JACKSONVILLE, FLORIDA 1998 ODMDS BENTHIC COMMUNITY ASSESSMENT

Submitted to

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

The Jacksonville, Florida Ocean Dredged Material Disposal Site (ODMDS) was investigated by the U.S. Environmental Protection Agency (EPA) during June, 1998 as part of a monitoring study of dredged material disposal at the site. One aspect of this evaluation was benthic community characterization, which was accomplished via sample collection by EPA personnel and laboratory and data analysis by Barry A. Vittor & Associates, Inc. (BVA).

The Jacksonville ODMDS is centered at approximately 30°21'N and 81°18'W (Table 1; Figure 1). Five benthic monitoring stations were located within the disposal area and seven stations were located just outside this area (Figure 1).

2.0 METHODS

2.1 Sample Collection And Handling

Divers used a hand–held cylindrical corer (area = 0.0079 m^2) to collect bottom samples. Fifteen replicate cores were obtained at each of ten stations and 30 replicates were collected at Stations 8 and 10. 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. Hand cores were also collected at each station for sediment texture analysis. These data were analyzed by the EPA and provided to BVA.

The greater number of core samples collected at Stations 8 and 10 were used to verify the number replicates needed to adequately represent the number of unique taxa in the benthic assemblage at the study area. Data were evaluated using species-area curves and the 75% criteria established by Dennison and Hay (1967). Station 8 contained 201 distinct taxa, with 79% appearing in the first 15 replicates. Station 10 contained 196 distinct taxa with 76% appearing within the first 19 replicates. It was anticipated that the number of distinct (non-redundant) taxa were lower than the actual number of taxa, and concluded that 15 replicate samples per station would adequately represent the ODMDS study area. The first 15 sequential samples from Stations 8 and 10 were used in subsequent data analyses.

2.2 Macroinfaunal Sample Analysis

In BVA's laboratory, 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 labelled glass vials containing 70% isopropanol. Each vial represented a major taxonomic group (*e.g.* Oligochaeta, Mollusca, Arthropoda). Oligochaetes were individually mounted and cleared on microscope slides prior to identification. 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 Jacksonville region.

Each sample was analyzed for wet-weight biomass (g/m^2) for the major taxonomic groups identified. After identification, each taxonomic group was kept in separate vials and preserved in 70% isopropyl alcohol. A biomass technician removed the organisms from a vial, placed them on a filter paper pad, gently blotted them with a paper towel to remove moisture, placed them in a tared weighing pan, and weighed the pan to the nearest 0.1 mg using a Mettler Model AG-104 balance.

3.0 DATA ANALYSIS METHODS

3.1 Assemblage Analyses

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. Documentation of BVA's standard QA/QC procedures and results for this project are available upon request.

Several numerical indices were chosen for analysis and interpretation of the macroinfaunal data. Selection was based primarily on the ability of the index to provide a meaningful summary of data, as well as the applicability of the index to the characterization of the benthic community. Abundance is reported as the total number of individuals per station and the total number of individuals per square meter (= density). Species richness is reported as the total 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:

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

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

i = is the i'^{th} taxon in the sample, and

p_i = is the number of individuals of the i'^{th} taxon divided by the total number of individuals in the sample.

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 Evenness Index J' (Pielou, 1966) was calculated as $J' = H'/\mathit{ln}\ S$, where $\mathit{ln}\ S = H'_{max}$, or the maximum possible diversity, when all taxa are represented by the same number of individuals; thus, $J' = H'/H'_{max}$.

Macroinvertebrate data were graphically and statistically analyzed to identify any differences in density and number of taxa per replicate between seasons and disposal areas. Data for total density and taxa richness were ln(x+1) transformed to meet normality assumptions (Shapiro-Wilk W; SAS Institute, 1997). Transformed density and taxa data were analyzed using a one-way ANOVA, while post-hoc comparisons were calculated using a Tukey-Kramer HSD test (SAS Institute, 1997).

3.2 Faunal Similarities

Numerical classification analysis (Boesch 1977) was performed on the faunal data to examine within- and between- stations differences at the Jacksonville site and to compare faunal composition at each station within the site. Both normal and inverse classification analyses were used in this study. Normal analysis (sometimes called Q-analysis) treats samples as individual observations, each being composed of a number of attributes (*i.e.* the various species from a given sample). Normal analysis is instructive in helping to ascertain community structure and to infer specific ecological conditions between sampling stations from the relative distributions of species. Inverse classification (termed R-analysis) is based on species as individuals, each of which is characterized by its relative abundance in the various samples. This type of analysis is commonly used to identify species groupings with particular habitats or environmental conditions.

Classification analysis of both station collections (normal analysis) and species (inverse analysis) was performed using the Czekanowski quantitative index of faunal similarity (Field and MacFarlane 1968). This index is computationally equivalent to the Bray-Curtis similarity measure (Bray and Curtis 1957). The value of the similarity index is 1.0 when two samples are identical and 0 when no species are in common. Hierarchical clustering of similarity values is achieved using the group-average sorting strategy (Lance and Williams 1967b) and displayed in the form of dendograms.

Both similarity classification and cluster analysis were performed using the microcomputer package, "Community Analysis System 5.0" (Bloom 1994), as modified for use in BVA's benthic data management program. Species used in these analyses were selected according to their percent abundance and percent frequency. Total densities for each of the selected species at a given station were log-transformed [x=ln(x+1)] for the analysis.

4.0 HABITAT CHARACTERISTICS

Sediment data for the 12 stations are given in Table 2 and Figures 2 and 3. Sediment at all stations was predominantly sand and ranged from 81.0% at Station 9 to 97.2% at Station 3 (Figure

2). Sediments at four stations within the disposal area (2, 4, 5 and 7) were > 90% sand, while the sediment at Station 10 in the disposal site had a larger gravel (shell hash) fraction (14.7%) (Table 2, Figure 2). The total organic fraction of the sediment was low for all stations and ranged from 0.36% at Station 11 to 1.61% at Station 9 (Figure 3).

5.0 BENTHIC COMMUNITY CHARACTERIZATION

5.1 Faunal Composition, Abundance, And Community Structure

Appendix A provides a complete phylogenetic listing for all survey stations.

A total of 7861 organisms, representing 434 taxa, were identified from the 12 stations (Table 3). Polychaetes were the most numerous organisms present representing 33.8% of the total assemblage, followed in abundance by bivalves (26.9%), gastropods (15.0%) and malacostracans (14.7%). Polychaetes represented 34.3% of the total number of taxa followed by malacostracans (28.8%), bivalves (14.3%) and gastropods (11.3%) (Table 3). The percent abundance of major taxa at each station for the is given in Table 4 and shown as the number of individuals (Figure 4) and the number of taxa (Figure 5). These data indicate that the assemblages at the 12 stations were relatively homogeneous at the level of higher taxa (Phyla).

No single taxa represented more than 6% of the total from the Jacksonville ODMDS samples. Dominant taxa collected included the bivalve, *Tellina* (LPIL), the gastropods, *Acteocina bidentata* and *Caecum pulchellum*, and the polychaetes, *Mediomastus* (LPIL) and *Prionospio cristata* representing 5.7%, 5.6%, 4.4%, 3.7% and 3.1% of the total assemblage, respectively (Table 5). The polychaetes, *P. cristata*, *Spiophanes missionensis* and *Spiophanes bombyx*, the malacostracan, *Cyclaspis varians* and the anopluran, *Tubulanus* (LPIL) were collected at all 12 stations (Table 5). Those taxa representing more than 5% of the assemblage at each station are given in Table 6.

Station mean density and total mean taxa data and community indices are given in Table 7. Mean densities ranged from 4042.2 organisms$\cdot$m^{-2} at Station 8 to 9004.2 organisms$\cdot$m^{-2} at Station 12 (Table 7; Figure 6). There were significant differences in densities between stations (Tables 8 and 9; Figure 4). In general, Stations 2 and 7 inside the disposal area and Stations 9 and 12 outside the site had higher densities than the remaining stations (Table 9; Figure 6).

The mean number of taxa ranged from 15.9 at Station 11 to 29.1 at Station 2 (Table 7; Figure 7). There were significant differences in mean number of taxa between stations (Tables 10 and 11; Figure 7). Stations 2 and 6 within the disposal area and Station 6 outside the site had the highest taxa richness (Table 11; Figure 7).

Taxa diversity and evenness are given in Table 7 and Figure 8. Taxa diversity (H') was high at all stations and ranged from 3.02 at Station 12 to 4.62 at Station 6. Taxa evenness (J) ranged from 0.64 at Station 12 to 0.90 at Station 6. In general, all stations were extremely diverse with an equitable distribution of taxa relative to other benthic infaunal assemblages in the region. The community indices showed considerable uniformity between stations. There was no predictable pattern in community indices between stations within and outside the disposal area (Figure 8).

Macroinfaunal wet-weight biomass data are given in Table 12 and Figures 9 and 10. Station 9 exhibited the highest biomass of 74.800 $g \cdot m^{-2}$, while Station 4 had the lowest biomass of 4.761 $g \cdot m^{-2}$. There was no predictable trend in biomass between stations within and outside the disposal area (Figures 9 and 10).

5.2 Numerical Classification Analysis

Normal (stations) and inverse (species) classification analyses were performed on the Jacksonville ODMDS data set and displayed as dendrograms (Figures 11 and 12). Selection of the species included in the analyses was based on a minimum representation of 0.5% of total individuals. Count data for the 41 taxa selected were included in a matrix of station and species groups (Table 13). These taxa accounted for 67.7% of the macroinfaunal assemblage collected.

Numerical classification of the 12 stations was interpreted at a two-group level (Figure 11). Group A contained the disposal site stations and Stations 1, 3, 6, 8 and 11 outside the site (Figure 11; Table 13), indicating a high degree of faunal similarity between the stations. Group B contained Stations 9 and 12 lying outside the site to the southeast.

Classification of the 41 taxa at the 12 stations was interpreted at a two–group level (Table 13; Figure 12). This classification based the grouping of species on their overall distribution patterns. Taxa Group 1 contained the polychaete taxa, *Boguea enigmatica* and the amphipod, *Bemlos brunneomaculatus* which were found in abundance only at station 7 within the disposal site. Taxa Group 2 contained the remaining taxa and indicated a homogeneous assemblage at the 12 stations (Table 13; Figure 12).

5.3 Taxa Assemblages

The macroinvertebrate taxa collected from the 12 stations at the Jacksonville, Florida ODMDS represented a homogeneous assemblage. This result was not unexpected because of the uniform sandy substrate found at all 12 stations; minor differences in taxa assemblages could be found in several laying outside the site (particularly Stations 9 and 12). Differences seen in the distribution of taxa between stations was probably due to stochastic differences between similar habitat types separated in space.

6.0 1995 vs 1998 COMPARISONS

Biological data collected from the disposal site in 1998 can be compared to data collected from the same site and stations in 1995 (BVA, 1996). In 1995, the number of taxa was significantly different between stations in the disposal area (based on ln transformed data; F = 16.30; df = 4, 69; Prob > F = < 0.0001; Figure 13). Station 10 had a significantly lower number of taxa than stations 2, 4, 5 and 7 in the disposal area. Station 5 had a significantly lower number of taxa than stations 2, 4 and 7, and a significantly higher number of taxa than station 10. There were significant differences between the number of taxa when comparing the same disposal site stations between 1995 and 1998 (F = 9.91; df = 9, 139; Prob > F = < 0.0001; Figure 13). Station 4 had a significantly higher number of taxa in 1995 than in 1998, and station 10 had a significantly lower number of taxa in 1995 than in 1998 (Figure 13). Taxa data for the disposal and reference areas for each year were combined; there was no significant difference between the number of taxa in the disposal area between 1995 and 1998 (F = 0.15; df = 1, 147; Prob > F = < 0.701), but the number of taxa at the reference stations was significantly higher in 1998 when compared to 1995 (F = 21.86; df = 1, 207; Prob > F = < 0.0001).

In 1995, mean densities were significantly different between stations in the disposal area (based on ln transformed data; F = 7.18; df = 4, 69; Prob > F = < 0.0001; Figure 14). Densities at stations 5 and 10 were significantly lower than at stations 2, 7, and 10 (Figure 14). There were significant differences between mean densities when comparing the same disposal site stations between 1995 and 1998 (F = 7.00; df = 9, 139; Prob > F = < 0.0001; Figure 14). Station 4 had a significantly higher density in 1995 than in 1998 (Figure 14). Density data for the disposal and reference areas for each year were combined; there was no significant difference between densities in the disposal area between 1995 and 1998 (F = 0.60; df = 1, 147; Prob > F = < 0.439), but densities at the reference stations were significantly higher in 1998 when compared to 1995 (F = 19.11; df = 1, 207; Prob > F = < 0.0001).

There were changes in the dominant macroinvertebrate taxa at the disposal site stations between 1995 and 1998 (Table 14). However, only three taxa in 1995 and one taxa in 1998 represented more that 10% of the total macroinvertebrate assemblage. Similar changes were apparent at reference stations between 1995 and 1998. These differences in abundant taxa were most probably due to natural variation in the benthic macroinvertebrate assemblage.

There were more than 120 unique Families of macroinvertebrates identified from both the disposal and reference sites in 1995 and 1998. In 1995, only one Family in the disposal area and no Families in the reference area made up more than 10% of the total assemblage (Table 15, Figures 15 and 16). The dominant Family in the disposal and reference sites was the archiannelid family, Polygordiidae making up 11.2% and 8.7% of the assemblages, respectively (Table 15). There were three other Families in both areas which made up > 5% of the total assemblage in 1995 (Figures 15 and 16). The same four dominant Families were found in both the disposal and reference areas. In 1998, only one Family in the disposal area and no Families in the reference area made up more than 10% of the total assemblage (Table 15, Figures 15 and 16). The dominant Family in the disposal site in 1998 was the polychaete Family, Spionidae representing 14.2% of the total assemblage

(Table 15). Polygordiidae, the dominant Family in the disposal area in 1995, made up < 1% of the total assemblage in 1998. The gastropod Family Scaphandridae was the dominant Family in the reference area rin 1998 representing 9.9% of the total assemblage. Polygordiidae, the dominant Family in the reference area in 1995, made up < 1% of the total assemblage in 1998. The high diversity of Families collected and the absence of clear dominance by one or more Families at the sites in 1995 and 1998 makes interpretations of shifts in assemblage composition problematic.

7.0 SUMMARY

The results of the benthic survey of the Jacksonville, Florida ODMDS are summarized below:

1. Sediment at all 12 stations was predominantly sand. Sediments at four stations within the disposal area (2, 4, 5 and 7) were > 90% sand, while the sediment at Station 10 in the disposal site had a larger gravel (shell hash) fraction. The total organic fraction of the sediment was low for all stations.

2. A total of 7861 organisms, representing 434 taxa, were identified from the 12 stations. Polychaetes were the most numerous organisms present representing 33.8% of the total assemblage, followed in abundance by bivalves (26.9%), gastropods (15.0%) and malacostracans (14.7%). Polychaetes represented 34.3% of the total number of taxa followed by malacostracans (28.8%), bivalves (14.3%) and gastropods (11.3%).

3. No single taxa represented more than 6% of the total from the Jacksonville ODMDS samples. Dominant taxa collected included the bivalve, *Tellina* (LPIL), the gastropods, *Acteocina bidentata* and *Caecum pulchellum*, and the polychaetes, *Mediomastus* (LPIL) and *Prionospio cristata*. The polychaetes, *P. cristata*, *Spiophanes missionensis* and *Spiophanes bombyx*, the malacostracan, *Cyclaspis varians* and the anopluran, *Tubulanus* (LPIL) were collected at all 12 stations.

4. Mean densities ranged from 4042.2 organisms$\cdot$m^{-2} at Station 8 to 9004.2 organisms$\cdot$m^{-2} at Station 12. There were significant differences in densities between stations. In general, Stations 2 and 7 inside the disposal area and Stations 9 and 12 outside the site had higher densities than the remaining stations.

5. The mean number of taxa ranged from 15.9 at Station 11 to 29.1 at Station 2. There were significant differences in mean number of taxa between stations. Stations 2 and 6 within the disposal area and Station 6 outside the site had the highest taxa richness.

6. Taxa diversity (H') was high at all stations and ranged from 3.02 at Station 12 to 4.62 at Station 6.

7. Taxa evenness (J) ranged from 0.64 at Station 12 to 0.90 at Station 6. In general, all stations were extremely diverse with an equitable distribution of taxa relative to other benthic infaunal assemblages in the region. The community indices showed considerable uniformity between stations. There was no predictable pattern in community indices between stations within and outside the disposal area.

8. Station 9 exhibited the highest wet-weight biomass of 74.800 $g \cdot m^{-2}$, while Station 4 had the lowest biomass of 4.761 $g \cdot m^{-2}$. There was no predictable trend in biomass between stations within and outside the disposal area.

9. Numerical classification of the 12 stations was interpreted at a two-group level. Group A contained the disposal site stations and Stations 1, 3, 6, 8 and 11 outside the site, indicating a high degree of faunal similarity between the stations. Group B contained Stations 9 and 12 lying outside the site to the southeast. Classification of 41 taxa at the 12 stations was interpreted at a two–group level. Taxa Group 1 contained the polychaete, *Boguea enigmatica* and the amphipod, *Bemlos brunneomaculatu*s which were found in abundance only at station 7 within the disposal site. Taxa Group 2 contained the remaining taxa and indicated a homogeneous assemblage at the 12 stations.

10. The macroinvertebrate taxa collected from the 12 stations at the Jacksonville, Florida ODMDS represented a homogeneous assemblage.

11. In 1995, the number of taxa was significantly different between stations in the disposal area. There were also significant differences between the number of taxa when comparing the same disposal site stations between 1995 and 1998. Station 4 had a significantly higher number of taxa in 1995 than in 1998, and station 10 had a significantly lower number of taxa in 1995 than in 1998. When taxa data for the disposal and reference areas for each year were combined, there was no

significant difference between the number of taxa in the disposal area between 1995 and 1998, but the number of taxa at the reference stations was significantly higher in 1998 when compared to 1995.

