Massachusetts Bay Benthic Community Assessment, 2004

SUBMITTED TO:

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Centers for Coastal Ocean Science
Center for Coastal Environmental Health and Biomolecular Research
Silver Spring, Maryland 20910

PREPARED BY:

Barry A. Vittor & Associates, Inc.
8060 Cottage Hill Rd.
Mobile, Alabama 36695
(251) 633-6100

October 2005

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Massachusetts Bay was sampled during 2004. One aspect of this evaluation was benthic community characterization, which was accomplished via sample collection by National Oceanic and Atmospheric Administration (NOAA) personnel and laboratory and data analysis by Barry A. Vittor & Associates, Inc. (BVA). Locations of the Massachusetts Bay stations are given in Table 1.

METHODS

Sample Collection And Handling

A Young grab (area = 0.04 m^2) was used to collect a bottom sample at each of 32 Massachusetts Bay stations during 2004. Macroinfaunal samples were sieved through a 0.5–mm mesh screen and preserved with 10% formalin on ship. Macroinfaunal samples were transported to the BVA laboratory in Mobile, Alabama.

Macroinfaunal Sample Analysis

In the laboratory of BVA, benthic samples were inventoried, rinsed gently through a 0.5 mm mesh sieve to remove preservatives and sediment, stained with Rose Bengal, and stored in 70% isopropanol solution until processing. Sample material (sediment, detritus, organisms) was placed in white enamel trays for sorting under Wild M-5A dissecting microscopes. All macroinvertebrates were carefully removed with forceps and placed in labeled glass vials containing 70% isopropanol. Each vial represented a major taxonomic group (e.g. Polychaeta, Mollusca, Arthropoda). All sorted macroinvertebrates were identified to the lowest practical identification level (LPIL), which in most cases was to species level unless the specimen was a juvenile, damaged, or otherwise unidentifiable. The number of individuals of each taxon, excluding fragments, was recorded. A voucher collection was prepared, composed of representative individuals of each species not previously encountered in samples from the region.

DATA ANALYSIS

All data generated as a result of laboratory analysis of macroinfauna samples were first coded on data sheets. Enumeration data were entered for each species according to station and replicate. These data were reduced to a data summary report for each station, which included a taxonomic species list and benthic community parameters information. Archive data files of species identification and enumeration were prepared.

The Quality Assurance and Quality Control reports for the Massachusetts Bay samples are given in the Appendix.

Assemblage Structure

Several numerical indices were chosen for analysis and interpretation of the macroinfaunal data. Infaunal abundance is reported as the total number of individuals per station and the total number of individuals per square meter (= density). Taxa richness is reported as the average number of taxa represented in a given station collection.

Taxa diversity, which is often related to the ecological stability and environmental "quality" of the benthos, was estimated using Shannon's Index (Pielou, 1966), according to the following formula:

$$H' = -\sum_{i=1}^{s} p_i(ln\ p_i)$$

where, S = the number of taxa in the sample,

i = the i'th taxa in the sample, and

p_i = is the number of individuals of the i'th taxa divided by the total number of individuals in the sample.

Taxa diversity was calculated using ln; however, diversity may also be calculated using $\log_2$. Both methods of calculating diversity are common in the scientific literature. The taxa diversity calculated in this report using ln, can be converted to $\log_2$ diversity by multiplying the ln taxa diversity by 1.4427.

Taxa diversity within a given community is dependent upon the number of taxa present (taxa richness) and the distribution of all individuals among those taxa (equitability or evenness). In order to quantify and compare the equitability in the fauna to the taxa diversity for a given area, Pielou's Index J' (Pielou, 1966) was calculated as J' = H'/lnS, where $lnS = H'_{max}$, or the maximum possible diversity, when all taxa are represented by the same number of individuals; thus, $J' = H' / H'_{max}$.

BENTHIC COMMUNITY CHARACTERIZATION

Microsoft ™Excel spreadsheets are being provided separately to NOAA which include: raw data on taxa abundance and density by replicate, a complete taxonomic listing with station abundance and occurrence, a major taxa table with overall taxa abundance, and an assemblage parameter table including data on mean number of taxa, mean density, taxa diversity and taxa evenness by station.

Station location and partial water quality data for the 32 Massachusetts Bay stations are given in Table 1.

A total of 16818 organisms, representing 304 taxa, were identified from the 32 Massachusetts Bay stations (Table 2). Polychaetes were the most numerous organisms present representing 72.4% of the total assemblage, followed in abundance by bivalves (8.8%). Polychaetes represented 44.4% of the total number of taxa followed by malacostracans (23.0%), bivalves (13.8%) and gastropods (7.9%) (Table 2).

The abundance of major taxa by station are given in Table 3 and Figure 2. Polychaetes dominated the assemblage at most stations; malacostracans dominated at Station MassPE and there was a mixed assemblage of polychaetes, bivalves and malacostracans at Stations CC-4, CC-a5, MB-a11, MB-a3 and SB-3.

The dominant taxon collected from the Massachusetts Bay samples was the polychaete, *Polydora cornuta* representing 13.1% of the total individuals collected (Table 4). Other dominant taxa included the polychaete *Spio limicola*, the annelid Family Tubificidae (LPIL) and the polychaete, *Samythella sp. A* each representing 10.8%, 4.3%, and 3.1% of the total assemblage, respectively. The Tubificidae (LPIL) and the polychaete Families, Maldanidae (LPIL) and Cirratulidae (LPIL) were the most widely distributed taxa being found at >70% of the stations (Table 4). The distribution of dominant taxa representing > 10% of the total assemblage at each station is given in Table 5.

Station taxa richness and station density data are given in Table 6 and Figures 3 and 4. Taxa richness varied and ranged from 7 at Station SB-3 to 74 at Station MB-a11 (Table 6; Figure 3). Station densities exhibited considerable variation ranging from 375 organisms/m^2 at Station SB-3 to 54425 organisms/m^2 at Station BH-3 (Table 6; Figure 4).

Taxa diversity and evenness are given in Table 6 and Figures 5 and 6. Taxa diversity (H') ranged from 1.22 at Station BH-3 to 3.75 at Station MB-11a (Table 6; Figure 5). Taxa evenness (J') ranged from 0.36 at Station BH-3 to 0.95 at Station SB-3 (Table 6; Figure 6).

LITERATURE CITED

Pielou, E.C. 1966. The measurement of diversity in different types of biological collections. Journal of Theoretical Biology 13:131-144.

Table 1. Station location and water quality data for the NOAA Massachusetts Bay stations, 2004.

Station	Latitude	Longitude	Depth (m)	Temp (C)	Salinity (ppt)	DO (mg/l)	Conductivity (μmhos)
ABB-1	42.10401	70.49265	48				
ABB-3	42.19410	70.51124	57				
ABB-5	42.09254	70.53605	35				
ABB-a1	42.07469	70.41305	57				
ABB-a5	42.17732	70.64751	24				
BH-2	42.28861	70.88524	10	17.9	28.9	8.15	44.77
BH-3	42.31410	70.99871	7	17.6	28.5	7.94	44.04
BH-4	42.27835	70.92205	10	16.2	28.8	8.39	44.52
BH-5	42.34455	71.00046	3	14.0	28.9	8.46	44.74
BH-a2	42.29137	70.99600	10	17.4	28.6	7.46	44.21
BOS-DI							
CC-1	41.81342	70.09364	15	13.9	29.6	8.50	45.70
CC-3	41.87210	70.12840	9	13.4	29.8		
CC-4	41.76986	70.36676	17	12.9	29.3	8.90	45.27
CC-5	41.99025	70.24148	43	12.3	29.3	8.44	45.25
CC-a5	42.00365	70.50367	37				
D-1	42.40283	70.67257	70				
D-2	42.25453	70.53469					
D-3	42.51493	70.59210	68				
D-4	42.36109	70.42270	85				
D-5	42.36361	70.58640	84				
MassPE	41.98642	70.62085	29	14.1	29.2	8.78	35.61
MB-2	42.54012	70.72795	37				
MB-a1	42.43146	70.79662	45	13.0	28.8	9.38	34.46
MB-a10	42.50290	70.72398	57				
MB-a11	42.38021	70.72808	53				
MB-a3	42.40319	70.73202	51	13.6	29.0	9.18	44.81
SB-1	42.32300	70.27240	36				
SB-2	42.39046	70.40107	31				
SB-3	42.29834	70.30624	31				
SB-4	42.17474	70.27986	25				
SB-5	42.28235	70.25948	34				

Table 2. Summary of overall abundance of major benthic macroinfaunal taxonomic groups for the Massachusetts Bay stations, 2004.

Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
Annelida				
Oligochaeta	2	0.7	1,215	7.22
Polychaeta	135	44.4	12,167	72.35
Mollusca				
Aplacophora	1	0.3	4	0.02
Bivalvia	42	13.8	1,487	8.84
Gastropoda	24	7.9	148	0.88
Polyplacophora	1	0.3	1	0.01
Scaphopoda	1	0.3	24	0.14
Arthropoda				
Arachnida	1	0.3	1	0.01
Malacostraca	70	23.0	1,043	6.20
Ostracoda	5	1.6	12	0.07
Echinodermata				
Asteroidea	2	0.7	3	0.02
Echinoidea	2	0.7	115	0.68
Holothuroidea	2	0.7	3	0.02
Ophiuroidea	3	1.0	9	0.05
Other Taxa	13	4.3	586	3.48
Total	**304**		**16,818**	

Table 3. Summary of abundance of major benthic macroinfaunal taxonomic groups by station for the Massachusetts Bay stations, 2004.

