig. 7).

Regression of mean grain size in phi units against bottom depth in feet demonstrates that a significant relationship exists between the two (Fig. 8). The correlation coefficient of -0.3317 is significant at the 98% level. Remembering, in this and subsequent regressions, that since the phi scale is an inverse measure, this regression indicates that coarser sediments may be expected in the deeper portions of the sampling

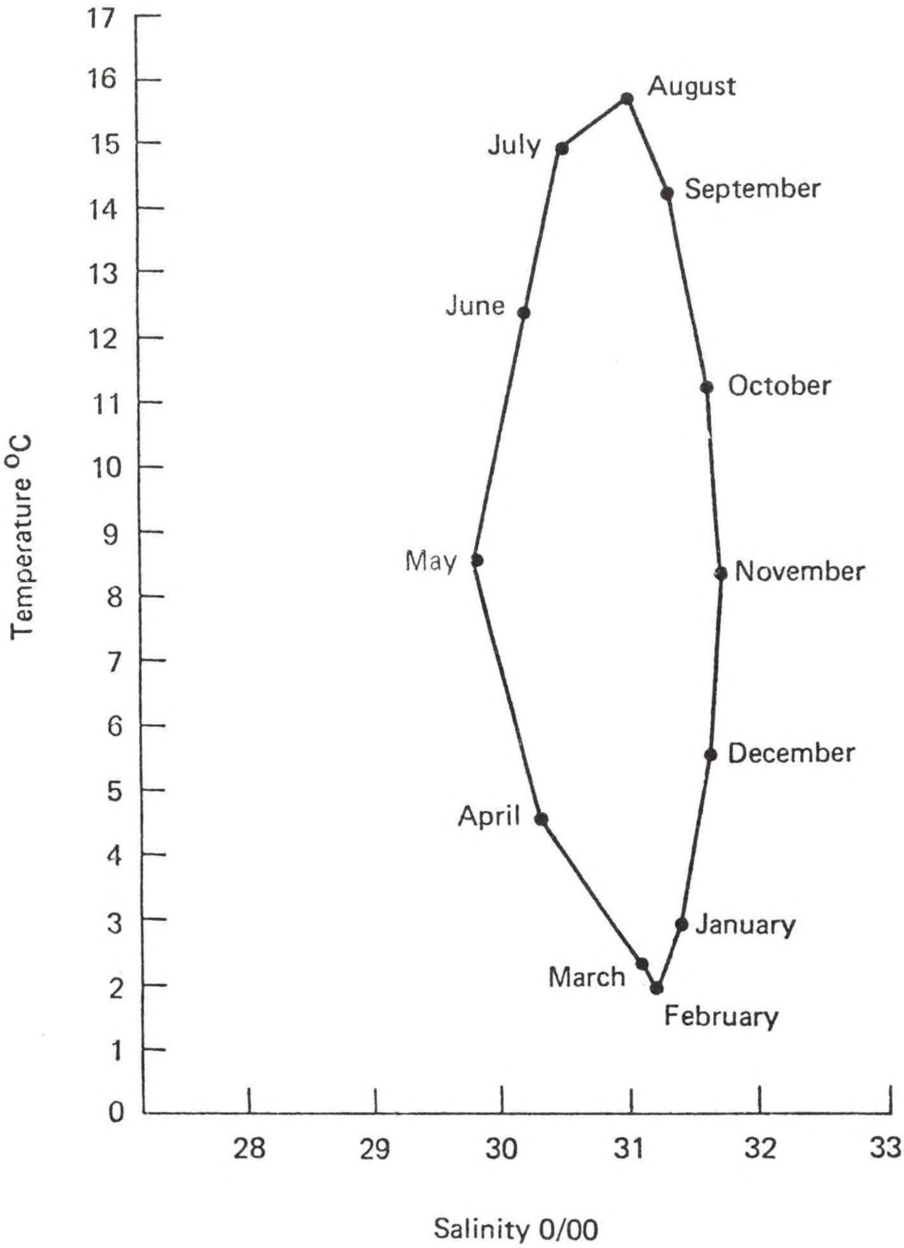


Fig. 6. The annual temperature and salinity cycle at Boothbay Harbor (Garfield and Welch 1978).

Table 2. Sediment characteristics, organic carbon and kjeldahl nitrogen values for Casco Bay stations.

EX 8001 April 1980

Station Number	Mean grain size (Ø)	Sediment Type (from mean)	Sorting	Organic Carbon (mg/g)(1)	Total Kjeldahl Nitrogen (mg/g)(1)
2	5.122	medium silt	very poorly sorted	8.6	0.254
3	3.677	very fine sand	extremely poorly sorted	17.9	0.517
4	4.513	coarse silt	very poorly sorted	15.7	0.474
5	6.706	fine silt	very poorly sorted	21.2	0.555
6	7.305	very fine silt	very poorly sorted	25.7	1.096
7	7.923	very fine silt	very poorly sorted	26.5	1.294
8	4.523	coarse silt	very poorly sorted	13.3	0.328
9	- 0.305	very coarse sand	moderately well sorted	4.7	0.038
10	7.940	very fine silt	very poorly sorted	21.1	0.555
11	5.805	medium silt	very poorly sorted	19.1	0.382
12	6.391	fine silt	very poorly sorted	20.9	0.493
13	6.468	fine silt	very poorly sorted	21.6	0.536
15	6.960	fine silt	very poorly sorted	23.9	0.775
16	8.158	coarse clay	very poorly sorted	38.2	0.800
17	8.444	coarse clay	very poorly sorted	35.6	0.817
18	2.594	fine sand	extremely poorly sorted	14.7	0.071
19	7.152	very fine silt	very poorly sorted	26.2	0.512
20	7.435	very fine silt	very poorly sorted	26.6	0.472

Station Number	Mean grain size (Ø)	Sediment Type (from mean)	Sorting	Organic Carbon (mg/g)(1)	Total Kjeldahl Nitrogen (mg/g)(1)
21	7.879	very fine silt	very poorly sorted	33.2	0.523
22	1.869	medium sand	very poorly sorted	4.6	0.062
23	6.487	fine silt	very poorly sorted	24.8	0.504
24	7.363	very fine silt	very poorly sorted	35.2	0.654
25	8.074	coarse clay	very poorly sorted	25.1	0.594
26	8.068	coarse clay	very poorly sorted	37.2	0.921
27	7.999	very fine silt	very poorly sorted	39.3	0.738
28	6.773	fine silt	very poorly sorted	25.3	0.606
29	6.870	fine silt	very poorly sorted	24.1	0.641
30	8.410	coarse clay	very poorly sorted	30.7	0.601
31	8.471	coarse clay	very poorly sorted	36.7	0.714
32	8.277	coarse clay	very poorly sorted	41.3	0.774
33	7.384	very fine silt	very poorly sorted	26.1	0.552
34	8.281	coarse clay	very poorly sorted	34.0	0.883
35	8.340	coarse clay	very poorly sorted	33.1	0.834
36	7.682	very fine silt	very poorly sorted	233.0	0.948
37	5.476	medium silt	very poorly sorted	44.5	0.465
38	8.526	coarse clay	very poorly sorted	41.2	1.211
39	8.334	coarse clay	very poorly sorted	36.6	0.653
40	8.564	coarse clay	very poorly sorted	36.9	0.665

Station Number	Mean grain size (Ø)	Sediment Type (from mean)	Sorting	Organic Carbon (mg/g)[1]	Total Kjeldahl Nitrogen (mg/g)[1]
41	6.861	fine silt	very poorly sorted	23.1	0.343
42	7.810	very fine silt	very poorly sorted	25.4	0.505
43	8.328	coarse clay	very poorly sorted	30.7	0.681
44	7.006	very fine silt	very poorly sorted	33.4	0.529
45	7.848	very fine silt	very poorly sorted	39.5	0.512
46	5.152	medium silt	very poorly sorted	15.2	0.326
47	3.041	very fine sand	extremely poorly sorted	5.5	0.041
48	3.864	very fine sand	very poorly sorted	11.2	0.336
50	0.810	coarse sand	poorly sorted	1.5	0.081
51	5.919	medium silt	very poorly sorted	19.4	0.380
52	7.215	very fine silt	very poorly sorted	26.1	0.503
53	3.365	very fine sand	very poorly sorted	37.8	0.561
54	4.238	coarse silt	very poorly sorted	10.8	0.204
55	4.072	coarse silt	very poorly sorted	10.9	0.220
56	6.769	fine silt	very poorly sorted	28.5	0.653
57	7.794	very fine silt	very poorly sorted	23.4	0.503
58	7.911	very fine silt	very poorly sorted	26.0	0.612

Note: (1) All values are reported as mg/g dry sediment weight.

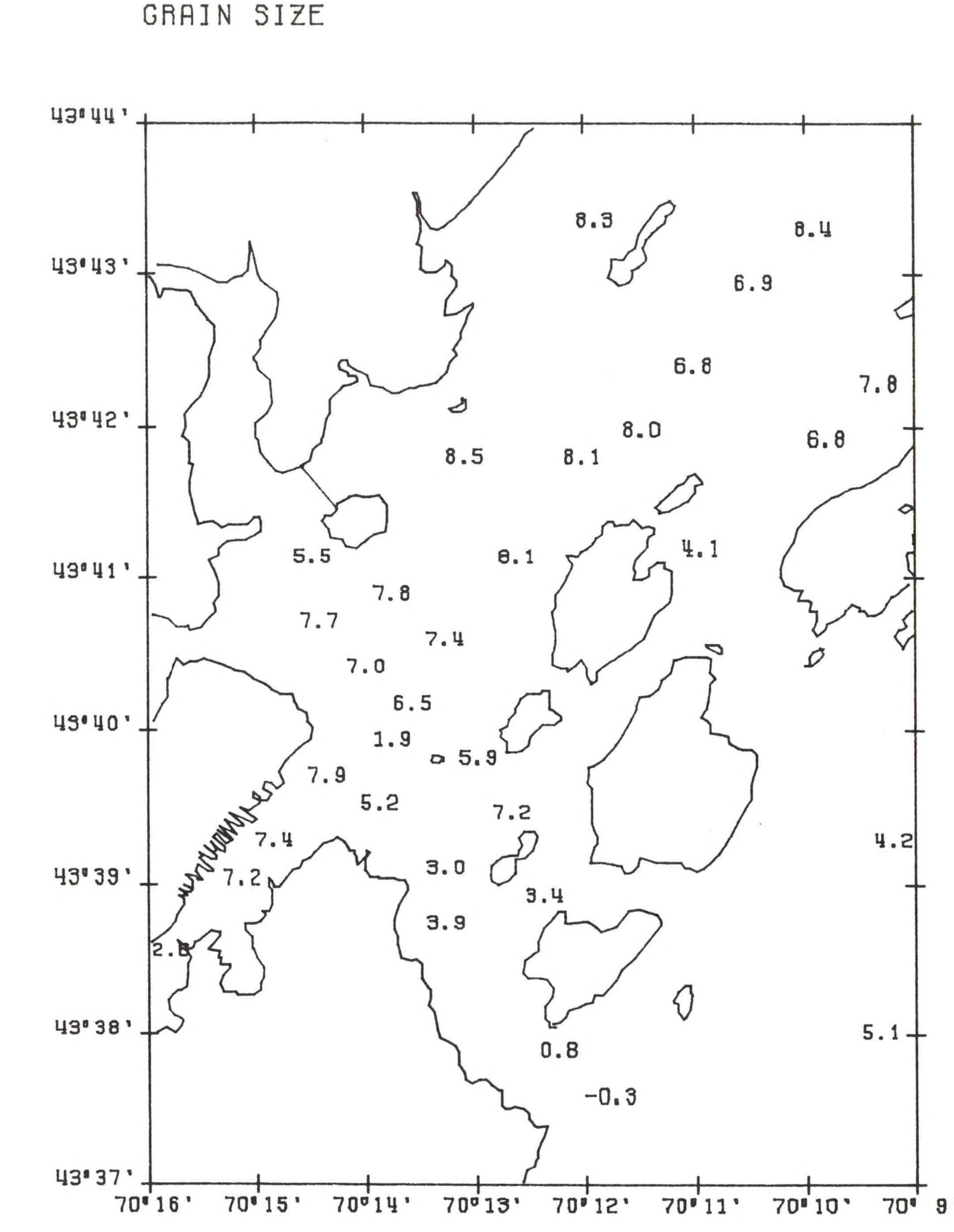
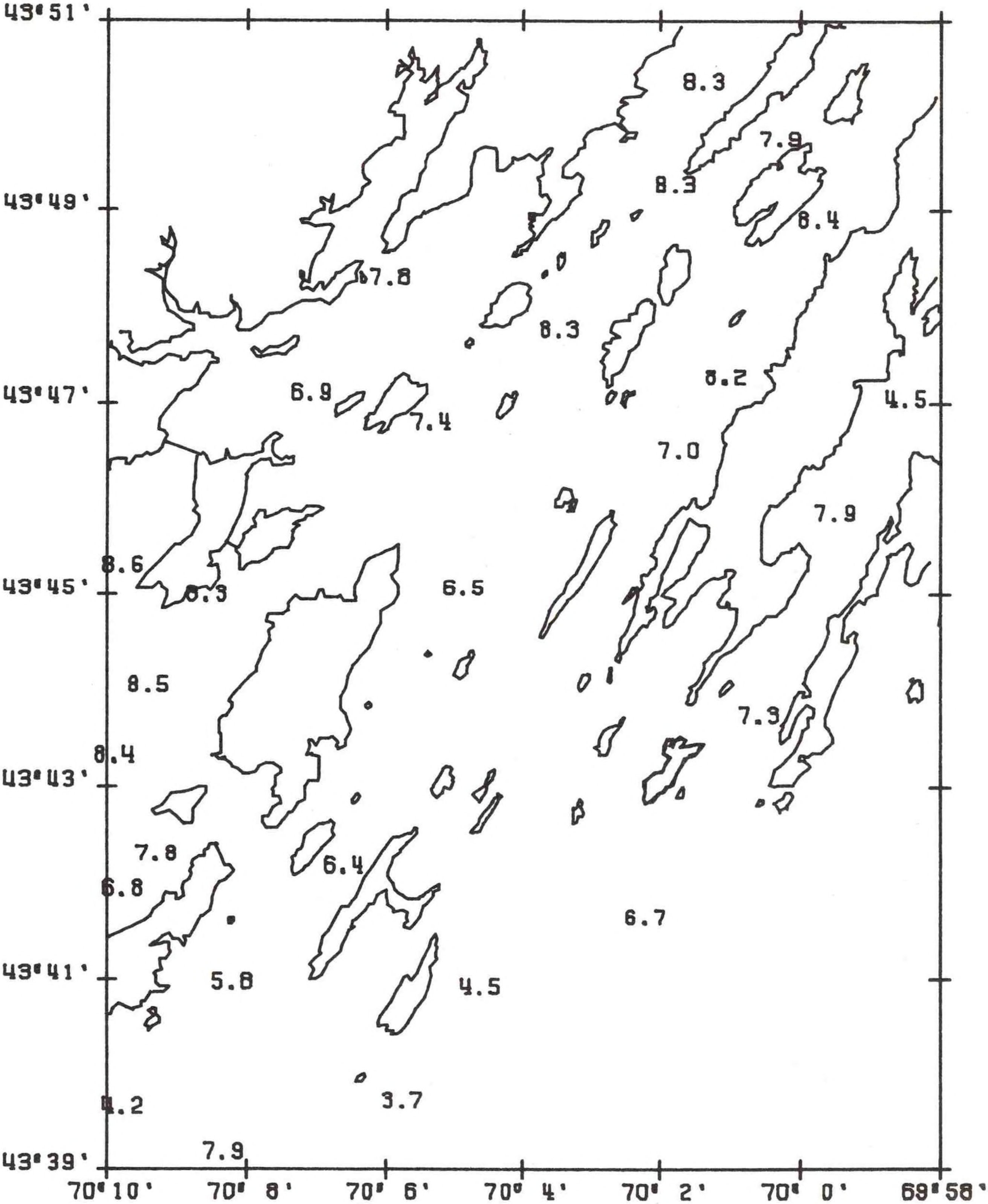


Fig. 7. The distribution of mean grain size in phi units throughout Casco Bay.

GRAIN SIZE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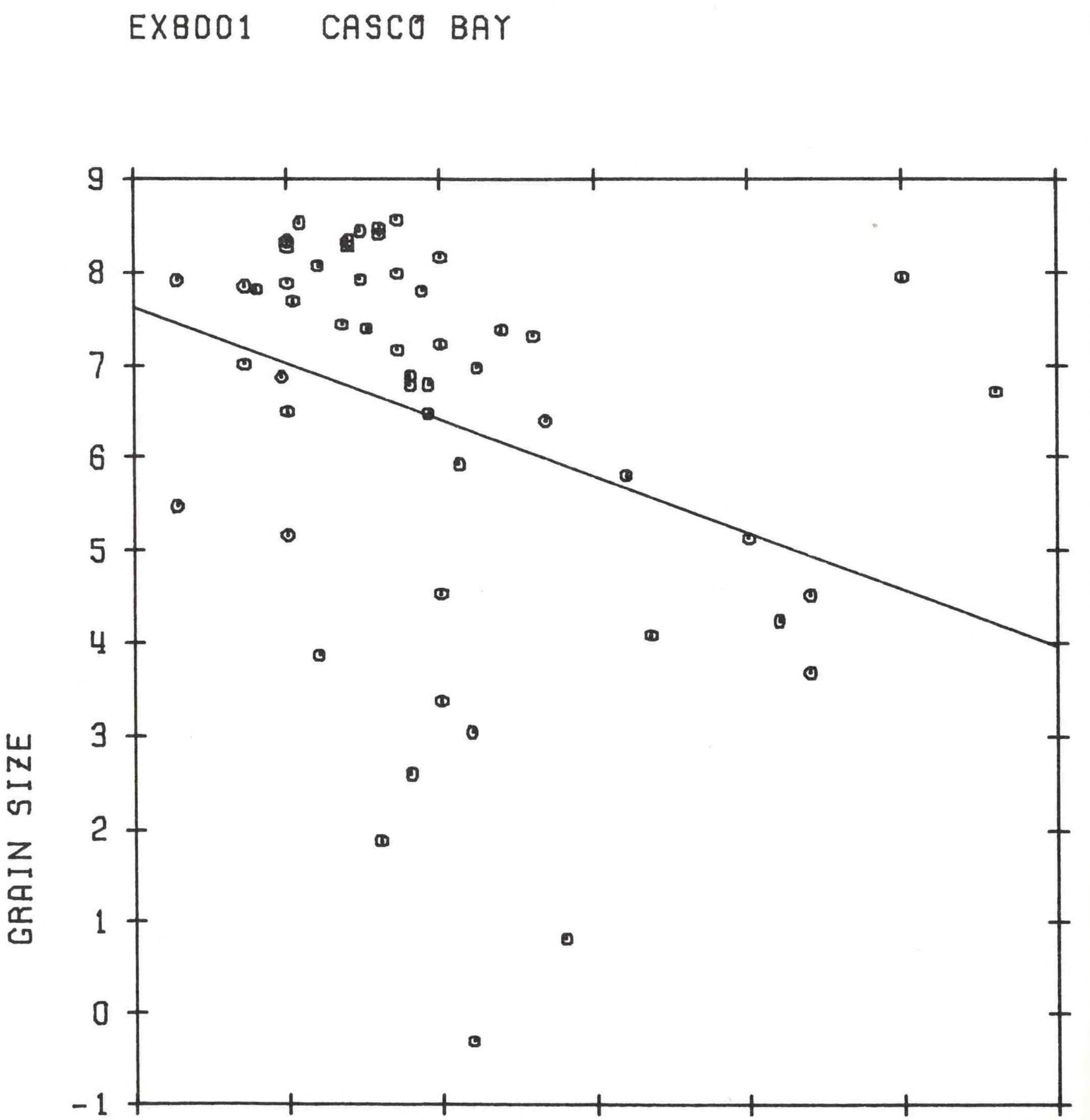


Fig. 8. Regression of mean grain size in phi units against depth in feet.

area. In many coastal areas sediments become coarser with increasing distance from shore and/or from river mouths because estuaries serve as traps for fine sediments. Since depth, too, commonly increases with distance from shore, a positive relationship between depth and coarse sediments might usually be expected in coastal waters. Due to the complex topography of the Casco Bay region, we cannot separate the effects of depth, distance from shore, or even distance from river mouths in regard to gross sediment parameters. We feel confident, however, that all three factors are operative in controlling the grain size distribution, hence the scatter around the regression line. Because we cannot meaningfully quantify distance from shore or distance from source, we use depth alone to represent a complex of related factors.

Fifty of the 55 stations have very poorly sorted sediments (Table 2). With the exception of station 9, a coarse sand station which is moderately well-sorted, the remaining stations are either poorly or extremely poorly sorted.

The percentage of sand, silt and clay were calculated for each sample and are plotted in Fig. 9 (see also Appendix 1). This presentation suggests that most samples contain approximately equal proportions of silt- and clay-sized particles and the mean grain size is largely a function of the amount of sand in the sample.

Consideration of grain size distributions and sorting coefficients does not in itself fully characterize the finer sediments of Casco Bay. Our experience in taking grab samples shows that the sediments are also extremely soft, i.e. have a very low bearing strength. Repeated lowerings of our specially modified grab often failed to obtain a

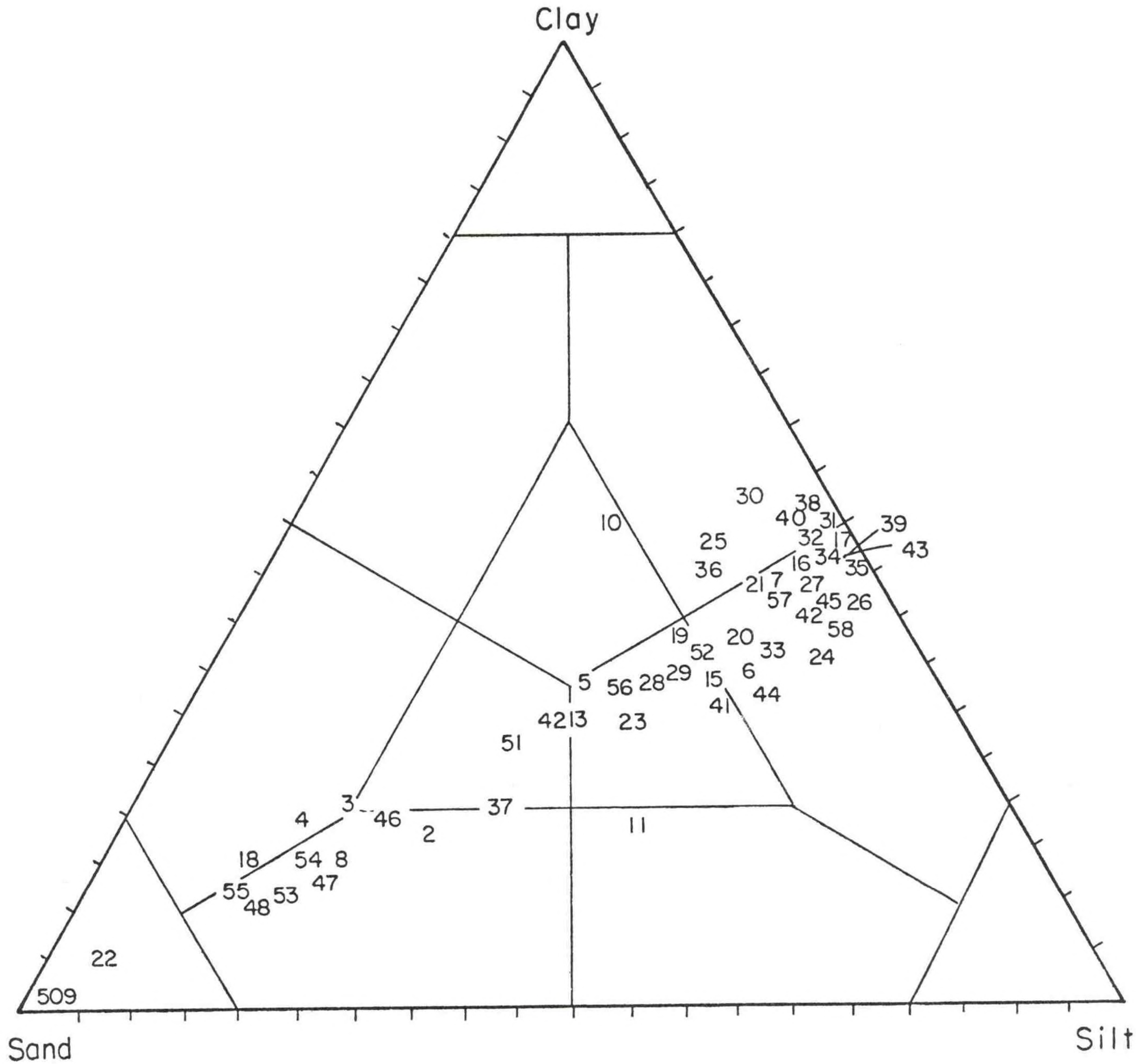


Fig. 9. The distribution of sand, silt and clay in the Casco Bay samples.

sample, although it had obviously been fully immersed in mud. In these situations, we were forced to move the station slightly to find a more cohesive bottom. Even here, however, the sediments visually resembled a loose gel. In these cases, the bucket screens offered little impediment to the grab's penetration into the bottom, and many organisms were caught on the screens. In essence, the sediments were so low in bearing strength that the grab sank to an unknown depth with the surface layers being sieved by the bucket screens in the process.

Timson (personal communication) observed a similar sedimentary phenomenon in Muscongus Bay, Maine, while working with sidescan sonar. He describes it as a nepheloid or gel layer which is intermediate between the water column and bottom. We call it fluid mud and believe it is caused by tidal currents which are strong enough to prevent complete deposition of silt and clay-sized particles, but which do not have a sufficient excursion to disperse them from the system. If this is true, we would expect variations in the depth and extent of the layer over a spring-neap tidal cycle. In any event, the phenomenon must have a profound effect on the nature of the benthic community and is worthy of additional study.

Sediment Carbon and Nitrogen

Sediment organic carbon values as determined by chromic acid digestion are presented in Table 2 and Fig. 10. Values range from 1.5 to 44.5 mg/g dry weight with an overall mean of 25.2 mg/g. Station 36, which exhibited 233.0 mg/g organic carbon due to a high proportion of wood chips, is an extreme outlier and is excluded from organic carbon numerical analyses. The station is located at the mouth of the Presumpscot River on a deposit of wood chips resulting from past

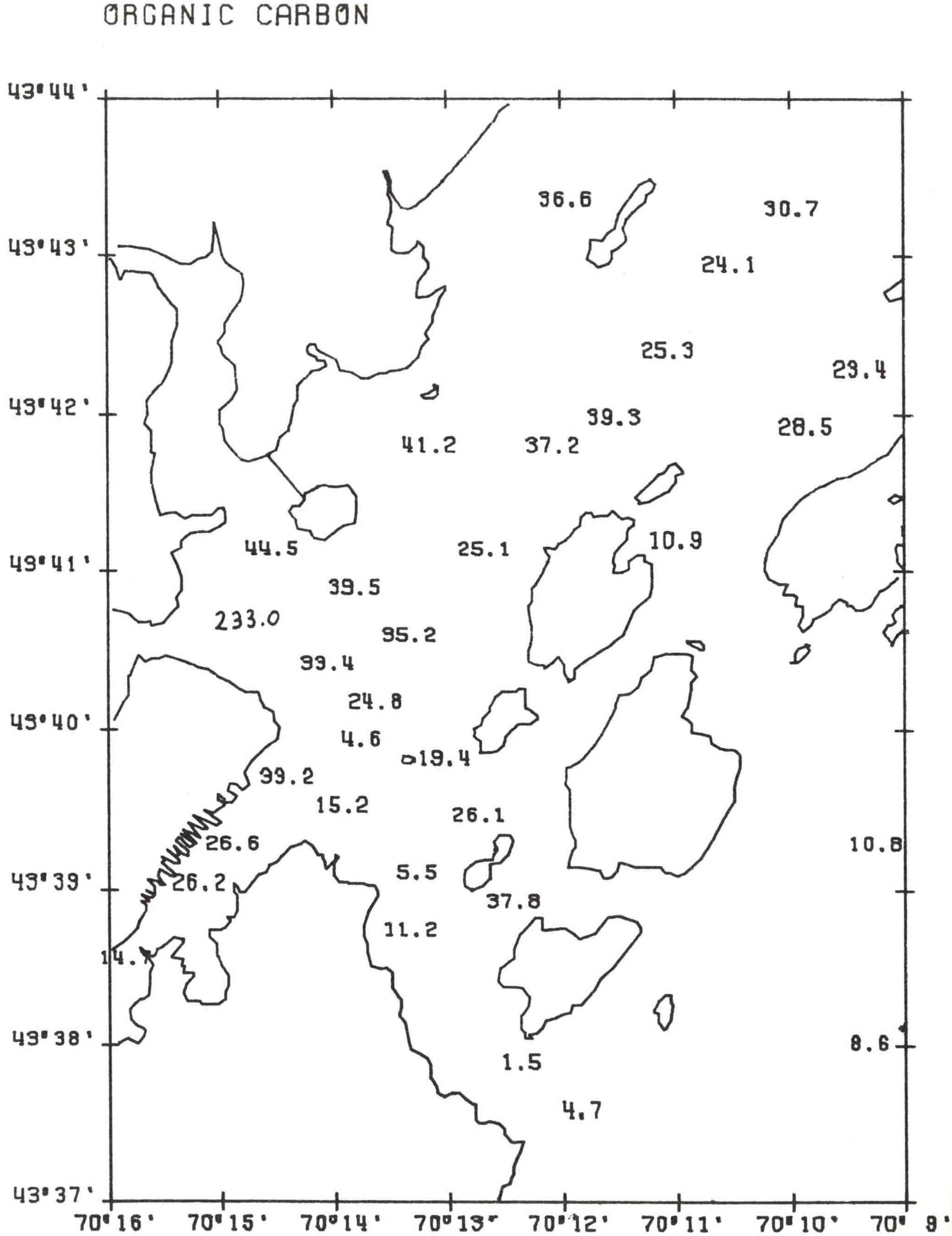
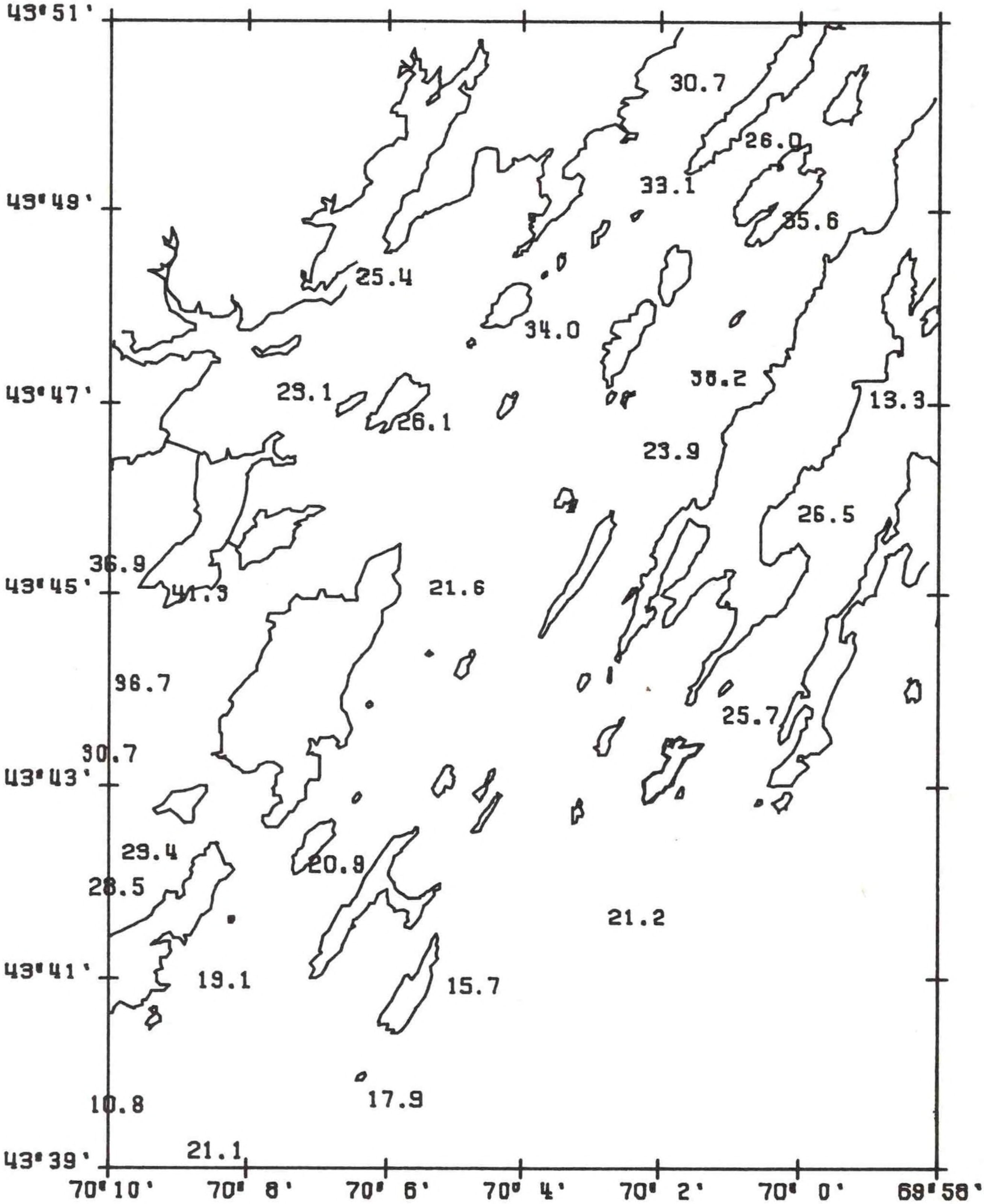


Fig. 10. The distribution of organic carbon (mg/g dry sediment) in the surficial sediments of Casco Bay.

ØRGANIC CARBØN



disposal of paper mill wastes into the river. No other station is so influenced.

Examination of Fig.10 shows that organic carbon levels lower than the average are generally confined to the approaches to Portland Harbor and the offshore stations. Stations with organic carbon levels considerably higher than average occur in a group in lower Casco Bay off Portland and Falmouth and at scattered sites close to land in the upper Bay. In an attempt to elucidate potential controlling factors of organic carbon distribution, organic carbon levels are regressed against bottom depth (complex factor), mean grain size and distance from Portland, the principal population and industrial center. Significant relationships exist for both bottom depth and mean grain size (Figs. 11 and 12). These relationships suggest that organic carbon levels decrease with increasing depth and increase with decreasing mean grain size. The correlation coefficients are -0.4756 and 0.7742, respectively, and both are significant at the 99.9% level. We show above, however, that bottom depth and mean grain size are themselves related and therefore, it is not clear from this analysis whether organic carbon level is influenced by one or both of these factors. By employing multiple regression analysis, it is shown that organic carbon level is significantly related only to mean grain size (Table 3).

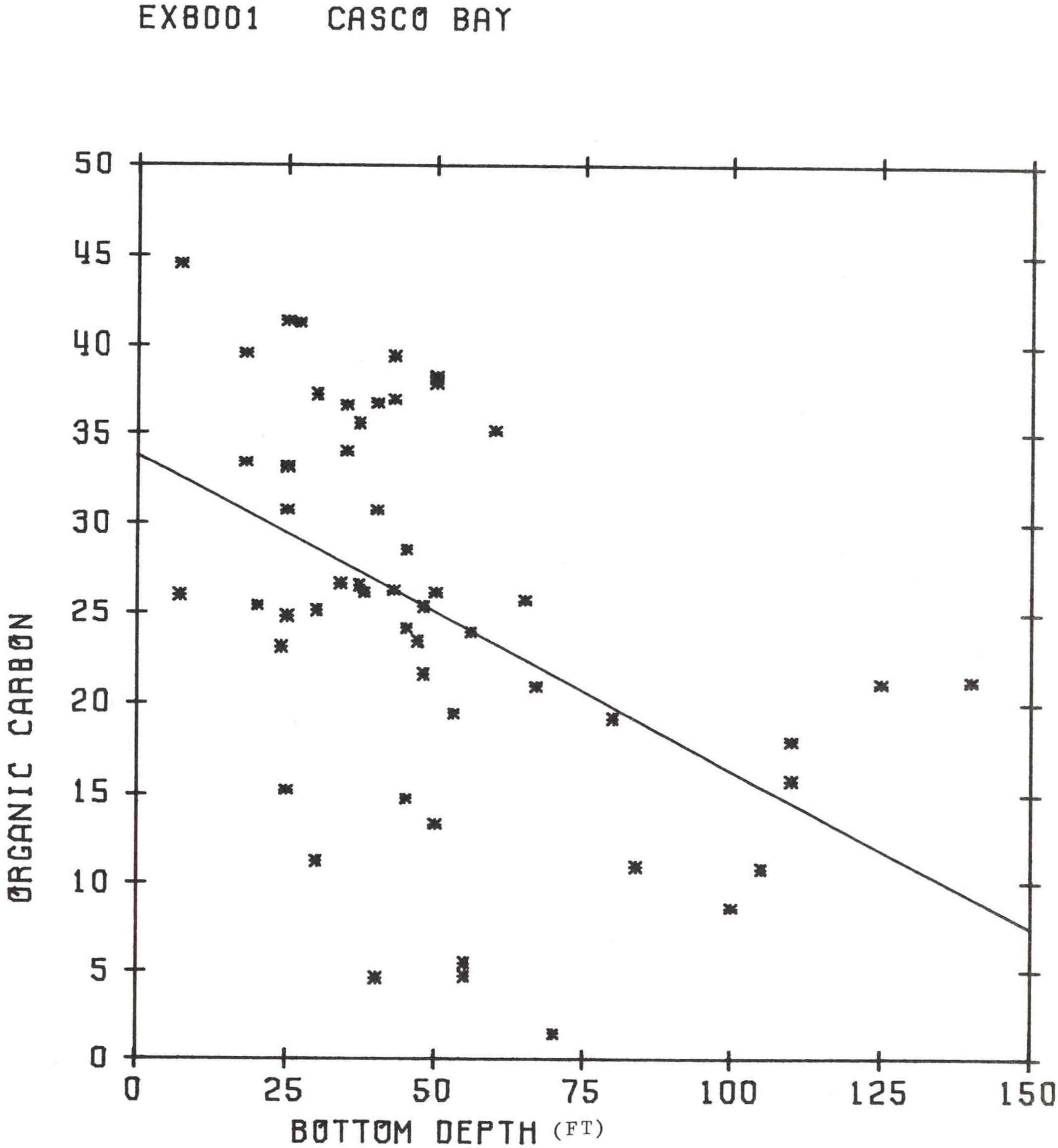


Fig. 11. The relationship between organic carbon and bottom depth.

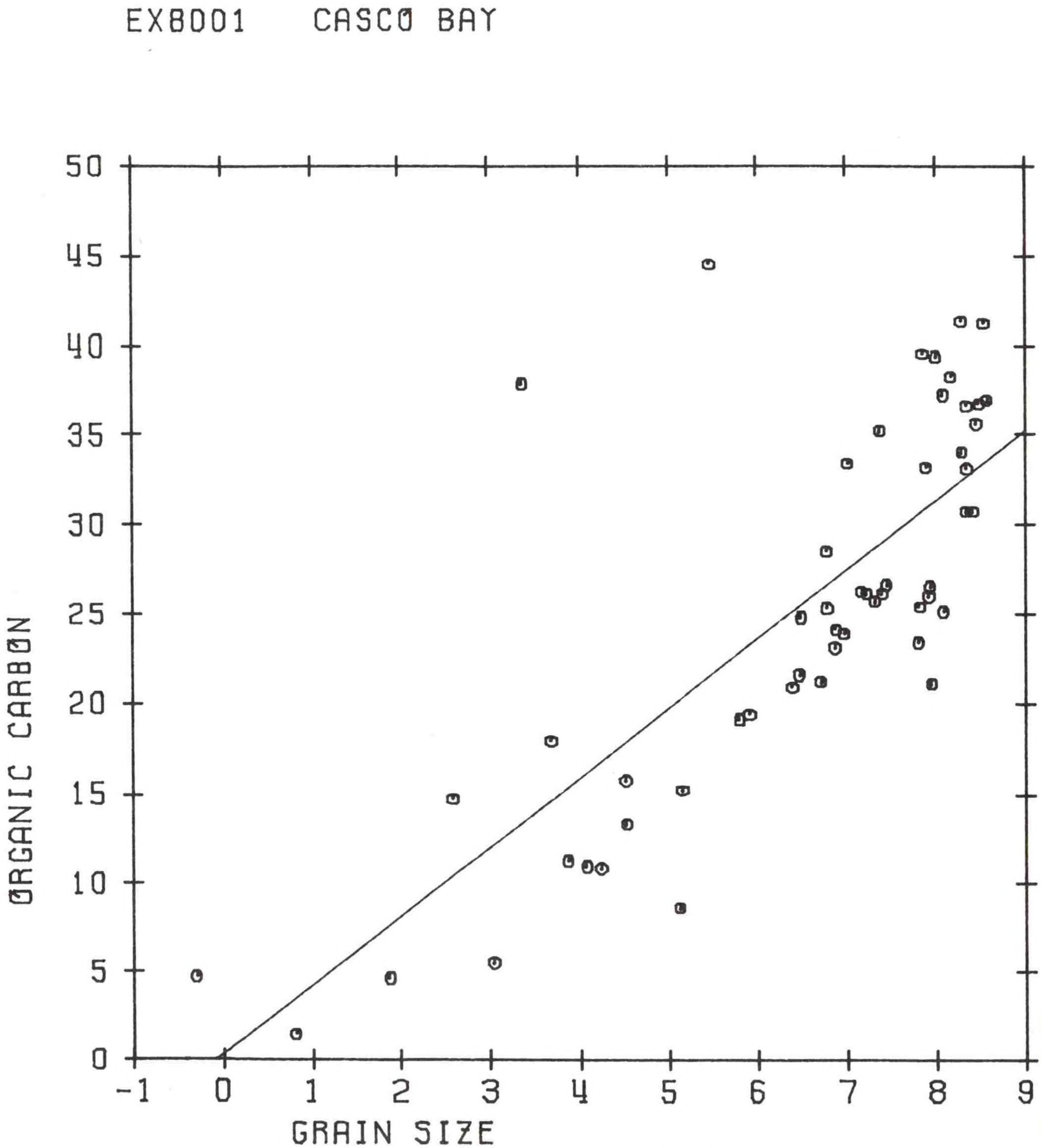


Fig. 12. The relationship between organic carbon and mean grain size (phi units).

Table 3. ANOVA table of multiple regression analysis of organic carbon on mean grain size, bottom depth and their interaction.

Source	Degrees of Freedom	Type IV Sum of Squares	F Value	PR>F
Mean Grain Size	1	451.0196	10.84	0.0018
Depth	1	8.5920	0.21	0.6515
Grain Size-Depth	1	2.9443	0.07	0.7917
Error	50	2079.9867		

Total Kjeldahl nitrogen values are also presented in Table 2. Values range from 0.038 to 1.294 mg/g. To date no attempt has been made to interpret these results. They are included for completeness.

Trace Metals

Subsamples from 32 stations were analyzed by atomic absorption spectrometry for the metals cadmium, chromium, copper, lead, nickel and zinc. Results, as ppm dry weight, are presented in Table 4.

Cadmium is present in the sediments of Casco Bay in concentrations ranging from 0.20 to 0.90 ppm with a mean value of 0.50 ppm. Highest cadmium values occur in the Portland vicinity and at station 53, the former domestic dumpsite for Peaks Island residents (Fig. 13). Lowest cadmium levels are found at the offshore stations while the remaining stations deviate little from the mean.

Chromium levels average 34.5 ppm and range from 5.85 to 55.0 ppm (Table 4). The approaches to Portland Harbor exhibit the lowest

Table 4. Concentration of metals (ppm dry weight) in surface sediments of Casco Bay, Maine.

Sta. No.	Cd	Cr	Cu	Ni	Pb	Zn
2	< 0.25	27.0	9.45	11.0	13.5	39.0
4	0.40	26.0	8.38	18.5	18.5	49.4
8	0.30	23.0	8.70	13.0	12.0	43.0
9	0.20	8.50	2.40	4.5	10.5	20.85
10	0.35	39.1	14.0	22.8	29.7	70.8
11	0.25	31.0	11.4	18.5	24.0	59.5
13	0.50	36.5	11.8	19.5	21.5	65.5
15	0.55	38.0	20.0	20.0	33.5	73.5
16	0.55	54.0	16.4	27.5	25.0	30.5
17	0.60	47.5	16.6	32.0	19.5	84.5
19	0.87	49.2	44.5	23.65	61.4	81.9
20	0.80	46.5	32.0	18.5	51.0	100.
21	0.59	36.6	25.5	22.87	45.0	90.1
26	0.60	55.0	19.7	22.5	35.0	89.0
29	0.50	50.0	16.3	20.0	29.5	74.5
32	0.65	40.0	15.8	22.0	21.5	66.0
34	0.50	49.4	15.8	23.7	20.2	71.67
36	0.90	10.8	13.8	6.60	59.0	80.0
37	0.75	34.5	19.2	14.0	35.5	83.5
41	0.40	31.0	13.1	21.0	16.5	61.0
42	0.55	43.0	14.8	23.0	20.5	68.0
43	0.55	50.4	16.1	24.4	19.0	73.8
46	0.45	26.0	15.0	14.0	30.5	70.5
47	< 0.25	21.5	9.90	12.0	9.0	36.0
48	0.30	18.0	10.2	9.35	22.5	44.5
50	0.45	5.8	4.45	5.75	16.5	21.0
52	0.60	34.5	20.2	20.5	35.5	80.5
53	0.80	44.0	22.6	9.05	--	87.0
54	< 0.25	23.5	7.95	12.5	18.0	41.0
55	0.30	20.5	8.70	11.0	17.5	40.5
56	0.55	43.0	17.0	23.0	32.0	81.0
57	0.45	41.5	14.6	16.0	28.0	64.0

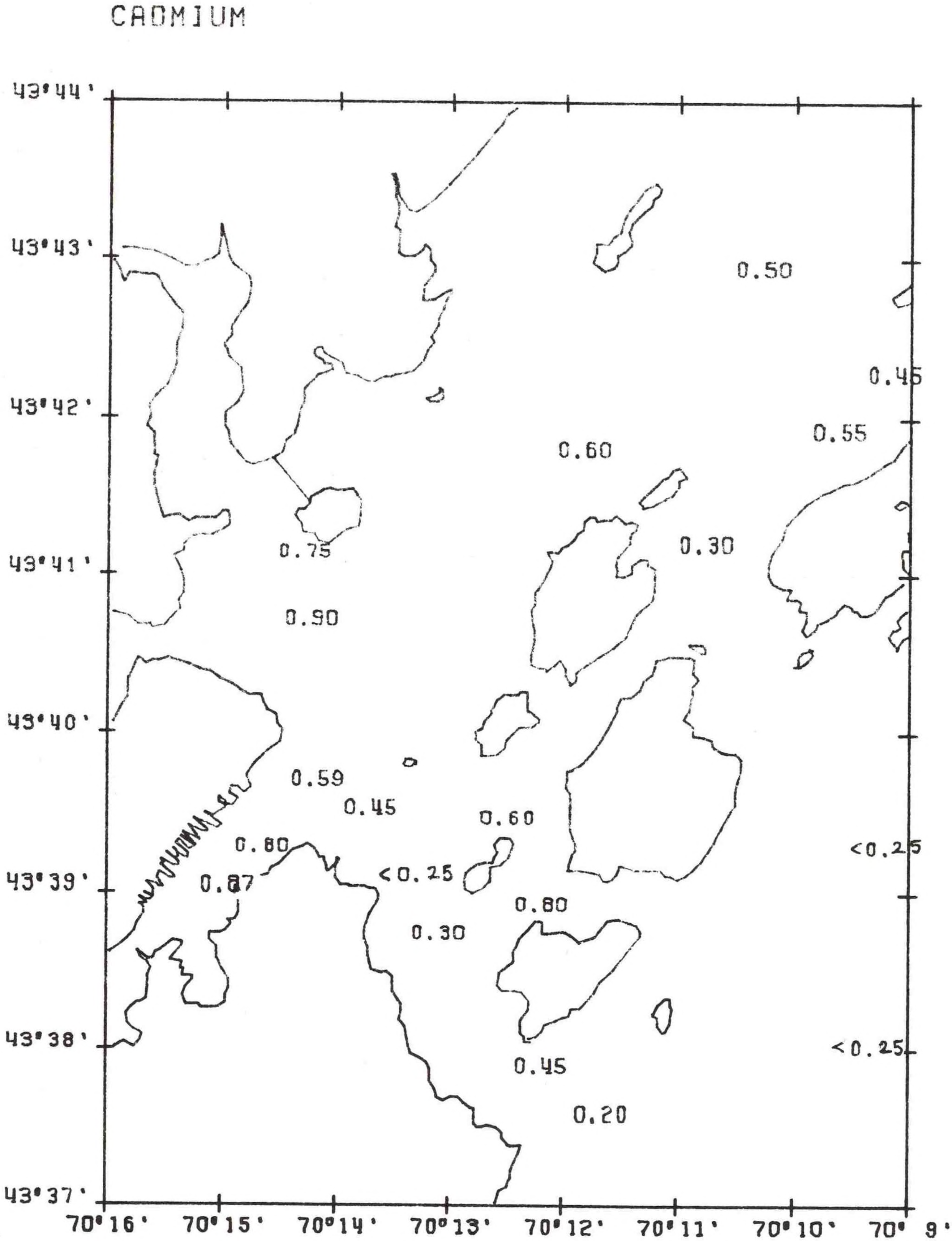
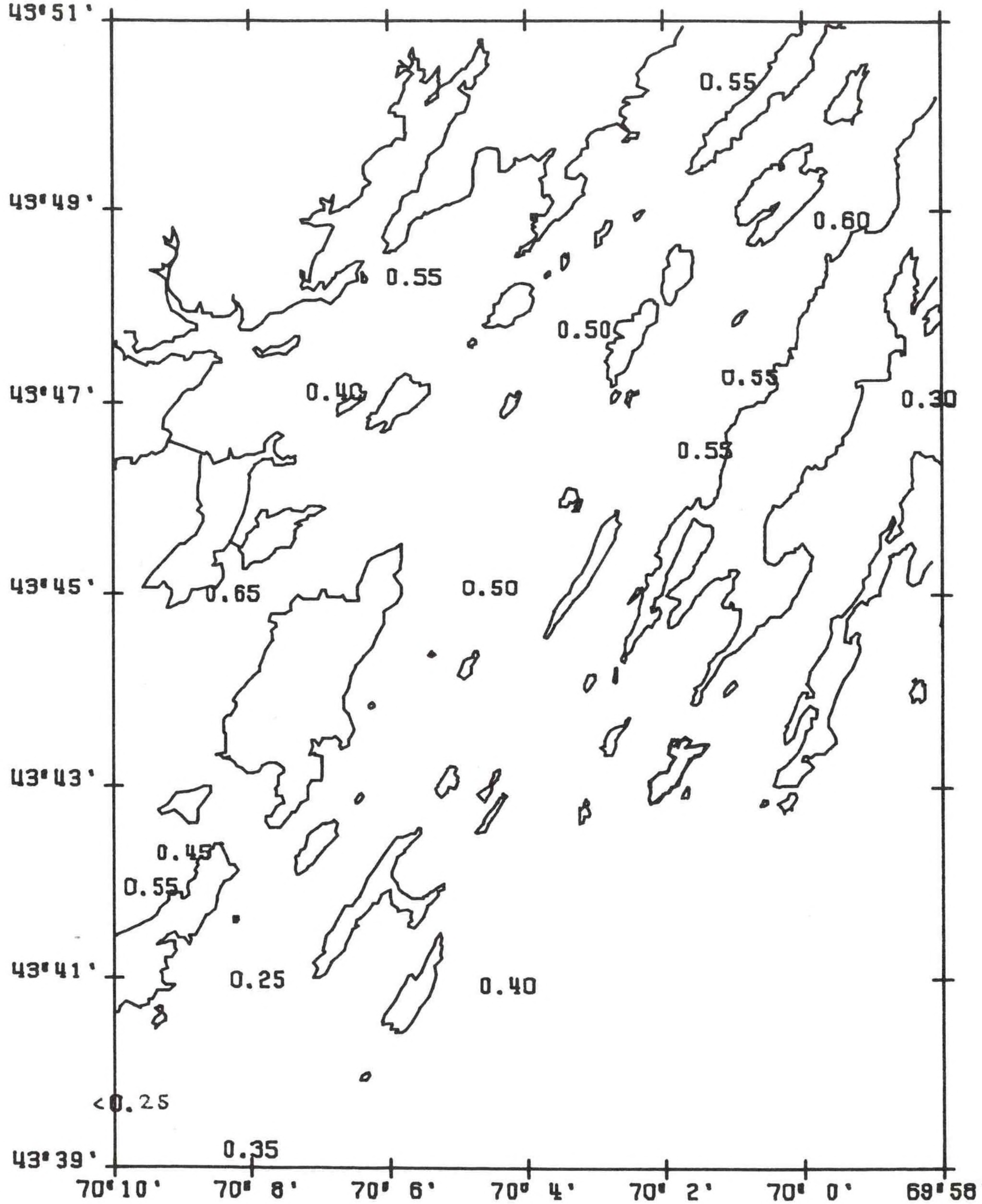


Fig. 13. The distribution of cadmium (ppm dry weight) in the surficial sediments of Casco Bay, Maine.