12. In 1995, mean densities were significantly different between stations in the disposal area. There were significant differences between mean densities when comparing the same disposal site stations between 1995 and 1998. Station 4 had a significantly higher density in 1995 than in 1998. When density data for the disposal and reference areas for each year were combined, there was no significant difference between densities in the disposal area between 1995 and 1998, but densities at the reference stations were significantly higher in 1998 when compared to 1995.

13. There were changes in the dominant macroinvertebrate taxa at the disposal site stations between 1995 and 1998. However, only three taxa in 1995 and one taxa in 1998 represented more that 10% of the total macroinvertebrate assemblage. Similar changes were apparent at reference stations between 1995 and 1998. These differences in abundant taxa were most probably due to natural variation in the benthic macroinvertebrate assemblage.

14. There were more than 120 unique Families of macroinvertebrates identified from both the disposal and reference sites in 1995 and 1998. The high diversity of Families collected and the absence of clear dominance by one or more Families at the sites in 1995 and 1998 makes interpretations of shifts in assemblage composition problematic.

8.0 LITERATURE CITED

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Table 1. Station locations for the Jacksonville, Florida ODMDS, June 1998.

Station Number	Latitude	Longitude
1	30° 21.83"	81° 18.19"
2	30° 21.50"	81° 17.81"
3	30° 21.00"	81° 18.95"
4	30° 20.90"	81° 18.05"
5	30° 21.00"	81° 17.43"
6	30° 21.00"	81° 17.05"
7	30° 20.75"	81° 18.57"
8	30° 21.49"	81° 18.64"
9	30° 20.35"	81° 17.20"
10	30° 21.18"	81° 18.22"
11	30° 20.17"	81° 18.57"
12	30° 20.00"	81° 17.90"

Table 2. Sediment data for the Jacksonville, Florida ODMDS, June 1998.

Station	% Gravel	% Sand	% Silt	% Clay	% Silt + Clay	% TOC
1	6.94	89.81	0.46	1.99	2.45	0.80
2	3.20	90.58	3.26	1.91	5.18	1.04
3	0.21	97.19	0.45	1.62	2.07	0.53
4	3.18	92.04	2.30	1.75	4.05	0.73
5	1.65	96.32	0.70	0.88	1.58	0.45
6	4.02	89.79	3.67	1.56	5.23	0.96
7	4.17	92.32	0.40	2.42	2.82	0.69
8	1.16	89.35	5.62	2.40	8.02	1.47
9	8.54	80.99	7.02	1.85	8.87	1.61
10	14.70	82.96	0.53	1.09	1.62	0.73
11	0.85	97.77	0.17	0.85	1.02	0.36
12	0.27	94.61	2.97	1.35	4.32	0.80

Table 3. Summary of abundance of major taxonomic groups for the Jacksonville, Florida ODMDS, June 1998.

Taxa	Total No. of Taxa	% Total	Total No. of Individuals	% Total
ANNELIDA				
Polychaeta	149	34.3	2660	33.8
Oligochaeta	1	0.2	21	0.3
MOLLUSCA				
Bivalvia	62	14.3	2118	26.9
Gastropoda	49	11.3	1179	15.0
Other Mollusca	4	0.9	18	0.2
ARTHROPODA				
Malacostraca	125	28.8	1159	14.7
Other Arthropoda	19	4.4	192	2.4
OTHER TAXA	25	5.8	514	6.5
TOTAL	**434**		**7861**	

Table 4. Abundance and distribution of major taxonomic groups at each station for the Jacksonville, Florida ODMDS, June 1998.

Station	**Taxa**	**No. of Taxa**	**% Total**	**No. of Individuals**	**% Total**
1	Annelida	46	35.1	214	35.3
	Mollusca	40	30.5	233	38.4
	Arthropoda	32	24.4	104	17.1
	Other Taxa	13	9.9	56	9.2
	Total	131		607	
2	Annelida	50	36.0	383	48.4
	Mollusca	33	23.7	224	28.3
	Arthropoda	42	30.2	113	14.3
	Other Taxa	14	10.1	71	9.0
	Total	139		791	
3	Annelida	26	32.1	111	23.1
	Mollusca	29	35.8	290	60.4
	Arthropoda	23	28.4	74	15.4
	Other Taxa	3	3.7	5	1.0
	Total	81		480	
4	Annelida	38	36.2	214	38.6
	Mollusca	28	26.7	140	25.3
	Arthropoda	32	30.5	132	23.8
	Other Taxa	7	6.7	68	12.3
	Total	105		554	
5	Annelida	56	40.6	288	58.1
	Mollusca	32	23.2	92	18.5
	Arthropoda	42	30.4	79	15.9
	Other Taxa	8	5.8	37	7.5
	Total	138		496	
6	Annelida	68	39.1	299	48.5
	Mollusca	49	28.2	148	24.0
	Arthropoda	46	26.4	117	19.0
	Other Taxa	11	6.3	53	8.6
	Total	174		617	
7	Annelida	53	35.6	280	28.4
	Mollusca	41	27.5	464	47.1
	Arthropoda	45	30.2	191	19.4
	Other Taxa	10	6.7	50	5.1
	Total	149		985	

Table 4 continued:

Station	Taxa	No. of Taxa	% Total	No. of Individuals	% Total
8	Annelida	53	35.6	171	35.7
	Mollusca	43	28.9	208	43.4
	Arthropoda	44	29.5	81	16.9
	Other Taxa	9	6.0	19	4.0
	Total	149		479	
9	Annelida	41	36.9	178	22.8
	Mollusca	34	30.6	444	56.9
	Arthropoda	25	22.5	85	10.9
	Other Taxa	11	9.9	74	9.5
	Total	111		781	
10	Annelida	38	30.6	204	39.9
	Mollusca	31	25.0	136	26.6
	Arthropoda	43	34.7	139	27.2
	Other Taxa	12	9.7	32	6.3
	Total	124		511	
11	Annelida	26	32.9	167	33.9
	Mollusca	24	30.4	183	37.1
	Arthropoda	22	27.8	128	26.0
	Other Taxa	7	8.9	15	3.0
	Total	79		493	
12	Annelida	31	28.4	172	16.1
	Mollusca	39	35.8	753	70.6
	Arthropoda	29	26.6	108	10.1
	Other Taxa	10	9.2	34	3.2
	Total	109		1067	

Table 5. Abundance and distribution of taxa for the Jacksonville, Florida ODMDS, June 1998.

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Tellina (LPIL)	M	Biva	447	5.69	5.69	11	91.7
Acteocina bidentata	M	Gast	441	5.61	11.30	8	66.7
Caecum pulchellum	M	Gast	345	4.39	15.69	10	83.3
Mediomastus (LPIL)	A	Poly	288	3.66	19.35	11	91.7
Prionospio cristata	A	Poly	244	3.10	22.45	12	100.0
Lucina (LPIL)	M	Biva	226	2.87	25.33	7	58.3
Ceratonereis irritabilis	A	Poly	201	2.56	27.88	9	75.0
Apoprionospio pygmaea	A	Poly	199	2.53	30.42	8	66.7
Ervilia concentrica	M	Biva	190	2.42	32.83	11	91.7
Crassinella lunulata	M	Biva	160	2.04	34.87	11	91.7
Bivalvia (LPIL)	M	Biva	135	1.72	36.59	12	100.0
Lucinidae (LPIL)	M	Biva	133	1.69	38.28	8	66.7
Magelona filiformis	A	Poly	115	1.46	39.74	3	25.0
Ophiuroidea (LPIL)	E	Ophi	110	1.40	41.14	11	91.7
Crassinella martinicensis	M	Biva	100	1.27	42.41	7	58.3
Maldanidae (LPIL)	A	Poly	93	1.18	43.59	7	58.3
Reticulocythereis sp.C	Ar	Ostr	82	1.04	44.64	4	33.3
Paraprionospio pinnata	A	Poly	80	1.02	45.66	8	66.7
Spiophanes missionensis	A	Poly	77	0.98	46.64	12	100.0
Lucina radians	M	Biva	76	0.97	47.60	4	33.3
Cyclaspis varians	Ar	Mala	76	0.97	48.57	12	100.0
Boguea enigmatica	A	Poly	75	0.95	49.52	3	25.0
Rhynchocoela (LPIL)	R	–	74	0.94	50.46	11	91.7
Prionospio (LPIL)	A	Poly	71	0.90	51.37	9	75.0
Tellinidae (LPIL)	M	Biva	69	0.88	52.25	2	16.7
Metharpinia floridana	Ar	Mala	69	0.88	53.12	9	75.0
Goniadides carolinae	A	Poly	68	0.87	53.99	8	66.7
Bemlos (LPIL)	Ar	Mala	65	0.83	54.81	10	83.3
Rictaxis punctostriatus	M	Gast	64	0.81	55.63	9	75.0
Bemlos brunneomaculatus	Ar	Mala	64	0.81	56.44	2	16.7
Sipuncula (LPIL)	S	–	61	0.78	57.22	6	50.0
Anadara transversa	M	Biva	60	0.76	57.98	11	91.7
Nephtys picta	A	Poly	59	0.75	58.73	11	91.7
Acanthohaustorius intermedius	Ar	Mala	59	0.75	59.48	7	58.3
Veneridae (LPIL)	M	Biva	58	0.74	60.22	10	83.3
Eudevenopus honduranus	Ar	Mala	58	0.74	60.96	11	91.7
Erichthonius brasiliensis	Ar	Mala	57	0.73	61.68	8	66.7
Branchiostoma (LPIL)	C	Lept	54	0.69	62.37	9	75.0
Varicorbula operculata	M	Biva	52	0.66	63.03	10	83.3
Nereididae (LPIL)	A	Poly	50	0.64	63.67	7	58.3
Spionidae (LPIL)	A	Poly	50	0.64	64.30	11	91.7
Tubulanus (LPIL)	R	Anop	48	0.61	64.92	12	100.0
Spiophanes bombyx	A	Poly	47	0.60	65.51	12	100.0
Armandia maculata	A	Poly	46	0.59	66.10	9	75.0
Abra (LPIL)	M	Biva	46	0.59	66.68	7	58.3
Americhelidium americanum	Ar	Mala	42	0.53	67.22	11	91.7
Protohaustorius wigleyi	Ar	Mala	40	0.51	67.73	2	16.7
Scoletoma verrilli	A	Poly	38	0.48	68.21	10	83.3
Gouldia cerina	M	Biva	38	0.48	68.69	8	66.7
Cyclaspis pustulata	Ar	Mala	38	0.48	69.18	10	83.3
Laonice cirrata	A	Poly	37	0.47	69.65	6	50.0
Diopatra papillata	A	Poly	36	0.46	70.11	10	83.3
Abra aequalis	M	Biva	34	0.43	70.54	9	75.0
Aoridae (LPIL)	Ar	Mala	33	0.42	70.96	8	66.7
Aricidea taylori	A	Poly	31	0.39	71.35	6	50.0
Peristichia argia	M	Gast	31	0.39	71.75	3	25.0
Bhawania heteroseta	A	Poly	30	0.38	72.13	6	50.0

Table 5 continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Sabellaria vulgaris	A	Poly	30	0.38	72.51	8	66.7
Polygordius (LPIL)	A	Poly	29	0.37	72.88	8	66.7
Malacoceros vanderhorsti	A	Poly	28	0.36	73.23	4	33.3
Phascolion strombi	S	–	27	0.34	73.58	6	50.0
Eusarsiella cresseyi	Ar	Ostr	27	0.34	73.92	3	25.0
Aricidea (LPIL)	A	Poly	26	0.33	74.25	9	75.0
Cyclaspis unicornis	Ar	Mala	26	0.33	74.58	7	58.3
Magelona pettiboneae	A	Poly	25	0.32	74.90	9	75.0
Owenia fusiformis	A	Poly	25	0.32	75.22	7	58.3
Aspidosiphon albus	S	–	24	0.31	75.52	7	58.3
Lucina multilineata	M	Biva	24	0.31	75.83	5	41.7
Pitar fulminatus	M	Biva	24	0.31	76.14	2	16.7
Strigilla mirabilis	M	Biva	23	0.29	76.43	4	33.3
Brachiopoda (LPIL)	B	–	22	0.28	76.71	3	25.0
Onuphidae (LPIL)	A	Poly	22	0.28	76.99	9	75.0
Pythinella cuneata	M	Biva	22	0.28	77.27	4	33.3
Gastropoda (LPIL)	M	Gast	22	0.28	77.55	9	75.0
Oligochaeta (LPIL)	A	Olig	21	0.27	77.81	6	50.0
Anachis obesa	M	Gast	21	0.27	78.08	7	58.3
Liljeborgia sp.A	Ar	Mala	21	0.27	78.35	8	66.7
Melitidae (LPIL)	Ar	Mala	21	0.27	78.62	5	41.7
Mytilidae (LPIL)	M	Biva	20	0.25	78.87	9	75.0
Turbonilla interrupta	M	Gast	19	0.24	79.11	4	33.3
Argissa hamatipes	Ar	Mala	19	0.24	79.35	8	66.7
Euceramus praelongus	Ar	Mala	19	0.24	79.60	9	75.0
Actiniaria (LPIL)	Cn	Anth	18	0.23	79.82	5	41.7
Tectonatica pusilla	M	Gast	18	0.23	80.05	7	58.3
Parasterope zeta	Ar	Ostr	18	0.23	80.28	8	66.7
Nannodiella oxia	M	Gast	17	0.22	80.50	6	50.0
Strombiformis bilineatus	M	Gast	17	0.22	80.71	7	58.3
Acanthohaustorius millsi	Ar	Mala	17	0.22	80.93	5	41.7
Aspidosiphon muelleri	S	–	16	0.20	81.13	5	41.7
Spiochaetopterus oculatus	A	Poly	16	0.20	81.34	8	66.7
Onuphis eremita	A	Poly	16	0.20	81.54	4	33.3
Ampelisca bicarinata	Ar	Mala	16	0.20	81.75	6	50.0
Mooreonuphis pallidula	A	Poly	15	0.19	81.94	5	41.7
Brania wellfleetensis	A	Poly	15	0.19	82.13	2	16.7
Semele proficua	M	Biva	15	0.19	82.32	6	50.0
Deutella incerta	Ar	Mala	15	0.19	82.51	11	91.7
Harbansus paucichelatus	Ar	Ostr	15	0.19	82.70	7	58.3
Spio pettiboneae	A	Poly	14	0.18	82.88	8	66.7
Metatiron tropakis	Ar	Mala	14	0.18	83.06	5	41.7
Photis (LPIL)	Ar	Mala	14	0.18	83.23	6	50.0
Oxyurostylis smithi	Ar	Mala	14	0.18	83.41	5	41.7
Amphiuridae (LPIL)	E	Ophi	14	0.18	83.59	4	33.3
Ampharetidae (LPIL)	A	Poly	13	0.17	83.76	4	33.3
Glycera sp.E	A	Poly	13	0.17	83.92	6	50.0
Aricidea wassi	A	Poly	13	0.17	84.09	3	25.0
Chione cancellata	M	Biva	13	0.17	84.25	5	41.7
Kurtziella rubella	M	Gast	13	0.17	84.42	7	58.3
Processa hemphilli	Ar	Mala	13	0.17	84.58	5	41.7
Cirrophorus (LPIL)	A	Poly	12	0.15	84.73	4	33.3
Terebellidae (LPIL)	A	Poly	12	0.15	84.89	3	25.0
Polycirrus sp.G	A	Poly	12	0.15	85.04	4	33.3
Acteocina candei	M	Gast	12	0.15	85.19	3	25.0
Dentalium texasianum	M	Scap	12	0.15	85.35	2	16.7
Corophium (LPIL)	Ar	Mala	12	0.15	85.50	6	50.0
Asteropterygion occulitristis	Ar	Ostr	12	0.15	85.65	5	41.7

Table 5 continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Lineidae (LPIL)	R	Anop	11	0.14	85.79	7	58.3
Lioberus castaneus	M	Biva	11	0.14	85.93	3	25.0
Olivella dealbata	M	Gast	11	0.14	86.07	5	41.7
Atys sandersoni	M	Gast	11	0.14	86.21	1	8.3
Janiridae (LPIL)	Ar	Mala	11	0.14	86.35	1	8.3
Batea catharinensis	Ar	Mala	11	0.14	86.49	4	33.3
Acuminodeutopus naglei	Ar	Mala	11	0.14	86.63	3	25.0
Kalliapseudes sp.C	Ar	Mala	11	0.14	86.77	4	33.3
Eusarsiella texana	Ar	Ostr	11	0.14	86.91	6	50.0
Caulleriella sp.J	A	Poly	10	0.13	87.04	4	33.3
Apoprionospio dayi	A	Poly	10	0.13	87.16	3	25.0
Diplodonta (LPIL)	M	Biva	10	0.13	87.29	7	58.3
Odostomia (LPIL)	M	Gast	10	0.13	87.42	5	41.7
Turridae (LPIL)	M	Gast	10	0.13	87.55	4	33.3
Kurtziella limonitella	M	Gast	10	0.13	87.67	5	41.7
Corophium lacustre	Ar	Mala	10	0.13	87.80	4	33.3
Pagurus (LPIL)	Ar	Mala	10	0.13	87.93	6	50.0
Chloeia viridis	A	Poly	9	0.11	88.04	5	41.7
Glycinde (LPIL)	A	Poly	9	0.11	88.16	1	8.3
Goniada littorea	A	Poly	9	0.11	88.27	6	50.0
Magelona papillicornis	A	Poly	9	0.11	88.39	4	33.3
Nereis micromma	A	Poly	9	0.11	88.50	3	25.0
Paraonidae (LPIL)	A	Poly	9	0.11	88.61	3	25.0
Phyllodoce arenae	A	Poly	9	0.11	88.73	6	50.0
Dipolydora socialis	A	Poly	9	0.11	88.84	5	41.7
Semelidae (LPIL)	M	Biva	9	0.11	88.96	5	41.7
Macrocallista maculata	M	Biva	9	0.11	89.07	5	41.7
Stenothoe minuta	Ar	Mala	9	0.11	89.19	3	25.0
Cirratulidae (LPIL)	A	Poly	8	0.10	89.29	5	41.7
Heteropodarke lyonsi	A	Poly	8	0.10	89.39	4	33.3
Magelona sp.I	A	Poly	8	0.10	89.49	4	33.3
Ceratocephale oculata	A	Poly	8	0.10	89.59	7	58.3
Armandia agilis	A	Poly	8	0.10	89.70	4	33.3
Prionospio cirrifera	A	Poly	8	0.10	89.80	4	33.3
Barbatia candida	M	Biva	8	0.10	89.90	1	8.3
Dosinia (LPIL)	M	Biva	8	0.10	90.00	2	16.7
Lyonsia hyalina floridana	M	Biva	8	0.10	90.10	5	41.7
Mysella planulata	M	Biva	8	0.10	90.20	3	25.0
Olividae (LPIL)	M	Gast	8	0.10	90.31	4	33.3
Acteocina canaliculata	M	Gast	8	0.10	90.41	2	16.7
Amakusanthura magnifica	Ar	Mala	8	0.10	90.51	5	41.7
Amphipoda (LPIL)	Ar	Mala	8	0.10	90.61	4	33.3
Melinna maculata	A	Poly	7	0.09	90.70	5	41.7
Lumbrineridae (LPIL)	A	Poly	7	0.09	90.79	4	33.3
Sigambra tentaculata	A	Poly	7	0.09	90.88	4	33.3
Lepidasthenia varia	A	Poly	7	0.09	90.97	1	8.3
Pista palmata	A	Poly	7	0.09	91.06	2	16.7
Trachycardium muricatum	M	Biva	7	0.09	91.15	4	33.3
Corbulidae (LPIL)	M	Biva	7	0.09	91.24	2	16.7
Cardiomya costellata	M	Biva	7	0.09	91.32	3	25.0
Volvulella persimilis	M	Gast	7	0.09	91.41	4	33.3
Phoxocephalidae (LPIL)	Ar	Mala	7	0.09	91.50	4	33.3
Hippomedon sp.A	Ar	Mala	7	0.09	91.59	2	16.7
Cerapus tubularis	Ar	Mala	7	0.09	91.68	4	33.3
Photis pugnator	Ar	Mala	7	0.09	91.77	3	25.0
Campylaspis sp.E	Ar	Mala	7	0.09	91.86	3	25.0
Paguridae (LPIL)	Ar	Mala	7	0.09	91.95	2	16.7
Aspidosiphon (LPIL)	S	–	6	0.08	92.02	4	33.3

