

# Chesapeake Bay Benthic Community Assessment, 2001

## **SUBMITTED TO:**

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National Oceanic and Atmospheric Administration  
National Centers for Coastal Ocean Science  
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January 2003

## **TABLE OF CONTENTS**

**LIST OF TABLES**

**LIST OF FIGURES**

**INTRODUCTION**

**METHODS**

*Sample Collection And Handling*

*Macroinfaunal Sample Analysis*

**DATA ANALYSIS**

Assemblage Structure

**BENTHIC COMMUNITY CHARACTERIZATION**

**LITERATURE CITED**

**APPENDIX**

## **LIST OF TABLES**

Table 1. Summary of station location and water quality data for the Chesapeake Bay stations, 2001.

Table 2. Summary of overall abundance of major benthic macroinfaunal taxonomic groups for the Chesapeake Bay stations, 2001.

Table 3. Summary of abundance of major benthic macroinfaunal taxonomic groups by station for the Chesapeake Bay stations, 2001.

Table 4. Distribution and abundance and of taxa for the Chesapeake Bay stations, 2001.

Table 5. Percentage abundance of dominant taxa for the Chesapeake Bay stations, 2001.

Table 6. Summary of benthic macroinfaunal data for the Chesapeake Bay stations, 2001.

## **LIST OF FIGURES**

Figure 1. Locations of the Chesapeake Bay stations, 2001.

Figure 2. Distribution of major macroinvertebrate taxa for the Chesapeake Bay stations, 2001.

Figure 3. Taxa richness data for the Chesapeake Bay stations, 2001.

Figure 4. Taxa density data for the Chesapeake Bay stations, 2001.

Figure 5. Taxa diversity ( $H'$ ) data for the Chesapeake Bay stations, 2001.

Figure 6. Taxa evenness ( $J'$ ) data for the Chesapeake Bay stations, 2001.

## INTRODUCTION

Chesapeake Bay was sampled during 2001. 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 Figure 1 and Table 1.

## METHODS

### *Sample Collection And Handling*

A Young-modified Van Veen grab (area = 0.04 m<sup>2</sup>) was used to collect bottom samples at each of the 78 stations during 2001. 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 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 the Shannon-Weaver 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  $J' = H'/\ln S$ , where  $\ln S = H'_{\max}$ , 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 <sup>TM</sup>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 8182 organisms, representing 229 taxa, were identified from the 78 Chesapeake Bay stations (Table 2). Polychaetes were the most numerous organisms present representing 55.1% of the total assemblage, followed in abundance by malacostracans (11.6%) and gastropods (10.6%). Polychaetes represented 42.8% of the total number of taxa followed by malacostracans (23.1%), bivalves (12.2%), and gastropods (11.8%) (Table 2).

The abundance of major taxa by station are given in Table 3 and Figure 2. The number of taxa per station ranged from 0 at Station 168 to 40 at Station 154. The number of organisms per station ranged from 0 at Station 168 to 622 at Station 205.

The dominant taxa collected from the Chesapeake Bay stations were the polychaetes, *Mediomastus ambiseta* and *Paraprionospio pinnata* and the gastropod,

*Acteocina canaliculata* representing 17.5%, 6.1%, and 6.0% of the total individuals collected (Table 4). The polychaete, *Mediomastus ambiseta* was the most widely distributed taxon being found at 55% 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 0 at Station 168 to 40 at Station 154 (Table 6, Figure 3). Station densities exhibited considerable variation ranging from 0 organisms/m<sup>2</sup> at Station 168 to 15550 organisms/m<sup>2</sup> at Station 205 (Table 6, Figure 4).

Taxa diversity and evenness are given in Table 6 and Figures 5 and 6. Taxa diversity ( $H'$ ) ranged from 0 at Station 168 to 3.22 at Station 163 (Table 6, Figure 5). Taxa evenness ( $J'$ ) ranged from 0 at Station 168 to 0.97 at Station 178 (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. Summary of station location and water quality data for the Chesapeake Bay stations, 2001

Station	Latitude	Longitude	Depth (m)	Temp. (°C)	Sal. (ppt)	D.O. (mg/l)
133	37° 44.762	75° 56.340	6.49	25.1	20.7	ND
134	37° 44.554	75° 59.275	6.49	25.3	21.5	ND
135	37° 41.655	76° 01.902	10.30	25.4	22.1	ND
136	37° 39.895	76° 19.606	1.28	26.6	18.5	ND
137	37° 36.595	76° 12.947	8.20	25.9	19.3	ND
138	37° 32.580	76° 18.354	3.00	27.0	14.8	9.22
139	37° 19.960	76° 13.521	10.60	25.1	23.6	ND
140	37° 43.456	75° 56.396	14.50	25.3	22.1	ND
141	37° 36.947	76° 06.156	12.50	25.2	22.5	ND
142	37° 33.947	76° 11.672	9.90	25.8	19.9	ND
143	37° 27.809	76° 06.324	3.32	25.0	24.5	ND
144	37° 13.490	76° 05.140	4.11	25.0	26.0	ND
145	37° 43.304	75° 47.398	4.27	25.1	19.6	5.34
146	37° 38.166	75° 55.518	5.18	25.2	21.3	5.45
147	37° 24.066	76° 02.434	3.78	24.9	24.8	ND
148	37° 13.456	76° 02.137	2.23	25.1	24.7	ND
149	37° 10.199	76° 00.784	8.60	24.9	25.8	ND
150	37° 05.030	76° 04.801	6.60	24.0	29.1	ND
151	37° 02.135	75° 58.451	6.40	23.8	29.4	ND
152	37° 12.915	76° 16.256	5.45	25.4	22.6	ND
153	37° 04.972	76° 09.552	9.70	23.2	28.1	ND
154	36° 57.544	76° 00.491	6.10	20.0	30.6	ND
155	37° 06.709	76° 16.238	10.00	26.6	22.2	7.20
156	36° 58.264	76° 03.494	3.05	22.2	30.0	ND
157	37° 01.200	76° 15.527	5.79	25.0	22.0	6.25
158	36° 58.688	76° 22.404	3.35	25.5	22.8	6.00
159	36° 58.711	76° 23.209	3.05	25.6	22.8	6.58
160	36° 57.665	76° 24.173	3.05	22.8	23.1	7.29
161	36° 59.918	76° 15.133	4.70	25.1	24.1	ND
162	36° 58.884	76° 18.789	5.79	24.9	22.6	5.38
163	36° 57.400	76° 05.914	9.00	22.6	29.5	ND
164	36° 56.015	76° 11.476	5.00	25.4	24.3	ND
166	36° 31.006	75° 35.816	7.00	26.7	22.3	0.04
167	36° 55.906	76° 21.743	5.50	25.4	22.5	ND
168	36° 55.450	76° 26.230	5.10	21.6	22.4	ND
169	36° 54.291	76° 25.180	1.22	22.8	21.3	11.21
170	37° 44.473	76° 31.053	0.61	29.5	13.4	8.70
171	37° 37.789	76° 27.329	8.11	26.3	17.4	ND
172	37° 36.259	76° 22.073	9.40	26.2	18.0	ND
173	37° 47.515	76° 38.778	2.13	26.8	14.9	6.95
174	37° 42.586	76° 33.614	13.40	26.1	17.0	ND
175	37° 40.033	76° 33.269	11.90	26.3	17.8	ND
176	37° 53.561	76° 46.826	6.80	26.1	11.8	ND
177	37° 52.386	76° 46.205	6.50	26.1	12.6	ND

Table 1 continued:

<b>Station</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Depth (m)</b>	<b>Temp. (°C)</b>	<b>Sal. (ppt)</b>	<b>D.O. (mg/l)</b>
<b>178</b>	37° 50.640	76° 45.120	10.00	26.0	12.8	0.15
<b>179</b>	37° 54.976	76° 50.067	1.28	24.7	6.4	ND
<b>180</b>	37° 50.364	76° 45.288	10.00	26.0	11.3	6.97
<b>181</b>	37° 48.000	76° 42.780	8.60	25.9	12.5	7.39
<b>182</b>	37° 24.617	76° 40.444	1.52	26.7	17.3	5.60
<b>183</b>	37° 20.213	76° 36.344	7.60	26.1	21.1	ND
<b>184</b>	37° 18.625	76° 33.921	1.52	25.8	20.7	5.13
<b>185</b>	37° 21.481	76° 38.025	9.00	25.9	18.0	ND
<b>186</b>	37° 18.122	76° 34.606	3.96	26.2	21.2	ND
<b>187</b>	37° 15.713	76° 32.096	10.00	25.9	22.5	ND
<b>188</b>	37° 20.468	76° 38.247	8.50	25.7	18.5	ND
<b>189</b>	37° 18.400	76° 36.678	2.74	26.3	18.3	ND
<b>190</b>	37° 18.134	76° 34.621	9.00	26.2	21.0	4.92
<b>191</b>	37° 06.377	76° 37.872	6.00	23.0	15.7	ND
<b>192</b>	37° 03.524	76° 32.624	3.35	22.4	20.5	7.85
<b>193</b>	37° 03.122	76° 30.685	1.37	21.8	20.0	7.39
<b>194</b>	37° 05.343	76° 38.743	4.00	23.3	14.9	ND
<b>195</b>	37° 03.842	76° 39.566	2.44	22.4	15.4	ND
<b>196</b>	37° 02.678	76° 38.050	2.44	22.7	15.6	9.10
<b>197</b>	37° 00.465	76° 33.619	2.74	22.4	19.6	6.90
<b>198</b>	36° 59.431	76° 31.684	2.44	21.9	19.4	7.30
<b>199</b>	36° 56.320	76° 29.621	0.61	22.4	20.0	6.90
<b>200</b>	36° 54.758	76° 20.402	16.30	25.2	23.5	ND
<b>201</b>	36° 53.850	76° 20.300	15.10	25.2	23.7	ND
<b>202</b>	36° 51.551	76° 19.336	13.40	22.5	23.0	ND
<b>203</b>	36° 50.293	76° 14.301	2.29	23.8	21.9	5.81
<b>204</b>	36° 50.153	76° 15.300	6.00	24.5	21.9	5.19
<b>205</b>	36° 50.058	76° 13.107	2.13	23.4	21.7	5.92
<b>206</b>	36° 49.355	76° 17.483	11.00	23.8	22.8	ND
<b>207</b>	36° 47.427	76° 18.333	1.22	24.6	22.2	5.50
<b>208</b>	36° 44.659	76° 17.828	4.88	26.1	21.1	5.55
<b>209</b>	37° 23.099	76° 24.032	7.00	26.0	22.2	ND
<b>210</b>	37° 19.101	76° 21.623	5.50	25.6	21.9	ND
<b>211</b>	37° 16.164	76° 22.086	5.10	26.6	21.9	ND

ND - No data

Table 2. Summary of overall abundance of major benthic macroinfaunal taxonomic groups for the Chesapeake Bay stations, 2001.