CADMIUM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chromium levels and the Portland area in general is characterized by low to moderate chromium levels (Fig. 14). Stations in Portland Harbor proper and in mid and upper Casco Bay generally have higher than average values.

Sediment levels of copper in Casco Bay range from 2.40 to 44.5 ppm with an overall mean of 15.5 (Table 4). Only five stations exhibit copper levels of over 20 ppm. These are the three stations in Portland Harbor and stations 52 and 53 (Fig. 15). The gradient of decreasing copper levels down the Fore River is suggestive of an upstream source. Once again, lowest copper levels are found in the sandy main shipping channel into the Bay and at the offshore stations. Upper Bay stations generally are close to the mean in copper concentration.

Lead concentrations in the sediments range from 9.0 to 61.4 ppm with an average of 26.8 (Table 4). Its distribution is similar to that of copper, i.e. high concentrations in Portland Harbor with a decreasing gradient down the Fore River, low concentrations in the tidal channel and at most offshore sites, and low to moderate values throughout the remainder of the Bay (Fig. 16).

Unlike the other metals, nickel does not show a strong pattern in its distribution (Fig. 17). Concentrations range from 4.53 to 32.0 ppm with a mean of 17.6 ppm. The extreme high value occurs at station 17 in upper Casco Bay. Low values are found principally in channel areas and just offshore, but even this pattern is not as clearly developed as for the other metals.

Zinc concentrations in Casco Bay sediments average 65.4 ppm and range from 20.5 to 100.5 ppm (Table 4). Highest values occur in

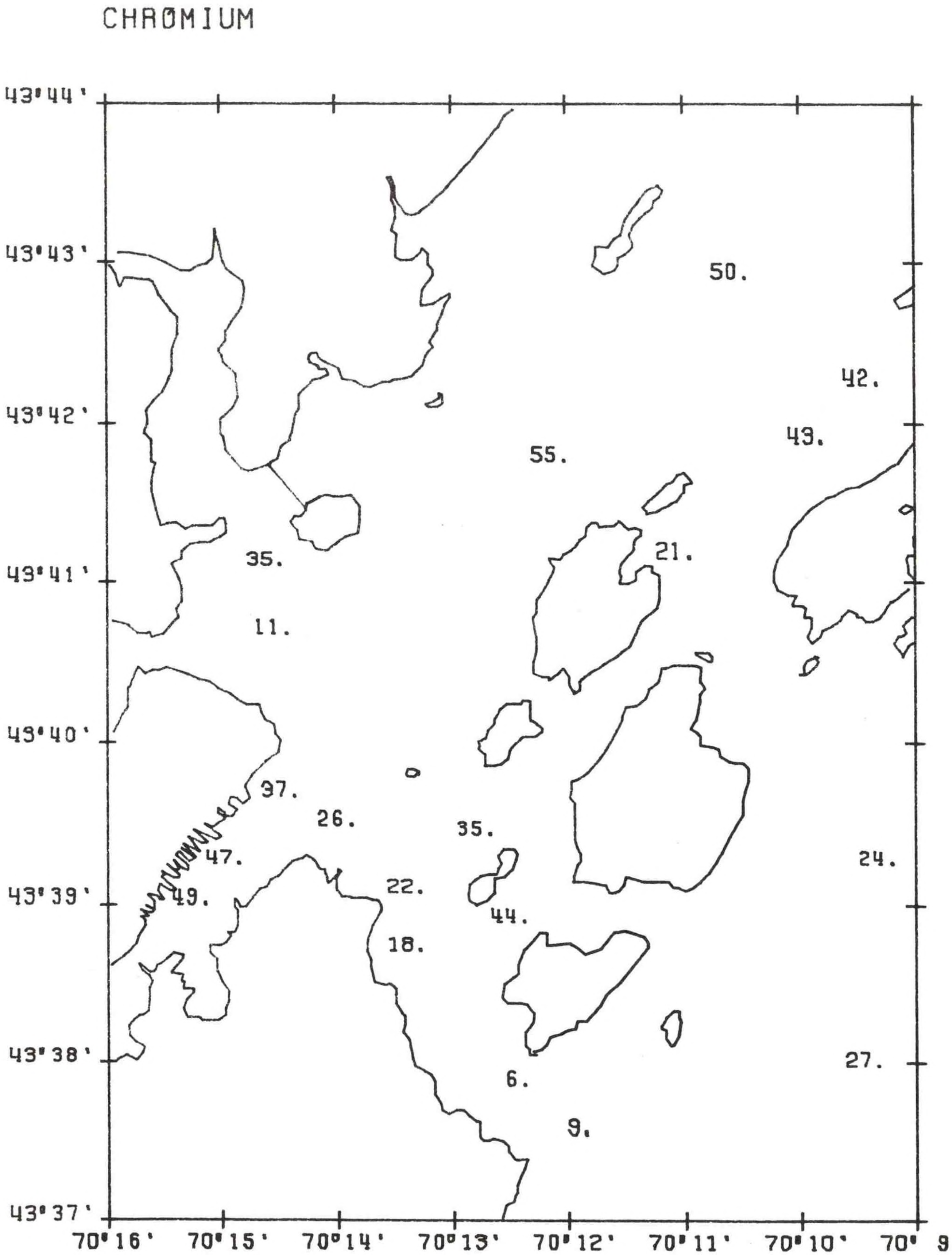
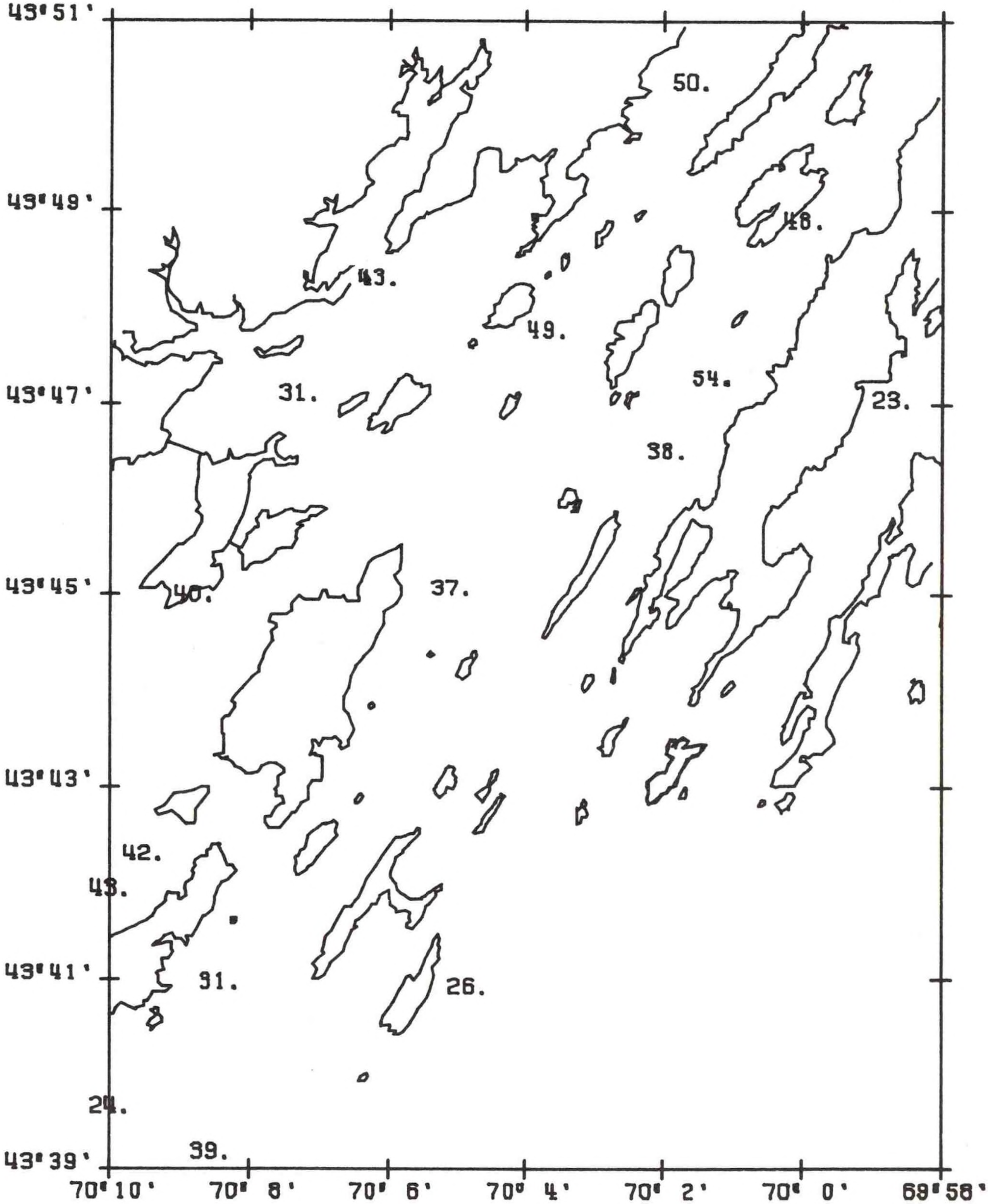


Fig. 14. The distribution of chromium (ppm dry weight) in the surficial sediments of Casco Bay, Maine.

CHROMIUM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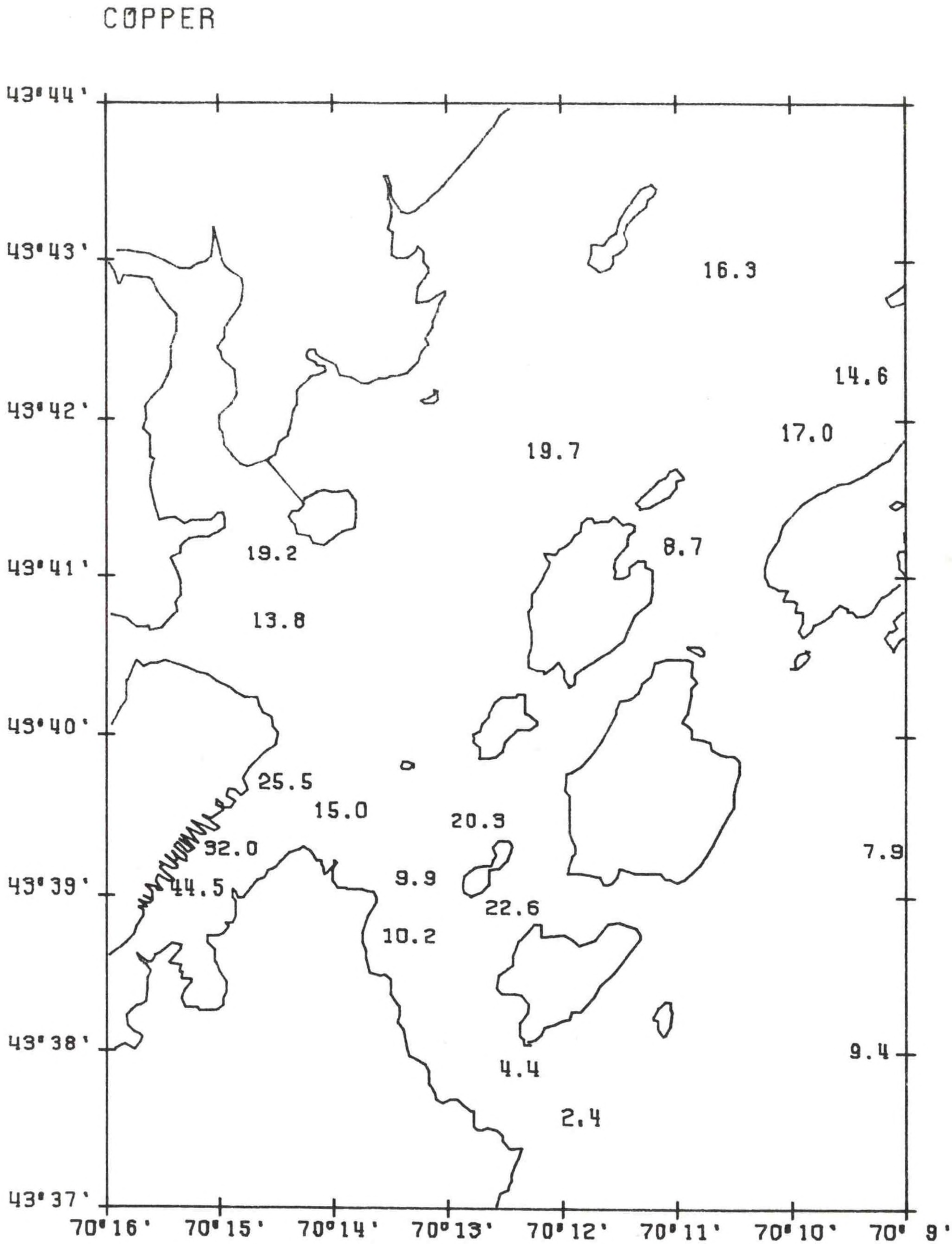
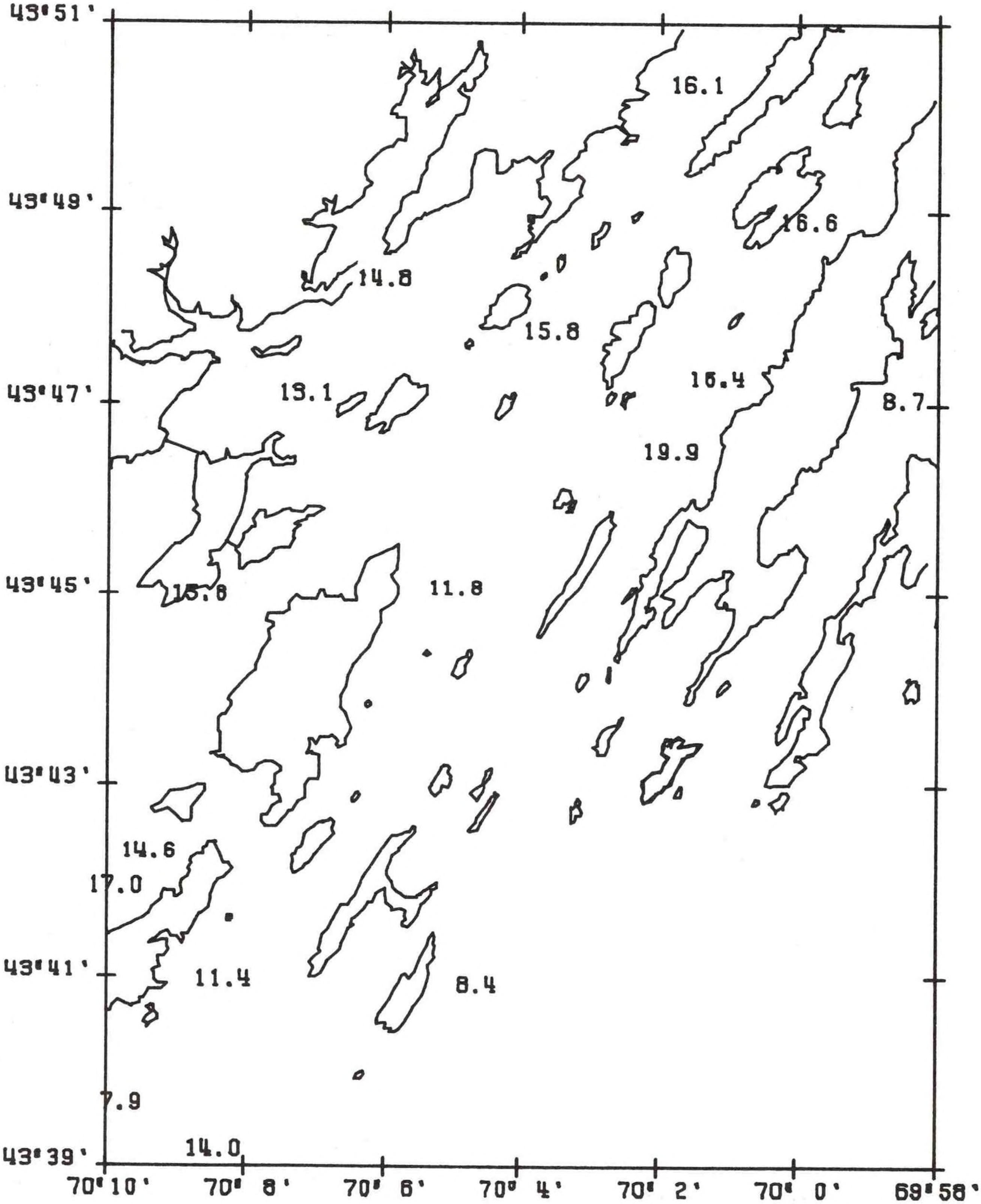


Fig. 15. The distribution of copper (ppm dry weight) in the surficial sediments of Casco Bay, Maine.

COPPER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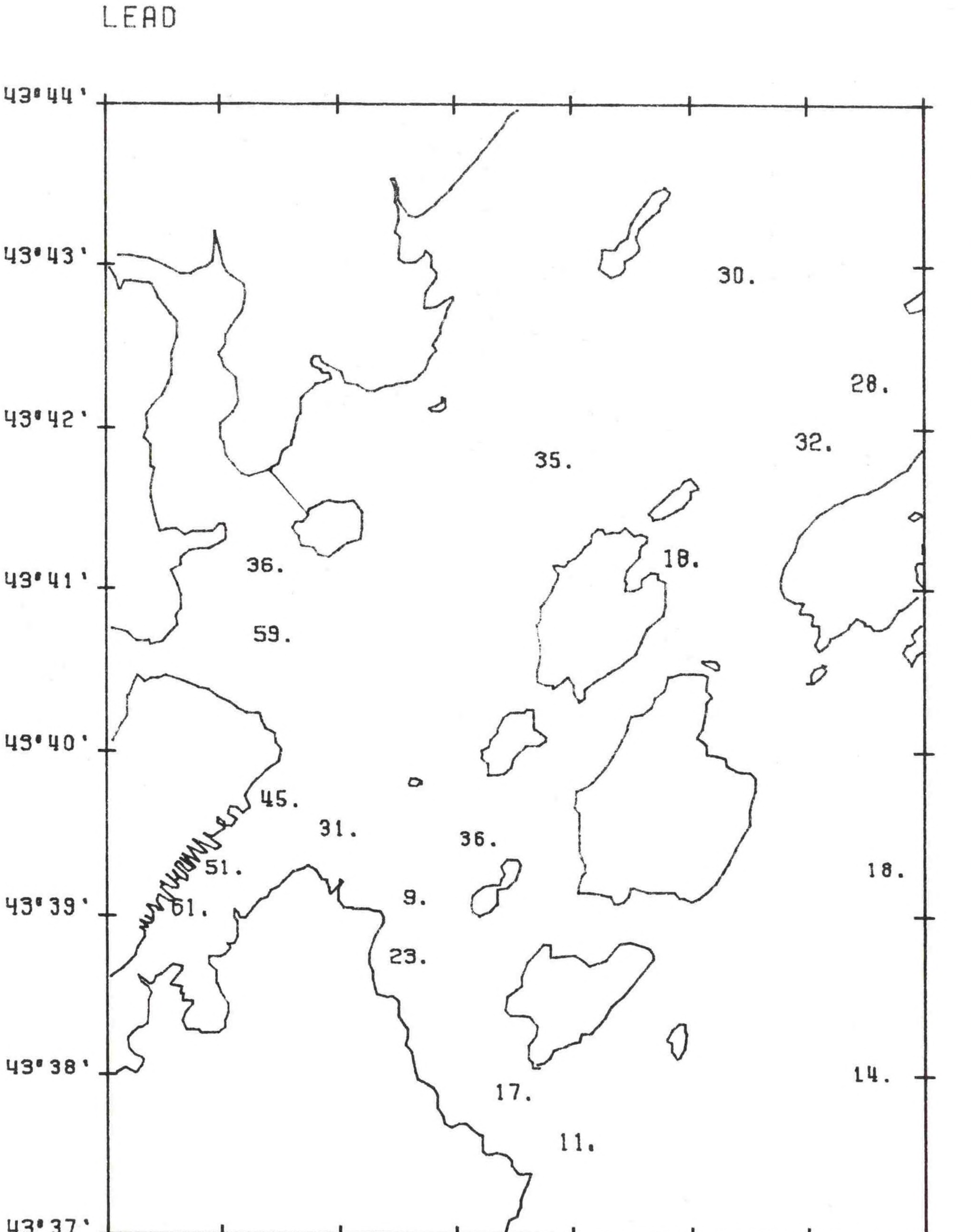
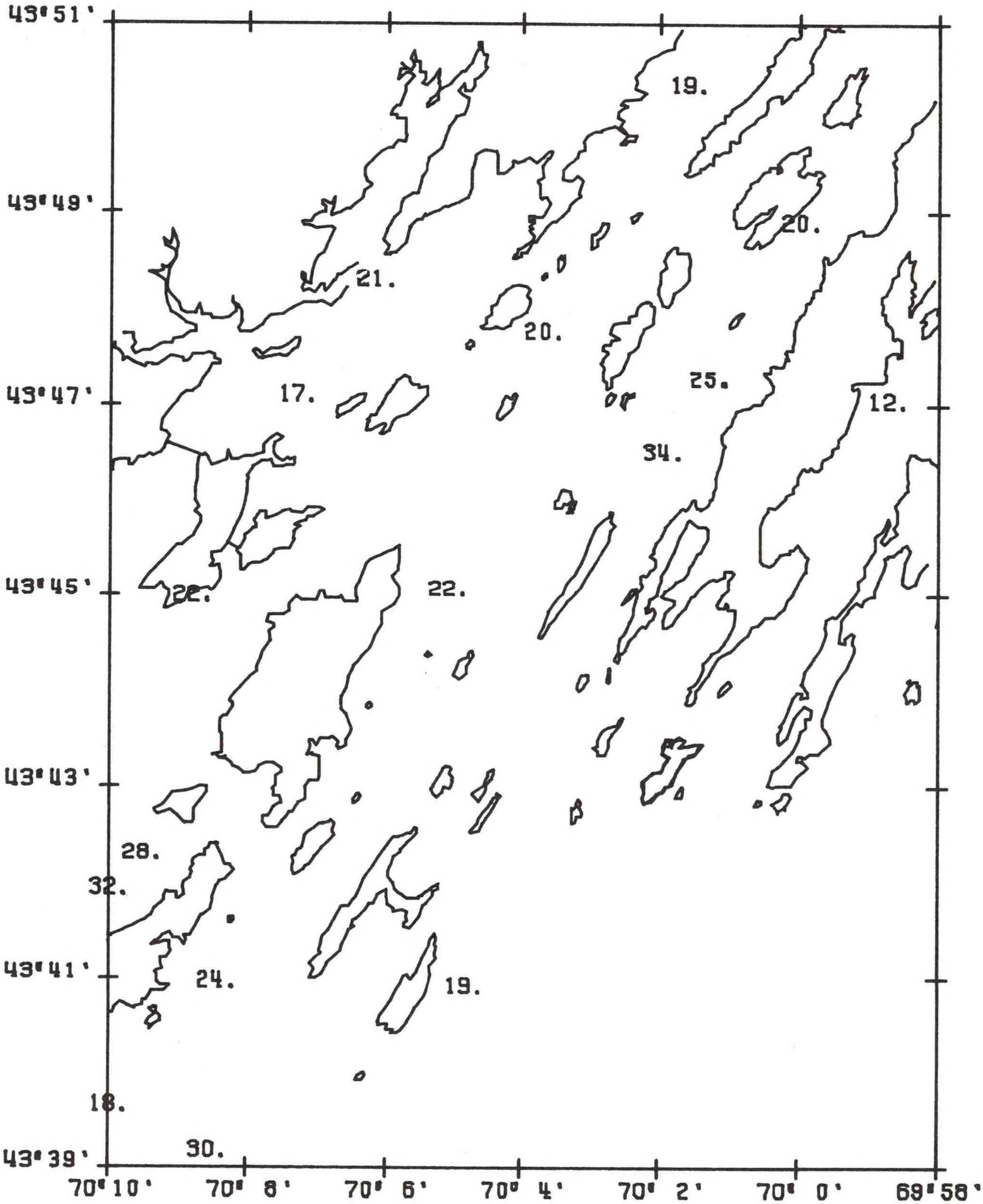


Fig. 16. The distribution of lead (ppm dry weight) in the surficial sediments of Casco Bay, Maine.

LEAD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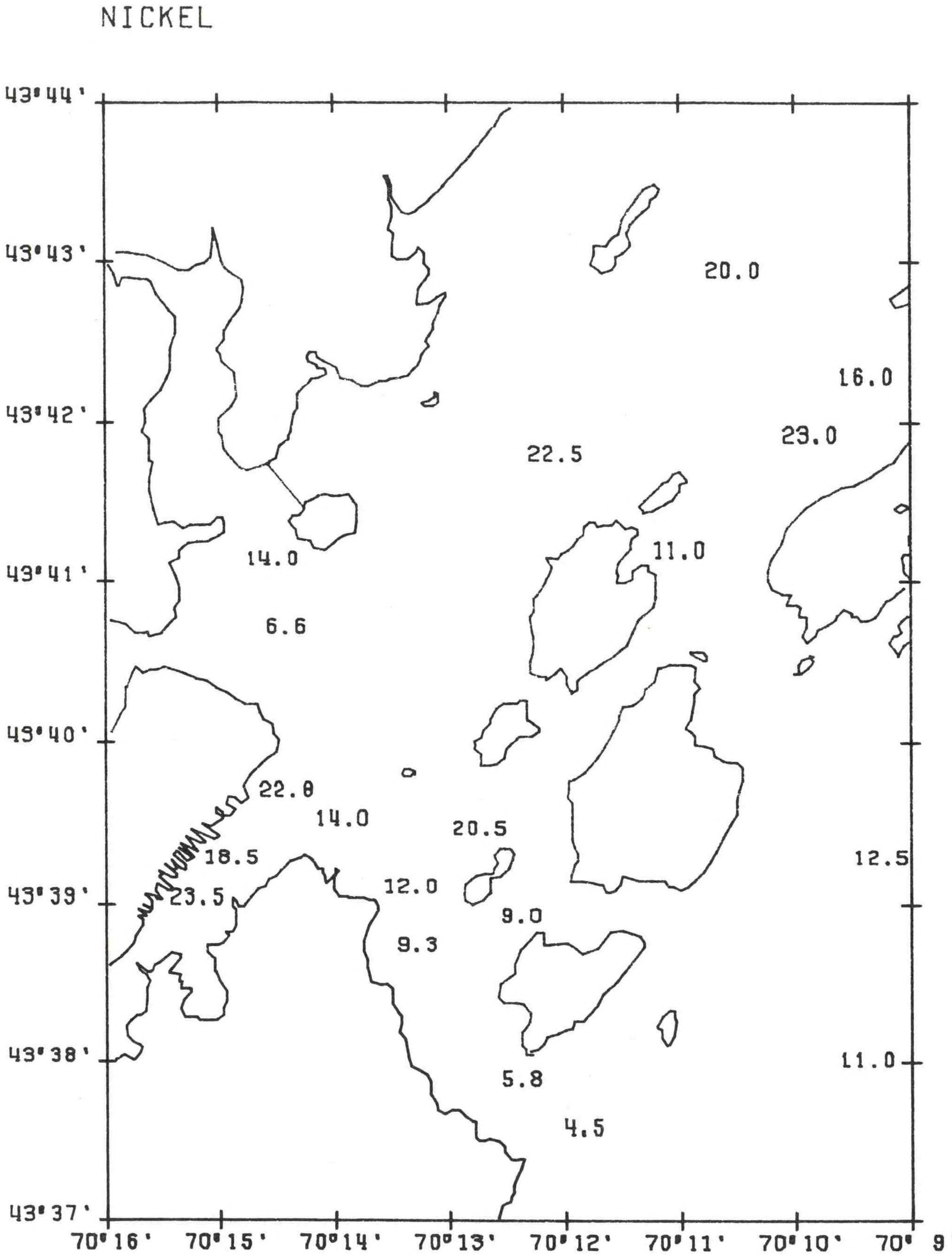
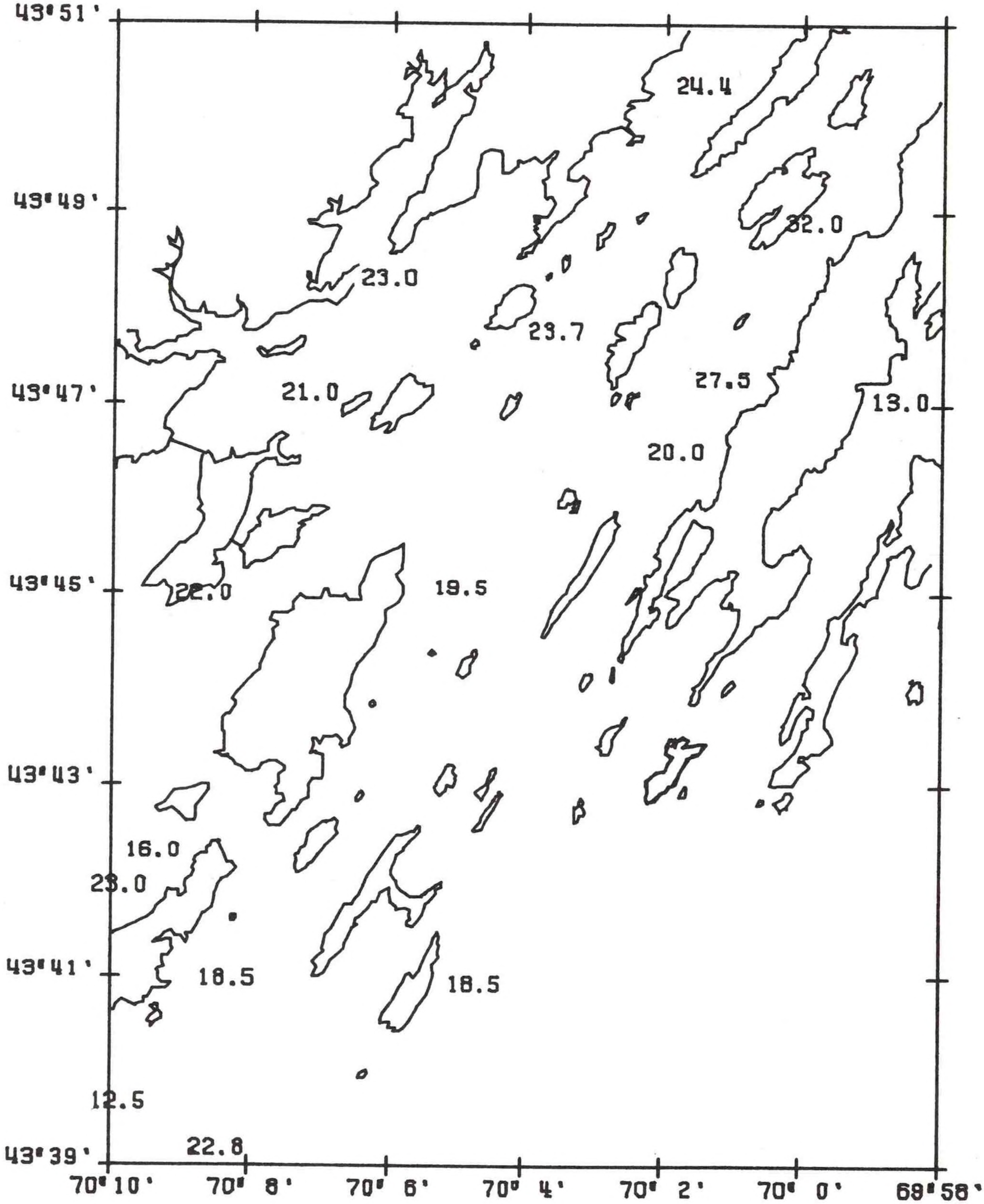


Fig. 17. The distribution of nickel (ppm dry weight) in the surficial sediments of Casco Bay, Maine.

NICKEL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23.0
23.7
21.0
27.5
13.0
20.0
19.5
22.0
16.0
23.0
18.5
18.5
12.5
22.8

Portland Harbor although stations with values well above the mean are found scattered throughout the Bay (Fig. 18). Low values are again grouped in the outer shipping channel and offshore of the islands.

Whereas upland drainage may be an important source of metals deposited in coastal sediments, it does not seem to explain the elevated levels in the Fore River (called the Stroudwater River in its non-tidal portion). The Fore River has a small drainage area (28 sq. miles) relative to the two other principal rivers entering Casco Bay, the Presumpscot (590 sq. mi.) and the Royal (142 sq. mi.), which show little or no elevation of metal levels near their mouths. In addition, above Portland, the Fore River is largely surrounded by tidal marshes and residential developments serviced by municipal sewers which discharge elsewhere. It seems likely, therefore, that the elevated metal levels in Portland Harbor sediments result from anthropogenic introductions within the harbor and the industrialized lower Fore River estuary. Additional sampling above Portland will be required to prove this hypothesis.

Linear correlations were computed for the six metals as well as percent organic carbon and mean grain size on the phi scale (Table 5). This analysis shows that, as demonstrated elsewhere (i.e. de Groot *et al.*, 1976), metal levels in Casco Bay surficial sediments are highly correlated with fine grained sediment and levels of organic carbon. That these factors are significant is a reflection of the large surface area of fine-grained sediments and the sorptive capacity of many organic compounds. These relationships help to explain the areal distribution of the metals as, for example, the uniformally low levels encountered in the coarse sediments in the main entrance to Casco Bay.

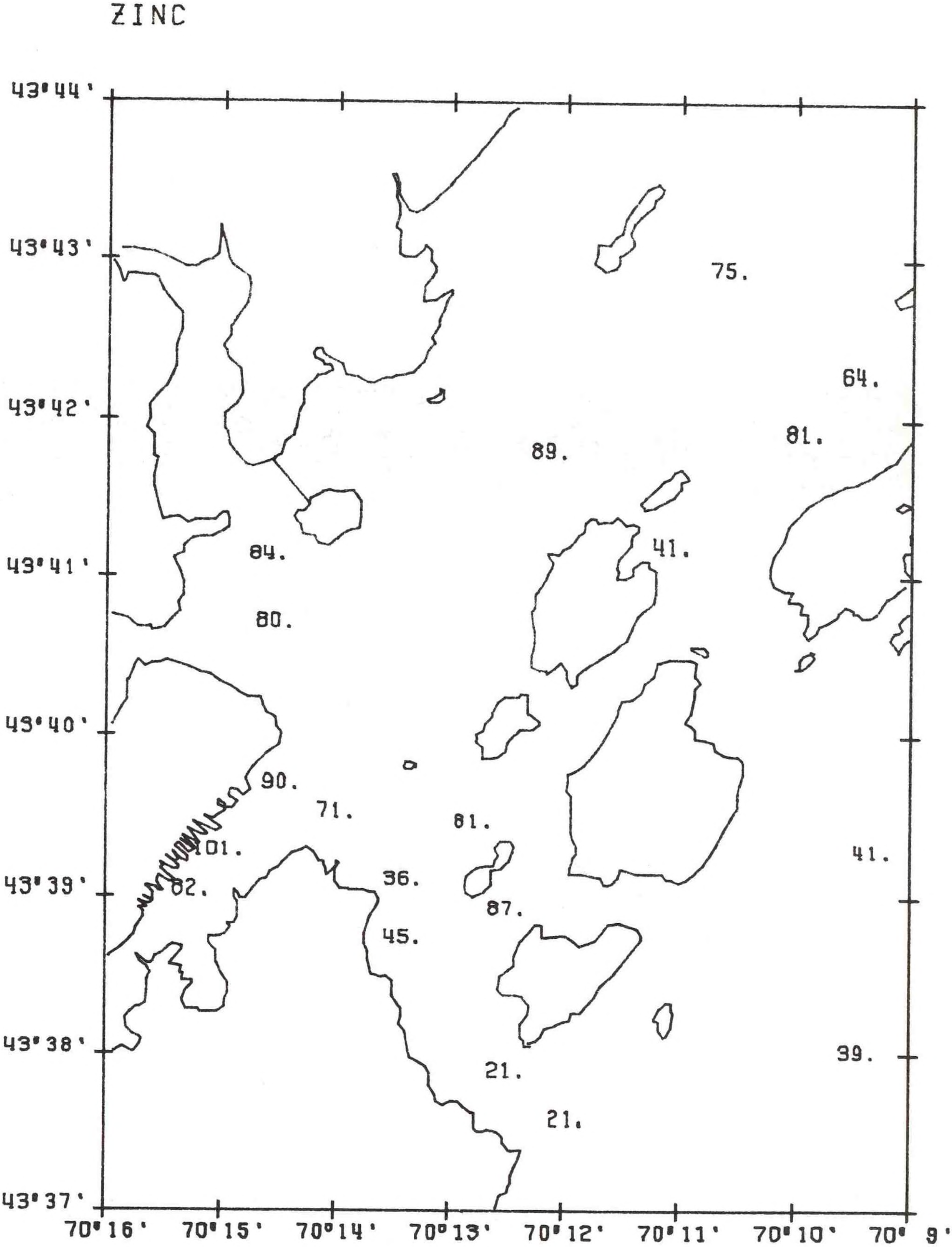
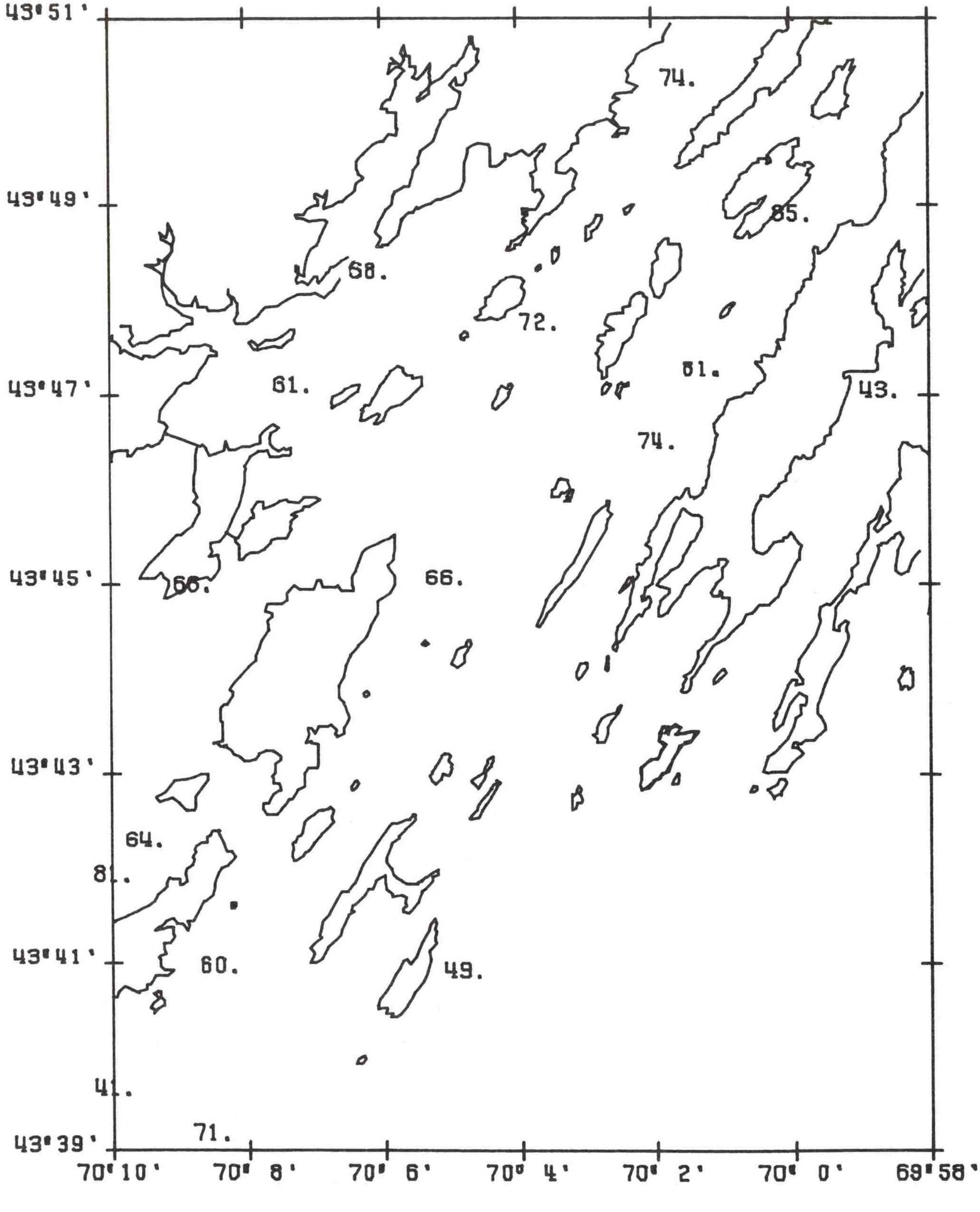


Fig. 18. The distribution of zinc (ppm dry weight) in the surficial sediments of Casco Bay, Maine.

ZINC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The six metals were also highly correlated to each other in terms of their distribution and concentration (Table 5). The only exceptions to this generalization are the correlations of nickel with cadmium and lead with chromium.

Comparison of trace metal levels in Casco Bay sediments with levels found in other recent New England investigations will help to put these results into perspective. Five studies utilizing comparable methodology are available for comparison. Lyons *et al.* (in press) examined trace metal levels in five northern New England estuaries. They concluded from sediment profiles that three of them, Machias Bay, Cape Rosier and the Seabrook River estuary show little increase in trace metal

Table 5. Correlation matrix for Casco Bay trace metal samples[1]

	Org. C	Cd	Cr	Cu	Pb	Ni	Zn	$\bar{X}$ grain size
Organic Carbon	1.000							
Cadmium	0.762	1.000						
Chromium	0.822	0.461	1.000					
Copper	0.578	0.705	0.635	1.000				
Lead	0.476	0.775	0.287	0.802	1.000			
Nickel	0.675	0.319	0.826	0.466	0.175	1.000		
Zinc	0.853	0.786	0.766	0.775	0.724	0.625	1.000	
Mean Grain Size	0.774	0.495	0.761	0.528	0.470	0.813	0.775	1.000

[1] n = 32 except for lead and organic carbon where n = 31.
Significant at 99% confidence interval if $r \geq 0.449$ for n = 32 and $r \geq 0.456$ for n = 31.

concentrations over the past century and are probably representative of pre-industrial levels. Two other estuaries, the Saco and Kennebec, exhibit recent anthropogenic enrichment due to industrial and/or sewage inputs. Armstrong *et al.* (1976) determined trace metal values of the sediments of the Great Bay estuary which has been historically subjected to industrial discharges. Lyons and Gaudette (1979) investigated concentrations in Jeffreys Basin, a fine-grained depositional area off the coast of southern Maine and New Hampshire. They concluded that the relatively high levels found there are the result of fine-grained sediment export from estuaries. Two southern New England estuaries, the unpolluted Mystic River estuary and the impacted Branford Harbor, were contrasted by Lyons and Fitzgerald (1980). Finally, Greig *et al.* (1977) analyzed a large number of sediment samples from Long Island Sound, a large, highly "urbanized" estuary. For purposes of comparison we have used only their results from the eastern half of the Sound, stations 72-143, to avoid the overbearing influence of inputs from the New York City area.

Trace metal levels at the 11 New England sites are contrasted in Table 6. It is important to remember that trace metal distributions in Casco Bay are very heterogenous and the mean values are only a gross representation of the conditions in a given subarea. Cadmium levels in Casco Bay compare favorably with the three other sites having reported values. The mean value is close to that of the unimpacted Mystic River estuary and considerably lower than the values reported for Branford Harbor and eastern Long Island Sound. Casco Bay sediments appear to be moderately enriched in terms of chromium. The mean concentration is nearly twice that of the pre-industrial levels of northern New

Table 6. Comparison of trace metal levels at several New England locations.

Site	Cd $\bar{x}$	Cd range	Cd S.D.	Cr $\bar{x}$	Cr range	Cr S.D.	Cu $\bar{x}$	Cu range	Cu S.D.
Casco Bay (this study)	0.47	0-0.90	0.23	34.5	5.8- 55.0	13.4	15.5	2.4- 44.5	8.0
Kennebec River Estuary, ME[1] (Lyons et al., in press)				29	-	-	33	-	-
Saco River Estuary, ME[1] (Lyons et al., in press)				274	-	-	15	-	-
Penobscot Bay, ME[1] (Lyons et al., in press)				18	-	-	9	-	-
Machias Bay, ME[1] (Lyons et al, in press)				16	-	-	9	-	-
Seabrook River Estuary, NH[1] (Lyons et al., in press)				19	-	-	7	-	-
Great Bay Estuary, NH (Armstrong et al., 1976)				142	9.6-594	112	16.4	2.9-129	14.8
Jeffreys Basin (Lyons and Gaudette, 1979)				56.3	20.1-83.7	-	16.4	2.4- 35.1	-
Mystic River Estuary, CT[2] (Lyons and Fitzgerald, 1980)	0.41	-	-				4.4	-	-
Branford Harbor, CT[2] (Lyons and Fitzgerald, 1980)	1.16	-	-				34.5	-	-
Eastern Long Island Sound[3] (Greig et al., 1977)	2.7	-	1.0	57.7	-	56.7	20.0	-	26.4

Table 6. Comparison of trace metal levels at several New England locations.