Station	Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
ABB-1	Annelida	29	53.7	811	89.7
	Mollusca	11	20.4	63	7.0
	Arthropoda	9	16.7	15	1.7
	Echinodermat	1	1.9	1	0.1
	Other Taxa	4	7.4	14	1.5
	Total	**54**		**904**	
ABB-3	Annelida	40	61.5	847	78.1
	Mollusca	10	15.4	159	14.7
	Arthropoda	10	15.4	55	5.1
	Echinodermat	0	0.0	0	0.0
	Other Taxa	5	7.7	23	2.1
	Total	**65**		**1084**	
ABB-5	Annelida	44	77.2	558	75.8
	Mollusca	1	1.8	1	0.1
	Arthropoda	10	17.5	164	22.3
	Echinodermat	1	1.8	3	0.4
	Other Taxa	1	1.8	10	1.4
	Total	**57**		**736**	
ABB-a1	Annelida	21	58.3	428	87.0
	Mollusca	7	19.4	38	7.7
	Arthropoda	5	13.9	18	3.7
	Echinodermat	0	0.0	0	0.0
	Other Taxa	3	8.3	8	1.6
	Total	**36**		**492**	
ABB-a5	Annelida	25	67.6	353	86.5
	Mollusca	4	10.8	9	2.2
	Arthropoda	6	16.2	11	2.7
	Echinodermat	0	0.0	0	0.0
	Other Taxa	2	5.4	35	8.6
	Total	**37**		**408**	
BH-2	Annelida	10	71.4	58	89.2
	Mollusca	4	28.6	7	10.8
	Arthropoda	0	0.0	0	0.0
	Echinodermat	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**14**		**65**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
BH-3	Annelida	18	60.0	2102	96.6
	Mollusca	9	30.0	72	3.3
	Arthropoda	3	10.0	3	0.1
	Echinodermat	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**30**		**2177**	
BH-4	Annelida	20	80.0	256	90.5
	Mollusca	4	16.0	25	8.8
	Arthropoda	0	0.0	0	0.0
	Echinodermat	0	0.0	0	0.0
	Other Taxa	1	4.0	2	0.7
	Total	**25**		**283**	
BH-5	Annelida	18	64.3	119	77.3
	Mollusca	6	21.4	27	17.5
	Arthropoda	4	14.3	8	5.2
	Echinodermat	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**28**		**154**	
BH-a2	Annelida	17	77.3	501	98.0
	Mollusca	3	13.6	6	1.2
	Arthropoda	2	9.1	4	0.8
	Echinodermat	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**22**		**511**	
BOS-DI	Annelida	22	64.7	449	79.6
	Mollusca	6	17.6	52	9.2
	Arthropoda	6	17.6	63	11.2
	Echinodermat	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**34**		**564**	
CC-1	Annelida	21	70.0	96	61.9
	Mollusca	6	20.0	51	32.9
	Arthropoda	2	6.7	2	1.3
	Echinodermat	0	0.0	0	0.0
	Other Taxa	1	3.3	6	3.9
	Total	**30**		**155**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
CC-3	Annelida	27	61.4	1141	73.7
	Mollusca	8	18.2	111	7.2
	Arthropoda	5	11.4	13	0.8
	Echinodermat	1	2.3	3	0.2
	Other Taxa	3	6.8	280	18.1
	Total	**44**		**1548**	
CC-4	Annelida	37	61.7	294	46.1
	Mollusca	9	15.0	225	35.3
	Arthropoda	10	16.7	109	17.1
	Echinodermat	2	3.3	3	0.5
	Other Taxa	2	3.3	7	1.1
	Total	**60**		**638**	
CC-5	Annelida	30	62.5	735	95.5
	Mollusca	6	12.5	9	1.2
	Arthropoda	9	18.8	19	2.5
	Echinodermat	0	0.0	0	0.0
	Other Taxa	3	6.3	7	0.9
	Total	**48**		**770**	
CC-a5	Annelida	29	44.6	257	49.1
	Mollusca	14	21.5	151	28.9
	Arthropoda	15	23.1	104	19.9
	Echinodermat	2	3.1	2	0.4
	Other Taxa	5	7.7	9	1.7
	Total	**65**		**523**	
D-1	Annelida	29	63.0	195	73.9
	Mollusca	8	17.4	55	20.8
	Arthropoda	6	13.0	8	3.0
	Echinodermat	0	0.0	0	0.0
	Other Taxa	3	6.5	6	2.3
	Total	**46**		**264**	
D-2	Annelida	28	59.6	438	82.8
	Mollusca	7	14.9	68	12.9
	Arthropoda	6	12.8	9	1.7
	Echinodermat	2	4.3	2	0.4
	Other Taxa	4	8.5	12	2.3
	Total	**47**		**529**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
D-3	Annelida	27	54.0	463	83.7
	Mollusca	10	20.0	53	9.6
	Arthropoda	9	18.0	25	4.5
	Echinodermat	1	2.0	1	0.2
	Other Taxa	3	6.0	11	2.0
	Total	**50**		**553**	
D-4	Annelida	21	56.8	218	80.4
	Mollusca	8	21.6	38	14.0
	Arthropoda	6	16.2	12	4.4
	Echinodermat	0	0.0	0	0.0
	Other Taxa	2	5.4	3	1.1
	Total	**37**		**271**	
D-5	Annelida	26	57.8	246	75.2
	Mollusca	8	17.8	60	18.3
	Arthropoda	5	11.1	8	2.4
	Echinodermat	2	4.4	2	0.6
	Other Taxa	4	8.9	11	3.4
	Total	**45**		**327**	
MassPE	Annelida	9	33.3	20	7.9
	Mollusca	3	11.1	25	9.9
	Arthropoda	13	48.1	163	64.7
	Echinodermat	1	3.7	43	17.1
	Other Taxa	1	3.7	1	0.4
	Total	**27**		**252**	
MB-2	Annelida	34	54.8	515	77.2
	Mollusca	13	21.0	110	16.5
	Arthropoda	13	21.0	30	4.5
	Echinodermat	0	0.0	0	0.0
	Other Taxa	2	3.2	12	1.8
	Total	**62**		**667**	
MB-a1	Annelida	27	54.0	464	84.7
	Mollusca	11	22.0	63	11.5
	Arthropoda	10	20.0	19	3.5
	Echinodermat	0	0.0	0	0.0
	Other Taxa	2	4.0	2	0.4
	Total	**50**		**548**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
MB-a10	Annelida	28	50.0	509	77.5
	Mollusca	14	25.0	103	15.7
	Arthropoda	9	16.1	33	5.0
	Echinodermat	0	0.0	0	0.0
	Other Taxa	5	8.9	12	1.8
	Total	**56**		**657**	
MB-a11	Annelida	31	41.9	113	47.5
	Mollusca	9	12.2	15	6.3
	Arthropoda	24	32.4	84	35.3
	Echinodermat	3	4.1	8	3.4
	Other Taxa	7	9.5	18	7.6
	Total	**74**		**238**	
MB-a3	Annelida	19	39.6	29	31.5
	Mollusca	13	27.1	37	40.2
	Arthropoda	14	29.2	24	26.1
	Echinodermat	0	0.0	0	0.0
	Other Taxa	2	4.2	2	2.2
	Total	**48**		**92**	
SB-1	Annelida	28	66.7	276	84.4
	Mollusca	4	9.5	9	2.8
	Arthropoda	6	14.3	10	3.1
	Echinodermat	1	2.4	8	2.4
	Other Taxa	3	7.1	24	7.3
	Total	**42**		**327**	
SB-2	Annelida	13	72.2	156	87.2
	Mollusca	0	0.0	0	0.0
	Arthropoda	3	16.7	3	1.7
	Echinodermat	1	5.6	2	1.1
	Other Taxa	1	5.6	18	10.1
	Total	**18**		**179**	
SB-3	Annelida	3	42.9	5	33.3
	Mollusca	1	14.3	1	6.7
	Arthropoda	1	14.3	4	26.7
	Echinodermat	0	0.0	0	0.0
	Other Taxa	2	28.6	5	33.3
	Total	**7**		**15**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
SB-4	Annelida	21	63.6	290	82.2
	Mollusca	4	12.1	4	1.1
	Arthropoda	5	15.2	11	3.1
	Echinodermat	1	3.0	7	2.0
	Other Taxa	2	6.1	41	11.6
	Total	**33**		**353**	
SB-5	Annelida	28	63.6	440	82.4
	Mollusca	6	13.6	17	3.2
	Arthropoda	5	11.4	29	5.4
	Echinodermat	2	4.5	35	6.6
	Other Taxa	3	6.8	13	2.4
	Total	**44**		**534**	

Table 4. Distrubution and abundance of benthic macroinfaunal taxa for the Massachusetts Bay stations, 2004.