Table 5 continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Magelona (LPIL)	A	Poly	6	0.08	92.10	4	33.3
Polynoidae (LPIL)	A	Poly	6	0.08	92.18	4	33.3
Sabellidae (LPIL)	A	Poly	6	0.08	92.25	3	25.0
Mitrella lunata	M	Gast	6	0.08	92.33	4	33.3
Turbonilla (LPIL)	M	Gast	6	0.08	92.41	5	41.7
Crepidula plana	M	Gast	6	0.08	92.48	1	8.3
Calyptraea centralis	M	Gast	6	0.08	92.56	4	33.3
Bateidae (LPIL)	Ar	Mala	6	0.08	92.63	1	8.3
Bemlos brunneomaculatus brunne	Ar	Mala	6	0.08	92.71	2	16.7
Pinnixa sayana	Ar	Mala	6	0.08	92.79	1	8.3
Turbellaria (LPIL)	Pl	Turb	5	0.06	92.85	5	41.7
Phoronis (LPIL)	Ph	–	5	0.06	92.91	3	25.0
Mesochaetopterus (LPIL)	A	Poly	5	0.06	92.98	4	33.3
Scoletoma impatiens	A	Poly	5	0.06	93.04	2	16.7
Sigambra bassi	A	Poly	5	0.06	93.11	3	25.0
Litocorsa antennata	A	Poly	5	0.06	93.17	1	8.3
Apoprionospio (LPIL)	A	Poly	5	0.06	93.23	2	16.7
Hiatella arctica	M	Biva	5	0.06	93.30	3	25.0
Columbellidae (LPIL)	M	Gast	5	0.06	93.36	4	33.3
Caecum johnsoni	M	Gast	5	0.06	93.42	1	8.3
Acteocina (LPIL)	M	Gast	5	0.06	93.49	2	16.7
Calyptraeidae (LPIL)	M	Gast	5	0.06	93.55	2	16.7
Maera caroliniana	Ar	Mala	5	0.06	93.61	1	8.3
Aeginellidae (LPIL)	Ar	Mala	5	0.06	93.68	4	33.3
Decapoda Natantia (LPIL)	Ar	Mala	5	0.06	93.74	5	41.7
Processa (LPIL)	Ar	Mala	5	0.06	93.80	4	33.3
Pinnixa (LPIL)	Ar	Mala	5	0.06	93.87	3	25.0
Pseudophilomedes ambon	Ar	Ostr	5	0.06	93.93	4	33.3
Rutiderma darbyi	Ar	Ostr	5	0.06	94.00	3	25.0
Echiura (LPIL)	Eu	–	4	0.05	94.05	4	33.3
Capitellidae (LPIL)	A	Poly	4	0.05	94.10	2	16.7
Notomastus (LPIL)	A	Poly	4	0.05	94.15	3	25.0
Glycera dibranchiata	A	Poly	4	0.05	94.20	2	16.7
Goniadidae (LPIL)	A	Poly	4	0.05	94.25	2	16.7
Lumbrineris latreilli	A	Poly	4	0.05	94.30	2	16.7
Scoletoma (LPIL)	A	Poly	4	0.05	94.35	2	16.7
Aglaophamus verrilli	A	Poly	4	0.05	94.40	3	25.0
Galathowenia oculata	A	Poly	4	0.05	94.45	3	25.0
Phyllodoce longipes	A	Poly	4	0.05	94.50	3	25.0
Spio sp.B	A	Poly	4	0.05	94.56	2	16.7
Syllis cornuta	A	Poly	4	0.05	94.61	2	16.7
Poecilochaetus (LPIL)	A	Poly	4	0.05	94.66	3	25.0
Semele bellastriata	M	Biva	4	0.05	94.71	3	25.0
Corbula contracta	M	Biva	4	0.05	94.76	2	16.7
Dosinia discus	M	Biva	4	0.05	94.81	3	25.0
Pitar (LPIL)	M	Biva	4	0.05	94.86	3	25.0
Cardiomya (LPIL)	M	Biva	4	0.05	94.91	2	16.7
Epitonium (LPIL)	M	Gast	4	0.05	94.96	3	25.0
Eulimidae (LPIL)	M	Gast	4	0.05	95.01	3	25.0
Cyathura polita	Ar	Mala	4	0.05	95.06	3	25.0
Cyathura burbancki	Ar	Mala	4	0.05	95.12	2	16.7
Stenothoidae (LPIL)	Ar	Mala	4	0.05	95.17	2	16.7
Synopiidae (LPIL)	Ar	Mala	4	0.05	95.22	3	25.0
Tiron tropakis	Ar	Mala	4	0.05	95.27	3	25.0
Gibberosus myersi	Ar	Mala	4	0.05	95.32	1	8.3
Campylaspis sp.m	Ar	Mala	4	0.05	95.37	2	16.7
Trachypenaeus (LPIL)	Ar	Mala	4	0.05	95.42	2	16.7
Leptochela serratorbita	Ar	Mala	4	0.05	95.47	4	33.3

Table 5 continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Sicyonia (LPIL)	Ar	Mala	4	0.05	95.52	1	8.3
Pinnotheridae (LPIL)	Ar	Mala	4	0.05	95.57	3	25.0
Majidae (LPIL)	Ar	Mala	4	0.05	95.62	2	16.7
Asteroidea (LPIL)	E	Aste	4	0.05	95.67	2	16.7
Capitella (LPIL)	A	Poly	3	0.04	95.71	2	16.7
Schistomeringos pectinata	A	Poly	3	0.04	95.75	2	16.7
Schistomeringos rudolphi	A	Poly	3	0.04	95.79	2	16.7
Glycera americana	A	Poly	3	0.04	95.83	2	16.7
Glycera (LPIL)	A	Poly	3	0.04	95.87	3	25.0
Goniadides (LPIL)	A	Poly	3	0.04	95.90	2	16.7
Podarkeopsis levifuscina	A	Poly	3	0.04	95.94	2	16.7
Axiothella mucosa	A	Poly	3	0.04	95.98	2	16.7
Magelona riojai	A	Poly	3	0.04	96.02	2	16.7
Nephtyidae (LPIL)	A	Poly	3	0.04	96.06	2	16.7
Nereis succinea	A	Poly	3	0.04	96.09	3	25.0
Aricidea suecica	A	Poly	3	0.04	96.13	2	16.7
Ancistrosyllis hartmanae	A	Poly	3	0.04	96.17	3	25.0
Spio (LPIL)	A	Poly	3	0.04	96.21	2	16.7
Dispio uncinata	A	Poly	3	0.04	96.25	3	25.0
Scolelepis squamata	A	Poly	3	0.04	96.29	2	16.7
Loimia sp.A	A	Poly	3	0.04	96.32	1	8.3
Abra lioica	M	Biva	3	0.04	96.36	1	8.3
Semele (LPIL)	M	Biva	3	0.04	96.40	3	25.0
Crassinella (LPIL)	M	Biva	3	0.04	96.44	2	16.7
Anomia simplex	M	Biva	3	0.04	96.48	2	16.7
Thraciidae (LPIL)	M	Biva	3	0.04	96.51	3	25.0
Caecum imbricatum	M	Gast	3	0.04	96.55	3	25.0
Cyclostremiscus pentagonus	M	Gast	3	0.04	96.59	2	16.7
Kurtziella (LPIL)	M	Gast	3	0.04	96.63	2	16.7
Strombiformis (LPIL)	M	Gast	3	0.04	96.67	2	16.7
Antalis (LPIL)	M	Scap	3	0.04	96.71	1	8.3
Edotia triloba	Ar	Mala	3	0.04	96.74	3	25.0
Serolis mgrayi	Ar	Mala	3	0.04	96.78	3	25.0
Corophium acutum	Ar	Mala	3	0.04	96.82	2	16.7
Ampeliscidae (LPIL)	Ar	Mala	3	0.04	96.86	2	16.7
Ampelisca (LPIL)	Ar	Mala	3	0.04	96.90	1	8.3
Parametopella cypris	Ar	Mala	3	0.04	96.93	1	8.3
Rildardanus laminosa	Ar	Mala	3	0.04	96.97	2	16.7
Elasmopus levis	Ar	Mala	3	0.04	97.01	3	25.0
Shoemakerella cubensis	Ar	Mala	3	0.04	97.05	2	16.7
Tanaidacea (LPIL)	Ar	Mala	3	0.04	97.09	2	16.7
Penaeidae (LPIL)	Ar	Mala	3	0.04	97.13	2	16.7
Palaemonidae (LPIL)	Ar	Mala	3	0.04	97.16	2	16.7
Periclimenes longicaudatus	Ar	Mala	3	0.04	97.20	2	16.7
Sicyonia typica	Ar	Mala	3	0.04	97.24	2	16.7
Xanthidae (LPIL)	Ar	Mala	3	0.04	97.28	2	16.7
Eusarsiella (LPIL)	Ar	Ostr	3	0.04	97.32	1	8.3
Paramphinome sp.B	A	Poly	2	0.03	97.34	2	16.7
Isolda pulchella	A	Poly	2	0.03	97.37	2	16.7
Mediomastus californiensis	A	Poly	2	0.03	97.39	2	16.7
Notomastus latericeus	A	Poly	2	0.03	97.42	1	8.3
Protodorvillea kefersteini	A	Poly	2	0.03	97.44	2	16.7
Glyceridae (LPIL)	A	Poly	2	0.03	97.47	1	8.3
Hesionidae (LPIL)	A	Poly	2	0.03	97.49	2	16.7
Lumbrineris (LPIL)	A	Poly	2	0.03	97.52	1	8.3
Scoletoma tenuis	A	Poly	2	0.03	97.54	1	8.3
Magelonidae (LPIL)	A	Poly	2	0.03	97.57	2	16.7
Nereis (LPIL)	A	Poly	2	0.03	97.60	2	16.7

Table 5 continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Armandia (LPIL)	A	Poly	2	0.03	97.62	2	16.7
Diopatra cuprea	A	Poly	2	0.03	97.65	1	8.3
Phyllodocidae (LPIL)	A	Poly	2	0.03	97.67	2	16.7
Polyodontes lupinus	A	Poly	2	0.03	97.70	2	16.7
Sthenelais (LPIL)	A	Poly	2	0.03	97.72	1	8.3
Scolelepis texana	A	Poly	2	0.03	97.75	1	8.3
Syllidae (LPIL)	A	Poly	2	0.03	97.77	1	8.3
Polycirrus (LPIL)	A	Poly	2	0.03	97.80	2	16.7
Drilonereis longa	A	Poly	2	0.03	97.82	2	16.7
Chione grus	M	Biva	2	0.03	97.85	2	16.7
Spisula solidissima	M	Biva	2	0.03	97.88	1	8.3
Hiatellidae (LPIL)	M	Biva	2	0.03	97.90	2	16.7
Turbonilla portoricana	M	Gast	2	0.03	97.93	2	16.7
Odostomia weberi	M	Gast	2	0.03	97.95	2	16.7
Vitrinellidae (LPIL)	M	Gast	2	0.03	97.98	2	16.7
Cerithiidae (LPIL)	M	Gast	2	0.03	98.00	2	16.7
Melanella (LPIL)	M	Gast	2	0.03	98.03	2	16.7
Opisthobranchia (LPIL)	M	Gast	2	0.03	98.05	1	8.3
Liljeborgiidae (LPIL)	Ar	Mala	2	0.03	98.08	1	8.3
Podocerus kleidus	Ar	Mala	2	0.03	98.10	2	16.7
Unciola serrata	Ar	Mala	2	0.03	98.13	1	8.3
Haustoriidae (LPIL)	Ar	Mala	2	0.03	98.16	2	16.7
Elasmopus (LPIL)	Ar	Mala	2	0.03	98.18	1	8.3
Ceradocus shoemakeri	Ar	Mala	2	0.03	98.21	2	16.7
Ischyroceridae (LPIL)	Ar	Mala	2	0.03	98.23	1	8.3
Photis sp.D	Ar	Mala	2	0.03	98.26	2	16.7
Bodotriidae (LPIL)	Ar	Mala	2	0.03	98.28	1	8.3
Cyclaspis (LPIL)	Ar	Mala	2	0.03	98.31	2	16.7
Leptochela (LPIL)	Ar	Mala	2	0.03	98.33	1	8.3
Latreutes parvulus	Ar	Mala	2	0.03	98.36	2	16.7
Decapoda Reptantia (LPIL)	Ar	Mala	2	0.03	98.38	1	8.3
Pinnotheres ostreum	Ar	Mala	2	0.03	98.41	2	16.7
Goneplax sigsbei	Ar	Mala	2	0.03	98.44	2	16.7
Callianassidae (LPIL)	Ar	Mala	2	0.03	98.46	2	16.7
Albunea paretii	Ar	Mala	2	0.03	98.49	2	16.7
Hepatus (LPIL)	Ar	Mala	2	0.03	98.51	2	16.7
Heterocrypta granulata	Ar	Mala	2	0.03	98.54	2	16.7
Amboleberis americana	Ar	Ostr	2	0.03	98.56	2	16.7
Eusarsiella disparalis	Ar	Ostr	2	0.03	98.59	2	16.7
Eusarsiella ozotothrix	Ar	Ostr	2	0.03	98.61	2	16.7
Eusarsiella greyi	Ar	Ostr	2	0.03	98.64	1	8.3
Ophiothrix angulata	E	Ophi	2	0.03	98.66	2	16.7
Holothuroidea (LPIL)	E	Holo	2	0.03	98.69	2	16.7
Ascidiacea (LPIL)	C	Asci	2	0.03	98.72	2	16.7
Sipunculus nudus	S	–	1	0.01	98.73	1	8.3
Capitella capitata	A	Poly	1	0.01	98.74	1	8.3
Dasybranchus lumbricoides	A	Poly	1	0.01	98.75	1	8.3
Notomastus hemipodus	A	Poly	1	0.01	98.77	1	8.3
Notomastus americanus	A	Poly	1	0.01	98.78	1	8.3
Notomastus tenuis	A	Poly	1	0.01	98.79	1	8.3
Scyphoproctus (LPIL)	A	Poly	1	0.01	98.80	1	8.3
Chaetopteridae (LPIL)	A	Poly	1	0.01	98.82	1	8.3
Cirriformia sp.F	A	Poly	1	0.01	98.83	1	8.3
Pherusa inflata	A	Poly	1	0.01	98.84	1	8.3
Glycera sp.C	A	Poly	1	0.01	98.86	1	8.3
Scoletoma ernesti	A	Poly	1	0.01	98.87	1	8.3
Boguea sp.A	A	Poly	1	0.01	98.88	1	8.3
Nephtys simoni	A	Poly	1	0.01	98.89	1	8.3

