



**FERNANDINA BEACH, FLORIDA ODMDS 2005 BENTHIC
COMMUNITY ASSESSMENT**

Submitted to

**U.S. Environmental Protection Agency, Region 4
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1.0 INTRODUCTION

The Fernandina Beach, Florida Ocean Dredged Material Disposal Site (ODMDS) was investigated by the U.S. Environmental Protection Agency (EPA) during 2005 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 Fernandina Beach ODMDS is located approximately 7 nautical miles east of Fernandina Beach, FL and 8.5 nautical miles northeast of the St. Johns River entrance channel. Six benthic monitoring stations were located within the disposal area and six stations were located just outside this area (Table 1, Figure 1).

2.0 METHODS

2.1 Sample Collection And Handling

A modified-Young grab (area = 0.04 m²) was used to collect bottom samples at each of twelve stations (Figure 1). Six stations were located within the ODMDS and six were positioned outside the ODMDS. 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. Samples were also collected at each station for sediment texture analysis.

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 labeled 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 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. Infaunal abundance is reported as the total number of individuals per station

and the total number of individuals per square meter (= density). Taxa richness is reported as the number of taxa represented in a given station collection.

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

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

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

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

p_i = the number of individuals of the i'th taxa 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 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, $J' = H' / H'_{\max}$. An additional measure of richness, Margalef's D, was calculated as $(s-1)/\ln(n)$, where s = number of taxa and n = total number of individuals (Pielou 1966).

Univariate comparisons (ANOVA) of biomass, taxa richness and density were made assuming that each station within and outside the ODMDS were replicates.

3.2 Cluster, ANOSIM and SIMPER Analyses

Cluster analysis was performed on the benthic macroinvertebrate data by calculating the Bray-Curtis similarity coefficient for all pairs of sampling stations, after having transformed (e.g.

square root, \ln_e) the original taxa abundances (Clarke and Gorley 2003). Clusters were formed using the group-average linkage method between similarities. A non-parametric multi-dimensional scaling (MDS) was then performed on the similarity matrix generated by the cluster analysis. MDS represents sample stations in 2-dimensional space such that the relative distances apart of all points were in the same rank order as the relative dissimilarities of the samples as calculated by the Bray-Curtis coefficients. Points close together in an MDS plot represents sample stations that were very similar in taxa composition and points that were far apart represent very different assemblages (Clarke and Gorley 2003).

The ANOSIM (Analysis of Similarities) test was calculated to assess assemblage differences between samples within and outside the ODMDS using the Bray-Curtis similarity matrix. Subsequently, the SIMPER test was used to identify which taxa accounted for any observed differences between assemblage groups. The ANOSIM and SIMPER tests were calculated using PRIMER (Clarke and Gorley 2003).

4.0 HABITAT CHARACTERISTICS

Sediment data for the 12 stations are given in Table 2 and Figure 2. Bottom sediments at stations outside the ODMDS averaged > 98% sand. Sediments inside the ODMDS at Stations F04, F08 and F09 averaged > 97% sand, while Stations F05, F06 and F10 had significant gravel fractions (20%, 18% and 39%, respectively). In a 1989 benthic survey of the ODMDS, the outer five stations surveyed averaged >93% sand, while three stations inside the ODMDS had >75% sand and two other stations inside the ODMDS had significant gravel fractions (>21%) (Table 2).

5.0 BENTHIC COMMUNITY CHARACTERIZATION

5.1 Faunal Composition, Abundance, And Community Structure

A total of 2251 organisms, representing 255 taxa, were identified from the 12 stations (Table 3). Polychaetes were the most numerous organisms present representing 58.9% of the total assemblage, followed in abundance by bivalves (13.3%), malacostracans (10.2%) and gastropods (6.0%). Polychaetes represented 45.1% of the total number of taxa followed by malacostracans (23.5%), bivalves (11.4%) and gastropods (9.0%) (Table 3). The percent abundance of major taxa at each station is given in Table 4 and Figure 3. Station F01 outside the ODMDS was dominated by annelids (polychaetes), while the remaining stations outside the ODMDS were dominated by a mixed annelid/mollusk assemblage. Three stations within the ODMDS (F04, F05, F10) were dominated by annelids (polychaetes). Station F06 was dominated by a mixed annelid/mollusk assemblage and Station F09 by a mixed annelid/malacostracan assemblage (Table 4, Figure 3).