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
Polydora cornuta	Ann	Poly	2196	13.06	13.06	5	16
Spio limicola	Ann	Poly	1812	10.77	23.83	15	47
Tubificidae (LPIL)	Ann	Olig	729	4.33	28.17	23	72
Samythella sp. A	Ann	Poly	527	3.13	31.30	17	53
Enchytraeidae (LPIL)	Ann	Olig	486	2.89	34.19	9	28
Maldanidae (LPIL)	Ann	Poly	485	2.88	37.07	24	75
Prionospio steenstrupi	Ann	Poly	462	2.75	39.82	15	47
Cirratulidae (LPIL)	Ann	Poly	460	2.74	42.56	23	72
Eteone longa	Ann	Poly	414	2.46	45.02	6	19
Euchone incolor	Ann	Poly	371	2.21	47.22	8	25
Rhynchocoela (LPIL)	Rhy	-	356	2.12	49.34	19	59
Parapionosyllis longicirrata	Ann	Poly	338	2.01	51.35	8	25
Exogone hebes	Ann	Poly	331	1.97	53.32	13	41
Nucula delphinodonta	Mol	Biva	304	1.81	55.13	15	47
Aricidea catherinae	Ann	Poly	286	1.70	56.83	13	41
Thyasira trisinuata	Mol	Biva	262	1.56	58.38	15	47
Aricidea quadrilobata	Ann	Poly	259	1.54	59.92	13	41
Ninoe nigripes	Ann	Poly	248	1.47	61.40	20	63
Levinsenia gracilis	Ann	Poly	234	1.39	62.79	18	56
Maldane glebifex	Ann	Poly	207	1.23	64.02	8	25
Nucula proxima	Mol	Biva	176	1.05	65.07	3	9
Spionidae (LPIL)	Ann	Poly	164	0.98	66.04	13	41
Mediomastus californiensis	Ann	Poly	162	0.96	67.01	16	50
Unciola (LPIL)	Art	Mala	142	0.84	67.85	7	22
Protodriloides chaetifer	Ann	Poly	141	0.84	68.69	2	6
Novaquesta trifurcata	Ann	Poly	128	0.76	69.45	2	6
Streblospio benedicti	Ann	Poly	122	0.73	70.17	5	16
Aricidea (LPIL)	Ann	Poly	119	0.71	70.88	13	41
Polygordius (LPIL)	Ann	Poly	114	0.68	71.56	11	34
Echinarachnius parma	Ech	Echi	111	0.66	72.22	10	31
Axiothella mucosa	Ann	Poly	110	0.65	72.87	3	9
Spisula solidissima	Mol	Biva	110	0.65	73.53	4	13
Nephtys incisa	Ann	Poly	109	0.65	74.18	18	56
Cirrophorus ilvana	Ann	Poly	108	0.64	74.82	5	16
Periploma margaritaceum	Mol	Biva	107	0.64	75.45	14	44
Aphelochaeta (LPIL)	Ann	Poly	103	0.61	76.07	12	38
Crenella decussata	Mol	Biva	101	0.60	76.67	15	47
Ampharetidae (LPIL)	Ann	Poly	97	0.58	77.24	17	53
Syllides longocirrata	Ann	Poly	91	0.54	77.79	5	16
Ampelisca vadorum	Art	Mala	88	0.52	78.31	7	22
Prionospio (LPIL)	Ann	Poly	85	0.51	78.81	4	13
Monticellina baptisteae	Ann	Poly	82	0.49	79.30	9	28
Aricidea finitima	Ann	Poly	80	0.48	79.78	1	3
Ascidiacea (LPIL)	Cho	Asci	78	0.46	80.24	5	16
Terebellides stroemi	Ann	Poly	75	0.45	80.69	12	38
Acanthohaustorius millsi	Art	Mala	72	0.43	81.12	1	3
Crassicorophium crassicorne	Art	Mala	69	0.41	81.53	4	13
Leitoscoloplos (LPIL)	Ann	Poly	69	0.41	81.94	15	47
Sphaerosyllis brevifrons	Ann	Poly	69	0.41	82.35	6	19
Dipolydora socialis	Ann	Poly	68	0.40	82.75	7	22
Eudorella pusilla	Art	Mala	67	0.40	83.15	15	47
Exogone verugera	Ann	Poly	63	0.37	83.52	8	25
Unciola irrorata	Art	Mala	63	0.37	83.90	10	31

Table 4 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
Harmothoe imbricata	Ann	Poly	61	0.36	84.26	7	22
Cossura soyeri	Ann	Poly	60	0.36	84.62	6	19
Goniadella gracilis	Ann	Poly	59	0.35	84.97	3	9
Edotia montosa	Art	Mala	57	0.34	85.31	8	25
Aricidea cerrutii	Ann	Poly	56	0.33	85.64	5	16
Phyllodoce (LPIL)	Ann	Poly	52	0.31	85.95	6	19
Mediomastus (LPIL)	Ann	Poly	51	0.30	86.25	11	34
Ilyanassa trivittata	Mol	Gast	49	0.29	86.54	4	13
Leptocheirus pinguis	Art	Mala	48	0.29	86.83	9	28
Phoxocephalus holbolli	Art	Mala	47	0.28	87.11	12	38
Spio (LPIL)	Ann	Poly	46	0.27	87.38	3	9
Lyonsia hyalina	Mol	Biva	45	0.27	87.65	6	19
Nephtyidae (LPIL)	Ann	Poly	45	0.27	87.92	15	47
Nephtys (LPIL)	Ann	Poly	45	0.27	88.19	11	34
Aricidea taylori	Ann	Poly	44	0.26	88.45	3	9
Bivalvia (LPIL)	Mol	Biva	44	0.26	88.71	10	31
Caulleriella sp. J	Ann	Poly	43	0.26	88.96	3	9
Lineidae (LPIL)	Rhy	Anop	40	0.24	89.20	11	34
Apistobranchus tullbergi	Ann	Poly	39	0.23	89.43	5	16
Owenia fusiformis	Ann	Poly	39	0.23	89.67	7	22
Mya arenaria	Mol	Biva	35	0.21	89.87	9	28
Erichthonius difformis	Art	Mala	34	0.20	90.08	5	16
Yoldia sapotilla	Mol	Biva	34	0.20	90.28	7	22
Tellinidae (LPIL)	Mol	Biva	33	0.20	90.47	2	6
Galathowenia oculata	Ann	Poly	32	0.19	90.66	6	19
Phoronis (LPIL)	Pho	-	32	0.19	90.86	10	31
Sternaspis scutata	Ann	Poly	32	0.19	91.05	8	25
Astarte castanea	Mol	Biva	31	0.18	91.23	3	9
Acanthohaustorius intermedius	Art	Mala	30	0.18	91.41	1	3
Streptosyllis arenae	Ann	Poly	30	0.18	91.59	3	9
Tellina agilis	Mol	Biva	30	0.18	91.76	7	22
Scoletoma fragilis	Ann	Poly	29	0.17	91.94	10	31
Harpinia propinqua	Art	Mala	27	0.16	92.10	7	22
Protodorvillea kefersteini	Ann	Poly	26	0.15	92.25	7	22
Syllidae (LPIL)	Ann	Poly	25	0.15	92.40	8	25
Scaphopoda (LPIL)	Mol	Scap	24	0.14	92.54	5	16
Actiniaria (LPIL)	Cni	Anth	23	0.14	92.68	9	28
Molgula manhattensis	Cho	Asci	23	0.14	92.82	2	6
Mytilus edulis	Mol	Biva	23	0.14	92.95	4	13
Protohaustorius deichmannae	Art	Mala	23	0.14	93.09	1	3
Scoletoma verrilli	Ann	Poly	23	0.14	93.23	5	16
Phyllodocidae (LPIL)	Ann	Poly	22	0.13	93.36	11	34
Alvania pelagica	Mol	Gast	21	0.12	93.48	9	28
Astarte undata	Mol	Biva	21	0.12	93.61	6	19
Cossura delta	Ann	Poly	21	0.12	93.73	4	13
Diastylis sculpta	Art	Mala	21	0.12	93.86	2	6
Haminoea solitaria	Mol	Gast	21	0.12	93.98	8	25
Leitoscoloplos acutus	Ann	Poly	21	0.12	94.11	5	16
Spiophanes bombyx	Ann	Poly	21	0.12	94.23	5	16
Sphaerosyllis (LPIL)	Ann	Poly	20	0.12	94.35	2	6
Tharyx acutus	Ann	Poly	20	0.12	94.47	7	22
Chaetozone setosa	Ann	Poly	19	0.11	94.58	5	16
Crepidula plana	Mol	Gast	19	0.11	94.70	1	3
Nereis grayi	Ann	Poly	19	0.11	94.81	8	25
Yoldia (LPIL)	Mol	Biva	19	0.11	94.92	7	22
Dulichia porrecta	Art	Mala	18	0.11	95.03	7	22