Site	Ni $\bar{x}$	Ni range	Ni S.D.	Pb $\bar{x}$	Pb range	Pb S.D.	Zn $\bar{x}$	Zn range	Zn S.D.
Casco Bay (this study)	17.6	4.5-32.0	6.7	26.8	9.0- 61.4	13.1	65.4	20.8-100.5	20.5
Kennebec River Estuary, ME[1] (Lyons et al., in press)				33	-	-	64	-	-
Saco River Estuary, ME[1] (Lyons et al., in press)				36	-	-	47	-	-
Penobscot Bay, ME[1] (Lyons et al., in press)				12	-	-	32	-	-
Machias Bay, ME[1] (Lyons et al., in press)				13	-	-	35	-	-
Seabrook River Estuary, NH[1] (Lyons et al., in press)				9	-	-	29	-	-
Great Bay Estuary, NH (Armstrong et al., 1976)				40.7	0.80-145	22.1	60.6	13.4-212	28.5
Jeffreys Basin (Lyons and Gaudette, 1979)				31.2	9.5- 58.6	-	75.4	30.7-102.4	-
Mystic River Estuary, CT[2] (Lyons and Fitzgerald, 1980)				14.5	-	-	56.5	-	-
Branford Harbor, CT[2] (Lyons and Fitzgerald, 1980)				265	-	-	54.5	-	-
Eastern Long Island Sound[3] (Greig et al., 1977)	7.6	-	6.6	16.2	-	14.5	48.0	-	43.7

[1] top centimeter; [2] top 4 centimeters; [3] stations 72-143

England estuaries, but an order of magnitude lower than the Saco and Great Bay estuaries, both of which are highly enriched with chromium due to tannery operations (Armstrong *et al.*, 1976; Mayer and Fink, 1980; Lyons *et al.*, in press).

Copper levels in Casco Bay are also elevated relative to the non-industrialized estuaries and are comparable to the other impacted sites with the exceptions of the Kennebec River estuary, Maine and Branford Harbor, Connecticut. Long Island Sound is the only other site from which nickel data are available and the mean value is much lower than that of Casco Bay.

The mean value of lead in Casco Bay sediments is higher than that of the four non-industrialized sites and Long Island Sound, but generally lower than the other industrialized estuaries. Mean zinc concentration, on the other hand, is only exceeded by that reported for Jeffreys Basin.

These results show that trace metals are not distributed homogenously in the Casco Bay region. Whereas a strong correlation exists between metal concentrations and both mean grain size and organic carbon concentrations, there is also a strong geographic pattern not completely explained by these relationships or the location of freshwater inputs. In general, high trace metal levels are found in the Portland area, which includes the lower Fore River estuary, low levels are found in scour channels, relatively low concentrations are encountered at the offshore sites and moderate levels occur in the very fine sediments of central and upper Casco Bay. In addition, four metals exhibit a gradient down the lower Fore River estuary suggesting an upstream addition.

Comparisons with other New England sites indicate, with the possible exception of cadmium, that trace metal concentrations in Casco Bay are elevated well above presumed pre-industrial levels. Mean values of each of the other metals examined are comparable to levels reported from other industrialized New England areas.

Realizing that trace metal concentrations from stations in the Portland area are generally much higher than the mean, and that the mean is reduced by low concentrations elsewhere in the Bay, it is concluded that the sediments of Portland Harbor and the lower Fore River estuary are impacted by trace metals. Sediment profile studies are needed to put the present levels into a historical context.

Hydrocarbons

The 32 hydrocarbon subsamples are in the process of analysis. These results will be integrated into our overall analysis as soon as they are available. Preliminary results indicate high levels of one or more groups of hydrocarbons in Casco Bay sediments.

Visual examination of the samples indicated very high levels of sediment hydrocarbons in the Portland area. Indeed, a couple of samples were extremely difficult to pick because hydrocarbons formed a film on the picking trays, forceps and organisms. Oil was also observed at one of the sandy stations that is presumably well-flushed.

The Fauna

The 56 $0.1m^2$ grab samples sieved to 1.0 mm yielded 264 putative species (Table 7). Two hundred and thirteen of these were identified to the species level. The molluscs, annelids and arthropods were the best represented groups accounting for 16.6, 42.0 and 26.1% of the species respectively. Species list for individual stations are presented in Appendix 2.

Many of the species occurrences are interesting in terms of their presence or abundance. For instance, one of the dominant polychaetes, *Aglaophamus neotenus*, was described only very recently (Blake, 1980). Among the isopods, both the Virginian *Cassidinidia lunifrons* and the Arctic *Munna fabricii* were found within the limited confines of Casco Bay. Undescribed members of the amphipod genera *Melita* and *Monoculodes* were encountered as were individuals of the genera *Bathymedon*, *Halimedon* and *Gitanopsis*. These latter, and perhaps several other records, represent range extensions which will be treated in another contribution.

Density

Numbers of individuals ranged from 120 to $36,380/m^2$ with a mean of $8,743/m^2$ (Table 8). The lowest value occurred at station 36 in the wood chip deposits while the highest value was recorded at the nearby station 37 which was located in a mussel reef. Density distribution is presented in Fig. 19. Values exceeding $10,000/m^2$ are generally found at the offshore stations and at several stations in the lower Bay.

Three regions of low density stations are noticeable. These are stations 47, 49 and 50 in the main channel into the Bay, stations 18, 19

Table 7. Phylogenetic listing of taxa encountered during benthic sampling of Casco Bay, April 1980.

PHYLUM CNIDARIA

Class Hydrozoa
Campanularia sp.
Sertularia pumila
Hydroid A
Hydrozoa

Class Anthozoa
Anemone A
Anemone B
Cerianthus borealis

PHYLUM PLATYHELMINTHES

Notoplana atomata
Platyhelminthes

PHYLUM RHYNCHOCOELA

Cerebratulus lacteus
Lineus ruber
Nemertea A
Nemertea B
Nemertea C
Nemertea D
Nemertea E
Nemertea F
Nemertea G
Nemertea H
Nemertea I
Nemertea J
Nemertea K

PHYLUM BRYOZOA

Caberea ellisi
Membraniporidae

PHYLUM MOLLUSCA

Class Gastropoda
Alvania arenaria
Alvania carinata
Calliostoma occidentale
Cocculina sp.
Cylichna alba
Cylichna gouldi
Doto coronata
Hydrobia sp.
Lacuna vincta
Littorina littorea
Littorina obtusata
Nassarius trivittatus
Oenopota bicarinata
Philine finmarchia
Skeneopsis planorbis

Class Scaphopoda

Dentalium entale

Class Vivalvia

Anomia aculeata
Arctia islandica
Astarte borealis
Astarte undata
Bivalvia
Cardita borealis
Cerastoderma pinnulatum
Chlamys islandica
Crenella decussata
Gemma gemma
Lyonsia hyalina
Macoma balthica
Modiolus modiolus
Mulinia lateralis
Mya arenaria
Mytilus edulis
Nucula annulata
Nucula delphinodonta
Nucula tenuis
Pandora gouldiana
Periploma leanum
Periploma papyratium
Pitar morrhuana
Solemya borealis
Tellina agilis
Tracia conradi
Thyasira flexuosa
Yoldia limatula

PHYLUM ANNELIDA

Class Polychaeta

Aglaophamus circinata
Aglaophamus neotenus
Ampharete acutifrons
Ampharete arctica
Apistobranchus tullbergi
Aricidea jeffreysii
Aricidea quadrilobata
Aricidea suecica
Archiannelida
Asabellides oculata
Autolytus sp.
Brada granosa
Brada villosa
Capitella capitata
?*Chaetopterus* sp.
Cirratulidae
Clymenella torquata
Diplocirrus hirsutus
Dodecaceria sp.
Eteone flava
Eteone heteropoda

Eteone longa
Eucylymene collaris
Eusyllis blomstrandi
Exogone hebes
Exogone verugera
Gattyana cirrosa
Goniada maculata
Harmothoe extenuata
Harmothoe imbricata
Hartmania moorei
Heteromastus filiformis
Laonice cirrata
Lepidonotus squamatus
Lumbrineris acuta
Lumbrineris brevipes
Lumbrineris fragilis
Lumbrineris tenuis
Maldane sarsi
Maldanopsis elongata
Mediomastus ambiseta
Melinna cristata
Microphthalmus aberrans
Myriochele heeri
Nephtys bucera
Nephtys ciliata
Nephtys incisa
Nephtys sp.
Nereidae
Nereis grayi
Nereis pelagica
Nereis sp.
Nereis virens
Nereis zonata
Ninoe nigripes
Notomastus latericus
Ophelina acuminata
Ophioglycera gigantea
Owenia fusiformis
Oweniidae
Paraonis gracilis
Paraonis lyra
Parapionosyllis longocirrata
Petaloproctus tenuis
Pherusa affinis
Pholoe minuta
Phyllodoce groenlandica
Phyllodoce maculata
Phyllodoce mucosa
Phyllodocidae
Polychaete B
Polycirrus eximus
Polycirrus medusa
Polycirrus phosphoreus
Polydora ligni
Polydora quadrilobata
Polydora socialis
Polydora sp.

Potamilla neglecta
Praxillella gracilis
Praxillella praetermissa
Praxillella sp.
Prionospio steenstrupi
Pygospio elegans
Rhodine loveni
Sabella penicillus
Scalibregma inflatum
Scoloplos robustus
Scoloplos sp.
Sphaerodoropsis minuta
Sphaerosyllis erinaceus
Spio filicornis
Spio setosa
Spiophanes bombyx
Spirorbis borealis
Spirorbis sp.
Stauronereis caecus
Stauronereis rudolphi
Sternaspis scutata
Streblospio benedicti
Syllidae
Syllis cornuta
Syllis gracilis
Terebellid A
Terebillid B
Terebellidae
Terebellides stroemi
Tharyx sp.
Trichobranchus glacialis
Trochochaeta multisetoca

Class Oligochaeta
Oligochaeta

PHYLUM SIPUNCULA

Golfingia verrillii
Phascolion strombi
Phascolopsis gouldii

PHYLUM ECHIURIDA

Echiurus echiurus

PHYLUM ARTHROPODA

Subclass Cirripedia
Balanus balanoides

Subclass Malacostraca
Order Cumacea
Campylaspis rubicunda
Diastylis abbreviata
Diastylis cornuifer
Diastylis polita

Diastylis quadrispinosa
Diastylis sculpta
Eudorella hispida
Eudorella truncatula
Leptostylis longimana
Oxyurostylis smithi
Petalosarsia declivis

Order Isopoda
Cassidinidea lunifrons
Chirodotea coeca
Edotea triloba
Jaera sp.
Limnoria lignorum
Munna fabricii
Ptilanthura tenuis

Order Mysidacea
Erythrops erythrophthalma
Meterythrops robustus
Mysis stenolepis
Neomysis americana

Order Amphipoda
Aeginina longicornis
Ampelisca abdita
Ampelisca agassizi
Ampelisca macrocephala
Ampelisca vadorum
Anonyx liljeborgi
Argissa hamatipes
Bathymedon sp.
Byblis gaimardi
Caprella unica
Casco bigelowi
Corophium crassicorne
Corophium insidiosum
Corophium tuberculatum
Corophium volutator
Dexamine thea
Dulichia monacantha
Erichthonius rubricornis
Gammarus oceanicus
Gitanopsis sp.
Halimedon sp.
Haploops tubicola
Harpinia propinqua
Hippomedon serratus
Leptocheirus pinguis
Mayerella limicola
Melita n. sp.
Metopella angusta
Monoculodes n. sp.
Monoculodes tesselatus
Orchomenella pinguis
Paracaprella tenuis
Photis macrocoxa
Phoxocephalus holbolli
Pleustes panoplus
Pleusymtes glaber

Pontogeneia inermis
Protomedeia fasciata
Psammonyx nobilis
Stenopleustes gracilis
Stenopleustes inermis
Unicola irrorata

Order Decapoda
Cancer borealis
Cancer irroratus
Pagurus arcuatus
Pagurus longicarpus
Pagurus pubescens

PHYLUM ECHINODERMATA

Class Holothuroidea
Chirodota laevis
Molpadia oolictica

Class Echinoidea
Echinarachnius parma
Strongylocentrotus droebachiensis

Class Stelleroidea
Amphipholis squamata
Asterias sp.
Ophiopholis aculeata
Ophiura sarsi

PHYLUM HEMICHORDATA

Saccoglossus kowalevskii
Stereobalanus canadensis

PHYLUM A

PHYLUM B

Table 8. Species per station, density/m^2, biomass (g/m^2 wet weight) diversity (H^1), evenness (J^1) and species richness at each of the 56 Casco Bay Stations sampled.

EX 8001 April 1980

Station Number	Number of Species	Diversity	Evenness	Richness	Density[1]	Biomass[2]
02	59	1.9304	0.3282	7.3643	26330	1309
03	86	4.1760	0.6498	11.7428	13920	1910
04	72	2.6690	0.4326	8.8945	29290	1308
05	75	3.1303	0.5025	9.3895	26470	1213
06	56	3.1812	0.5478	8.4796	6560	438
07	24	1.8956	0.4134	3.4871	7320	278
08	41	1.8979	0.3542	5.5763	13040	509
09	30	2.7714	0.5648	3.9337	15910	314
10	62	4.3474	0.7301	9.0952	8180	502
11	51	2.9477	0.5197	7.3361	9120	511
12	50	3.1251	0.5537	7.5945	6340	251
13	40	2.8565	0.5367	6.0841	6080	312
15	27	3.1872	0.6703	4.1918	4940	204
16	24	3.0717	0.6700	4.0565	2900	65
17	7	0.8195	0.2919	1.0357	3280	193
18	27	3.5031	0.7453	4.6469	2170 +	1307
19	32	3.7421	0.7484	5.5749	2600	491
20	27	3.1345	0.6592	4.5637	2980	225
21	41	3.0870	0.5762	5.4651	15090	612
22	63	4.1177	0.6943	8.7590	9440 +	726
23	42	2.8865	0.5353	5.6421	14320	813

[1] individuals/m^2 [2] grams wet weight/m^2

EX 8001 April 1980

Station Number	Number of Species	Diversity	Evenness	Richness	Density[1]	Biomass[2]
24	27	2.9194	0.6140	3.8394	8730	942
25	20	2.5123	0.5813	3.1382	4260	277
26	18	2.1486	0.5153	3.3928	1500	183
27	26	3.0147	0.6414	4.6083	2270	203
28	45	2.4389	0.4441	5.9120	17070	692
29	25	2.7384	0.5897	4.0813	3580	294
30	14	2.6916	0.7069	2.7765	1080	89
31	14	3.0748	0.8076	3.2016	580	109
32	5	0.4153	0.1789	0.8577	1060	53
33	32	2.9144	0.5829	4.5389	9250	674
34	15	1.5613	0.3996	2.5703	2320	104
35	9	0.8433	0.2660	1.2448	6180	215
36	8	2.7925	0.9308	2.8170	120	18
37	23	2.5812	0.5706	2.6832	36380	732
38	12	1.0136	0.2827	2.2635	1290	54
39	13	2.4780	0.6696	2.3502	1650	95
40	15	2.9628	0.7584	3.2426	750	30
41	29	2.1876	0.4550	4.0331	8080 +	686
42	19	1.0994	0.2588	3.2110	2720	314
43	7	1.7990	0.6408	1.5855	440	83
44	42	3.4091	0.6363	5.2151	21430 +	839
45	21	1.9882	0.4526	3.0700	6750	909
46	36	2.8139	0.5531	4.6842	11470	783

[1] individuals/m^2 [2] grams wet weight/m^2

EX 8001 April 1980

Station Number	Number of Species	Diversity	Evenness	Richness	Density[1]	Biomass[2]
47	23	3.6386	0.8284	4.5641	800 +	257
48	46	3.6013	0.6520	6.2413	13530	707
49	33	3.9507	0.7974	5.9333	1570 +	157
50	32	4.2826	0.8728	6.0062	1250 +	158
51	37	3.5376	0.6791	5.7425	5280	629
52	29	2.3345	0.4856	4.0696	7610 +	156
53	49	3.2982	0.6006	6.5357	8390 +	261
54	65	2.1533	0.3576	8.4262	19890	963
55	53	1.6535	0.2901	6.3071	32490 +	1727
56	27	2.9585	0.6222	4.8845	2050	265
57	25	2.7581	0.5939	4.3925	2360	328
58	24	3.0389	0.6628	3.7460	4640	354

[1] individuals/m^2 [2] grams wet weight/m^2

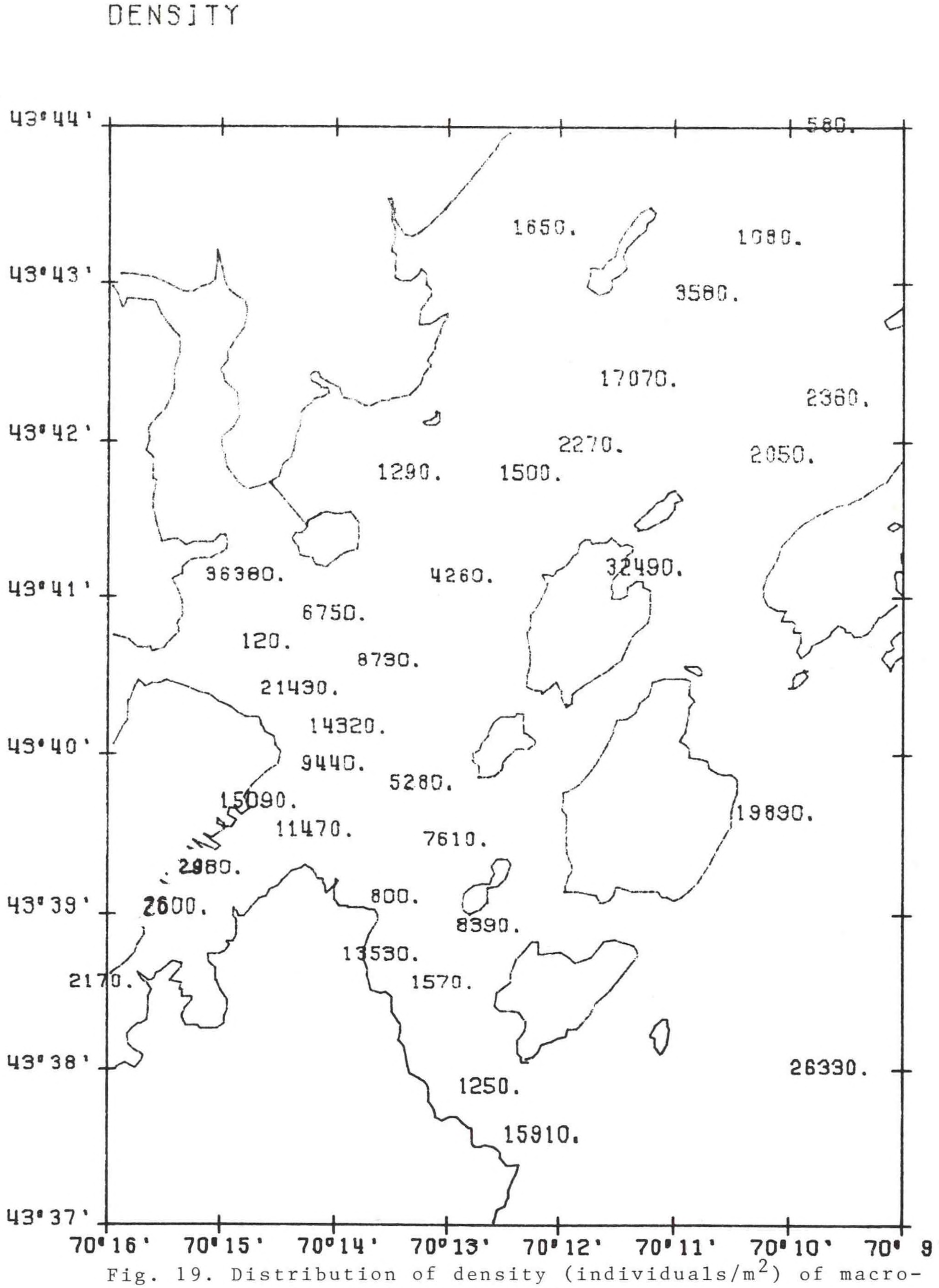
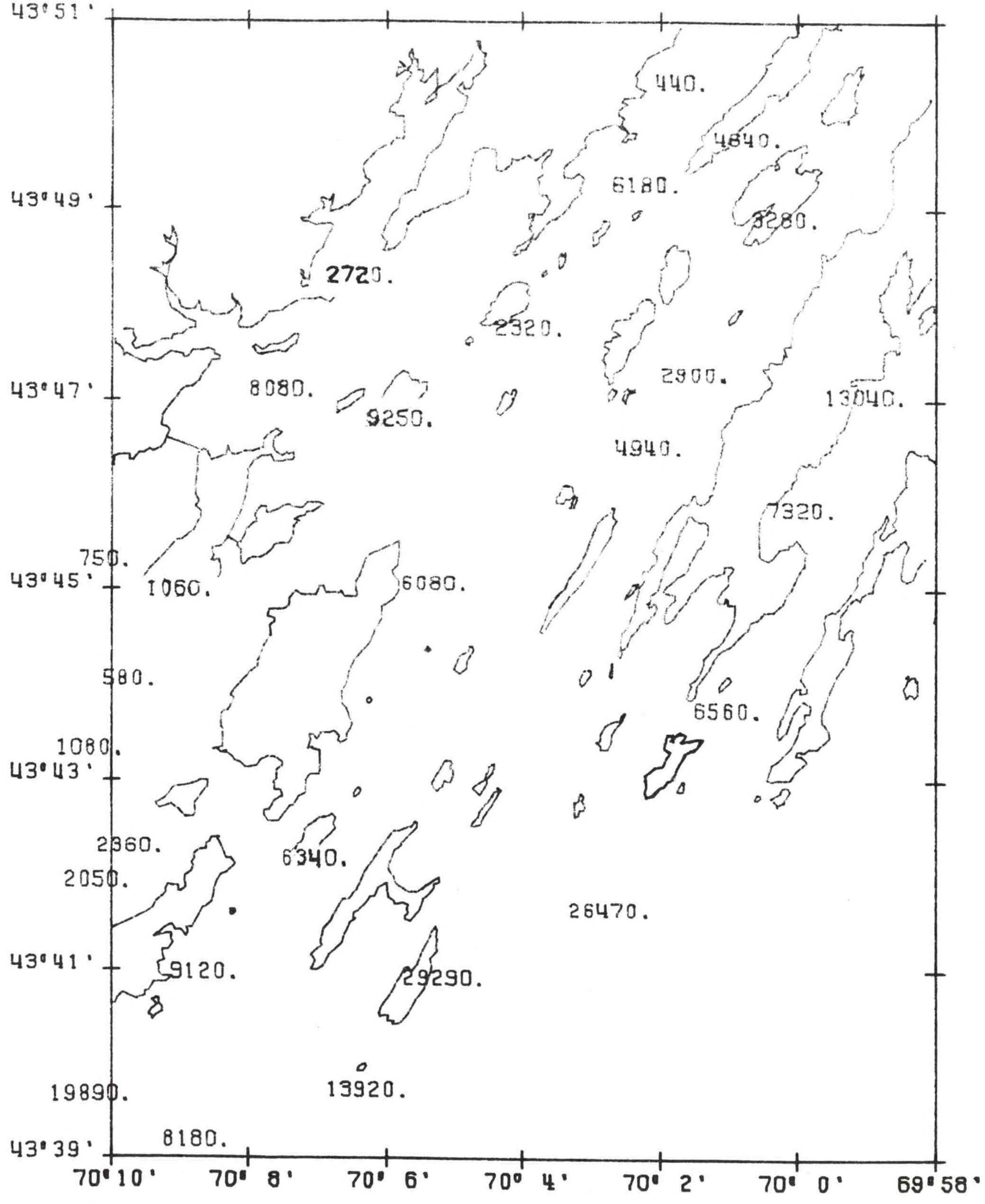


Fig. 19. Distribution of density (individuals/m^2) of macrobenthos in Casco Bay, Maine.

DENSITY



43°51'
43°49'
43°47'
43°45'
43°43'
43°41'
43°39'
70°10'
70° 8'
70° 6'
70° 4'
70° 2'
70° 0'
69°58'
440.
4840.
6180.
3280.
2720.
2320.
2900.
13040.
8080.
9250.
4940.
7320.
750.
1060.
6080.
580.
6560.
1080.
2360.
6340.
2050.
26470.
9120.
29290.
19890.
13920.
8180.

and 20 in Portland Harbor and several stations in the middle and upper Bay. Reasons for these low densities are not completely obvious. Stations with similar sediments located around stations 47, 49 and 50 have much higher densities. Further data are needed before we can speculate on whether this is a natural or pollution-induced phenomenon. Stations 18, 19 and 20 exhibited the highest levels of trace metals, so perhaps the reduced densities there are impact related. The middle and upper Bay stations with low animal densities are those where extremely soft sediments were encountered. We believe that these sediments offer so little bearing strength that only a depauperate community can develop.

Correlation analysis was used to add insight into factors that might be influencing density levels. Density is correlated with both depth and mean grain size (Fig. 20 and 21). These relationships, both of which are significant at the 99%, level indicate that density increases with increasing depth and decreases with decreasing mean grain size. The latter relationship adds support to the hypothesis that physical properties at some fine-grained stations prevent the development of a normal community. Density is not significantly correlated with temperature, salinity or organic carbon content.

Correlation analyses were also run between density and the six trace metals. Two of the metals, chromium and nickel, were negatively correlated to density at over the 95% level. While not attaining the conventionally accepted 95% level of significance, it is interesting to note that cadmium, zinc, copper and lead are all negatively correlated with density. The significance levels are 94, 93, 88 and 76%, respectively.

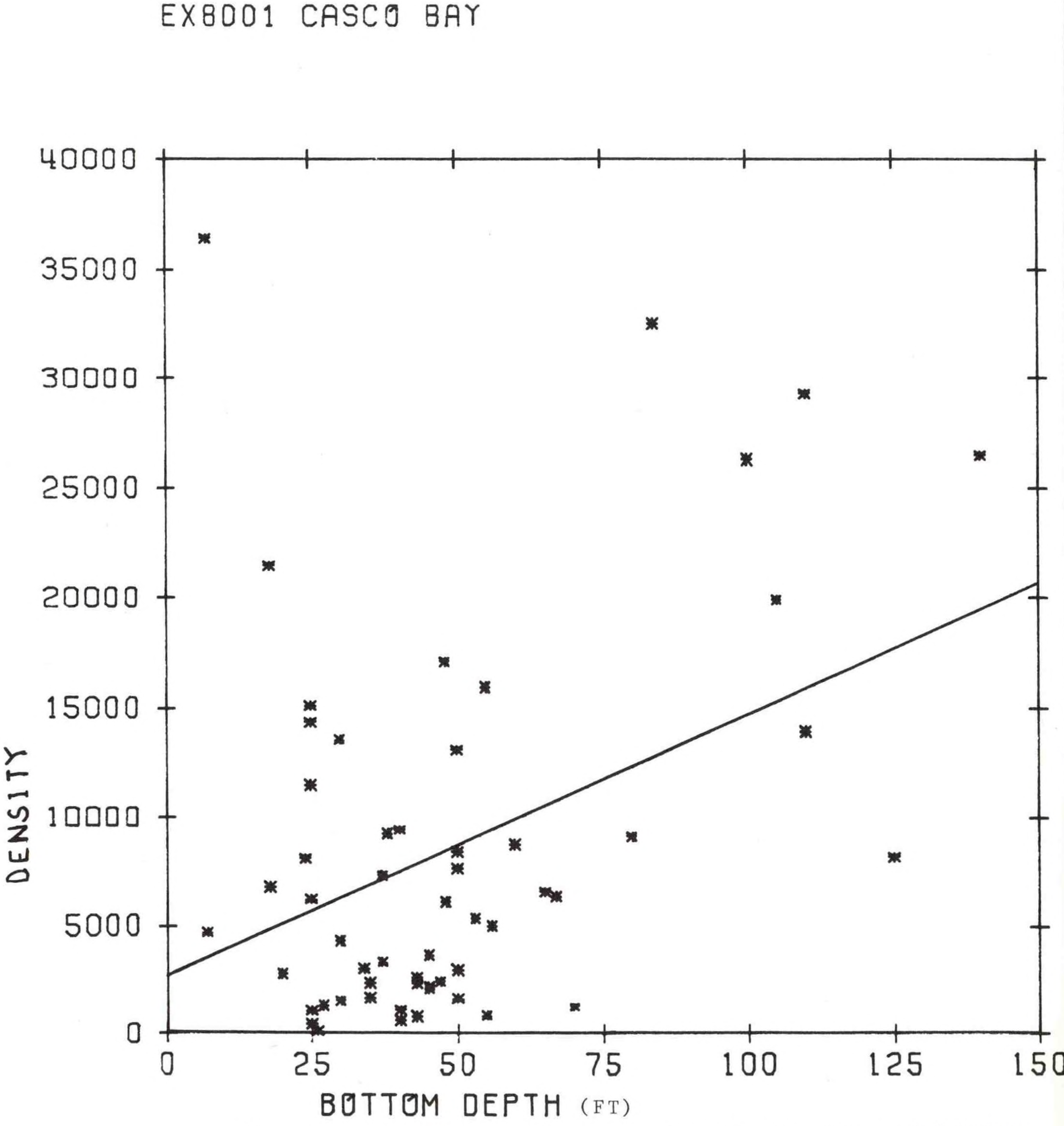


Fig. 20. The relationship between faunal density and bottom depth.

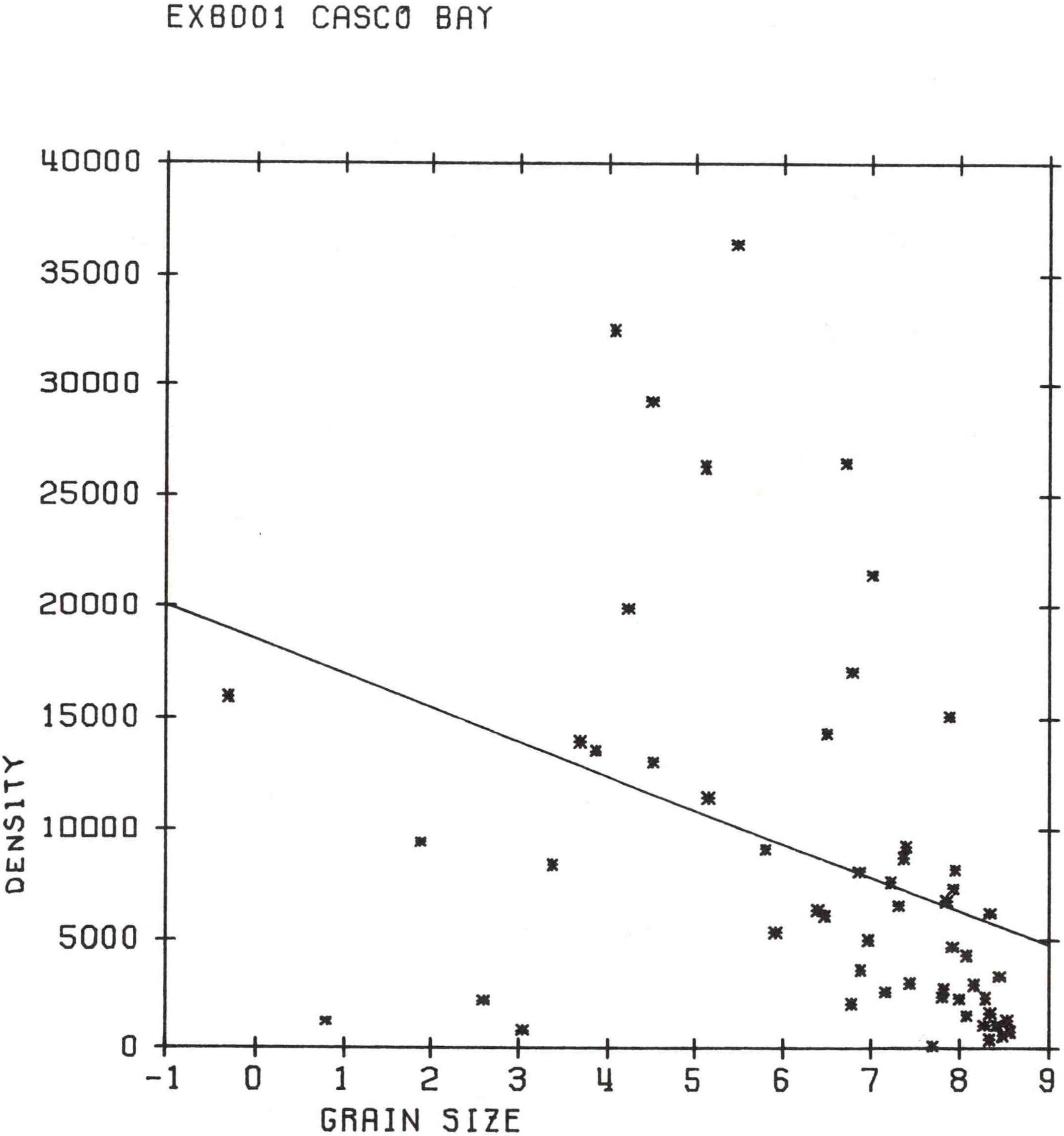


Fig. 21. The relationship between faunal density and mean grain size.

Comparing Casco Bay faunal densities with those from other temperate and boreal areas demonstrates the comparative richness of the region (Table 9). Such high density and biomass (see below) indicates a high or extended period of productivity. Data on primary productivity

Table 9. Mean density of invertebrates in unconsolidated sediments of temperate and boreal inshore waters (modified from Maurer *et al.* 1978)

Location	Mean Density/m^2	Source
Casco Bay, Maine	8,743	this study
Sheepscot Estuary, Maine		
Gradient Study	4,928	Larsen & Doggett (1978)
Shallow Water Study	771	Larsen (1979)
Mystic River, Massachusetts	3,000	Rowe *et al.* (1972)
Moriches Bay, New York	1,300	O'Connor (1972)
Delaware Bay	722	Maurer *et al.* (1978)
False Bay, South Africa	2,200	Field, (1971)
Gullmars Fjord, Sweden	4,198	Rosenberg (1973)
Lambert Bay, South Africa	1,153	Christie (1976)

of Casco Bay are presently being generated by other researchers at the Bigelow Laboratory. These data may provide an explanation for the observed faunal densities.

Biomass

Biomass of the 1.0 mm sieve fraction averaged 49.6 g/m^2 on a wet weight basis. The range at individual stations was 1.8 to 191.0 g/m^2 (Table 8). In all cases animals weighing over one gram were excluded from the analysis. Annelids constituted 49.6% of the fauna in terms of wet weight. Arthropods, molluscs, echinoderms and miscellaneous phyla accounted for 19.3, 11.6, 1.9 and 17.6% of the biomass, respectively.

There was considerable variation in total biomass between stations but relative dominance of higher taxa was fairly consistent (Fig. 22 and 23). Annelids were biomass dominants at 43 of the 56 stations. Arthropods were dominant at stations 2, 4 and 5 due to the abundance of *Ampelisca agassizi* and *Haploops tubicola* and at stations 24 and 25 due to *Casco bigelowi*. Molluscs were also biomass dominants at only five stations. These were stations 47 - 50 because of the presence of *Nucula delphinodonta* and *Nassarius trivittatus* and at the sparsely populated station 43. Stations 18 - 20 in Portland Harbor were dominated in terms of biomass by various miscellaneous taxa.

Like density, biomass exhibits a strong positive correlation (99.9%) with depth and a strong negative correlation (99.0%) with mean grain size (Figs. 24 and 25). Furthermore, it is negatively correlated with organic carbon (99.9%) (Fig. 26). In addition, biomass is also positively correlated at the 99.9% level with density and number of species per station. It is negatively correlated with all of the trace metals. Three of these relationships, cadmium, chromium and zinc are significant at the 95% level. Levels of significance for copper, nickel and lead are 83, 89 and 79%, respectively.

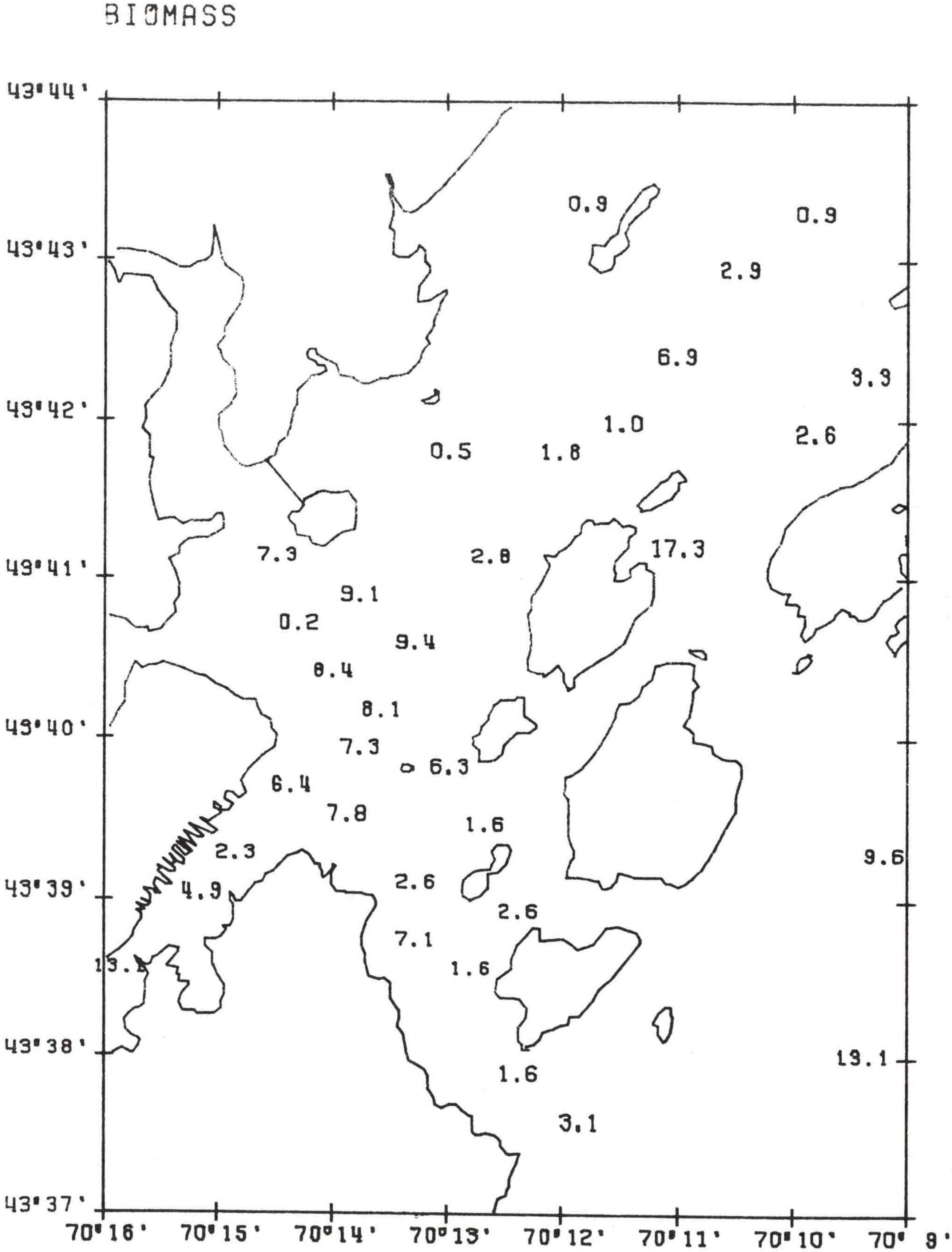
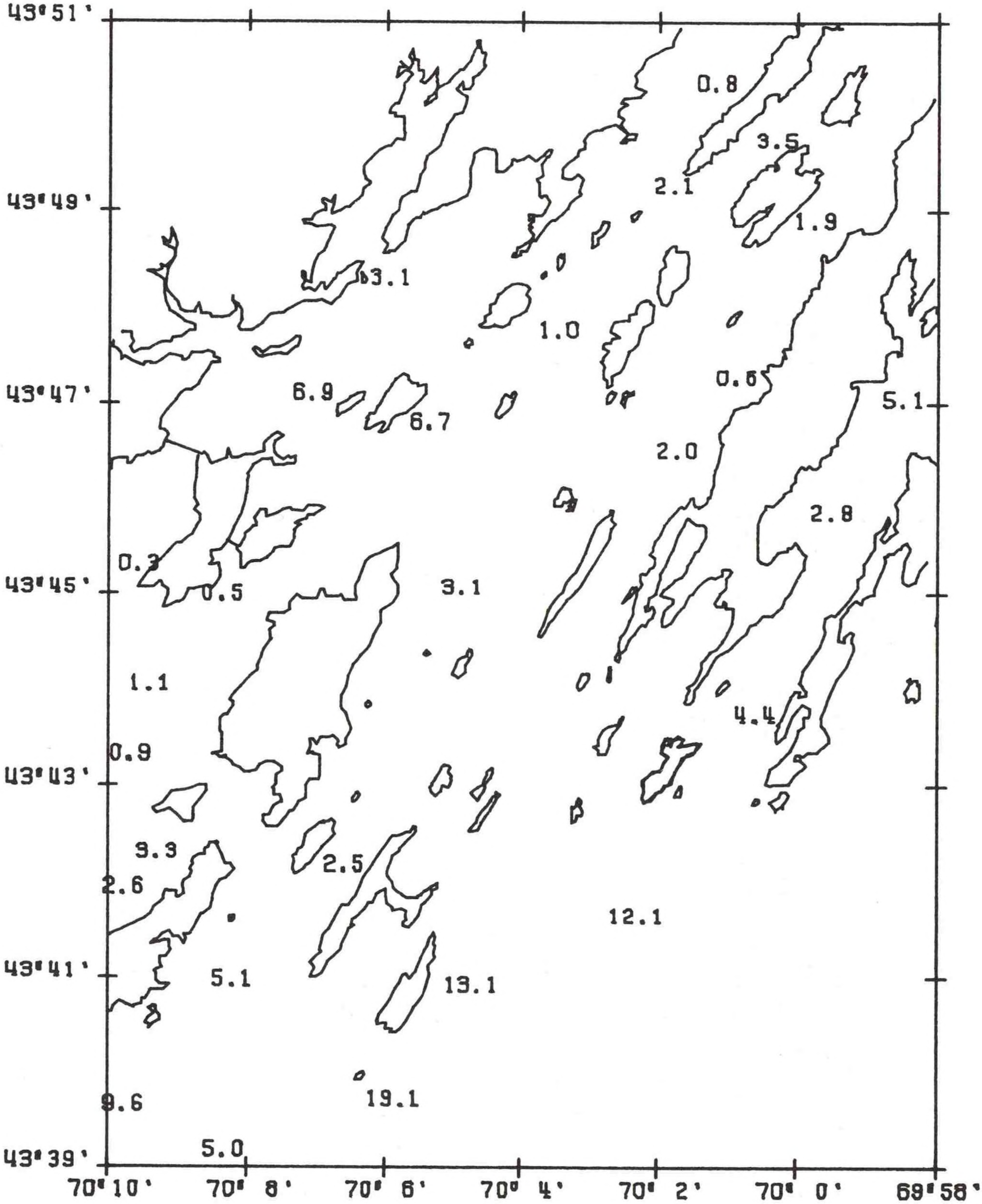


Fig. 22. Distribution of biomass (grams wet weight per 0.1 m^2) of macrobenthos in Casco Bay, Maine.