Wet-weight biomass data for the major taxonomic groups is summarized for each station are given in Table 5 and Figure 4. Biomass at Stations F01, F02, F03, F11 and F12 outside the ODMDS had a wet-weight biomass $<0.5 \text{ g/m}^2$, while Station F07 had a weight-biomass of 2.1544 g/m^2 due to the abundance of arthropods (Table 5). Biomass at Stations F04, F08 and F09 inside the ODMDS had wet-weight biomass $<0.1 \text{ g/m}^2$. Biomass at Stations F05 and F06 was dominated by mollusks, while biomass at Station F10 was dominated by both annelids and mollusks (Figure 4). The average biomass inside the ODMDS was 0.9566 (SD = 0.9194) and 0.5564 (SD = 0.5873) outside the ODMDS. There was no significant difference, however, in biomass between stations inside and outside the ODMDS ($F = 5.32$, $P = 0.44$, $df = 1, 8$).

The dominant taxon collected from the 12 Fernandina ODMDS stations was the polychaete, *Bhawania heteroseta*, representing 5.2% of the total number of individuals (Table 6). Other dominant taxa collected included the polychaete Family, Maldanidae (LPIL) and the polychaetes, *Prionospio cristata*, *Mediomastus* (LPIL) and *Polygordius* (LPIL) representing 4.9%, 4.6%, 3.9% and 3.1% of the total assemblage, respectively (Table 6). The chordate, *Branchiostoma* (LPIL) was the most widely distributed taxon being found at 67% of the stations (Table 6). Those taxa representing more than 5% of the assemblage at each station are given in Table 7. In general the stations outside the ODMDS were dominated by a mixed assemblage of polychaetes, bivalves and gastropods, while the assemblages within the ODMDS were dominated by various polychaete taxa (Table 7).

Taxa richness data for the 12 ODMDS stations are given in Table 8 and Figure 5. Taxa richness ranged from 20 taxa/station at Station F03 to 50 taxa/station at Station F01 outside the ODMDS and from 20 at Station F08 to 88 at Station F05 inside the ODMDS. Taxa richness averaged 34.0 taxa/station outside the ODMDS and 54.0 taxa/station inside the ODMDS. There was no significant difference in taxa richness between stations inside and outside the ODMDS ($F = 4.965$, $P = 0.196$, $df = 1, 10$).

Density data for the 12 ODMDS stations are given in Table 8 and Figure 6. Densities ranged from 625 organisms/m² at Station F07 to 3800 organisms/m² at Station F01 outside the ODMDS and from 1025 organisms/m² at Station F08 to 17875 organisms/m² at Station F10 inside the ODMDS. Densities averaged 2025.0 organisms/m² outside the ODMDS and 7354.2 organisms/m² inside the ODMDS. There was no significant difference in density between stations inside and outside the ODMDS ($F = 4.965$, $P = 0.113$, $df = 1, 10$).

Taxa diversity and evenness for the ODMDS stations are given in Table 8 and Figures 7 and 8. Taxa diversity (H') showed a similar range of variation outside and within the ODMDS and averaged 3.09 and 3.24, respectively (Table 8). Taxa evenness (J') also exhibited a similar range of variation outside and within the ODMDS and averaged 0.90 and 0.86, respectively. The community indices showed considerable uniformity between stations. There was no predictable pattern in community indices between stations within and outside the disposal area (Figures 7 and 8).

5.2 Cluster, ANOSIM and SIMPER Analyses

Cluster analysis of the 12 ODMDS stations is given in Figure 9. There were two main clusters of stations; the first cluster included all of the stations outside the ODMDS except for Station F11 and Stations F04 and F08 from within the ODMDS; the second cluster included Stations F05, F06 and F10 from within the ODMDS and Station F09 and F11 from outside the ODMDS. Stations F05, F06 and F10 clustered together and the assemblages probably reflected the fact that the sediment at these stations was distinct from that found at the other stations (gravelly sand and sandy gravel vs sand). The results of the MDS analysis are given in Figure 10. The groupings in the MDS reflect the major groupings found in the cluster analysis. Stations F05, F06 and F10 again were in a tight grouping reflecting similar biological assemblages; Station F09, F11 and F07 were outliers, while the remaining stations had similar assemblages (Figure 10).

The results of the ANOSIM reflect the general similarity in assemblages between stations within and outside the ODMDS: Global $R = 0.109$, significance of $R = 18.2\%$ - these data indicate that the null hypothesis that the assemblages within and outside the ODMDS are similar

should be accepted. The results of the SIMPER analysis which list those taxa contributing to the dissimilarity between stations within and outside the ODMDS are given in Appendix I.

6.0 2005 vs. 1989 COMPARISONS

Biological data collected from the disposal site in 2005 can be compared to data collected from the same site in 1989 (Barry A. Vittor & Associates, Inc. 1990). Sediment texture data from 1989 and 2005 are summarized in Table 2 and Figure 11. Sediment composition at the 5 stations sampled outside the ODMDS in 1989 was variable: sand was found at Stations F6 and F12, silty sand at Station F1 and slightly gravelly sand at Stations F2 and F11. Sediment composition at the 6 stations outside the ODMDS sampled in 2005 was > 97% sand. Sediment at stations within the ODMDS in 1989 was also variable with sand at one station, slightly gravelly sand at two stations and gravelly sand at two stations. In 2005, three stations had sandy sediments (F04, F08, F09), two had gravelly sand sediments (F05 and F06) and one had sandy gravel sediments (F10).