Table 4 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
Pygospio elegans	Ann	Poly	18	0.11	95.14	1	3
Petaloproctus tenuis	Ann	Poly	17	0.10	95.24	2	6
Ampharete finmarchica	Ann	Poly	16	0.10	95.33	6	19
Crenella (LPIL)	Mol	Biva	16	0.10	95.43	1	3
Photis macrocoxa	Art	Mala	16	0.10	95.52	5	16
Polynoidae (LPIL)	Ann	Poly	16	0.10	95.62	9	28
Tellina (LPIL)	Mol	Biva	16	0.10	95.71	4	13
Terebellidae (LPIL)	Ann	Poly	16	0.10	95.81	10	31
Tubulanus (LPIL)	Rhy	Anop	15	0.09	95.90	7	22
Ampelisca (LPIL)	Art	Mala	14	0.08	95.98	7	22
Paraonis pygoenigmatica	Ann	Poly	14	0.08	96.06	1	3
Photis (LPIL)	Art	Mala	14	0.08	96.15	9	28
Crenella glandula	Mol	Biva	13	0.08	96.22	2	6
Dipolydora quadrilobata	Ann	Poly	13	0.08	96.30	4	13
Glyceridae (LPIL)	Ann	Poly	13	0.08	96.38	4	13
Mysella planulata	Mol	Biva	13	0.08	96.46	4	13
Pholoe minuta	Ann	Poly	13	0.08	96.53	6	19
Nephtys picta	Ann	Poly	12	0.07	96.60	2	6
Parougia caeca	Ann	Poly	11	0.07	96.67	7	22
Erichthonius (LPIL)	Art	Mala	10	0.06	96.73	1	3
Bathyporeia quoddyensis	Art	Mala	9	0.05	96.78	1	3
Exogone (LPIL)	Ann	Poly	9	0.05	96.84	4	13
Glycera americana	Ann	Poly	9	0.05	96.89	1	3
Heteromastus filiformis	Ann	Poly	9	0.05	96.94	6	19
Paramphinome sp. E	Ann	Poly	9	0.05	97.00	2	6
Aeginellidae (LPIL)	Art	Mala	8	0.05	97.04	4	13
Aricidea suecica	Ann	Poly	8	0.05	97.09	1	3
Campylaspis rubicunda	Art	Mala	8	0.05	97.14	5	16
Desmosomatidae (LPIL)	Art	Mala	8	0.05	97.19	3	9
Dorvilleidae (LPIL)	Ann	Poly	8	0.05	97.24	3	9
Goniada maculata	Ann	Poly	8	0.05	97.28	5	16
Lumbrineridae (LPIL)	Ann	Poly	8	0.05	97.33	6	19
Metopella angusta	Art	Mala	8	0.05	97.38	4	13
Nereididae (LPIL)	Ann	Poly	8	0.05	97.43	3	9
Pleurogonium spinosissimum	Art	Mala	8	0.05	97.47	3	9
Pseudunciola obliquua	Art	Mala	8	0.05	97.52	1	3
Stenopleustes inermis	Art	Mala	8	0.05	97.57	3	9
Tanaissus psammophilus	Art	Mala	8	0.05	97.62	2	6
Lumbrinerides acuta	Ann	Poly	7	0.04	97.66	2	6
Ophelina acuminata	Ann	Poly	7	0.04	97.70	3	9
Orchomenella minuta	Art	Mala	7	0.04	97.74	1	3
Phyllodoce maculata	Ann	Poly	7	0.04	97.78	3	9
Ptilanthura tenuis	Art	Mala	7	0.04	97.82	3	9
Rhepoxynius hudsoni	Art	Mala	7	0.04	97.87	2	6
Sipuncula (LPIL)	Sip	-	7	0.04	97.91	3	9
Aeginina longicornis	Art	Mala	6	0.04	97.94	4	13
Clymenella torquata	Ann	Poly	6	0.04	97.98	2	6
Microphthalmus similis	Ann	Poly	6	0.04	98.01	2	6
Nephtys ciliata	Ann	Poly	6	0.04	98.05	5	16
Oedicerotidae (LPIL)	Art	Mala	6	0.04	98.09	5	16
Sabellidae (LPIL)	Ann	Poly	6	0.04	98.12	4	13
Scalibregma inflatum	Ann	Poly	6	0.04	98.16	4	13
Synasterope cushmani	Art	Ostr	6	0.04	98.19	4	13
Astarte (LPIL)	Mol	Biva	5	0.03	98.22	2	6
Capitella capitata	Ann	Poly	5	0.03	98.25	3	9
Capitellidae (LPIL)	Ann	Poly	5	0.03	98.28	4	13

Table 4 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
Chiridotea caeca	Art	Mala	5	0.03	98.31	2	6
Cyclocardia borealis	Mol	Biva	5	0.03	98.34	1	3
Gastropoda (LPIL)	Mol	Gast	5	0.03	98.37	4	13
Hiatellidae (LPIL)	Mol	Biva	5	0.03	98.40	1	3
Microphthalmus (LPIL)	Ann	Poly	5	0.03	98.43	3	9
Mytilidae (LPIL)	Mol	Biva	5	0.03	98.46	3	9
Ophiuroidea (LPIL)	Ech	Ophi	5	0.03	98.49	2	6
Paraonis fulgens	Ann	Poly	5	0.03	98.52	1	3
Thyasiridae (LPIL)	Mol	Biva	5	0.03	98.55	1	3
Aoridae (LPIL)	Art	Mala	4	0.02	98.57	4	13
Aplacophora (LPIL)	Mol	Apla	4	0.02	98.60	4	13
Chiridotea (LPIL)	Art	Mala	4	0.02	98.62	2	6
Clinocardium ciliatum	Mol	Biva	4	0.02	98.64	3	9
Cnidaria (LPIL)	Cni	-	4	0.02	98.67	1	3
Echinoidea (LPIL)	Ech	Echi	4	0.02	98.69	4	13
Garosyrrhoe sp. F	Art	Mala	4	0.02	98.72	2	6
Lysianassidae (LPIL)	Art	Mala	4	0.02	98.74	4	13
Nicomache lumbricalis	Ann	Poly	4	0.02	98.76	2	6
Odostomia seminuda	Mol	Gast	4	0.02	98.79	1	3
Pleustidae (LPIL)	Art	Mala	4	0.02	98.81	4	13
Sphaerodoropsis minuta	Ann	Poly	4	0.02	98.83	4	13
Trochochaeta multisetosa	Ann	Poly	4	0.02	98.86	3	9
Alvania (LPIL)	Mol	Gast	3	0.02	98.88	2	6
Astarte borealis	Mol	Biva	3	0.02	98.89	1	3
Astarte sp. B	Mol	Biva	3	0.02	98.91	2	6
Brada villosa	Ann	Poly	3	0.02	98.93	2	6
Caulleriella (LPIL)	Ann	Poly	3	0.02	98.95	3	9
Corophiidae (LPIL)	Art	Mala	3	0.02	98.97	2	6
Crepidula fornicata	Mol	Gast	3	0.02	98.98	1	3
Diastylidae (LPIL)	Art	Mala	3	0.02	99.00	2	6
Diastylis quadrispinosa	Art	Mala	3	0.02	99.02	2	6
Dipolydora caulleryi	Ann	Poly	3	0.02	99.04	2	6
Hippomedon serratus	Art	Mala	3	0.02	99.05	2	6
Hydrozoa (LPIL)	Cni	Hydr	3	0.02	99.07	3	9
Ischyroceridae (LPIL)	Art	Mala	3	0.02	99.09	1	3
Opheliidae (LPIL)	Ann	Poly	3	0.02	99.11	3	9
Ophiopholis aculeata	Ech	Ophi	3	0.02	99.13	1	3
Petalosarsia declivis	Art	Mala	3	0.02	99.14	3	9
Pyrgocythara plicosa	Mol	Gast	3	0.02	99.16	3	9
Rissoidae (LPIL)	Mol	Gast	3	0.02	99.18	2	6
Syllis (LPIL)	Ann	Poly	3	0.02	99.20	2	6
Travisia carnea	Ann	Poly	3	0.02	99.22	2	6
Ampelisca macrocephala	Art	Mala	2	0.01	99.23	2	6
Amphipoda (LPIL)	Art	Mala	2	0.01	99.24	2	6
Assiminea succinea	Mol	Gast	2	0.01	99.25	1	3
Byblis (LPIL)	Art	Mala	2	0.01	99.26	2	6
Casco bigelowi	Art	Mala	2	0.01	99.27	2	6
Ceriantharia (LPIL)	Cni	Anth	2	0.01	99.29	2	6
Ceriantheopsis americana	Cni	Anth	2	0.01	99.30	2	6
Ctenodiscus crispatus	Ech	Aste	2	0.01	99.31	2	6
Haplocytheridea setipunctata	Art	Ostr	2	0.01	99.32	1	3
Harmothoe (LPIL)	Ann	Poly	2	0.01	99.33	2	6
Leptochelia (LPIL)	Art	Mala	2	0.01	99.35	2	6
Margarites (LPIL)	Mol	Gast	2	0.01	99.36	1	3
Mayerella limicola	Art	Mala	2	0.01	99.37	2	6
Melinna maculata	Ann	Poly	2	0.01	99.38	1	3