BIOMASS


43°51'
43°49'
43°47'
43°45'
43°43'
43°41'
43°39'
70°10'
70° 8'
70° 6'
70° 4'
70° 2'
70° 0'
69°58'
0.8
3.5
2.1
1.9
13.1
1.0
0.6
6.9
6.7
5.1
2.0
2.8
0.3
0.5
3.1
1.1
4.4
0.9
9.3
2.5
2.6
12.1
5.1
13.1
9.6
19.1
5.0

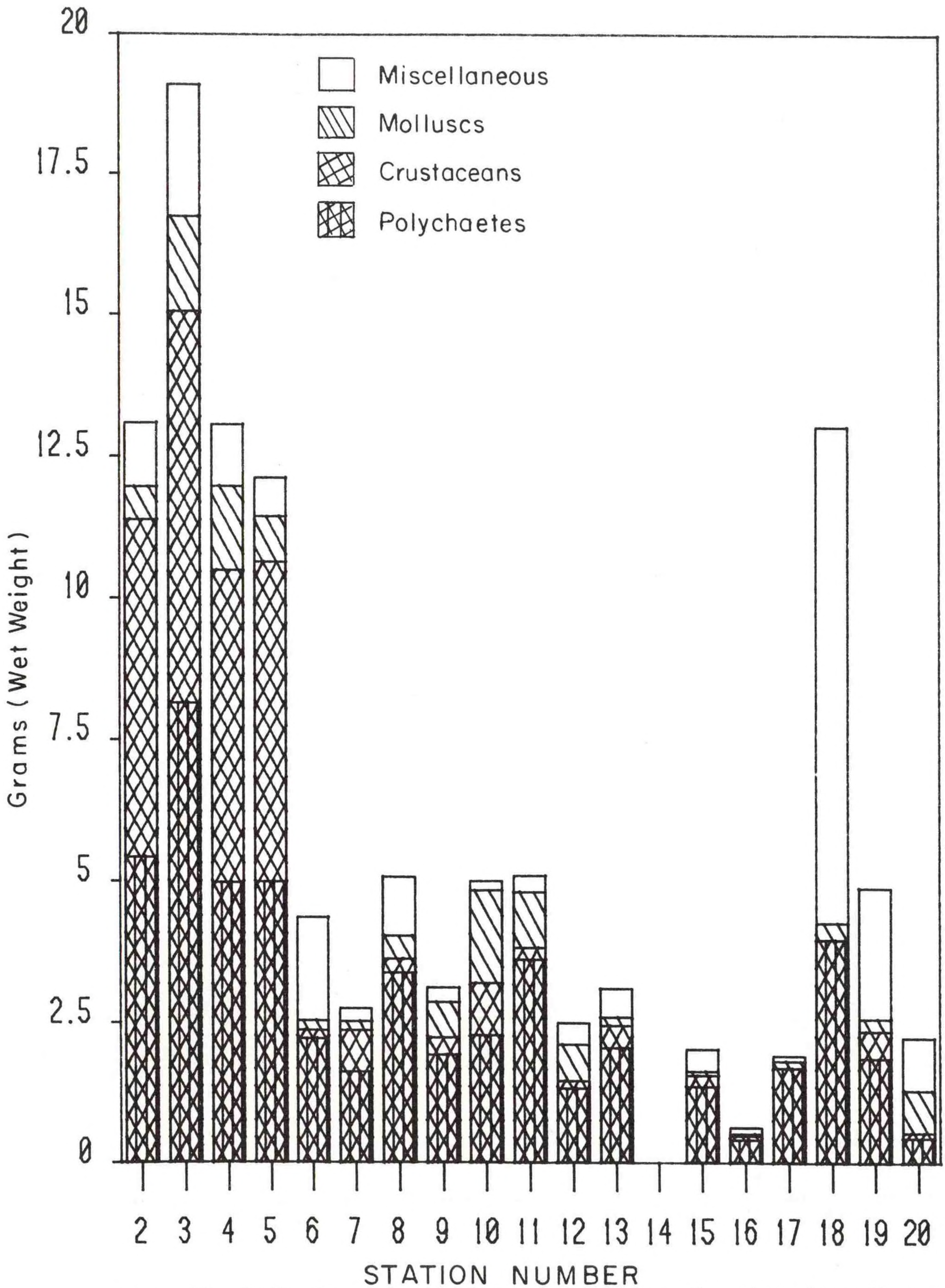
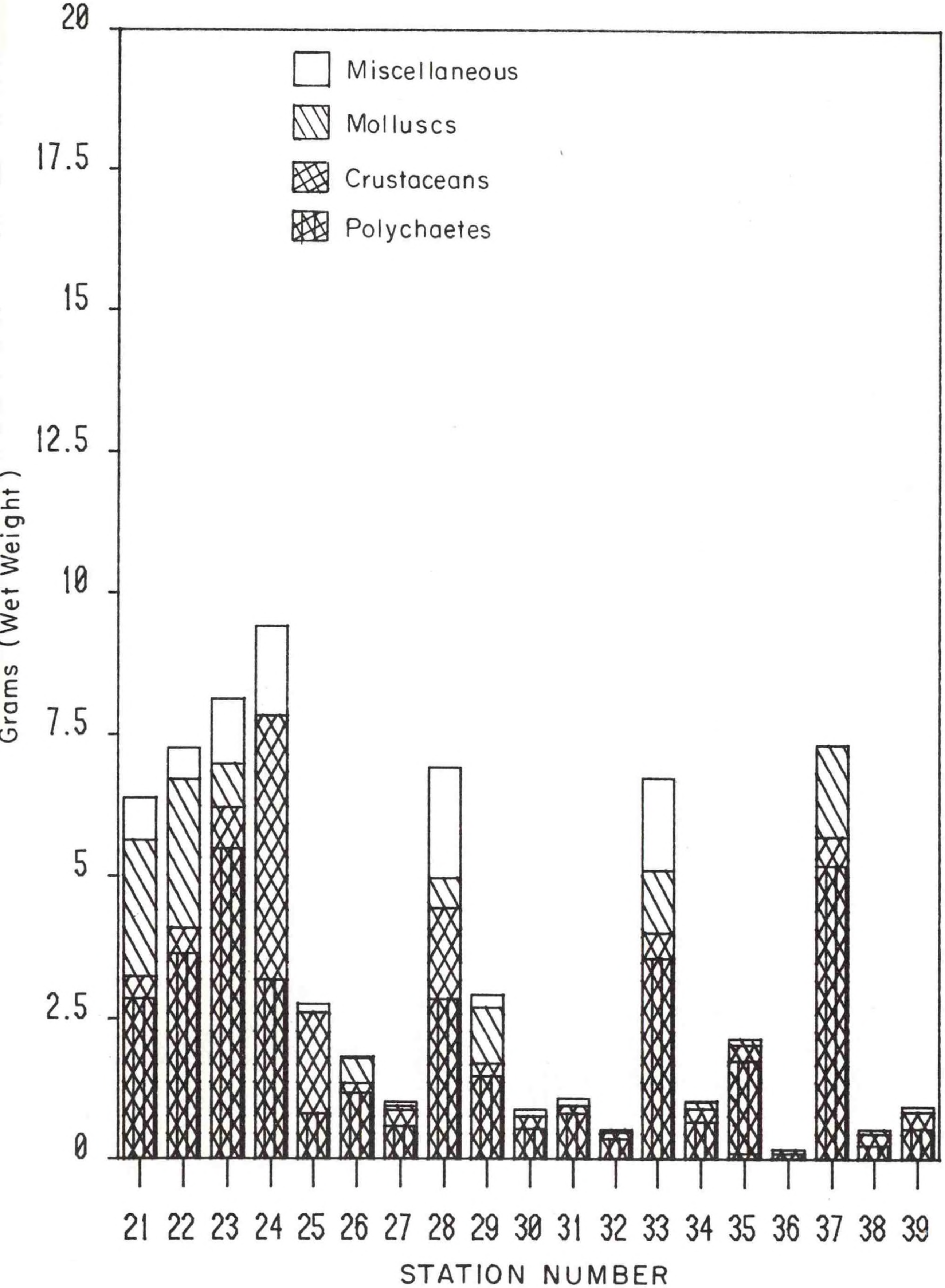
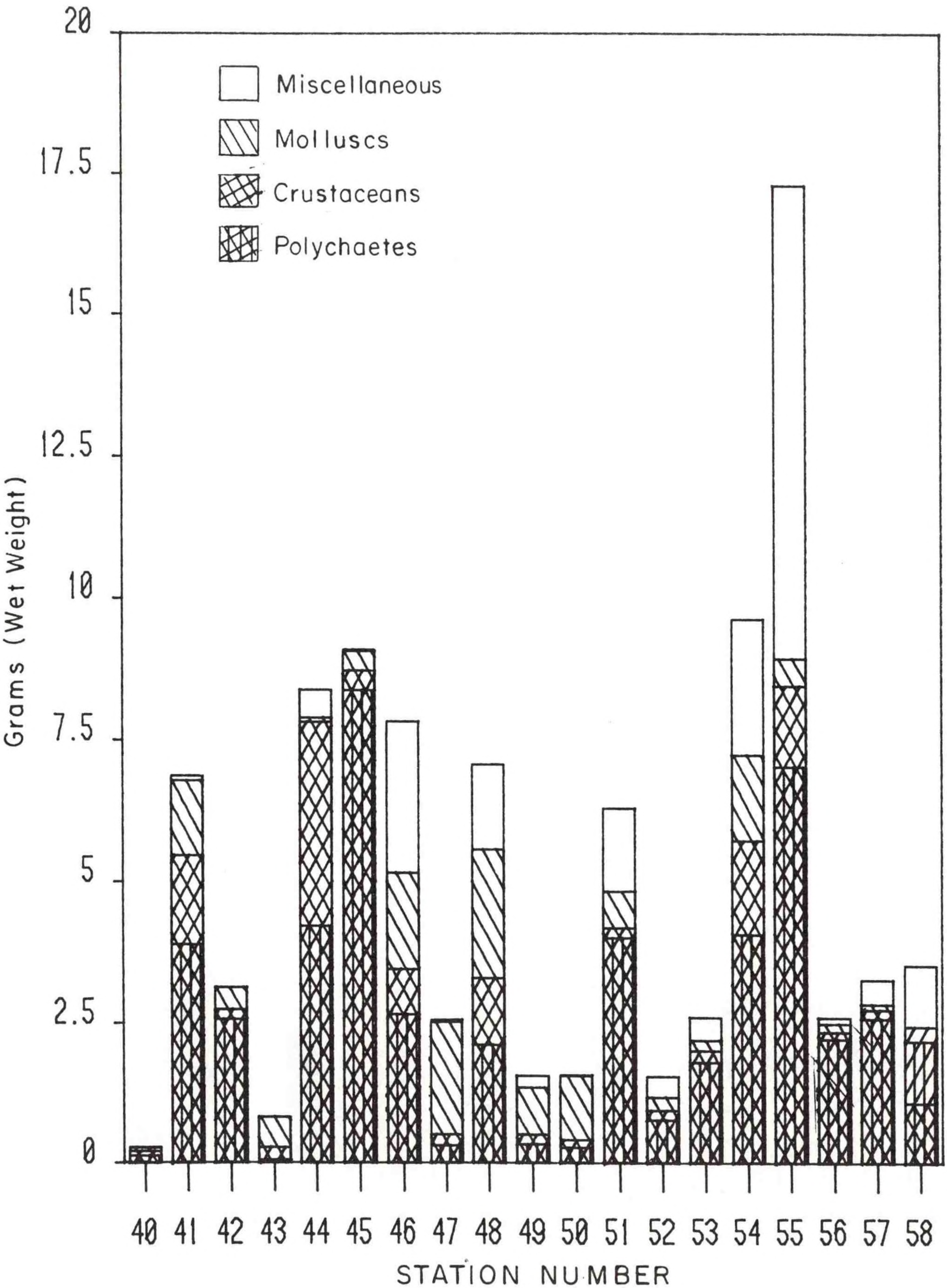


Fig. 23. Relative proportion of biomass of major faunal components in Casco Bay.



20
17.5
15
12.5
10
7.5
5
2.5
0
Grams (Wet Weight)
Miscellaneous
Molluscs
Crustaceans
Polychaetes
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
STATION NUMBER


20
17.5
15
12.5
10
7.5
5
2.5
0
Grams (Wet Weight)
Miscellaneous
Molluscs
Crustaceans
Polychaetes
40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58
STATION NUMBER

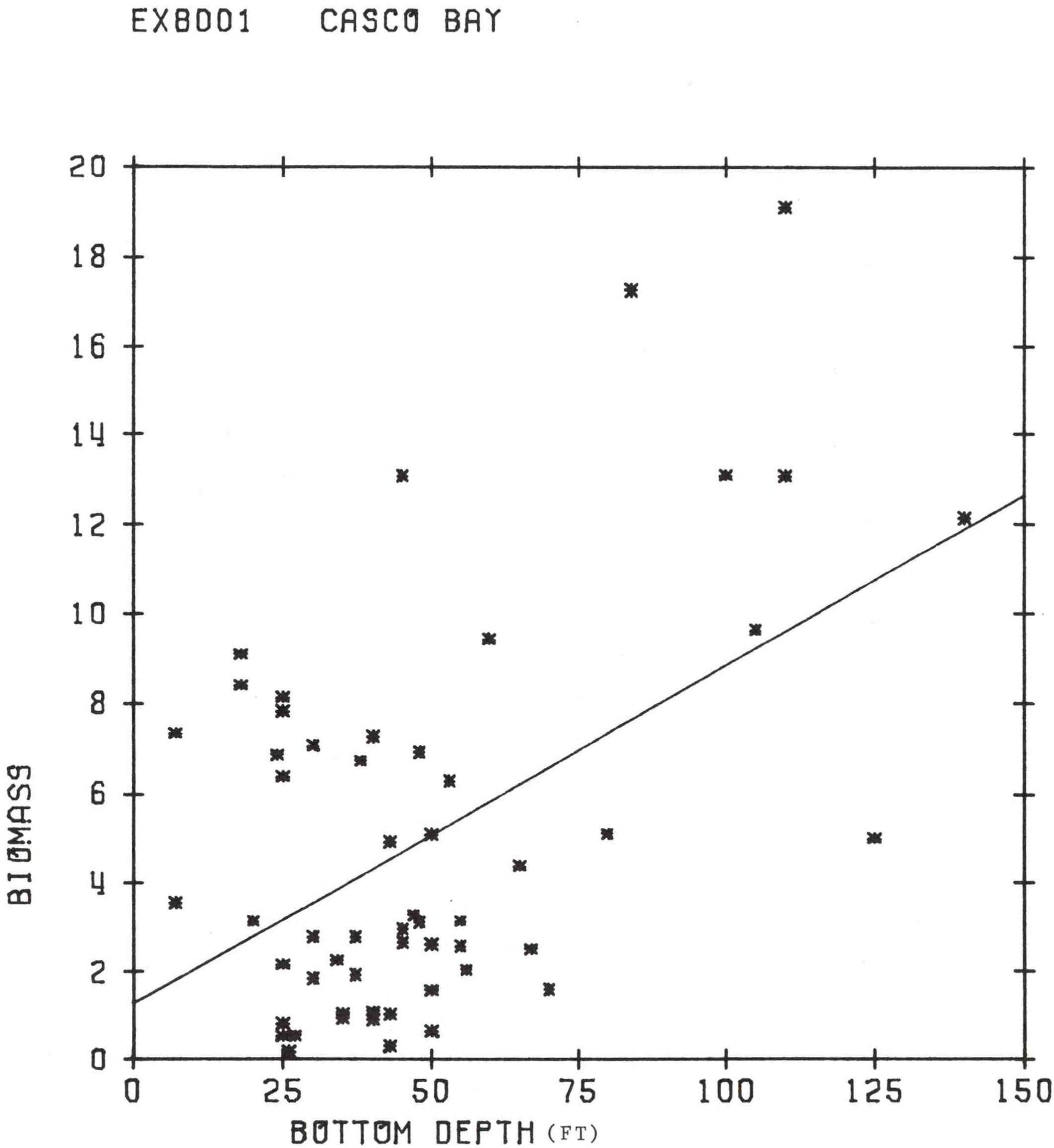


Fig. 24. The relationship between biomass and bottom depth.

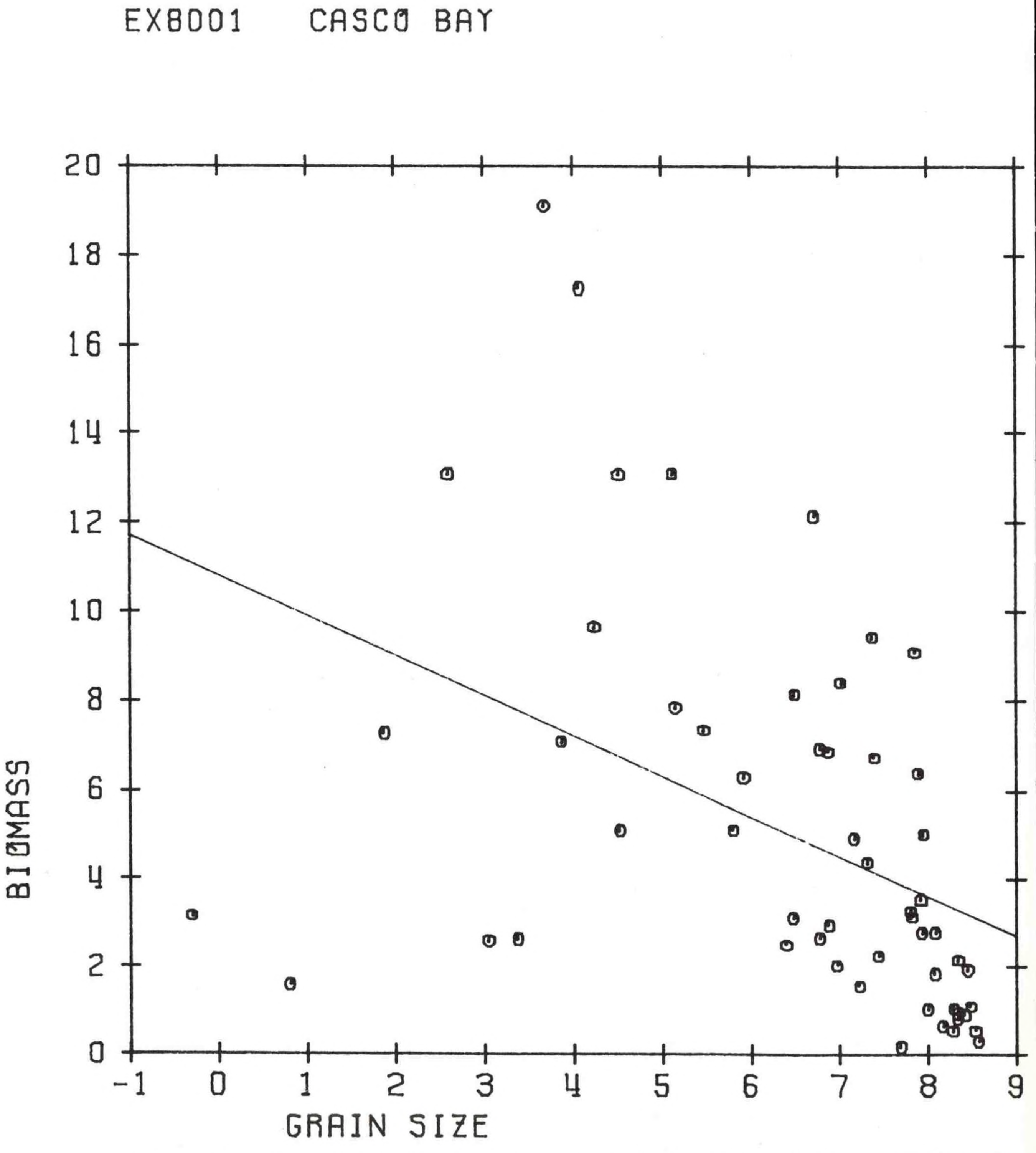


Fig. 25. The relationship between biomass and mean grain size

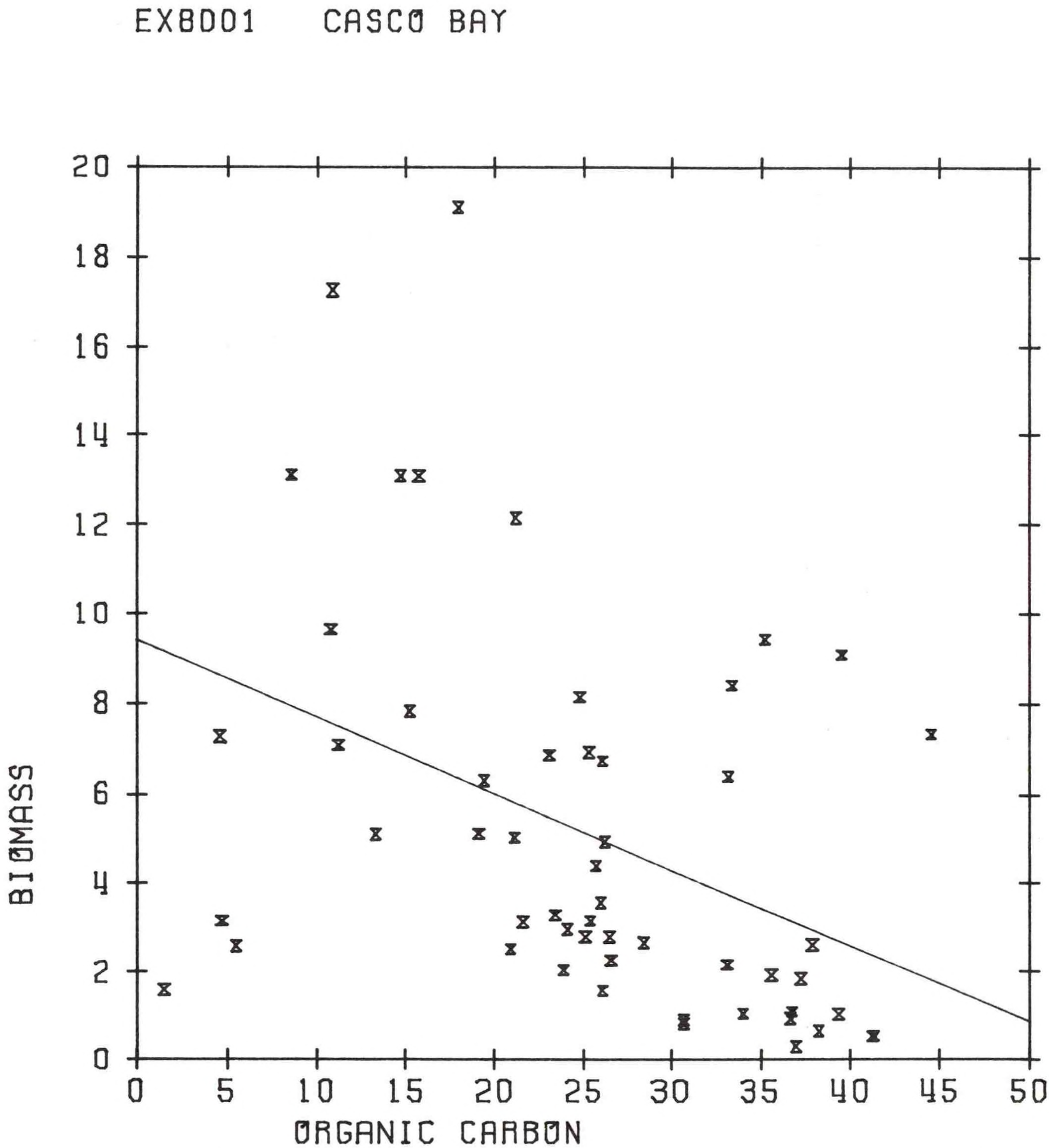


Fig. 26. The relationship between biomass and organic carbon content of the sediments.

Species Per Station

The number of species per station ($0.1m^2$) ranged from 5 to 86 with a mean of 33.1 (Table 8). The offshore stations consistently had the highest numbers of species and moderate numbers are characteristic of lower Casco Bay. Less than 20 species were found at many of the finer-grained stations and in the wood chips of station 36. Indeed, stations 17, 32, 35, 36 and 43 were occupied by less than 10 species (Fig. 27).

The number of species per station is very strongly correlated (99.9% level) with increasing depth (Fig. 28). It is also negatively correlated at the 99.9% level with mean grain size and organic carbon (Figs. 29 and 30). Number of species is the only biological parameter to be significantly correlated with salinity (98% level).

As with density and biomass, species per station is negatively correlated with each of the metals. Two of these relationships, cadmium and zinc, are significant at the 99% and 95% levels, respectively. Other non-significant correlations and their significance levels are: chromium 94%; nickel 93%; copper 82% and lead 75%.

Diversity

Informational diversity, as measured by the Shannon index, ranged from 0.415 at station 32 to 4.347 at station 10 (Table 8). The overall mean was 2.72. High values of H' diversity are found at some offshore stations and generally throughout the Portland region including the trace metal impacted, low density stations 18-20 (Fig. 31). An explanation for this unusual result can be found in an examination of evenness and species richness levels (Table 8). In general, the high

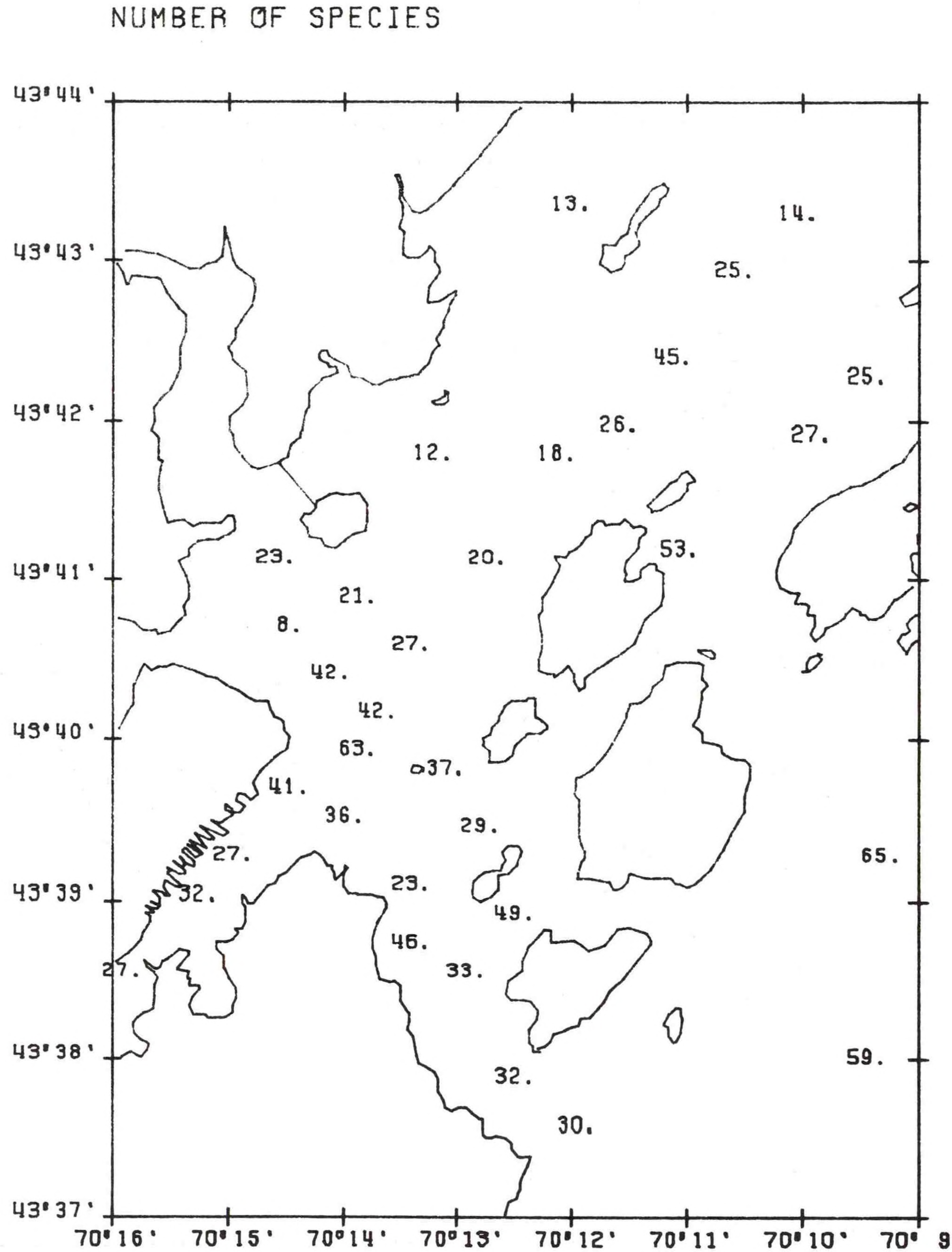
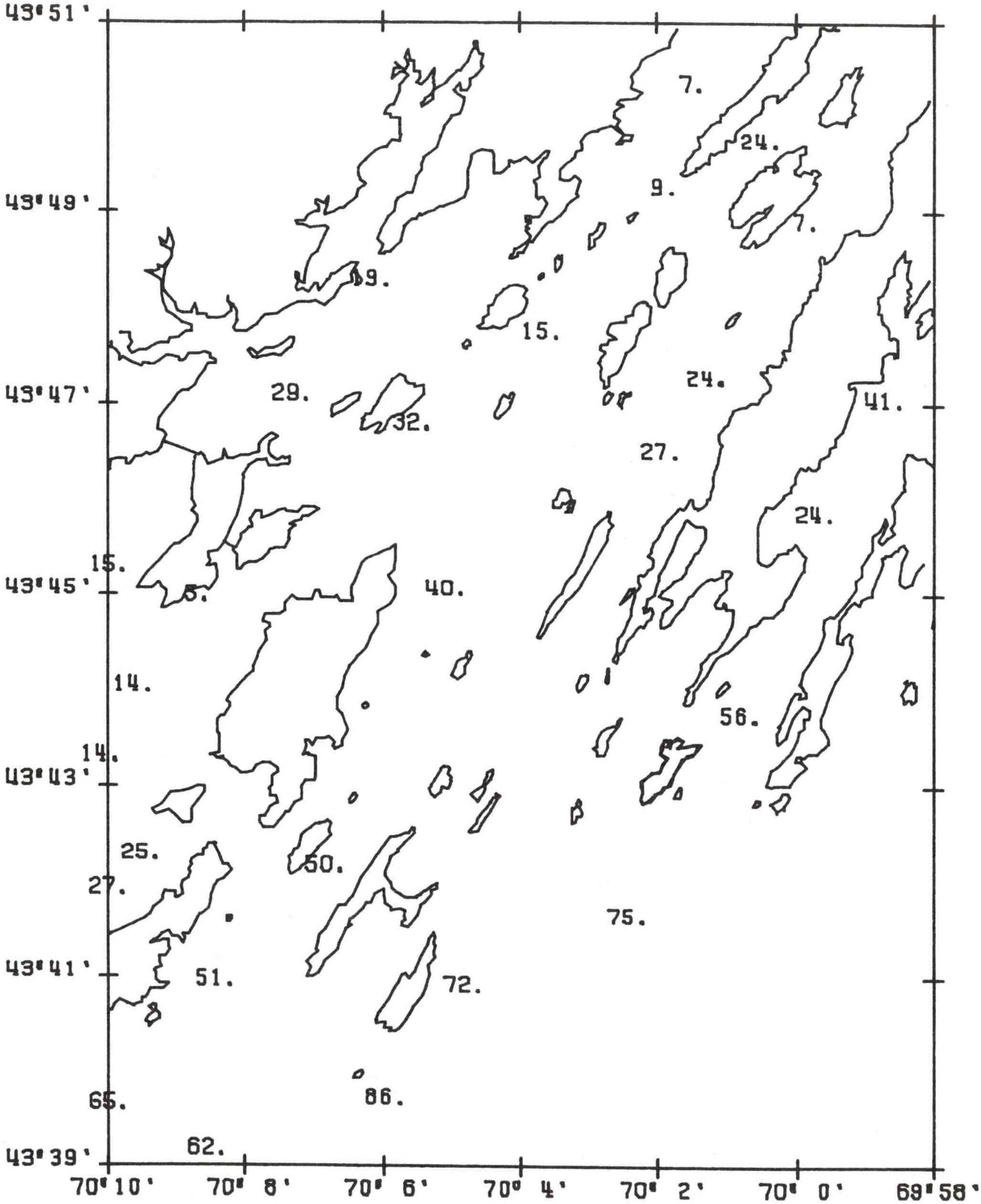


Fig. 27. The distribution of number of species per station throughout Casco Bay.

NUMBER OF SPECIES



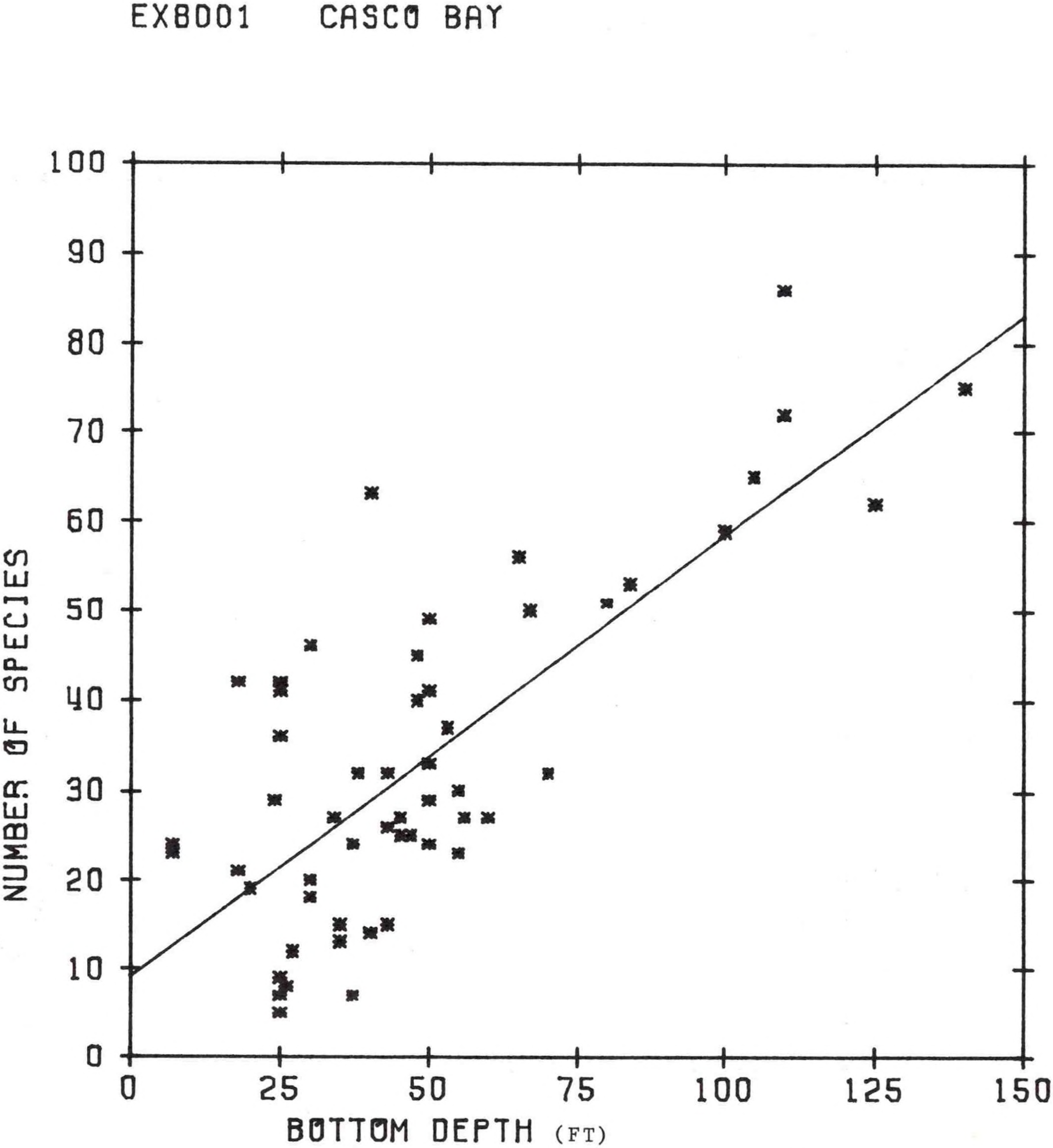


Fig. 28. The relationship between species per station and bottom depth.

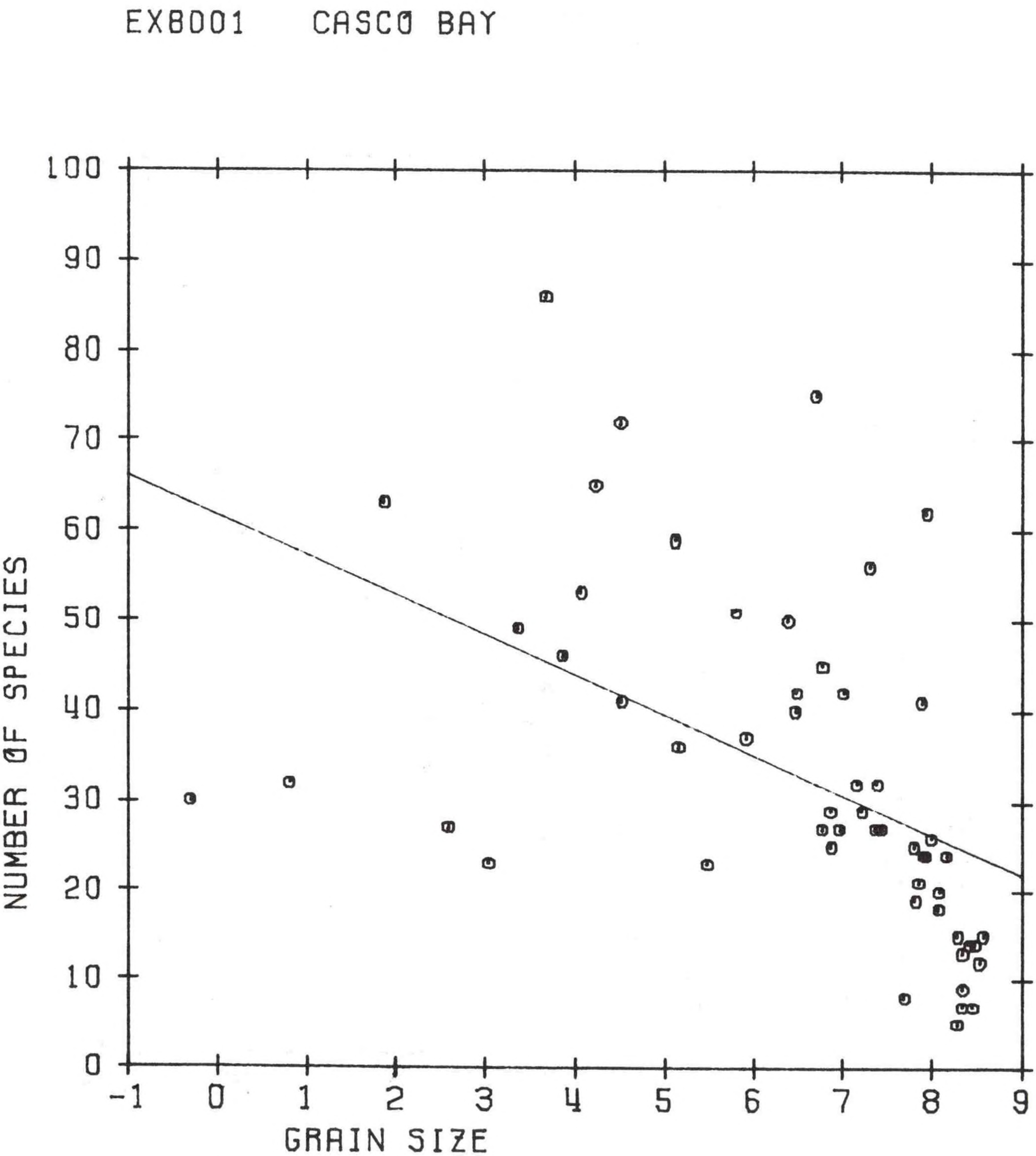


Fig. 29. the relationship between species per station and mean grain size.

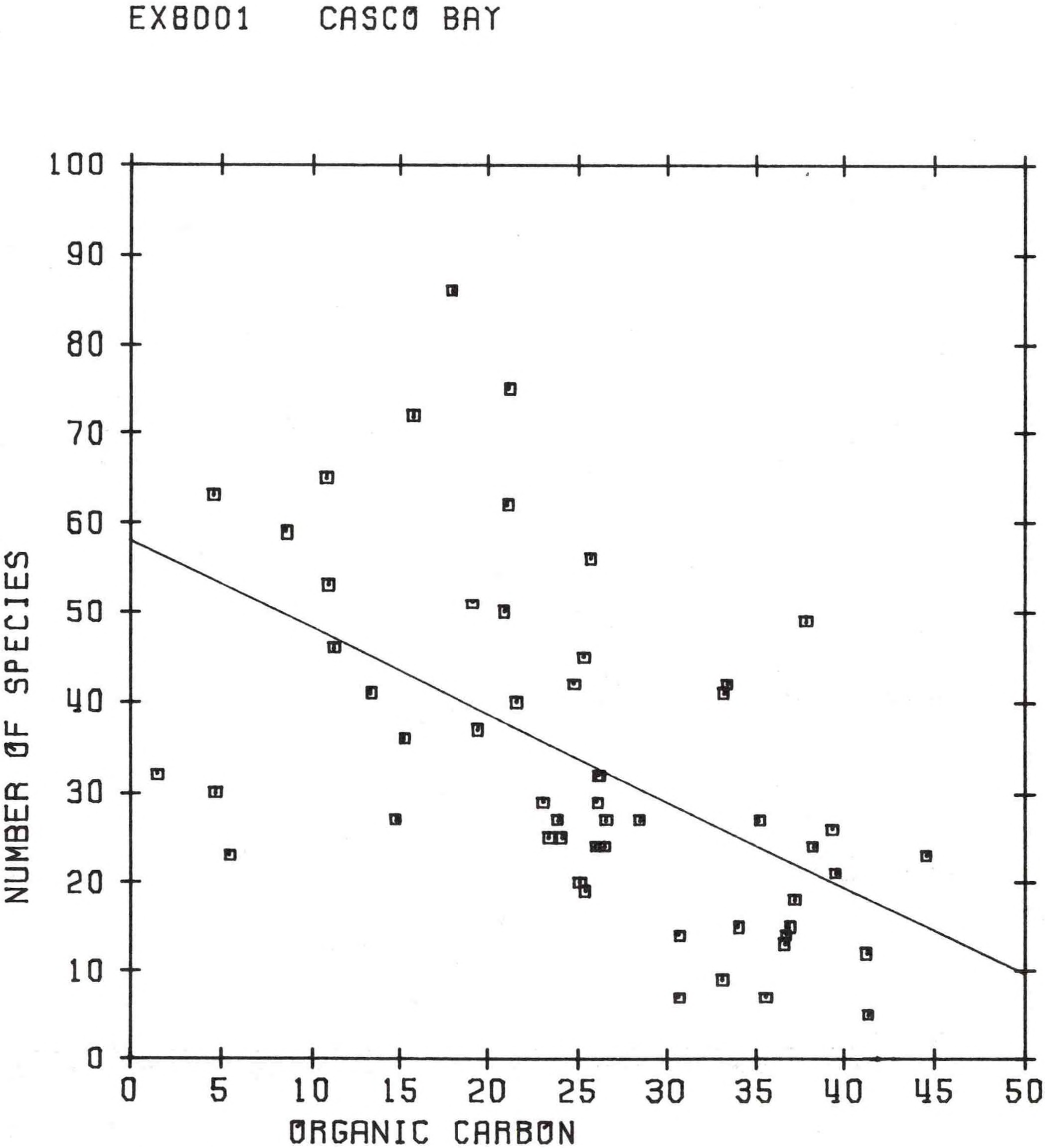


Fig. 30. The relationship between species per station and sediment organic carbon.

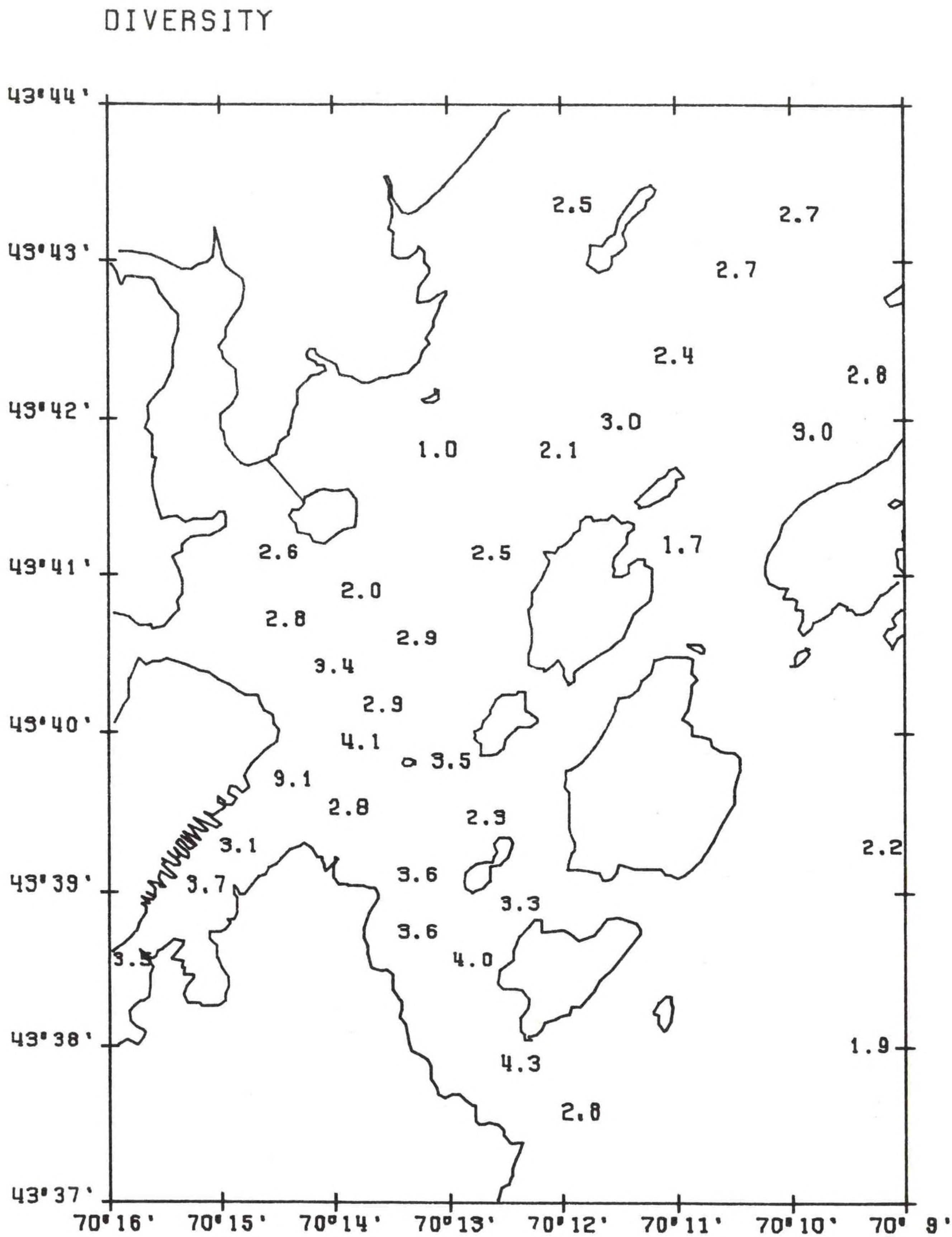
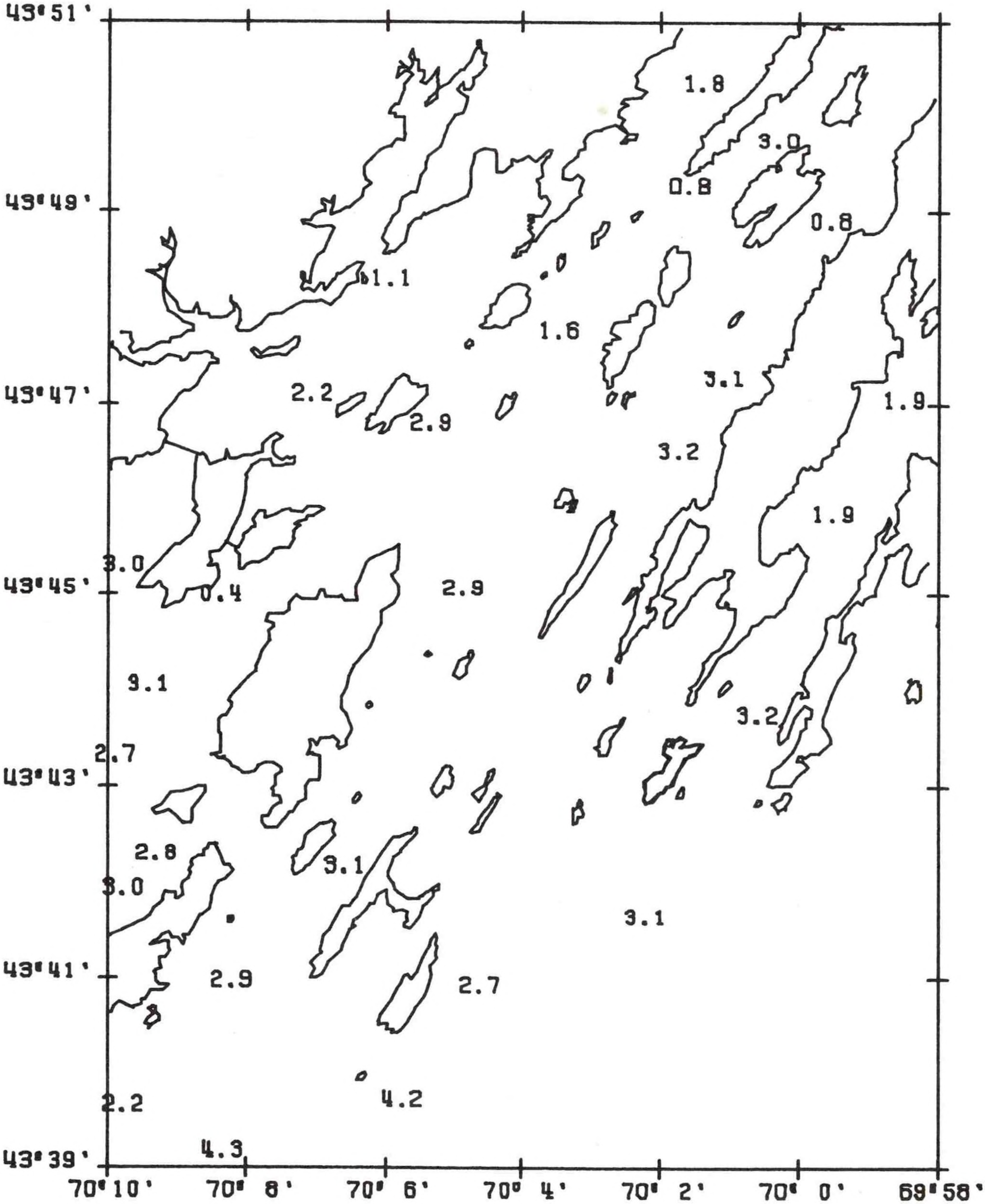


Fig. 31. The distribution of macrobenthic H' diversity in Casco Bay, Maine.

DIVERSITY


43°51'
43°49'
43°47'
43°45'
43°43'
43°41'
43°39'
70°10'
70° 8'
70° 6'
70° 4'
70° 2'
70° 0'
69°58'
1.8
3.0
0.8
0.8
1.1
1.6
3.1
1.9
2.2
2.9
3.2
1.9
3.0
0.4
2.9
3.1
3.2
2.7
2.8
3.1
3.0
3.1
2.9
2.7
2.2
4.2
4.3

diversity values at many stations seems to be caused by high species richness. Naturally, these are the stations with high numbers of species. At other stations, however, evenness appears to be the dominant component of diversity. For example, stations 15, 16, 18, 19, 20 and 36 only have moderate to low species richness levels but are among the highest stations in evenness which results in diversity levels of over 3.0 at stations where conventional logic would predict depressed diversity.

Extremely low diversity is limited to stations with very fine sediments. Not all the fine-grained stations exhibit such low diversity, however, and the explanation for this is analogous to that presented above.

Like the other biological parameters discussed, informational diversity is positively correlated with bottom depth, at the 95% level, and negatively correlated with mean grain size and organic carbon, both at the 99% level (Figs. 32, 33 and 34). As would be expected, diversity is positively correlated at the 99.9% level with species number, but shows no relationship to density. Additionally, diversity is not significantly correlated with any of the trace metals and is not even consistent in the sign of the correlation coefficient.