<b>Taxa</b>	<b>Total No. Taxa</b>	<b>% of Total</b>	<b>Total No. Individuals</b>	<b>% of Total</b>
<b>Annelida</b>				
<b>Oligochaeta</b>	3	1.3	676	8.3
<b>Polychaeta</b>	98	42.8	4,510	55.1
<b>Mollusca</b>				
<b>Bivalvia</b>	28	12.2	458	5.6
<b>Gastropoda</b>	27	11.8	868	10.6
<b>Arthropoda</b>				
<b>Insecta</b>	3	1.3	11	0.1
<b>Malacostraca</b>	53	23.1	948	11.6
<b>Ostracoda</b>	2	0.9	7	0.1
<b>Echinodermata</b>				
<b>Echinoidea</b>	1	0.4	1	0.0
<b>Holothuroidea</b>	2	0.9	7	0.1
<b>Ophiuroidea</b>	2	0.9	13	0.2
<b>Other Taxa</b>	10	4.4	683	8.3
<b>Total</b>	<b>229</b>		<b>8,182</b>	

Table 3. Summary of abundance of major benthic macroinfaunal taxonomic groups by station for the Chesapeake Bay stations, 2001.

Station	Taxa	No. of Taxa	% of Total	No. of Individuals	% of Total
<b>133</b>	Annelida	14	53.8	115	50.7
	Mollusca	6	23.1	96	42.3
	Arthropoda	4	15.4	12	5.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	7.7	4	1.8
	<b>Total</b>	<b>26</b>		<b>227</b>	
<b>134</b>	Annelida	12	63.2	67	66.3
	Mollusca	4	21.1	23	22.8
	Arthropoda	3	15.8	11	10.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>19</b>		<b>101</b>	
<b>135</b>	Annelida	19	63.3	101	65.6
	Mollusca	2	6.7	27	17.5
	Arthropoda	5	16.7	19	12.3
	Echinodermata	1	3.3	1	0.6
	Other Taxa	3	10.0	6	3.9
	<b>Total</b>	<b>30</b>		<b>154</b>	
<b>136</b>	Annelida	4	33.3	12	21.4
	Mollusca	2	16.7	30	53.6
	Arthropoda	3	25.0	7	12.5
	Echinodermata	1	8.3	3	5.4
	Other Taxa	2	16.7	4	7.1
	<b>Total</b>	<b>12</b>		<b>56</b>	
<b>137</b>	Annelida	15	57.7	173	70.9
	Mollusca	3	11.5	33	13.5
	Arthropoda	5	19.2	12	4.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	11.5	26	10.7
	<b>Total</b>	<b>26</b>		<b>244</b>	
<b>138</b>	Annelida	4	33.3	7	11.1
	Mollusca	3	25.0	45	71.4
	Arthropoda	3	25.0	8	12.7
	Echinodermata	1	8.3	2	3.2
	Other Taxa	1	8.3	1	1.6
	<b>Total</b>	<b>12</b>		<b>63</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>139</b>	Annelida	4	33.3	25	62.5
	Mollusca	3	25.0	5	12.5
	Arthropoda	3	25.0	7	17.5
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	16.7	3	7.5
	<b>Total</b>	<b>12</b>		<b>40</b>	
<b>140</b>	Annelida	6	66.7	26	65.0
	Mollusca	1	11.1	10	25.0
	Arthropoda	2	22.2	4	10.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>9</b>		<b>40</b>	
<b>141</b>	Annelida	9	60.0	42	68.9
	Mollusca	1	6.7	3	4.9
	Arthropoda	3	20.0	14	23.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	13.3	2	3.3
	<b>Total</b>	<b>15</b>		<b>61</b>	
<b>142</b>	Annelida	6	75.0	29	76.3
	Mollusca	1	12.5	4	10.5
	Arthropoda	1	12.5	5	13.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>8</b>		<b>38</b>	
<b>143</b>	Annelida	11	50.0	45	61.6
	Mollusca	3	13.6	4	5.5
	Arthropoda	3	13.6	6	8.2
	Echinodermata	1	4.5	2	2.7
	Other Taxa	4	18.2	16	21.9
	<b>Total</b>	<b>22</b>		<b>73</b>	
<b>144</b>	Annelida	20	54.1	83	58.0
	Mollusca	6	16.2	17	11.9
	Arthropoda	6	16.2	16	11.2
	Echinodermata	1	2.7	7	4.9
	Other Taxa	4	10.8	20	14.0
	<b>Total</b>	<b>37</b>		<b>143</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>145</b>	Annelida	5	55.6	21	75.0
	Mollusca	1	11.1	3	10.7
	Arthropoda	0	0.0	0	0.0
	Echinodermata	1	11.1	1	3.6
	Other Taxa	2	22.2	3	10.7
	<b>Total</b>	<b>9</b>		<b>28</b>	
<b>146</b>	Annelida	10	45.5	63	52.9
	Mollusca	2	9.1	26	21.8
	Arthropoda	7	31.8	18	15.1
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	13.6	12	10.1
	<b>Total</b>	<b>22</b>		<b>119</b>	
<b>147</b>	Annelida	12	50.0	25	25.8
	Mollusca	4	16.7	33	34.0
	Arthropoda	3	12.5	8	8.2
	Echinodermata	1	4.2	1	1.0
	Other Taxa	4	16.7	30	30.9
	<b>Total</b>	<b>24</b>		<b>97</b>	
<b>148</b>	Annelida	9	40.9	44	45.4
	Mollusca	7	31.8	24	24.7
	Arthropoda	3	13.6	10	10.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	13.6	19	19.6
	<b>Total</b>	<b>22</b>		<b>97</b>	
<b>149</b>	Annelida	14	48.3	225	86.5
	Mollusca	8	27.6	13	5.0
	Arthropoda	4	13.8	12	4.6
	Echinodermata	1	3.4	2	0.8
	Other Taxa	2	6.9	8	3.1
	<b>Total</b>	<b>29</b>		<b>260</b>	
<b>150</b>	Annelida	10	45.5	159	83.2
	Mollusca	8	36.4	24	12.6
	Arthropoda	4	18.2	8	4.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>22</b>		<b>191</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>151</b>	Annelida	11	73.3	20	47.6
	Mollusca	1	6.7	7	16.7
	Arthropoda	1	6.7	1	2.4
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	13.3	14	33.3
	<b>Total</b>	<b>15</b>			<b>42</b>
<b>152</b>	Annelida	9	37.5	14	6.0
	Mollusca	6	25.0	94	40.3
	Arthropoda	7	29.2	39	16.7
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	8.3	86	36.9
	<b>Total</b>	<b>24</b>			<b>233</b>
<b>153</b>	Annelida	19	67.9	53	55.8
	Mollusca	4	14.3	11	11.6
	Arthropoda	4	14.3	28	29.5
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	3.6	3	3.2
	<b>Total</b>	<b>28</b>			<b>95</b>
<b>154</b>	Annelida	23	57.5	113	66.5
	Mollusca	5	12.5	13	7.6
	Arthropoda	9	22.5	37	21.8
	Echinodermata	1	2.5	1	0.6
	Other Taxa	2	5.0	6	3.5
	<b>Total</b>	<b>40</b>			<b>170</b>
<b>155</b>	Annelida	4	26.7	13	22.0
	Mollusca	3	20.0	37	62.7
	Arthropoda	5	33.3	6	10.2
	Echinodermata	1	6.7	1	1.7
	Other Taxa	2	13.3	2	3.4
	<b>Total</b>	<b>15</b>			<b>59</b>
<b>156</b>	Annelida	11	52.4	288	92.3
	Mollusca	8	38.1	21	6.7
	Arthropoda	1	4.8	2	0.6
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	4.8	1	0.3
	<b>Total</b>	<b>21</b>			<b>312</b>



Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>157</b>	Annelida	6	31.6	6	9.5
	Mollusca	5	26.3	9	14.3
	Arthropoda	5	26.3	14	22.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	15.8	34	54.0
	<b>Total</b>	<b>19</b>		<b>63</b>	
<b>158</b>	Annelida	8	50.0	36	30.5
	Mollusca	4	25.0	59	50.0
	Arthropoda	1	6.3	10	8.5
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	18.8	13	11.0
	<b>Total</b>	<b>16</b>		<b>118</b>	
<b>159</b>	Annelida	10	43.5	17	17.7
	Mollusca	6	26.1	47	49.0
	Arthropoda	4	17.4	9	9.4
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	13.0	23	24.0
	<b>Total</b>	<b>23</b>		<b>96</b>	
<b>160</b>	Annelida	18	60.0	117	79.1
	Mollusca	6	20.0	19	12.8
	Arthropoda	3	10.0	4	2.7
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	10.0	8	5.4
	<b>Total</b>	<b>30</b>		<b>148</b>	
<b>161</b>	Annelida	8	42.1	11	6.5
	Arthropoda	1	5.3	1	0.6
	Mollusca	6	31.6	151	89.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	4	21.1	6	3.6
	<b>Total</b>	<b>19</b>		<b>169</b>	
<b>162</b>	Annelida	19	48.7	90	52.0
	Mollusca	11	28.2	55	31.8
	Arthropoda	6	15.4	12	6.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	7.7	16	9.2
	<b>Total</b>	<b>39</b>		<b>173</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>163</b>	Annelida	22	59.5	60	61.2
	Mollusca	11	29.7	30	30.6
	Arthropoda	3	8.1	6	6.1
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	2.7	2	2.0
	<b>Total</b>	<b>37</b>		<b>98</b>	
<b>164</b>	Annelida	13	59.1	169	68.7
	Mollusca	5	22.7	29	11.8
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	4	18.2	48	19.5
	<b>Total</b>	<b>22</b>		<b>246</b>	
<b>166</b>	Annelida	3	30.0	19	57.6
	Mollusca	2	20.0	2	6.1
	Arthropoda	3	30.0	9	27.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	20.0	3	9.1
	<b>Total</b>	<b>10</b>		<b>33</b>	
<b>167</b>	Annelida	8	72.7	29	78.4
	Mollusca	0	0.0	0	0.0
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	27.3	8	21.6
	<b>Total</b>	<b>11</b>		<b>37</b>	
<b>168</b>	Annelida	0	0.0	0	0.0
	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
	<b>Total</b>	<b>0</b>		<b>0</b>	
<b>169</b>	Annelida	5	41.7	33	44.6
	Mollusca	4	33.3	32	43.2
	Arthropoda	1	8.3	1	1.4
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	16.7	8	10.8
	<b>Total</b>	<b>12</b>		<b>74</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>170</b>	Annelida	7	53.8	76	46.6
	Mollusca	3	23.1	15	9.2
	Arthropoda	3	23.1	72	44.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>13</b>			<b>163</b>
<b>171</b>	Annelida	5	71.4	14	87.5
	Mollusca	1	14.3	1	6.3
	Arthropoda	1	14.3	1	6.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>7</b>			<b>16</b>
<b>172</b>	Annelida	7	43.8	21	23.1
	Mollusca	3	18.8	57	62.6
	Arthropoda	4	25.0	10	11.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	12.5	3	3.3
	<b>Total</b>	<b>16</b>			<b>91</b>
<b>173</b>	Annelida	8	88.9	110	98.2
	Mollusca	1	11.1	2	1.8
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>9</b>			<b>112</b>
<b>174</b>	Annelida	6	85.7	51	98.1
	Mollusca	1	14.3	1	1.9
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>7</b>			<b>52</b>
<b>175</b>	Annelida	8	44.4	175	68.1
	Mollusca	4	22.2	6	2.3
	Arthropoda	3	16.7	6	2.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	16.7	70	27.2
	<b>Total</b>	<b>18</b>			<b>257</b>

