Chesapeake Bay Benthic Community Assessment, 2002

SUBMITTED TO:

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INTRODUCTION

Chesapeake Bay was sampled during 2002. 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). Location data for the Chesapeake Bay estuary stations are given in Figures 1 and 2 and Table 1.

METHODS

Sample Collection And Handling

A Young-modified Van Veen grab (area = 0.04 m^2) was used to collect 2 replicate bottom samples at each of the 33 stations during September 2002. 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.

Sediment Analysis

Sediment texture was determined at half-phi intervals using the hydrometer technique for fractions smaller than 44 μm and nested sieves for larger particle fractions. Texture parameters that were computed included percent gravel, sand, and silt /clay. Total organic carbon (TOC) content was measured as ash-free dry weight expressed as a percentage.

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 Chesapeake 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 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 by Shannon-Wiener 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 = 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}.

HABITAT CHARACTERISTICS

Water quality and depth data are given for the 33 stations in Table 1 (note that water quality data was missing for numerous stations). Station depths and salinity data are given in Figure 3. Salinities were between 10 and 16 ppt at the BH stations, SR stations SR1 and VB1; salinity at the remaining stations was between 20 and 33 ppt (Figure 3, Table 1).

Sediment data for the 33 stations are given in Table 1 and Figure 4. The sediments at the BH, SR and YR stations were dominated (>80%) by silt+clay. The remaining stations were dominated either by sand (BH, NHS and VB stations) or a mixture of sand and silt+clay (N, NH stations).

BENTHIC COMMUNITY CHARACTERIZATION

Microsoft ™Excel spreadsheets are being provided separately to NOAA which include: raw data on taxa abundance and density, 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 number of taxa, density, taxa diversity and taxa evenness by station.

A total of 5659 organisms, representing 191 taxa, were identified from the 33 Chesapeake Bay stations (Table 2). Polychaetes were the most numerous organisms present representing 52.2% of the total assemblage, followed in abundance by bivalves (10.7%) and malacostracans (10.2%). Polychaetes represented 40.8% of the total number of taxa followed by malacostracans (20.4%), bivalves (12.6%), and gastropods (11.5%) (Table 2). The abundance of major taxa by station are given in Table 3 and Figure 5. Assemblage composition varied considerably between stations with polychaetes dominating at some stations (>97% of the total at the SR sations), arthropods at station BHM9, mollusks at station BHS3, and a mixed assemblage of polychaetes, mollusks and arthropods at the majority of stations (Figure 5, Table 3).

The dominant taxon collected from the 33 Chesapeake Bay stations was the polychaete, *Apoprionospio pygmaea* which represented 10.6% of the total. The polychaetes, *Heteromastus filiformis*, *Streblospio benedicti*, and *Paraprionospio pinnata* and the oligochaete Family, Tubificidae were also abundant and represented 6.7%, 5.9%, 5.8%and 5.2% of the total individuals collected (Table 4). The polychaete, *Streblospio benedicti* was the most widely distributed taxon being found at 67% of the stations (Table 4). The distribution of dominant taxa representing > 10% of the total assemblage at each

station is given in Table 5. The polychaetes, *H. filiformis* and *S. benedicti* were dominant at the BH stations, *P. pinnata* at the NH stations, *S. benedicti* at the SR stations (>80% of the assemblage), and *A. pygmaea* at the VB stations (Table 4). The bivalves, *Mulinia lateralis* and *Tellina agilis* were dominant at the BH stations (Table 4).

Station taxa richness data are given in Table 6 and Figures 6, 7, and 8. Taxa richness varied considerably between stations and ranged from 1.5 at Station SR2 to 40.5 at Station N4 (Figure 6). The highest taxa richness was clustered among the N stations, while the lowest taxa richness was found at the SR stations. Taxa richness was significantly correlated with salinity (Spearman's Rho = 0.578, P>[Rho] = 0.0007).

Station density data are given in Table 6 and Figures 9, 10 and 11. Station densities also exhibited considerable variation ranging from 125 organisms/m^2 at Station SR2 to 7337.5 organisms/m^2 at Station NHS1. The highest densities were generally clustered among the N and VB stations, while the lowest densities were found at the SR and four of the BH stations (Table 6). Density was significantly positively correlated with salinity (Spearman's Rho = 0.513, P>[Rho] = 0.0032) and sediment gravel+sand (Spearman's Rho = 0.463, P>[Rho] = 0.0066), and inversely correlated with sediment silt+clay (Spearman's Rho = -0.463, P>[Rho] = 0.0066).

Taxa diversity and evenness are given in Table 6 and Figures 12 and 13. Taxa diversity (H') ranged from 0.50 at Station SR2 to 3.60 at Station N4 (Table 6, Figure 12). Taxa diversity was lowest at the SR stations (< 0.7) and highest at the N stations (5 stations with H' > 3). Taxa evenness (J') ranged from 0.38 at Station SR3 to 0.92 at Station BHM5 (Table 6, Figure 13).

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 locations, water quality and sediment data for the Chesapeake Bay stations, September 2002.

Station	Latitude	Longitude	Depth (m)	Temp. (C)	Sal. (ppt)	D.O. (mg/l)	Cond. (µmho/cm)	% Gravel	% Sand	% Silt	% Clay	% Silt+Clay	USACE Description	Median Particle Size (phi)	Sorting Coefficient	% Moisture
BHM4	39° 12.70'	76° 27.45'	3.0	22.90	14.30	0.12	22.66	4.79	33.15	32.13	29.93		clayey silt	5.642	3.437	41.59
BHM5	39° 12.61'	76° 34.45'	4.6	24.20	14.50	4.65	23.98	0.00	7.21	36.09	56.70		clay	8.749	1.885	65.07
BHM6	39° 12.98'	76° 33.87'	5.8	24.00	14.30	5.12	23.21	0.00	9.81	32.95	57.24		clay	8.626	2.216	71.81
BHM7	39° 09.88'	76° 24.77'	6.0	23.10	14.60	9.13	23.16	0.00	24.53	22.94	52.52		clay	8.167	4.006	51.73
BHM8	39° 11.58'	76° 23.91'	5.0	22.90	14.30	9.69	22.65	0.00	7.71	27.35	64.94		clay	8.974	2.204	58.93
BHM9	39° 13.28'	76° 22.41'	5.8	22.70	12.90	1.81	21.99	0.00	4.31	38.07	57.62		clay	8.454	1.614	61.32
BHS1	39° 08.58'	76° 26.13'	3.7	25.70	14.30	10.63	23.64	0.00	98.00	–	–	2.00	sand	1.616	0.629	25.97
BHS2	39° 09.00'	76° 26.86'	3.7	23.80	14.70	6.36	23.65	1.08	57.05	20.73	21.13		clayey sand	3.754	3.457	34.83
BHS3	39° 10.19'	76° 28.30'	1.8	23.70	14.30	6.23	23.02	0.00	99.71	–	–	0.29	sand	1.946	0.686	21.09
BHS4	39° 13.43'	76° 30.90'	2.4	24.20	13.90	6.65	22.88	1.02	66.16	11.11	21.71		clayey sand	2.893	4.277	25.61
BHS5	39° 13.68'	76° 31.26'	3.7	23.90	14.60	3.67	24.14	0.00	98.87	–	–	1.13	sand	1.581	0.401	20.69
BHS6	39° 13.75'	76° 33.62'	3.4	23.90	14.20	5.94	23.01	0.00	97.94	–	–	2.06	sand	2.287	0.852	26.95
N1	36° 56.90'	76° 10.31'	7.5	24.20	24.90	6.70	39.41	0.00	76.14	7.42	16.44		silty sand	2.730	3.467	20.99
N2	36° 56.75'	76° 10.42'	8.1	nd	24.90	nd	nd	0.00	57.88	23.69	18.43		silty sand	3.847	2.985	26.76
N3	36° 56.31'	76° 10.19'	9.0	24.30	30.40	nd	nd	2.75	69.47	8.15	19.63		silty sand	2.651	4.633	22.68
N4	36° 56.36'	76° 10.09'	8.8	24.30	30.30	nd	nd	1.34	65.66	15.45	17.55		silty sand	3.558	3.913	27.76
NHM1	36° 54.20'	76° 20.02'	6.4	24.60	23.10	5.98	36.54	0.00	54.98	16.42	28.60		clayey sand	3.831	3.925	37.45
NHM3	36° 55.91'	76° 22.05'	6.1	24.40	25.30	5.43	39.81	0.00	30.97	35.11	33.93		sandy clay	6.567	3.124	47.55
NHS1	36° 53.78'	76° 19.47'	1.7	23.90	22.70	6.00	36.16	0.37	99.08	–	–	0.54	sand	1.056	0.791	20.44
NHS2	36° 54.29	76° 24.16'	2.1	23.70	22.60	4.45	34.93	0.00	99.06	–	–	0.94	sand	2.472	0.399	25.21
NHS3	36° 58.72'	76° 23.21'	3.4	24.00	23.70	6.21	36.74	0.00	98.29	–	–	1.71	sand	2.123	0.789	20.63
NP	36° 56.40'	76° 10.51'	9.2	24.30	30.20	nd	nd	0.38	70.02	9.68	19.92		silty sand	3.354	4.214	26.97
SR1	38° 57.85'	76° 35.74'	3.0	24.90	14.80	0.07	24.39	0.00	15.98	27.97	56.05		clay	9.223	4.147	72.93
SR2	38° 57.15'	76° 34.02'	5.5	24.80	15.60	0.10	22.52	0.00	15.75	19.41	64.84		clay	9.979	4.336	76.74
SR3	38° 56.53'	76° 31.99'	5.2	24.70	16.30	0.13	26.46	0.00	3.13	21.53	75.34		clay	10.016	2.435	70.82
VB1	36° 46.80'	75° 55.64'	10.0	24.40	32.20	nd	nd	0.00	96.73	–	–	3.27	sand	3.203	0.804	2.97
VB2	36° 46.77'	75° 55.70'	10.0	24.40	32.20	nd	nd	0.00	91.36	8.25	–	0.39	sand	3.187	0.769	22.84
VB3	36° 47.06'	75° 55.48'	10.0	24.40	32.20	nd	nd	0.00	92.95	6.56	–	0.49	sand	3.470	0.419	24.05
VB4	36° 47.24'	75° 55.07'	10.0	24.40	32.20	nd	nd	0.00	91.24	7.48	–	1.28	sand	3.459	0.446	24.94
VBP	36° 47.01'	75° 55.72'	11.5	24.40	32.20	nd	nd	0.00	73.13	9.40	17.48		silty sand	3.652	2.846	30.00
YR2	37° 13.50'	76° 26.75'	9.6	25.50	24.10	nd	nd	0.00	4.70	62.48	32.82		silty clay	4.702	5.332	50.56
YR6	37° 13.64'	76° 25.48'	11.4	25.50	24.10	nd	nd	0.00	9.13	42.64	48.23		silty clay	7.822	2.340	54.16
YRR	37° 13.40'	76° 26.12'	13.1	25.60	24.10	nd	nd	0.00	3.42	41.02	55.56		clay	8.536	2.029	45.44

nd = no data

Table 2. Summary of overall abundance of major benthic macroinfaunal taxonomic groups for the Chesapeake Bay stations, September 2002.

Taxa	Total No. Taxa	% of Total	Total No. Individuals	% of Total
Annelida				
Oligochaeta	3	1.6	548	9.7
Polychaeta	78	40.8	2,953	52.2
Mollusca				
Bivalvia	24	12.6	605	10.7
Gastropoda	22	11.5	479	8.5
Arthropoda				
Insecta	1	0.5	1	0.0
Malacostraca	39	20.4	576	10.2
Ostracoda	7	3.7	78	1.4
Echinodermata				
Echinoidea	1	0.5	1	0.0
Holothuroidea	1	0.5	1	0.0
Ophiuroidea	3	1.6	33	0.6
Other Taxa	12	6.3	384	6.8
Total	**191**		**5,659**	

Table 3. Summary of abundance of major benthic macroinfaunal taxonomic groups by station for the Chesapeake Bay stations, September 2002.