Table 5 continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Nephtys (LPIL)	A	Poly	1	0.01	98.91	1	8.3
Ceratonereis (LPIL)	A	Poly	1	0.01	98.92	1	8.3
Scoloplos rubra	A	Poly	1	0.01	98.93	1	8.3
Leitoscoloplos (LPIL)	A	Poly	1	0.01	98.94	1	8.3
Aricidea cerrutii	A	Poly	1	0.01	98.96	1	8.3
Paraonis pygoenigmatica	A	Poly	1	0.01	98.97	1	8.3
Pilargidae (LPIL)	A	Poly	1	0.01	98.98	1	8.3
Phyllodoce (LPIL)	A	Poly	1	0.01	99.00	1	8.3
Malmgreniella maccraryae	A	Poly	1	0.01	99.01	1	8.3
Harmothoe (LPIL)	A	Poly	1	0.01	99.02	1	8.3
Acoetidae (LPIL)	A	Poly	1	0.01	99.03	1	8.3
Autolytus sp.B	A	Poly	1	0.01	99.05	1	8.3
Streptosyllis pettiboneae	A	Poly	1	0.01	99.06	1	8.3
Megalomma bioculatum	A	Poly	1	0.01	99.07	1	8.3
Demonax microphthalmus	A	Poly	1	0.01	99.08	1	8.3
Pista (LPIL)	A	Poly	1	0.01	99.10	1	8.3
Polycirrus eximius	A	Poly	1	0.01	99.11	1	8.3
Notocirrus spiniferus	A	Poly	1	0.01	99.12	1	8.3
Pectinaria gouldii	A	Poly	1	0.01	99.13	1	8.3
Ensis minor	M	Biva	1	0.01	99.15	1	8.3
Nucula aegeenis	M	Biva	1	0.01	99.16	1	8.3
Anadara (LPIL)	M	Biva	1	0.01	99.17	1	8.3
Musculus lateralis	M	Biva	1	0.01	99.19	1	8.3
Cardiidae (LPIL)	M	Biva	1	0.01	99.20	1	8.3
Laevicardium mortoni	M	Biva	1	0.01	99.21	1	8.3
Macoma tenta	M	Biva	1	0.01	99.22	1	8.3
Macoma (LPIL)	M	Biva	1	0.01	99.24	1	8.3
Crassatellidae (LPIL)	M	Biva	1	0.01	99.25	1	8.3
Mactridae (LPIL)	M	Biva	1	0.01	99.26	1	8.3
Cardiomya perrostrata	M	Biva	1	0.01	99.27	1	8.3
Lyonsia (LPIL)	M	Biva	1	0.01	99.29	1	8.3
Gastrochaena hians	M	Biva	1	0.01	99.30	1	8.3
Solemya velum	M	Biva	1	0.01	99.31	1	8.3
Asthenothaerus hemphilli	M	Biva	1	0.01	99.33	1	8.3
Epitonium multistriatum	M	Gast	1	0.01	99.34	1	8.3
Naticidae (LPIL)	M	Gast	1	0.01	99.35	1	8.3
Sinum perspectivum	M	Gast	1	0.01	99.36	1	8.3
Ilyanassa trivittata	M	Gast	1	0.01	99.38	1	8.3
Caecum cooperi	M	Gast	1	0.01	99.39	1	8.3
Teinostoma biscaynense	M	Gast	1	0.01	99.40	1	8.3
Terebra (LPIL)	M	Gast	1	0.01	99.41	1	8.3
Olivella (LPIL)	M	Gast	1	0.01	99.43	1	8.3
Marginella lavalleeana	M	Gast	1	0.01	99.44	1	8.3
Niso aeglees	M	Gast	1	0.01	99.45	1	8.3
Polyplacophora (LPIL)	M	Poly	1	0.01	99.47	1	8.3
Anthuridae (LPIL)	Ar	Mala	1	0.01	99.48	1	8.3
Ptilanthura tenuis	Ar	Mala	1	0.01	99.49	1	8.3
Eurydice littoralis	Ar	Mala	1	0.01	99.50	1	8.3
Corophiidae (LPIL)	Ar	Mala	1	0.01	99.52	1	8.3
Oedicerotidae (LPIL)	Ar	Mala	1	0.01	99.53	1	8.3
Listriella barnardi	Ar	Mala	1	0.01	99.54	1	8.3
Listriella sp.G	Ar	Mala	1	0.01	99.55	1	8.3
Podocerus brasiliensis	Ar	Mala	1	0.01	99.57	1	8.3
Acanthohaustorius shoemakeri	Ar	Mala	1	0.01	99.58	1	8.3
Protohaustorius (LPIL)	Ar	Mala	1	0.01	99.59	1	8.3
Lysianassidae (LPIL)	Ar	Mala	1	0.01	99.61	1	8.3
Tiron (LPIL)	Ar	Mala	1	0.01	99.62	1	8.3
Gitanopsis (LPIL)	Ar	Mala	1	0.01	99.63	1	8.3

Table 5 continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Gammaropsis sp.C	Ar	Mala	1	0.01	99.64	1	8.3
Gammaropsis (LPIL)	Ar	Mala	1	0.01	99.66	1	8.3
Microprotopus raneyi	Ar	Mala	1	0.01	99.67	1	8.3
Cyclaspis sp.N	Ar	Mala	1	0.01	99.68	1	8.3
Campylaspis heardi	Ar	Mala	1	0.01	99.69	1	8.3
Stomatopoda (LPIL)	Ar	Mala	1	0.01	99.71	1	8.3
Gibbesia neglecta	Ar	Mala	1	0.01	99.72	1	8.3
Bigelowina biminiensis	Ar	Mala	1	0.01	99.73	1	8.3
Mysidae (LPIL)	Ar	Mala	1	0.01	99.75	1	8.3
Tanaissus psammophilus	Ar	Mala	1	0.01	99.76	1	8.3
Sergestidae (LPIL)	Ar	Mala	1	0.01	99.77	1	8.3
Ogyrides alphaerostris	Ar	Mala	1	0.01	99.78	1	8.3
Ogyrides hayi	Ar	Mala	1	0.01	99.80	1	8.3
Porcellanidae (LPIL)	Ar	Mala	1	0.01	99.81	1	8.3
Ebalia cariosa	Ar	Mala	1	0.01	99.82	1	8.3
Portunidae (LPIL)	Ar	Mala	1	0.01	99.83	1	8.3
Callinectes (LPIL)	Ar	Mala	1	0.01	99.85	1	8.3
Parthenopidae (LPIL)	Ar	Mala	1	0.01	99.86	1	8.3
Hypoconcha (LPIL)	Ar	Mala	1	0.01	99.87	1	8.3
Ostracoda (LPIL)	Ar	Ostr	1	0.01	99.89	1	8.3
Cylindroleberididae (LPIL)	Ar	Ostr	1	0.01	99.90	1	8.3
Pseudophilomedes zeta	Ar	Ostr	1	0.01	99.91	1	8.3
Eusarsiella spinosa	Ar	Ostr	1	0.01	99.92	1	8.3
Limulus polyphemus	Ar	Mero	1	0.01	99.94	1	8.3
Decapoda (LPIL)	Ar	Mala	1	0.01	99.95	1	8.3
Ophiactis savignyi	E	Ophi	1	0.01	99.96	1	8.3
Ophiothrix (LPIL)	E	Ophi	1	0.01	99.97	1	8.3
Echinoidea (LPIL)	E	Echi	1	0.01	99.99	1	8.3
Balanoglossus (LPIL)	H	Ente	1	0.01	100.00	1	8.3

Taxa Key

A = Annelida
 Poly = Polychaeta
 Olig = Oligochaeta
Ar = Arthropoda
 Mala = Malacostraca
 Mero = Merostomata
 Ostr = Ostracoda
B = Brachiopoda
C = Chordata
 Asci = Ascidiacea
 Lept = Leptocardia
Cn = Cnidaria
E = Echinodermata
 Aste = Asteroidea
 Echi = Echinoidea
 Holo = Holothuroidea
 Ophi = Ophiuroidea

Eu = Echiura
H = Hemichordata
 Ente = Enteropneusta
M = Mollusca
 Biva = Bivalvia
 Gast = Gastropoda
 Poly = Polyplacophora
 Scap = Scaphopoda
Ph = Phoronida
Pl = Plathyhelminthes
 Turb = Turbellaria
R = Rhynchocoela
 Anop = Anopla
S = Sipuncula

Table 6. Percent abundance of dominant taxa (> 5% of the total assemblage) for the Jacksonville, Florida ODMDS, June 1998.

	STATION											
Taxa	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
SIPUNCULA												
Sipuncula (LPIL)									5.1			
ANNELIDA												
Polychaeta												
Mediomastus (LPIL)	8.6	8.8			5.0					9.2		
Boguea enigmatica							6.5					
Magelona filiformis									8.1			
Ceratonereis irritabi					7.1	6.2		7.1				
Apoprionospio pygmaea			7.7								19.5	
Prionospio cristata		7.0		9.0						5.5		
MOLLUSCA												
Bivalvia												
Lucinidae (LPIL)			18.1									
Lucina radians									6.5			
Lucina (LPIL)												17.9
Tellinidae (LPIL)							6.4					
Tellina (LPIL)			8.8	7.4				5.8	17.7			7.8
Crassinella lunulata	5.1							7.1				
Crassinella martinice							5.7					
Ervilia concentrica			6.7	6.3								
Gastropoda												
Caecum pulchellum	5.3						14.6				19.9	
Acteocina bidentata			5.6						11.8			28.3
ARTHROPODA												
Malacostraca												
Bemlos brunneomaculatus							6.4					
Protohaustorius wigleyi											5.1	
Ostracoda												
Reticulocythereis sp.C			5.4									
ECHINODERMATA												
Ophiuroidea												
Ophiuroidea (LPIL)				6.1								

Table 7. Summary of assemblage parameters for the Jacksonville, Florida ODMDS stations, June 1998.

	REPLICATE DATA				STATION DATA					
Station	Rep	Total No. Taxa	Total No. Individuals	Density (nos/m²)	Total No. Taxa	Total No. Individuals	Mean Density nos/m² (SD)	Avg. No. Taxa (SD)	H' Diversity	J' Evenness
1	1	19	24	3038	132	607	5122.4	24.0	4.19	0.86
1	2	16	23	2911			2683.9	8.1		
1	3	41	82	10380						
1	4	23	54	6835						
1	5	29	56	7089						
1	6	12	16	2025						
1	7	31	44	5570						
1	8	18	23	2911						
1	9	21	37	4684						
1	10	25	34	4304						
1	11	36	84	10633						
1	12	29	44	5570						
1	13	25	39	4937						
1	14	14	16	2025						
1	15	21	31	3924						
2	1	36	61	7722	139	791	6675.1	29.1	4.18	0.85
2	2	19	24	3038			1496.6	6.1		
2	3	34	54	6835						
2	4	27	54	6835						
2	5	26	49	6203						
2	6	28	58	7342						
2	7	37	69	8734						
2	8	41	64	8101						
2	9	28	45	5696						
2	10	21	51	6456						
2	11	24	61	7722						
2	12	30	65	8228						
2	13	25	45	5696						
2	14	33	55	6962						
2	15	27	36	4557						
3	1	16	25	3165	81	480	4050.6	17.1	3.43	0.78
3	2	20	34	4304			748.9	3.3		
3	3	17	30	3797						
3	4	19	43	5443						
3	5	16	36	4557						
3	6	16	31	3924						
3	7	18	33	4177						
3	8	14	23	2911						
3	9	24	35	4430						
3	10	18	41	5190						
3	11	22	37	4684						
3	12	16	23	2911						
3	13	15	30	3797						
3	14	14	29	3671						
3	15	11	30	3797						
4	1	21	38	4810	105	554	4675.1	20.3	3.91	0.84
4	2	15	19	2405			1545.5	4.0		
4	3	13	20	2532						
4	4	26	61	7722						
4	5	19	26	3291						
4	6	21	31	3924						
4	7	25	52	6582						
4	8	22	36	4557						
4	9	17	29	3671						
4	10	14	26	3291						
4	11	23	53	6709						
4	12	23	44	5570						
4	13	20	39	4937						
4	14	24	39	4937						
4	15	22	41	5190						

Table 7 continued:

	REPLICATE DATA				STATION DATA					
Station	Rep	Total No. Taxa	Total No. Individuals	Density (nos/m²)	Total No. Taxa	Total No. Individuals	Mean Density nos/m² (SD)	Avg. No. Taxa (SD)	H' Diversity	J' Evenness
5	1	14	20	2532	138	496	4185.7	21.3	4.39	0.89
5	2	28	43	5443			2096.7	7.3		
5	3	17	21	2658						
5	4	16	24	3038						
5	5	17	23	2911						
5	6	22	34	4304						
5	7	32	52	6582						
5	8	10	14	1772						
5	9	15	19	2405						
5	10	20	37	4684						
5	11	25	40	5063						
5	12	38	80	10127						
5	13	21	32	4051						
5	14	21	26	3291						
5	15	23	31	3924						
6	1	24	31	3924	174	617	5206.8	27.5	4.62	0.9
6	2	38	52	6582			2009.9	8.8		
6	3	27	35	4430						
6	4	23	29	3671						
6	5	45	63	7975						
6	6	30	38	4810						
6	7	34	49	6203						
6	8	21	28	3544						
6	9	29	51	6456						
6	10	29	57	7215						
6	11	25	38	4810						
6	12	12	15	1899						
6	13	38	73	9241						
6	14	23	34	4304						
6	15	15	24	3038						
7	1	30	64	8101	150	985	8312.2	28.4	3.88	0.77
7	2	28	55	6962			3397.8	7.7		
7	3	26	60	7595						
7	4	20	46	5823						
7	5	26	47	5949						
7	6	32	61	7722						
7	7	37	91	11519						
7	8	18	35	4430						
7	9	35	90	11392						
7	10	35	59	7468						
7	11	36	122	15443						
7	12	33	91	11519						
7	13	10	13	1646						
7	14	34	66	8354						
7	15	26	85	10759						
8	1	23	31	3924	149	479	4042.2	21.5	4.36	0.87
8	2	38	66	8354			1871.7	7.8		
8	3	26	37	4684						
8	4	24	35	4430						
8	5	22	25	3165						
8	6	12	15	1899						
8	7	23	32	4051						
8	8	13	21	2658						
8	9	26	38	4810						
8	10	18	24	3038						
8	11	34	60	7595						
8	12	17	23	2911						
8	13	15	17	2152						
8	14	10	18	2278						
8	15	22	37	4684						

Table 7 continued:

	REPLICATE DATA				STATION DATA					
Station	Rep	Total No. Taxa	Total No. Individuals	Density (nos/m²)	Total No. Taxa	Total No. Individuals	Mean Density nos/m² (SD)	Avg. No. Taxa (SD)	H' Diversity	J' Evenness
9	1	20	60	7595	113	781	6590.7	24.1	3.56	0.75
9	2	18	42	5316			1610.8	4.8		
9	3	25	52	6582						
9	4	29	68	8608						
9	5	26	53	6709						
9	6	23	50	6329						
9	7	23	36	4557						
9	8	33	62	7848						
9	9	22	46	5823						
9	10	20	43	5443						
9	11	24	81	10253						
9	12	15	32	4051						
9	13	27	60	7595						
9	14	31	52	6582						
9	15	25	44	5570						
10	1	26	64	8101	125	511	4312.2	19.9	4.14	0.86
10	2	24	53	6709			1995.4	4.2		
10	3	16	21	2658						
10	4	14	24	3038						
10	5	18	30	3797						
10	6	17	23	2911						
10	7	26	57	7215						
10	8	23	56	7089						
10	9	24	39	4937						
10	10	17	27	3418						
10	11	13	14	1772						
10	12	20	24	3038						
10	13	22	23	2911						
10	14	17	24	3038						
10	15	21	32	4051						
11	1	17	25	3165	79	493	4160.3	15.9	3.24	0.74
11	2	14	22	2785			1325.8	3.2		
11	3	17	41	5190						
11	4	17	31	3924						
11	5	16	34	4304						
11	6	15	29	3671						
11	7	16	24	3038						
11	8	13	50	6329						
11	9	11	25	3165						
11	10	19	34	4304						
11	11	21	41	5190						
11	12	15	34	4304						
11	13	22	54	6835						
11	14	11	34	4304						
11	15	14	15	1899						
12	1	23	89	11266	110	1067	9004.2	22.1	3.02	0.64
12	2	23	56	7089			2286.9	3.4		
12	3	23	82	10380						
12	4	17	59	7468						
12	5	19	70	8861						
12	6	28	110	13924						
12	7	28	87	11013						
12	8	22	76	9620						
12	9	21	44	5570						
12	10	22	56	7089						
12	11	17	74	9367						
12	12	25	90	11392						
12	13	22	62	7848						
12	14	24	63	7975						
12	15	18	49	6203						

Table 8. Analysis of variance table for density differences across stations at the Jacksonville, Florida ODMDS, June 1998.

Source	DF	Sum of Squares	Mean Square	**F Ratio**	**Prob > F**
Station	11	14.410	1.31	**8.939**	**< 0.0001**
ln(Density+1)	168	24.620	0.147		
Total	179	39.031	0.218		

Shapiro-Wilk W Test for Normality	
W= 0.97	Prob < W = 0.08

Table 9. Tukey-Kramer post-hoc comparisons of station mean densities at the Jacksonville, Florida ODMDS, June 1998. * = significantly different at $p < 0.05$; ns = not significant.

	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8	Station 9	Station 10	Station 11	Station 12
Station 1		ns	ns	ns	ns	ns	*	ns	ns	ns	ns	*
Station 2	–		*	ns	*	ns	ns	*	ns	*	*	ns
Station 3	–	–		ns	ns	ns	*	ns	*	ns	ns	*
Station 4	–	–	–		ns	ns	*	ns	ns	ns	ns	*
Station 5	–	–	–	–		ns	*	ns	*	ns	ns	*
Station 6	–	–	–	–	–		ns	ns	ns	ns	ns	*
Station 7	–	–	–	–	–	–		*	ns	*	*	ns
Station 8	–	–	–	–	–	–	–		*	ns	ns	*
Station 9	–	–	–	–	–	–	–	–		*	*	ns
Station 10	–	–	–	–	–	–	–	–	–		ns	*
Station 11	–	–	–	–	–	–	–	–	–	–		*
Station 12	–	–	–	–	–	–	–	–	–	–	–	

Table 10. Analysis of variance table for taxa richness differences across stations for the Jacksonville, Florida ODMDS, June 1998.

Source	DF	Sum of Squares	Mean Square	**F Ratio**	**Prob > F**
Station	11	5.095	0.463	**6.807**	**< 0.0001**
ln(Taxa+1)	168	11.431	0.068		
Total	179	16.526	0.092		

Shapiro-Wilk W Test for Normality	
W= 0.97	Prob < W = 0.08

Table 11. Tukey-Kramer post-hoc comparisons of taxa richness for the Jacksonville, Florida ODMDS stations, June 1998. * = significantly different at $p < 0.05$; ns = not significant.