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>176</b>	Annelida	3	42.9	14	13.2
	Mollusca	1	14.3	1	0.9
	Arthropoda	3	42.9	91	85.8
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>7</b>		<b>106</b>	
<b>177</b>	Annelida	4	44.4	61	83.6
	Mollusca	1	11.1	1	1.4
	Arthropoda	3	33.3	10	13.7
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	11.1	1	1.4
	<b>Total</b>	<b>9</b>		<b>73</b>	
<b>178</b>	Annelida	4	66.7	12	66.7
	Mollusca	1	16.7	3	16.7
	Arthropoda	1	16.7	3	16.7
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>6</b>		<b>18</b>	
<b>179</b>	Annelida	5	35.7	40	40.0
	Mollusca	4	28.6	34	34.0
	Arthropoda	4	28.6	25	25.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	7.1	1	1.0
	<b>Total</b>	<b>14</b>		<b>100</b>	
<b>180</b>	Annelida	5	45.5	56	30.4
	Mollusca	1	9.1	3	1.6
	Arthropoda	4	36.4	120	65.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	9.1	5	2.7
	<b>Total</b>	<b>11</b>		<b>184</b>	
<b>181</b>	Annelida	5	100.0	15	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
	<b>Total</b>	<b>5</b>		<b>15</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>182</b>	Annelida	6	40.0	40	60.6
	Mollusca	5	33.3	7	10.6
	Arthropoda	2	13.3	2	3.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	13.3	17	25.8
	<b>Total</b>	<b>15</b>		<b>66</b>	
<b>183</b>	Annelida	5	62.5	14	82.4
	Mollusca	0	0.0	0	0.0
	Arthropoda	1	12.5	1	5.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	25.0	2	11.8
	<b>Total</b>	<b>8</b>		<b>17</b>	
<b>184</b>	Annelida	7	58.3	48	71.6
	Mollusca	1	8.3	1	1.5
	Arthropoda	3	25.0	14	20.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	8.3	4	6.0
	<b>Total</b>	<b>12</b>		<b>67</b>	
<b>185</b>	Annelida	7	46.7	64	71.9
	Mollusca	3	20.0	5	5.6
	Arthropoda	2	13.3	3	3.4
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	20.0	17	19.1
	<b>Total</b>	<b>15</b>		<b>89</b>	
<b>186</b>	Annelida	3	37.5	30	81.1
	Mollusca	2	25.0	4	10.8
	Arthropoda	1	12.5	1	2.7
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	25.0	2	5.4
	<b>Total</b>	<b>8</b>		<b>37</b>	
<b>187</b>	Annelida	6	60.0	35	74.5
	Mollusca	0	0.0	0	0.0
	Arthropoda	3	30.0	11	23.4
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	10.0	1	2.1
	<b>Total</b>	<b>10</b>		<b>47</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>188</b>	Annelida	6	66.7	46	93.9
	Mollusca	3	33.3	3	6.1
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>9</b>			<b>49</b>
<b>189</b>	Annelida	8	47.1	61	60.4
	Mollusca	4	23.5	5	5.0
	Arthropoda	2	11.8	2	2.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	17.6	33	32.7
	<b>Total</b>	<b>17</b>			<b>101</b>
<b>190</b>	Annelida	9	60.0	60	82.2
	Mollusca	0	0.0	0	0.0
	Arthropoda	3	20.0	3	4.1
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	20.0	10	13.7
	<b>Total</b>	<b>15</b>			<b>73</b>
<b>191</b>	Annelida	10	43.5	121	63.4
	Mollusca	5	21.7	42	22.0
	Arthropoda	6	26.1	22	11.5
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	8.7	6	3.1
	<b>Total</b>	<b>23</b>			<b>191</b>
<b>192</b>	Annelida	5	62.5	49	90.7
	Mollusca	2	25.0	3	5.6
	Arthropoda	1	12.5	2	3.7
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>8</b>			<b>54</b>
<b>193</b>	Annelida	3	60.0	17	53.1
	Mollusca	2	40.0	15	46.9
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>5</b>			<b>32</b>

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>194</b>	Annelida	4	44.4	30	81.1
	Mollusca	2	22.2	2	5.4
	Arthropoda	3	33.3	5	13.5
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>9</b>		<b>37</b>	
<b>195</b>	Annelida	3	60.0	5	71.4
	Mollusca	1	20.0	1	14.3
	Arthropoda	1	20.0	1	14.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>5</b>		<b>7</b>	
<b>196</b>	Annelida	4	50.0	25	83.3
	Mollusca	2	25.0	2	6.7
	Arthropoda	2	25.0	3	10.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>8</b>		<b>30</b>	
<b>197</b>	Annelida	6	66.7	13	68.4
	Mollusca	2	22.2	5	26.3
	Arthropoda	1	11.1	1	5.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>9</b>		<b>19</b>	
<b>198</b>	Annelida	6	60.0	38	84.4
	Mollusca	2	20.0	4	8.9
	Arthropoda	2	20.0	3	6.7
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>10</b>		<b>45</b>	
<b>199</b>	Annelida	8	61.5	167	95.4
	Mollusca	2	15.4	3	1.7
	Arthropoda	2	15.4	4	2.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	7.7	1	0.6
	<b>Total</b>	<b>13</b>		<b>175</b>	

Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>200</b>	Annelida	3	50.0	4	50.0
	Mollusca	3	50.0	4	50.0
	Arthropoda	0	0.0	0	0.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>6</b>		<b>8</b>	
<b>201</b>	Annelida	13	52.0	92	63.4
	Mollusca	4	16.0	23	15.9
	Arthropoda	4	16.0	13	9.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	4	16.0	17	11.7
	<b>Total</b>	<b>25</b>		<b>145</b>	
<b>202</b>	Annelida	7	53.8	28	75.7
	Mollusca	1	7.7	1	2.7
	Arthropoda	4	30.8	7	18.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	7.7	1	2.7
	<b>Total</b>	<b>13</b>		<b>37</b>	
<b>203</b>	Annelida	4	66.7	44	95.7
	Mollusca	0	0.0	0	0.0
	Arthropoda	1	16.7	1	2.2
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	16.7	1	2.2
	<b>Total</b>	<b>6</b>		<b>46</b>	
<b>204</b>	Annelida	9	64.3	167	88.8
	Mollusca	2	14.3	2	1.1
	Arthropoda	2	14.3	10	5.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	7.1	9	4.8
	<b>Total</b>	<b>14</b>		<b>188</b>	
<b>205</b>	Annelida	5	38.5	543	87.3
	Mollusca	2	15.4	5	0.8
	Arthropoda	5	38.5	64	10.3
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	7.7	10	1.6
	<b>Total</b>	<b>13</b>		<b>622</b>	



Table 3 continued:

<b>Station</b>	<b>Taxa</b>	<b>No. of Taxa</b>	<b>% of Total</b>	<b>No. of Individuals</b>	<b>% of Total</b>
<b>206</b>	Annelida	5	83.3	57	95.0
	Mollusca	0	0.0	0	0.0
	Arthropoda	1	16.7	3	5.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>6</b>		<b>60</b>	
<b>207</b>	Annelida	9	56.3	35	76.1
	Arthropoda	3	18.8	5	10.9
	Mollusca	3	18.8	5	10.9
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	6.3	1	2.2
	<b>Total</b>	<b>16</b>		<b>46</b>	
<b>208</b>	Annelida	5	38.5	179	92.3
	Mollusca	3	23.1	7	3.6
	Arthropoda	4	30.8	6	3.1
	Echinodermata	0	0.0	0	0.0
	Other Taxa	1	7.7	2	1.0
	<b>Total</b>	<b>13</b>		<b>194</b>	
<b>209</b>	Annelida	2	66.7	17	94.4
	Mollusca	0	0.0	0	0.0
	Arthropoda	1	33.3	1	5.6
	Echinodermata	0	0.0	0	0.0
	Other Taxa	0	0.0	0	0.0
	<b>Total</b>	<b>3</b>		<b>18</b>	
<b>210</b>	Annelida	8	57.1	31	72.1
	Mollusca	1	7.1	2	4.7
	Arthropoda	2	14.3	5	11.6
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	21.4	5	11.6
	<b>Total</b>	<b>14</b>		<b>43</b>	
<b>211</b>	Annelida	18	50.0	131	51.6
	Mollusca	2	5.6	15	5.9
	Arthropoda	13	36.1	79	31.1
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	8.3	29	11.4
	<b>Total</b>	<b>36</b>		<b>254</b>	

Table 4. Distribution and abundance of taxa for the Chesapeake Bay stations, 2001.