Whereas, we believe all of the biological parameters should be re-evaluated in greater depth once the hydrocarbon data can be factored into the analysis, all of them, except diversity, presently add insight into the existing conditions in Casco Bay and will aid us in providing an integrated overview of the biological functioning and health of the system. Diversity, on the other hand, is not presently useful in this regard. Once all the data are available, diversity should again be

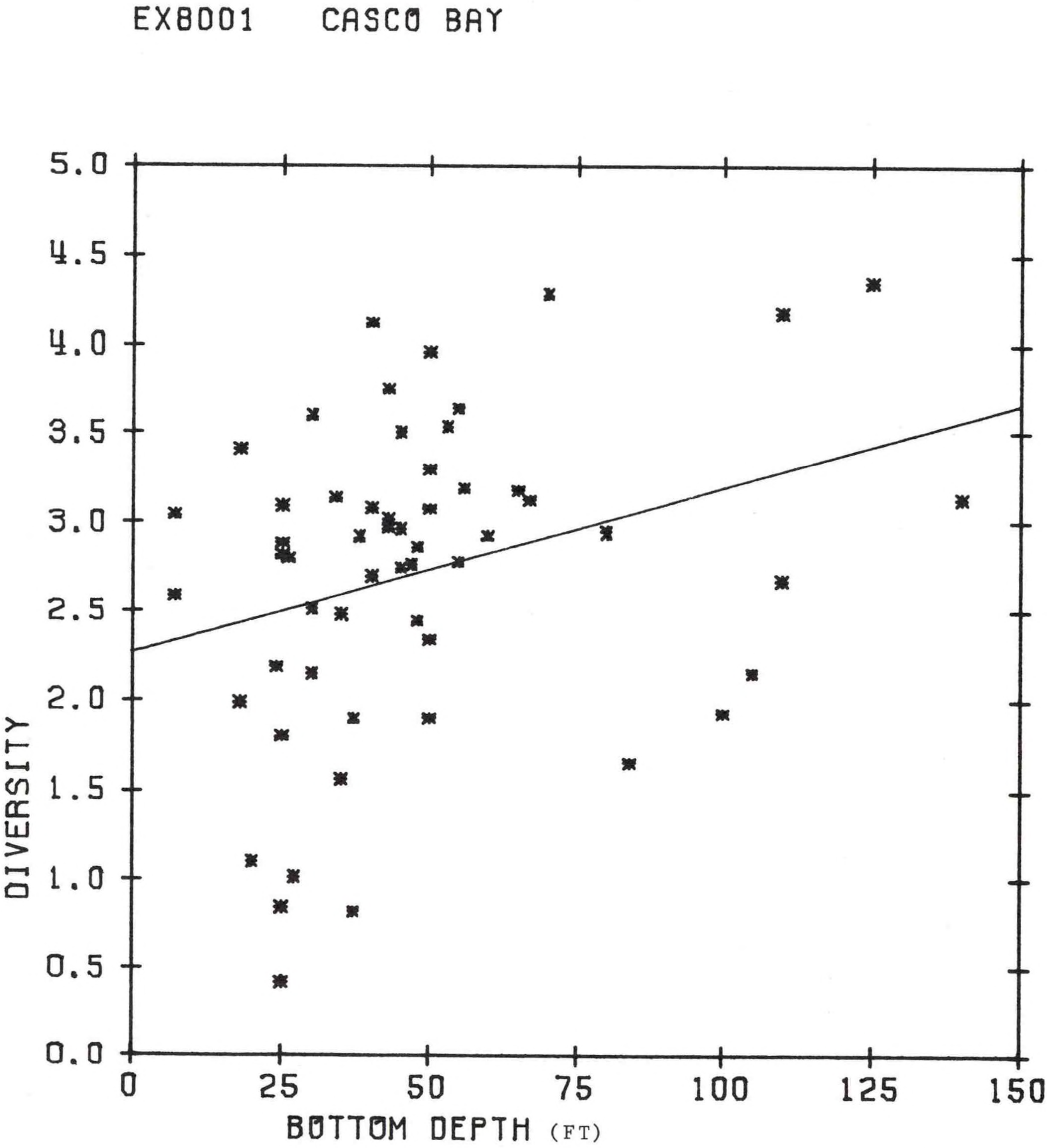


Fig. 32. The relationship of H' diversity and bottom depth.

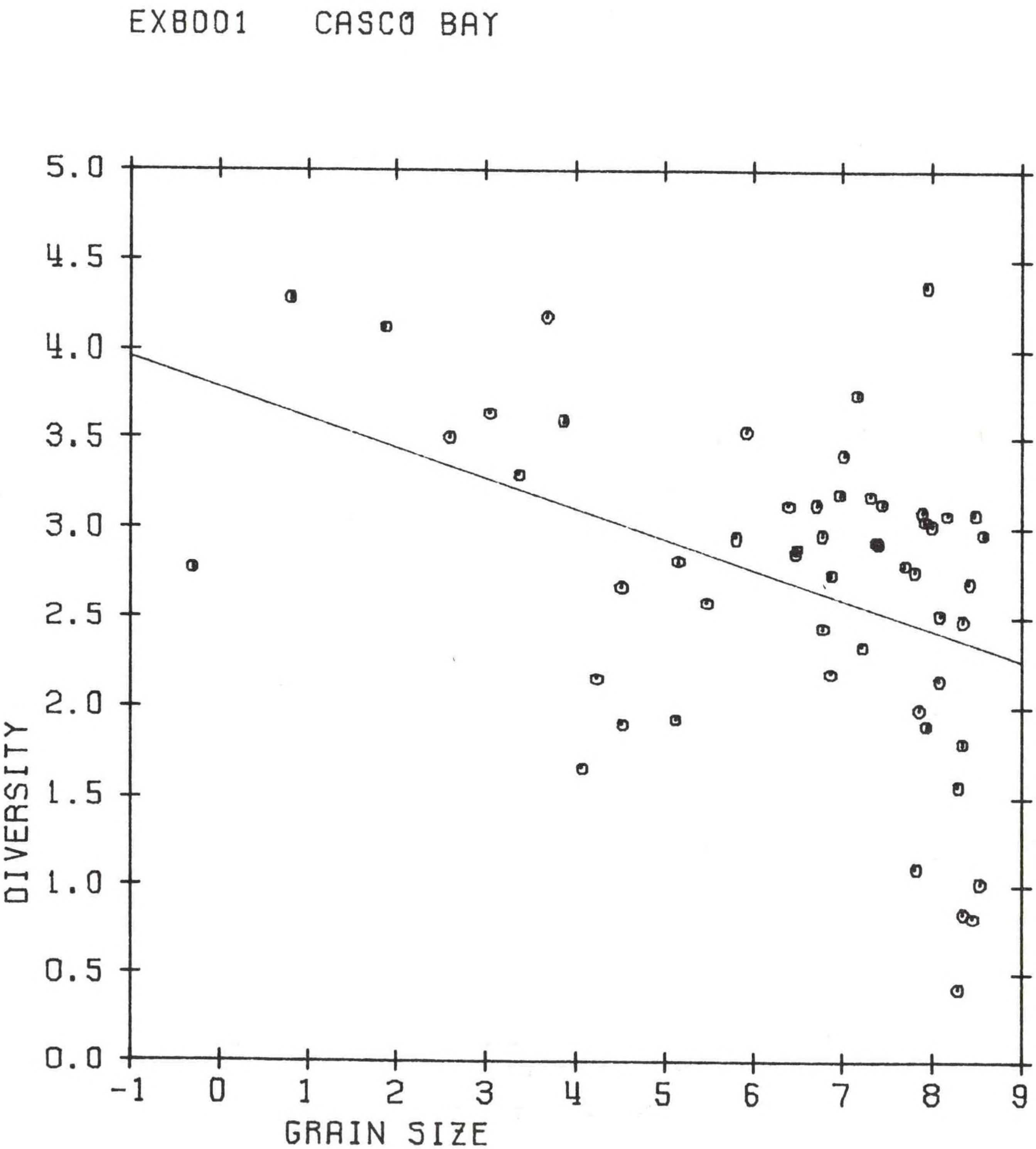


Fig. 33. The relationship between H' diversity and mean grain size.

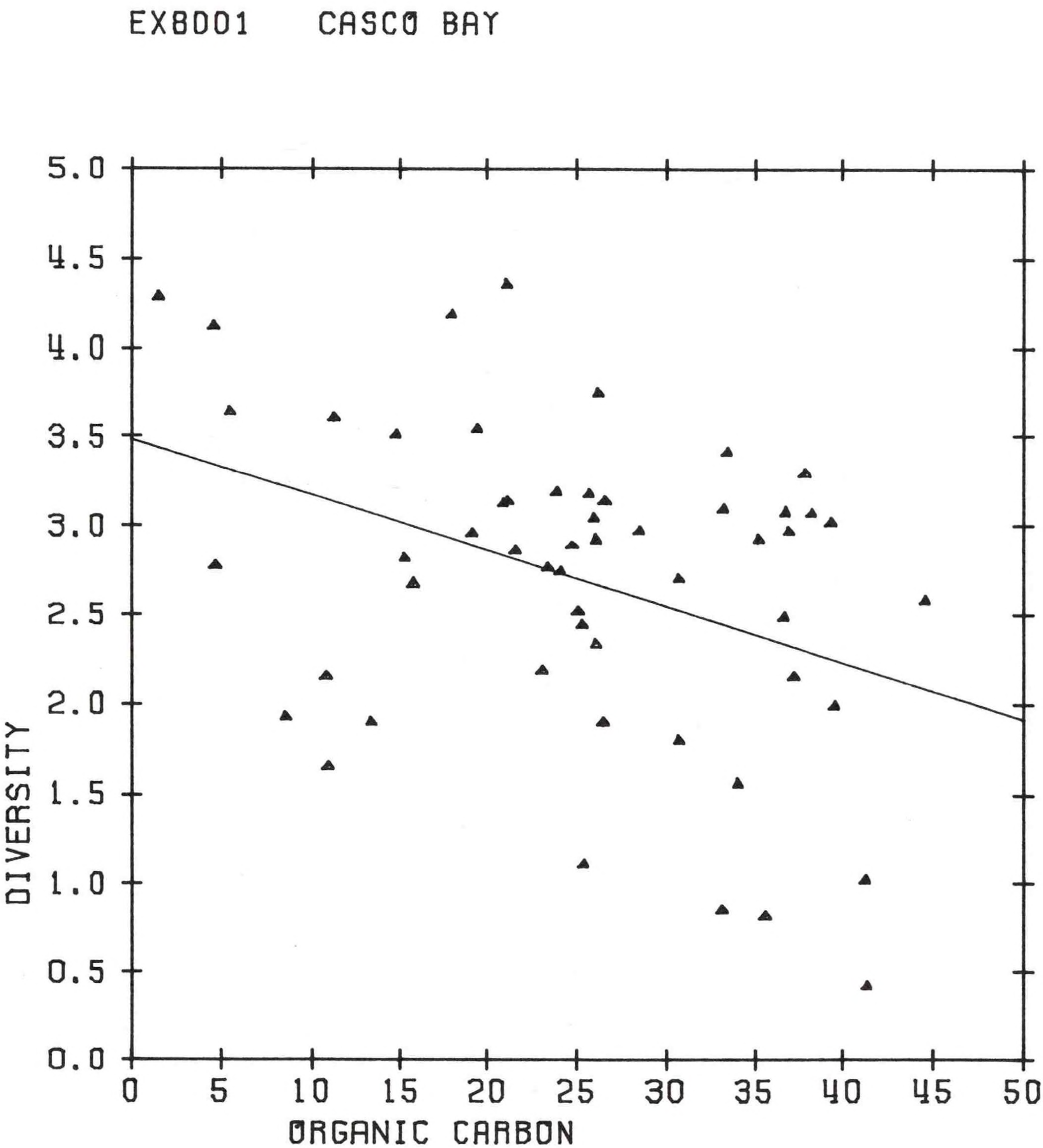


Fig. 34. The relationship of H' diversity and sediment organic carbon.

evaluated, but other related tools, such as fit to a lognormal distribution, should be looked at as well. It may be that H' diversity is simply not the appropriate index to illuminate the finer nuances of a heterogeneous system like Casco Bay.

Classification Analysis

Classification or cluster analysis is a useful way of objectively examining patterns in complex data sets which cannot easily be uncovered by other techniques. It is a hypothesis generating technique which can suggest relationships between biological and physical factors that may be causal to observed community distributions. Although the method is numerical, and therefore objective, the interpretation is subjective. One way to minimize subjectivity is to produce a large number of site-groups and species groups and then combine them until the most meaningful pattern is produced using a minimum of groups. The goal is to produce the most comprehensive but simple explanation for the observed phenomena.

We are at an intermediate step in this process. We have produced station and species dendrograms based on faunal data. We have defined a moderate number of site-groups and species-groups and have initiated a comparison of the groups with the extrinsic factors now on hand. In order to conserve resources we intend to wait until all of the physical data are available before finalizing our interpretation. We have, however, included our analysis to date because it does provide useful information about Casco Bay and illustrates the strength of the analysis that will be available soon.

The dendrogram which resulted from the classification of the 56 stations using species abundances as attributes (normal classification) is presented in Fig. 35. For the time being we have truncated this dendrogram at the nine group level. Examination of Fig. 35 shows that all of these groups are fairly discrete but some, for example groups 2 and 3, are candidates for further fusion. We have a great deal of faith in this classification because it shows good spatial discrimination (Fig. 36).

The 10 members of site-group 1 are principally deep-water offshore stations. Site-groups 2, 3 and 7 are limited to the Portland region. Stations in site-groups 2 and 3 are intermingled in outer Portland Harbor and are adjacent to one another on the dendrogram. This suggests a close faunal affinity between them. Site-group 7 stations are found on the edge of the patch of site-group 2 and 3 stations and are far removed from them in the dendrogram. This reflects a real difference in faunal composition undoubtedly controlled by physical factors. Site-group 4 is widely scattered throughout Casco Bay with all but one of the member stations occurring near shore. Site-group 5 dominates the central portion of the Bay while site-group 6 members ring the Bay at shallow stations. The three member site-group 8 exhibits no spatial pattern and site-group 9 is a single station outlier consisting of the mussel reef comminity at station 37.

The dendrogram resulting from the inverse classification is presented in Fig. 37. Only those noncolonial species occurring at over 10% of the stations were used in this procedure. We have tentatively truncated this dendrogram at the 14 group level. The most significant feature of this analysis is the distinct separation of species-group N

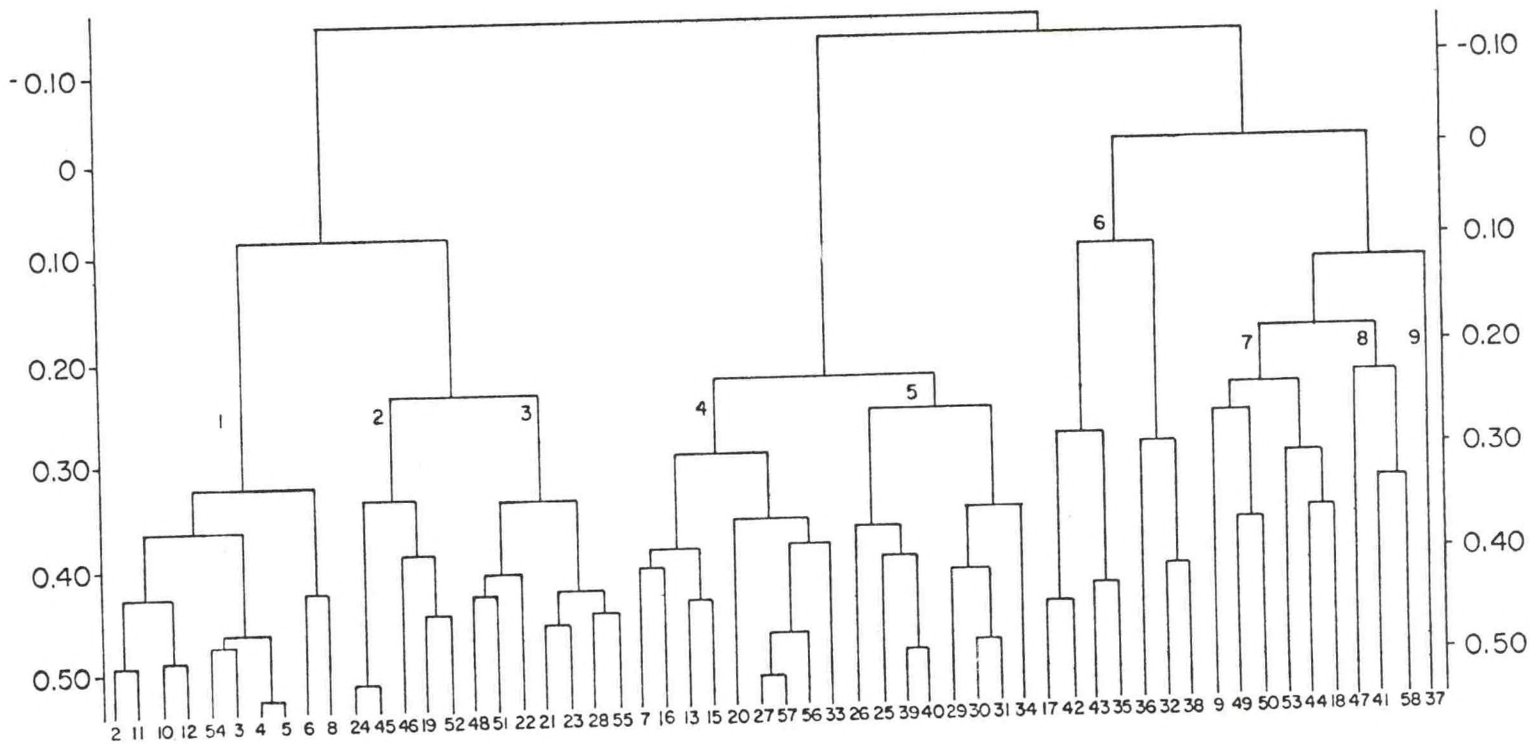


Fig. 35. Dendrogram of hierarchical classification of stations in Casco Bay, Maine. Lower numbers refer to station numbers. Numbers on branches refer to site-groups.

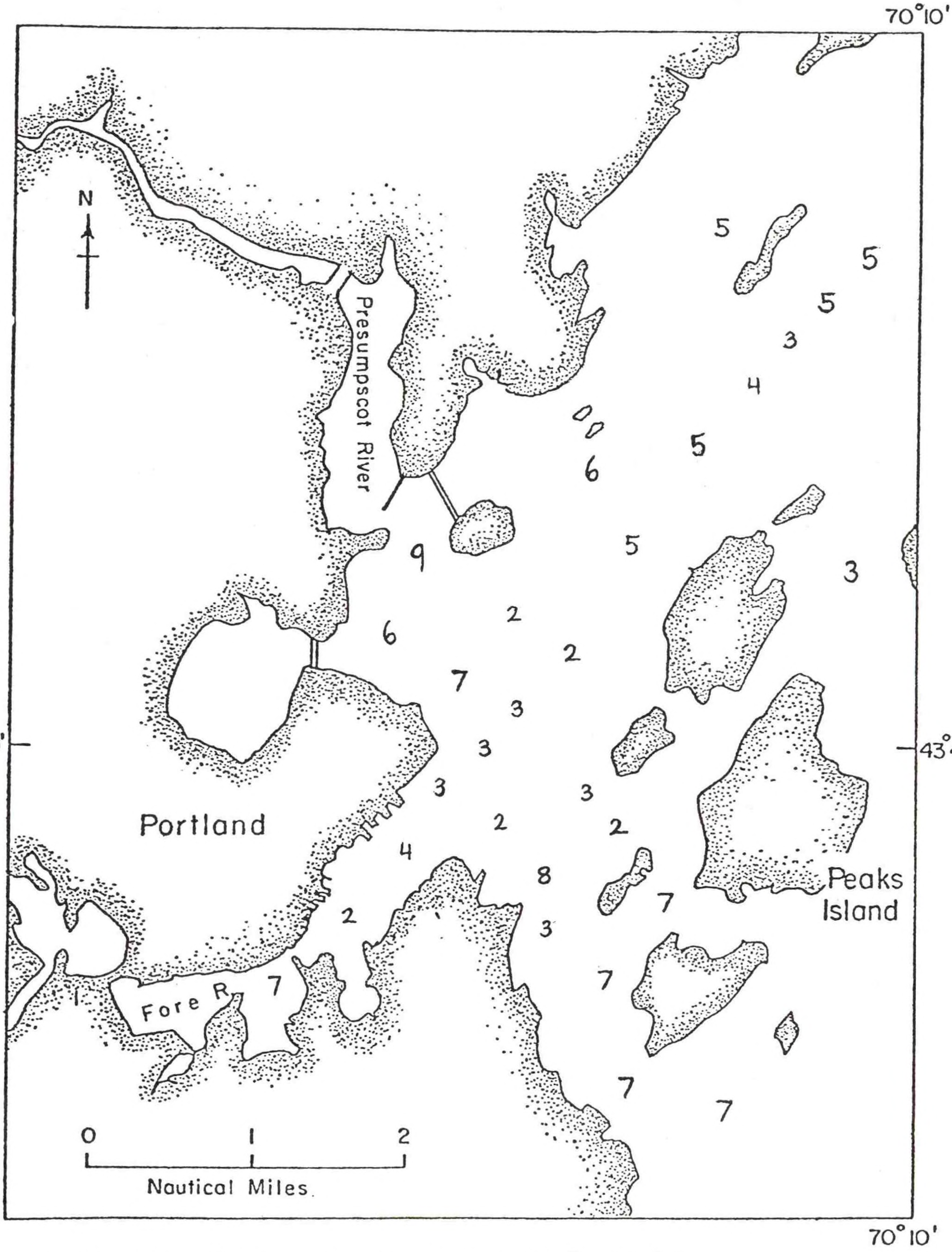
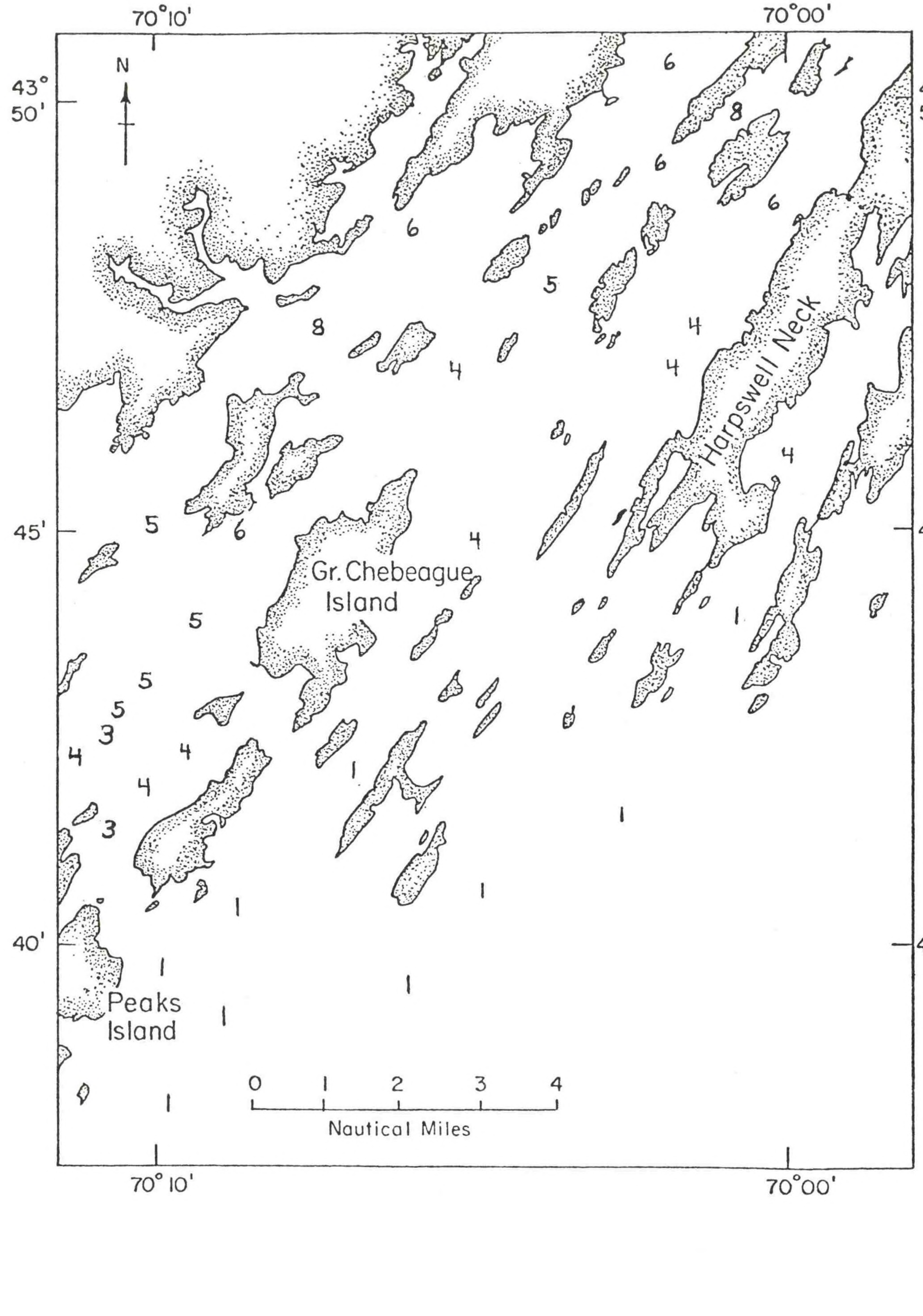


Fig. 36. Distribution of site-groups in Casco Bay.


70°10'
70°00'
43°
50'
43
50
N
45'
45'
40'
40'
Harpswell Neck
Gr. Chebeague
Island
Peaks
Island
0 1 2 3 4
Nautical Miles
70°10'
70°00'
6
8
6
6
6
5
8
4
4
4
4
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1
1
1
1
1

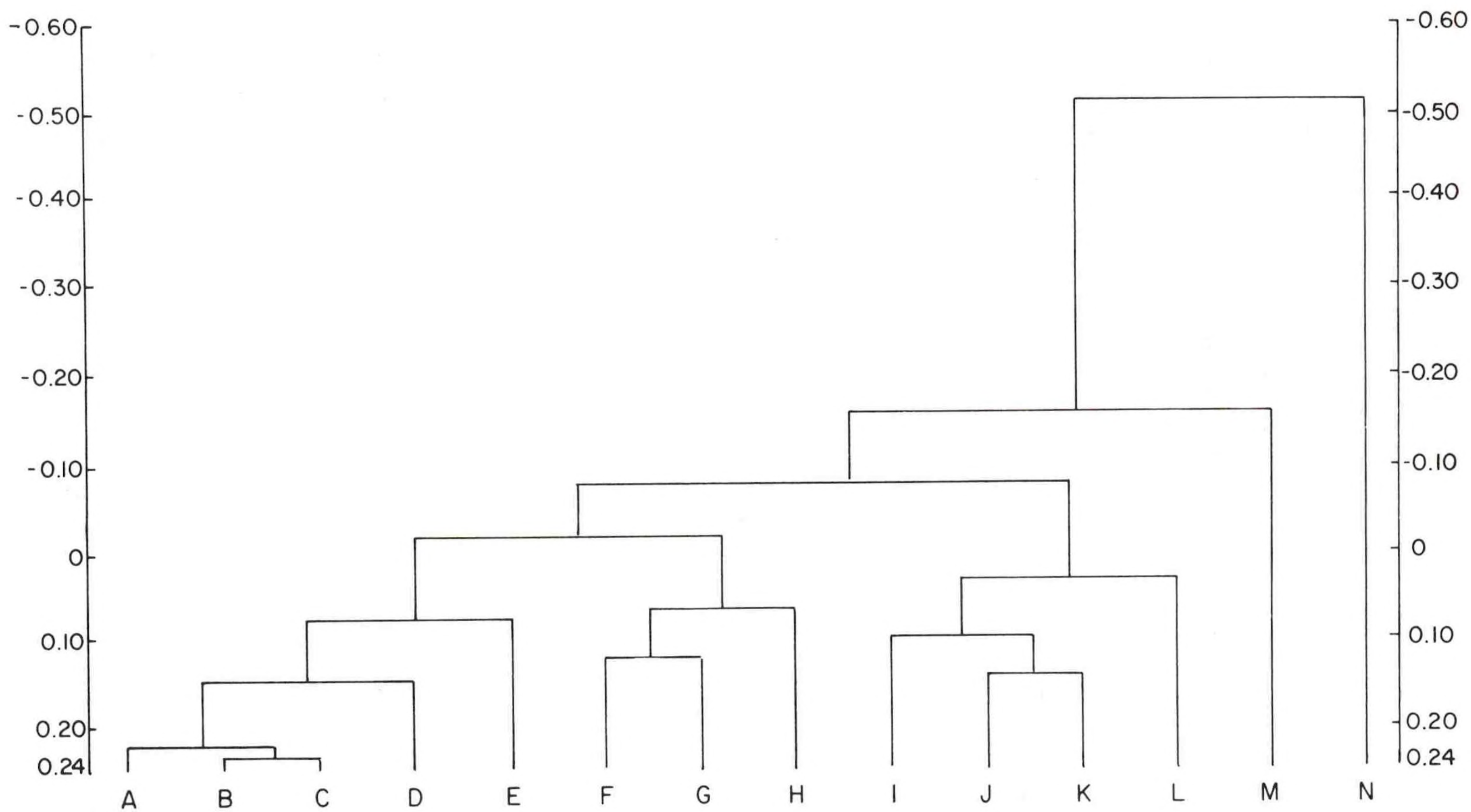

Fig. 37. Dendrogram of hierarchical classification of species-data. Letters refer to species-groups.

from the others. This group is not a single specis outlier, but the largest group and the separation suggests a basic difference in distribution between species-group N members and members of the other groups. The membership of each species-group is presented in Table 10.

By examining the constancy and fidelity of species-groups at the various site-groups it is possible to achieve insight into the distribution of the species-groups and perhaps into the controlling ecological mechanisms. This process is called nodal analysis.

The patterns of constancy and fidelity of the species-groups at the site-groups is summarized in Figs. 38 and 39. The width of the rows and columns is proportional to the size of the groups. Site-group 1 is occupied in medium to very high constancy by all species-groups with the exception of species-groups H-K. These latter four groups also demonstrate a fidelity of less than unity at site-group 1 indicating an avoidance of the member stations. It is the only site-group where species-groups E, F and M are highly constant and G and M are highly faithful. With the exceptions of species-groups F and G, site-groups 2 and 3 are occupied by similar species-groups but differ in relative constancy and fidelity especially in terms of species-groups A, B and C. Site-group 4 is best characterized by the presence of species-groups I and N. Species-group I is highly constant and faithful only at site-groups 4 and 5. These two mid-Bay site-groups differ from one another in that site-group 4 has six species-groups present at low to medium constancy which do not occur at site-group 5 stations.

Site-group 6 is impoverished. Only species-group J is present at moderate constancy. Site-group 7 has similarities to site-groups 2 and

Table 10. Membership of species-groups

	Species-groups
Species-group A	*Cerianthus borealis*
	Crenella decussata
	Periploma papyratium
	Thyasira flexuosa
	Eteone longa
	Pherusa affinis
	Pholoe minuta
	Sabella penicillus
	Phoxocephalus holbolli
Species-group B	*Modiolus modiolus*
	Mya arenaria
	Nucula annulata
	Pitar morrhuana
	Ampharete acutifrons
	Stauronereis caecus
	Stenopleustes inermis
Species-group C	*Cerastoderma pinnulatum*
	Paraonis gracilis
	Harpinia propinqua
	Orchomenella pinguis
	Phoxis macrocoxa

Species-group D	*Nemertea C*
	Phyllodoce mucosa
	Casco bigelowi
	Leptocheirus pinguis
	Corophium crassicorne
Species-group E	*Ampharete arctica*
	Lumbrineris fragilis
	Owenia fusiformis
	Potamilla neglecta
Species-group F	*Euclymene collaris*
	Maldane sarsi
	Spiophanes bombyx
	Edotea triloba
	Dulichia monacantha
	Chirodota laevis
Species-group G	*Cardita borealis*
	Asabellides oculata
	Goniada maculata
	Harmothoe imbricata
	Ophelina acuminata
	Phyllodoce maculata
	Diastylis quadrispinosa

Species-group H	*Amphipholis squamata*
	Nereis virens
	Unicola irrorata
Species-group I	*Yoldia limatula*
	Aricidea suecica
	Eudorella hispida
	Erythrops erythropthalma
	Meterythrops robusta
Species-group J	*Anemone A*
	Nassarius trivittatus
	Mulinia lateralis
	Neomysis americana
	Ampelisca abdita
	Melita n. sp.
Species-group K	*Hydrobia* sp.
	Gemma gemma
	Tellina agilis
Species-group L	*Nemertea D*
	Nemertea H
	Hartmania moorei

Species-group M	*Alvania carinata*
	Aricidea quadrilobata
	Rhodine loveni
	Spio filicornis
	Sternaspis scutata
	Leptostylis longimana
	Ampelisca agassizi
	Anonyx liljeborgi
	Metopella angusta
Species-group N	*Cerebratulus lacteus*
	Nucula delphinodonta
	Aglaophamus neotenus
	Aricidea jeffreysii
	Lumbrineris tenuis
	Mediomastus ambiseta
	Nephtys incisa
	Ninoe nigripes
	Prionospio steenstrupi
	Scoloplos sp.
	Tharyx sp.
	Oligochaeta
	Diastylis sculpta
	Eudorella truncatula
	Argissa hamatipes

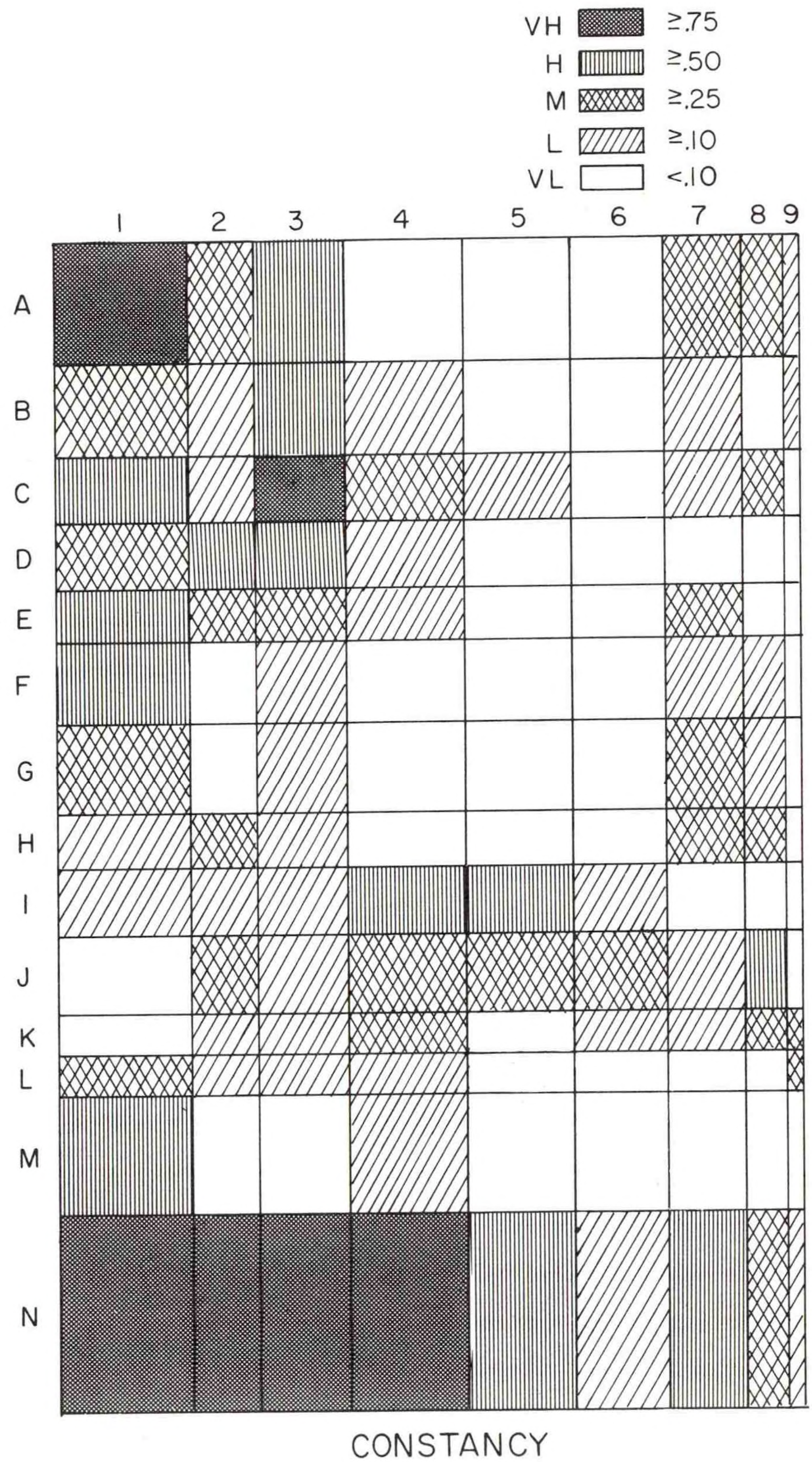

Fig. 38. Constancy of species-groups at site-groups.

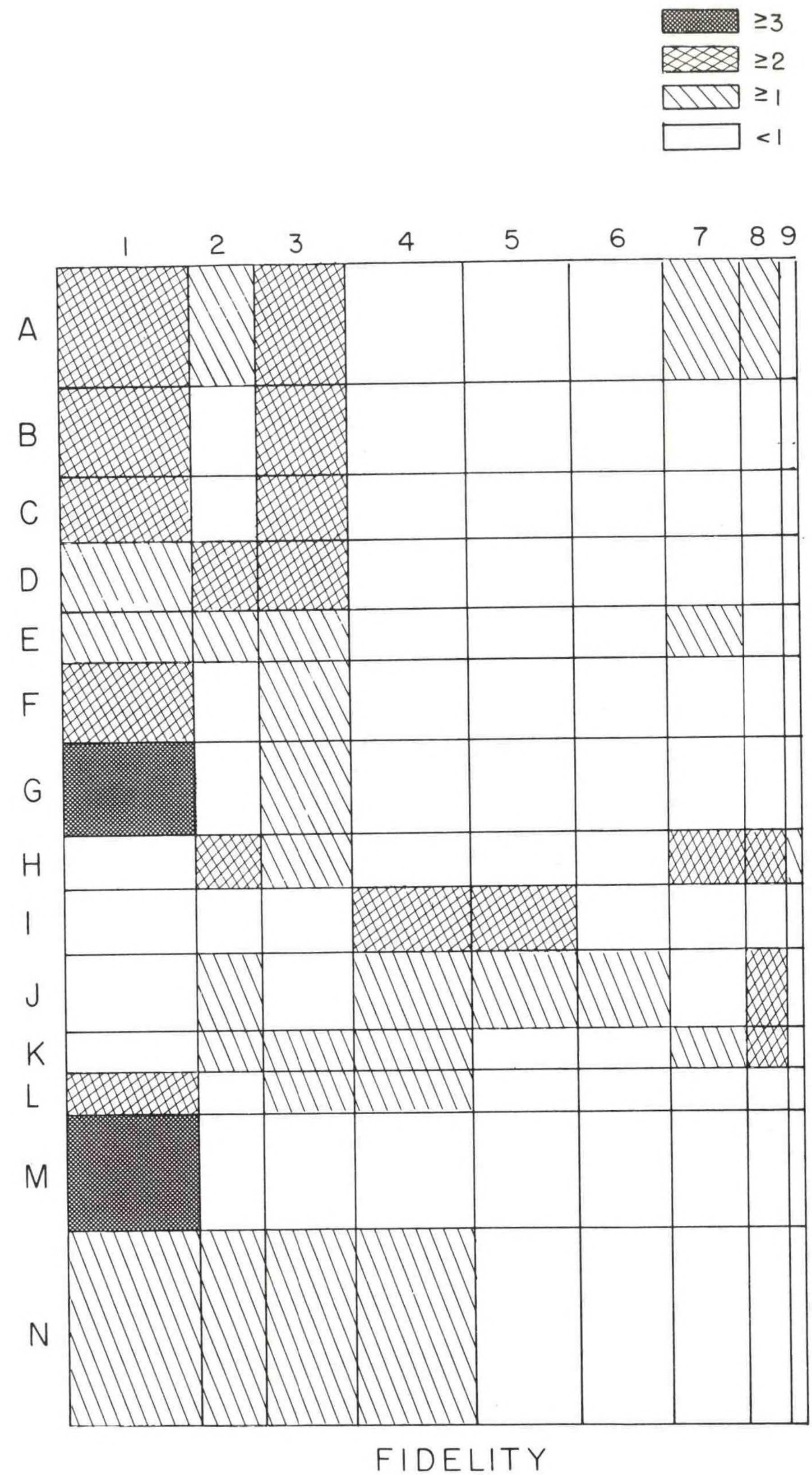

Fig. 39. Fidelity of species-groups to site-groups.

3 in terms of species-group affiliations but differs in constancy and/or fidelity levels of species-groups B, C, D and G. Species-groups H, J and K are most characteristic of site-group 8, as they are present in medium to high constancy and with high fidelity. Site-group 9 consists of one station which is qualitatively different from all other stations in several regards.

Species-group N is unique in that it occurs at all the site-groups and is present in high to very high constancy at six of the nine site-groups. Naturally, with such widespread constancy its fidelity to individual site-groups is very low. Examination of the frequency of occurrence of the member species of species-group N shows that they occur at from 53.6 to 87.5% of the stations sampled. This explains the distinct separation of species-group N from the others in the dendrogram (Fig. 37). Excepting the special cases of site-groups 6 and 9, we can characterize the fauna of Casco Bay by species-group N. This group of very tolerant, numerically dominant species which are undoubtedly typical of nearshore bottoms over a large area. Superimposed on this homogeneous fauna are smaller groups of species which are responding to finer environmental distinctions and hence have a more restricted range within Casco Bay. It is from among these other groups that initial changes in community structure, potentially indicative of enviromental degradation, should be sought.

Several physical and biological parameters are compared in Table 11 on a site-group basis. The observed differences were subjected to standard analysis of variance and the site-groups differed significantly (> 95%) from one another in each of the measured parameters. This is strong evidence that the numerical classification, using only species occurrences and abundances, dissected Casco Bay into ecologically meaningful components. Analysis of variance also demonstrated that the site-groups were significantly different in regard to four of the trace metals, cadmium, chromium, nickel and zinc.

The data was subjected to Duncan's multiple range test to determine which site-groups differed in the measured parameters. Results of this procedure are presented in Table 12. Zinc is not included because Duncan's test is not powerful enough, in this case, to break out the dissimilar site-groups. Groups represented by the same letter in the table are not different. For instance, by comparing Tables 11 and 12 we can conclude that site-group A is significantly deeper than all the others which do not differ significantly among themselves. Likewise, site-group 9, located on a mussel reef, has a significantly greater density than site-groups 1 and 3 which are in turn significantly denser than the remainder of the groups. Some of the other results are not so straightforward. In terms of biomass site-groups 1 and 3 are significantly richer than site-groups 4, 5 and 6, but the intermediate groups cannot be statistically differentiated from either the high or low biomass stations.

We are extremely encouraged that the chosen classification techniques produced groupings that are statistically valid. We are confident that once all of the data are available we will be able to provide a comprehensive analysis and benchmark of the present state of the benthic environment of Casco Bay.

SUMMARY AND TENTATIVE CONCLUSIONS

Casco Bay is a major coastal resource heavily utilized for commerce, commercial fishing and recreation. Facilities and activities

Table 11. Mean, ranges and standard deviations of various physical and biological parameters by site-group.

Site Group	Depth (m)			Temperature (^oC)			Grain Size (phi)			Organic Carbon (mg/g)		
	$\bar{x}$	range	SD	$\bar{x}$	range	SD	$\bar{x}$	range	SD	$\bar{x}$	range	SD
1	29.0	15.3-42.7	8.8	3.5	3.7-2.9	0.3	5.622	3.677-7.940	1.430	17.4	8.6-25.7	5.3
2	12.0	5.5-18.3	5.3	4.5	4.4-4.7	0.1	6.946	5.152-7.848	1.039	28.4	15.2-39.5	9.4
3	13.3	7.6-25.6	6.4	4.6	4.0-5.2	0.4	5.266	1.868-6.773	2.080	18.5	4.6-33.2	10.1
4	12.4	10.4-17.1	3.7	4.2	3.7-4.6	0.3	7.432	6.468-8.158	0.593	28.2	21.6-39.3	6.3
5	11.4	9.2-13.7	1.7	4.6	4.0-6.3	0.7	8.134	6.870-8.564	0.540	32.7	24.1-37.2	5.4
6	8.0	6.1-11.3	1.6	4.9	4.4-5.9	0.5	8.201	7.682-8.526	0.324	34.6	25.4-41.2	6.2[1]
7	11.3	5.5-21.4	7.4	4.5	4.2-4.6	0.2	2.694	-0.305-7.006	2.811	18.4	4.7-37.8	16.5
8	8.7	2.1-16.8	7.5	6.0	4.5-7.8	1.7	5.938	3.014-7.911	2.563	18.2	5.5-26.0	11.1
9	--	2.1	--	--	4.9	--	--	5.746	--	--	44.5	--

	Density ($\#/m^2$)			Biomass (g/m^2)[2]			Species per Station			Diversity (H^1)		
	$\bar{x}$	range	SD	$\bar{x}$	range	SD	$\bar{x}$	range	SD	$\bar{x}$	range	SD
1	15915	6340-29290	8895	89.1	25.1-191.0	53.3	62	41-86	13	2.96	1.90-4.35	0.85
2	7432	2600-11395	3234	65.6	15.6-94.2	33.1	29	21-36	6	2.76	1.99-3.74	0.67
3	15318	5280-32490	8540	84.7	62.9-172.7	39.3	47	37-63	9	3.05	1.65-4.12	0.82
4	4455	2050-9250	2595	27.3	6.5-67.4	17.5	28	24-40	5	2.87	1.90-3.19	0.39
5	1965	580-3580	1335	14.8	3.0-29.4	9.5	18	13-27	5	2.52	1.56-3.07	0.48
6	2155	120-6180	8518	13.3	1.8-31.4	10.9	10	5-19	5	1.25	0.42-2.79	0.80
7	8453	1250-21430	8518	50.6	15.7-130.7	46.7	36	27-49	8	3.54	2.77-4.28	0.53
8	4508	800-8080	3643	43.2	25.7-68.6	22.5	25	23-29	3	2.96	2.19-3.63	0.73
9	--	36380	--	--	73.2	--	--	23	--	--	2.58	--

[1] not including station 36

[2] excludes animals over 1 gm.

Table 12. Patterns of significant difference between site-groups based on Duncan's multiple range test. Groups represented by the same letter(s) are not different.

	Site-group								
	1	2	3	4	5	6	7	8	9
Depth	A	B	B	B	B	B	B	B	B
Temperature	B	B	B	B	B	B	B	A	A+B
Salinity	A	A+B	A+B	A+B	A+B	B	A+B	C	A+B
Mean Grain Size	C	A+B+C	C+D	A+B	A	A	D	B+C	C+D
Organic Carbon	C	A+B	B+C	A+B	A	A	B+C	B+C	A
Density	B	C	B	C	C	C	C	C	A
Biomass	A	A+B	A	B	B	B	A+B	A+B	A+B
Species per Station	A	C	B	C	D+E	E	C	C+D	C+D+E
Diversity	A+B	A+B	A+B	A+B	B+C	C	A	A+B	A+B+C
Cadmium	B	A	A+B	A	A	A	A+B	B	A
Chromium	B	A+B	B	A	A	A+B	B	B	A+B
Nickel	A+B	A	A+B	A	A	A	B	A+B	A+B

potentially threatening to the environment occur throughout the Bay but are most concentrated in the region of Portland.

Casco Bay is characterized by a boreal climate and a large tidal range (3 m). Sediments range from sand in tidally scoured channels to clay in the inner reaches of the Bay. Interior portions of the Bay have extremely soft bottom sediments which may be described as fluid mud or gel. Stations in these areas are occupied by an aberrant community with low species richness and low density. Further work is needed to fully document this phenomenon.

Trace metals are not homogeneously distributed throughout Casco Bay. Sandy and offshore stations tend to be low in metal concentration, while Portland Harbor appears to contain anthropogenic inputs. Comparisons with 10 other New England sites confirms that Casco Bay sediments are impacted in terms of the trace metals sampled.

The fauna of Casco Bay is rich in terms of diversity, density and biomass. These parameters, and others, are positively correlated with bottom depth and negatively correlated with mean grain size and organic carbon content. Most biological parameters are negatively correlated with at least some of the trace metals. We await the hydrocarbon data to complete our analysis.

Numerical classifications dissected Casco Bay into nine site-groups occupied by 14 species-groups. The site-groups are spatially realistic and differ significantly (>95%) in regard to both physical and biological factors. One species-group is widely distributed and is considered typical, boreal shallow-water fauna.

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Appendix 1.
Sediment data by station

Table A-1. The percentage of sand, silt and clay particles in each Casco Bay sediment sample taken in April 1980.