Table 4 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
Mitrella multilineata	Mol	Gast	2	0.01	99.39	1	3
Mulinia lateralis	Mol	Biva	2	0.01	99.41	1	3
Munna fabricii	Art	Mala	2	0.01	99.42	1	3
Mya (LPIL)	Mol	Biva	2	0.01	99.43	1	3
Nereis acuminata	Ann	Poly	2	0.01	99.44	1	3
Nuculanidae (LPIL)	Mol	Biva	2	0.01	99.45	1	3
Orbinia ornata	Ann	Poly	2	0.01	99.46	2	6
Pandora (LPIL)	Mol	Biva	2	0.01	99.48	2	6
Paranaitis speciosa	Ann	Poly	2	0.01	99.49	2	6
Pectinaria (LPIL)	Ann	Poly	2	0.01	99.50	1	3
Pherusa affinis	Ann	Poly	2	0.01	99.51	1	3
Politolana impressa	Art	Mala	2	0.01	99.52	2	6
Polycirrus (LPIL)	Ann	Poly	2	0.01	99.54	2	6
Psammonyx nobilis	Art	Mala	2	0.01	99.55	1	3
Pteriidae (LPIL)	Mol	Biva	2	0.01	99.56	2	6
Scoletoma (LPIL)	Ann	Poly	2	0.01	99.57	2	6
Spiophanes (LPIL)	Ann	Poly	2	0.01	99.58	2	6
Spiophanes kroeyeri	Ann	Poly	2	0.01	99.60	2	6
Stereoderma unisemata	Ech	Holo	2	0.01	99.61	1	3
Streptosyllis varians	Ann	Poly	2	0.01	99.62	1	3
Trachyleberididae (LPIL)	Art	Ostr	2	0.01	99.63	1	3
Acanthohaustorius (LPIL)	Art	Mala	1	0.01	99.64	1	3
Acari (LPIL)	Art	Arac	1	0.01	99.64	1	3
Ampithoe rubricata	Art	Mala	1	0.01	99.65	1	3
Ancistrosyllis jonesi	Ann	Poly	1	0.01	99.66	1	3
Apocorophium acutum	Art	Mala	1	0.01	99.66	1	3
Asteroidea (LPIL)	Ech	Aste	1	0.01	99.67	1	3
Bathyporeia (LPIL)	Art	Mala	1	0.01	99.67	1	3
Byblis serrata	Art	Mala	1	0.01	99.68	1	3
Calyptraeidae (LPIL)	Mol	Gast	1	0.01	99.68	1	3
Campylaspis (LPIL)	Art	Mala	1	0.01	99.69	1	3
Capitella (LPIL)	Ann	Poly	1	0.01	99.70	1	3
Cardiidae (LPIL)	Mol	Biva	1	0.01	99.70	1	3
Carditidae (LPIL)	Mol	Biva	1	0.01	99.71	1	3
Caudina arenata	Ech	Holo	1	0.01	99.71	1	3
Chaetozone sp. J	Ann	Poly	1	0.01	99.72	1	3
Chone (LPIL)	Ann	Poly	1	0.01	99.73	1	3
Colus (LPIL)	Mol	Gast	1	0.01	99.73	1	3
Colus pubescens	Mol	Gast	1	0.01	99.74	1	3
Cumingia tellinoides	Mol	Biva	1	0.01	99.74	1	3
Cyathura polita	Art	Mala	1	0.01	99.75	1	3
Diastylis cornuifer	Art	Mala	1	0.01	99.76	1	3
Drilonereis longa	Ann	Poly	1	0.01	99.76	1	3
Euspira heros	Mol	Gast	1	0.01	99.77	1	3
Flabelligeridae (LPIL)	Ann	Poly	1	0.01	99.77	1	3
Harmothoe acanellae	Ann	Poly	1	0.01	99.78	1	3
Hyas coarctatus	Art	Mala	1	0.01	99.79	1	3
Iphimedia sp. B	Art	Mala	1	0.01	99.79	1	3
Ischyrocerus anguipes	Art	Mala	1	0.01	99.80	1	3
Janira alta	Art	Mala	1	0.01	99.80	1	3
Kurtziella cerina	Mol	Gast	1	0.01	99.81	1	3
Laonice cirrata	Ann	Poly	1	0.01	99.82	1	3
Leucon nasica	Art	Mala	1	0.01	99.82	1	3
Microphthalmus aberrans	Ann	Poly	1	0.01	99.83	1	3
Montacutidae (LPIL)	Mol	Biva	1	0.01	99.83	1	3
Munnidae (LPIL)	Art	Mala	1	0.01	99.84	1	3

Table 4 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
Muricidae (LPIL)	Mol	Gast	1	0.01	99.85	1	3
Nassariidae (LPIL)	Mol	Gast	1	0.01	99.85	1	3
Naticidae (LPIL)	Mol	Gast	1	0.01	99.86	1	3
Notocirrus spiniferus	Ann	Poly	1	0.01	99.86	1	3
Nuculana (LPIL)	Mol	Biva	1	0.01	99.87	1	3
Ophiura robusta	Ech	Ophi	1	0.01	99.88	1	3
Orbiniidae (LPIL)	Ann	Poly	1	0.01	99.88	1	3
Pagurus (LPIL)	Art	Mala	1	0.01	99.89	1	3
Parasterope pollex	Art	Ostr	1	0.01	99.89	1	3
Pectinidae (LPIL)	Mol	Biva	1	0.01	99.90	1	3
Phascolion strombi	Sip	-	1	0.01	99.90	1	3
Philomedes (LPIL)	Art	Ostr	1	0.01	99.91	1	3
Phyllodoce arenae	Ann	Poly	1	0.01	99.92	1	3
Pista palmata	Ann	Poly	1	0.01	99.92	1	3
Pitar morrhuanus	Mol	Biva	1	0.01	99.93	1	3
Politolana concharum	Art	Mala	1	0.01	99.93	1	3
Polycirrus eximius	Ann	Poly	1	0.01	99.94	1	3
Polyplacophora (LPIL)	Mol	Polyp	1	0.01	99.95	1	3
Propebela turricula	Mol	Gast	1	0.01	99.95	1	3
Sigalion arenicola	Ann	Poly	1	0.01	99.96	1	3
Sigalionidae (LPIL)	Ann	Poly	1	0.01	99.96	1	3
Solemya velum	Mol	Biva	1	0.01	99.97	1	3
Syllis alosae	Ann	Poly	1	0.01	99.98	1	3
Trichobranchus glacialis	Ann	Poly	1	0.01	99.98	1	3
Turbonilla interrupta	Mol	Gast	1	0.01	99.99	1	3
Turridae (LPIL)	Mol	Gast	1	0.01	99.99	1	3
Veneridae (LPIL)	Mol	Biva	1	0.01	100.00	1	3

Taxa Key

Ann=Annelida
- Olig=Oligochaeta
- Poly=Polychaeta

Art=Arthropoda
- Arac=Arachnida
- Mala=Malacostraca
- Ostr=Ostracoda

Cho=Chordata
- Asci=Ascidiacea

Cni=Cnidaria
- Anth=Anthozoa
- Hydr=Hydrozoa

Ech=Echinodermata
- Aste=Asteroidea
- Echi=Echinoidea
- Holo=Holothuroidea
- Ophi=Ophiuroidea

Mol=Mollusca
- Apla=Aplacophora
- Biva=Bivalvia
- Gast=Gastropoda
- Polyp=Polyplacophora
- Scap=Scaphopoda

Pho=Phoronida

Rhy=Rhynchocoela

Sip=Sipuncula

Table 5. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Massachusetts Bay stations, 2004.

Taxa	ABB-1	ABB-3	ABB-5	ABB-a1	ABB-a5	BH-2	BH-3	BH-4	BH-5	BH-a2
Annelida										
Oligochaeta										
Enchytraeidae (LPIL)										
Tubificidae (LPIL)									13.0	31.1
Polychaeta										
Aricidea catherinae									11.0	
Aricidea finitima					19.6					
Axiothella mucosa										
Cirratulidae (LPIL)			13.0							
Eteone longa							18.6			
Euchone incolor										
Exogone hebes										
Maldane glebifex										
Maldanidae (LPIL)										
Nephtys incisa									25.3	
Parapionosyllis longicirrata										
Polydora cornuta						33.8	65.8	54.4		43.4
Polygordius (LPIL)					10.3					
Prionospio (LPIL)										
Prionospio steenstrupi										
Pygospio elegans						27.7				
Samythella sp. A		10.6		14.0						
Spio limicola	42.7	33.0		21.3						
Spionidae (LPIL)										
Streblospio benedicti						13.8				11.7
Arthropoda										
Malacostraca										
Acanthohaustorius intermedius										
Acanthohaustorius millsi										
Ampelisca vadorum										
Crassicorophium crassicorne										
Unciola (LPIL)			16.3							

Table 5 continued:

Taxa	ABB-1	ABB-3	ABB-5	ABB-a1	ABB-a5	BH-2	BH-3	BH-4	BH-5	BH-a2
Echinodermata										
Echinoidea										
Echinarachnius parma										
Mollusca										
Bivalvia										
Astarte undata										
Crenella decussata										
Nucula proxima										
Spisula solidissima										
Rhynchocoela										
Rhynchocoela (LPIL)										

Table 5 continued:

Taxa	BOS-DI	CC-1	CC-3	CC-4	CC-5	CC-a5	D-1	D-2	D-3	D-4	D-5	MassPE	MB-2	MB-a1
Annelida														
Oligochaeta														
Enchytraeidae (LPIL)		13.5	24.2											
Tubificidae (LPIL)			19.9											
Polychaeta														
Aricidea catherinae				13.6	11.6									
Aricidea finitima														
Axiothella mucosa														
Cirratulidae (LPIL)							10.2				16.5			12.8
Eteone longa														
Euchone incolor					43.2									
Exogone hebes														
Maldane glebifex										32.1				
Maldanidae (LPIL)									14.1					
Nephtys incisa														
Parapionosyllis longicirrata														
Polydora cornuta	64.7													
Polygordius (LPIL)														
Prionospio (LPIL)						11.3								
Prionospio steenstrupi								13.2	14.5				13.3	
Pygospio elegans														
Samythella sp. A									10.7		13.1			
Spio limicola								29.9	17.5				34.2	43.6
Spionidae (LPIL)														12.0
Streblospio benedicti														
Arthropoda														
Malacostraca														
Acanthohaustorius intermedius												11.9		
Acanthohaustorius millsi												28.6		
Ampelisca vadorum						12.6								
Crassicorophium crassicorne				10.0										
Unciola (LPIL)														

Table 5 continued:

Taxa	BOS-DI	CC-1	CC-3	CC-4	CC-5	CC-a5	D-1	D-2	D-3	D-4	D-5	MassPE	MB-2	MB-a1
Echinodermata														
Echinoidea														
Echinarachnius parma												17.1		
Mollusca														
Bivalvia														
Astarte undata														
Crenella decussata														
Nucula proxima				25.5										
Spisula solidissima		25.2												
Rhynchocoela														
Rhynchocoela (LPIL)			15.4											