Station	Taxa	Total No. Taxa	% of Total	Total No. Individuals	% of Total
BHM4	Annelida	8	50.0	76	46.3
	Mollusca	4	25.0	46	28.0
	Arthropoda	2	12.5	37	22.6
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	12.5	5	3.0
	Total	**16**		**164**	
BHM5	Annelida	6	60.0	18	75.0
	Mollusca	3	30.0	5	20.8
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	10.0	1	4.2
	Total	**10**		**24**	
BHM6	Annelida	4	66.7	16	72.7
	Mollusca	2	33.3	6	27.3
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**6**		**22**	
BHM7	Annelida	9	69.2	54	63.5
	Mollusca	3	23.1	30	35.3
	Arthropoda	1	7.7	1	1.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**13**		**85**	
BHM8	Annelida	9	52.9	133	64.3
	Mollusca	4	23.5	43	20.8
	Arthropoda	2	11.8	22	10.6
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	11.8	9	4.3
	Total	**17**		**207**	
BHM9	Annelida	4	33.3	12	11.5
	Mollusca	4	33.3	18	17.3
	Arthropoda	3	25.0	71	68.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	8.3	3	2.9
	Total	**12**		**104**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% of Total	Total No. Individuals	% of Total
BHS1	Annelida	9	52.9	123	79.4
	Mollusca	6	35.3	29	18.7
	Arthropoda	2	11.8	3	1.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**17**		**155**	
BHS2	Annelida	12	50.0	306	67.5
	Mollusca	6	25.0	111	24.5
	Arthropoda	4	16.7	33	7.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	8.3	3	0.7
	Total	**24**		**453**	
BHS3	Annelida	3	25.0	6	15.0
	Mollusca	5	41.7	23	57.5
	Arthropoda	3	25.0	10	25.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	8.3	1	2.5
	Total	**12**		**40**	
BHS4	Annelida	8	47.1	58	36.5
	Mollusca	4	23.5	69	43.4
	Arthropoda	4	23.5	31	19.5
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	5.9	1	0.6
	Total	**17**		**159**	
BHS5	Annelida	4	50.0	29	46.8
	Mollusca	3	37.5	31	50.0
	Arthropoda	1	12.5	2	3.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**8**		**62**	
BHS6	Annelida	8	61.5	92	44.0
	Mollusca	2	15.4	86	41.1
	Arthropoda	2	15.4	29	13.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	7.7	2	1.0
	Total	**13**		**209**	
N1	Annelida	19	47.5	97	38.6
	Mollusca	10	25.0	78	31.1
	Arthropoda	7	17.5	22	8.8
	Echinodermata	0	0.0	0	0.0
	Other Taxa	4	10.0	54	21.5
	Total	**40**		**251**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% of Total	Total No. Individuals	% of Total
N2	Annelida	20	43.5	125	64.4
	Mollusca	13	28.3	23	11.9
	Arthropoda	7	15.2	32	16.5
	Echinodermata	2	4.3	8	4.1
	Other Taxa	4	8.7	6	3.1
	Total	**46**		**194**	
N3	Annelida	30	61.2	157	62.3
	Mollusca	8	16.3	27	10.7
	Arthropoda	7	14.3	28	11.1
	Echinodermata	1	2.0	11	4.4
	Other Taxa	3	6.1	29	11.5
	Total	**49**		**252**	
N4	Annelida	30	49.2	125	48.1
	Mollusca	14	23.0	47	18.1
	Arthropoda	12	19.7	47	18.1
	Echinodermata	2	3.3	5	1.9
	Other Taxa	3	4.9	36	13.8
	Total	**61**		**260**	
NHM1	Annelida	20	57.1	85	66.4
	Mollusca	5	14.3	22	17.2
	Arthropoda	3	8.6	9	7.0
	Echinodermata	1	2.9	1	0.8
	Other Taxa	6	17.1	11	8.6
	Total	**35**		**128**	
NHM3	Annelida	9	50.0	65	69.9
	Mollusca	4	22.2	12	12.9
	Arthropoda	3	16.7	8	8.6
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	11.1	8	8.6
	Total	**18**		**93**	
NHS1	Annelida	17	45.9	434	73.9
	Mollusca	8	21.6	90	15.3
	Arthropoda	7	18.9	40	6.8
	Echinodermata	0	0.0	0	0.0
	Other Taxa	5	13.5	23	3.9
	Total	**37**		**587**	
NHS2	Annelida	9	50.0	47	26.7
	Mollusca	5	27.8	75	42.6
	Arthropoda	2	11.1	4	2.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	11.1	50	28.4
	Total	**18**		**176**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% of Total	Total No. Individuals	% of Total
NHS3	Annelida	14	45.2	38	21.7
	Mollusca	12	38.7	74	42.3
	Arthropoda	3	9.7	11	6.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	6.5	52	29.7
	Total	**31**		**175**	
NP	Annelida	20	40.0	101	48.1
	Mollusca	12	24.0	42	20.0
	Arthropoda	11	22.0	38	18.1
	Echinodermata	1	2.0	6	2.9
	Other Taxa	6	12.0	23	11.0
	Total	**50**		**210**	
SR1	Annelida	4	80.0	44	97.8
	Mollusca	0	0.0	0	0.0
	Arthropoda	1	20.0	1	2.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**5**		**45**	
SR2	Annelida	2	100.0	10	100.0
	Mollusca	0	0.0	0	0.0
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**2**		**10**	
SR3	Annelida	7	87.5	62	98.4
	Mollusca	0	0.0	0	0.0
	Arthropoda	1	12.5	1	1.6
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**8**		**63**	
VB1	Annelida	12	44.4	246	86.9
	Mollusca	5	18.5	10	3.5
	Arthropoda	6	22.2	18	6.4
	Echinodermata	1	3.7	1	0.4
	Other Taxa	3	11.1	8	2.8
	Total	**27**		**283**	
VB2	Annelida	11	45.8	196	88.3
	Mollusca	8	33.3	12	5.4
	Arthropoda	5	20.8	14	6.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	Total	**24**		**222**	

Table 3 continued:

Station	Taxa	Total No. Taxa	% of Total	Total No. Individuals	% of Total
VB3	Annelida	5	27.8	148	80.0
	Mollusca	7	38.9	18	9.7
	Arthropoda	5	27.8	17	9.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	5.6	2	1.1
	Total	**18**		**185**	
VB4	Annelida	9	36.0	276	90.5
	Mollusca	7	28.0	13	4.3
	Arthropoda	7	28.0	14	4.6
	Echinodermata	1	4.0	1	0.3
	Other Taxa	1	4.0	1	0.3
	Total	**25**		**305**	
VBP	Annelida	24	64.9	130	56.8
	Mollusca	7	18.9	16	7.0
	Arthropoda	5	13.5	80	34.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	2.7	3	1.3
	Total	**37**		**229**	
YR2	Annelida	15	60.0	87	86.1
	Mollusca	1	4.0	1	1.0
	Arthropoda	4	16.0	7	6.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	5	20.0	6	5.9
	Total	**25**		**101**	
YR6	Annelida	18	51.4	75	47.2
	Mollusca	7	20.0	22	13.8
	Arthropoda	5	14.3	16	10.1
	Echinodermata	1	2.9	1	0.6
	Other Taxa	4	11.4	45	28.3
	Total	**35**		**159**	
YRR	Annelida	4	26.7	30	63.8
	Mollusca	3	20.0	5	10.6
	Arthropoda	5	33.3	9	19.1
	Echinodermata	1	6.7	1	2.1
	Other Taxa	2	13.3	2	4.3
	Total	**15**		**47**	

Table 4. Distribution and abundance and of benthic macroinfaunal taxa for the Chesapeake Bay stations, September 2002.

Taxa Name	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occurrence	% Station Occurrence
Apoprionospio pygmaea	Ann	Poly	599	10.58	10.58	6	18
Heteromastus filiformis	Ann	Poly	380	6.71	17.30	12	36
Streblospio benedicti	Ann	Poly	336	5.94	23.24	22	67
Paraprionospio pinnata	Ann	Poly	327	5.78	29.02	18	55
Tubificidae (LPIL)	Ann	Olig	292	5.16	34.18	20	61
Tellina agilis	Mol	Biva	252	4.45	38.63	15	45
Phoronis (LPIL)	Pho	-	242	4.28	42.91	13	39
Lumbriculidae (LPIL)	Ann	Olig	181	3.20	46.10	4	12
Acteocina canaliculata	Mol	Gast	160	2.83	48.93	12	36
Mulinia lateralis	Mol	Biva	157	2.77	51.71	15	45
Tharyx acutus	Ann	Poly	138	2.44	54.14	5	15
Mediomastus (LPIL)	Ann	Poly	123	2.17	56.32	15	45
Turbonilla interrupta	Mol	Gast	115	2.03	58.35	14	42
Spionidae (LPIL)	Ann	Poly	106	1.87	60.22	14	42
Odostomia weberi	Mol	Gast	102	1.80	62.03	7	21
Cyathura polita	Art	Mala	93	1.64	63.67	8	24
Bhawania heteroseta	Ann	Poly	91	1.61	65.28	7	21
Leptocheirus plumulosus	Art	Mala	91	1.61	66.88	8	24
Pagurus (LPIL)	Art	Mala	91	1.61	68.49	6	18
Cirratulidae (LPIL)	Ann	Poly	86	1.52	70.01	9	27
Tubificoides heterochaetus	Ann	Olig	75	1.33	71.34	8	24
Ampelisca verrilli	Art	Mala	73	1.29	72.63	10	30
Macoma balthica	Mol	Biva	70	1.24	73.86	8	24
Sigambra tentaculata	Ann	Poly	70	1.24	75.10	11	33
Rhynchocoela (LPIL)	Rhy	-	62	1.10	76.20	17	52
Nereis succinea	Ann	Poly	56	0.99	77.19	13	39
Loimia viridis	Ann	Poly	49	0.87	78.05	9	27
Maldanidae (LPIL)	Ann	Poly	41	0.72	78.78	5	15
Aglaophamus verrilli	Ann	Poly	39	0.69	79.47	8	24
Nephtys picta	Ann	Poly	39	0.69	80.16	8	24
Parasterope pollex	Art	Ostr	38	0.67	80.83	7	21
Listriella barnardi	Art	Mala	37	0.65	81.48	11	33
Edotea triloba	Art	Mala	36	0.64	82.12	3	9
Nereis (LPIL)	Ann	Poly	35	0.62	82.74	10	30
Spiophanes bombyx	Ann	Poly	34	0.60	83.34	11	33
Tubulanus (LPIL)	Rhy	Anop	31	0.55	83.88	10	30
Cerapus tubularis	Art	Mala	30	0.53	84.41	5	15
Mediomastus ambiseta	Ann	Poly	30	0.53	84.94	8	24
Notomastus latericeus	Ann	Poly	30	0.53	85.47	8	24
Ampelisca abdita	Art	Mala	29	0.51	85.99	5	15
Monticellina dorsobranchialis	Ann	Poly	27	0.48	86.46	5	15
Streptosyllis pettiboneae	Ann	Poly	27	0.48	86.94	1	3
Bivalvia (LPIL)	Mol	Biva	26	0.46	87.40	13	39
Anachis lafresnayi	Mol	Gast	24	0.42	87.82	5	15
Ophiuroidea (LPIL)	Ech	Ophi	24	0.42	88.25	6	18
Pectinaria gouldii	Ann	Poly	24	0.42	88.67	10	30
Phyllodocidae (LPIL)	Ann	Poly	23	0.41	89.08	6	18
Eusarsiella zostericola	Art	Ostr	22	0.39	89.47	5	15
Branchiostoma (LPIL)	Cho	Lept	20	0.35	89.82	3	9
Nucula proxima	Mol	Biva	20	0.35	90.17	6	18
Acteocina bidentata	Mol	Gast	17	0.30	90.48	6	18

Table 4 continued:

Taxa Name	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occurrence	% Station Occurrence
Spiochaetopterus oculatus	Ann	Poly	16	0.28	90.76	6	18
Rangia cuneata	Mol	Biva	15	0.27	91.02	6	18
Sabellaria vulgaris	Ann	Poly	15	0.27	91.29	5	15
Actiniaria (LPIL)	Cni	Anth	14	0.25	91.54	9	27
Erichthonius brasiliensis	Art	Mala	14	0.25	91.78	3	9
Glycinde solitaria	Ann	Poly	13	0.23	92.01	7	21
Ogyrides alphaerostris	Art	Mala	13	0.23	92.24	6	18
Nephtys caeca	Ann	Poly	12	0.21	92.45	4	12
Turbonilla (LPIL)	Mol	Gast	12	0.21	92.67	3	9
Caulleriella sp. J	Ann	Poly	11	0.19	92.86	1	3
Melita nitida	Art	Mala	11	0.19	93.06	2	6
Podarkeopsis levifuscina	Ann	Poly	11	0.19	93.25	5	15
Abra aequalis	Mol	Biva	10	0.18	93.43	6	18
Clymenella torquata	Ann	Poly	10	0.18	93.60	6	18
Podocopida (LPIL)	Art	Ostr	10	0.18	93.78	1	3
Prionospio perkinsi	Ann	Poly	10	0.18	93.96	4	12
Rictaxis punctostriatus	Mol	Gast	10	0.18	94.13	5	15
Capitellidae (LPIL)	Ann	Poly	9	0.16	94.29	6	18
Glycera americana	Ann	Poly	9	0.16	94.45	6	18
Scolelepis texana	Ann	Poly	9	0.16	94.61	3	9
Hypereteone heteropoda	Ann	Poly	8	0.14	94.75	3	9
Leitoscoloplos (LPIL)	Ann	Poly	8	0.14	94.89	3	9
Tellina (LPIL)	Mol	Biva	8	0.14	95.03	6	18
Ilyanassa trivittata	Mol	Gast	7	0.12	95.16	4	12
Phyllodoce arenae	Ann	Poly	7	0.12	95.28	5	15
Amphiuridae (LPIL)	Ech	Ophi	6	0.11	95.39	1	3
Carazziella hobsonae	Ann	Poly	6	0.11	95.49	2	6
Magelona filiformis	Ann	Poly	6	0.11	95.60	2	6
Marenzellaria viridis	Ann	Poly	6	0.11	95.71	4	12
Scoloplos rubra	Ann	Poly	6	0.11	95.81	1	3
Tellinidae (LPIL)	Mol	Biva	6	0.11	95.92	5	15
Americhelidium americanum	Art	Mala	5	0.09	96.01	4	12
Ampelisca (LPIL)	Art	Mala	5	0.09	96.09	4	12
Anachis obesa	Mol	Gast	5	0.09	96.18	1	3
Balanoglossus (LPIL)	Hem	Ente	5	0.09	96.27	3	9
Eusarsiella texana	Art	Ostr	5	0.09	96.36	5	15
Kurtziella cerina	Mol	Gast	5	0.09	96.45	4	12
Macoma tenta	Mol	Biva	5	0.09	96.54	4	12
Malmgreniella taylori	Ann	Poly	5	0.09	96.62	3	9
Mytilopsis leucophaeata	Mol	Biva	5	0.09	96.71	2	6
Nephtys (LPIL)	Ann	Poly	5	0.09	96.80	2	6
Veneridae (LPIL)	Mol	Biva	5	0.09	96.89	3	9
Americamysis bigelowi	Art	Mala	4	0.07	96.96	2	6
Aricidea wassi	Ann	Poly	4	0.07	97.03	1	3
Glycera robusta	Ann	Poly	4	0.07	97.10	3	9
Lepidactylus dytiscus	Art	Mala	4	0.07	97.17	1	3
Lepidonotus variabilis	Ann	Poly	4	0.07	97.24	4	12
Monoculodes sp. G	Art	Mala	4	0.07	97.31	2	6
Mysella planulata	Mol	Biva	4	0.07	97.38	1	3
Nassariidae (LPIL)	Mol	Gast	4	0.07	97.46	2	6
Odostomia (LPIL)	Mol	Gast	4	0.07	97.53	2	6
Owenia fusiformis	Ann	Poly	4	0.07	97.60	4	12

Table 4 continued:

Taxa Name	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occurrence	% Station Occurrence
Oxyurostylis smithi	Art	Mala	4	0.07	97.67	2	6
Unciola serrata	Art	Mala	4	0.07	97.74	2	6
Amphioplus abditus	Ech	Ophi	3	0.05	97.79	2	6
Anadara transversa	Mol	Biva	3	0.05	97.84	3	9
Ancistrosyllis groenlandica	Ann	Poly	3	0.05	97.90	3	9
Chione cancellata	Mol	Biva	3	0.05	97.95	1	3
Dipolydora socialis	Ann	Poly	3	0.05	98.00	1	3
Gemma gemma	Mol	Biva	3	0.05	98.06	1	3
Lineidae (LPIL)	Rhy	Anop	3	0.05	98.11	3	9
Sabaco americanus	Ann	Poly	3	0.05	98.16	2	6
Semelidae (LPIL)	Mol	Biva	3	0.05	98.22	2	6
Tagelus divisus	Mol	Biva	3	0.05	98.27	2	6
Turbellaria (LPIL)	Pla	Turb	3	0.05	98.32	3	9
Anachis (LPIL)	Mol	Gast	2	0.04	98.36	1	3
Aricidea (LPIL)	Ann	Poly	2	0.04	98.39	1	3
Bowmaniella portoricensis	Art	Mala	2	0.04	98.43	2	6
Chiridotea tuftsi	Art	Mala	2	0.04	98.46	1	3
Corophiidae (LPIL)	Art	Mala	2	0.04	98.50	1	3
Dissodactylus mellitae	Art	Mala	2	0.04	98.53	1	3
Hesionidae (LPIL)	Ann	Poly	2	0.04	98.57	2	6
Leitoscoloplos robustus	Ann	Poly	2	0.04	98.60	2	6
Melanella intermedia	Mol	Gast	2	0.04	98.64	1	3
Montacutidae (LPIL)	Mol	Biva	2	0.04	98.67	2	6
Mysidopsis furca	Art	Mala	2	0.04	98.71	1	3
Parahesione luteola	Ann	Poly	2	0.04	98.75	2	6
Phyllodoce (LPIL)	Ann	Poly	2	0.04	98.78	2	6
Pinnixa (LPIL)	Art	Mala	2	0.04	98.82	2	6
Polydora cornuta	Ann	Poly	2	0.04	98.85	1	3
Scolelepis (LPIL)	Ann	Poly	2	0.04	98.89	2	6
Scoloplos (LPIL)	Ann	Poly	2	0.04	98.92	1	3
Tectonatica pusilla	Mol	Gast	2	0.04	98.96	1	3
Trachypenaeus constrictus	Art	Mala	2	0.04	98.99	2	6
Turridae (LPIL)	Mol	Gast	2	0.04	99.03	2	6
Acanthohaustorius millsi	Art	Mala	1	0.02	99.05	1	3
Aeginellidae (LPIL)	Art	Mala	1	0.02	99.06	1	3
Ancistrosyllis hartmanae	Ann	Poly	1	0.02	99.08	1	3
Ascidiacea (LPIL)	Cho	Asci	1	0.02	99.10	1	3
Astarte undata	Mol	Biva	1	0.02	99.12	1	3
Bryozoa (LPIL)	Bry	-	1	0.02	99.13	1	3
Busycon carica	Mol	Gast	1	0.02	99.15	1	3
Cabira incerta	Ann	Poly	1	0.02	99.17	1	3
Caulleriella (LPIL)	Ann	Poly	1	0.02	99.19	1	3
Chaetopterus variopedatus	Ann	Poly	1	0.02	99.20	1	3
Chironomus (LPIL)	Art	Inse	1	0.02	99.22	1	3
Cnidaria (LPIL)	Cni	-	1	0.02	99.24	1	3
Diopatra cuprea	Ann	Poly	1	0.02	99.26	1	3
Drilonereis (LPIL)	Ann	Poly	1	0.02	99.28	1	3
Drilonereis longa	Ann	Poly	1	0.02	99.29	1	3
Ensis minor	Mol	Biva	1	0.02	99.31	1	3
Epitonium (LPIL)	Mol	Gast	1	0.02	99.33	1	3
Epitonium multistriatum	Mol	Gast	1	0.02	99.35	1	3
Ervilia concentrica	Mol	Biva	1	0.02	99.36	1	3

Table 4 continued:

Taxa Name	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occurrence	% Station Occurrence
Euceramus praelongus	Art	Mala	1	0.02	99.38	1	3
Eusarsiella cresseyi	Art	Ostr	1	0.02	99.40	1	3
Gastropoda (LPIL)	Mol	Gast	1	0.02	99.42	1	3
Geukensia demissa	Mol	Biva	1	0.02	99.43	1	3
Glycera dibranchiata	Ann	Poly	1	0.02	99.45	1	3
Haplocytheridea setipunctata	Art	Ostr	1	0.02	99.47	1	3
Hydrozoa (LPIL)	Cni	Hydr	1	0.02	99.49	1	3
Lepidonotus sublevis	Ann	Poly	1	0.02	99.51	1	3
Leucon americanus	Art	Mala	1	0.02	99.52	1	3
Loimia (LPIL)	Ann	Poly	1	0.02	99.54	1	3
Lucifer faxoni	Art	Mala	1	0.02	99.56	1	3
Magelona (LPIL)	Ann	Poly	1	0.02	99.58	1	3
Magelona papillicornis	Ann	Poly	1	0.02	99.59	1	3
Melitidae (LPIL)	Art	Mala	1	0.02	99.61	1	3
Mellita isometra	Ech	Echi	1	0.02	99.63	1	3
Monocorophium acherusicum	Art	Mala	1	0.02	99.65	1	3
Nephtyidae (LPIL)	Ann	Poly	1	0.02	99.66	1	3
Nephtys incisa	Ann	Poly	1	0.02	99.68	1	3
Nereis acuminata	Ann	Poly	1	0.02	99.70	1	3
Nereis grayi	Ann	Poly	1	0.02	99.72	1	3
Okenia sapelona	Mol	Gast	1	0.02	99.73	1	3
Ostracoda (LPIL)	Art	Ostr	1	0.02	99.75	1	3
Pagurus pollicaris	Art	Mala	1	0.02	99.77	1	3
Panopeus occidentalis	Art	Mala	1	0.02	99.79	1	3
Paracaprella tenuis	Art	Mala	1	0.02	99.81	1	3
Paramphinome sp. B	Ann	Poly	1	0.02	99.82	1	3
Parapionosyllis longicirrata	Ann	Poly	1	0.02	99.84	1	3
Pinnixa sayana	Art	Mala	1	0.02	99.86	1	3
Pitar morrhuanus	Mol	Biva	1	0.02	99.88	1	3
Polynoidae (LPIL)	Ann	Poly	1	0.02	99.89	1	3
Portunidae (LPIL)	Art	Mala	1	0.02	99.91	1	3
Ptilanthura tenuis	Art	Mala	1	0.02	99.93	1	3
Pyramidella crenulata	Mol	Gast	1	0.02	99.95	1	3
Spiophanes (LPIL)	Ann	Poly	1	0.02	99.96	1	3
Thyonella pervicax	Ech	Holo	1	0.02	99.98	1	3
Xanthidae (LPIL)	Art	Mala	1	0.02	100.00	1	3

Taxa Key

Ann = Annelida
  Olig = Oligochaeta
  Poly = Polychaeta
Art = Arthropoda
  Inse = Insecta
  Mala = Malacostraca
  Ostr = Ostracoda
Bry = Bryozoa
Cho = Chordata
  Asci = Ascidiacea
  Lept = Leptocardia
ıi = Cnidaria
ıth = Anthozoa
/dr = Hydrozoa
: Echinodermata
hi = Echinoidea
) = Holothuroidea
ıi = Ophiuroidea
= Hemichordata
: = Enteropneusta
Mol = Mollusca
  Biva = Bivalvia
  Gast = Gastropoda
Pho = Phoronida
Pla = Platyhelminthes
  Turb = Turbellaria
  Rhy = Rhynchocoela
  Anop = Anopla

Table 5. Percentage abundance of dominant benthic macroinfaunal taxa (> 10% of the total) for the Chesapeake Bay stations, September 2002.