Station	% sand	% silt	% clay
2	53.7	28.0	18.3
3	58.6	19.5	22.0
4	64.0	17.4	18.6
5	32.0	34.5	33.5
6	15.3	47.9	36.8
7	9.1	46.5	44.4
8	63.3	21.3	15.4
9	99.2	.3	.4
10	20.8	29.0	50.2
11	34.6	46.4	19.0
12	36.6	34.6	28.9
13	35.1	35.0	30.0
15	20.4	45.6	34.0
16	4.9	48.8	46.3
17	1.4	49.2	49.4
18	71.5	13.7	14.8
19	21.7	40.1	38.1
20	16.6	44.3	39.1
21	10.5	45.5	44.0
22	89.9	5.2	4.9
23	30.5	40.2	29.4
24	10.0	54.4	35.6
25	13.0	38.8	48.2
26	3.1	53.8	43.0
27	7.1	48.6	44.4
28	26.7	40.3	33.0
29	23.0	42.7	34.4
30	6.2	40.1	53.7
31	1.7	48.0	50.3
32	4.4	47.8	47.8
33	14.7	47.9	37.4

Station	% sand	% silt	%clay
34	3.0	49.4	47.6
35	1.7	50.8	47.5
36	15.2	39.9	44.9
37	45.7	33.6	20.7
38	1.9	47.3	50.9
39	1.7	50.4	48.0
40	2.1	46.4	51.5
41	20.7	47.9	31.4
42	7.3	51.9	40.9
43	2.4	50.8	46.8
44	16.5	50.6	32.9
45	6.1	52.2	41.7
46	57.2	23.9	19.0
47	65.5	21.3	13.2
48	73.7	16.1	10.2
49			
50	97.2	1.2	1.5
51	41.9	31.3	26.8
52	19.7	42.4	37.9
53	69.6	18.8	11.6
54	66.4	18.6	15.0
55	73.5	14.3	12.2
56	27.8	39.4	32.7
57	9.3	48.4	42.3
58	5.3	54.6	40.0

Appendix 2.
Faunal data by station

CRUISE EX8001 STATION 02 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AMPELISCA AGASSIZI	1793.	1793.	68.10	68.10
2	PRIONOSPIO STEENSTRUPI	456.	2249.	17.32	85.42
3	NINOE NIGRIPES	44.	2293.	1.67	87.09
4	CASCO BIGELOWI	42.	2335.	1.60	88.68
5	MEDIOMASTUS AMBISETA	26.	2361.	0.99	89.67
6	PHOTIS MACROCOXA	26.	2387.	0.99	90.66
7	THARYX SP.	24.	2411.	0.91	91.57
8	AMPHARETE ARCTICA	21.	2432.	0.80	92.37
9	SCOLOPLOS SP.	17.	2449.	0.65	93.01
10	HARPINIA PROPINQUA	17.	2466.	0.65	93.66
11	ASABELLIDES OCULATA	14.	2480.	0.53	94.19
12	CRENELLA DECUSSATA	12.	2492.	0.46	94.64
13	RHODINE LOVENI	12.	2504.	0.46	95.10
14	SABELLA PENICILLUS	10.	2514.	0.38	95.48
15	EUDORELLA TRUNCATULA	7.	2521.	0.27	95.75
16	DIASTYLIS SCULPTA	7.	2528.	0.27	96.01
17	CEREBRATULUS LACTEUS	6.	2534.	0.23	96.24
18	PERIPLOMA PAPYRATIUM	6.	2540.	0.23	96.47
19	LUMBRINERIS FRAGILIS	6.	2546.	0.23	96.70
20	GONIADA MACULATA	6.	2552.	0.23	96.92
21	PARAONIS GRACILIS	5.	2557.	0.19	97.11
22	STENOPLEUSTES INERMIS	5.	2562.	0.19	97.30
23	PHOLOE MINUTA	4.	2566.	0.15	97.46
24	SPIO FILICORNIS	4.	2570.	0.15	97.61
25	PETALOSARSIA DECLIVIS	4.	2574.	0.15	97.76
26	MYA ARENARIA	3.	2577.	0.11	97.87
27	AMPHARETE ACUTIFRONS	3.	2580.	0.11	97.99
28	ARICIDEA SUECICA	3.	2583.	0.11	98.10
29	MELLINA CRISTATA	3.	2586.	0.11	98.21
30	LEPTOSTYLIS LONGIMANA	3.	2589.	0.11	98.33
31	ERICTHONIUS RUBRICORNIS	3.	2592.	0.11	98.44
32	NEMERTEA D	2.	2594.	0.08	98.52
33	NEMERTEA C	2.	2596.	0.08	98.59
34	BRADA GRANOSA	2.	2598.	0.08	98.67
35	LUMBRINERIS TENUIS	2.	2600.	0.08	98.75
36	NEPHTYS INCISA	2.	2602.	0.08	98.82
37	HARMOTHOE IMBRICATA	2.	2604.	0.08	98.90
38	STERNASPIS SCUTATA	2.	2606.	0.08	98.97
39	PRAXILLELLA GRACILIS	2.	2608.	0.08	99.05
40	OPHELINA ACUMINATA	2.	2610.	0.08	99.13
41	DIASTYLIS ABBREVIATA	2.	2612.	0.08	99.20
42	DIASTYLIS QUADRISPINOSA	2.	2614.	0.08	99.28
43	EDOTEA TRILOBA	2.	2616.	0.08	99.35
44	ARGISSA HAMATIPES	2.	2618.	0.08	99.43
45	THYASIRA FLEXUOSA	1.	2619.	0.04	99.47
46	NUCULA ANNULATA	1.	2620.	0.04	99.51
47	PITAR MORRHUANA	1.	2621.	0.04	99.54
48	EXOGONE VERUGA	1.	2622.	0.04	99.58
49	PHYLLODOCE MUCOSA	1.	2623.	0.04	99.62
50	OLIGOCHAETA	1.	2624.	0.04	99.66
51	LAONICE CIRRATA	1.	2625.	0.04	99.70
52	MAYERELLA LIMICOLA	1.	2626.	0.04	99.73
53	CAMPYLASPIS RUBICUNDA	1.	2627.	0.04	99.77
54	DIASTYLIS CORNUIFER	1.	2628.	0.04	99.81
55	OXYUROSTYLIS SMITHI	1.	2629.	0.04	99.85
56	DULICHIA MONACANTHA	1.	2630.	0.04	99.89
57	PHOXOCEPHALUS HOLBOLLI	1.	2631.	0.04	99.92
58	PROTOMEDEIA FASCIATA	1.	2632.	0.04	99.96
59	MONOCULODES N.SP.	1.	2633.	0.04	100.00

NUMBER OF SPECIES 59

NUMBER OF INDIVIDUALS 2633.

INDIVIDUALS PER M2 26330

CRUISE EX8001 STATION 03 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AMPELISCA AGASSIZI	385.	385.	27.66	27.66
2	HAPLOOPS TUBICOLA	217.	602.	15.59	43.25
3	PRIONOSPIO STEENSTRUPI	134.	736.	9.63	52.87
4	RHODINE LOVENI	67.	803.	4.81	57.69
5	MALDANE SARSI	65.	868.	4.67	62.36
6	PROTOMEDEIA FASCIATA	47.	915.	3.38	65.73
7	CRENELLA DECUSSATA	45.	960.	3.23	68.97
8	LEPTOCHEIRUS PINGUIS	40.	1000.	2.87	71.84
9	THARYX SP.	39.	1039.	2.80	74.64
10	ERICTHONIUS RUBRICORNIS	36.	1075.	2.59	77.23
11	HARPINIA PROPINQUA	23.	1098.	1.65	78.88
12	DIASTYLIS QUADRISPINOSA	21.	1119.	1.51	80.39
13	AMPHARETE ARCTICA	18.	1137.	1.29	81.68
14	EUDORELLA TRUNCATULA	18.	1155.	1.29	82.97
15	PHYLLODOCE MUCOSA	15.	1170.	1.08	84.05
16	THYASIRA FLEXUOSA	11.	1181.	0.79	84.84
17	AMPELISCA MACROCEPHALA	11.	1192.	0.79	85.63
18	ASABELLIDES OCULATA	10.	1202.	0.72	86.35
19	PHOTIS MACROCOXA	10.	1212.	0.72	87.07
20	TEREBELLID B	9.	1221.	0.65	87.72
21	MEDIOMASTUS AMBISETA	9.	1230.	0.65	88.36
22	OPHELINA ACUMINATA	9.	1239.	0.65	89.01
23	NINOE NIGRIPES	8.	1247.	0.57	89.58
24	SPIO FILICORNIS	7.	1254.	0.50	90.09
25	ASTARTE UNDATA	6.	1260.	0.43	90.52
26	NUCULA DELPHINODONTA	6.	1266.	0.43	90.95
27	LUMBRINERIS FRAGILIS	6.	1272.	0.43	91.38
28	AMPHARETE ACUTIFRONS	6.	1278.	0.43	91.81
29	PERIPLOMA PAPYRATIUM	5.	1283.	0.36	92.17
30	UNCIOLA IRRORATA	5.	1288.	0.36	92.53
31	SABELLA PENICILLUS	4.	1292.	0.29	92.82
32	PHOLOE MINUTA	4.	1296.	0.29	93.10
33	DIASTYLIS ABBREVIATA	4.	1300.	0.29	93.39
34	DIASTYLIS SCULPTA	4.	1304.	0.29	93.68
35	EDOTEA TRILOBA	4.	1308.	0.29	93.97
36	STEREOBALANUS CANADENSIS	3.	1311.	0.22	94.18
37	CERIANTHUS BOREALIS	3.	1314.	0.22	94.40
38	AMPHIPHOLIS SQUAMATA	3.	1317.	0.22	94.61
39	HARTMANIA MOOREI	3.	1320.	0.22	94.83
40	HARMOTHOE IMBRICATA	3.	1323.	0.22	95.04
41	LEPTOSTYLIS LONGIMANA	3.	1326.	0.22	95.26
42	MUNNA FABRICII	3.	1329.	0.22	95.47
43	ANONYX LILJEBORGI	3.	1332.	0.22	95.69
44	STENOPLEUSTES INERMIS	3.	1335.	0.22	95.90
45	NOTOPLANA ATOMATA	2.	1337.	0.14	96.05
46	PERIPLOMA LEANUM	2.	1339.	0.14	96.19
47	CARDITA BOREALIS	2.	1341.	0.14	96.34
48	OWENIA FUSIFORMIS	2.	1343.	0.14	96.48
49	SYLLIS GRACILIS	2.	1345.	0.14	96.62
50	EUCLYMENE COLLARIS	2.	1347.	0.14	96.77
51	PHYLLODOCE MACULATA	2.	1349.	0.14	96.91
52	ETEONE LONGA	2.	1351.	0.14	97.05
53	MELINNA CRISTATA	2.	1353.	0.14	97.20
54	NEPHTYS INCISA	2.	1355.	0.14	97.34
55	PRAXILLELLA GRACILIS	2.	1357.	0.14	97.49
56	STERNASPIS SCUTATA	2.	1359.	0.14	97.63
57	GITANOPSIS SP.	2.	1361.	0.14	97.77
58	HALIMEDON SP.	2.	1363.	0.14	97.92
59	DULICHIA MONOCANTHA	2.	1365.	0.14	98.06
60	NEMERTEA G	1.	1366.	0.07	98.13
61	THRACIA CONRADI	1.	1367.	0.07	98.20
62	CHLAMYS ISLANDICA	1.	1368.	0.07	98.28
63	LYONSIA HYALINA	1.	1369.	0.07	98.35
64	MODIOLUS MODIOLUS	1.	1370.	0.07	98.42
65	TRICHOBRANCHUS GLACIALIS	1.	1371.	0.07	98.49
66	TROCHOCHAETA MULTISETOSA	1.	1372.	0.07	98.56
67	EXOGONE HEBES	1.	1373.	0.07	98.63
68	PHERUSA AFFINIS	1.	1374.	0.07	98.71
69	AGLAOPHAMUS CIRCINATA	1.	1375.	0.07	98.78
70	SCALIBREGMA INFLATUM	1.	1376.	0.07	98.85
71	SCOLOPLOS SP.	1.	1377.	0.07	98.92
72	GONIADA MACULATA	1.	1378.	0.07	98.99
73	ARICIDEA JEFFREYSII	1.	1379.	0.07	99.07
74	PARAONIS GRACILIS	1.	1380.	0.07	99.14
75	TEREBELLIDES STROEMI	1.	1381.	0.07	99.21
76	METERYTHROPS ROBUSTA	1.	1382.	0.07	99.28
77	PETALOSARSIA DECLIVIS	1.	1383.	0.07	99.35
78	DIASTYLIS CORNUIFER	1.	1384.	0.07	99.42
79	CANCER BOREALIS	1.	1385.	0.07	99.50
80	PLEUSYMTES GLABER	1.	1386.	0.07	99.57
81	BATHYMEDON SP.	1.	1387.	0.07	99.64
82	PHOXOCEPHALUS HOLBOLLI	1.	1388.	0.07	99.71
83	ARGISSA HAMATIPES	1.	1389.	0.07	99.78
84	PONTOGENEIA INERMIS	1.	1390.	0.07	99.86
85	COROPHIUM CRASSICORNE	1.	1391.	0.07	99.93
86	METOPELLA ANGUSTA	1.	1392.	0.07	100.00

NUMBER OF SPECIES 86

NUMBER OF INDIVIDUALS 1392.

INDIVIDUALS PER M2 13920

CRUISE EX8001 STATION 04 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	1215.	1215.	41.48	41.48
2	AMPELISCA AGASSIZI	1020.	2235.	34.82	76.31
3	HAPLOOPS TUBICOLA	137.	2372.	4.68	80.98
4	CRENELLA DECUSSATA	79.	2451.	2.70	83.68
5	NUCULA DELPHINODONTA	48.	2499.	1.64	85.32
6	MEDIOMASTUS AMBISETA	46.	2545.	1.57	86.89
7	PHOXOCEPHALUS HOLBOLLI	34.	2579.	1.16	88.05
8	HARPINIA PROPINQUA	33.	2612.	1.13	89.18
9	EUDORELLA TRUNCATULA	29.	2641.	0.99	90.17
10	SABELLA PENICILLUS	19.	2660.	0.65	90.82
11	PHOTIS MACROCOXA	17.	2677.	0.58	91.40
12	LEPTOCHEIRUS PINGUIS	16.	2693.	0.55	91.94
13	PHYLLODOCE MUCOSA	15.	2708.	0.51	92.45
14	DULICHIA MONOCANTHA	15.	2723.	0.51	92.97
15	AMPELISCA MACROCEPHALA	14.	2737.	0.48	93.44
16	ASTARTE BOREALIS	10.	2747.	0.34	93.79
17	AMPHARETE ARCTICA	10.	2757.	0.34	94.13
18	NINOE NIGRIPES	9.	2766.	0.31	94.43
19	PERIPLOMA PAPYRATIUM	8.	2774.	0.27	94.71
20	THARYX SP.	8.	2782.	0.27	94.98
21	DIASTYLIS QUADRISPINOSA	8.	2790.	0.27	95.25
22	ORCHOMENELLA PINGUIS	8.	2798.	0.27	95.53
23	ETEONE LONGA	7.	2805.	0.24	95.77
24	DIASTYLIS SCULPTA	7.	2812.	0.24	96.01
25	HARMOTHOE IMBRICATA	6.	2818.	0.20	96.21
26	CASCO BIGELOWI	6.	2824.	0.20	96.41
27	TEREBELLIDAE	5.	2829.	0.17	96.59
28	RHODINE LOVENI	5.	2834.	0.17	96.76
29	GONIADA MACULATA	5.	2839.	0.17	96.93
30	STENOPLEUSTES INERMIS	5.	2844.	0.17	97.10
31	ERICTHONIUS RUBRICORNIS	5.	2849.	0.17	97.27
32	NUCULA ANNULATA	4.	2853.	0.14	97.40
33	ALVANIA CARINATA	4.	2857.	0.14	97.54
34	POLYDORA QUADRILOBATA	4.	2861.	0.14	97.68
35	PHOLOE MINUTA	4.	2865.	0.14	97.81
36	LUMBRINERIS FRAGILIS	4.	2869.	0.14	97.95
37	CERASTODERMA PINNULATUM	3.	2872.	0.10	98.05
38	THYASIRA FLEXUOSA	3.	2875.	0.10	98.16
39	MELINNA CRISTATA	3.	2878.	0.10	98.26
40	EDOTEA TRILOBA	3.	2881.	0.10	98.36
41	COROPHIUM CRASSICORNE	3.	2884.	0.10	98.46
42	ANONYX LILJEBORGI	3.	2887.	0.10	98.57
43	CARDITA BOREALIS	2.	2889.	0.07	98.63
44	AMPHARETE ACUTIFRONS	2.	2891.	0.07	98.70
45	TRICHOBRANCHUS GLACIALIS	2.	2893.	0.07	98.77
46	ASABELLIDES OCULATA	2.	2895.	0.07	98.84
47	SCOLOPLOS SP.	2.	2897.	0.07	98.91
48	OPHELINA ACUMINATA	2.	2899.	0.07	98.98
49	ARICIDEA JEFFREYSII	2.	2901.	0.07	99.04
50	NEPHTYS INCISA	2.	2903.	0.07	99.11
51	MUNNA FABRICII	2.	2905.	0.07	99.18
52	CHIRIDOTA LAEVIS	2.	2907.	0.07	99.25
53	NEMERTEA G	2.	2909.	0.07	99.32
54	CERIANTHUS BOREALIS	2.	2911.	0.07	99.38
55	OENOPOTA BICARINATA	1.	2912.	0.03	99.42
56	MYA ARENARIA	1.	2913.	0.03	99.45
57	LACUNA VINCTA	1.	2914.	0.03	99.49
58	TEREBELLIDES STROEMI	1.	2915.	0.03	99.52
59	NEREIS GRAYI	1.	2916.	0.03	99.56
60	OLIGOCHAETA	1.	2917.	0.03	99.59
61	SPIO FILICORNIS	1.	2918.	0.03	99.62
62	LAONICE CIRRATA	1.	2919.	0.03	99.66
63	OWENIA FUSIFORMIS	1.	2920.	0.03	99.69
64	STAURONEREIS CAECUS	1.	2921.	0.03	99.73
65	PARAONIS GRACILIS	1.	2922.	0.03	99.76
66	MALDANE SARSI	1.	2923.	0.03	99.79
67	BRADA VILLOSA	1.	2924.	0.03	99.83
68	PHERUSA AFFINIS	1.	2925.	0.03	99.86
69	HALIMEDON SP.	1.	2926.	0.03	99.90
70	ARGISSA HAMATIPES	1.	2927.	0.03	99.93
71	CEREBRATULUS LACTEUS	1.	2928.	0.03	99.97
72	PHYLUM A	1.	2929.	0.03	100.00

NUMBER OF SPECIES 72

NUMBER OF INDIVIDUALS 2929.

INDIVIDUALS PER M2 29290

CRUISE EX8001 STATION 05 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AMPELISCA AGASSIZI	1115.	1115.	42.12	42.12
2	MALDANE SARSI	380.	1495.	14.36	56.48
3	HAPLOOPS TUBICOLA	311.	1806.	11.75	68.23
4	PRIONOSPIO STEENSTRUPI	183.	1989.	6.91	75.14
5	AMPHARETE ARCTICA	162.	2151.	6.12	81.26
6	RHODINE LOVENI	130.	2281.	4.91	86.17
7	THARYX SP.	43.	2324.	1.62	87.80
8	SPIO FILICORNIS	26.	2350.	0.98	88.78
9	ASABELLIDES OCULATA	24.	2374.	0.91	89.69
10	LUMBRINERIS FRAGILIS	20.	2394.	0.76	90.44
11	ERICTHONIUS RUBRICORNIS	18.	2412.	0.68	91.12
12	BYBLIS GAIMARDI	16.	2428.	0.60	91.73
13	MEDIOMASTUS AMBISETA	16.	2444.	0.60	92.33
14	CAPRELLA UNICA	11.	2455.	0.42	92.75
15	ASTARTE UNDATA	11.	2466.	0.42	93.16
16	NINOE NIGRIPES	11.	2477.	0.42	93.58
17	DIASTYLIS QUADRISPINOSA	10.	2487.	0.38	93.96
18	MELINNA CRISTATA	10.	2497.	0.38	94.33
19	HARPINIA PROPINQUA	9.	2506.	0.34	94.67
20	PHOLOE MINUTA	9.	2515.	0.34	95.01
21	SABELLA PENICILLUS	9.	2524.	0.34	95.35
22	CARDITA BOREALIS	8.	2532.	0.30	95.66
23	STERNASPIS SCUTATA	8.	2540.	0.30	95.96
24	EUDORELLA TRUNCATULA	7.	2547.	0.26	96.22
25	PERIPLOMA PAPYRATIUM	6.	2553.	0.23	96.45
26	NUCULA DELPHINODONTA	6.	2559.	0.23	96.68
27	CEREBRATULUS LACTEUS	5.	2564.	0.19	96.86
28	PHYLLODOCE MUCOSA	5.	2569.	0.19	97.05
29	CRENELLA DECUSSATA	4.	2573.	0.15	97.20
30	THYASIRA FLEXUOSA	4.	2577.	0.15	97.36
31	GONIADA MACULATA	4.	2581.	0.15	97.51
32	DULICHIA MONACANTHA	3.	2584.	0.11	97.62
33	TRICHOBRANCHUS GLACIALIS	3.	2587.	0.11	97.73
34	PARAONIS GRACILIS	3.	2590.	0.11	97.85
35	NOTOMASTUS LATERICUS	3.	2593.	0.11	97.96
36	DIPLOCIRRUS HIRSUTUS	3.	2596.	0.11	98.07
37	AEGININA LONGICORNIS	2.	2598.	0.08	98.15
38	PHOTIS MACROCOXA	2.	2600.	0.08	98.22
39	LEPTOCHEIRUS PINGUIS	2.	2602.	0.08	98.30
40	HALIMEDON SP.	2.	2604.	0.08	98.38
41	ALVANIA CARINATA	2.	2606.	0.08	98.45
42	MODIOLUS MODIOLUS	2.	2608.	0.08	98.53
43	AMPHIPHOLIS SQUAMATA	2.	2610.	0.08	98.60
44	OLIGOCHAETA	2.	2612.	0.08	98.68
45	STAURONEREIS CAECUS	2.	2614.	0.08	98.75
46	NEPHTYS INCISA	2.	2616.	0.08	98.83
47	SCALIBREGMA INFLATUM	2.	2618.	0.08	98.90
48	LAONICE CIRRATA	2.	2620.	0.08	98.98
49	LEPTOSTYLIS LONGIMANA	1.	2621.	0.04	99.02
50	PTILANTHURA TENUIS	1.	2622.	0.04	99.06
51	MUNNA FABRICII	1.	2623.	0.04	99.09
52	ORCHOMENELLA PINGUIS	1.	2624.	0.04	99.13
53	PHOXOCEPHALUS HOLBOLLI	1.	2625.	0.04	99.17
54	UNCIOLA IRRORATA	1.	2626.	0.04	99.21
55	PLEUSTES PANOPLUS	1.	2627.	0.04	99.24
56	METOPELLA ANGUSTA	1.	2628.	0.04	99.28
57	PONTOGENEIA INERMIS	1.	2629.	0.04	99.32
58	ANONYX LILJEBORGI	1.	2630.	0.04	99.36
59	AMPELISCA MACROCEPHALA	1.	2631.	0.04	99.39
60	PHASCOLION STROMBI	1.	2632.	0.04	99.43
61	CERIANTHUS BOREALIS	1.	2633.	0.04	99.47
62	NUCULA ANNULATA	1.	2634.	0.04	99.51
63	CERASTODERMA PINNULATUM	1.	2635.	0.04	99.55
64	CHIRIDOTA LAEVIS	1.	2636.	0.04	99.58
65	STRONGYLOCENTROTUS DROEBACHIENSIS	1.	2637.	0.04	99.62
66	OPHIOPHOLIS ACULEATA	1.	2638.	0.04	99.66
67	OPHIURA SARSI	1.	2639.	0.04	99.70
68	PARAPIONOSYLLIS LONGOCIRRATA	1.	2640.	0.04	99.73
69	SPHAERODOROPSIS MINUTA	1.	2641.	0.04	99.77
70	EUSYLLIS BLOMSTRANDI	1.	2642.	0.04	99.81
71	ARICIDEA QUADRILOBATA	1.	2643.	0.04	99.85
72	PRAXILLELLA PRAETERMISSA	1.	2644.	0.04	99.89
73	ETEONE LONGA	1.	2645.	0.04	99.92
74	POTAMILLA NEGLECTA	1.	2646.	0.04	99.96
75	PHYLLODOCE MACULATA	1.	2647.	0.04	100.00

NUMBER OF SPECIES 75

NUMBER OF INDIVIDUALS 2647.

INDIVIDUALS PER M2 26470

CRUISE EX8001 STATION 06 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	371.	371.	56.55	56.55
2	STERNASPIS SCUTATA	33.	404.	5.03	61.59
3	MEDIOMASTUS AMBISETA	30.	434.	4.57	66.16
4	THARYX SP.	21.	455.	3.20	69.36
5	SPIO FILICORNIS	16.	471.	2.44	71.80
6	NINOE NIGRIPES	12.	483.	1.83	73.63
7	AMPHIPHOLIS SQUAMATA	11.	494.	1.68	75.30
8	HALIMEDON SP.	9.	503.	1.37	76.68
9	CEREBRATULUS LACTEUS	7.	510.	1.07	77.74
10	EUDORELLA TRUNCATULA	7.	517.	1.07	78.81
11	OWENIA FUSIFORMIS	7.	524.	1.07	79.88
12	PARAONIS GRACILIS	7.	531.	1.07	80.94
13	STENOPLEUSTES INERMIS	6.	537.	0.91	81.86
14	SCOLOPLOS SP.	6.	543.	0.91	82.77
15	AGLAOPHAMUS NEOTENUS	6.	549.	0.91	83.69
16	ARICIDEA QUADRILOBATA	6.	555.	0.91	84.60
17	NUCULA DELPHINODONTA	6.	561.	0.91	85.52
18	ALVANIA CARINATA	6.	567.	0.91	86.43
19	OLIGOCHAETA	5.	572.	0.76	87.19
20	MALDANE SARSI	5.	577.	0.76	87.96
21	ARICIDEA JEFFREYSII	5.	582.	0.76	88.72
22	AMPHARETE ARCTICA	5.	587.	0.76	89.48
23	DIPLOCIRRUS HIRSUTUS	5.	592.	0.76	90.24
24	LUMBRINERIS FRAGILIS	5.	597.	0.76	91.01
25	STEREOBALANUS CANADENSIS	4.	601.	0.61	91.62
26	DULICHIA MONOCANTHA	4.	605.	0.61	92.23
27	EDOTEA TRILOBA	4.	609.	0.61	92.84
28	HARTMANIA MOOREI	4.	613.	0.61	93.44
29	ARGISSA HAMATIPES	3.	616.	0.46	93.90
30	MONOCULODES TESSELATUS	3.	619.	0.46	94.36
31	APISTOBRANCHUS TULLBERGI	3.	622.	0.46	94.82
32	NEMERTEA D	2.	624.	0.30	95.12
33	BATHYMEDON SP.	2.	626.	0.30	95.43
34	HARPINIA PROPINQUA	2.	628.	0.30	95.73
35	METOPELLA ANGUSTA	2.	630.	0.30	96.04
36	AMPELISCA AGASSIZI	2.	632.	0.30	96.34
37	MELITA N.SP.	2.	634.	0.30	96.65
38	SABELLA PENICILLUS	2.	636.	0.30	96.95
39	THYASIRA FLEXUOSA	2.	638.	0.30	97.26
40	PERIPLOMA PAPYRATIUM	2.	640.	0.30	97.56
41	ANEMONE A	1.	641.	0.15	97.71
42	ECHIURUS ECHIURUS	1.	642.	0.15	97.87
43	NEMERTEA C	1.	643.	0.15	98.02
44	MAYERELLA LIMICOLA	1.	644.	0.15	98.17
45	ORCHOMENELLA PINGUIS	1.	645.	0.15	98.32
46	PHOTIS MACROCOXA	1.	646.	0.15	98.48
47	TEREBELLIDAE	1.	647.	0.15	98.63
48	PRAXILLELLA GRACILIS	1.	648.	0.15	98.78
49	TRICHOBRANCHUS GLACIALIS	1.	649.	0.15	98.93
50	NEPHTYS INCISA	1.	650.	0.15	99.08
51	RHODINE LOVENI	1.	651.	0.15	99.24
52	ARICIDEA SUECICA	1.	652.	0.15	99.39
53	PHOLOE MINUTA	1.	653.	0.15	99.54
54	SPIOPHANES BOMBYX	1.	654.	0.15	99.69
55	PRAXILLELLA SP.	1.	655.	0.15	99.85
56	CERASTODERMA PINNULATUM	1.	656.	0.15	100.00

NUMBER OF SPECIES 56

NUMBER OF INDIVIDUALS 656.

INDIVIDUALS PER M2 6560

CRUISE EX8001 STATION 07 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	EUDORELLA TRUNCATULA	491.	491.	67.08	67.08
2	PRIONOSPIO STEENSTRUPI	87.	578.	11.89	78.96
3	DIASTYLIS SCULPTA	51.	629.	6.97	85.93
4	AGLAOPHAMUS NEOTENUS	37.	666.	5.05	90.98
5	NEPHTYS INCISA	11.	677.	1.50	92.49
6	ERYTHROPS ERYTHROPHTHALMA	11.	688.	1.50	93.99
7	ARICIDEA SUECICA	8.	696.	1.09	95.08
8	MEDIOMASTUS AMBISETA	5.	701.	0.68	95.76
9	CEREBRATULUS LACTEUS	4.	705.	0.55	96.31
10	SCOLOPLOS SP.	3.	708.	0.41	96.72
11	EUDORELLA HISPIDA	3.	711.	0.41	97.13
12	HALIMEDON SP.	3.	714.	0.41	97.54
13	LUMBRINERIS FRAGILIS	2.	716.	0.27	97.81
14	THARYX SP.	2.	718.	0.27	98.09
15	DULICHIA MONOCANTHA	2.	720.	0.27	98.36
16	ORCHOMENELLA PINGUIS	2.	722.	0.27	98.63
17	BATHYMEDON SP.	2.	724.	0.27	98.91
18	NEOMYSIS AMERICANA	2.	726.	0.27	99.18
19	GEMMA GEMMA	1.	727.	0.14	99.32
20	CERASTODERMA PINNULATUM	1.	728.	0.14	99.45
21	NASSARIUS TRIVITTATUS	1.	729.	0.14	99.59
22	ARICIDEA JEFFREYSII	1.	730.	0.14	99.73
23	ETEONE LONGA	1.	731.	0.14	99.86
24	ARGISSA HAMATIPES	1.	732.	0.14	100.00

NUMBER OF SPECIES 24

NUMBER OF INDIVIDUALS 732.

INDIVIDUALS PER M2 7320

CRUISE EX8001 STATION 08 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	977.	977.	74.92	74.92
2	MEDIOMASTUS AMBISETA	56.	1033.	4.29	79.22
3	EUDORELLA TRUNCATULA	42.	1075.	3.22	82.44
4	LUMBRINERIS TENUIS	37.	1112.	2.84	85.28
5	ARICIDEA JEFFREYSII	18.	1130.	1.38	86.66
6	NINOE NIGRIPES	16.	1146.	1.23	87.88
7	APISTOBRANCHUS TULLBERGI	15.	1161.	1.15	89.03
8	NUCULA DELPHINODONTA	13.	1174.	1.00	90.03
9	ARGISSA HAMATIPES	13.	1187.	1.00	91.03
10	OLIGOCHAETA	11.	1198.	0.84	91.87
11	SCOLOPLOS SP.	11.	1209.	0.84	92.71
12	AGLAOPHAMUS NEOTENUS	11.	1220.	0.84	93.56
13	PHYLLODOCE MUCOSA	10.	1230.	0.77	94.33
14	OWENIA FUSIFORMIS	8.	1238.	0.61	94.94
15	STERNASPIS SCUTATA	6.	1244.	0.46	95.40
16	PARAONIS GRACILIS	6.	1250.	0.46	95.86
17	ETEONE LONGA	6.	1256.	0.46	96.32
18	CRENELLA DECUSSATA	5.	1261.	0.38	96.70
19	ORCHOMENELLA PINGUIS	5.	1266.	0.38	97.09
20	PHOLOE MINUTA	4.	1270.	0.31	97.39
21	AMPHARETE ARCTICA	4.	1274.	0.31	97.70
22	OPHELINA ACUMINATA	3.	1277.	0.23	97.93
23	NEMERTEA D	2.	1279.	0.15	98.08
24	CHIRIDOTA LAEVIS	2.	1281.	0.15	98.24
25	PHERUSA AFFINIS	2.	1283.	0.15	98.39
26	THARYX SP.	2.	1285.	0.15	98.54
27	LUMBRINERIS FRAGILIS	2.	1287.	0.15	98.70
28	NEOMYSIS AMERICANA	2.	1289.	0.15	98.85
29	AMPELISCA VADORUM	2.	1291.	0.15	99.00
30	CASCO BIGELOWI	2.	1293.	0.15	99.16
31	CYLICHNA GOULDI	1.	1294.	0.08	99.23
32	THYASIRA FLEXUOSA	1.	1295.	0.08	99.31
33	GEMMA GEMMA	1.	1296.	0.08	99.39
34	YOLDIA LIMATULA	1.	1297.	0.08	99.46
35	PERIPLOMA PAPYRATIUM	1.	1298.	0.08	99.54
36	NEMERTEA C	1.	1299.	0.08	99.62
37	CERIANTHUS BOREALIS	1.	1300.	0.08	99.69
38	SABELLA PENICILLUS	1.	1301.	0.08	99.77
39	HARTMANIA MOOREI	1.	1302.	0.08	99.85
40	ETEONE FLAVA	1.	1303.	0.08	99.92
41	METOPELLA ANGUSTA	1.	1304.	0.08	100.00

NUMBER OF SPECIES 41

NUMBER OF INDIVIDUALS 1304.

INDIVIDUALS PER M2 13040

CRUISE EX8001 STATION 09 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	OLIGOCHAETA	776.	776.	48.77	48.77
2	ARCHIANNELIDA	186.	962.	11.69	60.47
3	PARAONIS LYRA	161.	1123.	10.12	70.58
4	THARYX SP.	95.	1218.	5.97	76.56
5	CEREBRATULUS LACTEUS	72.	1290.	4.53	81.08
6	EXOGONE VERUGA	63.	1353.	3.96	85.04
7	PRAXILLELLA PRAETERMISSA	48.	1401.	3.02	88.06
8	EXOGONE HEBES	37.	1438.	2.33	90.38
9	ARICIDEA JEFFREYSII	33.	1471.	2.07	92.46
10	AMPHARETE ARCTICA	25.	1496.	1.57	94.03
11	CHIRODOTEA COECA	22.	1518.	1.38	95.41
12	STAURONEREIS RUDOLPHI	19.	1537.	1.19	96.61
13	SYLLIS CORNUTA	10.	1547.	0.63	97.23
14	LUMBRINERIS ACUTA	9.	1556.	0.57	97.80
15	POLYCIRRUS PHOSPHOREUS	7.	1563.	0.44	98.24
16	PLATYHELMINTHES	4.	1567.	0.25	98.49
17	PRIONOSPIO STEENSTRUPI	4.	1571.	0.25	98.74
18	PHOLOE MINUTA	3.	1574.	0.19	98.93
19	LUMBRINERIS TENUIS	3.	1577.	0.19	99.12
20	ASTARTE BOREALIS	2.	1579.	0.13	99.25
21	NASSARIUS TRIVITTATUS	2.	1581.	0.13	99.37
22	LUMBRINERIS FRAGILIS	2.	1583.	0.13	99.50
23	CERASTODERMA PINNULATUM	1.	1584.	0.06	99.56
24	OWENIA FUSIFORMIS	1.	1585.	0.06	99.62
25	POTAMILLA NEGLECTA	1.	1586.	0.06	99.69
26	OPHIOGLYCERA GIGANTEA	1.	1587.	0.06	99.75
27	GONIADA MACULATA	1.	1588.	0.06	99.81
28	AGLAOPHAMUS CIRCINATA	1.	1589.	0.06	99.87
29	DIASTYLIS SCULPTA	1.	1590.	0.06	99.94
30	PSAMMONYX NOBILIS	1.	1591.	0.06	100.00

NUMBER OF SPECIES 30

NUMBER OF INDIVIDUALS 1591.

INDIVIDUALS PER M2 15910

CRUISE EX8001 STATION 10 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	165.	165.	20.17	20.17
2	NUCULA DELPHINODONTA	87.	252.	10.64	30.81
3	SPIO FILICORNIS	81.	333.	9.90	40.71
4	AMPELISCA AGASSIZI	78.	411.	9.54	50.24
5	THARYX SP.	49.	460.	5.99	56.23
6	ARCTICA ISLANDICA	40.	500.	4.89	61.12
7	AMPHARETE ACUTIFRONS	32.	532.	3.91	65.04
8	CASCO BIGELOWI	25.	557.	3.06	68.09
9	NINOE NIGRIPES	23.	580.	2.81	70.90
10	MEDIOMASTUS AMBISETA	21.	601.	2.57	73.47
11	EDOTEA TRILOBA	20.	621.	2.44	75.92
12	CRENELLA DECUSSATA	18.	639.	2.20	78.12
13	MALDANE SARSI	17.	656.	2.08	80.20
14	STERNASPIS SCUTATA	16.	672.	1.96	82.15
15	THYASIRA FLEXUOSA	16.	688.	1.96	84.11
16	ALVANIA CARINATA	15.	703.	1.83	85.94
17	SCOLOPLOS SP.	11.	714.	1.34	87.29
18	DULICHIA MONOCANTHA	7.	721.	0.86	88.14
19	TEREBELLID A	6.	727.	0.73	88.88
20	OLIGOCHAETA	6.	733.	0.73	89.61
21	ARICIDEA SUECICA	5.	738.	0.61	90.22
22	AMPHARETE ARCTICA	5.	743.	0.61	90.83
23	EUDORELLA TRUNCATULA	5.	748.	0.61	91.44
24	LEPTOCHEIRUS PINGUIS	5.	753.	0.61	92.05
25	PERIPLOMA PAPYRATIUM	5.	758.	0.61	92.66
26	SABELLA PENICILLUS	4.	762.	0.49	93.15
27	DIPLOCIRRUS HIRSUTUS	4.	766.	0.49	93.64
28	NUCULA ANNULATA	4.	770.	0.49	94.13
29	APISTOBRANCHUS TULLBERGI	3.	773.	0.37	94.50
30	NEPHTYS INCISA	3.	776.	0.37	94.87
31	MONOCULODES TESSELATUS	3.	779.	0.37	95.23
32	PARAONIS GRACILIS	2.	781.	0.24	95.48
33	RHODINE LOVENI	2.	783.	0.24	95.72
34	PHYLLODOCE MUCOSA	2.	785.	0.24	95.97
35	ETEONE LONGA	2.	787.	0.24	96.21
36	OWENIA FUSIFORMIS	2.	789.	0.24	96.45
37	LUMBRINERIS TENUIS	2.	791.	0.24	96.70
38	YOLDIA LIMATULA	2.	793.	0.24	96.94
39	CEREBRATULUS LACTEUS	2.	795.	0.24	97.19
40	?CHAETOPTERUS SP.	1.	796.	0.12	97.31
41	TEREBELLIDES STROEMI	1.	797.	0.12	97.43
42	HARMATHOE IMBRICATA	1.	798.	0.12	97.55
43	PHERUSA AFFINIS	1.	799.	0.12	97.68
44	SCALIBREGMA INFLATUM	1.	800.	0.12	97.80
45	ARICIDEA QUADRILOBATA	1.	801.	0.12	97.92
46	SPIOPHANES BOMBYX	1.	802.	0.12	98.04
47	LAONICE CIRRATA	1.	803.	0.12	98.17
48	PHOLOE MINUTA	1.	804.	0.12	98.29
49	DIASTYLIS CORNUIFER	1.	805.	0.12	98.41
50	DIASTYLIS SCULPTA	1.	806.	0.12	98.53
51	DIASTYLIS QUADRISPINOSA	1.	807.	0.12	98.65
52	LEPTOSTYLIS LONGIMANA	1.	808.	0.12	98.78
53	PETALOSARSIA DECLIVIS	1.	809.	0.12	98.90
54	HALIMEDON SP.	1.	810.	0.12	99.02
55	STENOPLEUSTES INERMIS	1.	811.	0.12	99.14
56	ANONYX LILJEBORGI	1.	812.	0.12	99.27
57	ARGISSA HAMATIPES	1.	813.	0.12	99.39
58	AMPELISCA MACROCEPHALA	1.	814.	0.12	99.51
59	CERASTODERMA PINNULATUM	1.	815.	0.12	99.63
60	CYLICHNA GOULDI	1.	816.	0.12	99.75
61	CHIRIDOTA LAEVIS	1.	817.	0.12	99.88
62	ASTERIAS SP.	1.	818.	0.12	100.00

NUMBER OF SPECIES 62

NUMBER OF INDIVIDUALS 818.

INDIVIDUALS PER M2 8180

CRUISE EX8001 STATION 11 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	505.	505.	55.37	55.37
2	SPIO FILICORNIS	77.	582.	8.44	63.82
3	MEDIOMASTUS AMBISETA	63.	645.	6.91	70.72
4	PARAONIS GRACILIS	27.	672.	2.96	73.68
5	AMPELISCA VADORUM	25.	697.	2.74	76.43
6	ARCTICA ISLANDICA	20.	717.	2.19	78.62
7	NUCULA DELPHINODONTA	18.	735.	1.97	80.59
8	NINOE NIGRIPES	18.	753.	1.97	82.57
9	THYASIRA FLEXUOSA	17.	770.	1.86	84.43
10	STERNASPIS SCUTATA	16.	786.	1.75	86.18
11	THARYX SP.	12.	798.	1.32	87.50
12	EUDORELLA TRUNCATULA	12.	810.	1.32	88.82
13	PHOTIS MACROCOXA	10.	820.	1.10	89.91
14	SCOLOPLOS SP.	8.	828.	0.88	90.79
15	ALVANIA CARINATA	7.	835.	0.77	91.56
16	CEREBRATULUS LACTEUS	7.	842.	0.77	92.32
17	EDOTEA TRILOBA	6.	848.	0.66	92.98
18	AMPHARETE ARCTICA	5.	853.	0.55	93.53
19	CRENELLA DECUSSATA	4.	857.	0.44	93.97
20	OLIGOCHAETA	4.	861.	0.44	94.41
21	DIASTYLIS SCULPTA	4.	865.	0.44	94.85
22	SABELLA PENICILLUS	3.	868.	0.33	95.18
23	RHODINE LOVENI	3.	871.	0.33	95.50
24	HIPPOMEDON SERRATUS	3.	874.	0.33	95.83
25	STENOPLEUSTES INERMIS	3.	877.	0.33	96.16
26	PERIPLOMA PAPYRATIUM	2.	879.	0.22	96.38
27	NUCULA ANNULATA	2.	881.	0.22	96.60
28	PHOLOE MINUTA	2.	883.	0.22	96.82
29	ARICIDEA JEFFREYSII	2.	885.	0.22	97.04
30	NEPHTYS INCISA	2.	887.	0.22	97.26
31	EUDORELLA HISPIDA	2.	889.	0.22	97.48
32	HARPINIA PROPINQUA	2.	891.	0.22	97.70
33	ARGISSA HAMATIPES	2.	893.	0.22	97.92
34	METOPELLA ANGUSTA	2.	895.	0.22	98.14
35	MODIOLUS MODIOLUS	1.	896.	0.11	98.25
36	MYA ARENARIA	1.	897.	0.11	98.35
37	NUCULA TENUIS	1.	898.	0.11	98.46
38	PITAR MORRHUANA	1.	899.	0.11	98.57
39	DIPLOCIRRUS HIRSUTUS	1.	900.	0.11	98.68
40	LUMBRINERIS TENUIS	1.	901.	0.11	98.79
41	AGLAOPHAMUS NEOTENUS	1.	902.	0.11	98.90
42	AMPHARETE ACUTIFRONS	1.	903.	0.11	99.01
43	EUCLYMENE COLLARIS	1.	904.	0.11	99.12
44	ETEONE LONGA	1.	905.	0.11	99.23
45	LUMBRINERIS FRAGILIS	1.	906.	0.11	99.34
46	BATHYMEDON SP.	1.	907.	0.11	99.45
47	HALIMEDON SP.	1.	908.	0.11	99.56
48	MONOCULODES N.SP.	1.	909.	0.11	99.67
49	OXYUROSTYLIS SMITHI	1.	910.	0.11	99.78
50	PHOXOCEPHALUS HOLBOLLI	1.	911.	0.11	99.89
51	ORCHOMENELLA PINGUIS	1.	912.	0.11	100.00

NUMBER OF SPECIES 51

NUMBER OF INDIVIDUALS 912.

INDIVIDUALS PER M2 9120

CRUISE EX8001 STATION 12 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	351.	351.	55.36	55.36
2	NUCULA DELPHINODONTA	30.	381.	4.73	60.09
3	MEDIOMASTUS AMBISETA	27.	408.	4.26	64.35
4	SPIO FILICORNIS	23.	431.	3.63	67.98
5	MAYERELLA LIMICOLA	18.	449.	2.84	70.82
6	STERNASPIS SCUTATA	17.	466.	2.68	73.50
7	NINOE NIGRIPES	16.	482.	2.52	76.03
8	EUDORELLA TRUNCATULA	15.	497.	2.37	78.39
9	ARICIDEA SUECICA	12.	509.	1.89	80.28
10	STENOPLEUSTES INERMIS	11.	520.	1.74	82.02
11	THYASIRA FLEXUOSA	10.	530.	1.58	83.60
12	SCOLOPLOS SP.	9.	539.	1.42	85.02
13	HALIMEDON SP.	8.	547.	1.26	86.28
14	PARAONIS GRACILIS	8.	555.	1.26	87.54
15	PHOTIS MACROCOXA	6.	561.	0.95	88.49
16	ALVANIA CARINATA	6.	567.	0.95	89.43
17	DIASTYLIS SCULPTA	5.	572.	0.79	90.22
18	SABELLA PENICILLUS	5.	577.	0.79	91.01
19	DULICHIA MONOCANTHA	4.	581.	0.63	91.64
20	APISTOBRANCHUS TULLBERGI	4.	585.	0.63	92.27
21	ANEMONE A	4.	589.	0.63	92.90
22	MONOCULODES TESSELATUS	3.	592.	0.47	93.38
23	ANONYX LILJEBORGI	3.	595.	0.47	93.85
24	METOPELLA ANGUSTA	3.	598.	0.47	94.32
25	THARYX SP.	3.	601.	0.47	94.79
26	ETEONE LONGA	3.	604.	0.47	95.27
27	CEREBRATULUS LACTEUS	3.	607.	0.47	95.74
28	MYRIOCHELE HEERI	2.	609.	0.32	96.06
29	OLIGOCHAETA	2.	611.	0.32	96.37
30	AGLAOPHAMUS NEOTENUS	2.	613.	0.32	96.69
31	LUMBRINERIS TENUIS	2.	615.	0.32	97.00
32	LEPTOSTYLIS LONGIMANA	1.	616.	0.16	97.16
33	BATHYMEDON SP.	1.	617.	0.16	97.32
34	HARPINIA PROPINQUA	1.	618.	0.16	97.48
35	AMPELISCA AGASSIZI	1.	619.	0.16	97.63
36	ARGISSA HAMATIPES	1.	620.	0.16	97.79
37	DENTALIUM ENTALE	1.	621.	0.16	97.95
38	NUCULA ANNULATA	1.	622.	0.16	98.11
39	ARCTICA ISLANDICA	1.	623.	0.16	98.26
40	PERIPLOMA PAPYRATIUM	1.	624.	0.16	98.42
41	MYA ARENARIA	1.	625.	0.16	98.58
42	PHOLOE MINUTA	1.	626.	0.16	98.74
43	RHODINE LOVENI	1.	627.	0.16	98.90
44	EUCLYMENE COLLARIS	1.	628.	0.16	99.05
45	ARICIDEA QUADRILOBATA	1.	629.	0.16	99.21
46	ARICIDEA JEFFREYSII	1.	630.	0.16	99.37
47	PHYLLODOCE MUCOSA	1.	631.	0.16	99.53
48	PHERUSA AFFINIS	1.	632.	0.16	99.68
49	MOLPADIA OOLICTICA	1.	633.	0.16	99.84
50	NEMERTEA C	1.	634.	0.16	100.00

NUMBER OF SPECIES 50

NUMBER OF INDIVIDUALS 634.

INDIVIDUALS PER M2 6340

CRUISE EX8001 STATION 13 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	267.	267.	43.91	43.91
2	EUDORELLA TRUNCATULA	135.	402.	22.20	66.12
3	MEDIOMASTUS AMBISETA	47.	449.	7.73	73.85
4	SCOLOPLOS SP.	43.	492.	7.07	80.92
5	AGLAOPHAMUS NEOTENUS	22.	514.	3.62	84.54
6	ARICIDEA QUADRILOBATA	14.	528.	2.30	86.84
7	ARICIDEA JEFFREYSII	8.	536.	1.32	88.16
8	NUCULA DELPHINODONTA	8.	544.	1.32	89.47
9	ERYTHROPS ERYTHROPHTHALMA	8.	552.	1.32	90.79
10	CEREBRATULUS LACTEUS	5.	557.	0.82	91.61
11	NEPHTYS INCISA	4.	561.	0.66	92.27
12	ANEMONE A	4.	565.	0.66	92.93
13	OLIGOCHAETA	3.	568.	0.49	93.42
14	MAYERELLA LIMICOLA	3.	571.	0.49	93.91
15	EUDORELLA HISPIDA	3.	574.	0.49	94.41
16	CASCO BIGELOWI	3.	577.	0.49	94.90
17	LUMBRINERIS TENUIS	2.	579.	0.33	95.23
18	ETEONE LONGA	2.	581.	0.33	95.56
19	STAURONEREIS CAECUS	2.	583.	0.33	95.89
20	SPIO FILICORNIS	2.	585.	0.33	96.22
21	GEMMA GEMMA	2.	587.	0.33	96.55
22	ARGISSA HAMATIPES	2.	589.	0.33	96.87
23	MELITA N.SP.	2.	591.	0.33	97.20
24	ARCHIANNELIDA	1.	592.	0.16	97.37
25	LUMBRINERIS FRAGILIS	1.	593.	0.16	97.53
26	BRADA VILLOSA	1.	594.	0.16	97.70
27	HARTMANIA MOOREI	1.	595.	0.16	97.86
28	APISTOBRANCHUS TULLBERGI	1.	596.	0.16	98.03
29	STERNASPIS SCUTATA	1.	597.	0.16	98.19
30	PARAONIS GRACILIS	1.	598.	0.16	98.35
31	NEMERTEA H	1.	599.	0.16	98.52
32	MODIOLUS MODIOLUS	1.	600.	0.16	98.68
33	NUCULA ANNULATA	1.	601.	0.16	98.85
34	NASSARIUS TRIVITTATUS	1.	602.	0.16	99.01
35	DIASTYLIS SCULPTA	1.	603.	0.16	99.18
36	HALIMEDON SP.	1.	604.	0.16	99.34
37	PHOTIS MACROCOXA	1.	605.	0.16	99.51
38	HARPINIA PROPINQUA	1.	606.	0.16	99.67
39	ORCHOMENELLA PINGUIS	1.	607.	0.16	99.84
40	AMPELISCA ABDITA	1.	608.	0.16	100.00

NUMBER OF SPECIES 40

NUMBER OF INDIVIDUALS 608.