Taxon Name	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occurrence	% Station Occurrence
<i>Mediomastus ambiseta</i>	Ann	Poly	1430	17.48	17.48	55	71
<i>Paraprionospio pinnata</i>	Ann	Poly	499	6.10	23.58	46	59
<i>Acteocina canaliculata</i>	Mol	Gast	494	6.04	29.61	42	54
Tubificidae (LPIL)	Ann	Olig	359	4.39	34.00	32	41
<i>Leptocheirus plumulosus</i>	Art	Mala	323	3.95	37.95	7	9
<i>Tharyx acutus</i>	Ann	Poly	318	3.89	41.84	5	6
<i>Streblospio benedicti</i>	Ann	Poly	288	3.52	45.36	25	32
Phoronis (LPIL)	Pho	–	272	3.32	48.68	29	37
Lumbriculidae (LPIL)	Ann	Olig	223	2.73	51.41	8	10
<i>Loimia medusa</i>	Ann	Poly	205	2.51	53.91	35	45
<i>Gemma gemma</i>	Mol	Biva	193	2.36	56.27	10	13
<i>Nereis succinea</i>	Ann	Poly	167	2.04	58.31	24	31
<i>Glycinde solitaria</i>	Ann	Poly	162	1.98	60.29	44	56
<i>Branchiostoma</i> (LPIL)	Cho	Lept	157	1.92	62.21	20	26
Cirratulidae (LPIL)	Ann	Poly	140	1.71	63.92	13	17
<i>Heteromastus filiformis</i>	Ann	Poly	136	1.66	65.58	17	22
<i>Odostomia weberi</i>	Mol	Gast	133	1.63	67.21	11	14
Rhynchocoela (LPIL)	Rhy	–	101	1.23	68.44	35	45
<i>Listriella barnardi</i>	Art	Mala	100	1.22	69.67	25	32
Actiniaria (LPIL)	Cni	Anth	95	1.16	70.83	13	17
<i>Tubificoides heterochaetus</i>	Ann	Olig	94	1.15	71.98	11	14
<i>Polydora cornuta</i>	Ann	Poly	82	1.00	72.98	6	8
<i>Nereis</i> (LPIL)	Ann	Poly	77	0.94	73.92	6	8
Gastropoda (LPIL)	Mol	Gast	70	0.86	74.77	19	24
<i>Aglaothamum verrilli</i>	Ann	Poly	62	0.76	75.53	7	9
<i>Brania wellfleetensis</i>	Ann	Poly	59	0.72	76.25	8	10
Bivalvia (LPIL)	Mol	Biva	58	0.71	76.96	29	37
<i>Leitoscoloplos robustus</i>	Ann	Poly	58	0.71	77.67	21	27
<i>Ampelisca</i> (LPIL)	Art	Mala	57	0.70	78.37	14	18
<i>Apoprionospio pygmaea</i>	Ann	Poly	49	0.60	78.97	9	12
<i>Ampelisca verrilli</i>	Art	Mala	46	0.56	79.53	17	22
<i>Pectinaria gouldii</i>	Ann	Poly	46	0.56	80.09	10	13
<i>Spiochaetopterus oculus</i>	Ann	Poly	46	0.56	80.65	25	32
Tellinidae (LPIL)	Mol	Biva	46	0.56	81.21	14	18
<i>Prionospio</i> (LPIL)	Ann	Poly	43	0.53	81.74	7	9
<i>Nucula proxima</i>	Mol	Biva	40	0.49	82.23	7	9
<i>Sigambra tentaculata</i>	Ann	Poly	39	0.48	82.71	13	17
<i>Leucon americanus</i>	Art	Mala	37	0.45	83.16	20	26
<i>Nephtys picta</i>	Ann	Poly	37	0.45	83.61	12	15
<i>Rhepoxynius hudsoni</i>	Art	Mala	34	0.42	84.03	8	10
<i>Spiophanes bombyx</i>	Ann	Poly	34	0.42	84.44	14	18
<i>Clymenella torquata</i>	Ann	Poly	33	0.40	84.84	3	4
<i>Geukensia demissa</i>	Mol	Biva	33	0.40	85.25	2	3
<i>Hobsonia florida</i>	Ann	Poly	32	0.39	85.64	1	1
<i>Turbonilla interrupta</i>	Mol	Gast	32	0.39	86.03	6	8
<i>Melita nitida</i>	Art	Mala	31	0.38	86.41	4	5
<i>Parapionosyllis longicirrata</i>	Ann	Poly	31	0.38	86.79	2	3
<i>Erichsonella filiformis</i>	Art	Mala	29	0.35	87.14	1	1
<i>Ampelisca vadorum</i>	Art	Mala	28	0.34	87.48	7	9
<i>Odostomia</i> (LPIL)	Mol	Gast	28	0.34	87.83	10	13
<i>Tubulanus</i> (LPIL)	Rhy	Anop	26	0.32	88.14	12	15
<i>Ampelisca abdita</i>	Art	Mala	24	0.29	88.44	7	9
<i>Bhawania heteroseta</i>	Ann	Poly	24	0.29	88.73	9	12
Asciacea (LPIL)	Cho	Asci	23	0.28	89.01	6	8

Table 4 continued:

<b>Taxon Name</b>	<b>Phylum</b>	<b>Class</b>	<b>No. of Individuals</b>	<b>% of Total</b>	<b>Cumulative %</b>	<b>Station Occurrence</b>	<b>% Station Occurrence</b>
<i>Paramphinome</i> sp. B	Ann	Poly	23	0.28	89.29	4	5
<i>Podarkeopsis levifuscina</i>	Ann	Poly	23	0.28	89.57	10	13
<i>Polycirrus</i> sp. G	Ann	Poly	23	0.28	89.86	2	3
Calyptraeidae (LPIL)	Mol	Gast	22	0.27	90.12	3	4
<i>Cyathura polita</i>	Art	Mala	22	0.27	90.39	6	8
<i>Paracaprella tenuis</i>	Art	Mala	18	0.22	90.61	4	5
<i>Caulleriella</i> sp. J	Ann	Poly	17	0.21	90.82	3	4
<i>Ilyanassa trivittata</i>	Mol	Gast	17	0.21	91.03	6	8
Nereididae (LPIL)	Ann	Poly	17	0.21	91.24	9	12
<i>Oxyurostylis smithi</i>	Art	Mala	17	0.21	91.44	10	13
<i>Rangia cuneata</i>	Mol	Biva	17	0.21	91.65	1	1
<i>Erichthonius brasiliensis</i>	Art	Mala	16	0.20	91.85	2	3
<i>Hydroides dianthus</i>	Ann	Poly	16	0.20	92.04	1	1
<i>Amphilochus</i> (LPIL)	Art	Mala	15	0.18	92.23	4	5
<i>Ancistrosyllis hartmanae</i>	Ann	Poly	15	0.18	92.41	3	4
<i>Laeonereis culveri</i>	Ann	Poly	15	0.18	92.59	2	3
Corophiidae (LPIL)	Art	Mala	14	0.17	92.76	4	5
<i>Edotea triloba</i>	Art	Mala	14	0.17	92.94	7	9
Maldanidae (LPIL)	Ann	Poly	14	0.17	93.11	7	9
<i>Sabellaria vulgaris</i>	Ann	Poly	13	0.16	93.27	1	1
<i>Capitella capitata</i>	Ann	Poly	12	0.15	93.41	2	3
<i>Acanthohaustorius millsii</i>	Art	Mala	11	0.13	93.55	3	4
<i>Cylichna alba</i>	Mol	Gast	11	0.13	93.68	2	3
<i>Glycera americana</i>	Ann	Poly	11	0.13	93.82	9	12
Nephtyidae (LPIL)	Ann	Poly	11	0.13	93.95	4	5
<i>Cymadusa compta</i>	Art	Mala	10	0.12	94.07	1	1
<i>Owenia fusiformis</i>	Ann	Poly	10	0.12	94.19	3	4
<i>Cabira incerta</i>	Ann	Poly	9	0.11	94.30	5	6
<i>Nephtys incisa</i>	Ann	Poly	9	0.11	94.41	4	5
<i>Notomastus latericeus</i>	Ann	Poly	9	0.11	94.52	5	6
Polynoidae (LPIL)	Ann	Poly	9	0.11	94.63	4	5
<i>Ptilanthura tenuis</i>	Art	Mala	9	0.11	94.74	5	6
<i>Chaetopterus variopedatus</i>	Ann	Poly	8	0.10	94.84	6	8
<i>Nereis acuminata</i>	Ann	Poly	8	0.10	94.94	2	3
<i>Spisula solidissima</i>	Mol	Biva	8	0.10	95.04	2	3
<i>Tellina</i> (LPIL)	Mol	Biva	8	0.10	95.14	4	5
<i>Amphioplus abditus</i>	Ech	Ophi	7	0.09	95.22	1	1
<i>Cerapus tubularis</i>	Art	Mala	7	0.09	95.31	5	6
<i>Chironomus</i> (LPIL)	Art	Inse	7	0.09	95.39	1	1
<i>Cyclaspis varians</i>	Art	Mala	7	0.09	95.48	5	6
<i>Dulichniella appendiculata</i>	Art	Mala	7	0.09	95.56	1	1
<i>Mediomastus</i> (LPIL)	Ann	Poly	7	0.09	95.65	1	1
<i>Neverita duplicata</i>	Mol	Gast	7	0.09	95.73	3	4
<i>Prionospio heterobranchia</i>	Ann	Poly	7	0.09	95.82	1	1
Serpulidae (LPIL)	Ann	Poly	7	0.09	95.91	1	1
Acteonidae (LPIL)	Mol	Gast	6	0.07	95.98	1	1
<i>Capitella jonesi</i>	Ann	Poly	6	0.07	96.05	2	3
<i>Elasmopus levis</i>	Art	Mala	6	0.07	96.13	2	3
<i>Hemipodus roseus</i>	Ann	Poly	6	0.07	96.20	1	1
Ophiuroidea (LPIL)	Ech	Ophi	6	0.07	96.27	4	5
<i>Parahesionia luteola</i>	Ann	Poly	6	0.07	96.35	3	4
<i>Parasterope pollex</i>	Art	Ostr	6	0.07	96.42	2	3
<i>Pinnixa</i> (LPIL)	Art	Mala	6	0.07	96.49	4	5
<i>Turbonilla</i> (LPIL)	Mol	Gast	6	0.07	96.57	4	5
<i>Anachis lafresnayi</i>	Mol	Gast	5	0.06	96.63	2	3

Table 4 continued:

<b>Taxon Name</b>	<b>Phylum</b>	<b>Class</b>	<b>No. of Individuals</b>	<b>% of Total</b>	<b>Cumulative %</b>	<b>Station Occurrence</b>	<b>% Station Occurrence</b>
<i>Apocorophium simile</i>	Art	Mala	5	0.06	96.69	1	1
<i>Crassostrea virginica</i>	Mol	Biva	5	0.06	96.75	1	1
Decapoda (LPIL)	Art	Mala	5	0.06	96.81	2	3
<i>Exogone</i> (LPIL)	Ann	Poly	5	0.06	96.87	1	1
<i>Haminoea succinea</i>	Mol	Gast	5	0.06	96.93	1	1
<i>Kurtziella cerina</i>	Mol	Gast	5	0.06	96.99	2	3
<i>Macoma tenta</i>	Mol	Biva	5	0.06	97.05	1	1
<i>Malmgreniella macraryanae</i>	Ann	Poly	5	0.06	97.12	2	3
Melitidae (LPIL)	Art	Mala	5	0.06	97.18	2	3
Phoxocephalidae (LPIL)	Art	Mala	5	0.06	97.24	2	3
<i>Phyllodoce arenae</i>	Ann	Poly	5	0.06	97.30	5	6
Scaphandridae (LPIL)	Mol	Gast	5	0.06	97.36	3	4
<i>Scoloplos rubra</i>	Ann	Poly	5	0.06	97.42	4	5
<i>Tellina agilis</i>	Mol	Biva	5	0.06	97.48	2	3
<i>Travisia carnea</i>	Ann	Poly	5	0.06	97.54	2	3
<i>Anachis obesa</i>	Mol	Gast	4	0.05	97.59	2	3
<i>Anadara transversa</i>	Mol	Biva	4	0.05	97.64	2	3
<i>Autolytus</i> (LPIL)	Ann	Poly	4	0.05	97.69	2	3
<i>Ensis minor</i>	Mol	Biva	4	0.05	97.74	3	4
Hesionidae (LPIL)	Ann	Poly	4	0.05	97.79	2	3
<i>Leptosynapta tenuis</i>	Ech	Holo	4	0.05	97.84	3	4
<i>Lyonsia hyalina</i>	Mol	Biva	4	0.05	97.89	4	5
<i>Macoma</i> (LPIL)	Mol	Biva	4	0.05	97.93	1	1
<i>Mooreonuphis pallidula</i>	Ann	Poly	4	0.05	97.98	2	3
<i>Mulinia lateralis</i>	Mol	Biva	4	0.05	98.03	3	4
Phyllodocidae (LPIL)	Ann	Poly	4	0.05	98.08	4	5
<i>Prionospio perkinsi</i>	Ann	Poly	4	0.05	98.13	2	3
<i>Cirrophorus</i> (LPIL)	Ann	Poly	3	0.04	98.17	3	4
<i>Cryptochironomus</i> (LPIL)	Art	Inse	3	0.04	98.20	1	1
<i>Epitonium multistriatum</i>	Mol	Gast	3	0.04	98.24	3	4
<i>Glycera dibranchiata</i>	Ann	Poly	3	0.04	98.28	3	4
Holothuroidea (LPIL)	Ech	Holo	3	0.04	98.31	1	1
Hydrozoa (LPIL)	Cni	Hydr	3	0.04	98.35	2	3
<i>Hypereteone heteropoda</i>	Ann	Poly	3	0.04	98.39	3	4
Mactridae (LPIL)	Mol	Biva	3	0.04	98.42	2	3
<i>Microphthalmus hartmanae</i>	Ann	Poly	3	0.04	98.46	2	3
<i>Monoculodes</i> sp. G	Art	Mala	3	0.04	98.50	2	3
<i>Mytilopsis leucophaeata</i>	Mol	Biva	3	0.04	98.53	1	1
<i>Pagurus longicarpus</i>	Art	Mala	3	0.04	98.57	1	1
<i>Scolecopsis texana</i>	Ann	Poly	3	0.04	98.61	2	3
<i>Streptosyllis arenae</i>	Ann	Poly	3	0.04	98.64	2	3
Turbellaria (LPIL)	Pla	Turb	3	0.04	98.68	3	4
<i>Unciola serrata</i>	Art	Mala	3	0.04	98.72	3	4
Xanthidae (LPIL)	Art	Mala	3	0.04	98.75	3	4
Amphipoda (LPIL)	Art	Mala	2	0.02	98.78	1	1
<i>Anachis</i> (LPIL)	Mol	Gast	2	0.02	98.80	1	1
<i>Aricidea wassi</i>	Ann	Poly	2	0.02	98.83	2	3
<i>Balanoglossus</i> (LPIL)	Hem	Ente	2	0.02	98.85	1	1
<i>Caecum</i> (LPIL)	Mol	Gast	2	0.02	98.88	2	3
<i>Doridella obscura</i>	Mol	Gast	2	0.02	98.90	1	1
<i>Emerita talpoida</i>	Art	Mala	2	0.02	98.92	1	1
<i>Eobrolgus spinosus</i>	Art	Mala	2	0.02	98.95	1	1
<i>Gammaropsis</i> sp. H	Art	Mala	2	0.02	98.97	1	1
<i>Lepidonotus variabilis</i>	Ann	Poly	2	0.02	99.00	2	3
<i>Lucina multilineata</i>	Mol	Biva	2	0.02	99.02	1	1

Table 4 continued:

<b>Taxon Name</b>	<b>Phylum</b>	<b>Class</b>	<b>No. of Individuals</b>	<b>% of Total</b>	<b>Cumulative %</b>	<b>Station Occurrence</b>	<b>% Station Occurrence</b>
<i>Macoma balthica</i>	Mol	Biva	2	0.02	99.05	1	1
<i>Mitrella lunata</i>	Mol	Gast	2	0.02	99.07	2	3
<i>Nephtys</i> (LPIL)	Ann	Poly	2	0.02	99.10	2	3
Nuculidae (LPIL)	Mol	Biva	2	0.02	99.12	1	1
<i>Ogyrides alphaerostris</i>	Art	Mala	2	0.02	99.14	2	3
Paraonidae (LPIL)	Ann	Poly	2	0.02	99.17	2	3
<i>Podarke obscura</i>	Ann	Poly	2	0.02	99.19	2	3
<i>Politolana polita</i>	Art	Mala	2	0.02	99.22	1	1
<i>Rhepoxynius</i> (LPIL)	Art	Mala	2	0.02	99.24	1	1
<i>Rhithropanopeus harrisi</i>	Art	Mala	2	0.02	99.27	2	3
<i>Rictaxis</i> (LPIL)	Mol	Gast	2	0.02	99.29	1	1
<i>Schistomeringos rudolphi</i>	Ann	Poly	2	0.02	99.32	1	1
Spionidae (LPIL)	Ann	Poly	2	0.02	99.34	2	3
<i>Tagelus</i> (LPIL)	Mol	Biva	2	0.02	99.36	2	3
Terebellidae (LPIL)	Ann	Poly	2	0.02	99.39	2	3
<i>Americamysis bigelowi</i>	Art	Mala	1	0.01	99.40	1	1
Ampharetidae (LPIL)	Ann	Poly	1	0.01	99.41	1	1
<i>Aricidea</i> (LPIL)	Ann	Poly	1	0.01	99.43	1	1
<i>Batea catharinensis</i>	Art	Mala	1	0.01	99.44	1	1
Capitellidae (LPIL)	Ann	Poly	1	0.01	99.45	1	1
Caprellidae (LPIL)	Art	Mala	1	0.01	99.46	1	1
<i>Carazziella hobsonae</i>	Ann	Poly	1	0.01	99.47	1	1
Chaetopteridae (LPIL)	Ann	Poly	1	0.01	99.49	1	1
<i>Cirrophorus furcatus</i>	Ann	Poly	1	0.01	99.50	1	1
<i>Coelotanypus</i> (LPIL)	Art	Inse	1	0.01	99.51	1	1
<i>Demonax micropthalmus</i>	Ann	Poly	1	0.01	99.52	1	1
<i>Diopatra cuprea</i>	Ann	Poly	1	0.01	99.54	1	1
<i>Drilonereis</i> sp. H	Ann	Poly	1	0.01	99.55	1	1
Echinoidea (LPIL)	Ech	Echi	1	0.01	99.56	1	1
<i>Erichthonius</i> (LPIL)	Art	Mala	1	0.01	99.57	1	1
<i>Eumida sanguinea</i>	Ann	Poly	1	0.01	99.58	1	1
<i>Eusarsiella texana</i>	Art	Ostr	1	0.01	99.60	1	1
<i>Glycera</i> (LPIL)	Ann	Poly	1	0.01	99.61	1	1
<i>Grubeosyllis clavata</i>	Ann	Poly	1	0.01	99.62	1	1
Haustoriidae (LPIL)	Art	Mala	1	0.01	99.63	1	1
Lineidae (LPIL)	Rhy	Anop	1	0.01	99.65	1	1
Lucinidae (LPIL)	Mol	Biva	1	0.01	99.66	1	1
<i>Magelona filiformis</i>	Ann	Poly	1	0.01	99.67	1	1
<i>Magelona</i> sp. I	Ann	Poly	1	0.01	99.68	1	1
Magelonidae (LPIL)	Ann	Poly	1	0.01	99.69	1	1
<i>Microprotopus raneyi</i>	Art	Mala	1	0.01	99.71	1	1
<i>Monocorophium acherusicum</i>	Art	Mala	1	0.01	99.72	1	1
<i>Monoculodes</i> (LPIL)	Art	Mala	1	0.01	99.73	1	1
<i>Monticellina dorsobranchialis</i>	Ann	Poly	1	0.01	99.74	1	1
<i>Mya</i> (LPIL)	Mol	Biva	1	0.01	99.76	1	1
Mytilidae (LPIL)	Mol	Biva	1	0.01	99.77	1	1
<i>Neomysis americana</i>	Art	Mala	1	0.01	99.78	1	1
<i>Notomastus</i> (LPIL)	Ann	Poly	1	0.01	99.79	1	1
Oedicerotidae (LPIL)	Art	Mala	1	0.01	99.80	1	1
<i>Orbinia americana</i>	Ann	Poly	1	0.01	99.82	1	1
<i>Oxyurostylis</i> (LPIL)	Art	Mala	1	0.01	99.83	1	1
<i>Pandora inornata</i>	Mol	Biva	1	0.01	99.84	1	1
<i>Paraonis pygoenigmatica</i>	Ann	Poly	1	0.01	99.85	1	1
<i>Pectinaria</i> (LPIL)	Ann	Poly	1	0.01	99.87	1	1
Pinnotheridae (LPIL)	Art	Mala	1	0.01	99.88	1	1

Table 4 continued:

<b>Taxon Name</b>	<b>Phylum</b>	<b>Class</b>	<b>No. of Individuals</b>	<b>% of Total</b>	<b>Cumulative %</b>	<b>Station Occurrence</b>	<b>% Station Occurrence</b>
<i>Pyramidella</i> (LPIL)	Mol	Gast	1	0.01	99.89	1	1
Pyramidellidae (LPIL)	Mol	Gast	1	0.01	99.90	1	1
<i>Rictaxis punctostriatus</i>	Mol	Gast	1	0.01	99.91	1	1
Sabellidae (LPIL)	Ann	Poly	1	0.01	99.93	1	1
<i>Solemya velum</i>	Mol	Biva	1	0.01	99.94	1	1
<i>Sphaerosyllis taylori</i>	Ann	Poly	1	0.01	99.95	1	1
<i>Streptosyllis pettiboneae</i>	Ann	Poly	1	0.01	99.96	1	1
<i>Tectonatica pusilla</i>	Mol	Gast	1	0.01	99.98	1	1
Veneridae (LPIL)	Mol	Biva	1	0.01	99.99	1	1
Vitrinellidae (LPIL)	Mol	Gast	1	0.01	100.00	1	1

**Taxa Key**

Ann = Annelida

Olig = Oligochaeta

Poly = Polychaeta

Cni = Cnidaria

Anth = Anthozoa

Hydr = Hydrozoa

Mol = Mollusca

Biva = Bivalvia

Gast = Gastropoda

Art = Arthropoda

Inse = Insecta

Mala = Malacostraca

Ostr = Ostracoda

Ech = Echinodermata

Echi = Echinoidea

Holo = Holothuroidea

Ophi = Ophiuroidea

Pho = Phoronida

Pla = Platyhelminthes

Turb = Turbellaria

Cho = Chordata

Asci = Ascidiacea

Lept = Leptocardia

Hem = Hemichordata

Ente = Enteropneusta

Rhy = Rhynchocoela

Anop = Anopla



















Table 5 continued:

Taxa	206	207	208	209	210	211
<b>Annelida</b>						
Oligochaeta						
Lumbriculidae (LPIL)						
Tubificidae (LPIL)	41.7					
<i>Tubificoides heterochaetus</i>						
Polychaeta						
<i>Aglaophamus verrilli</i>						
<i>Ancistrosyllis hartmanae</i>						
<i>Apoprionospio pygmaea</i>						
<i>Brania wellfleetensis</i>						
Cirratulidae (LPIL)						
<i>Clymenella torquata</i>						11.4
<i>Glycinde solitaria</i>		13.0				
<i>Hemipodus roseus</i>						
<i>Heteromastus filiformis</i>						
<i>Hobsonia florida</i>						
<i>Loimia medusa</i>						
<i>Mediomastus</i> (LPIL)						
<i>Mediomastus ambiseta</i>	41.7	23.9	63.4			15.4
<i>Nereis</i> (LPIL)						
<i>Nereis succinea</i>						
<i>Parapionosyllis longicirrata</i>						
<i>Paraprionospio pinnata</i>				88.9	44.2	
<i>Pectinaria gouldii</i>						
<i>Polycirrus</i> sp. G						
<i>Polydora cornuta</i>						
<i>Prionospio</i> (LPIL)						
<i>Sigambra tentaculata</i>						
<i>Streblospio benedicti</i>		21.7	17.0			
<i>Tharyx acutus</i>						
<b>Arthropoda</b>						
Malacostraca						
<i>Ampelisca</i> (LPIL)						
<i>Ampelisca abdita</i>						
<i>Erichsonella filiformis</i>						11.4
<i>Leptocheirus plumulosus</i>						
<i>Leucon americanus</i>						
<i>Listriella barnardi</i>						
<i>Melita nitida</i>						
<i>Rhepoxynius hudsoni</i>						

Table 5 continued:

Taxa	206	207	208	209	210	211
<b>Chordata</b>						
Leptocardia						
<i>Branchiostoma</i> (LPIL)						
<b>Cnidaria</b>						
Anthozoa						
Actiniaria (LPIL)						10.6
<b>Mollusca</b>						
Bivalvia						
Bivalvia (LPIL)						
<i>Gemma gemma</i>						
<i>Geukensia demissa</i>						
<i>Lyonsia hyalina</i>						
<i>Nucula proxima</i>						
<i>Rangia cuneata</i>						
<i>Spisula solidissima</i>						
<i>Tellina</i> (LPIL)						
Tellinidae (LPIL)						
Gastropoda						
<i>Acteocina canaliculata</i>						
<i>Odostomia</i> (LPIL)						
<i>Odostomia weberi</i>						
<i>Turbonilla interrupta</i>						
<b>Phoronida</b>						
<i>Phoronis</i> (LPIL)						
<b>Rhynchocoela</b>						
Rhynchocoela (LPIL)						
Anopla						
<i>Tubulanus</i> (LPIL)						



Table 6. Summary of benthic macroinfaunal data for the Chesapeake Bay stations, 2001.

Station	Rep	Total No. Individuals	Total No Taxa	Density (nos/m <sup>2</sup> )	H' Diversity	J' Evenness
133	1	227	26	5675	2.18	0.67
134	1	101	19	2525	2.61	0.89
135	1	154	30	3850	2.70	0.79
136	1	56	12	1400	1.91	0.77
137	1	244	26	6100	2.27	0.70
138	1	63	12	1575	1.84	0.74
139	1	40	12	1000	1.87	0.75
140	1	40	9	1000	1.75	0.79
141	1	61	15	1525	2.33	0.86
142	1	38	8	950	1.56	0.75
143	1	73	22	1825	2.72	0.88
144	1	143	37	3575	3.11	0.86
145	1	28	9	700	1.60	0.73
146	1	119	22	2975	2.21	0.71
147	1	97	24	2425	2.59	0.82
148	1	97	22	2425	2.65	0.86
149	1	260	29	6500	2.17	0.64
150	1	191	22	4775	2.01	0.65
151	1	42	15	1050	2.22	0.82
152	1	233	24	5825	2.16	0.68
153	1	95	28	2375	2.87	0.86
154	1	170	40	4250	2.93	0.80
155	1	59	15	1475	1.74	0.64
156	1	312	21	7800	0.80	0.26
157	1	63	19	1575	2.02	0.69
158	1	118	16	2950	2.22	0.80
159	1	96	23	2400	2.43	0.77
160	1	148	30	3700	2.44	0.72
161	1	169	19	4225	0.86	0.29

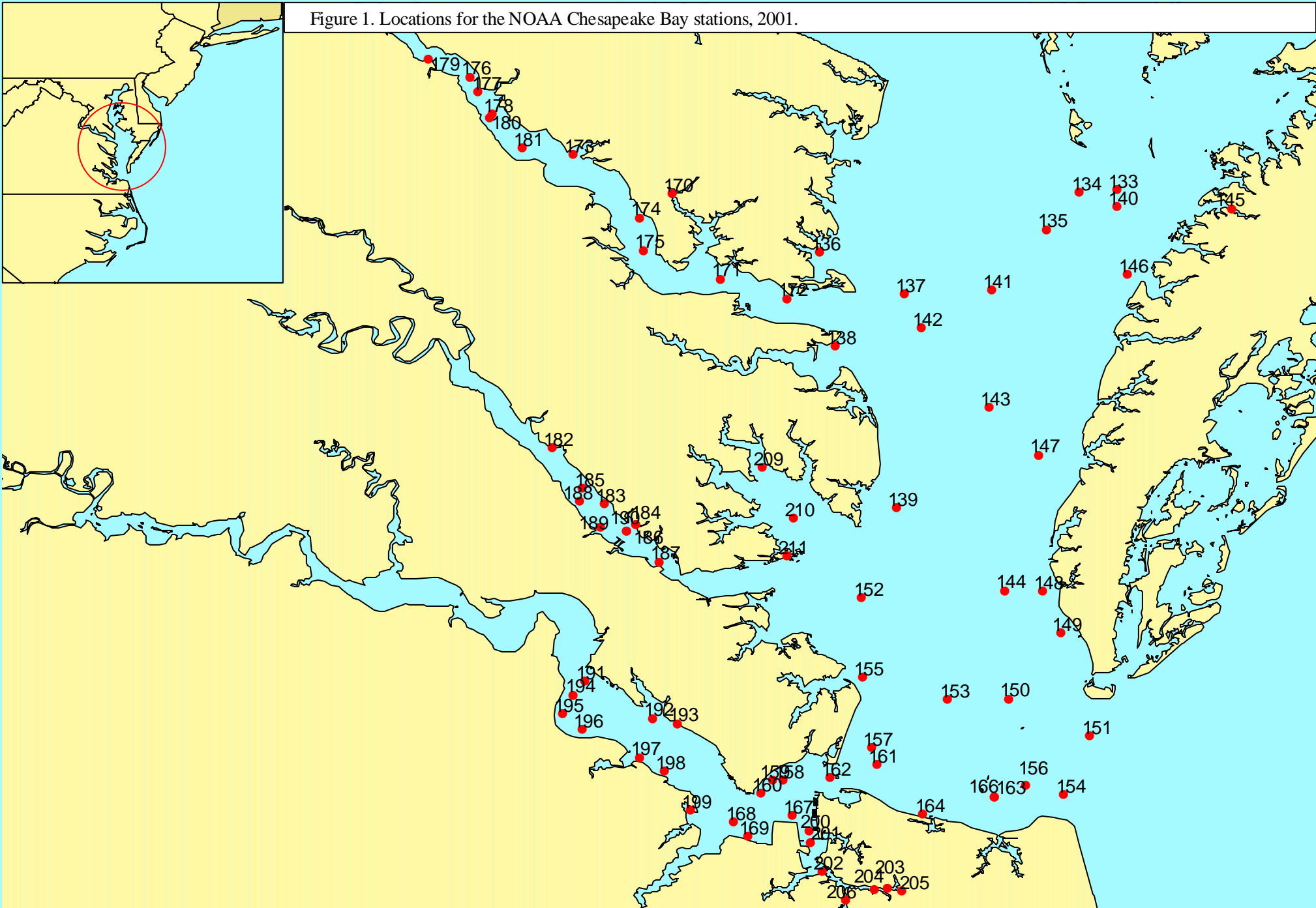
Table 6 continued:

<b>Station</b>	<b>Rep</b>	<b>Total No. Individuals</b>	<b>Total No Taxa</b>	<b>Density (nos/m<sup>2</sup>)</b>	<b>H' Diversity</b>	<b>J' Evenness</b>
162	1	173	39	4325	3.15	0.86
163	1	98	37	2450	3.22	0.89
164	1	246	22	6150	2.47	0.80
166	1	33	10	825	1.66	0.72
167	1	37	11	925	2.04	0.85
168	1	0	–	–	0.00	0.00
169	1	74	12	1850	1.73	0.70
170	1	163	13	4075	1.99	0.77
171	1	16	7	400	1.45	0.75
172	1	91	16	2275	1.61	0.58
173	1	112	9	2800	1.28	0.58
174	1	52	7	1300	0.63	0.32
175	1	257	18	6425	1.84	0.64
176	1	106	7	2650	0.97	0.50
177	1	73	9	1825	1.23	0.56
178	1	18	6	450	1.74	0.97
179	1	100	14	2500	1.91	0.72
180	1	184	11	4600	1.46	0.61
181	1	14	4	350	0.99	0.71
182	1	67	16	1675	2.22	0.80
183	1	17	8	425	1.66	0.80
184	1	67	12	1675	1.96	0.79
185	1	89	15	2225	1.99	0.73
186	1	37	8	925	1.34	0.65
187	1	47	10	1175	1.69	0.73
188	1	49	9	1225	1.34	0.61
189	1	101	17	2525	2.15	0.76
190	1	73	15	1825	2.18	0.81
191	1	191	23	4775	2.30	0.73
192	1	54	8	1350	1.23	0.59

Table 6 continued:

<b>Station</b>	<b>Rep</b>	<b>Total No. Individuals</b>	<b>Total No Taxa</b>	<b>Density (nos/m<sup>2</sup>)</b>	<b>H' Diversity</b>	<b>J' Evenness</b>
193	1	32	5	800	1.39	0.86
194	1	37	9	925	1.13	0.51
195	1	7	5	175	1.48	0.92
196	1	30	8	750	1.44	0.69
197	1	19	9	475	1.91	0.87
198	1	45	10	1125	1.66	0.72
199	1	175	13	4375	1.48	0.58
200	1	8	6	200	1.73	0.97
201	1	145	25	3625	2.57	0.80
202	1	37	13	925	2.07	0.81
203	1	46	6	1150	0.88	0.49
204	1	188	14	4700	1.28	0.48
205	1	622	13	15550	1.19	0.47
206	1	60	6	1500	1.24	0.69
207	1	46	16	1150	2.32	0.84
208	1	194	13	4850	1.26	0.49
209	1	18	3	450	0.43	0.39
210	1	43	14	1075	2.06	0.78
211	1	254	36	6350	2.98	0.83

Figure 1. Locations for the NOAA Chesapeake Bay stations, 2001.