Taxa	BHM4	BHM5	BHM6	BHM7	BHM8	BHM9	BHS1	BHS2	BHS3	BHS4	BHS5	BHS6	N1	N2	N3	N4	NHM1
Annelida																	
Oligochaeta																	
Lumbriculidae (LPIL)																	
Tubificidae (LPIL)		16.7			10.6		12.9										
Tubificoides heterochaetus		16.7			15.9												
Polychaeta																	
Apoprionospio pygmaea																	
Bhawania heteroseta															19.4		
Cirratulidae (LPIL)																	
Heteromastus filiformis	13.4	16.7		11.8	18.4		37.4	31.8			24.2	31.6					
Mediomastus (LPIL)																	
Nereis succinea				11.8													
Paraprionospio pinnata														14.9	13.5	13.8	18.0
Sigambra tentaculata																	
Spionidae (LPIL)																	
Streblospio benedicti	17.7	16.7	54.5	14.1	11.1		21.3	10.8		17.6	17.7						
Tharyx acutus																	
Arthropoda																	
Malacostraca																	
Cyathura polita	16.5					36.5											
Lepidactylus dytiscus									10.0								
Leptocheirus plumulosus						26.9				13.2							
Pagurus (LPIL)																	
Mollusca																	
Bivalvia																	
Macoma balthica				18.8		10.6											
Mulinia lateralis			13.6						25.0	13.2	32.3	22.0					
Tellina agilis	18.9	12.5	13.6	11.8				14.8	17.5	28.3	11.3	19.1					
Gastropoda																	
Acteocina canaliculata																	
Odostomia weberi													14.3				
Turbonilla interrupta																	
Phoronida																	
Phoronis (LPIL)													18.3				

Table 5 continued:

Taxa	NHM3	NHS1	NHS2	NHS3	NP	SR1	SR2	SR3	VB1	VB2	VB3	VB4	VBP	YR2	YR6	YRR
Annelida																
Oligochaeta																
Lumbriculidae (LPIL)		28.1														
Tubificidae (LPIL)		25.4				11.1										
Tubificoides heterochaetus							20.0									
Polychaeta																
Apoprionospio pygmaea									65.0	44.8	60.5	48.5	21.0			
Bhawania heteroseta																
Cirratulidae (LPIL)										12.6						
Heteromastus filiformis																
Mediomastus (LPIL)	17.2															
Nereis succinea																
Paraprionospio pinnata	41.9		11.4		12.4									42.6	22.6	40.4
Sigambra tentaculata														15.8		
Spionidae (LPIL)										16.1						
Streblospio benedicti						80.0	80.0	82.5								
Tharyx acutus												24.3	10.5			
Arthropoda																
Malacostraca																
Cyathura polita																
Lepidactylus dytiscus																
Leptocheirus plumulosus																
Pagurus (LPIL)													33.2			
Mollusca																
Bivalvia																
Macoma balthica																
Mulinia lateralis																
Tellina agilis																
Gastropoda																
Acteocina canaliculata			22.2													
Odostomia weberi																
Turbonilla interrupta			13.1	17.1												
Phoronida																
Phoronis (LPIL)			27.8	22.9											25.2	

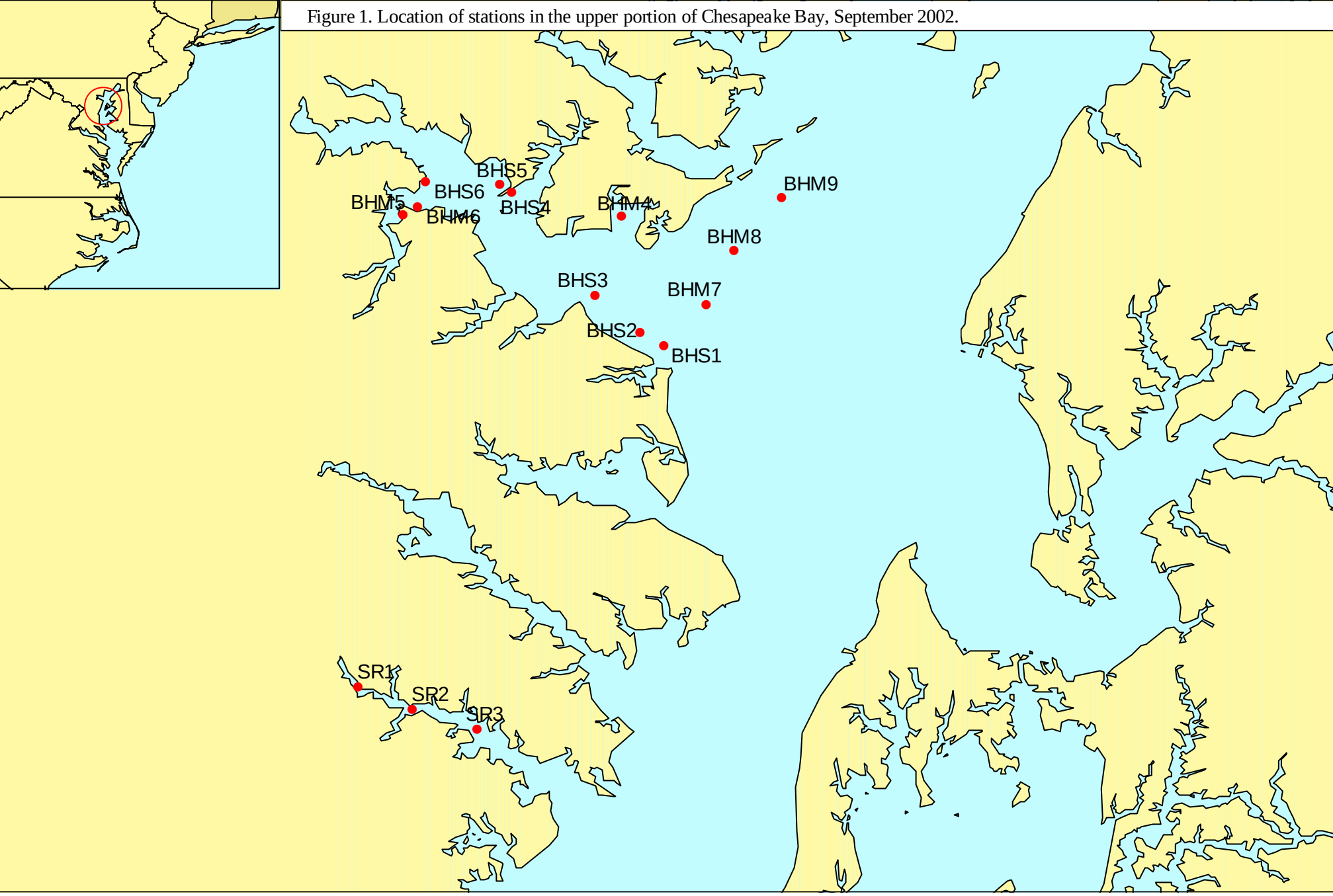
Table 6. Summary of the benthic macroinfaunal data for the Chesapeake Bay stations, September 2002.

Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. of Taxa	Mean Density	Total No. Taxa	Total No. Individuals	H' Diversity	J' Evenness
BHM4	1	14	111	2775	13.0	2050.0	16	164	2.30	0.83
	2	12	53	1325						
BHM5	1	6	12	300	6.5	300.0	10	24	2.12	0.92
	2	7	12	300						
BHM6	1	5	10	250	4.0	275.0	6	22	1.37	0.77
	2	3	12	300						
BHM7	1	11	46	1150	11.0	1062.5	13	85	2.30	0.90
	2	11	39	975						
BHM8	1	12	105	2625	14.5	2587.5	17	207	2.39	0.84
	2	17	102	2550						
BHM9	1	8	70	1750	9.5	1300.0	12	104	1.82	0.73
	2	11	34	850						
BHS1	1	15	107	2675	13.5	1937.5	17	155	1.96	0.69
	2	12	48	1200						
BHS2	1	14	128	3200	18.5	5662.5	24	453	2.33	0.73
	2	23	325	8125						
BHS3	1	7	19	475	9.0	500.0	12	40	2.24	0.90
	2	11	21	525						
BHS4	1	14	113	2825	12.0	1987.5	17	159	2.17	0.76
	2	10	46	1150						
BHS5	1	6	21	525	6.0	775.0	8	62	1.73	0.83
	2	6	41	1025						
BHS6	1	9	112	2800	9.5	2612.5	13	209	1.84	0.72
	2	10	97	2425						
N1	1	33	148	3700	29.0	3137.5	40	251	2.99	0.81
	2	25	103	2575						
N2	1	33	95	2375	32.0	2425.0	46	194	3.30	0.86
	2	31	99	2475						
N3	1	35	161	4025	32.0	3150.0	49	252	3.12	0.80
	2	29	91	2275						
N4	1	34	116	2900	40.5	3250.0	61	260	3.60	0.88
	2	47	144	3600						
NHM1	1	25	72	1800	23.5	1600.0	35	128	3.03	0.85
	2	22	56	1400						
NHM3	1	17	60	1500	12.0	1162.5	18	93	2.06	0.71
	2	7	33	825						
NHS1	1	31	429	10725	27.5	7337.5	37	587	2.33	0.64
	2	24	158	3950						
NHS2	1	15	65	1625	13.5	2200.0	18	176	2.10	0.73
	2	12	111	2775						
NHS3	1	19	70	1750	21.5	2187.5	31	175	2.63	0.76
	2	24	105	2625						
NP	1	36	122	3050	35.5	2625.0	50	210	3.48	0.89
	2	35	88	2200						

Table 6 continued:

Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. of Taxa	Mean Density	Total No. Taxa	Total No. Individuals	H' Diversity	J' Evenness
SR1	1	4	33	825	4.0	562.5	5	45	0.73	0.45
	2	4	12	300						
SR2	1	1	2	50	1.5	125.0	2	10	0.50	0.72
	2	2	8	200						
SR3	1	3	38	950	4.0	787.5	7	63	0.73	0.38
	2	5	25	625						
VB1	1	19	122	3050	18.0	3537.5	27	283	1.63	0.49
	2	17	161	4025						
VB2	1	17	57	1425	16.0	2775.0	24	222	1.95	0.61
	2	15	165	4125						
VB3	1	12	87	2175	12.5	2312.5	18	185	1.61	0.56
	2	13	98	2450						
VB4	1	18	225	5625	17.5	3812.5	25	305	1.70	0.53
	2	17	80	2000						
VBP	1	24	179	4475	22.0	2862.5	37	229	2.44	0.68
	2	20	50	1250						
YR2	1	13	35	875	15.0	1262.5	25	101	2.21	0.69
	2	17	66	1650						
YR6	1	28	92	2300	24.0	1987.5	35	159	2.68	0.75
	2	20	67	1675						
YRR	1	7	8	200	8.5	587.5	15	47	2.15	0.79
	2	10	39	975						

Figure 1. Location of stations in the upper portion of Chesapeake Bay, September 2002.



4 0 4 8 Miles

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Figure 2. Location of stations in the lower portion of Chesapeake Bay, September 2002.