INDIVIDUALS PER M2 6080

CRUISE EX8001 STATION 15 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	112.	112.	22.67	22.67
2	EUDORELLA TRUNCATULA	99.	211.	20.04	42.71
3	AGLAOPHAMUS NEOTENUS	86.	297.	17.41	60.12
4	MEDIOMASTUS AMBISETA	74.	371.	14.98	75.10
5	SCOLOPLOS SP.	28.	399.	5.67	80.77
6	ARICIDEA SUECICA	25.	424.	5.06	85.83
7	DIASTYLIS SCULPTA	14.	438.	2.83	88.66
8	ANEMONE A	10.	448.	2.02	90.69
9	OLIGOCHAETA	9.	457.	1.82	92.51
10	CEREBRATULUS LACTEUS	6.	463.	1.21	93.72
11	EUDORELLA HISPIDA	5.	468.	1.01	94.74
12	DULICHIA MONOCANTHA	3.	471.	0.61	95.34
13	ARGISSA HAMATIPES	3.	474.	0.61	95.95
14	MELITA N.SP.	3.	477.	0.61	96.56
15	AMPELISCA ABDITA	2.	479.	0.40	96.96
16	PHASCOLOPSIS GOULDII	2.	481.	0.40	97.37
17	NASSARIUS TRIVITTATUS	2.	483.	0.40	97.77
18	NEPHTYS INCISA	2.	485.	0.40	98.18
19	HALIMEDON SP.	1.	486.	0.20	98.38
20	OWENIA FUSIFORMIS	1.	487.	0.20	98.58
21	LUMBRINERIS FRAGILIS	1.	488.	0.20	98.79
22	STERNASPIS SCUTATA	1.	489.	0.20	98.99
23	ARICIDEA QUADRILOBATA	1.	490.	0.20	99.19
24	THARYX SP.	1.	491.	0.20	99.39
25	LUMBRINERIS TENUIS	1.	492.	0.20	99.59
26	PHYLLODOCE MUCOSA	1.	493.	0.20	99.80
27	SPIO FILICORNIS	1.	494.	0.20	100.00

NUMBER OF SPECIES 27

NUMBER OF INDIVIDUALS 494.

INDIVIDUALS PER M2 4940

CRUISE EX8001 STATION 16 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	100.	100.	34.48	34.48
2	AGLAOPHAMUS NEOTENUS	62.	162.	21.38	55.86
3	MEDIOMASTUS AMBISETA	26.	188.	8.97	64.83
4	SCOLOPLOS SP.	25.	213.	8.62	73.45
5	EUDORELLA TRUNCATULA	23.	236.	7.93	81.38
6	ANEMONE A	8.	244.	2.76	84.14
7	DIASTYLIS SCULPTA	8.	252.	2.76	86.90
8	LUMBRINERIS TENUIS	6.	258.	2.07	88.97
9	OLIGOCHAETA	5.	263.	1.72	90.69
10	NEOMYSIS AMERICANA	5.	268.	1.72	92.41
11	ERYTHROPS ERYTHROPHTHALMA	4.	272.	1.38	93.79
12	ARICIDEA SUECICA	3.	275.	1.03	94.83
13	OWENIA FUSIFORMIS	2.	277.	0.69	95.52
14	AMPELISCA ABDITA	2.	279.	0.69	96.21
15	STENOPLEUSTES INERMIS	2.	281.	0.69	96.90
16	NEPHTYS INCISA	1.	282.	0.34	97.24
17	LUMBRINERIS FRAGLILS	1.	283.	0.34	97.59
18	PHYLLODOCE MUCOSA	1.	284.	0.34	97.93
19	THARYX SP.	1.	285.	0.34	98.28
20	CYLICHNA ALBA	1.	286.	0.34	98.62
21	NASSARIUS TRIVITTATUS	1.	287.	0.34	98.97
22	CEREBRATULUS LACTEUS	1.	288.	0.34	99.31
23	OXYUROSTYLIS SMITHI	1.	289.	0.34	99.65
24	PHOTIS MACROCOXA	1.	290.	0.34	100.00

NUMBER OF SPECIES 24

NUMBER OF INDIVIDUALS 290.

INDIVIDUALS PER M2 2900

CRUISE EX8001 STATION 17 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	276.	276.	84.15	84.15
2	ANEMONE A	40.	316.	12.20	96.34
3	MULINIA LATERALIS	7.	323.	2.13	98.48
4	NEPHTYS INCISA	2.	325.	0.61	99.09
5	PRIONOSPIO STEENSTRUPI	1.	326.	0.30	99.39
6	DULICHIA MONOCANTHA	1.	327.	0.30	99.70
7	NEOMYSIS AMERICANA	1.	328.	0.30	100.00

NUMBER OF SPECIES 7

NUMBER OF INDIVIDUALS 328.

INDIVIDUALS PER M2 3280

CRUISE EX8001 STATION 18 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	OLIGOCHAETA	43.	43.	19.82	19.82
2	LUMBRINERIS TENUIS	39.	82.	17.97	37.79
3	ARICIDEA JEFFREYSII	37.	119.	17.05	54.84
4	LIMNORIA LIGNORUM	30.	149.	13.82	68.66
5	AMPHARETE ARCTICA	14.	163.	6.45	75.12
6	POLYDORA SOCIALIS	6.	169.	2.76	77.88
7	NINOE NIGRIPES	6.	175.	2.76	80.65
8	PHOTIS MACROCOXA	5.	180.	2.30	82.95
9	ETEONE LONGA	5.	185.	2.30	85.25
10	PRIONOSPIO STEENSTRUPI	5.	190.	2.30	87.56
11	PHOLOE MINUTA	4.	194.	1.84	89.40
12	GEMMA GEMMA	3.	197.	1.38	90.78
13	LUMBRINERIS FRAGILIS	3.	200.	1.38	92.17
14	TELLINA AGILIS	2.	202.	0.92	93.09
15	MEMBRANIPORIDAE	2.	204.	0.92	94.01
16	NEPHTYS INCISA	2.	206.	0.92	94.93
17	NEREIS VIRENS	2.	208.	0.92	95.85
18	YOLDIA LIMATULA	1.	209.	0.46	96.31
19	MYA ARENARIA	1.	210.	0.46	96.77
20	LYONSIA HYALINA	1.	211.	0.46	97.23
21	NASSARIUS TRIVITTATUS	1.	212.	0.46	97.70
22	COROPHIUM INSIDIOSUM	1.	213.	0.46	98.16
23	UNICOLA IRRORATA	1.	214.	0.46	98.62
24	SCOLOPLOS SP.	1.	215.	0.46	99.08
25	OPHELINA ACUMINATA	1.	216.	0.46	99.54
26	AGLAOPHAMUS NEOTENUS	1.	217.	0.46	100.00
27	CERIANTHUS BOREALIS	+			

NUMBER OF SPECIES 27

NUMBER OF INDIVIDUALS 217.+

INDIVIDUALS PER M2 2170+

CRUISE EX8001 STATION 19 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	LUMBRINERIS TENUIS	73.	73.	28.08	28.08
2	NINOE NIGRIPES	31.	104.	11.92	40.00
3	AGLAOPHAMUS NEOTENUS	30.	134.	11.54	51.54
4	NUCULA DELPHINODONTA	19.	153.	7.31	58.85
5	PRIONOSPIO STEENSTRUPI	15.	168.	5.77	64.62
6	PHYLLODOCE MUCOSA	13.	181.	5.00	69.62
7	EUDORELLA TRUNCATULA	11.	192.	4.23	73.85
8	ORCHOMENELLA PINGUIS	10.	202.	3.85	77.69
9	ARICIDEA JEFFREYSII	9.	211.	3.46	81.15
10	AMPHARETE ARCTICA	8.	219.	3.08	84.23
11	OLIGOCHAETA	6.	225.	2.31	86.54
12	TELLINA AGILIS	4.	229.	1.54	88.08
13	NEMERTEA C	4.	233.	1.54	89.62
14	PHOLOE MINUTA	3.	236.	1.15	90.77
15	YOLDIA LIMATULA	3.	239.	1.15	91.92
16	ETEONE LONGA	2.	241.	0.77	92.69
17	PHERUSA AFFINIS	2.	243.	0.77	93.46
18	NEPHTYS INCISA	2.	245.	0.77	94.23
19	METERYTHROPS ROBUSTA	2.	247.	0.77	95.00
20	MEDIOMASTUS AMBISETA	1.	248.	0.38	95.38
21	LUMBRINERIS FRAGILIS	1.	249.	0.38	95.77
22	POTAMILLA NEGLECTA	1.	250.	0.38	96.15
23	NEREIS SP.	1.	251.	0.38	96.54
24	GEMMA GEMMA	1.	252.	0.38	96.92
25	NUCULA ANNULATA	1.	253.	0.38	97.31
26	MODIOLUS MODIOLUS	1.	254.	0.38	97.69
27	ANEMONE A	1.	255.	0.38	98.08
28	NEMERTEA E	1.	256.	0.38	98.46
29	CERIANTHUS BOREALIS	1.	257.	0.38	98.85
30	DIASTYLIS SCULPTA	1.	258.	0.38	99.23
31	AMPELISCA ABDITA	1.	259.	0.38	99.62
32	LEPTOCHEIRUS PINGUIS	1.	260.	0.38	100.00

NUMBER OF SPECIES 32

NUMBER OF INDIVIDUALS 260.

INDIVIDUALS PER M2 2600

CRUISE EX8001 STATION 20 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	NUCULA DELPHINODONTA	113.	113.	37.92	37.92
2	PRIONOSPIO STEENSTRUPI	68.	181.	22.82	60.74
3	EUDORELLA TRUNCATULA	18.	199.	6.04	66.78
4	MEDIOMASTUS AMBISETA	15.	214.	5.03	71.81
5	LUMBRINERIS TENUIS	15.	229.	5.03	76.85
6	ANEMONE A	11.	240.	3.69	80.54
7	AGLAOPHAMUS NEOTENUS	7.	247.	2.35	82.89
8	NINOE NIGRIPES	6.	253.	2.01	84.90
9	THARYX SP.	5.	258.	1.68	86.58
10	DIASTYLIS SCULPTA	4.	262.	1.34	87.92
11	ARGISSA HAMATIPES	4.	266.	1.34	89.26
12	OLIGOCHAETA	4.	270.	1.34	90.60
13	OWENIIDAE	4.	274.	1.34	91.95
14	CEREBRATULUS LACTEUS	3.	277.	1.01	92.95
15	PHYLLODOCE MUCOSA	3.	280.	1.01	93.96
16	GEMMA GEMMA	2.	282.	0.67	94.63
17	HYDROBIA SP.	2.	284.	0.67	95.30
18	NASSARIUS TRIVITTATUS	2.	286.	0.67	95.97
19	ORCHOMENELLA PINGUIS	2.	288.	0.67	96.64
20	LEPTOCHEIRUS PINGUIS	2.	290.	0.67	97.32
21	ARICIDEA JEFFREYSII	2.	292.	0.67	97.99
22	YOLDIA LIMATULA	1.	293.	0.34	98.32
23	NUCULA ANNULATA	1.	294.	0.34	98.66
24	CERASTODERMA PINNULATUM	1.	295.	0.34	98.99
25	TELLINA AGILIS	1.	296.	0.34	99.33
26	NEOMYSIS AMERICANA	1.	297.	0.34	99.66
27	NEMERTEA C	1.	298.	0.34	100.00

NUMBER OF SPECIES 27

NUMBER OF INDIVIDUALS 298.

INDIVIDUALS PER M2 2980

CRUISE EX8001 STATION 21 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	NUCULA DELPHINODONTA	540.	540.	35.79	35.79
2	PRIONOSPIO STEENSTRUPI	335.	875.	22.20	57.99
3	LUMBRINERIS TENUIS	182.	1057.	12.06	70.05
4	ARICIDEA JEFFREYSII	92.	1149.	6.10	76.14
5	MEDIOMASTUS AMBISETA	53.	1202.	3.51	79.66
6	SCOLOPLOS SP.	49.	1251.	3.25	82.90
7	EUDORELLA TRUNCATULA	38.	1289.	2.52	85.42
8	PHOXOCEPHALUS HOLBOLLI	36.	1325.	2.39	87.81
9	AGLAOPHAMUS NEOTENUS	31.	1356.	2.05	89.86
10	DIASTYLIS SCULPTA	29.	1385.	1.92	91.78
11	ORCHOMENELLA PINGUIS	18.	1403.	1.19	92.98
12	NINOE NIGRIPES	17.	1420.	1.13	94.10
13	PHOTIS MACROCOXA	14.	1434.	0.93	95.03
14	OLIGOCHAETA	14.	1448.	0.93	95.96
15	PHYLLODOCE MUCOSA	5.	1453.	0.33	96.29
16	PITAR MORRHUANA	5.	1458.	0.33	96.62
17	BATHYMEDON SP.	4.	1462.	0.27	96.89
18	DULICHIA MONOCANTHA	4.	1466.	0.27	97.15
19	CEREBRATULUS LACTEUS	4.	1470.	0.27	97.42
20	THARYX SP.	4.	1474.	0.27	97.68
21	ETEONE LONGA	4.	1478.	0.27	97.95
22	PERIPLOMA PAPYRATIUM	4.	1482.	0.27	98.21
23	CERIANTHUS BOREALIS	3.	1485.	0.20	98.41
24	ARGISSA HAMATIPES	2.	1487.	0.13	98.54
25	NEMERTEA C	2.	1489.	0.13	98.67
26	AMPHARETE ACUTIFRONS	2.	1491.	0.13	98.81
27	POTAMILLA NEGLECTA	2.	1493.	0.13	98.94
28	MYA ARENARIA	2.	1495.	0.13	99.07
29	NUCULA ANNULATA	2.	1497.	0.13	99.20
30	CHIRIDOTA LAEVIS	1.	1498.	0.07	99.27
31	STENOPLEUSTES INERMIS	1.	1499.	0.07	99.34
32	CASCO BIGELOWI	1.	1500.	0.07	99.40
33	SABELLA PENICILLUS	1.	1501.	0.07	99.47
34	OWENIA FUSIFORMIS	1.	1502.	0.07	99.54
35	PHERUSA AFFINIS	1.	1503.	0.07	99.60
36	NEPHTYS INCISA	1.	1504.	0.07	99.67
37	CAPITELLA CAPITATA	1.	1505.	0.07	99.73
38	PARAONIS GRACILIS	1.	1506.	0.07	99.80
39	STAURONEREIS CAECUS	1.	1507.	0.07	99.87
40	MODIOLUS MODIOLUS	1.	1508.	0.07	99.93
41	CRENELLA DECUSSATA	1.	1509.	0.07	100.00

NUMBER OF SPECIES 41

NUMBER OF INDIVIDUALS 1509.

INDIVIDUALS PER M2 15090

CRUISE EX8001 STATION 22 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	269.	269.	28.50	28.50
2	MEDIOMASTUS AMBISETA	120.	389.	12.71	41.21
3	LUMBRINERIS TENUIS	71.	460.	7.52	48.73
4	ARICIDEA JEFFREYSII	59.	519.	6.25	54.98
5	AMPHARETE ARCTICA	54.	573.	5.72	60.70
6	NUCULA DELPHINODONTA	48.	621.	5.08	65.78
7	EUDORELLA TRUNCATULA	29.	650.	3.07	68.86
8	NINOE NIGRIPES	28.	678.	2.97	71.82
9	THARYX SP.	26.	704.	2.75	74.58
10	CRENELLA DECUSSATA	23.	727.	2.44	77.01
11	PHOXOCEPHALUS HOLBOLLI	19.	746.	2.01	79.03
12	NASSARIUS TRIVITTATUS	17.	763.	1.80	80.83
13	ARCHIANNELIDA	15.	778.	1.59	82.42
14	AMPELISCA VADORUM	12.	790.	1.27	83.69
15	COROPHIUM CRASSICORNE	10.	800.	1.06	84.75
16	SCOLOPLOS SP.	10.	810.	1.06	85.80
17	DIASTYLIS SCULPTA	9.	819.	0.95	86.76
18	OLIGOCHAETA	8.	827.	0.85	87.61
19	POLYDORA SP.	8.	835.	0.85	88.45
20	UNCIOLA IRRORATA	7.	842.	0.74	89.19
21	ETEONE LONGA	7.	849.	0.74	89.94
22	PHOLOE MINUTA	6.	855.	0.64	90.57
23	HARPINIA PROPINQUA	5.	860.	0.53	91.10
24	LEPTOCHEIRUS PINGUIS	5.	865.	0.53	91.63
25	CERASTODERMA PINNULATUM	5.	870.	0.53	92.16
26	SYLLIS GRACILIS	5.	875.	0.53	92.69
27	AUTOLYTUS SP.	4.	879.	0.42	93.11
28	PITAR MORRHUANA	4.	883.	0.42	93.54
29	POLYDORA SOCIALIS	4.	887.	0.42	93.96
30	OPHELINA ACUMINATA	4.	891.	0.42	94.39
31	PHERUSA AFFINIS	4.	895.	0.42	94.81
32	NEMERTEA F	3.	898.	0.32	95.13
33	NEMERTEA C	3.	901.	0.32	95.44
34	ORCHOMENELLA PINGUIS	3.	904.	0.32	95.76
35	EUCLYMENE COLLARIS	3.	907.	0.32	96.08
36	SCOLOPLOS ROBUSTUS	3.	910.	0.32	96.40
37	CHIRIDOTA LAEVIS	2.	912.	0.21	96.61
38	NEMERTEA G	2.	914.	0.21	96.82
39	CEREBRATULUS LACTEUS	2.	916.	0.21	97.03
40	PROTOMEDEIA FASCIATA	2.	918.	0.21	97.25
41	GEMMA GEMMA	2.	920.	0.21	97.46
42	PERIPLOMA PAPYRATIUM	2.	922.	0.21	97.67
43	TELLINA AGILIS	2.	924.	0.21	97.88
44	HYDROBIA SP.	2.	926.	0.21	98.09
45	NEREIS PELAGICA	2.	928.	0.21	98.30
46	AMPHIPHOLIS SQUAMATA	1.	929.	0.11	98.41
47	CERIANTHUS BOREALIS	1.	930.	0.11	98.52
48	CANCER BOREALIS	1.	931.	0.11	98.62
49	PAGURUS PUBESCENS	1.	932.	0.11	98.73
50	STENOPLEUSTES GRACILIS	1.	933.	0.11	98.83
51	STENOPLEUSTES INERMIS	1.	934.	0.11	98.94
52	EDOTEA TRILOBA	1.	935.	0.11	99.05
53	DOTO CORONATA	1.	936.	0.11	99.15
54	COCCULINA SP.	1.	937.	0.11	99.26
55	ASTARTE UNDATA	1.	938.	0.11	99.36
56	PANDORA GOULDIANA	1.	939.	0.11	99.47
57	LYONSIA HYALINA	1.	940.	0.11	99.58
58	EXOGONE HEBES	1.	941.	0.11	99.68
59	POLYDORA QUADRILOBATA	1.	942.	0.11	99.79
60	LUMBRINERIS FRAGILIS	1.	943.	0.11	99.89
61	SPIOPHANES BOMBYX	1.	944.	0.11	100.00
62	MEMBRANIPORIDAE	+			
63	SERTULARIA PUMILA	+			

NUMBER OF SPECIES 63

NUMBER OF INDIVIDUALS 944.+

INDIVIDUALS PER M2 9440+

CRUISE EX8001 STATION 23 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	638.	638.	44.55	44.55
2	AGLAOPHAMUS NEOTENUS	180.	818.	12.57	57.12
3	LUMBRINERIS TENUIS	173.	991.	12.08	69.20
4	NUCULA DELPHINODONTA	156.	1147.	10.89	80.10
5	EUDORELLA TRUNCATULA	65.	1212.	4.54	84.64
6	ARICIDEA JEFFREYSII	35.	1247.	2.44	87.08
7	MEDIOMASTUS AMBISETA	29.	1276.	2.03	89.11
8	ORCHOMENELLA PINGUIS	20.	1296.	1.40	90.50
9	DIASTYLIS SCULPTA	17.	1313.	1.19	91.69
10	NINOE NIGRIPES	16.	1329.	1.12	92.81
11	OLIGOCHAETA	16.	1345.	1.12	93.92
12	AMPELISCA ABDITA	11.	1356.	0.77	94.69
13	AMPHARETE ARCTICA	9.	1365.	0.63	95.32
14	ARGISSA HAMATIPES	7.	1372.	0.49	95.81
15	STAURONEREIS CAECUS	6.	1378.	0.42	96.23
16	CASCO BIGELOWI	5.	1383.	0.35	96.58
17	NEPHTYS INCISA	5.	1388.	0.35	96.93
18	HARPINIA PROPINQUA	4.	1392.	0.28	97.21
19	PHOXOCEPHALUS HOLBOLLI	3.	1395.	0.21	97.42
20	CERIANTHUS BOREALIS	3.	1398.	0.21	97.63
21	ETEONE LONGA	3.	1401.	0.21	97.83
22	SCOLOPLOS SP.	3.	1404.	0.21	98.04
23	LEPTOCHEIRUS PINGUIS	2.	1406.	0.14	98.18
24	BATHYMEDON SP.	2.	1408.	0.14	98.32
25	AMPHARETE ACUTIFRONS	2.	1410.	0.14	98.46
26	SABELLA PENICILLUS	2.	1412.	0.14	98.60
27	PHYLLODOCE MUCOSA	2.	1414.	0.14	98.74
28	MICROPHTHALMUS ABERRANS	2.	1416.	0.14	98.88
29	PITAR MORRHUANA	2.	1418.	0.14	99.02
30	CRENELLA DECUSSATA	2.	1420.	0.14	99.16
31	NEOMYSIS AMERICANA	1.	1421.	0.07	99.23
32	METERYTHROPS ROBUSTA	1.	1422.	0.07	99.30
33	COROPHIUM CRASSICORNE	1.	1423.	0.07	99.37
34	MONOCULODES N.SP.	1.	1424.	0.07	99.44
35	NEMERTEA C	1.	1425.	0.07	99.51
36	SYLLIS GRACILIS	1.	1426.	0.07	99.58
37	CLYMENELLA TORQUATA	1.	1427.	0.07	99.65
38	PHERUSA AFFINIS	1.	1428.	0.07	99.72
39	PARAONIS GRACILIS	1.	1429.	0.07	99.79
40	PHOLOE MINUTA	1.	1430.	0.07	99.86
41	YOLDIA LIMATULA	1.	1431.	0.07	99.93
42	GEMMA GEMMA	1.	1432.	0.07	100.00

NUMBER OF SPECIES 42

NUMBER OF INDIVIDUALS 1432.

INDIVIDUALS PER M2 14320

CRUISE EX8001 STATION 24 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	227.	227.	26.00	26.00
2	PRIONOSPIO STEENSTRUPI	206.	433.	23.60	49.60
3	ARICIDEA JEFFREYSII	196.	629.	22.45	72.05
4	MEDIOMASTUS AMBISETA	77.	706.	8.82	80.87
5	CASCO BIGELOWI	40.	746.	4.58	85.45
6	OLIGOCHAETA	31.	777.	3.55	89.00
7	EUDORELLA TRUNCATULA	18.	795.	2.06	91.07
8	ORCHOMENELLA PINGUIS	16.	811.	1.83	92.90
9	NINOE NIGRIPES	13.	824.	1.49	94.39
10	LEPTOCHEIRUS PINGUIS	10.	834.	1.15	95.53
11	ETEONE LONGA	6.	840.	0.69	96.22
12	AMPELISCA ABDITA	6.	846.	0.69	96.91
13	PHOXOCEPHALUS HOLBOLLI	4.	850.	0.46	97.37
14	SCOLOPLOS SP.	3.	853.	0.34	97.71
15	LUMBRINERIS TENUIS	3.	856.	0.34	98.05
16	NEPHTYS INCISA	2.	858.	0.23	98.28
17	THARYX SP.	2.	860.	0.23	98.51
18	NEMERTEA H	2.	862.	0.23	98.74
19	DULICHIA MONOCANTHA	2.	864.	0.23	98.97
20	UNCIOLA IRRORATA	2.	866.	0.23	99.20
21	NEREIS VIRENS	1.	867.	0.11	99.31
22	PHYLLODOCE MUCOSA	1.	868.	0.11	99.43
23	POLYDORA LIGNI	1.	869.	0.11	99.54
24	NEMERTEA C	1.	870.	0.11	99.66
25	DIASTYLIS SCULPTA	1.	871.	0.11	99.77
26	PHOTIS MACROCOXA	1.	872.	0.11	99.89
27	NEOMYSIS AMERICANA	1.	873.	0.11	100.00

NUMBER OF SPECIES 27

NUMBER OF INDIVIDUALS 873.

INDIVIDUALS PER M2 8730

CRUISE EX8001 STATION 25 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	219.	219.	51.41	51.41
2	ANEMONE A	50.	269.	11.74	63.15
3	CASCO BIGELOWI	47.	316.	11.03	74.18
4	PRIONOSPIO STEENSTRUPI	37.	353.	8.69	82.86
5	DIASTYLIS SCULPTA	19.	372.	4.46	87.32
6	EUDORELLA TRUNCATULA	14.	386.	3.29	90.61
7	MEDIOMASTUS AMBISETA	8.	394.	1.88	92.49
8	ARICIDEA JEFFREYSII	7.	401.	1.64	94.13
9	NEOMYSIS AMERICANA	7.	408.	1.64	95.77
10	METERYTHROPS ROBUSTA	3.	411.	0.70	96.48
11	OLIGOCHAETA	2.	413.	0.47	96.95
12	POTAMILLA NEGLECTA	2.	415.	0.47	97.42
13	ORCHOMENELLA PINGUIS	2.	417.	0.47	97.89
14	AMPELISCA ABDITA	2.	419.	0.47	98.36
15	MELITA N.SP.	2.	421.	0.47	98.83
16	LUMBRINERIS TENUIS	1.	422.	0.23	99.06
17	NINOE NIGRIPES	1.	423.	0.23	99.30
18	ERYTHROPS ERYTHROPHTHALMA	1.	424.	0.23	99.53
19	ARGISSA HAMATIPES	1.	425.	0.23	99.77
20	YOLDIA LIMATULA	1.	426.	0.23	100.00

NUMBER OF SPECIES 20

NUMBER OF INDIVIDUALS 426.

INDIVIDUALS PER M2 4260

CRUISE EX8001 STATION 26 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	98.	98.	65.33	65.33
2	ANEMONE A	12.	110.	8.00	73.33
3	PRIONOSPIO STEENSTRUPI	8.	118.	5.33	78.67
4	ARICIDEA JEFFREYSII	7.	125.	4.67	83.33
5	MEDIOMASTUS AMBISETA	5.	130.	3.33	86.67
6	EUDORELLA TRUNCATULA	3.	133.	2.00	88.67
7	NEOMYSIS AMERICANA	3.	136.	2.00	90.67
8	DULICHIA MONOCANTHA	2.	138.	1.33	92.00
9	ERYTHROPS ERYTHROPHTHALMA	2.	140.	1.33	93.33
10	LITTORINA OBTUSATA	2.	142.	1.33	94.67
11	OLIGOCHAETA	1.	143.	0.67	95.33
12	NEPHTYS INCISA	1.	144.	0.67	96.00
13	METERYTHROPS ROBUSTA	1.	145.	0.67	96.67
14	COROPHIUM CRASSICORNE	1.	146.	0.67	97.33
15	HARPINIA PROPINQUA	1.	147.	0.67	98.00
16	MELITA N.SP.	1.	148.	0.67	98.67
17	PHOTIS MACROCOXA	1.	149.	0.67	99.33
18	YOLDIA LIMATULA	1.	150.	0.67	100.00

NUMBER OF SPECIES 18

NUMBER OF INDIVIDUALS 150.

INDIVIDUALS PER M2 1500

CRUISE EX8001 STATION 27 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	112.	112.	49.34	49.34
2	EUDORELLA TRUNCATULA	18.	130.	7.93	57.27
3	ARICIDEA JEFFREYSII	16.	146.	7.05	64.32
4	NINOE NIGRIPES	14.	160.	6.17	70.48
5	NUCULA DELPHINODONTA	10.	170.	4.41	74.89
6	SCOLOPLOS SP.	7.	177.	3.08	77.97
7	AGLAOPHAMUS NEOTENUS	7.	184.	3.08	81.06
8	MEDIOMASTUS AMBISETA	6.	190.	2.64	83.70
9	OLIGOCHAETA	5.	195.	2.20	85.90
10	ARICIDEA SUECICA	5.	200.	2.20	88.11
11	ERYTHROPS ERYTHROPHTHALMA	4.	204.	1.76	89.87
12	DIASTYLIS SCULPTA	3.	207.	1.32	91.19
13	ARGISSA HAMATIPES	3.	210.	1.32	92.51
14	OWENIA FUSIFORMIS	3.	213.	1.32	93.83
15	CEREBRATULUS LACTEUS	2.	215.	0.88	94.71
16	NEPHTYS INCISA	2.	217.	0.88	95.59
17	MONOCULODES TUBERCULATUS	1.	218.	0.44	96.04
18	METERYTHROPS ROBUSTA	1.	219.	0.44	96.48
19	MYSIS STENOLEPIS	1.	220.	0.44	96.92
20	MODIOLUS MODIOLUS	1.	221.	0.44	97.36
21	YOLDIA LIMATULA	1.	222.	0.44	97.80
22	MOLPADIA OOLICTICA	1.	223.	0.44	98.24
23	PARAONIS GRACILIS	1.	224.	0.44	98.68
24	THARYX SP.	1.	225.	0.44	99.12
25	LUMBRINERIS TENUIS	1.	226.	0.44	99.56
26	SPIO FILICORNIS	1.	227.	0.44	100.00

NUMBER OF SPECIES 26

NUMBER OF INDIVIDUALS 227.

INDIVIDUALS PER M2 2270

CRUISE EX8001 STATION 28 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	1088.	1088.	63.74	63.74
2	LEPTOCHEIRUS PINGUIS	98.	1186.	5.74	69.48
3	NUCULA DELPHINODONTA	83.	1269.	4.86	74.34
4	EUDORELLA TRUNCATULA	60.	1329.	3.51	77.86
5	LUMBRINERIS TENUIS	60.	1389.	3.51	81.37
6	DIASTYLIS SCULPTA	52.	1441.	3.05	84.42
7	NINOE NIGRIPES	47.	1488.	2.75	87.17
8	ORCHOMENELLA PINGUIS	45.	1533.	2.64	89.81
9	ARGISSA HAMATIPES	22.	1555.	1.29	91.10
10	MEDIOMASTUS AMBISETA	15.	1570.	0.88	91.97
11	AGLAOPHAMUS NEOTENUS	15.	1585.	0.88	92.85
12	BATHYMEDON SP.	13.	1598.	0.76	93.61
13	ARICIDEA JEFFREYSII	12.	1610.	0.70	94.32
14	PHYLLODOCE MUCOSA	9.	1619.	0.53	94.84
15	NEMERTEA D	8.	1627.	0.47	95.31
16	PHOXOCEPHALUS HOLBOLLI	8.	1635.	0.47	95.78
17	PHOTIS MACROCOXA	7.	1642.	0.41	96.19
18	ARICIDEA SUECICA	6.	1648.	0.35	96.54
19	PARAONIS GRACILIS	5.	1653.	0.29	96.84
20	OPHELINA ACUMINATA	5.	1658.	0.29	97.13
21	NEPHTYS INCISA	5.	1663.	0.29	97.42
22	CEREBRATULUS LACTEUS	4.	1667.	0.23	97.66
23	NEMERTEA C	3.	1670.	0.18	97.83
24	HARPINIA PROPINQUA	3.	1673.	0.18	98.01
25	STENOPLEUSTES INERMIS	3.	1676.	0.18	98.18
26	DULICHIA MONOCANTHA	3.	1679.	0.18	98.36
27	SCOLOPLOS SP.	3.	1682.	0.18	98.54
28	SPIO FILICORNIS	3.	1685.	0.18	98.71
29	NEMERTEA H	2.	1687.	0.12	98.83
30	MAYERELLA LIMICOLA	2.	1689.	0.12	98.95
31	MELITA N.SP.	2.	1691.	0.12	99.06
32	PHOLOE MINUTA	2.	1693.	0.12	99.18
33	OLIGOCHAETA	2.	1695.	0.12	99.30
34	PLATYHELMINTHES	1.	1696.	0.06	99.36
35	HALIMEDON SP.	1.	1697.	0.06	99.41
36	METOPELLA ANGUSTA	1.	1698.	0.06	99.47
37	UNCIOLA IRRORATA	1.	1699.	0.06	99.53
38	STAURONEREIS CAECUS	1.	1700.	0.06	99.59
39	SPIO SETOSA	1.	1701.	0.06	99.65
40	TEREBELLID B	1.	1702.	0.06	99.71
41	HARTMANIA MOOREI	1.	1703.	0.06	99.77
42	THARYX SP.	1.	1704.	0.06	99.82
43	GONIADA MACULATA	1.	1705.	0.06	99.88
44	PITAR MORRHUANA	1.	1706.	0.06	99.94
45	NUCULA ANNULATA	1.	1707.	0.06	100.00

NUMBER OF SPECIES 45

NUMBER OF INDIVIDUALS 1707.

INDIVIDUALS PER M2 17070

CRUISE EX8001 STATION 29 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	NUCULA DELPHINODONTA	110.	110.	30.73	30.73
2	PRIONOSPIO STEENSTRUPI	97.	207.	27.09	57.82
3	EUDORELLA TRUNCATULA	68.	275.	18.99	76.82
4	NINOE NIGRIPES	33.	308.	9.22	86.03
5	DIASTYLIS SCULPTA	11.	319.	3.07	89.11
6	LUMBRINERIS TENUIS	8.	327.	2.23	91.34
7	CEREBRATULUS LACTEUS	4.	331.	1.12	92.46
8	AMPHARETE ACUTIFRONS	3.	334.	0.84	93.30
9	SCOLOPLOS SP.	3.	337.	0.84	94.13
10	NEPHTYS INCISA	3.	340.	0.84	94.97
11	AGLAOPHAMUS NEOTENUS	2.	342.	0.56	95.53
12	ARICIDEA SUECICA	2.	344.	0.56	96.09
13	SPIO FILICORNIS	2.	346.	0.56	96.65
14	MEDIOMASTUS AMBISETA	1.	347.	0.28	96.93
15	PARAONIS GRACILIS	1.	348.	0.28	97.21
16	EUDORELLA HISPIDA	1.	349.	0.28	97.49
17	ARGISSA HAMATIPES	1.	350.	0.28	97.77
18	MELITA N.SP.	1.	351.	0.28	98.04
19	CASCO BIGELOWI	1.	352.	0.28	98.32
20	ERYTHROPS ERYTHROPHTHALMA	1.	353.	0.28	98.60
21	YOLDIA LIMATULA	1.	354.	0.28	98.88
22	THYASIRA FLEXUOSA	1.	355.	0.28	99.16
23	NUCULA ANNULATA	1.	356.	0.28	99.44
24	NASSARIUS TRIVITTATUS	1.	357.	0.28	99.72
25	MOLPADIA OOLICTICA	1.	358.	0.28	100.00

NUMBER OF SPECIES 25

NUMBER OF INDIVIDUALS 358.

INDIVIDUALS PER M2 3580

CRUISE EX8001 STATION 30 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	EUDORELLA TRUNCATULA	43.	43.	39.81	39.81
2	PRIONOSPIO STEENSTRUPI	29.	72.	26.85	66.67
3	NINOE NIGRIPES	6.	78.	5.56	72.22
4	ERYTHROPS ERYTHROPHTHALMA	5.	83.	4.63	76.85
5	SPIO FILICORNIS	4.	87.	3.70	80.56
6	CEREBRATULUS LACTEUS	4.	91.	3.70	84.26
7	MELITA N.SP.	4.	95.	3.70	87.96
8	SCOLOPLOS SP.	3.	98.	2.78	90.74
9	DIASTYLIS SCULPTA	3.	101.	2.78	93.52
10	MEDIOMASTUS AMBISETA	2.	103.	1.85	95.37
11	NEPHTYS INCISA	2.	105.	1.85	97.22
12	GONIADA MACULATA	1.	106.	0.93	98.15
13	ARICIDEA SUECICA	1.	107.	0.93	99.07
14	ARGISSA HAMATIPES	1.	108.	0.93	100.00

NUMBER OF SPECIES 14

NUMBER OF INDIVIDUALS 108.

INDIVIDUALS PER M2 1080

CRUISE EX8001 STATION 31 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	23.	23.	39.66	39.66
2	NINOE NIGRIPES	6.	29.	10.34	50.00
3	NEOMYSIS AMERICANA	5.	34.	8.62	58.62
4	NEPHTYS INCISA	4.	38.	6.90	65.52
5	SCOLOPLOS SP.	3.	41.	5.17	70.69
6	MEDIOMASTUS AMBISETA	3.	44.	5.17	75.86
7	CEREBRATULUS LACTEUS	3.	47.	5.17	81.03
8	ARICIDEA SUECICA	2.	49.	3.45	84.48
9	AGLAOPHAMUS NEOTENUS	2.	51.	3.45	87.93
10	EUDORELLA TRUNCATULA	2.	53.	3.45	91.38
11	DIASTYLIS SCULPTA	2.	55.	3.45	94.83
12	OLIGOCHAETA	1.	56.	1.72	96.55
13	ARGISSA HAMATIPES	1.	57.	1.72	98.28
14	DEXAMINE THEA	1.	58.	1.72	100.00

NUMBER OF SPECIES 14

NUMBER OF INDIVIDUALS 58.

INDIVIDUALS PER M2 580

CRUISE EX8001 STATION 32 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	100.	100.	94.34	94.34
2	PRIONOSPIO STEENSTRUPI	3.	103.	2.83	97.17
3	DULICHIA MONOCANTHA	1.	104.	0.94	98.11
4	CASCO BIGELOWI	1.	105.	0.94	99.06
5	BIVALVIA	1.	106.	0.94	100.00

NUMBER OF SPECIES 5

NUMBER OF INDIVIDUALS 106.

INDIVIDUALS PER M2 1060

CRUISE EX8001 STATION 33 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	434.	434.	46.92	46.92
2	EUDORELLA TRUNCATULA	94.	528.	10.16	57.08
3	AGLAOPHAMUS NEOTENUS	71.	599.	7.68	64.76
4	NUCULA DELPHINODONTA	61.	660.	6.59	71.35
5	DIASTYLIS SCULPTA	55.	715.	5.95	77.30
6	ARICIDEA JEFFREYSII	52.	767.	5.62	82.92
7	MEDIOMASTUS AMBISETA	37.	804.	4.00	86.92
8	LUMBRINERIS TENUIS	24.	828.	2.59	89.51
9	OLIGOCHAETA	17.	845.	1.84	91.35
10	NINOE NIGRIPES	17.	862.	1.84	93.19
11	SCOLOPLOS SP.	16.	878.	1.73	94.92
12	ERYTHROPS ERYTHROPHTHALMA	12.	890.	1.30	96.22
13	YOLDIA LIMATULA	6.	896.	0.65	96.86
14	ARGISSA HAMATIPES	4.	900.	0.43	97.30
15	NEMERTEA H	3.	903.	0.32	97.62
16	CEREBRATULUS LACTEUS	2.	905.	0.22	97.84
17	THARYX SP.	2.	907.	0.22	98.05
18	MYRIOCHELE HEERI	2.	909.	0.22	98.27
19	NEPHTYS INCISA	2.	911.	0.22	98.49
20	ORCHOMENELLA PINGUIS	2.	913.	0.22	98.70
21	NEMERTEA D	1.	914.	0.11	98.81
22	MICROPHTHALMUS ABERRANS	1.	915.	0.11	98.92
23	ETEONE FLAVA	1.	916.	0.11	99.03
24	AMPHARETE ARCTICA	1.	917.	0.11	99.13
25	MALDANE SARSI	1.	918.	0.11	99.24
26	HARTMANIA MOOREI	1.	919.	0.11	99.35
27	ETEONE HETEROPODA	1.	920.	0.11	99.46
28	CASSIDINIDEA LUNIFRONS	1.	921.	0.11	99.57
29	DULICHIA MONOCANTHA	1.	922.	0.11	99.68
30	HALIMEDON SP.	1.	923.	0.11	99.78
31	GEMMA GEMMA	1.	924.	0.11	99.89
32	HYDROBIA SP.	1.	925.	0.11	100.00

NUMBER OF SPECIES 32

NUMBER OF INDIVIDUALS 925.

INDIVIDUALS PER M2 9250

CRUISE EX8001 STATION 34 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	172.	172.	74.14	74.14
2	SCOLOPLOS SP.	20.	192.	8.62	82.76
3	OWENIA FUSIFORMIS	12.	204.	5.17	87.93
4	NEOMYSIS AMERICANA	11.	215.	4.74	92.67
5	EUDORELLA TRUNCATULA	4.	219.	1.72	94.40
6	ARGISSA HAMATIPES	4.	223.	1.72	96.12
7	DIASTYLIS SCULPTA	1.	224.	0.43	96.55
8	COROPHIUM TUBERCULATUM	1.	225.	0.43	96.98
9	PHOTIS MACROCOXA	1.	226.	0.43	97.41
10	ERYTHROPS ERYTHROPHTHALMA	1.	227.	0.43	97.84
11	CEREBRATULUS LACTEUS	1.	228.	0.43	98.28
12	ARICIDEA SUECICA	1.	229.	0.43	98.71
13	AMPHARETE ARCTICA	1.	230.	0.43	99.14
14	YOLDIA LIMATULA	1.	231.	0.43	99.57
15	CYLICHNA ALBA	1.	232.	0.43	100.00

NUMBER OF SPECIES 15

NUMBER OF INDIVIDUALS 232.

INDIVIDUALS PER M2 2320

CRUISE EX8001 STATION 35 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	519.	519.	83.98	83.98
2	OWENIA FUSIFORMIS	73.	592.	11.81	95.79
3	NEOMYSIS AMERICANA	16.	608.	2.59	98.38
4	AMPELISCA ABDITA	5.	613.	0.81	99.19
5	EUDORELLA TRUNCATULA	1.	614.	0.16	99.35
6	MELITA N.SP.	1.	615.	0.16	99.51
7	CASCO BIGELOWI	1.	616.	0.16	99.68
8	MULINIA LATERALIS	1.	617.	0.16	99.84
9	NASSARIUS TRIVITTATUS	1.	618.	0.16	100.00

NUMBER OF SPECIES 9

NUMBER OF INDIVIDUALS 618.

INDIVIDUALS PER M2 6180

CRUISE EX8001 STATION 36 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	NEMERTEA B	3.	3.	25.00	25.00
2	AGLAOPHAMUS NEOTENUS	3.	6.	25.00	50.00
3	COROPHIUM INSIDIOSUM	1.	7.	8.33	58.33
4	AMPELISCA ABDITA	1.	8.	8.33	66.67
5	CHIRODOTEA COECA	1.	9.	8.33	75.00
6	PHOLOE MINUTA	1.	10.	8.33	83.33
7	NEPHTYS BUCERA	1.	11.	8.33	91.67
8	PRIONOSPIO STEENSTRUPI	1.	12.	8.33	100.00

NUMBER OF SPECIES 8

NUMBER OF INDIVIDUALS 12.

INDIVIDUALS PER M2 120

CRUISE EX8001 STATION 37 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	OLIGOCHAETA	1462.	1462.	40.19	40.19
2	BALANUS BALANOIDES	904.	2366.	24.85	65.04
3	MYTILUS EDULIS	508.	2874.	13.96	79.00
4	STREBLOSPIO BENEDICTI	161.	3035.	4.43	83.42
5	POLYDORA LIGNI	150.	3185.	4.12	87.55
6	THARYX SP.	101.	3286.	2.78	90.32
7	JAERA SP.	90.	3376.	2.47	92.80
8	LITTORINA LITTOREA	87.	3463.	2.39	95.19
9	HETEROMASTUS FILIFORMIS	47.	3510.	1.29	96.48
10	NEREIS VIRENS	43.	3553.	1.18	97.66
11	GAMMARUS OCEANICUS	15.	3568.	0.41	98.08
12	MACOMA BALTHICA	13.	3581.	0.36	98.43
13	PYGOSPIO ELEGANS	12.	3593.	0.33	98.76
14	MYA ARENARIA	8.	3601.	0.22	98.98
15	PHOLOE MINUTA	7.	3608.	0.19	99.18
16	COROPHIUM TUBERCULATUM	5.	3613.	0.14	99.31
17	CAPITELLA CAPITATA	5.	3618.	0.14	99.45
18	COROPHIUM VOLUTATOR	4.	3622.	0.11	99.56
19	ETEONE LONGA	4.	3626.	0.11	99.67
20	POLYDORA SP.	4.	3630.	0.11	99.78
21	NEMERTEA D	3.	3633.	0.08	99.86
22	HYDROBIA SP.	3.	3636.	0.08	99.94
23	CALLIOSTOMA OCCIDENTALE	2.	3638.	0.05	100.00

NUMBER OF SPECIES 23

NUMBER OF INDIVIDUALS 3638.

INDIVIDUALS PER M2 36380

CRUISE EX8001 STATION 38 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	111.	111.	86.05	86.05
2	PRIONOSPIO STEENSTRUPI	6.	117.	4.65	90.70
3	MELITA N.SP.	2.	119.	1.55	92.25
4	OLIGOCHAETA	2.	121.	1.55	93.80
5	EUDORELLA TRUNCATULA	1.	122.	0.78	94.57
6	CASCO BIGELOWI	1.	123.	0.78	95.35
7	METERYTHROPS ROBUSTA	1.	124.	0.78	96.12
8	ETEONE LONGA	1.	125.	0.78	96.90
9	MEDIOMASTUS AMBISETA	1.	126.	0.78	97.67
10	THARYX SP.	1.	127.	0.78	98.45
11	AMPHARETE ARCTICA	1.	128.	0.78	99.22
12	LACUNA VINCTA	1.	129.	0.78	100.00

NUMBER OF SPECIES 12

NUMBER OF INDIVIDUALS 129.

INDIVIDUALS PER M2 1290

CRUISE EX8001 STATION 39 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	55.	55.	33.33	33.33
2	PRIONOSPIO STEENSTRUPI	51.	106.	30.91	64.24
3	MELITA N.SP.	21.	127.	12.73	76.97
4	SCOLOPLOS SP.	19.	146.	11.52	88.48
5	MEDIOMASTUS AMBISETA	5.	151.	3.03	91.52
6	NINOE NIGRIPES	4.	155.	2.42	93.94
7	ARICIDEA JEFFREYSII	3.	158.	1.82	95.76
8	EUDORELLA TRUNCATULA	2.	160.	1.21	96.97
9	CEREBRATULUS LACTEUS	1.	161.	0.61	97.58
10	ARICIDEA SUECICA	1.	162.	0.61	98.18
11	ERYTHROPS ERYTHROPHTHALMA	1.	163.	0.61	98.79
12	NEOMYSIS AMERICANA	1.	164.	0.61	99.39
13	METERYTHROPS ROBUSTA	1.	165.	0.61	100.00

NUMBER OF SPECIES 13

NUMBER OF INDIVIDUALS 165.

INDIVIDUALS PER M2 1650

CRUISE EX8001 STATION 40 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	23.	23.	30.67	30.67
2	ANEMONE A	15.	38.	20.00	50.67
3	ARICIDEA JEFFREYSII	12.	50.	16.00	66.67
4	PRIONOSPIO STEENSTRUPI	9.	59.	12.00	78.67
5	MELITA N.SP.	3.	62.	4.00	82.67
6	NINOE NIGRIPES	2.	64.	2.67	85.33
7	NEOMYSIS AMERICANA	2.	66.	2.67	88.00
8	YOLDIA LIMATULA	2.	68.	2.67	90.67
9	CEREBRATULUS LACTEUS	1.	69.	1.33	92.00
10	ARICIDEA SUECICA	1.	70.	1.33	93.33
11	ERYTHROPS ERYTHROPHTHALMA	1.	71.	1.33	94.67
12	ORCHOMENELLA PINGUIS	1.	72.	1.33	96.00
13	ARGISSA HAMATIPES	1.	73.	1.33	97.33
14	NUCULA DELPHINODONTA	1.	74.	1.33	98.67
15	CERASTODERMA PINNULATUM	1.	75.	1.33	100.00

NUMBER OF SPECIES 15

NUMBER OF INDIVIDUALS 75.