Table 5 continued:

Taxa	MB-a10	MB-a11	MB-a3	SB-1	SB-2	SB-4	SB-5
Annelida							
Oligochaeta							
Enchytraeidae (LPIL)				10.7			
Tubificidae (LPIL)					11.3		
Polychaeta							
Aricidea catherinae							
Aricidea finitima							
Axiothella mucosa							19.9
Cirratulidae (LPIL)							
Eteone longa							
Euchone incolor							
Exogone hebes				20.5		25.2	
Maldane glebifex							
Maldanidae (LPIL)	16.4						
Nephtys incisa							
Parapionosyllis longicirrata				11.0	36.1	29.5	21.2
Polydora cornuta							
Polygordius (LPIL)							
Prionospio (LPIL)							
Prionospio steenstrupi		12.6					
Pygospio elegans							
Samythella sp. A							
Spio limicola	26.6						
Spionidae (LPIL)							
Streblospio benedicti							
Arthropoda							
Malacostraca							
Acanthohaustorius intermedius							
Acanthohaustorius millsi							
Ampelisca vadorum							
Crassicorophium crassicorne							
Unciola (LPIL)							

Table 5 continued:

Taxa	MB-a10	MB-a11	MB-a3	SB-1	SB-2	SB-4	SB-5
Echinodermata							
Echinoidea							
Echinarachnius parma							
Mollusca							
Bivalvia							
Astarte undata			9.8				
Crenella decussata			9.8				
Nucula proxima							
Spisula solidissima							
Rhynchocoela							
Rhynchocoela (LPIL)							

Table 6. Summary of the benthic macroinfaunal data for the Massachusetts Bay stations, 2004.

Station	Total Number Taxa	Total Number Individuals	Density (nos/m^2)	H' Diversity	J' Evenness
ABB-1	54	904	22600	2.48	0.62
ABB-3	65	1084	27100	2.80	0.67
ABB-5	57	736	18400	3.06	0.76
ABB-a1	36	492	12300	2.73	0.76
ABB-a5	37	408	10200	2.80	0.77
BH-2	14	65	1625	1.91	0.72
BH-3	30	2177	54425	1.22	0.36
BH-4	25	283	7075	1.90	0.59
BH-5	28	154	3850	2.63	0.79
BH-a2	22	511	12775	1.57	0.51
BOS-DI	34	564	14100	1.68	0.48
CC-1	30	155	3875	2.72	0.80
CC-3	44	1548	38700	2.38	0.63
CC-4	60	638	15950	2.92	0.71
CC-5	48	770	19250	2.32	0.60
CC-a5	65	523	13075	3.41	0.82
D-1	46	264	6600	3.22	0.84
D-2	47	529	13225	2.73	0.71
D-3	50	553	13825	2.87	0.73
D-4	37	271	6775	2.70	0.75
D-5	45	327	8175	3.11	0.82
MassPE	27	252	6300	2.41	0.73
MB-2	62	667	16675	2.83	0.69
MB-a1	50	548	13700	2.30	0.59
MB-a10	56	657	16425	2.80	0.70
MB-a11	74	238	5950	3.75	0.87
MB-a3	48	92	2300	3.53	0.91
SB-1	42	327	8175	2.98	0.80
SB-2	18	179	4475	2.08	0.72
SB-3	7	15	375	1.84	0.95
SB-4	33	353	8825	2.35	0.67
SB-5	44	534	13350	2.76	0.73

Figure1. Location of the Massachusetts Bay stations, 2004.

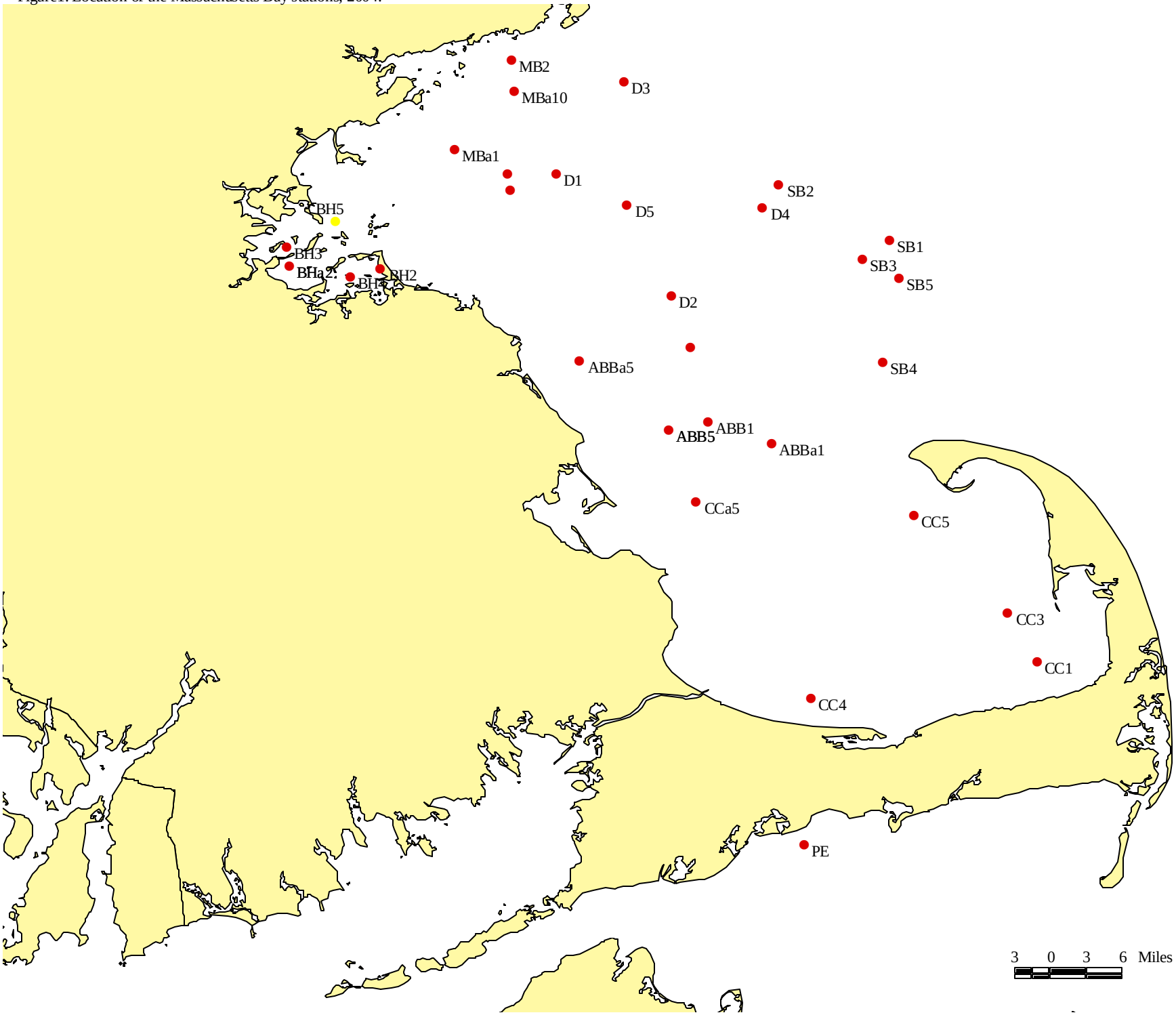


Figure 2. Distribution of major macroinvertebrate taxa for the Massachusetts Bay stations, 2004.