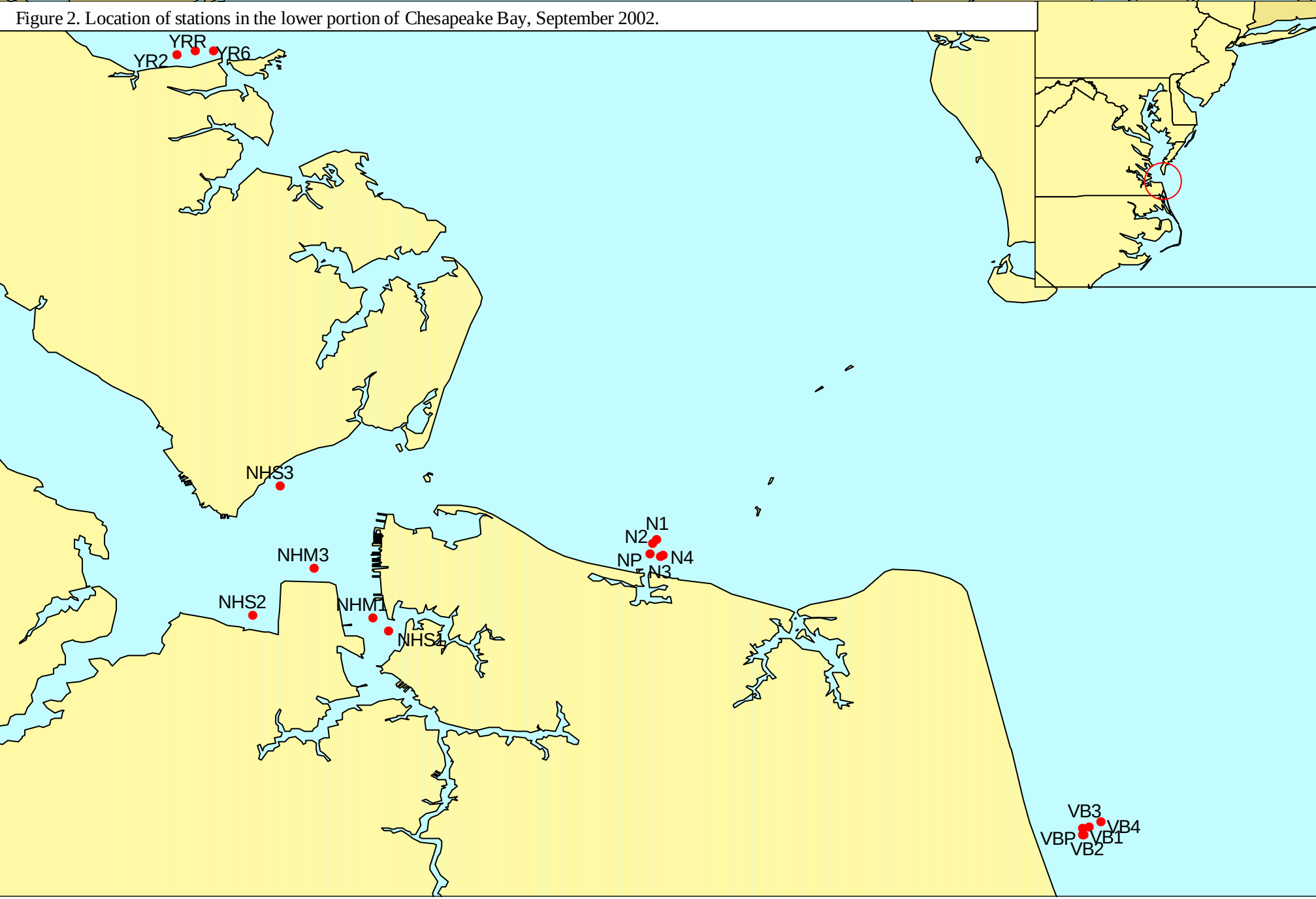

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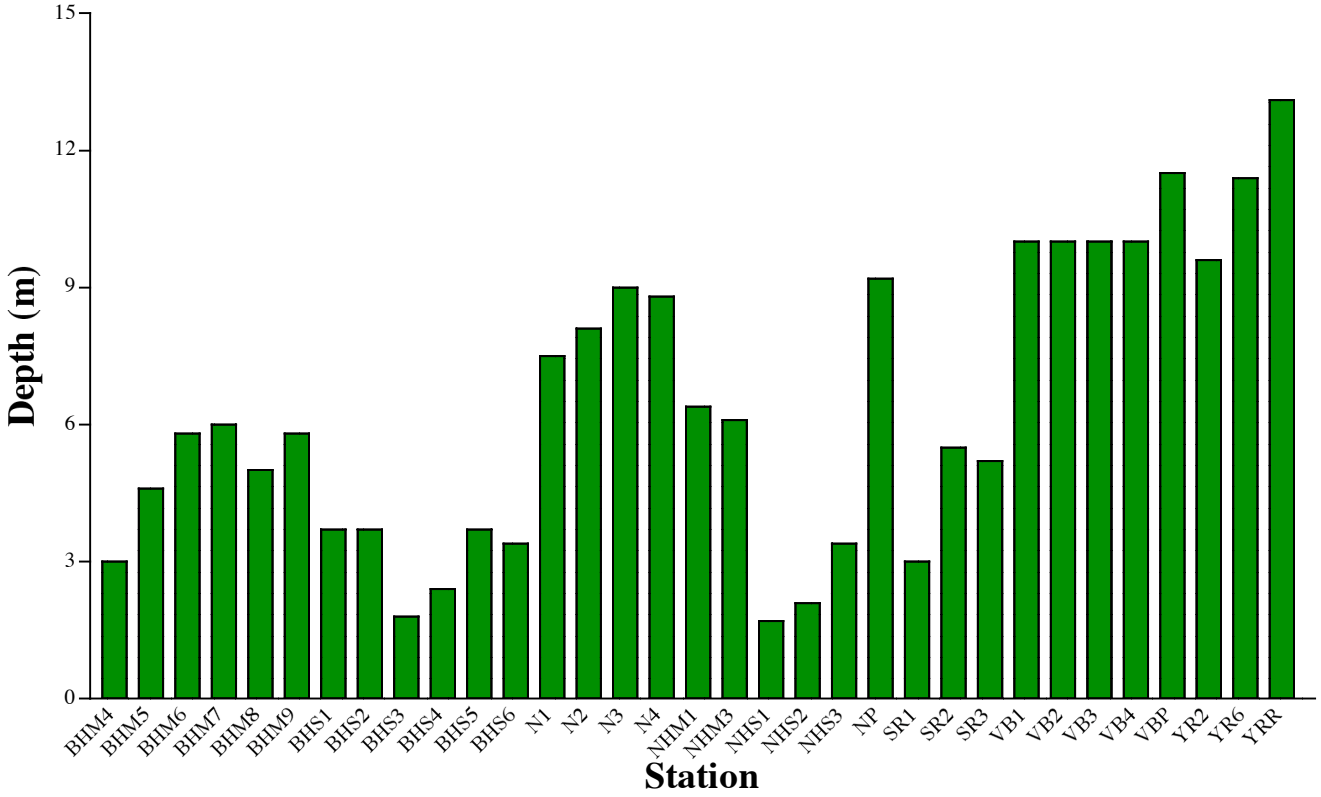
Figure 3. Water depth and salinity for the Chesapeake Bay stations, September 2002.



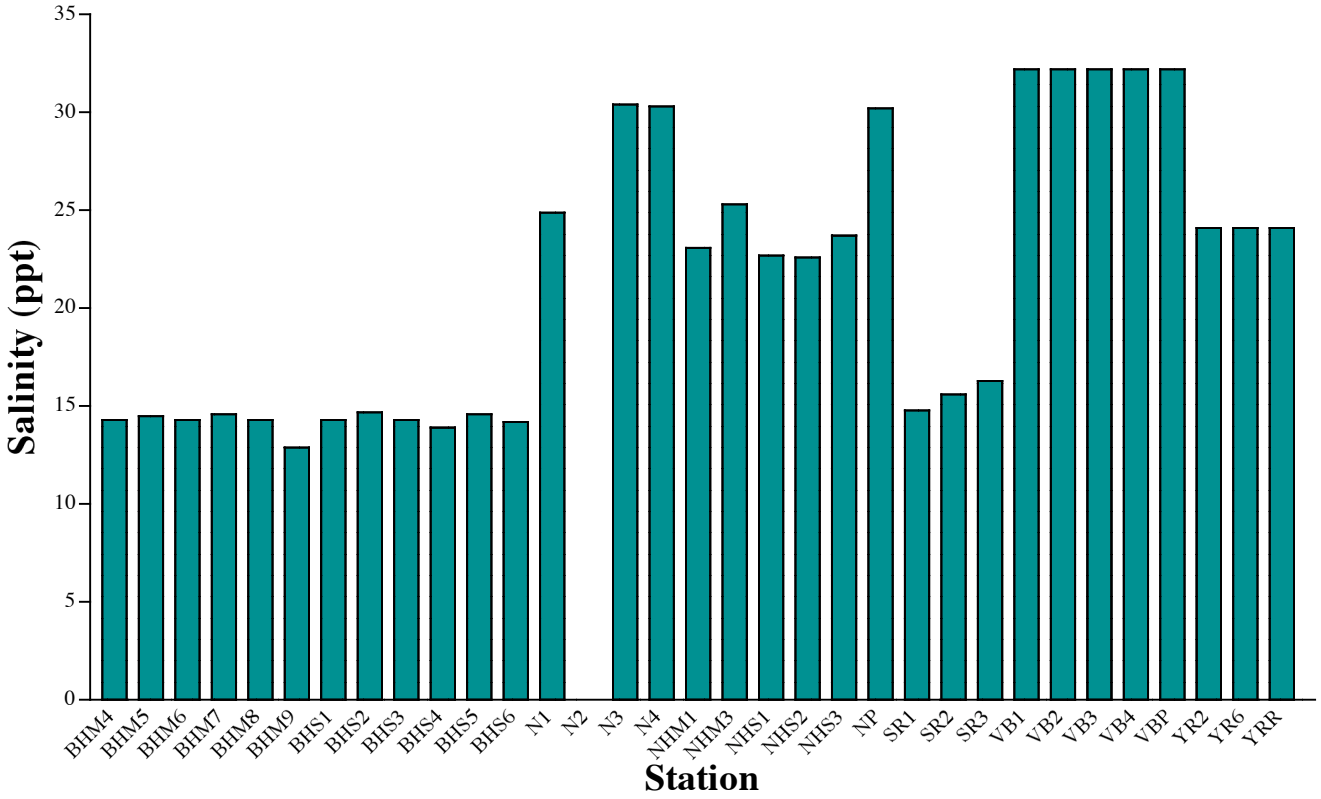


Figure 4. Sediment texture data for the Chesapeake Bay stations, September 2002.

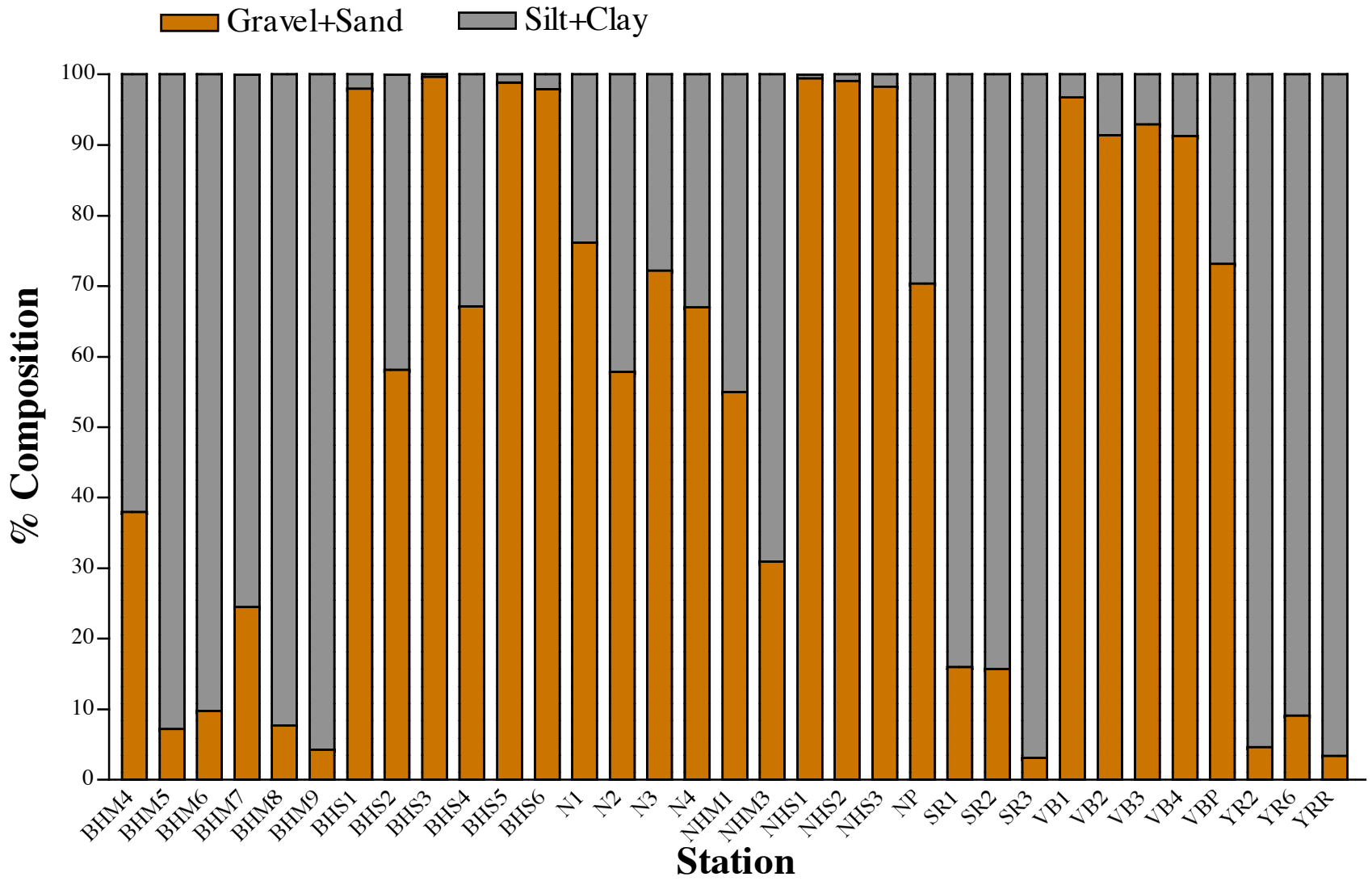


Figure 5. Distribution of major macroinvertebrate taxa for the Chesapeake Bay stations, September 2002.