10 0 10 20 Miles



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Environmental Research and Consulting



Figure 2. Distribution of major macroinvertebrate taxa for the Chesapeake Bay stations, 2001.

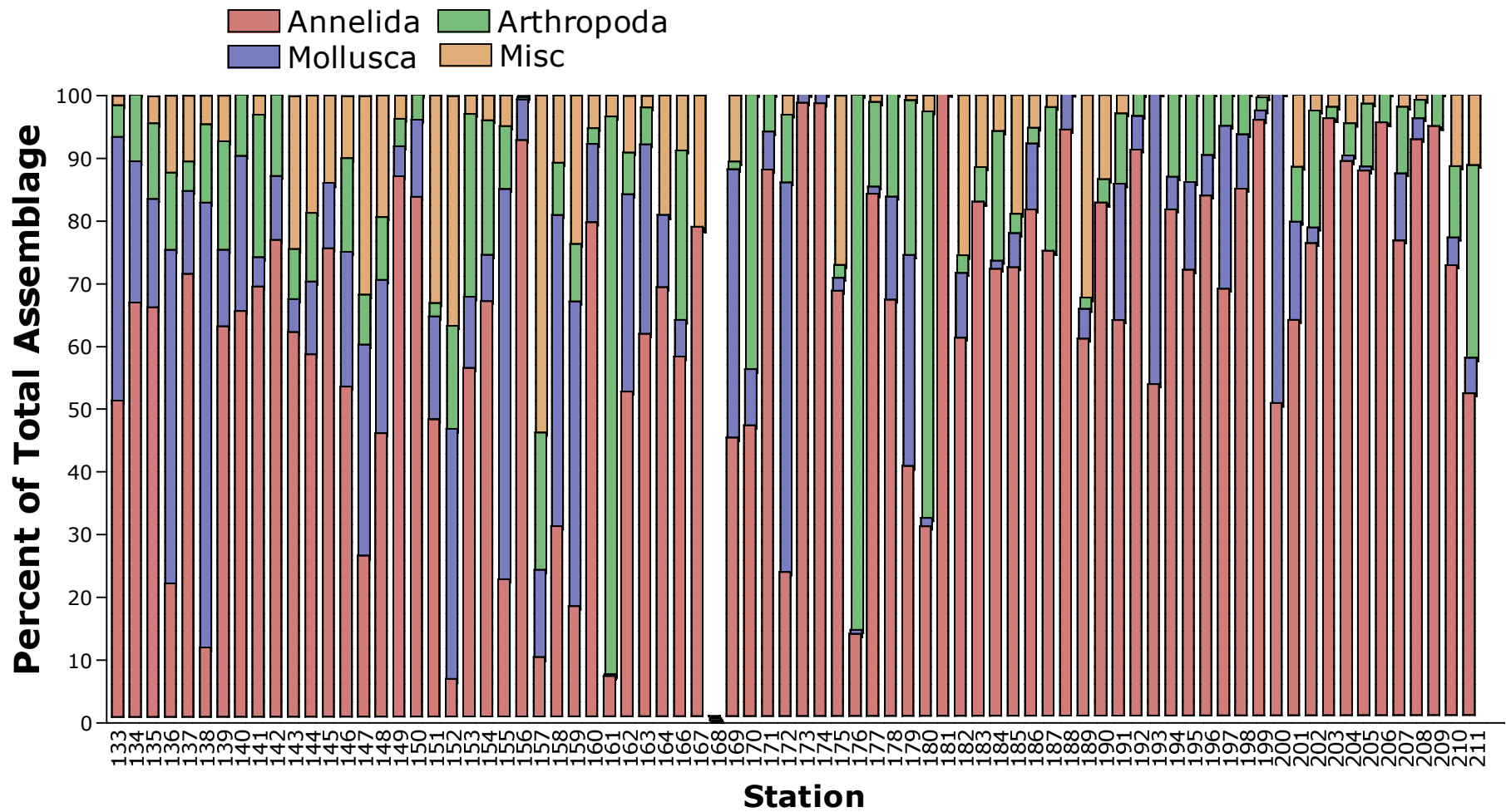


Figure 3. Taxa richness data for the Chesapeake Bay stations, 2001.

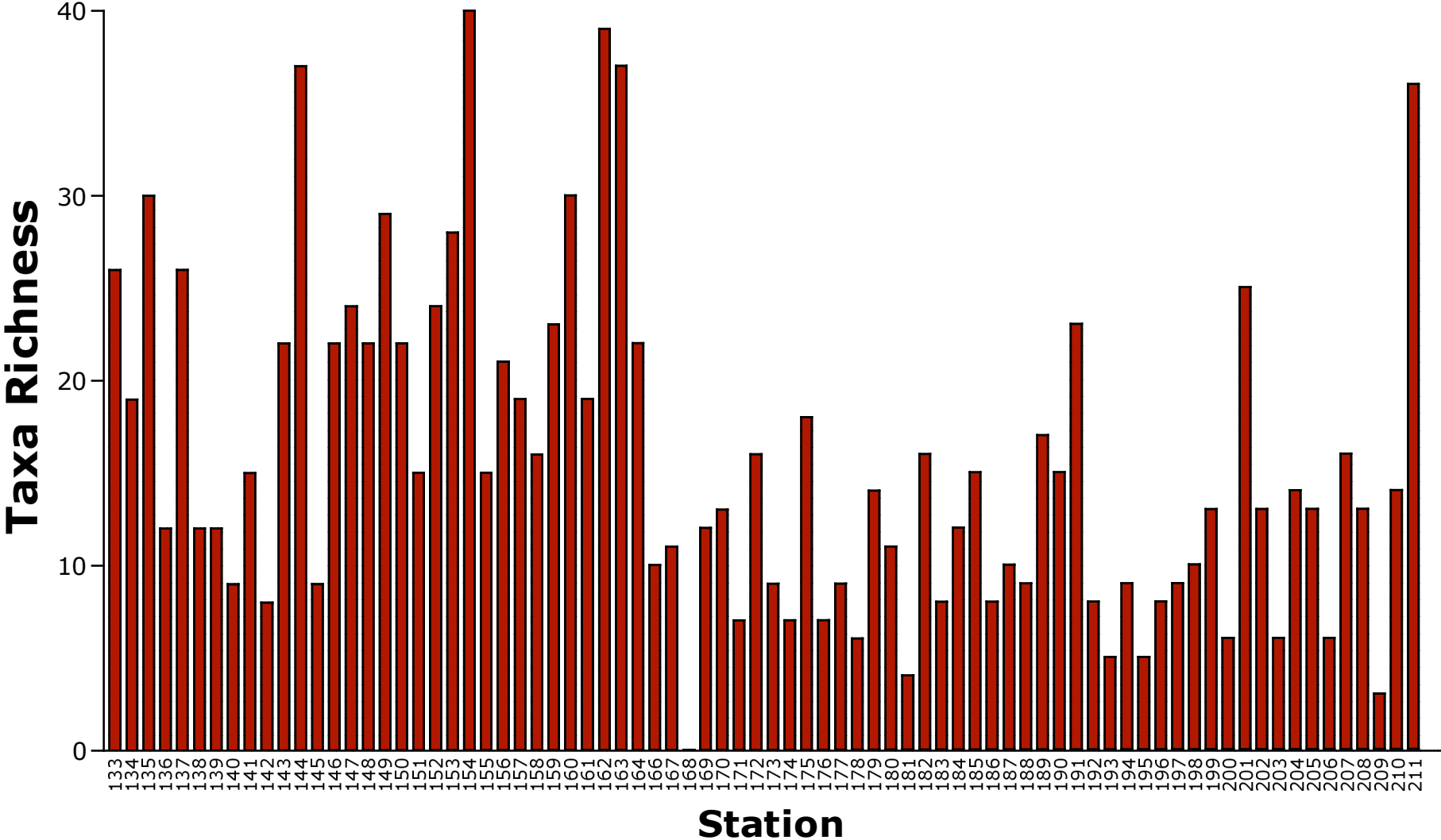


Figure 4. Taxa density data for the Chesapeake Bay stations, 2001.