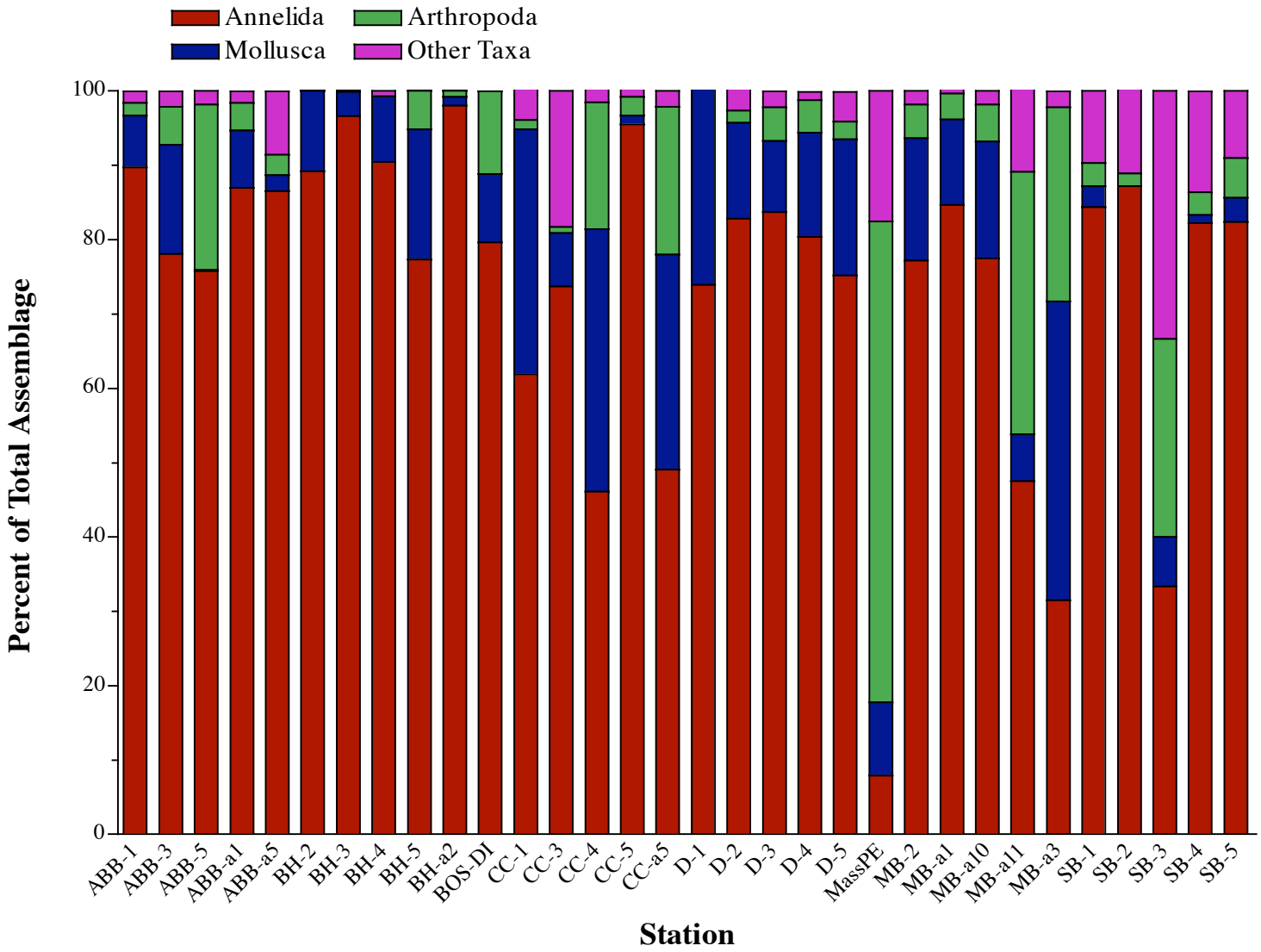


Figure 3. Taxa richness data for the Massachusetts Bay stations, 2004.

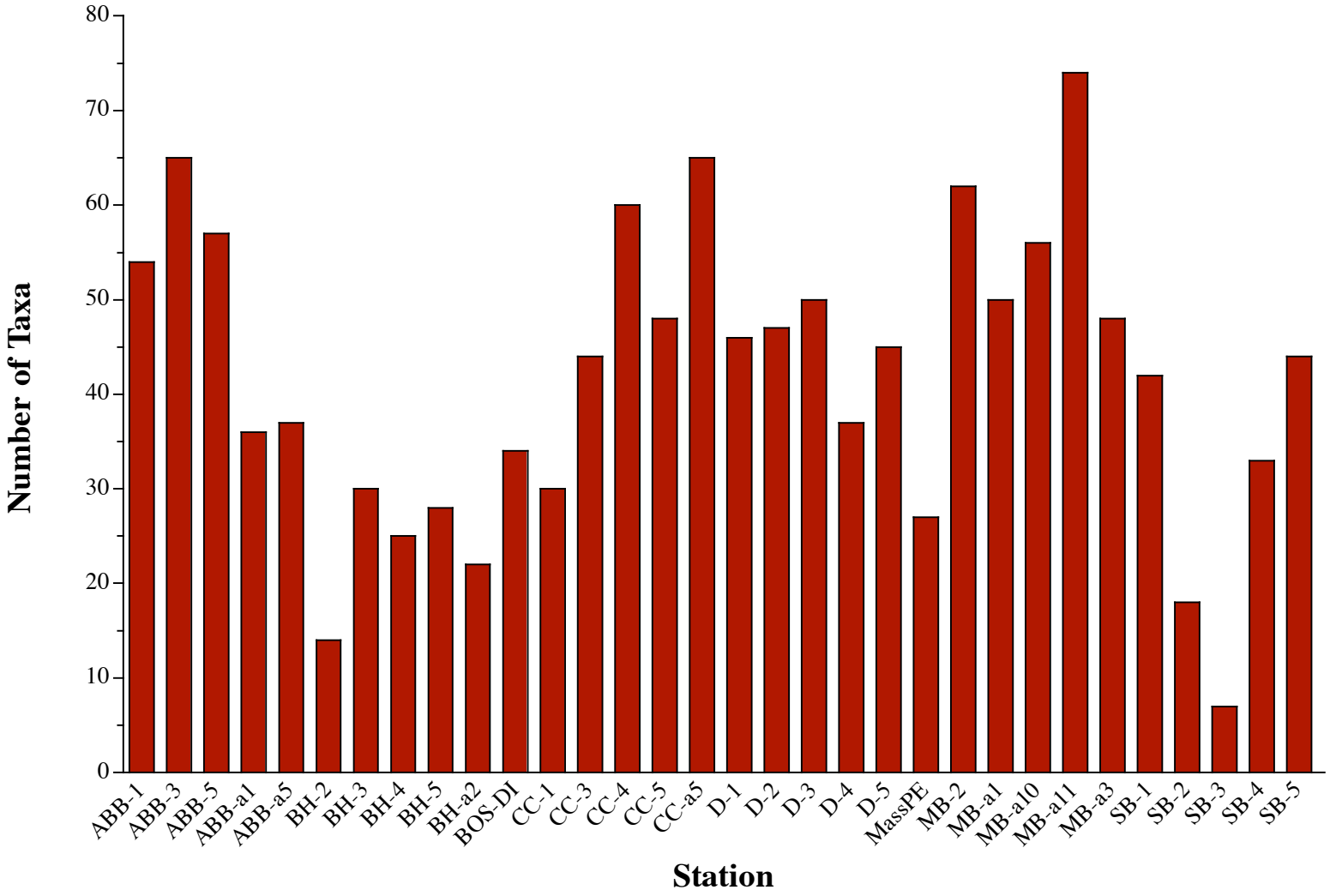


Figure 4. Taxa density data for the Massachusetts Bay stations, 2004.

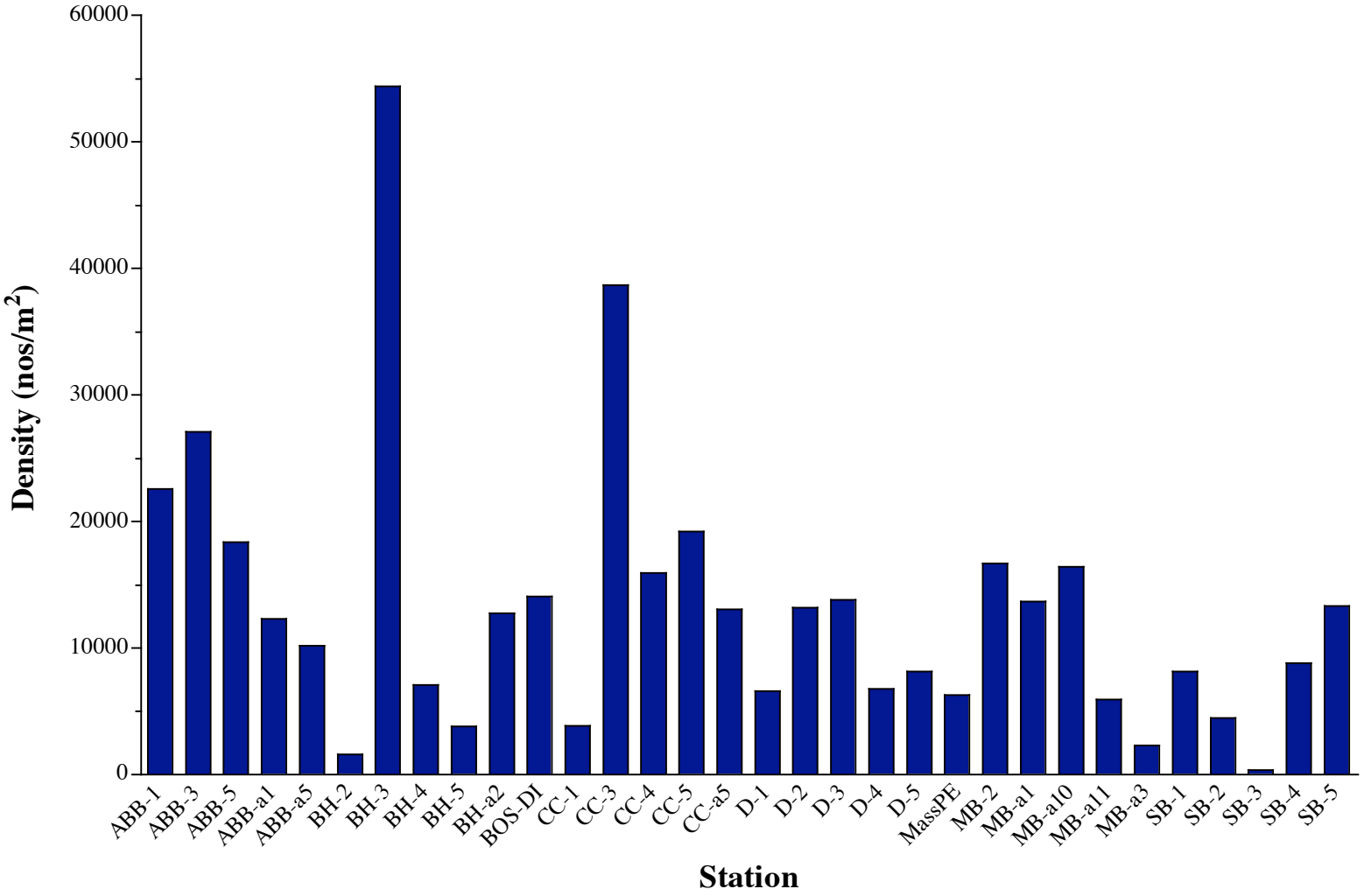


Figure 5. Taxa diversity (H') data for the Massachusetts Bay stations, 2004.