One biologically significant difference between the 1989 and 2005 events was in the total number of samples taken. In 1989, fifteen replicates were taken (using a 0.0079 m² diver core) at each of the ten stations for a total of 147 samples (3 samples were lost during processing) compared to a single sample taken with a modified Young grab (0.04 m²) at each of the 12 stations in 2005 for a total of 12 samples. The discrepancy in the number of samples taken has a potentially biologically significant effect on the number of taxa collected as well as the overall abundance of the taxa.

In 1989, 15823 individuals representing 423 taxa were collected from 147 samples collected at the 10 stations. Annelids (polychaetes) were the dominant taxa collected representing 46% of the individuals and 40% of the taxa collected. Dominant polychaetes

included the Family Serpulidae, *Exogone dispar*, *Parapionosyllis longicirrata*, *Bhawania heteroseta* and *Polygordius* (LPIL). Arthropods represented 7% of individuals and 29% of taxa collected. Dominant arthropods included the ostracod, *Reticulocythereis* sp. A and *Acetes* sp. A and *Glyptoplax* (LPIL). Mollusks represented 42% of the individuals and 25% of the taxa. Dominant mollusks included *Crassinella lunulata* and *Gouldia cerina*. The dominant annelid and mollusk taxa collected in 2005 were similar to those collected in 1989 (Table 6). The arthropod dominants between 1989 and 2005 were different, probably due to chance (147 samples were analyzed in 1989, but only 12 in 2005) and the low abundances of this group in both years.

In 1989, stations inside the ODMDS had significantly higher taxa richness and density than stations outside the ODMDS (Table 9, Barry A. Vittor & Associates, Inc. 1990). Taxa richness inside the ODMDS averaged 29.5 taxa/station and 19.6 taxa/station outside the ODMDS, while densities averaged 19152.2 organisms/m² inside and 7746.0 organisms/m² outside the ODMDS (Table 9). In 2005 taxa richness was higher both inside (54.0 vs. 29.5) and outside (34.0 vs. 19.6) the ODMDS than in 1989. In 1989 densities were higher both within (19152.2 vs. 7354.2) and outside (7746.0 vs. 2025.0) the ODMDS than in 2005. However, comparisons of taxa richness and density between 1989 and 2005 are problematic due to differences in sampling methodologies.

8.0 LITERATURE CITED

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- Clarke, K.R. and R.N. Gorley. 2003. PRIMER 5 (Plymouth Routines in Multivariate Ecological Research). Plymouth Marine Laboratory, Plymouth, United Kingdom.
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Table 1. Location of the Fernandina Beach, Florida ODMDS sampling stations, 2005

Station	Latitude (N) Degrees, minutes	Longitude (W) Degrees, minutes
Outside the ODMDS		
F01	30° 34.00'	81° 18.00'
F02	30° 33.29'	81° 18.89'
F03	30° 33.28'	81° 16.58'
F07	30° 32.00'	81° 19.70'
F11	30° 30.26'	81° 16.60'
F12	30° 30.00'	81° 18.00'
Inside the ODMDS		
F04	30° 32.75'	81° 18.85'
F05	30° 32.75'	81° 17.15'
F06	30° 32.59'	81° 18.03'
F08	30° 32.00'	81° 18.85'
F09	30° 32.00'	81° 18.00'
F10	30° 31.36'	81° 17.78'

Table 2. Sediment data for the USEPA Fernandina ODMDS stations, 1989 and 2005.

Station	% Gravel	% Sand	% Silt+Clay	Textural Description	Inman's Statistics	
					Median phi	Sorting Coeff
Outside the ODMDS						
F01	0	98.85	1.15	sand	2.067	0.995
F02	0	98.94	1.06	sand	2.517	0.874
F03	0	99.79	0.21	sand	2.451	0.516
F07	0.72	98.55	0.72	sand	2.490	0.439
F11	1.00	98.71	0.29	sand	1.038	0.88
F12	0	97.49	2.51	sand	3.226	0.688
	0.29	98.72	0.99			
Inside the ODMDS						
F04	2.13	97.53	0.33	sand	2.183	0.815
F05	20.03	76.33	3.64	gravelly sand	0.722	1.743
F06	18.09	80.81	1.11	gravelly sand	1.015	1.987
F08	0.15	99.19	0.66	sand	2.591	0.572
F09	1.10	98.70	0.20	sand	2.181	0.845
F10	39.35	55.39	5.26	sandy gravel	*	*
	13.48	84.66	1.87			