	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8	Station 9	Station 10	Station 11	Station 12
Station 1		ns	ns	ns	ns	ns	ns	ns	ns	ns	*	ns
Station 2	–		*	*	*	ns	ns	*	ns	*	*	ns
Station 3	–	–		ns	ns	*	*	ns	*	ns	ns	ns
Station 4	–	–	–		ns	ns	ns	ns	ns	ns	ns	ns
Station 5	–	–	–	–		ns	ns	ns	ns	ns	ns	ns
Station 6	–	–	–	–	–		ns	ns	ns	ns	*	ns
Station 7	–	–	–	–	–	–		ns	ns	*	*	ns
Station 8	–	–	–	–	–	–	–		ns	ns	ns	ns
Station 9	–	–	–	–	–	–	–	–		ns	*	ns
Station 10	–	–	–	–	–	–	–	–	–		ns	ns
Station 11	–	–	–	–	–	–	–	–	–	–		*
Station 12	–	–	–	–	–	–	–	–	–	–	–	

Table 12. Wet-weight and standing stock biomass summary for the Jacksonville, Florida ODMDS stations, June 1998.

	Mean Wet Weight (gm)	SCB (gm/m²)
Station: 1		
Annelida	0.0107	1.354
Arthropoda	0.0159	2.014
Mollusca	0.0511	6.465
Echinodermata	0.0004	0.046
Other Taxa	0.0140	1.766
Total	0.0920	11.646
Station: 2		
Annelida	0.0277	3.505
Arthropoda	0.0184	2.329
Mollusca	0.0523	6.618
Echinodermata	0.0006	0.076
Other Taxa	0.0184	2.332
Total	0.0988	14.860
Station: 3		
Annelida	0.0058	0.731
Arthropoda	0.0028	0.356
Mollusca	0.0489	6.186
Echinodermata	0.0000	0.000
Other Taxa	0.0343	4.345
Total	0.0918	11.618
Station: 4		
Annelida	0.0143	1.814
Arthropoda	0.0103	1.299
Mollusca	0.0096	1.214
Echinodermata	0.0018	0.223
Other Taxa	0.0017	0.213
Total	0.0376	4.761
Station: 5		
Annelida	0.0272	3.439
Arthropoda	0.0058	0.732
Mollusca	0.1422	18.003
Echinodermata	0.0000	0.006
Other Taxa	0.0089	1.132
Total	0.1842	23.313
Station: 6		
Annelida	0.0622	7.871
Arthropoda	0.0136	1.726
Mollusca	0.0707	8.954
Echinodermata	0.0017	0.218
Other Taxa	0.0169	2.138
Total	0.1652	20.906

	Mean Wet Weight (gm)	SCB (gm/m²)
Station: 7		
Annelida	0.0118	1.496
Arthropoda	0.0060	0.758
Mollusca	0.0525	6.642
Echinodermata	0.0005	0.067
Other Taxa	0.0036	0.457
Total	0.0744	9.419
Station: 8		
Annelida	0.0174	2.199
Arthropoda	0.0067	0.846
Mollusca	0.0313	3.960
Echinodermata	0.0020	0.254
Other Taxa	0.0353	4.473
Total	0.0927	11.732
Station: 9		
Annelida	0.2084	26.386
Arthropoda	0.0386	4.884
Mollusca	0.1674	21.189
Echinodermata	0.0000	0.001
Other Taxa	0.1765	22.341
Total	0.5909	74.800
Station: 10		
Annelida	0.0085	1.078
Arthropoda	0.0107	1.360
Mollusca	0.0176	2.226
Echinodermata	0.0080	1.010
Other Taxa	0.0047	0.592
Total	0.0495	6.268
Station: 11		
Annelida	0.0081	1.023
Arthropoda	0.0091	1.154
Mollusca	0.0289	3.663
Echinodermata	0.0000	0.003
Other Taxa	0.0011	0.138
Total	0.0473	5.981
Station: 12		
Annelida	0.0115	1.452
Arthropoda	0.0031	0.395
Mollusca	0.0290	3.672
Echinodermata	0.0000	0.003
Other Taxa	0.0028	0.349
Total	0.0464	5.871

Table 13. Data matrix for the the Jacksonville, Florida ODMDS station and taxa groups compiled from classification analysis dendrograms.

	STATION												
	4	**1**	**2**	**5**	**6**	**7**	**8**	**10**	**3**	**11**	**9**	**12**	
	A										B		
Boguea enigmatica			10			64						1	**I**
Bemlos brunneomaculatus						63		1					
Magelona filiformis							1				63	51	
Lucina radians				1		16					51	8	
Sipuncula (LPIL)		6	8			2	1				40	4	
Lucina (LPIL)			10	10	6		3		2	4		191	
Paraprionospio pinnata	1		7	14	8		10		3		24	13	
Acteocina bidentata	1					1	10	2	27	6	92	302	
Rictaxis punctostriatus		2	4		1		4	1	8	5	17	22	
Crassinella martinicensis		4	26	1	9	56			3	1			
Abra (LPIL)	4	15	15	1	1		3		7				
Erichthonius brasiliensis	15		3		13	1	5	18		1	1		
Acanthohaustorius intermedius	2	10	7			10	4	17		9			
Armandia maculata	6	5	5		4	9	2	12		1	2		
Tellina (LPIL)	41	24	34	7	10		28	23	42	17	138	83	
Caecum pulchellum		32	7	1	3	144	15	17	16	98		12	
Prionospio cristata	50	20	55	10	1	43	1	28	14	20	1	1	
Ervilia concentrica	35	28	19	3	1	47	1	13	32	10		1	
Mediomastus (LPIL)	27	52	70	25	25	9	20	47	8	1		4	
Ceratonereis irritabilis	16	17	33	35	38	3	34	22			3		
Crassinella lunulata	2	31	16	17	27	9	34	11	2		4	7	
Goniadides carolinae	2	6	11	14	20	4		10			1		
Maldanidae (LPIL)		10	32	6	2	37		1				5	
Branchiostoma (LPIL)		6	10	5	2	21	1	5		1	3		**II**
Anadara transversa	3	4	9	3	2	13	2	1	2		20	1	
Varicorbula operculata	1	3	14	2	1	13	3	1	2			12	
Rhynchocoela (LPIL)	8	4	10	6	7	7	2	2		6	4	18	
Spiophanes missionensis	12	8	17	9	6	1	3	2	4	7	2	6	
Bemlos (LPIL)	14	12	6	6	3	2	3	2		13		4	
Ophiuroidea (LPIL)	34	16	11	11	16	10	2	5		3	1	1	
Nephtys picta	3	10	8	5	12	5	5	4	4	1		2	
Metharpinia floridana	13	7	10	3		16	1	5	2	12			
Eudevenopus honduranus	10	7	9	1	4	10	1	2	3	9	2		
Spiophanes bombyx	6	5	3	5	1	10	1	6	1	6	1	2	
Cyclaspis varians	6	3	5	3	5	9	7	7	4	9	8	10	
Veneridae (LPIL)	3		6	3	4	8	6	5	7		6	10	
Tubulanus (LPIL)	3	3	1	6	6	2	6	3	3	2	12	1	
Americhelidium americanum	3	3	3	4	3		5	3	1	8	7	2	
Apoprionospio pygmaea	10		21	1		4	1		37	96		29	
Reticulocythereis sp.C									26	11	1	44	
Protohaustorius wigleyi									15	25			

Table 14. Comparisons of percent abundance of dominant taxa (> 5% of the total assemblage) for the Jacksonville, Florida ODMDS stations in 1995 and 1998.

	1995		1998	
Station	**Taxa**	**Percent of Total**	**Taxa**	**Percent of Total**
2	*Armandia maculata*	10.8	*Mediomastus* (LPIL)	8.8
	Tellina (LPIL)	9.0	*Prionospio cristata*	7.0
	Tanaissus psammophilus	5.2		
4	*Apoprionospio dayi*	8.5	*Prionospio cristata*	9.0
	Polygordius (LPIL)	30.4	*Tellina* (LPIL)	7.4
			Evilia concentrica	6.3
5	*Bhawania heteroseta*	7.8	*Mediomastus* (LPIL)	5.0
	Goniadides carolinae	5.6	*Ceratonereis irritabi*	7.1
	Armandia maculata	6.2		
	Semele bellastriata	8.5		
	Crassinella (LPIL)	5.7		
7	*Polygordius* (LPIL)	5.9	*Caecum pulchellum*	14.6
	Crassinella (LPIL)	9.0	*Boguea enigmatica*	6.5
	Arcidae (LPIL)	5.8	Tellinidae (LPIL)	6.4
			Crassinella (LPIL)	5.7
			Bemlos brunneomaculatus	6.4
10	*Polygordius* (LPIL)	23.2	*Mediomastus* (LPIL)	9.2
	Apoprionospio dayi	9.7	*Prionospio cristata*	5.5

Table 15. Percent abundance of dominant Families (> 5% of the total assemblage) for the Jacksonville, Florida ODMDS stations.

Family	**Site**	**Year**	**% of Total Assemblage**
Polygordiidae	Disposal	1995	11.19
Spionidae			8.98
Opheliidae			5.87
Tellinidae			5.84
Polygordiidae	Reference	1995	8.72
Spionidae			8.14
Tellinidae			6.90
Opheliidae			5.23
Spionidae	Disposal	1998	14.17
Capitellidae			5.51
Caecidae			5.30
Tellinidae			5.12
Scaphandridae	Reference	1998	9.88
Spionidae			9.31
Lucinidae			9.20
Tellinidae			7.56

Figure 1. Locations of benthic and sediment sampling stations at the Jacksonville, Florida ODMDS, June 1998.

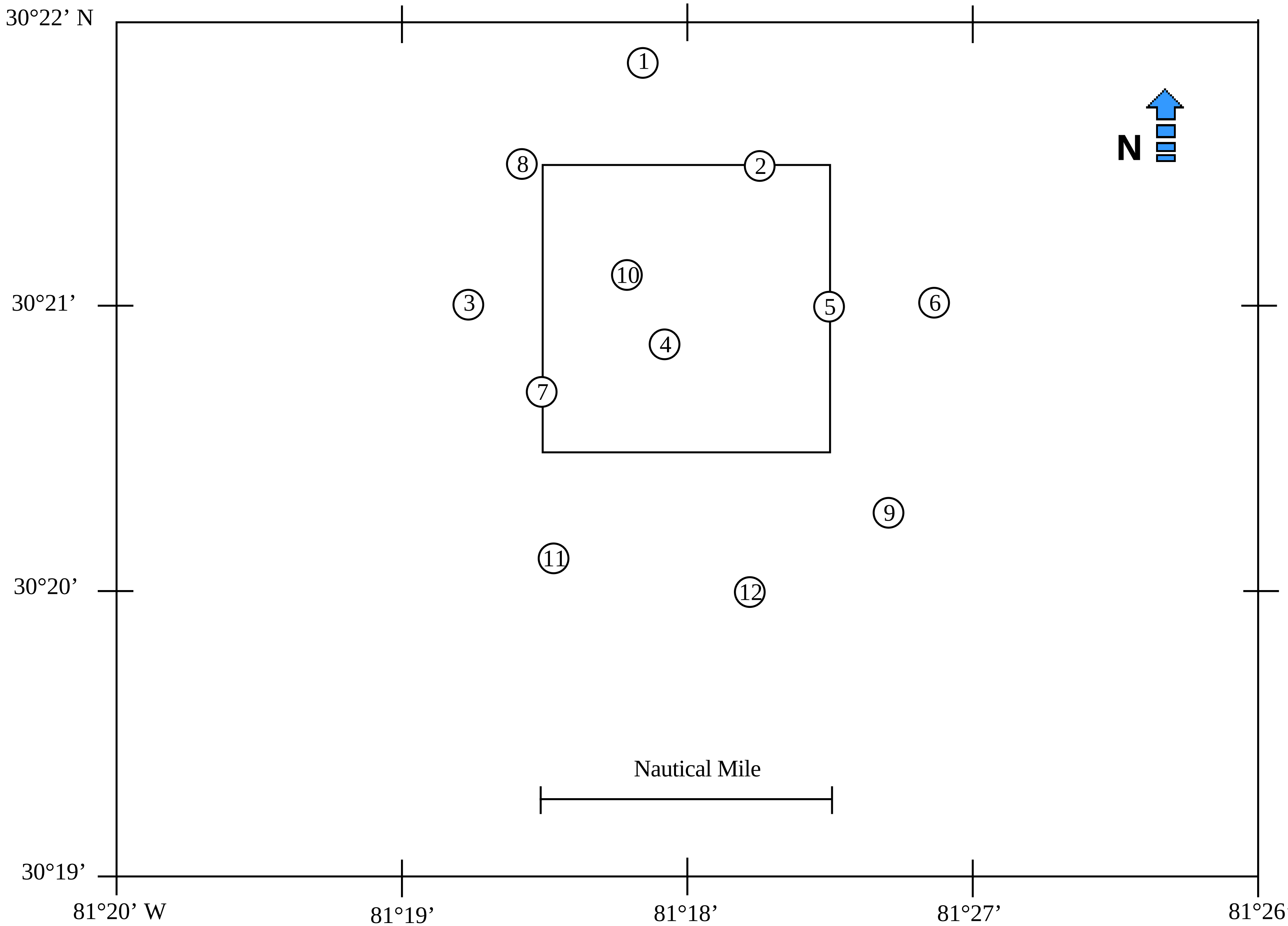


Figure 2. Sediment composition for the Jacksonville, Florida ODMDS stations, June 1998.

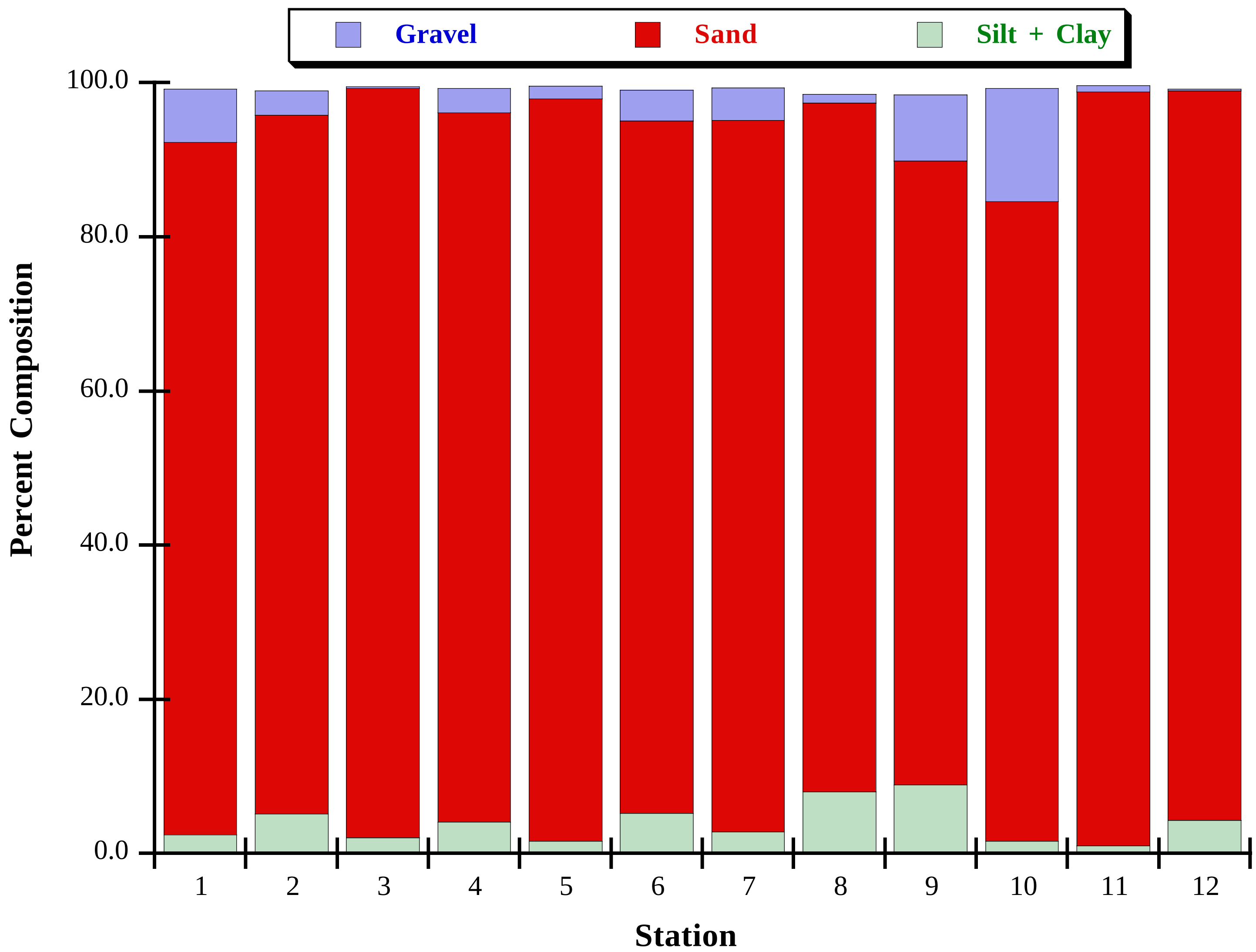


Figure 3. Sediment percent total organic carbon content for the Jacksonville, Florida ODMDS stations, June 1998.