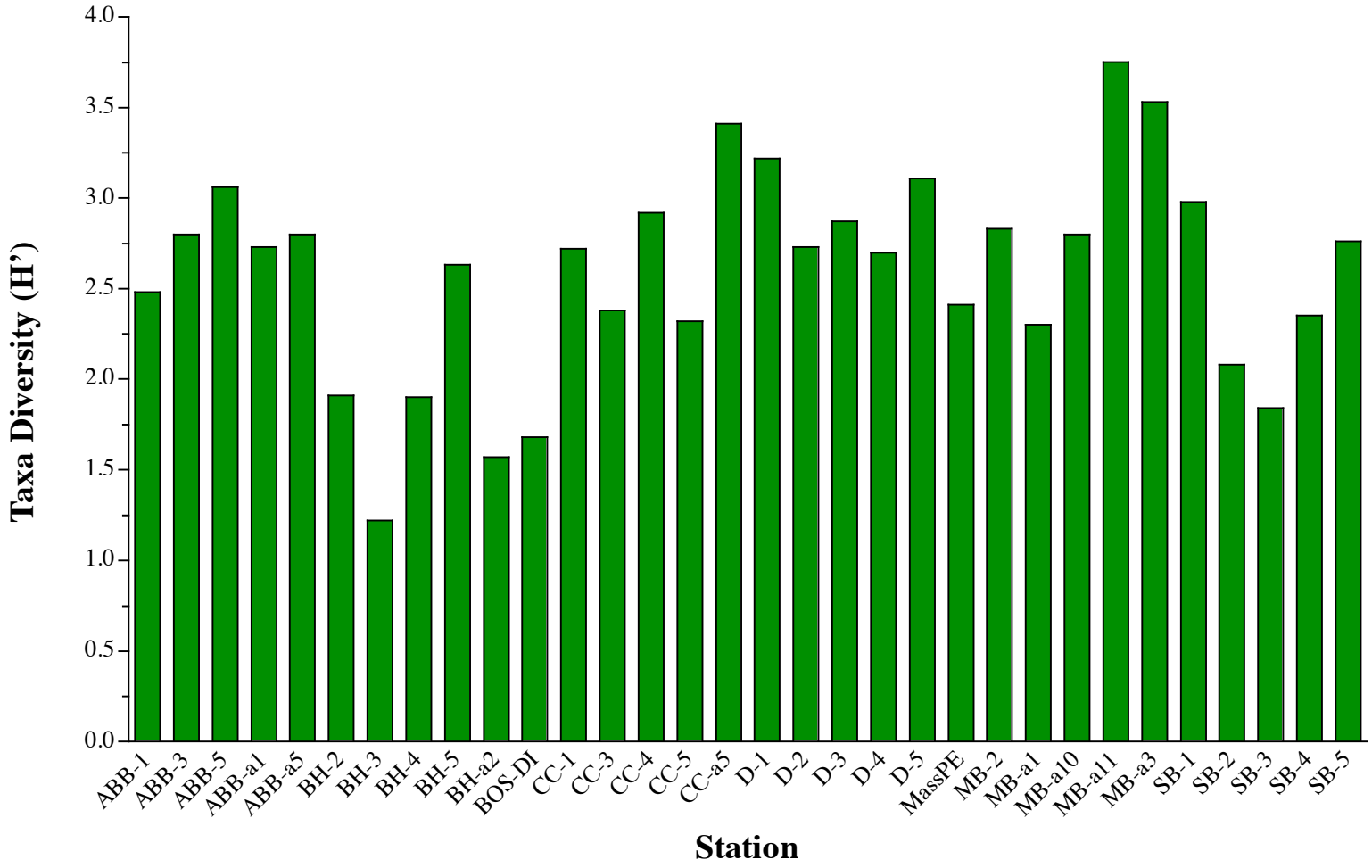
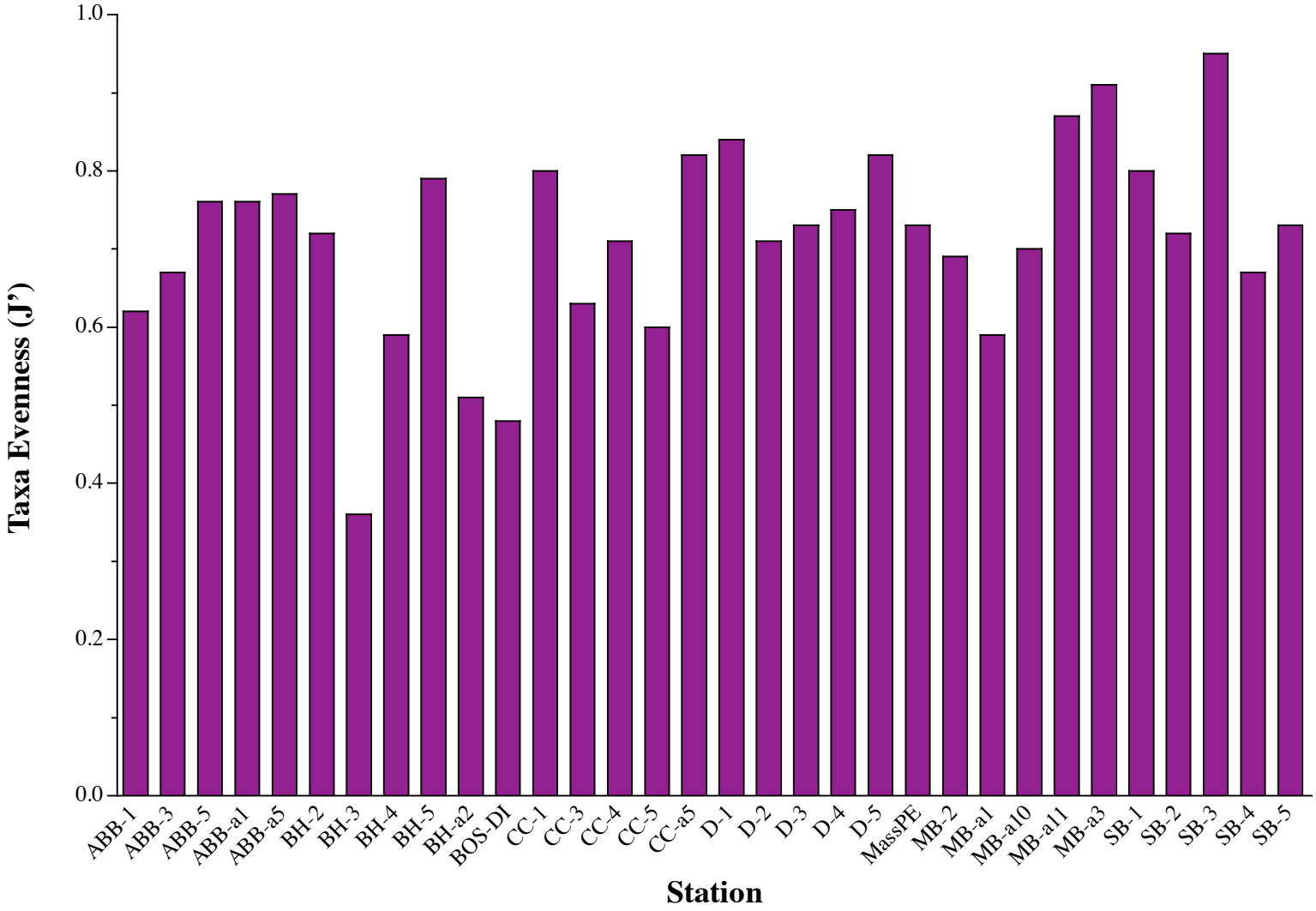


Figure 6. Taxa evenness (J') data for the Massachusetts Bay stations, 2004.



APPENDICES

QUALITY ASSURANCE STATEMENT

Client/Project: NOAA

Work Assignment Title: Massachusetts Bay-2004

Task Number: 002

Description of Data Set or Deliverable: 32 Benthic macroinvertebrate samples collected in 2004; Young Dredge grabs.

Description of audit and review activities: Judged accuracy rates were well above standard levels for sorting and taxonomy. Laboratory QC reports were completed. Copies of QC results follow (see attachment). All taxonomic data were entered into The computer and printed. This list was checked for accuracy against original taxonomic data sheets.

Description of outstanding issues or deficiencies which may affect data quality: None

_____

Signature of QA Officer or Reviewer Date

October 10, 2005

_____

Signature of Project Manager Date

QUALITY CONTROL REWORKS

Client/Project: NOAA-Task Order 2-Massachusetts Bay

Task Number: 2

Sorting Results:

Sample #	% Accuracy
BH-4	100%
BH-2	100%
BH-5	100%
ST d-5	100%
ABB-A1	100%

Taxonomy Results:

Sample #	Taxa	% Accuracy
SB5	Crust./Moll.	98%
D4	Crust./Moll.	100%
ABB-5	Crust./Moll.	98%
CC-1	Crust./Moll.	96%
D2	Annelida	99%
ABBa5	Annelida	99%
MB-a10	Annelida	99%

Description of outstanding issues or deficiencies which may affect data quality: None

Signature of QA Officer or Reviewer Date