*Cannot calculate due to the high percentage of gravel

1989 Data

Station	% Gravel	% Sand	% Silt+Clay	Textural Description
Outside ODMDS				
1	2.3	89.54	8.32	silty sand
2	3.82	93.52	1.84	slightly gravelly sand
6	1.12	95.64	2.52	sand
11	2.66	95.75	1.04	slightly gravelly sand
12	0.48	94.38	3.71	sand
	2.08	93.77	3.49	
Inside ODMDS				
5	5.13	91.63	2.55	slightly gravelly sand
7	0.94	97.4	1.19	sand
8	21.76	75.58	1.83	gravelly sand
9	32.16	63.8	2.21	gravelly sand
10	2.12	93.81	3.35	slightly gravelly sand
	12.42	84.44	2.23	

Table 3. Summary of overall abundance of major benthic macroinfaunal taxonomic groups for the Fernandina ODMDS stations, 2005.

Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
Annelida				
Oligochaeta	2	0.8	65	2.9
Polychaeta	115	45.1	1,326	58.9
Mollusca				
Bivalvia	29	11.4	299	13.3
Gastropoda	23	9.0	136	6.0
Polyplacophora	1	0.4	2	0.1
Scaphopoda	2	0.8	4	0.2
Arthropoda				
Malacostraca	60	23.5	230	10.2
Ostracoda	5	2.0	8	0.4
Echinodermata				
Asteroidea	1	0.4	1	0.0
Holothuroidea	1	0.4	1	0.0
Ophiuroidea	2	0.8	56	2.5
Other Taxa	14	5.5	123	5.5
Total	255		2,251	

Table 4. Summary of abundance of major benthic macroinfaunal taxonomic groups by station for the Fernandina ODMDS stations, 2005.

Station	Taxa	Total No. Taxa	% Total	Total No. Individuals	% Total
F01	Annelida	33	66.0	110	72.4
	Mollusca	2	4.0	10	6.6
	Arthropoda	8	16.0	8	5.3
	Echinodermata	1	2.0	17	11.2
	Other Taxa	6	12.0	7	4.6
	Total	50		152	100.0
F02	Annelida	14	43.8	27	45.0
	Mollusca	8	25.0	14	23.3
	Arthropoda	4	12.5	6	10.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	6	18.8	13	21.7
	Total	32		60	100.0
F03	Annelida	6	30.0	12	25.5
	Mollusca	9	45.0	28	59.6
	Arthropoda	2	10.0	3	6.4
	Echinodermata	1	5.0	2	4.3
	Other Taxa	2	10.0	2	4.3
	Total	20		47	100.0
F07	Annelida	10	47.6	10	40.0
	Mollusca	3	14.3	5	20.0
	Arthropoda	5	23.8	7	28.0
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	14.3	3	12.0
	Total	21		25	100.0
F11	Annelida	21	46.7	37	33.0
	Mollusca	12	26.7	32	28.6
	Arthropoda	7	15.6	11	9.8
	Echinodermata	1	2.2	5	4.5
	Other Taxa	4	8.9	27	24.1
	Total	45		112	100.0
F12	Annelida	12	33.3	34	37.8
	Mollusca	14	38.9	38	42.2
	Arthropoda	5	13.9	7	7.8
	Echinodermata	0	0.0	0	0.0
	Other Taxa	5	13.9	11	12.2
	Total	36		90	100.0

Table 4 continued:

Station	Taxa	Total No.		Total No.	
		Taxa	% Total	Individuals	% Total
F04	Annelida	18	66.7	41	77.4
	Mollusca	3	11.1	3	5.7
	Arthropoda	4	14.8	4	7.5
	Echinodermata	0	0.0	0	0.0
	Other Taxa	2	7.4	5	9.4
	Total	27		53	100.0
F05	Annelida	51	58.0	236	70.0
	Mollusca	17	19.3	52	15.4
	Arthropoda	11	12.5	24	7.1
	Echinodermata	4	4.5	10	3.0
	Other Taxa	5	5.7	15	4.5
	Total	88		337	100.0
F06	Annelida	44	50.6	262	45.7
	Mollusca	14	16.1	179	31.2
	Arthropoda	24	27.6	109	19.0
	Echinodermata	2	2.3	14	2.4
	Other Taxa	3	3.4	9	1.6
	Total	87		573	100.0
F08	Annelida	9	45.0	27	65.9
	Mollusca	4	20.0	7	17.1
	Arthropoda	4	20.0	4	9.8
	Echinodermata	0	0.0	0	0.0
	Other Taxa	3	15.0	3	7.3
	Total	20		41	100.0
F09	Annelida	13	52.0	21	45.7
	Mollusca	2	8.0	2	4.3
	Arthropoda	8	32.0	17	37.0
	Echinodermata	1	4.0	5	10.9
	Other Taxa	1	4.0	1	2.2
	Total	25		46	100.0
F10	Annelida	42	54.5	574	80.3
	Mollusca	13	16.9	71	9.9
	Arthropoda	14	18.2	38	5.3
	Echinodermata	1	1.3	5	0.7
	Other Taxa	7	9.1	27	3.8
	Total	77		715	100.0

Table 5. Weight-weight biomass of major benthic macroinfaunal groups by station for the Fernandina ODMDS stations, 2005.