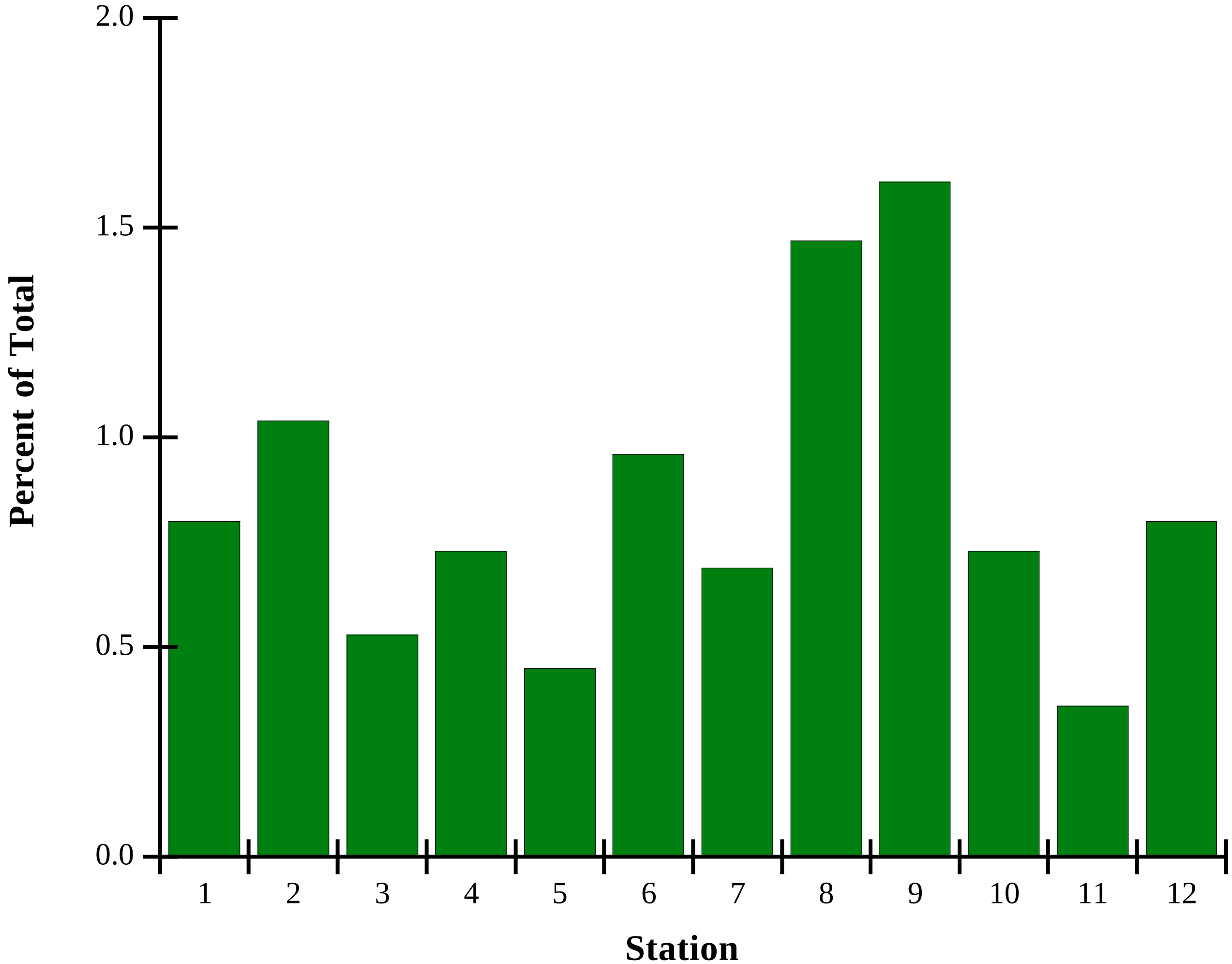


Figure 4. Abundance (as percent of the total assemblage) of major taxonomic groups at each station for the Jacksonville, Florida ODMDS stations, June 1998.

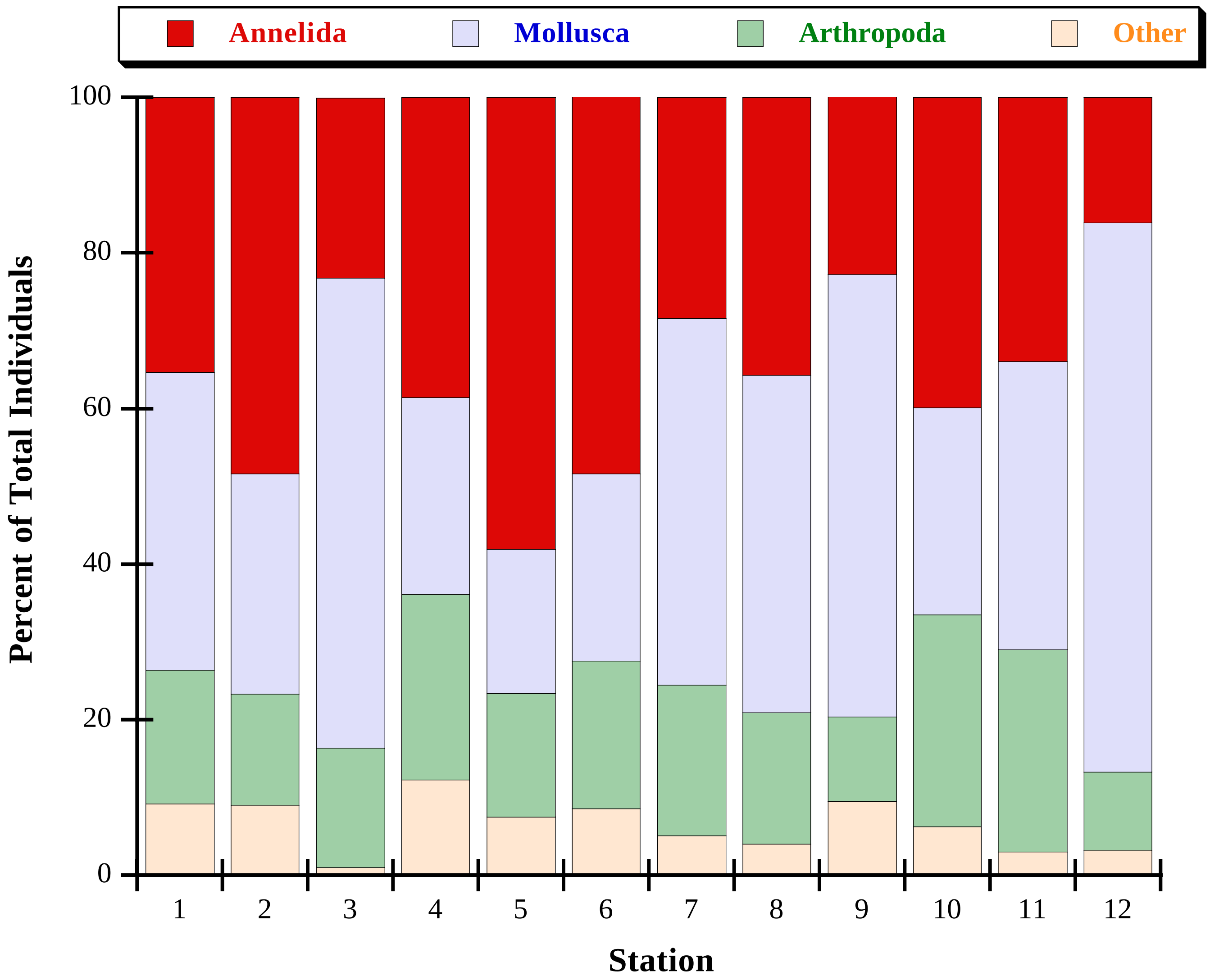


Figure 5. Taxa bundance (as percent of the total assemblage) of major taxonomic groups at each station for the Jacksonville, Florida ODMDS stations, June 1998.

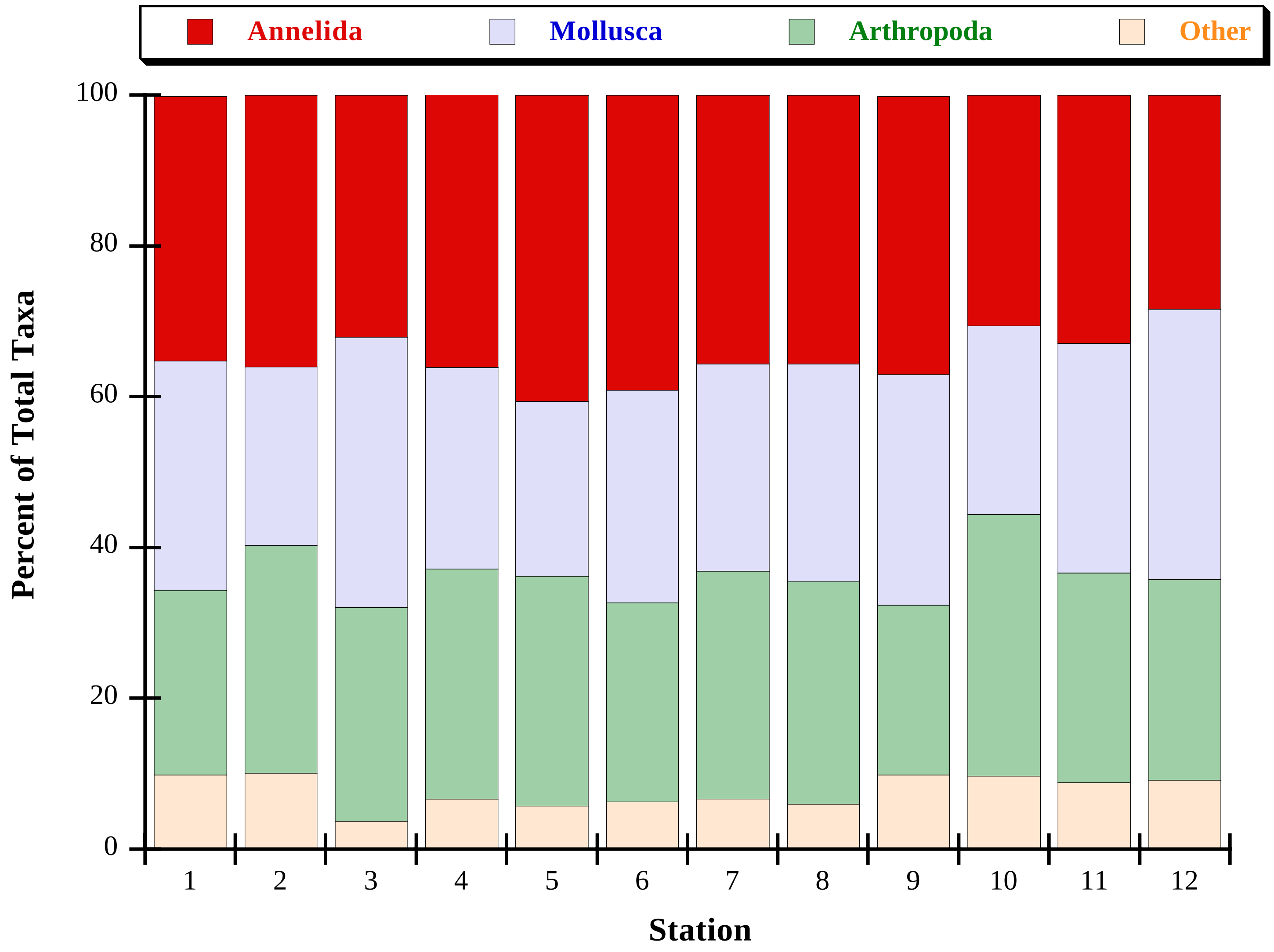


Figure 6. Macroinvertebrate densities for the Jacksonville, Florida ODMDS stations, June 1998.

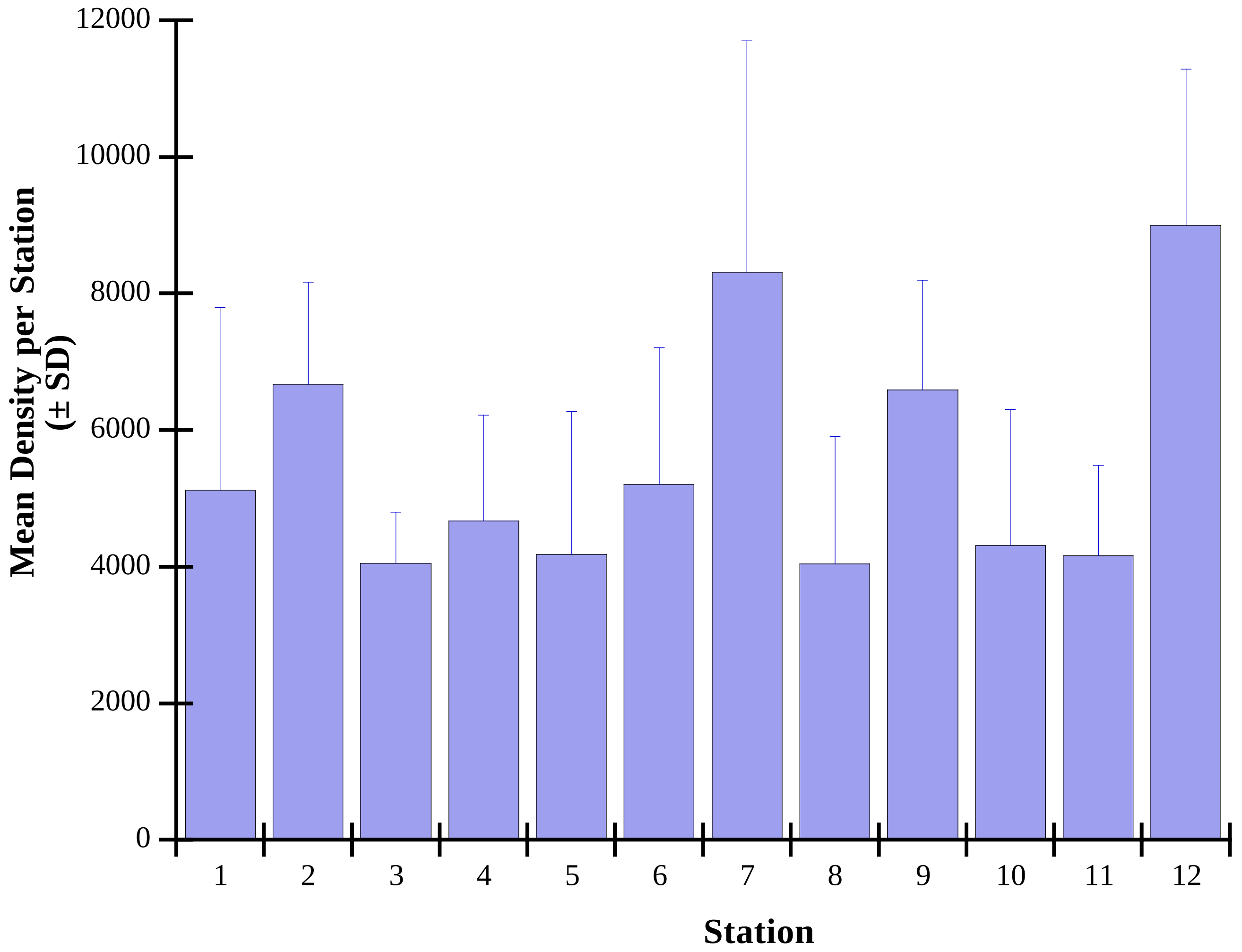


Figure 7. Macroinvertebrate taxa richness for the Jacksonville, Florida ODMDS stations, June 1998.

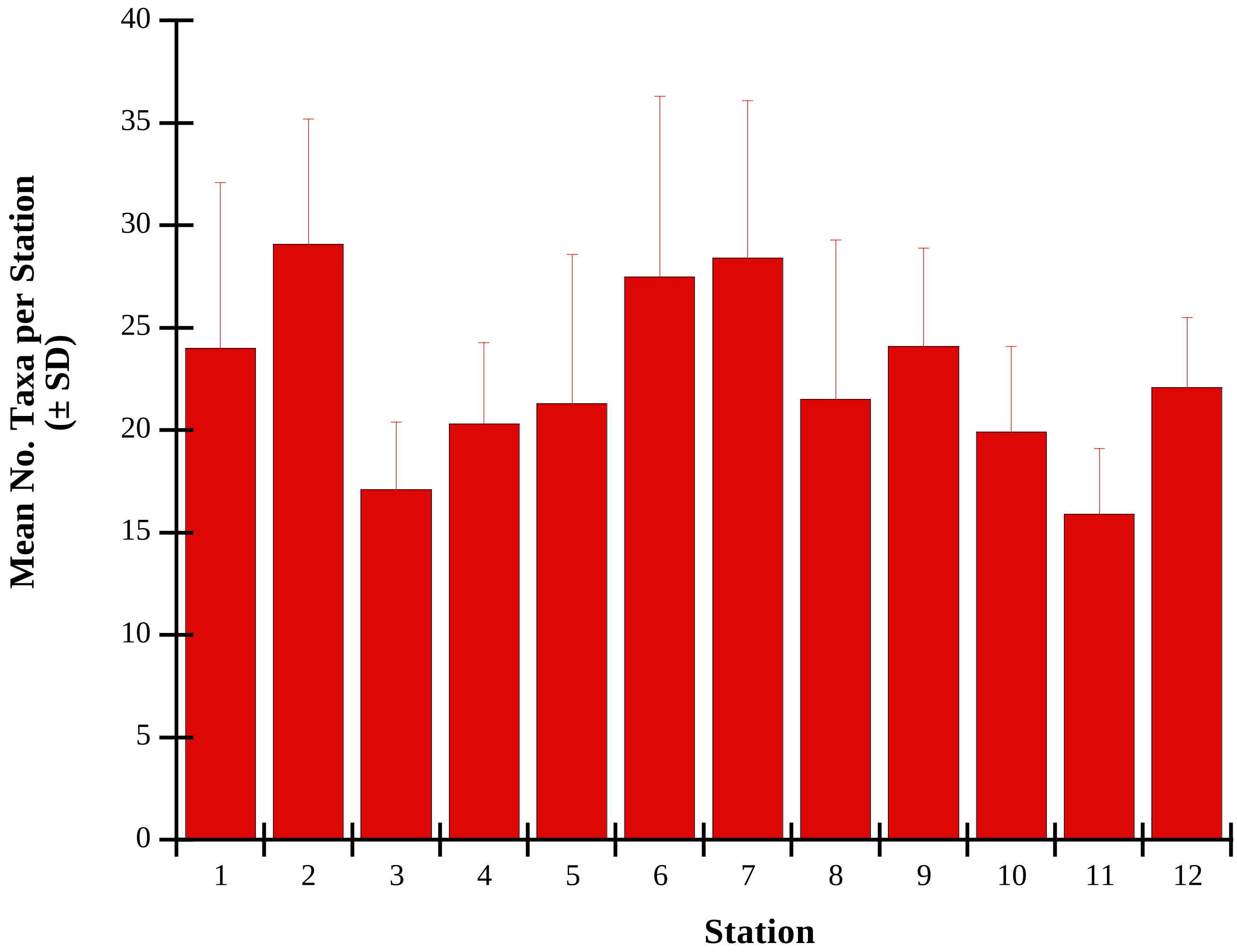
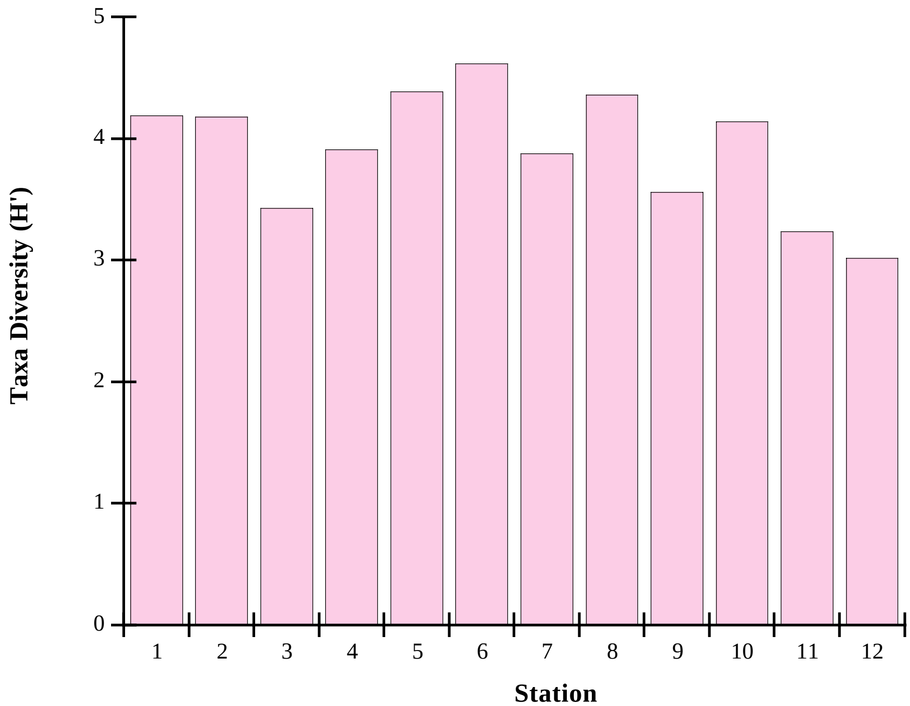


Figure 8. Taxa diversity (H’) and evenness (J’) for the Jacksonville, Florida ODMDS stations, June 1998.