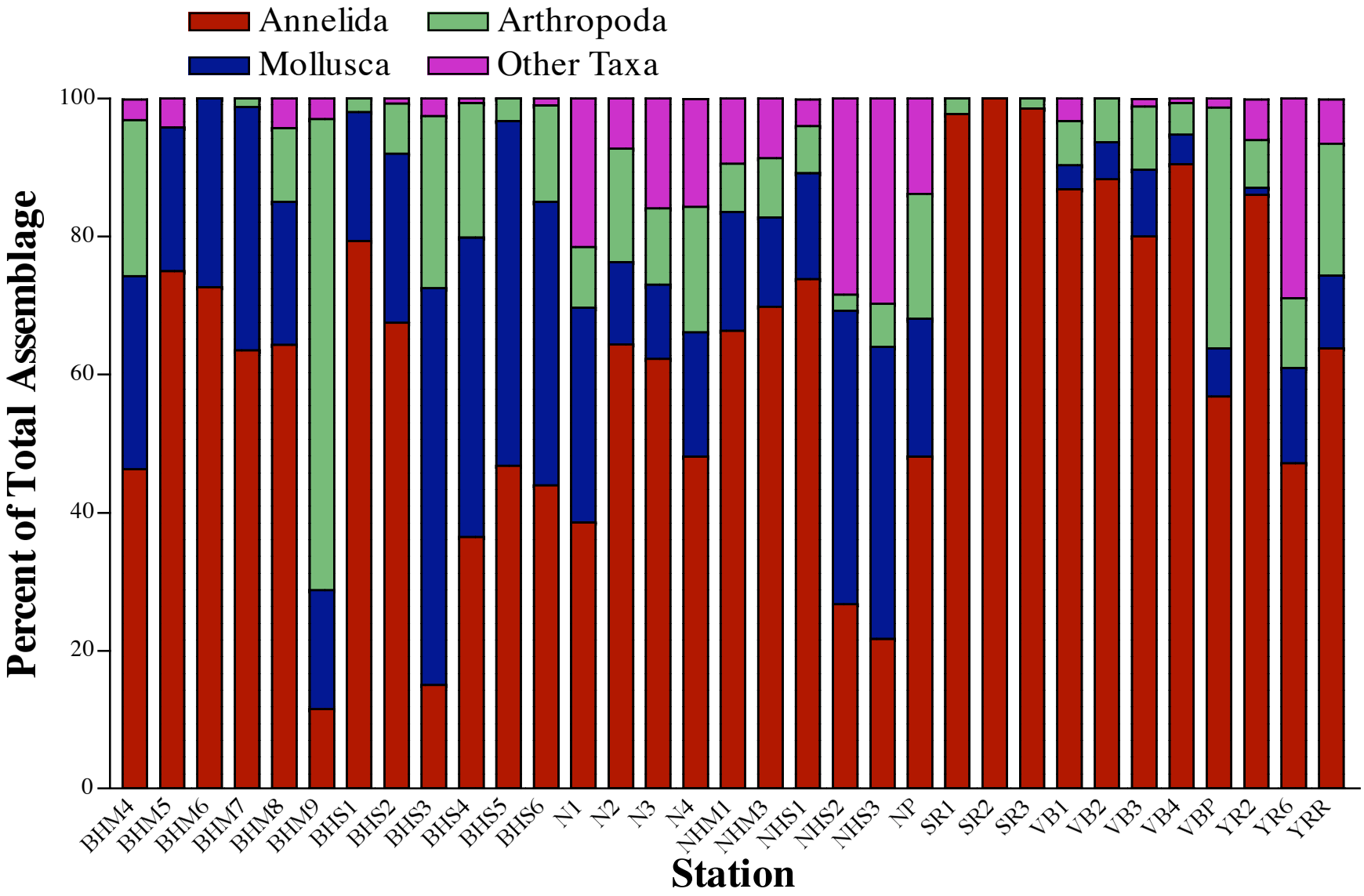


Figure 6. Taxa richness data for the Chesapeake Bay stations, September 2002.

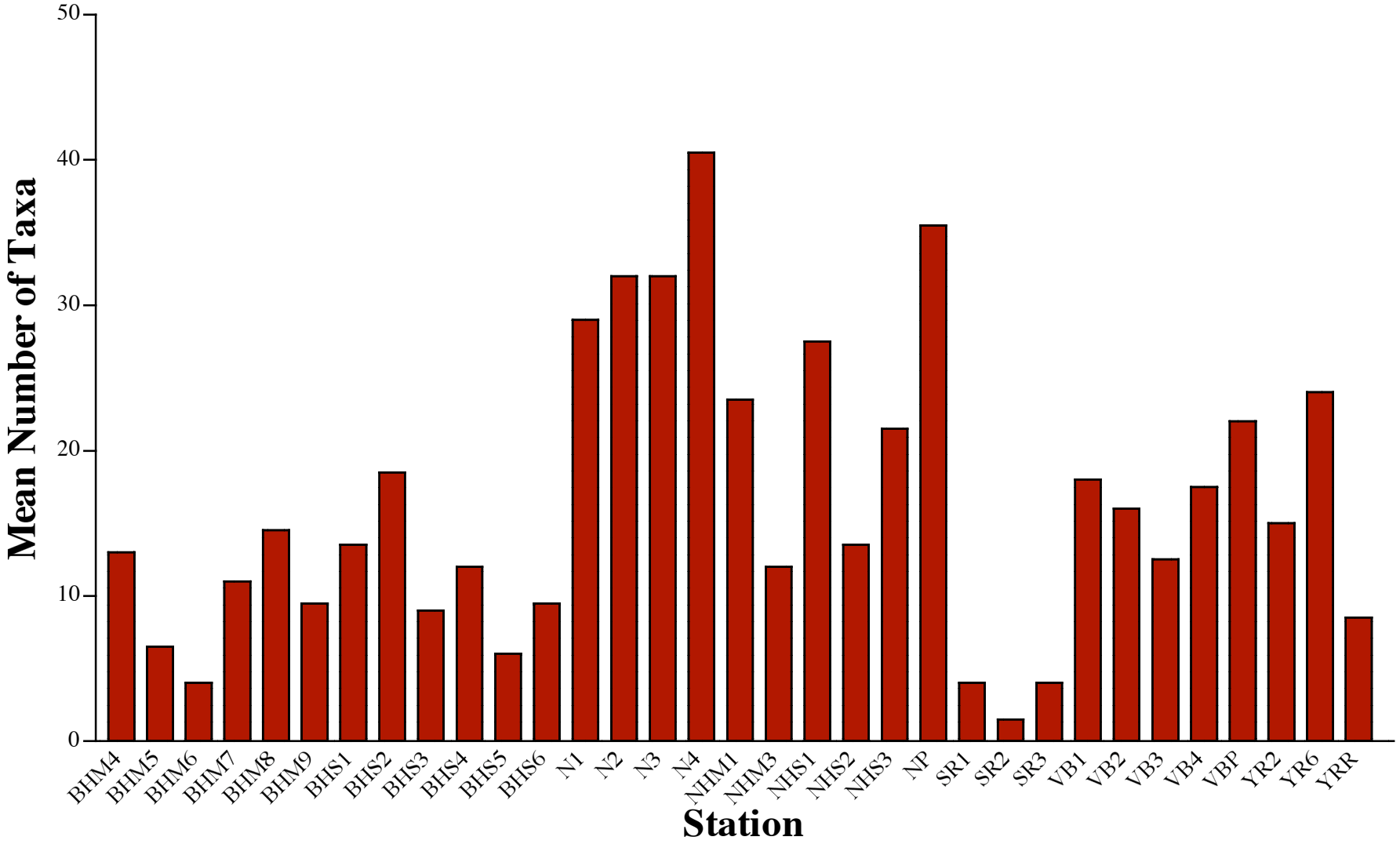


Figure 7. Spatial distribution of mean taxa richness for stations in the upper portion of Chesapeake Bay, September 2002.

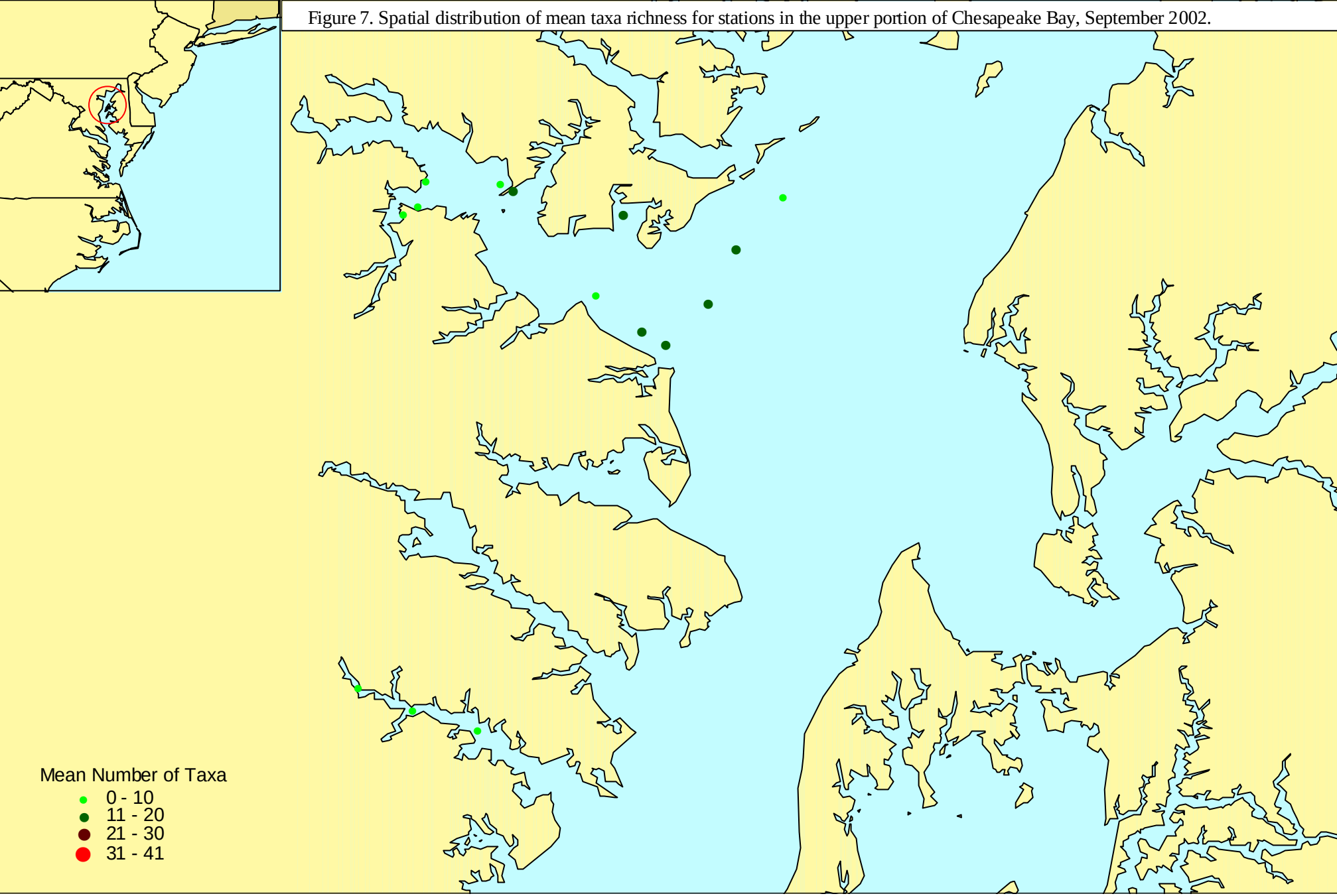


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Figure 8. Spatial distribution of mean taxa richness for stations in the lower portion of Chesapeake Bay stations, September 2002.