Station	Taxa Group	Biomass (gm/m²)	Station	Taxa Group	Biomass (gm/m²)
F01	Annelida	0.3906	F04	Annelida	0.1115
	Mollusca	0.0036		Mollusca	0.0027
	Arthropoda	0.0059		Arthropoda	0.0409
	Echinodermata	0.0018		Echinodermata	0.0000
	Other Taxa	0.0132		Other Taxa	0.0018
	Total	0.4151		Total	0.1569
F02	Annelida	0.0524	F05	Annelida	0.1944
	Mollusca	0.1133		Mollusca	0.6008
	Arthropoda	0.0121		Arthropoda	0.0198
	Echinodermata	0.0000		Echinodermata	0.0305
	Other Taxa	0.0201		Other Taxa	0.0968
	Total	0.1979		Total	0.9423
F03	Annelida	0.0049	F06	Annelida	0.2361
	Mollusca	0.0400		Mollusca	1.1612
	Arthropoda	0.0001		Arthropoda	0.1493
	Echinodermata	0.0001		Echinodermata	0.0405
	Other Taxa	0.0014		Other Taxa	0.0026
	Total	0.0465		Total	1.5897
F07	Annelida	0.0132	F08	Annelida	0.0226
	Mollusca	0.0042		Mollusca	0.0033
	Arthropoda	2.1344		Arthropoda	0.0022
	Echinodermata	0.0000		Echinodermata	0.0000
	Other Taxa	0.0026		Other Taxa	0.0080
	Total	2.1544		Total	0.0361
F11	Annelida	0.1003	F09	Annelida	0.0506
	Mollusca	0.0211		Mollusca	0.0058
	Arthropoda	0.0376		Arthropoda	0.0311
	Echinodermata	0.0036		Echinodermata	0.0060
	Other Taxa	0.0238		Other Taxa	0.0001
	Total	0.1864		Total	0.0936
F12	Annelida	0.0313	F10	Annelida	0.8488
	Mollusca	0.0342		Mollusca	0.4472
	Arthropoda	0.0011		Arthropoda	0.1416
	Echinodermata	0.0000		Echinodermata	0.0416
	Other Taxa	0.3261		Other Taxa	0.0726
	Total	0.3927		Total	1.5518

Table 6. Distribution and abundance and of benthic macroinfaunal taxa for the Fernandina ODMDS stations, 2005.