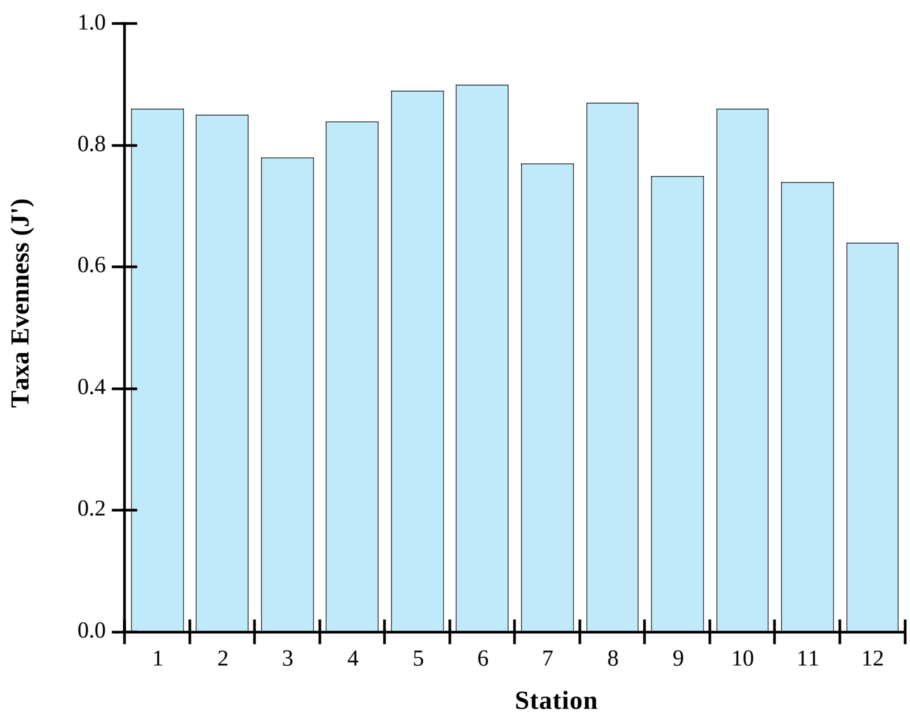


Figure 9. Total biomass summary for the Jacksonville, Florida ODMDS stations, June 1998.

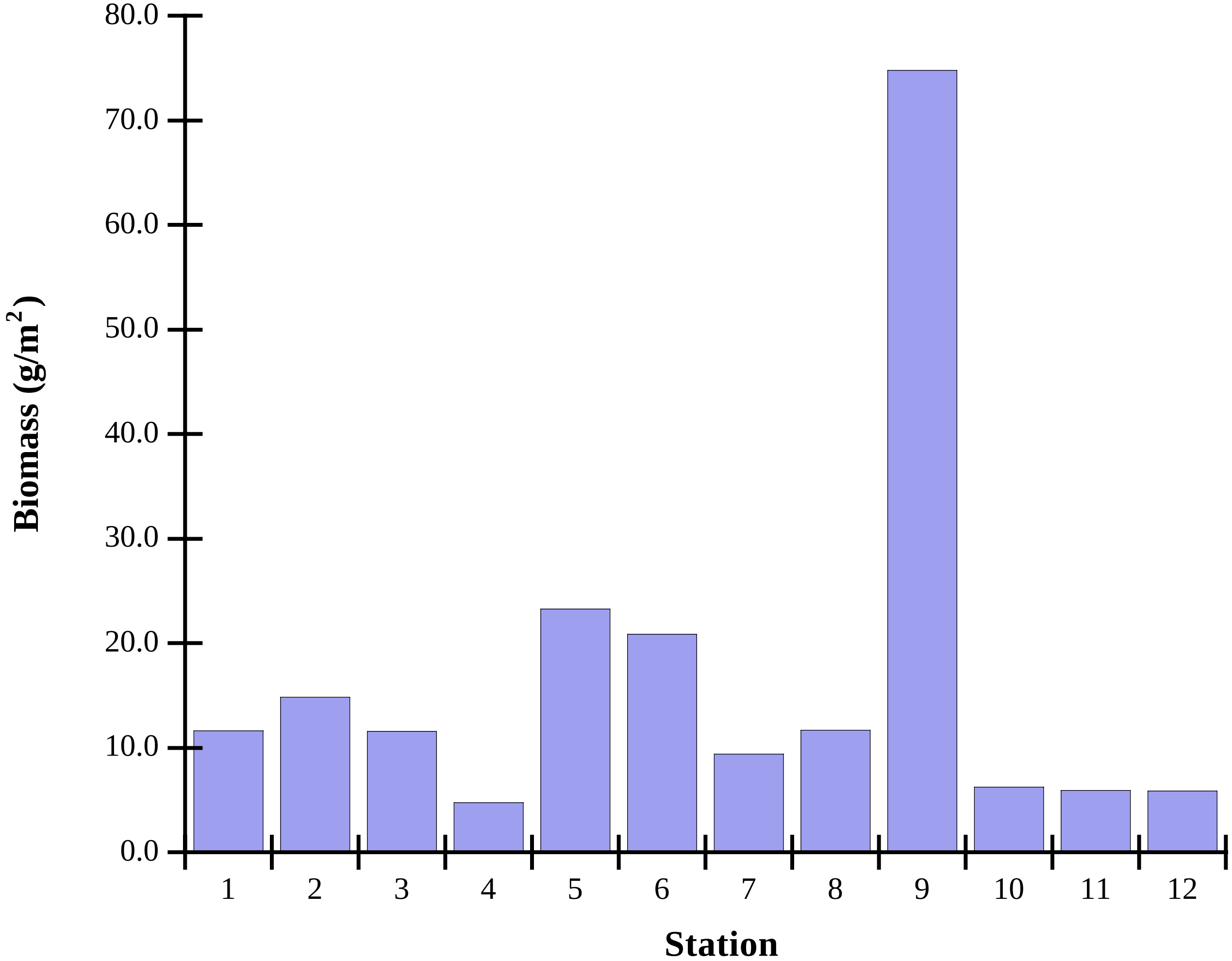
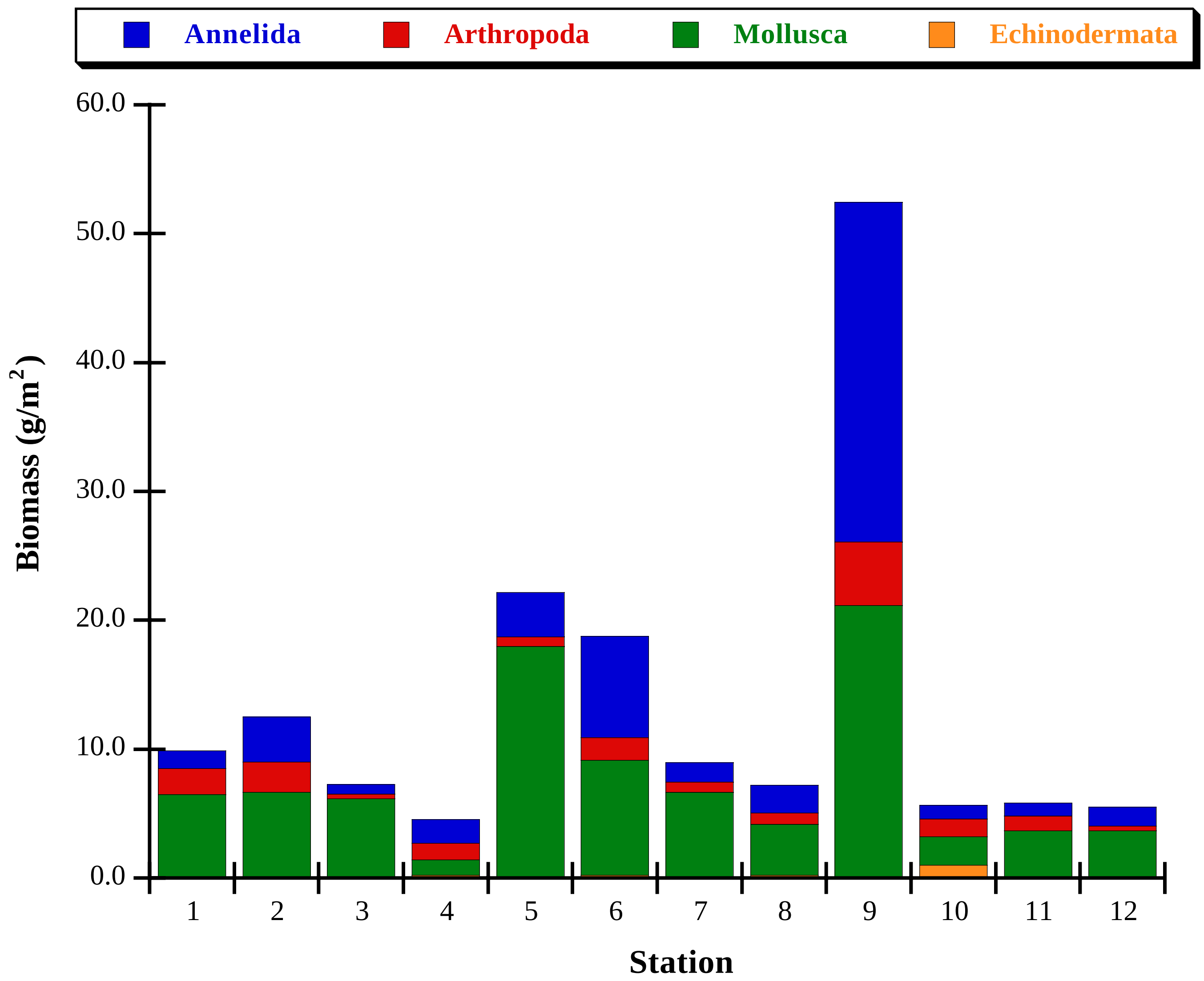


Figure 10. Biomass summary of major taxonomic groups for the Jacksonville, Florida ODMDS stations, June 1998.



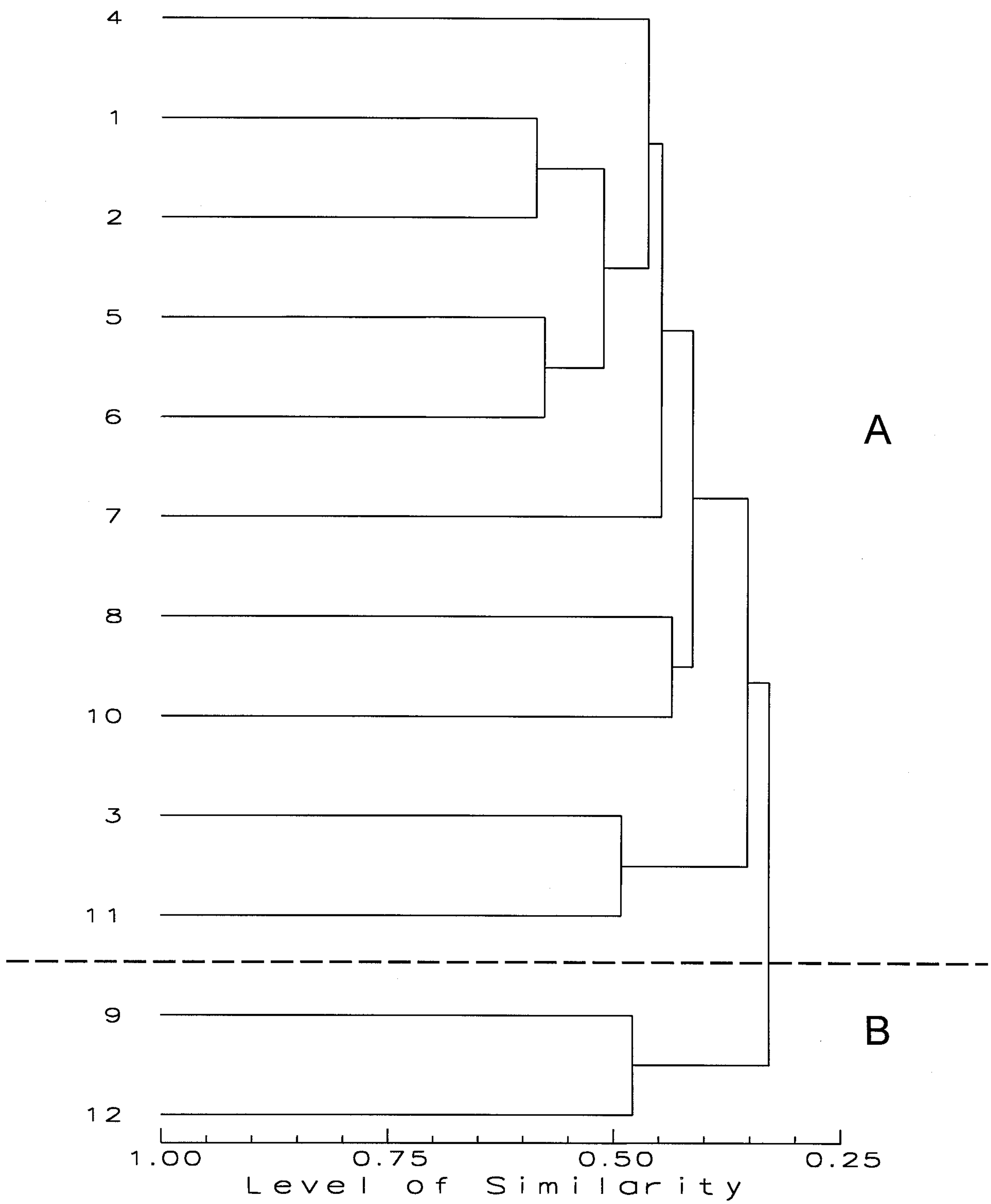


Figure 11. Normal (station) classification analysis for the Jacksonville, Florida ODMDS stations, June 1998. Bolded letters indicate station groups.