INDIVIDUALS PER M2 750

CRUISE EX8001 STATION 41 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AMPELISCA ABDITA	365.	365.	45.17	45.17
2	NEPHTYS SP.	297.	662.	36.76	81.93
3	POLYDORA LIGNI	35.	697.	4.33	86.26
4	PHOTIS MACROCOXA	21.	718.	2.60	88.86
5	MEDIOMASTUS AMBISETA	13.	731.	1.61	90.47
6	NASSARIUS TRIVITTATUS	12.	743.	1.49	91.96
7	TELLINA AGILIS	10.	753.	1.24	93.19
8	PRIONOSPIO STEENSTRUPI	6.	759.	0.74	93.94
9	DULICHIA MONOCANTHA	6.	765.	0.74	94.68
10	OLIGOCHAETA	5.	770.	0.62	95.30
11	ORCHOMENELLA PINGUIS	5.	775.	0.62	95.92
12	CIRRATULIDAE	4.	779.	0.50	96.41
13	EUDORELLA TRUNCATULA	4.	783.	0.50	96.91
14	OXYUROSTYLIS SMITHI	4.	787.	0.50	97.40
15	CAPITELLA CAPITATA	3.	790.	0.37	97.77
16	HETEROMASTUS FILIFORMIS	3.	793.	0.37	98.14
17	NINOE NIGRIPES	2.	795.	0.25	98.39
18	PHOLOE MINUTA	2.	797.	0.25	98.64
19	PHERUSA AFFINIS	2.	799.	0.25	98.89
20	ANEMONE A	1.	800.	0.12	99.01
21	SCOLOPLOS SP.	1.	801.	0.12	99.13
22	ARICIDEA JEFFREYSII	1.	802.	0.12	99.26
23	PHYLLODOCE MACULATA	1.	803.	0.12	99.38
24	SYLLIDAE	1.	804.	0.12	99.50
25	ETEONE LONGA	1.	805.	0.12	99.63
26	MALDANOPSIS ELONGATA	1.	806.	0.12	99.75
27	MELITA N.SP.	1.	807.	0.12	99.88
28	MULINIA LATERALIS	1.	808.	0.12	100.00
29	CAMPANULARIA	+			

NUMBER OF SPECIES 29

NUMBER OF INDIVIDUALS 808.+

INDIVIDUALS PER M2 8080+

CRUISE EX8001 STATION 42 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	235.	235.	86.40	86.40
2	SPIRORBIS BOREALIS	6.	241.	2.21	88.60
3	DULICHIA MONOCANTHA	4.	245.	1.47	90.07
4	NASSARIUS TRIVITTATUS	4.	249.	1.47	91.54
5	NEPHTYS INCISA	3.	252.	1.10	92.65
6	MULINIA LATERALIS	3.	255.	1.10	93.75
7	HYDROBIA SP.	3.	258.	1.10	94.85
8	DIASTYLIS SCULPTA	2.	260.	0.74	95.59
9	SPIRORBIS SP.	2.	262.	0.74	96.32
10	AEGININA LONGICORNIS	1.	263.	0.37	96.69
11	EUDORELLA TRUNCATULA	1.	264.	0.37	97.06
12	AMPELISCA ABDITA	1.	265.	0.37	97.43
13	ORCHOMENELLA PINGUIS	1.	266.	0.37	97.79
14	METERYTHROPS ROBUSTA	1.	267.	0.37	98.16
15	NEOMYSIS AMERICANA	1.	268.	0.37	98.53
16	ANEMONE A	1.	269.	0.37	98.90
17	POLYDORA LIGNI	1.	270.	0.37	99.26
18	NEREIS VIRENS	1.	271.	0.37	99.63
19	GEMMA GEMMA	1.	272.	0.37	100.00

NUMBER OF SPECIES 19

NUMBER OF INDIVIDUALS 272.

INDIVIDUALS PER M2 2720

CRUISE EX8001 STATION 43 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	24.	24.	54.55	54.55
2	NEOMYSIS AMERICANA	12.	36.	27.27	81.82
3	ANEMONE A	4.	40.	9.09	90.91
4	METERYTHROPS ROBUSTA	1.	41.	2.27	93.18
5	YOLDIA LIMATULA	1.	42.	2.27	95.45
6	MULINIA LATERALIS	1.	43.	2.27	97.73
7	NASSARIUS TRIVITTATUS	1.	44.	2.27	100.00

NUMBER OF SPECIES 7

NUMBER OF INDIVIDUALS 44.

INDIVIDUALS PER M2 440

CRUISE EX8001 STATION 44 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AMPELISCA ARDITA	563.	563.	26.27	26.27
2	COROPHIUM CRASSICORNE	440.	1003.	20.53	46.80
3	PRIONOSPIO STEENSTRUPI	264.	1267.	12.32	59.12
4	LUMBRINERIS TENUIS	207.	1474.	9.66	68.78
5	AGLAOPHAMUS NEOTENUS	116.	1590.	5.41	74.20
6	ARICIDEA JEFFREYSII	106.	1696.	4.95	79.14
7	PHOTIS MACROCOXA	75.	1771.	3.50	82.64
8	MEDIOMASTUS AMBISETA	51.	1822.	2.38	85.02
9	DULICHIA MONOCANTHA	46.	1868.	2.15	87.17
10	PHOXOCEPHALUS HOLBOLLI	45.	1913.	2.10	89.27
11	ORCHOMENELLA PINGUIS	38.	1951.	1.77	91.04
12	EUDORELLA TRUNCATULA	36.	1987.	1.68	92.72
13	NINOE NIGRIPES	34.	2021.	1.59	94.31
14	PHYLLODOCE MUCOSA	27.	2048.	1.26	95.57
15	DIASTYLIS SCULPTA	14.	2062.	0.65	96.22
16	PHOLOE MINUTA	13.	2075.	0.61	96.83
17	ETEONE LONGA	11.	2086.	0.51	97.34
18	AMPHARETE ACUTIFRONS	7.	2093.	0.33	97.67
19	SCOLOPLOS SP.	5.	2098.	0.23	97.90
20	NEPHTYS INCISA	5.	2103.	0.23	98.13
21	SACCOGLOSSUS KOWALEVSKII	5.	2108.	0.23	98.37
22	POTAMILLA NEGLECTA	4.	2112.	0.19	98.55
23	NEMERTEA A	4.	2116.	0.19	98.74
24	OLIGOCHAETA	3.	2119.	0.14	98.88
25	AMPHARETE ARCTICA	3.	2122.	0.14	99.02
26	MACOMA BALTHICA	3.	2125.	0.14	99.16
27	OWENIA FUSIFORMIS	2.	2127.	0.09	99.25
28	LUMBRINERIS BREVIPES	2.	2129.	0.09	99.35
29	ARGISSA HAMATIPES	2.	2131.	0.09	99.44
30	ASABELLIDES OCULATA	1.	2132.	0.05	99.49
31	STAURONEREIS CAECUS	1.	2133.	0.05	99.53
32	MICROPHTHALMUS ABERRANS	1.	2134.	0.05	99.58
33	POLYCIRRUS MEDUSA	1.	2135.	0.05	99.63
34	PHYLLODOCE MACULATA	1.	2136.	0.05	99.67
35	METERYTHROPS ROBUSTA	1.	2137.	0.05	99.72
36	DIASTYLIS POLITA	1.	2138.	0.05	99.77
37	UNCIOLA IRRORATA	1.	2139.	0.05	99.81
38	NEMERTEA H	1.	2140.	0.05	99.86
39	CERIANTHUS BOREALIS	1.	2141.	0.05	99.91
40	NUCULA DELPHINODONTA	1.	2142.	0.05	99.95
41	TELLINA AGILIS	1.	2143.	0.05	100.00
42	HYDROID A	+			

NUMBER OF SPECIES 42

NUMBER OF INDIVIDUALS 2143.+

INDIVIDUALS PER M2 21430+

CRUISE EX8001 STATION 45 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	AGLAOPHAMUS NEOTENUS	406.	406.	60.15	60.15
2	PRIONOSPIO STEENSTRUPI	110.	516.	16.30	76.44
3	ARICIDEA JEFFREYSII	55.	571.	8.15	84.59
4	THARYX SP.	53.	624.	7.85	92.44
5	NINOE NIGRIPES	13.	637.	1.93	94.37
6	NEREIS VIRENS	9.	646.	1.33	95.70
7	MEDIOMASTUS AMBISETA	6.	652.	0.89	96.59
8	COROPHIUM CRASSICORNE	5.	657.	0.74	97.33
9	SCOLOPLOS SP.	4.	661.	0.59	97.93
10	MICROPHTHALMUS ABERRANS	3.	664.	0.44	98.37
11	YOLDIA LIMATULA	1.	665.	0.15	98.52
12	CEREBRATULUS LACTEUS	1.	666.	0.15	98.67
13	OXYUROSTYLIS SMITHI	1.	667.	0.15	98.81
14	EUDORELLA TRUNCATULA	1.	668.	0.15	98.96
15	AMPELISCA ABDITA	1.	669.	0.15	99.11
16	PHOXOCEPHALUS HOLBOLLI	1.	670.	0.15	99.26
17	UNCIOLA IRRORATA	1.	671.	0.15	99.41
18	CASCO BIGELOWI	1.	672.	0.15	99.56
19	OLIGOCHAETA	1.	673.	0.15	99.70
20	ETEONE LONGA	1.	674.	0.15	99.85
21	NEPHTYS INCISA	1.	675.	0.15	100.00

NUMBER OF SPECIES 21

NUMBER OF INDIVIDUALS 675.

INDIVIDUALS PER M2 6750

CRUISE EX8001 STATION 46 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	NUCULA DELPHINODONTA	503.	503.	43.85	43.85
2	LUMBBINERIS TENUIS	206.	709.	17.96	61.81
3	PHOXOCEPHALUS HOLBOLLI	159.	868.	13.86	75.68
4	EUDORELLA TRUNCATULA	42.	910.	3.66	79.34
5	PHOTIS MACROCOXA	39.	949.	3.40	82.74
6	PHYLLODOCE MUCOSA	28.	977.	2.44	85.18
7	PRIONOSPIO STEENSTRUPI	27.	1004.	2.35	87.53
8	AMPELISCA ABDITA	27.	1031.	2.35	89.89
9	NINOE NIGRIPES	24.	1055.	2.09	91.98
10	ORCHOMENELLA PINGUIS	20.	1075.	1.74	93.72
11	AGLAOPHAMUS NEOTENUS	11.	1086.	0.96	94.68
12	DIASTYLIS SCULPTA	11.	1097.	0.96	95.64
13	UNCIOLA IRRORATA	6.	1103.	0.52	96.16
14	ARICIDEA JEFFREYSII	5.	1108.	0.44	96.60
15	ETEONE LONGA	4.	1112.	0.35	96.95
16	AMPHARETE ARCTICA	4.	1116.	0.35	97.30
17	LEPTOCHEIRUS PINGUIS	4.	1120.	0.35	97.65
18	OLIGOCHAETA	3.	1123.	0.26	97.91
19	CEREBRATULUS LACTEUS	3.	1126.	0.26	98.17
20	EDOTEA TRILOBA	3.	1129.	0.26	98.43
21	NEMERTEA C	2.	1131.	0.17	98.60
22	CERIANTHUS BOREALIS	2.	1133.	0.17	98.78
23	COROPHIUM CRASSICORNE	2.	1135.	0.17	98.95
24	CASCO BIGELOWI	2.	1137.	0.17	99.13
25	MEDIOMASTUS AMBISETA	1.	1138.	0.09	99.22
26	NEREIS VIRENS	1.	1139.	0.09	99.30
27	PHYLLODOCE GROENLANDICA	1.	1140.	0.09	99.39
28	SCOLOPLOS SP.	1.	1141.	0.09	99.48
29	PHOLOE MINUTA	1.	1142.	0.09	99.56
30	NEPHTYS INCISA	1.	1143.	0.09	99.65
31	LUMBRINERIS FRAGILIS	1.	1144.	0.09	99.74
32	GOLFINGIA VERRILLII	1.	1145.	0.09	99.83
33	CANCER IRRORATUS	1.	1146.	0.09	99.91
34	YOLDIA LIMATULA	1.	1147.	0.09	100.00
35	MEMBRANIPORIDAE	+			
36	MEMBRANIPORIDAE	+			

NUMBER OF SPECIES 36

NUMBER OF INDIVIDUALS 1147.+

INDIVIDUALS PER M2 11470 +

CRUISE EX8001 STATION 47 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	DIASTYLIS SCULPTA	20.	20.	25.00	25.00
2	NASSARIUS TRIVITTATUS	11.	31.	13.75	38.75
3	LUMBRINERIS TENUIS	9.	40.	11.25	50.00
4	NINOE NIGRIPES	9.	49.	11.25	61.25
5	EUDORELLA TRUNCATULA	5.	54.	6.25	67.50
6	PHYLLODOCIDAE	3.	57.	3.75	71.25
7	AMPHIPHOLIS SQUAMATA	3.	60.	3.75	75.00
8	AMPHARETE ACUTIFRONS	2.	62.	2.50	77.50
9	PHERUSA AFFINIS	2.	64.	2.50	80.00
10	PAGURUS LONGICARPUS	2.	66.	2.50	82.50
11	AMPELISCA ABDITA	2.	68.	2.50	85.00
12	LEPTOCHEIRUS PINGUIS	2.	70.	2.50	87.50
13	UNCIOLA IRRORATA	2.	72.	2.50	90.00
14	ETEONE LONGA	1.	73.	1.25	91.25
15	NEREIS VIRENS	1.	74.	1.25	92.50
16	ARGISSA HAMATIPES	1.	75.	1.25	93.75
17	ANOMIA ACULEATA	1.	76.	1.25	95.00
18	CRENELLA DECUSSATA	1.	77.	1.25	96.25
19	ASTARTE UNDATA	1.	78.	1.25	97.50
20	CERASTODERMA PINNULATUM	1.	79.	1.25	98.75
21	ASTERIAS SP.	1.	80.	1.25	100.00
22	MEMBRANIPORIDAE	+			
23	MEMBRANIPORIDAE	+			

NUMBER OF SPECIES 23

NUMBER OF INDIVIDUALS 80.+

INDIVIDUALS PER M2 800+

CRUISE EX8001 STATION 48 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	NUCULA DELPHINODONTA	454.	454.	33.56	33.56
2	PHOTIS MACROCOXA	190.	644.	14.04	47.60
3	EDOTEA TRILOBA	91.	735.	6.73	54.32
4	EUDORELLA TRUNCATULA	88.	823.	6.50	60.83
5	ORCHOMENELLA PINGUIS	86.	909.	6.36	67.18
6	DIASTYLIS SCULPTA	68.	977.	5.03	72.21
7	PHYLLODOCE MUCOSA	61.	1038.	4.51	76.72
8	AMPELISCA VADORUM	44.	1082.	3.25	79.97
9	PHOXOCEPHALUS HOLBOLLI	39.	1121.	2.88	82.85
10	LUMBRINERIS TENUIS	36.	1157.	2.66	85.51
11	CRENELLA DECUSSATA	23.	1180.	1.70	87.21
12	UNCIOLA IRRORATA	23.	1203.	1.70	88.91
13	PRIONOSPIO STEENSTRUPI	21.	1224.	1.55	90.47
14	COROPHIUM CRASSICORNE	16.	1240.	1.18	91.65
15	HARPINIA PROPINQUA	15.	1255.	1.11	92.76
16	ARICIDEA JEFFREYSII	13.	1268.	0.96	93.72
17	NINOE NIGRIPES	13.	1281.	0.96	94.68
18	PITAR MORRHUANA	7.	1288.	0.52	95.20
19	SCOLOPLOS SP.	6.	1294.	0.44	95.64
20	LUMBRINERIS FRAGILIS	6.	1300.	0.44	96.08
21	ANEMONE B	4.	1304.	0.30	96.38
22	NUCULA ANNULATA	4.	1308.	0.30	96.67
23	MYA ARENARIA	4.	1312.	0.30	96.97
24	ECHINARACHNIUS PARMA	3.	1315.	0.22	97.19
25	AMPHARETE ARCTICA	3.	1318.	0.22	97.41
26	CERIANTHUS BOREALIS	3.	1321.	0.22	97.63
27	PHILINE FINMARCHIA	3.	1324.	0.22	97.86
28	CARDITA BOREALIS	3.	1327.	0.22	98.08
29	NASSARIUS TRIVITTATUS	3.	1330.	0.22	98.30
30	AGLAOPHAMUS NEOTENUS	2.	1332.	0.15	98.45
31	PHOLOE MINUTA	2.	1334.	0.15	98.60
32	PERIPLOMA PAPYRATIUM	2.	1336.	0.15	98.74
33	MODIOLUS MODIOLUS	2.	1338.	0.15	98.89
34	LYONSIA HYALINA	2.	1340.	0.15	99.04
35	LEPTOCHEIRUS PINGUIS	2.	1342.	0.15	99.19
36	PHERUSA AFFINIS	1.	1343.	0.07	99.26
37	SPIOPHANES BOMBYX	1.	1344.	0.07	99.33
38	ETEONE LONGA	1.	1345.	0.07	99.41
39	PHYLUM B	1.	1346.	0.07	99.48
40	LINEUS RUBER	1.	1347.	0.07	99.56
41	NEMERTEA E	1.	1348.	0.07	99.63
42	CEREBRATULUS LACTEUS	1.	1349.	0.07	99.70
43	NEMERTEA C	1.	1350.	0.07	99.78
44	CERASTODERMA PINNULATUM	1.	1351.	0.07	99.85
45	MACOMA BALTHICA	1.	1352.	0.07	99.93
46	ARGISSA HAMATIPES	1.	1353.	0.07	100.00

NUMBER OF SPECIES 46

NUMBER OF INDIVIDUALS 1353.

INDIVIDUALS PER M2 13530

CRUISE EX8001 STATION 49 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	41.	41.	26.11	26.11
2	ECHINARACHNIUS PARMA	17.	58.	10.83	36.94
3	NUCULA DELPHINODONTA	17.	75.	10.83	47.77
4	UNCIOLA IRRORATA	11.	86.	7.01	54.78
5	POLYDORA QUADRILOBATA	8.	94.	5.10	59.87
6	NEMERTEA F	6.	100.	3.82	63.69
7	DODECACERIA SP.	5.	105.	3.18	66.88
8	PHYLLODOCE MACULATA	5.	110.	3.18	70.06
9	PHOLOE MINUTA	5.	115.	3.18	73.25
10	EDOTEA TRILOBA	5.	120.	3.18	76.43
11	NASSARIUS TRIVITTATUS	5.	125.	3.18	79.62
12	LUMBRINERIS TENUIS	4.	129.	2.55	82.17
13	PHOXOCEPHALUS HOLBOLLI	4.	133.	2.55	84.71
14	CRENELLA DECUSSATA	4.	137.	2.55	87.26
15	OLIGOCHAETA	3.	140.	1.91	89.17
16	AMPHIPHOLIS SQUAMATA	2.	142.	1.27	90.45
17	PHASCOLION STROMBI	1.	143.	0.64	91.08
18	ASTERIAS SP.	1.	144.	0.64	91.72
19	TEREIBELLIDAE	1.	145.	0.64	92.36
20	SYLLIS GRACILIS	1.	146.	0.64	92.99
21	POLYDORA SOCIALIS	1.	147.	0.64	93.63
22	AMPHARETIDAE	1.	148.	0.64	94.27
23	GATTYANA CIRROSA	1.	149.	0.64	94.90
24	HARMOTHOE EXTENUATA	1.	150.	0.64	95.54
25	OPHELINA ACUMINATA	1.	151.	0.64	96.18
26	LIMNORIA LIGNORUM	1.	152.	0.64	96.82
27	CANCER BOREALIS	1.	153.	0.64	97.45
28	PAGURUS ARCUATUS	1.	154.	0.64	98.09
29	MYA ARENARIA	1.	155.	0.64	98.73
30	CARDITA BOREALIS	1.	156.	0.64	99.36
31	OENOPOTA BICARINATA	1.	157.	0.64	100.00
32	SERTULARIA PUMILA	+			
33	MEMBRANIPORA SP.	+			

NUMBER OF SPECIES 33

NUMBER OF INDIVIDUALS 157.+

INDIVIDUALS PER M2 1570+

CRUISE EX8001 STATION 50 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	POLYCIRRUS EXIMUS	17.	17.	13.60	13.60
2	AMPHARETE ARCTICA	12.	29.	9.60	23.20
3	NASSARIUS TRIVITTATUS	10.	39.	8.00	31.20
4	PHOXOCEPHALUS HOLBOLLI	10.	49.	8.00	39.20
5	ARCHIANNELIDA	9.	58.	7.20	46.40
6	PRIONOSPIO STEENSTRUPI	9.	67.	7.20	53.60
7	EUCLYMENE COLLARIS	7.	74.	5.60	59.20
8	OLIGOCHAETA	6.	80.	4.80	64.00
9	EXOGONE HEBES	6.	86.	4.80	68.80
10	CEREBRATULUS LACTEUS	5.	91.	4.00	72.80
11	POLYDORA SOCIALIS	5.	96.	4.00	76.80
12	NEMERTEA F	4.	100.	3.20	80.00
13	THARYX SP.	4.	104.	3.20	83.20
14	PHOLOE MINUTA	3.	107.	2.40	85.60
15	CHIRODOTEA COECA	3.	110.	2.40	88.00
16	SPHAEROSYLLIS ERINACEUS	1.	111.	0.80	88.80
17	SPIOPHANES BOMBYX	1.	112.	0.80	89.60
18	AGLAOPHAMUS CIRCINATA	1.	113.	0.80	90.40
19	HARMOTHOE EXTENUATA	1.	114.	0.80	91.20
20	OWENIIDAE	1.	115.	0.80	92.00
21	PHYLLODOCE MACULATA	1.	116.	0.80	92.80
22	PARAONIS LYRA	1.	117.	0.80	93.60
23	AMPHIPHOLIS SQUAMATA	1.	118.	0.80	94.40
24	ECHINARACHNIUS PARMA	1.	119.	0.80	95.20
25	PHILINE FINMARCHIA	1.	120.	0.80	96.00
26	AMPELISCA AGASSIZI	1.	121.	0.80	96.80
27	HALIMEDON SP.	1.	122.	0.80	97.60
28	ANONYX LILJEBORGI	1.	123.	0.80	98.40
29	UNCIOLA IRRORATA	1.	124.	0.80	99.20
30	EDOTEA TRILOBA	1.	125.	0.80	100.00
31	MEMBRANIPORIDAE	+			
32	MEMBRANIPORIDAE	+			

NUMBER OF SPECIES 32

NUMBER OF INDIVIDUALS 125.+

INDIVIDUALS PER M2 1250+

CRUISE EX8001 STATION 51 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	LUMBRINERIS TENUIS	145.	145.	27.46	27.46
2	NUCULA DELPHINODONTA	92.	237.	17.42	44.89
3	NINOE NIGRIPES	82.	319.	15.53	60.42
4	PRIONOSPIO STEENSTRUPI	46.	365.	8.71	69.13
5	EUDORELLA TRUNCATULA	34.	399.	6.44	75.57
6	AGLAOPHAMUS NEOTENUS	16.	415.	3.03	78.60
7	CEREBRATULUS LACTEUS	11.	426.	2.08	80.68
8	ARICIDEA JEFFREYSII	10.	436.	1.89	82.58
9	DIASTYLIS SCULPTA	8.	444.	1.52	84.09
10	PITAR MORRHUANA	7.	451.	1.33	85.42
11	PHOXOCEPHALUS HOLBOLLI	6.	457.	1.14	86.55
12	PARAONIS GRACILIS	6.	463.	1.14	87.69
13	AMPHARETE ARCTICA	6.	469.	1.14	88.83
14	MYA ARENARIA	6.	475.	1.14	89.96
15	PHYLLODOCE MUCOSA	5.	480.	0.95	90.91
16	NEPHTYS INCISA	5.	485.	0.95	91.86
17	AMPELISCA AGASSIZI	4.	489.	0.76	92.61
18	ARGISSA HAMATIPES	4.	493.	0.76	93.37
19	PHOLOE MINUTA	4.	497.	0.76	94.13
20	HARPINIA PROPINQUA	3.	500.	0.57	94.70
21	ASABELLIDES OCULATA	3.	503.	0.57	95.26
22	ETEONE LONGA	3.	506.	0.57	95.83
23	CERIANTHUS BOREALIS	3.	509.	0.57	96.40
24	PERIPLOMA PAPYRATIUM	3.	512.	0.57	96.97
25	ORCHOMENELLA PINGUIS	2.	514.	0.38	97.35
26	SCOLOPLOS SP.	2.	516.	0.38	97.73
27	ARCTICA ISLANDICA	2.	518.	0.38	98.11
28	PAGURUS LONGICARPUS	1.	519.	0.19	98.30
29	STENOPLEUSTES INERMIS	1.	520.	0.19	98.48
30	PHOTIS MACROCOXA	1.	521.	0.19	98.67
31	EUCLYMENE COLLARIS	1.	522.	0.19	98.86
32	ANEMONE A	1.	523.	0.19	99.05
33	NEMERTEA E	1.	524.	0.19	99.24
34	MODIOLUS MODIOLUS	1.	525.	0.19	99.43
35	YOLDIA LIMATULA	1.	526.	0.19	99.62
36	CERASTODERMA PINNULATUM	1.	527.	0.19	99.81
37	NASSARIUS TRIVITTATUS	1.	528.	0.19	100.00

NUMBER OF SPECIES 37

NUMBER OF INDIVIDUALS 528.

INDIVIDUALS PER M2 5280

CRUISE EX8001 STATION 52 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	459.	459.	60.32	60.32
2	AGLAOPHAMUS NEOTENUS	79.	538.	10.38	70.70
3	ARICIDEA JEFFREYSII	44.	582.	5.78	76.48
4	LUMBRINERIS TENUIS	35.	617.	4.60	81.08
5	NUCULA DELPHINODONTA	32.	649.	4.20	85.28
6	PHYLLODOCE MUCOSA	24.	673.	3.15	88.44
7	SCOLOPLOS SP.	23.	696.	3.02	91.46
8	EUDORELLA TRUNCATULA	19.	715.	2.50	93.96
9	NINOE NIGRIPES	11.	726.	1.45	95.40
10	OLIGOCHAETA	5.	731.	0.66	96.06
11	OWENIA FUSIFORMIS	4.	735.	0.53	96.58
12	PHOXOCEPHALUS HOLBOLLI	3.	738.	0.39	96.98
13	CEREBRATULUS LACTEUS	2.	740.	0.26	97.24
14	MEDIOMASTUS AMBISETA	2.	742.	0.26	97.50
15	AMPHARETE ARCTICA	2.	744.	0.26	97.77
16	ETEONE LONGA	2.	746.	0.26	98.03
17	NEPHTYS INCISA	2.	748.	0.26	98.29
18	MODIOLUS MODIOLUS	2.	750.	0.26	98.55
19	PITAR MORRHUANA	2.	752.	0.26	98.82
20	NEMERTEA C	1.	753.	0.13	98.95
21	PHOLOE MINUTA	1.	754.	0.13	99.08
22	MALDANOPSIS ELONGATA	1.	755.	0.13	99.21
23	MACOMA BALTHICA	1.	756.	0.13	99.34
24	SOLEMYA BOREALIS	1.	757.	0.13	99.47
25	HYDROBIA SP.	1.	758.	0.13	99.61
26	AMPELISCA ARDITA	1.	759.	0.13	99.74
27	LEPTOCHEIRUS PINGUIS	1.	760.	0.13	99.87
28	NEOMYSIS AMERICANA	1.	761.	0.13	100.00
29	SERTULARIA PUMILA	+			

NUMBER OF SPECIES 29

NUMBER OF INDIVIDUALS 761.+

INDIVIDUALS PER M2 7610+

CRUISE EX8001 STATION 53 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	OLIGOCHAETA	281.	281.	33.49	33.49
2	PHOLOE MINUTA	156.	437.	18.59	52.09
3	ARICIDEA JEFFREYSII	128.	565.	15.26	67.34
4	PHOXOCEPHALUS HOLBOLLI	43.	608.	5.13	72.47
5	PRIONOSPIO STEENSTRUPI	43.	651.	5.13	77.59
6	MEDIOMASTUS AMBISETA	28.	679.	3.34	80.93
7	LUMBRINERIS TENUIS	22.	701.	2.62	83.55
8	THARYX SP.	19.	720.	2.26	85.82
9	SYLLIS CORNUTA	19.	739.	2.26	88.08
10	COROPHIUM INSIDIOSUM	10.	749.	1.19	89.27
11	ETEONE LONGA	9.	758.	1.07	90.35
12	ALVANIA ARENARIA	8.	766.	0.95	91.30
13	NUCULA DELPHINODONTA	7.	773.	0.83	92.13
14	AMPHIPHOLIS SQUAMATA	7.	780.	0.83	92.97
15	NINOE NIGRIPES	7.	787.	0.83	93.80
16	SCOLOPLOS ROBUSTUS	6.	793.	0.72	94.52
17	CRENELLA DECUSSATA	5.	798.	0.60	95.11
18	ASABELLIDES OCULATA	4.	802.	0.48	95.59
19	SCOLOPLOS SP.	4.	806.	0.48	96.07
20	NEREIS ZONATA	3.	809.	0.36	96.42
21	CEREBRATULUS LACTEUS	2.	811.	0.24	96.66
22	PHYLLODOCE MACULATA	2.	813.	0.24	96.90
23	SYLLIDAE	2.	815.	0.24	97.14
24	HARMOTHOE IMBRICATA	2.	817.	0.24	97.38
25	SYLLIS GRACILIS	2.	819.	0.24	97.62
26	CERIANTHUS BOREALIS	1.	820.	0.12	97.74
27	PHASCOLOPSIS GOULDII	1.	821.	0.12	97.85
28	COCCULINA SP.	1.	822.	0.12	97.97
29	PERIPLOMA PAPYRATIUM	1.	823.	0.12	98.09
30	MODIOLUS MODIOLUS	1.	824.	0.12	98.21
31	PANDORA GOULDIANA	1.	825.	0.12	98.33
32	ASTARTE UNDATA	1.	826.	0.12	98.45
33	CARDITA BOREALIS	1.	827.	0.12	98.57
34	SKENEOPSIS PLANORBIS	1.	828.	0.12	98.69
35	CANCER IRRORATUS	1.	829.	0.12	98.81
36	HAPLOOPS TUBICOLA	1.	830.	0.12	98.93
37	LIMNORIA LIGNORUM	1.	831.	0.12	99.05
38	POLYCHAETE B	1.	832.	0.12	99.17
39	SPIRORBIS SP.	1.	833.	0.12	99.28
40	AUTOLYTUS SP.	1.	834.	0.12	99.40
41	EXOGONE HEBES	1.	835.	0.12	99.52
42	POLYDORA SP.	1.	836.	0.12	99.64
43	LEPIDONOTUS SQUAMATUS	1.	837.	0.12	99.76
44	NEPHTYS CILIATA	1.	838.	0.12	99.88
45	PHYLLODOCIDAE	1.	839.	0.12	100.00
46	MEMBRANIPORIDAE	+			
47	CABEREA ELLISI	+			
48	HYDROZOA	+			
49	SERTULARIA PUMILA	+			

NUMBER OF SPECIES 49

NUMBER OF INDIVIDUALS 839.+

INDIVIDUALS PER M2 8390+

CRUISE EX8001 STATION 54 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	1354.	1354.	68.07	68.07
2	AMPELISCA AGASSIZI	264.	1618.	13.27	81.35
3	NINOE NIGRIPES	45.	1663.	2.26	83.61
4	SPIO FILICORNIS	34.	1697.	1.71	85.32
5	MEDIOMASTUS AMBISETA	28.	1725.	1.41	86.73
6	SCOLOPLOS SP.	23.	1748.	1.16	87.88
7	LUMBRINERIS TENUIS	22.	1770.	1.11	88.99
8	PHOTIS MACROCOXA	21.	1791.	1.06	90.05
9	SABELLA PENICILLUS	16.	1807.	0.80	90.85
10	THARYX SP.	12.	1819.	0.60	91.45
11	NUCULA DELPHINODONTA	12.	1831.	0.60	92.06
12	EUDORELLA TRUNCATULA	11.	1842.	0.55	92.61
13	CASCO BIGELOWI	11.	1853.	0.55	93.16
14	EDOTEA TRILOBA	9.	1862.	0.45	93.61
15	ETEONE LONGA	7.	1869.	0.35	93.97
16	ARGISSA HAMATIPES	6.	1875.	0.30	94.27
17	DIASTYLIS SCULPTA	5.	1880.	0.25	94.52
18	PHOXOCEPHALUS HOLBOLLI	5.	1885.	0.25	94.77
19	CRENELLA DECUSSATA	5.	1890.	0.25	95.02
20	CERIANTHUS BOREALIS	4.	1894.	0.20	95.22
21	ASABELLIDES OCULATA	4.	1898.	0.20	95.42
22	RHODINE LOVENI	4.	1902.	0.20	95.63
23	PARAONIS GRACILIS	4.	1906.	0.20	95.83
24	STENOPLEUSTES INERMIS	4.	1910.	0.20	96.03
25	ORCHOMENELLA PINGUIS	4.	1914.	0.20	96.23
26	LEPTOCHEIRUS PINGUIS	4.	1918.	0.20	96.43
27	NEMERTEA K	3.	1921.	0.15	96.58
28	NEMERTEA D	3.	1924.	0.15	96.73
29	NEMERTEA I	3.	1927.	0.15	96.88
30	CEREBRATULUS LACTEUS	3.	1930.	0.15	97.03
31	AMPHARETE ACUTIFRONS	3.	1933.	0.15	97.18
32	OLIGOCHAETA	3.	1936.	0.15	97.34
33	PHYLLODOCE MUCOSA	3.	1939.	0.15	97.49
34	STERNASPIS SCUTATA	3.	1942.	0.15	97.64
35	PETALOSARSIA DECLIVIS	3.	1945.	0.15	97.79
36	AMPELISCA MACROCEPHALA	3.	1948.	0.15	97.94
37	CERASTODERMA PINNULATUM	3.	1951.	0.15	98.09
38	PERIPLOMA PAPYRATIUM	3.	1954.	0.15	98.24
39	NEMERTEA J	2.	1956.	0.10	98.34
40	AGLAOPHAMUS NEOTENUS	2.	1958.	0.10	98.44
41	DULICHIA MONOCANTHA	2.	1960.	0.10	98.54
42	DIASTYLIS ABBREVIATA	2.	1962.	0.10	98.64
43	MODIOLUS MODIOLUS	2.	1964.	0.10	98.74
44	NUCULA ANNULATA	2.	1966.	0.10	98.84
45	THYASIRA FLEXUOSA	2.	1968.	0.10	98.94
46	PITAR MORRHUANA	2.	1970.	0.10	99.04
47	NEMERTEA H	1.	1971.	0.05	99.09
48	HARTMANIA MOOREI	1.	1972.	0.05	99.14
49	HARMOTHOE IMBRICATA	1.	1973.	0.05	99.20
50	AMPHARETE ARCTICA	1.	1974.	0.05	99.25
51	PRAXILLELLA GRACILIS	1.	1975.	0.05	99.30
52	SPIOPHANES BOMBYX	1.	1976.	0.05	99.35
53	PHOLOE MINUTA	1.	1977.	0.05	99.40
54	OPHELINA ACUMINATA	1.	1978.	0.05	99.45
55	PHERUSA AFFINIS	1.	1979.	0.05	99.50
56	GONIADA MACULATA	1.	1980.	0.05	99.55
57	LAONICE CIRRATA	1.	1981.	0.05	99.60
58	NEPHTYS INCISA	1.	1982.	0.05	99.65
59	DIASTYLIS QUADRISPINOSA	1.	1983.	0.05	99.70
60	CAMPYLASPIS RUBICUNDA	1.	1984.	0.05	99.75
61	ANONYX LILJEBORGI	1.	1985.	0.05	99.80
62	HAPLOOPS TUBICOLA	1.	1986.	0.05	99.85
63	MYTILUS EDULIS	1.	1987.	0.05	99.90
64	ARCTICA ISLANDICA	1.	1988.	0.05	99.95
65	YOLDIA LIMATULA	1.	1989.	0.05	100.00

NUMBER OF SPECIES 65

NUMBER OF INDIVIDUALS 1989.

INDIVIDUALS PER M2 19890

CRUISE EX8001 STATION 55 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STENNSTRUPI	2562.	2562.	78.86	78.86
2	MEDIOMASTUS AMBISETA	119.	2681.	3.66	82.52
3	LEPTOCHEIRUS PINGUIS	104.	2785.	3.20	85.72
4	LUMBRINERIS TENUIS	71.	2856.	2.19	87.90
5	PHOXOCEPHALUS HOLBOLLI	62.	2918.	1.91	89.81
6	EUDORELLA TRUNCATULA	37.	2955.	1.14	90.95
7	HARPINIA PROPINQUA	25.	2980.	0.77	91.72
8	ORCHOMENELLA PINGUIS	24.	3004.	0.74	92.46
9	ETEONE LONGA	22.	3026.	0.68	93.14
10	DIASTYLIS SCULPTA	20.	3046.	0.62	93.75
11	ARICIDEA JEFFREYSII	19.	3065.	0.58	94.34
12	CERIANTHUS BOREALIS	16.	3081.	0.49	94.83
13	PHOTIS MACROCOXA	16.	3097.	0.49	95.32
14	THARYX SP.	14.	3111.	0.43	95.75
15	PHOLOE MINUTA	13.	3124.	0.40	96.15
16	PHYLLODOCE MUCOSA	13.	3137.	0.40	96.55
17	AGLAOPHAMUS NEOTENUS	12.	3149.	0.37	96.92
18	NEREIS GRAYI	11.	3160.	0.34	97.26
19	OLIGOCHAETA	11.	3171.	0.34	97.60
20	POTAMILLA NEGLECTA	7.	3178.	0.22	97.81
21	ARGISSA HAMATIPES	6.	3184.	0.18	98.00
22	NINOE NIGRIPES	5.	3189.	0.15	98.15
23	AMPELISCA AGASSIZI	4.	3193.	0.12	98.28
24	PARAONIS GRACILIS	4.	3197.	0.12	98.40
25	NUCULA DELPHINODONTA	4.	3201.	0.12	98.52
26	CEREBRATULUS LACTEUS	3.	3204.	0.09	98.61
27	OWENIA FUSIFORMIS	3.	3207.	0.09	98.71
28	CLYMENELLA TORQUATA	3.	3210.	0.09	98.80
29	BRADA VILLOSA	3.	3213.	0.09	98.89
30	OPHELINA ACUMINATA	3.	3216.	0.09	98.98
31	COROPHIUM CRASSICORNE	2.	3218.	0.06	99.05
32	ASABELLIDES OCULATA	2.	3220.	0.06	99.11
33	NEREIDAE	2.	3222.	0.06	99.17
34	PHERUSA AFFINIS	2.	3224.	0.06	99.23
35	AMPHARETE ARCTICA	2.	3226.	0.06	99.29
36	STAURONEREIS CAECUS	2.	3228.	0.06	99.35
37	NEPHTYS INCISA	2.	3230.	0.06	99.41
38	MODIOLUS MODIOLUS	2.	3232.	0.06	99.48
39	YOLDIA LIMATULA	2.	3234.	0.06	99.54
40	NUCULA ANNULATA	2.	3236.	0.06	99.60
41	CERASTODERMA PINNULATUM	2.	3238.	0.06	99.66
42	NEMERTEA D	1.	3239.	0.03	99.69
43	NEMERTEA C	1.	3240.	0.03	99.72
44	LEPTOSTYLIS LONGIMANA	1.	3241.	0.03	99.75
45	CASCO BIGELOWI	1.	3242.	0.03	99.78
46	MELITA N.SP.	1.	3243.	0.03	99.82
47	HARMOTHOE IMBRICATA	1.	3244.	0.03	99.85
48	CAPITELLA CAPITATA	1.	3245.	0.03	99.88
49	SCOLOPLOS SP.	1.	3246.	0.03	99.91
50	LUMBRINERIS FRAGILIS	1.	3247.	0.03	99.94
51	CARDITA BOREALIS	1.	3248.	0.03	99.97
52	PERIPLOMA PAPYRATIUM	1.	3249.	0.03	100.00
53	HYDROZOA	+			

NUMBER OF SPECIES 53

NUMBER OF INDIVIDUALS 3249.+

INDIVIDUALS PER M2 32490+

CRUISE EX8001 STATION 56 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	92.	92.	44.88	44.88
2	EUDORELLA TRUNCATULA	41.	133.	20.00	64.88
3	NINOE NIGRIPES	10.	143.	4.88	69.76
4	SCOLOPLOS SP.	8.	151.	3.90	73.66
5	NUCULA DELPHINODONTA	8.	159.	3.90	77.56
6	ERYTHROPS ERYTHROPHTHALMA	8.	167.	3.90	81.46
7	NEPHTYS INCISA	4.	171.	1.95	83.41
8	CEREBRATULUS LACTEUS	4.	175.	1.95	85.37
9	DIASTYLIS SCULPTA	4.	179.	1.95	87.32
10	BATHYMEDON SP.	4.	183.	1.95	89.27
11	ARICIDEA SUECICA	3.	186.	1.46	90.73
12	MEDIOMASTUS AMBISETA	2.	188.	0.98	91.71
13	THARYX SP.	2.	190.	0.98	92.68
14	ARICIDEA JEFFREYSII	2.	192.	0.98	93.66
15	HARTMANIA MOOREI	1.	193.	0.49	94.15
16	LUMBRINERIS TENUIS	1.	194.	0.49	94.63
17	AGLAOPHAMUS NEOTENUS	1.	195.	0.49	95.12
18	YOLDIA LIMATULA	1.	196.	0.49	95.61
19	PITAR MORRHUANA	1.	197.	0.49	96.10
20	PHILINE FINMARCHIA	1.	198.	0.49	96.59
21	HALIMEDON SP.	1.	199.	0.49	97.07
22	EUDORELLA HISPIDA	1.	200.	0.49	97.56
23	STENOPLEUSTES INERMIS	1.	201.	0.49	98.05
24	ARGISSA HAMATIPES	1.	202.	0.49	98.54
25	METOPELLA ANGUSTA	1.	203.	0.49	99.02
26	ORCHOMENELLA PINGUIS	1.	204.	0.49	99.51
27	METERYTHROPS ROBUSTA	1.	205.	0.49	100.00

NUMBER OF SPECIES 27

NUMBER OF INDIVIDUALS 205.

INDIVIDUALS PER M2 2050

CRUISE EX8001 STATION 57 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	PRIONOSPIO STEENSTRUPI	109.	109.	46.19	46.19
2	EUDORELLA TRUNCATULA	53.	162.	22.46	68.64
3	SCOLOPLOS SP.	16.	178.	6.78	75.42
4	NEPHTYS INCISA	11.	189.	4.66	80.08
5	CEREBRATULUS LACTEUS	6.	195.	2.54	82.63
6	ERYTHROPS ERYTHROPHTHALMA	4.	199.	1.69	84.32
7	MEDIOMASTUS AMBISETA	4.	203.	1.69	86.02
8	NUCULA DELPHINODONTA	3.	206.	1.27	87.29
9	METERYTHROPS ROBUSTA	3.	209.	1.27	88.56
10	ARGISSA HAMATIPES	3.	212.	1.27	89.83
11	PETALOPROCTUS TENUIS	3.	215.	1.27	91.10
12	ARICIDEA JEFFREYSII	3.	218.	1.27	92.37
13	NINOE NIGRIPES	3.	221.	1.27	93.64
14	NASSARIUS TRIVITTATUS	2.	223.	0.85	94.49
15	BATHYMEDON SP.	2.	225.	0.85	95.34
16	OWENIIDAE	2.	227.	0.85	96.19
17	YOLDIA LIMATULA	1.	228.	0.42	96.61
18	CERASTODERMA PINNULATUM	1.	229.	0.42	97.03
19	DIASTYLIS SCULPTA	1.	230.	0.42	97.46
20	AMPELISCA VADORUM	1.	231.	0.42	97.88
21	STENOPLEUSTES INERMIS	1.	232.	0.42	98.30
22	PARAONIS GRACILIS	1.	233.	0.42	98.73
23	LUMBRINERIS TENUIS	1.	234.	0.42	99.15
24	THARYX SP.	1.	235.	0.42	99.58
25	OLIGOCHAETA	1.	236.	0.42	100.00

NUMBER OF SPECIES 25

NUMBER OF INDIVIDUALS 236.

INDIVIDUALS PER M2 2360

CRUISE EX8001 STATION 58 GRAB 1

RANK	SPECIES NAME	COUNT	CUM COUNT	%	CUM %
1	POLYDORA LIGNI	112.	112.	24.14	24.14
2	AGLAOPHAMUS NEOTENUS	109.	221.	23.49	47.63
3	AMPELISCA ABDITA	77.	298.	16.59	64.22
4	SCOLOPLOS SP.	40.	338.	8.62	72.84
5	POLYDORA SP.	39.	377.	8.41	81.25
6	TELLINA AGILIS	32.	409.	6.90	88.15
7	MEDIOMASTUS AMBISETA	19.	428.	4.09	92.24
8	ORCHOMENELLA PINGUIS	9.	437.	1.94	94.18
9	NEOMYSIS AMERICANA	5.	442.	1.08	95.26
10	OLIGOCHAETA	4.	446.	0.86	96.12
11	ASABELLIDES OCULATA	3.	449.	0.65	96.77
12	NASSARIUS TRIVITTATUS	3.	452.	0.65	97.41
13	STREBLOSPIO BENEDICTI	1.	453.	0.22	97.63
14	THARYX SP.	1.	454.	0.22	97.84
15	ETEONE LONGA	1.	455.	0.22	98.06
16	PHERUSA AFFINIS	1.	456.	0.22	98.28
17	MYTILUS EDULIS	1.	457.	0.22	98.49
18	MULINIA LATERALIS	1.	458.	0.22	98.71
19	GEMMA GEMMA	1.	459.	0.22	98.92
20	PARACAPRELLA TENUIS	1.	460.	0.22	99.14
21	DIASTYLIS SCULPTA	1.	461.	0.22	99.35
22	HALIMEDON SP.	1.	462.	0.22	99.57
23	DULICHIA MONOCANTHA	1.	463.	0.22	99.78
24	PHOXOCEPHALUS HOLBOLLI	1.	464.	0.22	100.00

NUMBER OF SPECIES 24

NUMBER OF INDIVIDUALS 464.

INDIVIDUALS PER M2 4640

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(continued from inside front cover)

9. *Phytoplankton Community Structure in Northeastern Coastal Waters of the United States. II. November 1978.* By Harold G. Marshall and Myra S. Cohn. August 1981. Revised and reprinted October 1981. v + 14 p., 3 figs., 1 app.

10. *Annual NEMP Report on the Health of the Northeast Coastal Waters of the United States, 1980.* Northeast Monitoring Program Report No. NEMP IV 81 A-H 0043. August 1981. Revised and reprinted January 1982. xxi + 79 p., 23 figs., 4 tables, 5 app.

11. *Proceedings of the Summer Flounder (Paralichthys dentatus) Age and Growth Workshop, 20-21 May 1980, Northeast Fisheries Center, Woods Hole, Massachusetts.* By Ronal W. Smith, Louise M. Dery, Paul G. Scarlett, and Ambrose Jearld, Jr. December 1981. iv + 14 p., 10 figs., 6 tables.

12. *Status of the Fishery Resources Off the Northeastern United States for 1981.* By Resource Assessment Division, Northeast Fisheries Center. January 1982. iii + 114 p., 44 figs., 44 tables.

13. *Gulf and Atlantic Survey for Selected Organic Pollutants in Finfish.* By Paul D. Boehm and Pam Hirtzer. April 1982. vii + 111 p., 46 figs., 31 tables, 2 app.

14. *Ecosystem Definition and Community Structure of the Macrobenthos of the NEMP Monitoring Station at Pigeon Hill in the Gulf of Maine.* By Alan W. Hulbert, Kenneth J. Pecci, Jonathan D. Witman, Larry G. Harris, James R. Sears, and Richard A. Cooper. May 1982. xii + 143 p., 16 figs., 10 tables, 9 app.

15. *Seasonal Phytoplankton Assemblages in Northeastern Coastal Waters of the United States.* By Harold G. Marshall and Myra S. Cohn. July 1982. vi + 31 p., 8 figs., 2 tables.

16. *Contaminants in New York Bight and Long Island Sediments and Demersal Species, and Contaminant Effects on Benthos, Summer 1980.* By Robert N. Reid, John E. O'Reilly, and Vincent S. Zdanowicz, eds. September 1982. x + 96 p., 36 figs., 21 tables.

17. *Summary of the Physical Oceanographic Processes and Features Pertinent to Pollution Distribution in the Coastal and Offshore Waters of the Northeastern United States, Virginia to Maine.* By Merton C. Ingham (ed.), Reed S. Armstrong, J. Lockwood Chamberlin, Steven K. Cook, David G. Mountain, Ronald J. Schlitz, James P. Thomas, James J. Bisagni, John F. Paul, and Catherine E. Warsh. December 1982. vi + 166 p., 21 figs., 2 tables.

18. *Stock Discrimination of Summer Flounder (Paralichthys dentatus) in the Middle and South Atlantic Bights: Results of a Workshop.* By Michael J. Fogarty, Glenn DeLaney, John W. Gillikin, Jr., John C. Poole, Daniel E. Ralph, Paul G. Scarlett, Ronal W. Smith, and Stuart J. Wilk. January 1983. iii + 14 p., 2 figs., 3 tables.

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