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
<i>Bhawania heteroseta</i>	Ann	Poly	117	5.20	5.20	3	25
Maldanidae (LPIL)	Ann	Poly	111	4.93	10.13	4	33
<i>Prionospio cristata</i>	Ann	Poly	103	4.58	14.70	3	25
<i>Mediomastus</i> (LPIL)	Ann	Poly	87	3.86	18.57	6	50
<i>Polygordius</i> (LPIL)	Ann	Poly	69	3.07	21.63	7	58
<i>Prionospio</i> (LPIL)	Ann	Poly	66	2.93	24.57	6	50
<i>Anadara transversa</i>	Mol	Biva	65	2.89	27.45	3	25
<i>Armandia maculata</i>	Ann	Poly	65	2.89	30.34	7	58
<i>Magelona</i> sp. H	Ann	Poly	56	2.49	32.83	3	25
<i>Crassinella lunulata</i>	Mol	Biva	55	2.44	35.27	5	42
<i>Odostomia</i> (LPIL)	Mol	Gast	51	2.27	37.54	1	8
Ophiuroidea (LPIL)	Ech	Ophi	51	2.27	39.80	7	58
<i>Gouldia cerina</i>	Mol	Biva	46	2.04	41.85	4	33
<i>Goniadides carolinae</i>	Ann	Poly	39	1.73	43.58	3	25
Tubificidae (LPIL)	Ann	Olig	38	1.69	45.27	5	42
Nereididae (LPIL)	Ann	Poly	37	1.64	46.91	7	58
<i>Branchiostoma</i> (LPIL)	Cho	Lept	31	1.38	48.29	8	67
<i>Globosolembos smithi</i>	Art	Mala	31	1.38	49.67	1	8
<i>Tellina</i> (LPIL)	Mol	Biva	29	1.29	50.96	5	42
<i>Apoprionospio pygmaea</i>	Ann	Poly	27	1.20	52.15	6	50
Enchytraeidae (LPIL)	Ann	Olig	27	1.20	53.35	3	25
Capitellidae (LPIL)	Ann	Poly	26	1.16	54.51	7	58
<i>Exogone lourei</i>	Ann	Poly	26	1.16	55.66	4	33
<i>Parapionosyllis longicirrata</i>	Ann	Poly	26	1.16	56.82	3	25
<i>Paraprionospio pinnata</i>	Ann	Poly	26	1.16	57.97	5	42
Rhynchocoela (LPIL)	Rhy	-	25	1.11	59.08	7	58
Cirratulidae (LPIL)	Ann	Poly	23	1.02	60.11	6	50
<i>Acteocina bidentata</i>	Mol	Gast	22	0.98	61.08	6	50
<i>Pleuromeris tridentata</i>	Mol	Biva	20	0.89	61.97	2	17
<i>Aricidea</i> (LPIL)	Ann	Poly	19	0.84	62.82	5	42
Bivalvia (LPIL)	Mol	Biva	19	0.84	63.66	5	42
<i>Lumbrineris latreilli</i>	Ann	Poly	18	0.80	64.46	3	25
<i>Autolytus</i> (LPIL)	Ann	Poly	16	0.71	65.17	2	17
<i>Dulichella</i> sp. A	Art	Mala	16	0.71	65.88	2	17
<i>Laonice cirrata</i>	Ann	Poly	16	0.71	66.59	3	25
<i>Neomegamphopus</i> (LPIL)	Art	Mala	16	0.71	67.30	4	33
Phyllodocidae (LPIL)	Ann	Poly	15	0.67	67.97	5	42
Turbellaria (LPIL)	Pla	Turb	14	0.62	68.59	3	25
Ampharetidae (LPIL)	Ann	Poly	13	0.58	69.17	3	25
<i>Aspidosiphon gosnoldi</i>	Sip	-	13	0.58	69.75	4	33
Hesionidae (LPIL)	Ann	Poly	13	0.58	70.32	3	25
<i>Caecum johnsoni</i>	Mol	Gast	12	0.53	70.86	4	33
<i>Liljeborgia</i> sp. A	Art	Mala	12	0.53	71.39	4	33
<i>Mooreonuphis pallidula</i>	Ann	Poly	12	0.53	71.92	5	42
<i>Magelona pettiboneae</i>	Ann	Poly	11	0.49	72.41	3	25
<i>Owenia fusiformis</i>	Ann	Poly	11	0.49	72.90	5	42
<i>Caecum pulchellum</i>	Mol	Gast	10	0.44	73.35	4	33
<i>Chone</i> (LPIL)	Ann	Poly	10	0.44	73.79	2	17
<i>Nephtys picta</i>	Ann	Poly	10	0.44	74.23	5	42
<i>Protohadzia schoenerae</i>	Art	Mala	10	0.44	74.68	1	8
Aoridae (LPIL)	Art	Mala	9	0.40	75.08	1	8
Goneplacidae (LPIL)	Art	Mala	9	0.40	75.48	2	17