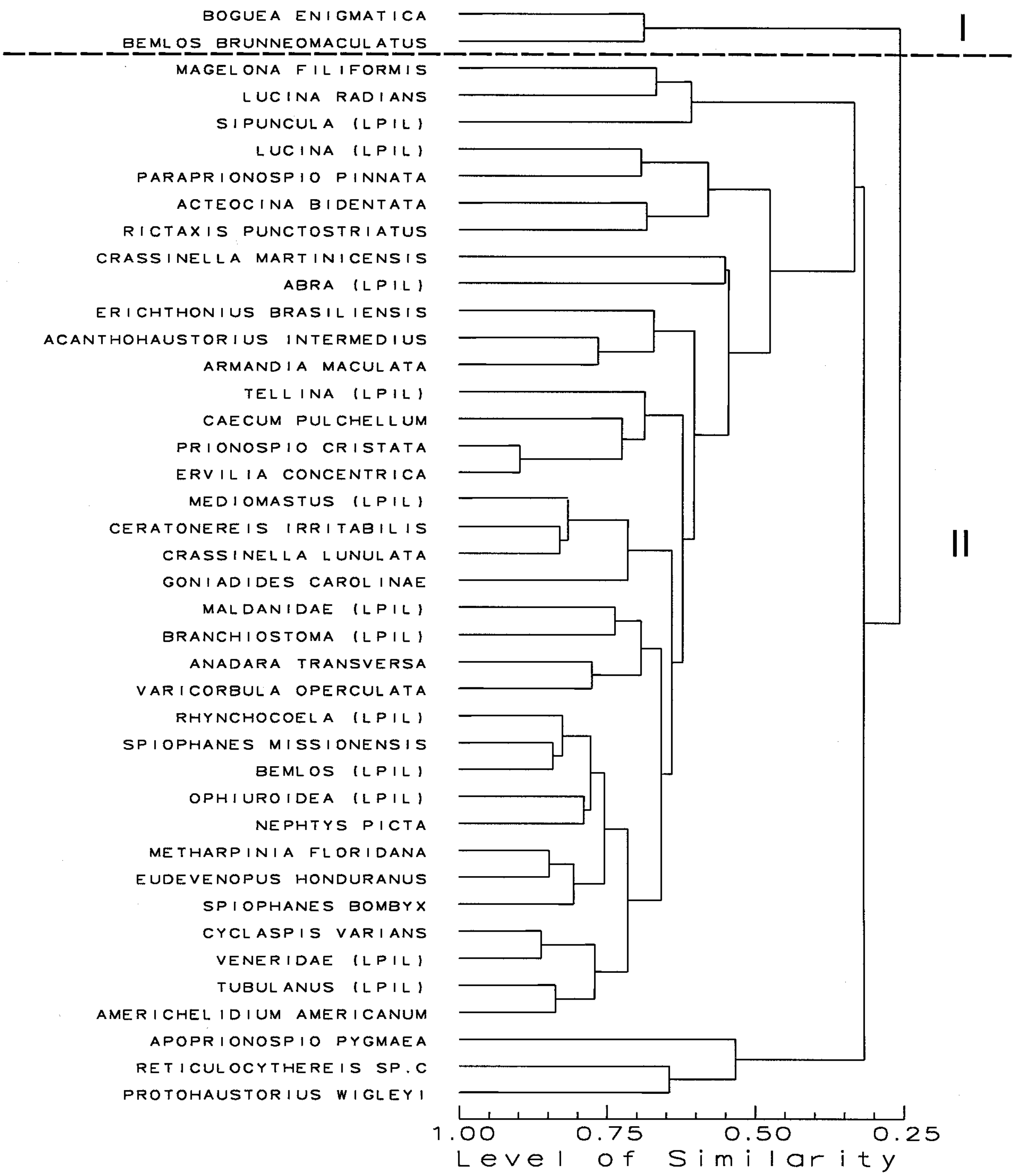


Figure 12. Inverse (taxa) classification analysis for the Jacksonville, Florida ODMDS stations, June 1998. Bolded numerals indicate taxa groups.

Figure 13. Comparisons of macroinvertebrate taxa richness for the Jacksonville, Florida ODMDS stations in 1995 and 1998. For pair-wise comparisons, ns = not significant and * = significant.

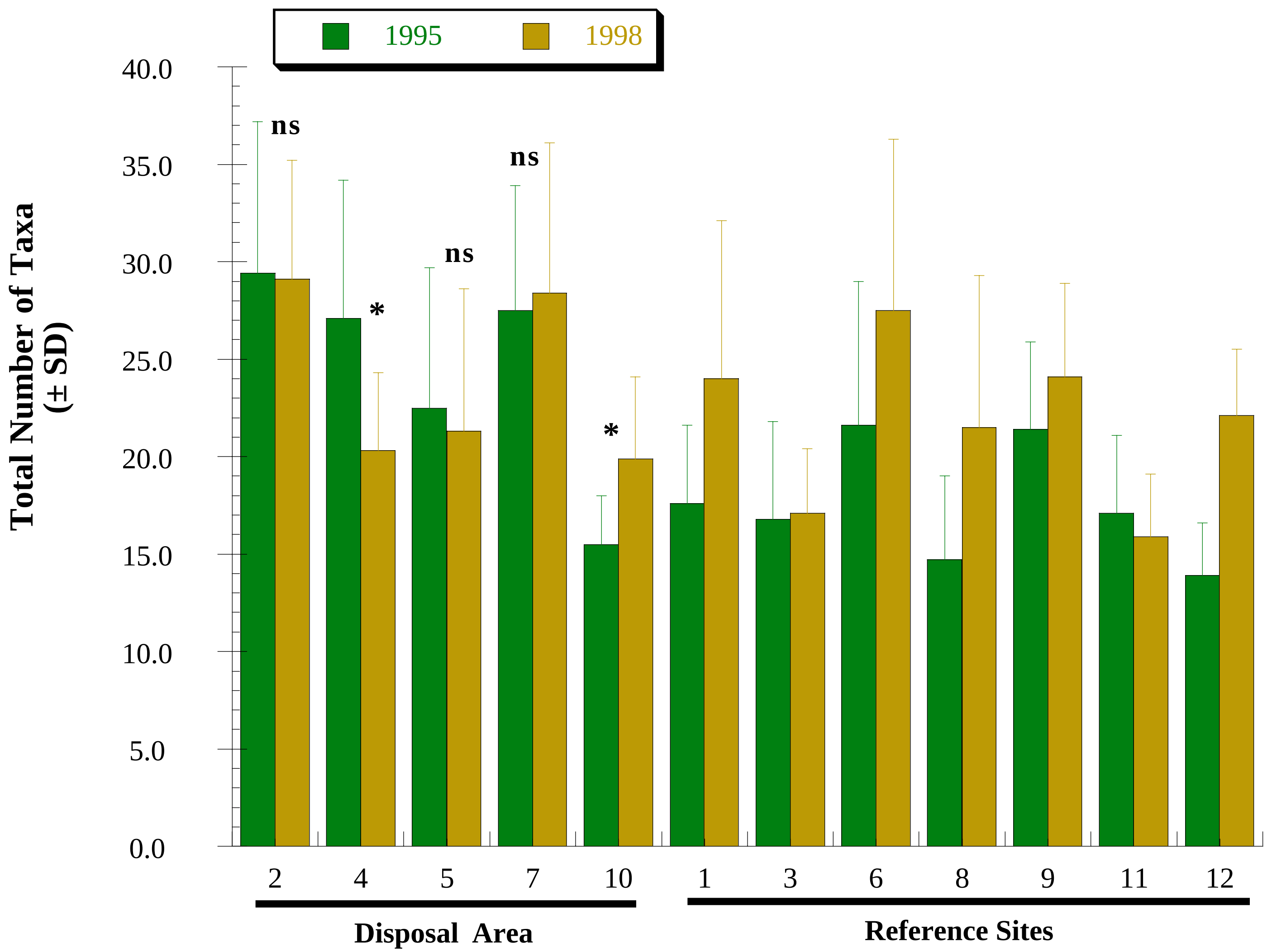
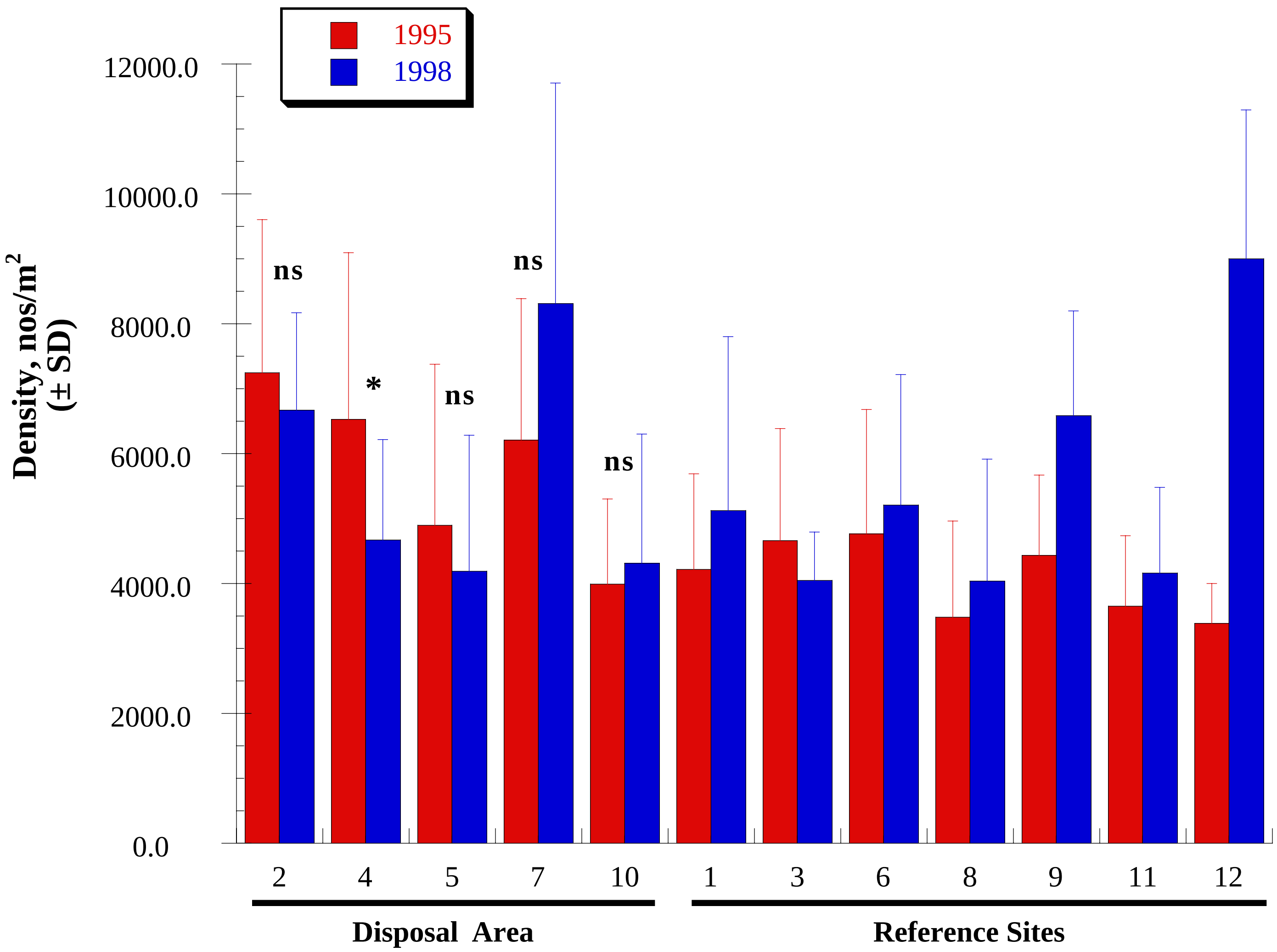
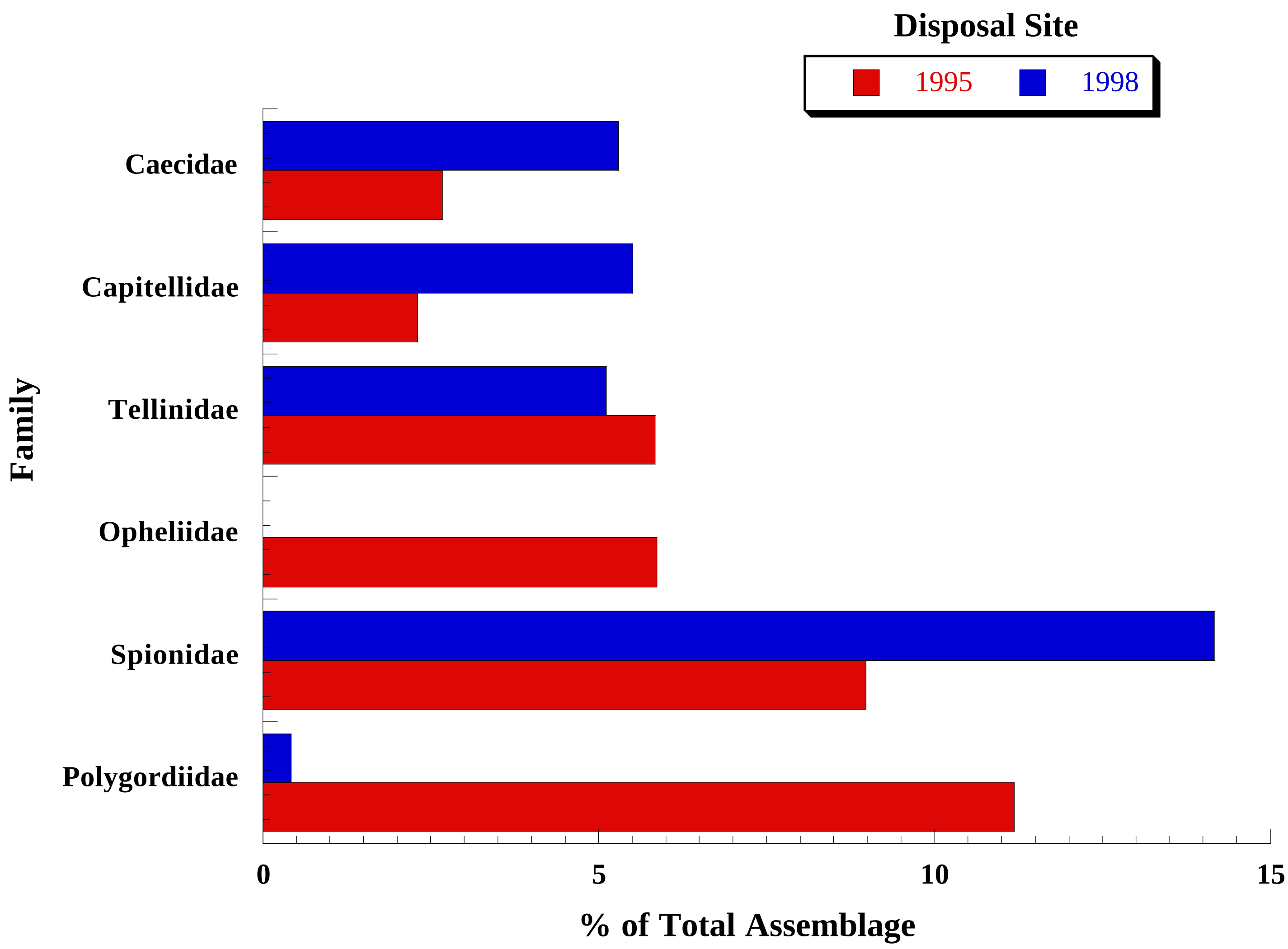
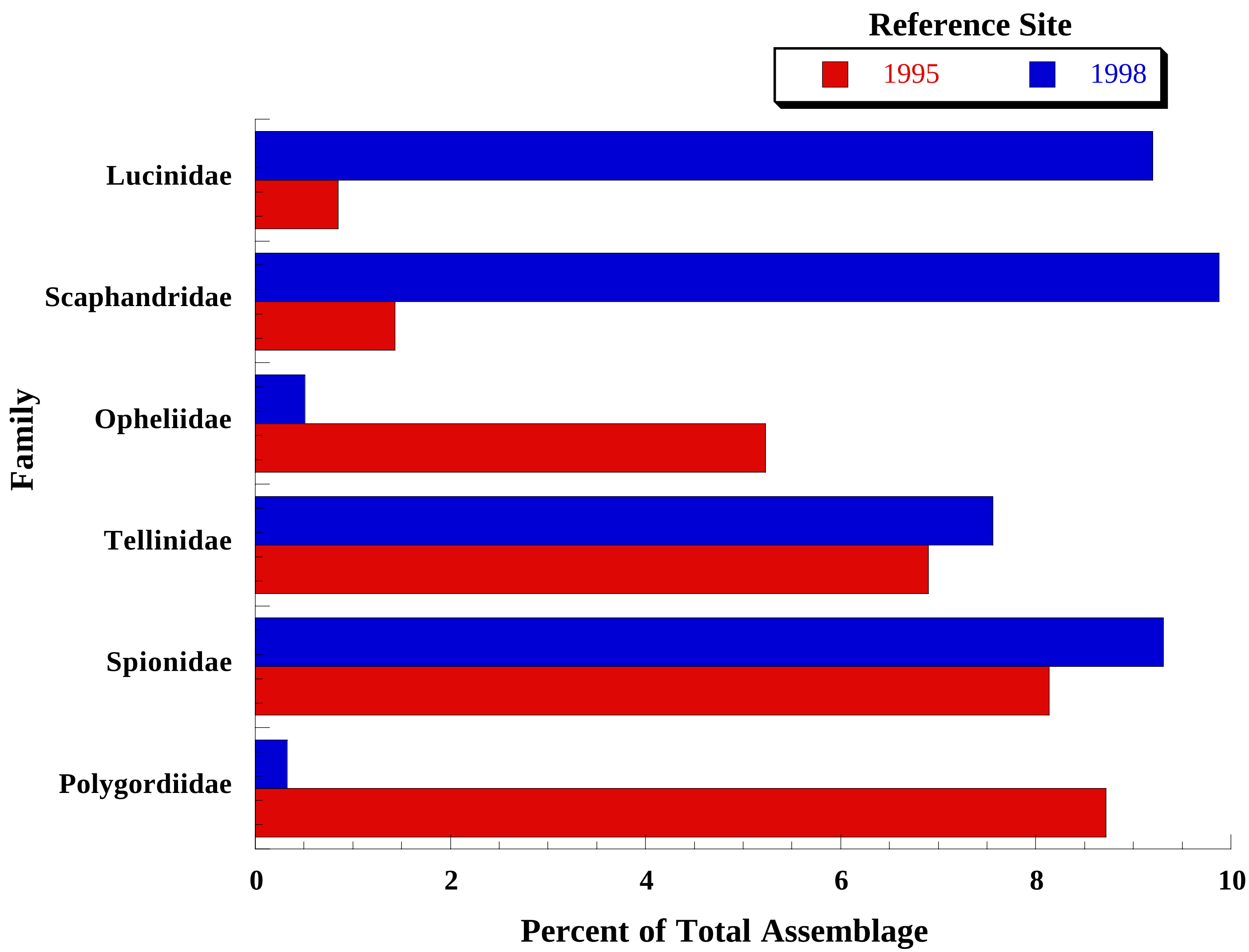


Figure 14. Comparisons of macroinvertebrate densities for the Jacksonville, Florida ODMDS stations in 1995 and 1998. For pair-wise comparisons, ns = not significant and * = significant.




Disposal Site
1995
1998
Family
Caecidae
Capitellidae
Tellinidae
Opheliidae
Spionidae
Polygordiidae
0
5
10
15
% of Total Assemblage


Reference Site
1995
1998
Lucinidae
Scaphandridae
Opheliidae
Tellinidae
Spionidae
Polygordiidae
Family
0
2
4
6
8
10
Percent of Total Assemblage