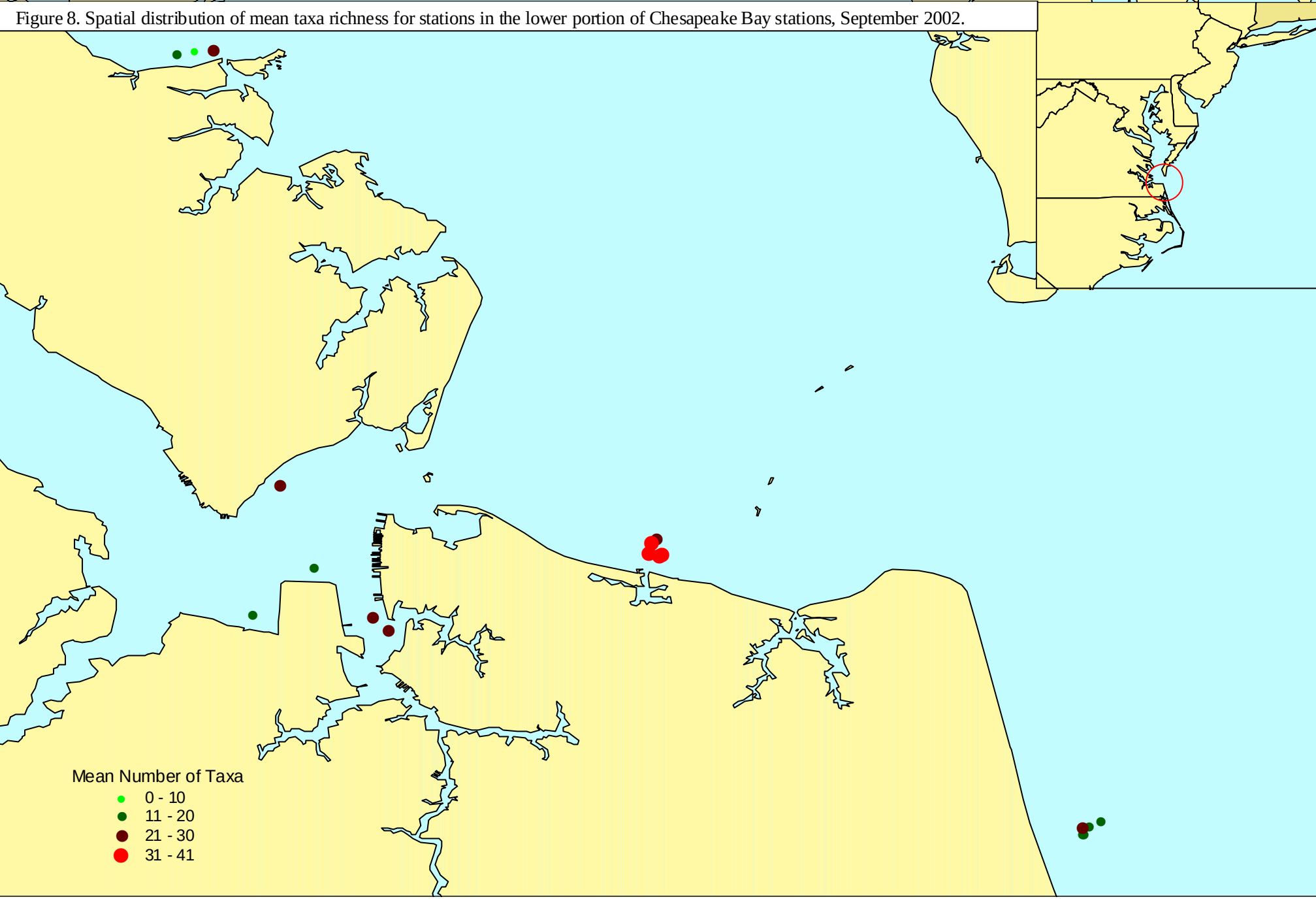

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Figure 9. Taxa density data for the Chesapeake Bay stations, September 2002.

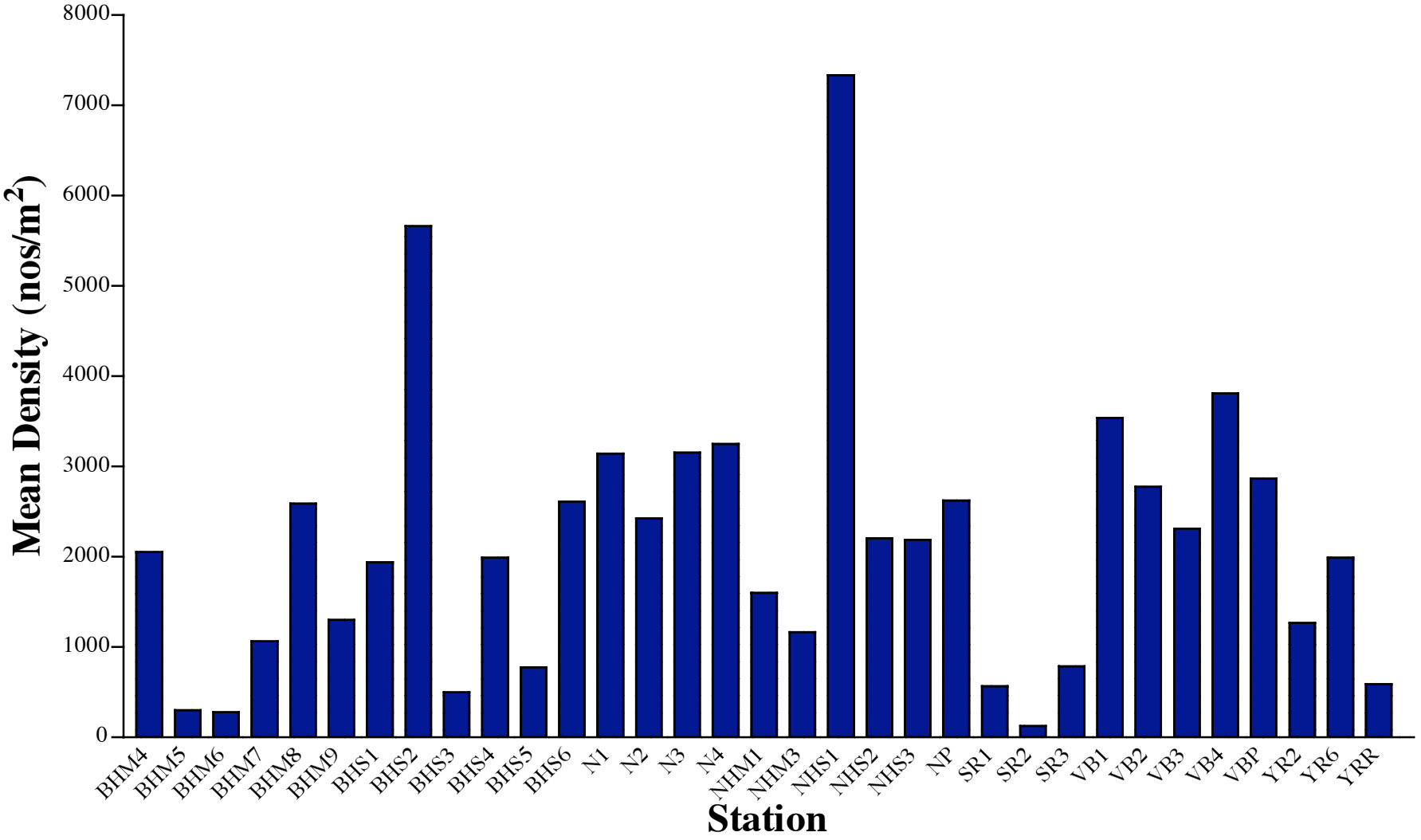

Figure 10. Spatial distribution of mean density data for stations in the upper portion of Chesapeake Bay, September 2002.

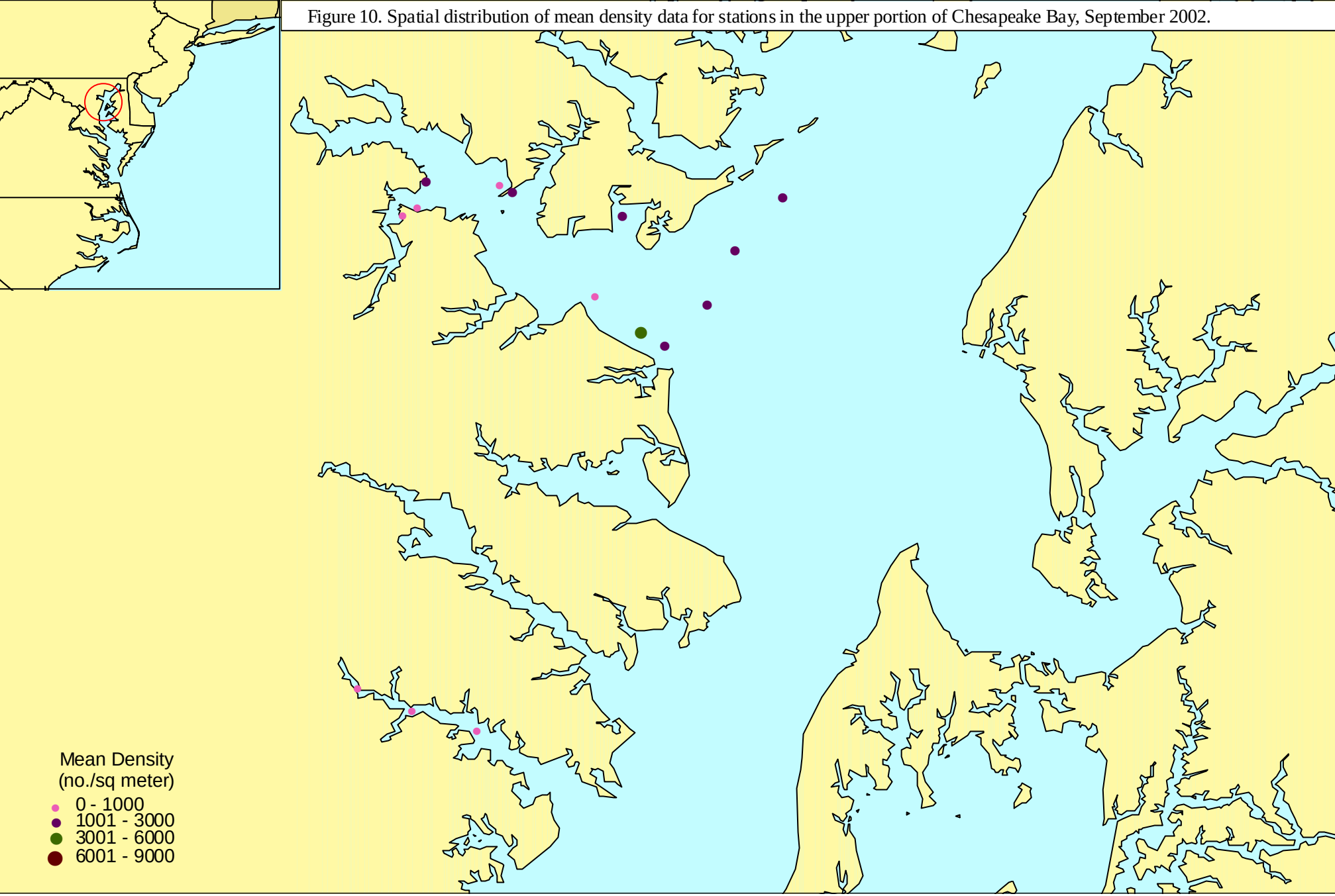

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Figure 11. Spatial distribution of mean density data for stations in the lower portion of Chesapeake Bay, September 2002.