Table 6 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
<i>Goniada littorea</i>	Ann	Poly	9	0.40	75.88	5	42
<i>Schistomeringos pectinata</i>	Ann	Poly	9	0.40	76.28	2	17
<i>Acteocina candei</i>	Mol	Gast	8	0.36	76.63	4	33
<i>Apanthura cracentia</i>	Art	Mala	8	0.36	76.99	1	8
<i>Arabella mutans</i>	Ann	Poly	8	0.36	77.34	1	8
<i>Dentatisyllis carolinae</i>	Ann	Poly	8	0.36	77.70	1	8
<i>Ervilia concentrica</i>	Mol	Biva	8	0.36	78.05	3	25
Lumbrineridae (LPIL)	Ann	Poly	8	0.36	78.41	4	33
<i>Polycirrus eximius</i>	Ann	Poly	8	0.36	78.76	3	25
<i>Syllis gracilis</i>	Ann	Poly	8	0.36	79.12	1	8
<i>Tharyx acutus</i>	Ann	Poly	8	0.36	79.48	1	8
<i>Aspidosiphon albus</i>	Sip	-	7	0.31	79.79	5	42
Lineidae (LPIL)	Rhy	Anop	7	0.31	80.10	4	33
<i>Phyllodoce</i> (LPIL)	Ann	Poly	7	0.31	80.41	3	25
Xanthidae (LPIL)	Art	Mala	7	0.31	80.72	2	17
<i>Aglaophamus verrilli</i>	Ann	Poly	6	0.27	80.99	2	17
<i>Dipolydora socialis</i>	Ann	Poly	6	0.27	81.25	4	33
<i>Glycera americana</i>	Ann	Poly	6	0.27	81.52	3	25
<i>Lucina multilineata</i>	Mol	Biva	6	0.27	81.79	2	17
<i>Magelona papillicornis</i>	Ann	Poly	6	0.27	82.05	4	33
<i>Photis</i> (LPIL)	Art	Mala	6	0.27	82.32	3	25
<i>Spiophanes missionensis</i>	Ann	Poly	6	0.27	82.59	4	33
Tellinidae (LPIL)	Mol	Biva	6	0.27	82.85	1	8
Amphiuridae (LPIL)	Ech	Ophi	5	0.22	83.07	2	17
<i>Bemlos brunneomaculatus</i>	Art	Mala	5	0.22	83.30	2	17
<i>Diplodonta</i> (LPIL)	Mol	Biva	5	0.22	83.52	3	25
<i>Ehlersia ferrugina</i>	Ann	Poly	5	0.22	83.74	1	8
<i>Eumida sanguinea</i>	Ann	Poly	5	0.22	83.96	2	17
Eunicidae (LPIL)	Ann	Poly	5	0.22	84.18	2	17
<i>Kupellonura</i> sp. B	Art	Mala	5	0.22	84.41	3	25
<i>Lumbrinerides acuta</i>	Ann	Poly	5	0.22	84.63	2	17
<i>Metharpinia floridana</i>	Art	Mala	5	0.22	84.85	2	17
Paguridae (LPIL)	Art	Mala	5	0.22	85.07	2	17
<i>Panoplax depressa</i>	Art	Mala	5	0.22	85.30	1	8
Spionidae (LPIL)	Ann	Poly	5	0.22	85.52	2	17
Terebellidae (LPIL)	Ann	Poly	5	0.22	85.74	2	17
<i>Tubulanus</i> (LPIL)	Rhy	Anop	5	0.22	85.96	2	17
<i>Americhelidium americanum</i>	Art	Mala	4	0.18	86.14	4	33
<i>Anodontia alba</i>	Mol	Biva	4	0.18	86.32	1	8
<i>Arabella multidentata</i>	Ann	Poly	4	0.18	86.49	1	8
<i>Cyclaspis varians</i>	Art	Mala	4	0.18	86.67	2	17
<i>Diopatra cuprea</i>	Ann	Poly	4	0.18	86.85	2	17
<i>Ensis directus</i>	Mol	Biva	4	0.18	87.03	1	8
<i>Eunice</i> (LPIL)	Ann	Poly	4	0.18	87.21	1	8
<i>Exogone atlantica</i>	Ann	Poly	4	0.18	87.38	3	25
<i>Glycera</i> (LPIL)	Ann	Poly	4	0.18	87.56	3	25
<i>Kurtziella rubella</i>	Mol	Gast	4	0.18	87.74	2	17
<i>Lepidonotus</i> sp. A	Ann	Poly	4	0.18	87.92	2	17
<i>Maera</i> sp. D	Art	Mala	4	0.18	88.09	1	8
Melitidae (LPIL)	Art	Mala	4	0.18	88.27	2	17
<i>Phascolion strombi</i>	Sip	-	4	0.18	88.45	1	8
<i>Phoronis</i> (LPIL)	Pho	-	4	0.18	88.63	4	33
<i>Pisione remota</i>	Ann	Poly	4	0.18	88.80	1	8
<i>Psammolyce arenosa</i>	Ann	Poly	4	0.18	88.98	1	8