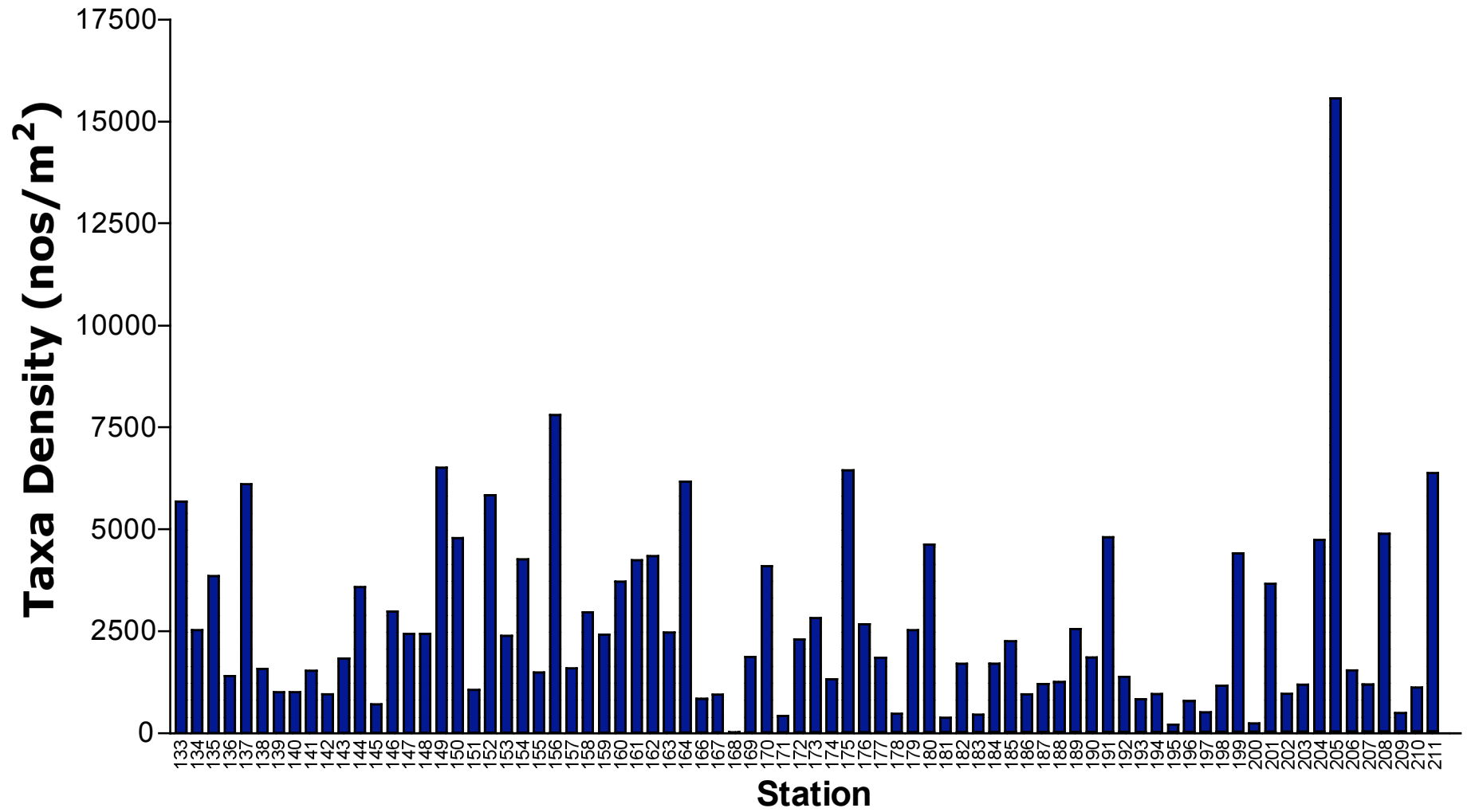


Figure 5. Taxa diversity ( $H'$ ) data for the Chesapeake Bay stations, 2001.

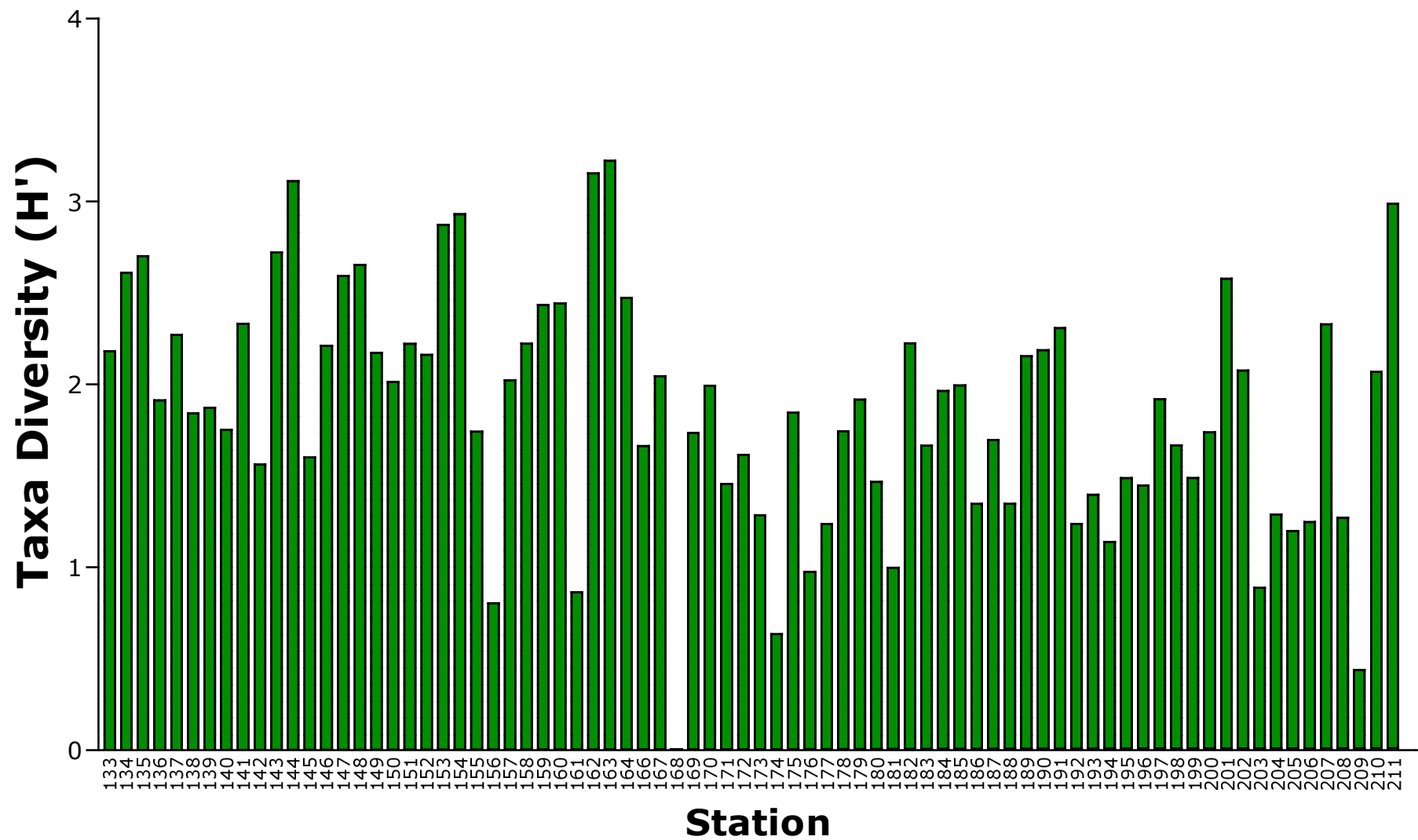
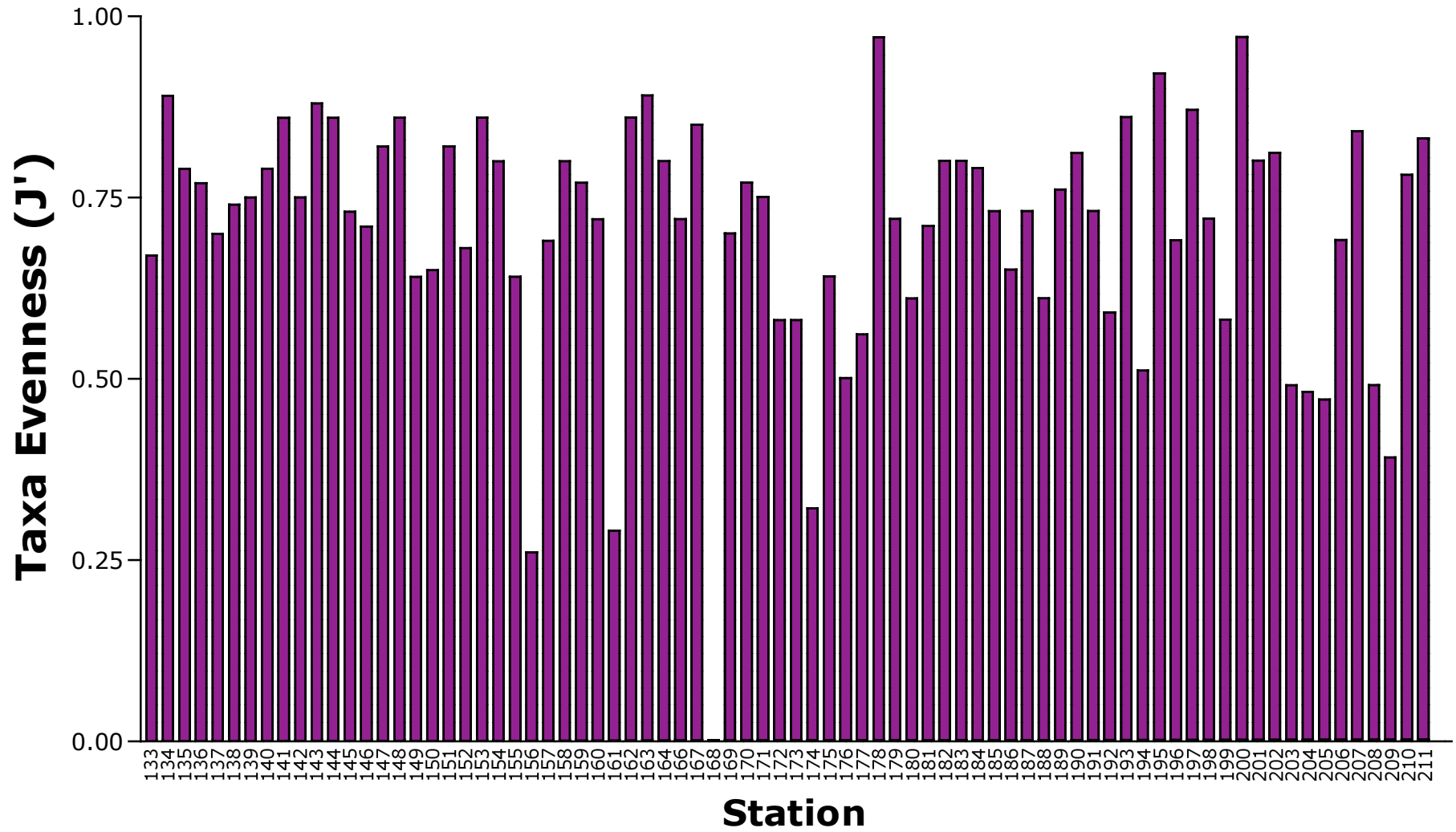




Figure 6. Taxa evenness ( $J'$ ) data for the Chesapeake Bay stations, 2001.



**APPENDICES**

## QUALITY ASSURANCE STATEMENT

Client/Project: NOAA

Work Assignment Title: Chesapeake Bay 2001

Task Number: Opt 1-9

Description of Data Set or Deliverable: 78 Benthic macroinvertebrate samples collected  
September, 2001; 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

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Signature of QA Officer or Reviewer

Date

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Signature of Project Manager

Date

## QUALITY CONTROL REWORKS

Client/Project: Chesapeake Bay 2001

Task Number: Opt1-9

<b>Sorting Results:</b>	<b>Sample #</b>	<b>% Accuracy</b>
	142	100%
	177	100%
	180	100%
	209	100%
	196	100%
	168	100%
	145	100%
	138	100%

<b>Taxonomy Results:</b>	<b>Sample #</b>	<b>Taxa</b>	<b>% Accuracy</b>
	143	Crust./Moll.	100%
	135	Crust./Moll.	98%
	152	Crust./Moll.	99%
	167	Crust./Moll.	100%
	179	Crust./Moll.	100%
	184	Crust./Moll.	99%
	199	Crust./Moll.	100%
	206	Crust./Moll.	98%
	191	Poly./Misc.	100%
	199	Poly./Misc.	99%
	161	Poly./Misc.	100%
	151	Poly./Misc.	100%
	180	Poly./Misc.	98%
	164	Poly./Misc.	96%
	152	Poly./Misc.	100%
	204	Poly./Misc.	99%

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

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Signature of QA Officer or Reviewer

Date