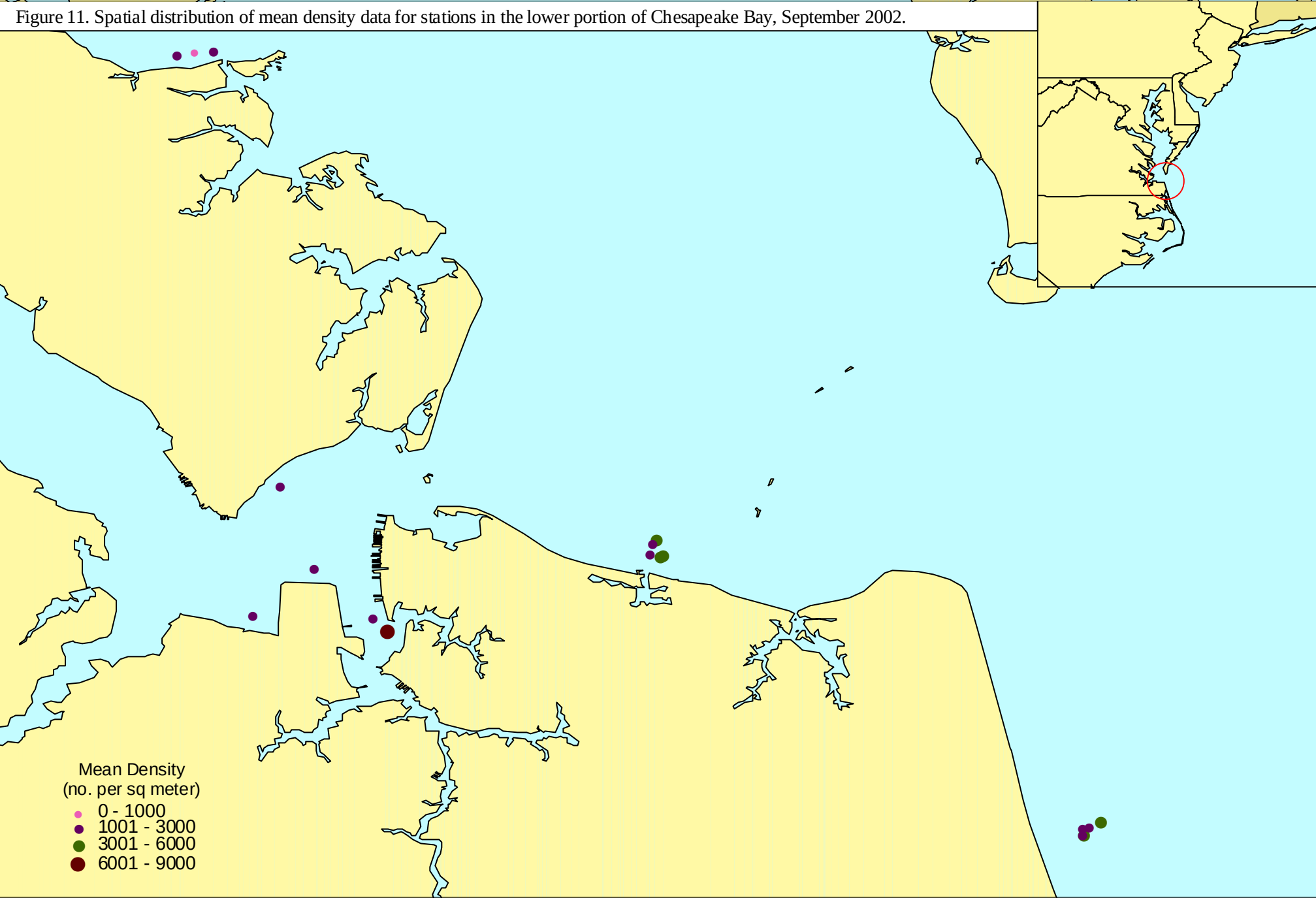


Figure 12. Taxa diversity (H') data for the Chesapeake Bay stations, September 2002.

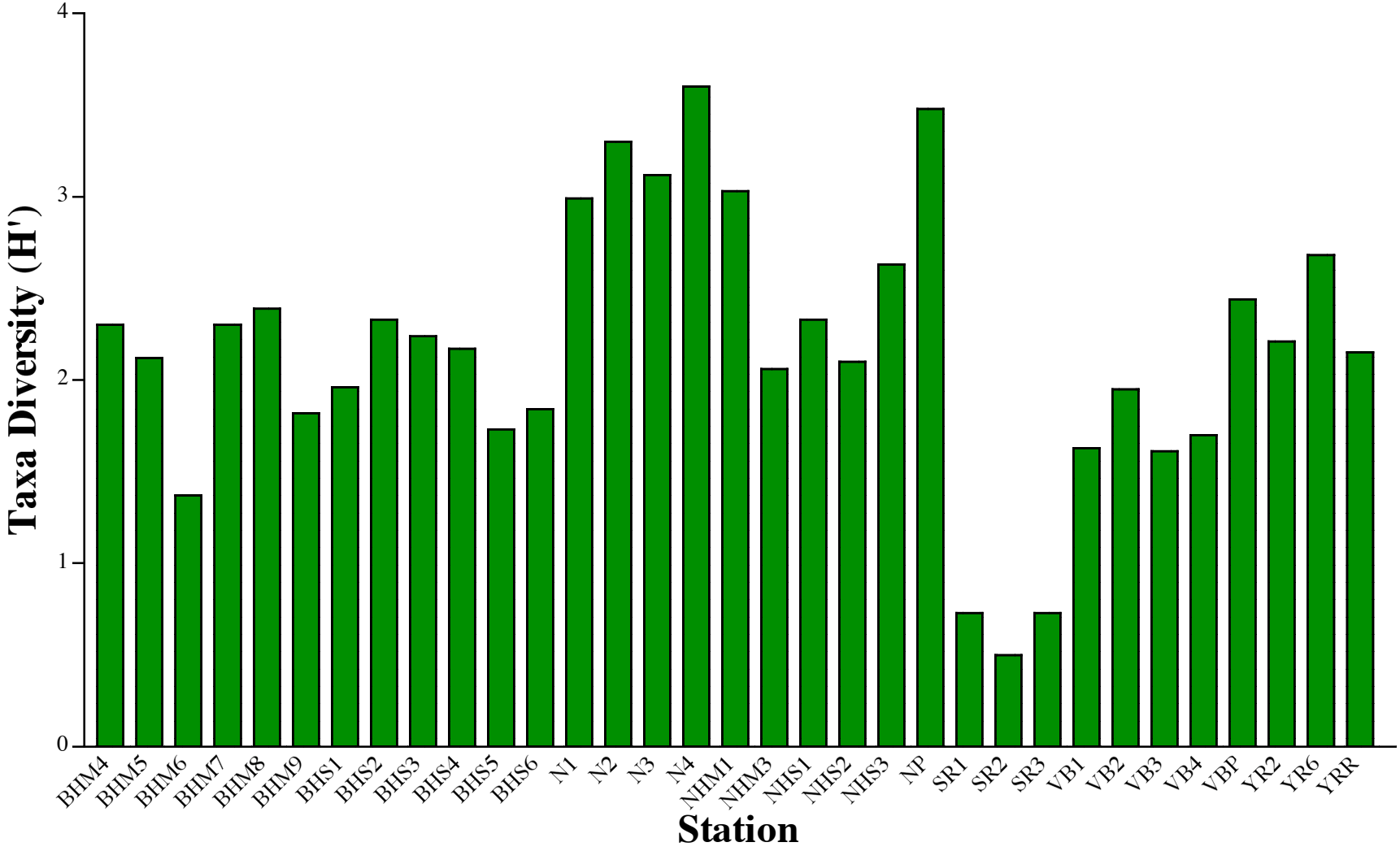
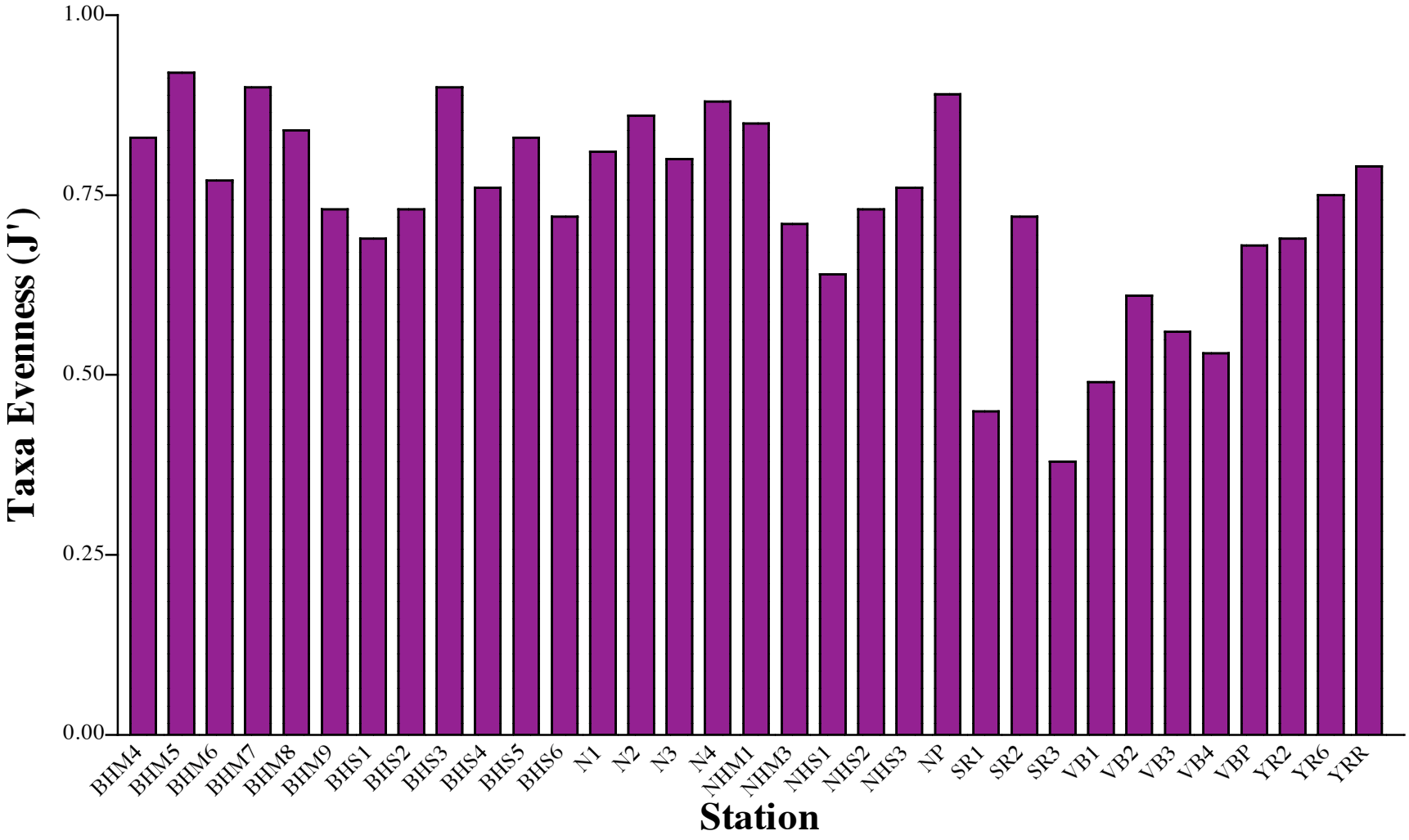


Figure 13. Taxa evenness (J') data for the Chesapeake Bay stations, 2 September 2002.



APPENDICES

QUALITY ASSURANCE STATEMENT

Client/Project: NOAA

Work Assignment Title: Chesapeake Bay 2002

Work Assignment Number: Task Number: Opt 2-4

Description of Data Set or Deliverable: 66 benthic macroinvertebrate samples collected September 2002; 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 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

_____

Signature of Project Manager Date

QUALITY CONTROL REWORKS

Client/Project: **Chesapeake Bay 2002**

Task Number: **Opt 2-4**

Sorting Results:	**Sample #**	**% Accuracy**
	BHM9-2	100%
	SR3-1	100%
	BHM6-1	100%
	VB4-2	100%
	BHS3-2	100%
	BHS3-1	100%
	YRR1-2	100%

Taxonomy Results:	**Sample #**	**Taxa**	**% Accuracy**
	BHM7-2	Crust./Moll.	100%
	N2-1	Crust./Moll.	100%
	BHS6-2	Crust./Moll.	100%
	VB2-1	Crust./Moll.	100%
	VBP-2	Crust./Moll.	100%
	BHM8-2	Poly./Misc.	100%
	NP-1	Poly./Misc.	97%
	N4-1	Poly./Misc.	97%
	VB2-2	Poly./Misc.	100%
	BHM8-1	Poly./Misc.	98%
	BHS2-2	Poly./Misc.	99%

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

Signature of QA Officer or Reviewer Date