Table 6 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
<i>Pythinella cuneata</i>	Mol	Biva	4	0.18	89.16	1	8
<i>Rildardanus laminosa</i>	Art	Mala	4	0.18	89.34	1	8
<i>Scoloplos rubra</i>	Ann	Poly	4	0.18	89.52	3	25
<i>Spiochaetopterus oculatus</i>	Ann	Poly	4	0.18	89.69	3	25
<i>Spiophanes bombyx</i>	Ann	Poly	4	0.18	89.87	2	17
<i>Aonides mayaguezensis</i>	Ann	Poly	3	0.13	90.00	1	8
<i>Aspidosiphon</i> (LPIL)	Sip	-	3	0.13	90.14	2	17
<i>Asteropterygion oculitristis</i>	Art	Ostr	3	0.13	90.27	3	25
<i>Calyptraea centralis</i>	Mol	Gast	3	0.13	90.40	2	17
Cnidaria (LPIL)	Cni	-	3	0.13	90.54	2	17
<i>Dentalium laqueatum</i>	Mol	Scap	3	0.13	90.67	1	8
<i>Diplodonta punctata</i>	Mol	Biva	3	0.13	90.80	1	8
Glyceridae (LPIL)	Ann	Poly	3	0.13	90.94	3	25
<i>Heterocrypta granulata</i>	Art	Mala	3	0.13	91.07	2	17
<i>Latreutes parvulus</i>	Art	Mala	3	0.13	91.20	2	17
<i>Maera</i> (LPIL)	Art	Mala	3	0.13	91.34	1	8
Montacutidae (LPIL)	Mol	Biva	3	0.13	91.47	1	8
Mytilidae (LPIL)	Mol	Biva	3	0.13	91.60	2	17
<i>Paleanotus</i> sp. A	Ann	Poly	3	0.13	91.74	2	17
Sabellidae (LPIL)	Ann	Poly	3	0.13	91.87	2	17
<i>Scoletoma</i> (LPIL)	Ann	Poly	3	0.13	92.00	2	17
<i>Sipuncula</i> (LPIL)	Sip	-	3	0.13	92.14	3	25
<i>Tectonatica pusilla</i>	Mol	Gast	3	0.13	92.27	3	25
<i>Turbonilla</i> (LPIL)	Mol	Gast	3	0.13	92.40	1	8
Turridae (LPIL)	Mol	Gast	3	0.13	92.54	2	17
<i>Albunea paretii</i>	Art	Mala	2	0.09	92.63	1	8
<i>Amakusanthura magnifica</i>	Art	Mala	2	0.09	92.71	2	17
<i>Ampelisca vadorum</i>	Art	Mala	2	0.09	92.80	1	8
<i>Anomia simplex</i>	Mol	Biva	2	0.09	92.89	2	17
<i>Apocorophium simile</i>	Art	Mala	2	0.09	92.98	1	8
<i>Apseudes</i> sp. A	Art	Mala	2	0.09	93.07	1	8
<i>Aricidea taylori</i>	Ann	Poly	2	0.09	93.16	2	17
<i>Armandia agilis</i>	Ann	Poly	2	0.09	93.25	2	17
Brachiopoda (LPIL)	Bra	-	2	0.09	93.34	1	8
<i>Brania wellfleetensis</i>	Ann	Poly	2	0.09	93.43	2	17
<i>Caecum floridanum</i>	Mol	Gast	2	0.09	93.51	1	8
<i>Cirrophorus</i> (LPIL)	Ann	Poly	2	0.09	93.60	2	17
<i>Cirrophorus ilvana</i>	Ann	Poly	2	0.09	93.69	1	8
<i>Crepidula plana</i>	Mol	Gast	2	0.09	93.78	1	8
Decapoda (LPIL)	Art	Mala	2	0.09	93.87	1	8
<i>Euceramus praelongus</i>	Art	Mala	2	0.09	93.96	2	17
<i>Eudevenopus honduranus</i>	Art	Mala	2	0.09	94.05	1	8
<i>Eusarsiella</i> sp. L	Art	Ostr	2	0.09	94.14	1	8
<i>Filogranula</i> sp. A	Ann	Poly	2	0.09	94.22	1	8
<i>Gibberosus myersi</i>	Art	Mala	2	0.09	94.31	2	17
<i>Golfingia</i> (LPIL)	Sip	-	2	0.09	94.40	1	8
<i>Litocorsa antennata</i>	Ann	Poly	2	0.09	94.49	2	17
Lucinidae (LPIL)	Mol	Biva	2	0.09	94.58	1	8
<i>Magelona</i> (LPIL)	Ann	Poly	2	0.09	94.67	1	8
<i>Mediomastus californiensis</i>	Ann	Poly	2	0.09	94.76	2	17
<i>Mesanthura</i> (LPIL)	Art	Mala	2	0.09	94.85	1	8
<i>Metatiron tropakis</i>	Art	Mala	2	0.09	94.94	2	17
<i>Mitrella lunata</i>	Mol	Gast	2	0.09	95.02	1	8
<i>Neomegamphopus kalanii</i>	Art	Mala	2	0.09	95.11	1	8

Table 6 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
Nephtyidae (LPIL)	Ann	Poly	2	0.09	95.20	2	17
<i>Nephtys simoni</i>	Ann	Poly	2	0.09	95.29	1	8
<i>Nucula aegeensis</i>	Mol	Biva	2	0.09	95.38	1	8
<i>Onuphis eremita oculata</i>	Ann	Poly	2	0.09	95.47	2	17
Pectinidae (LPIL)	Mol	Biva	2	0.09	95.56	2	17
Pinnotheridae (LPIL)	Art	Mala	2	0.09	95.65	2	17
<i>Podarke obscura</i>	Ann	Poly	2	0.09	95.74	1	8
Polyplacophora (LPIL)	Mol	Poly	2	0.09	95.82	1	8
<i>Processa hemphilli</i>	Art	Mala	2	0.09	95.91	1	8
<i>Sabellaria vulgaris</i>	Ann	Poly	2	0.09	96.00	2	17
<i>Semele</i> (LPIL)	Mol	Biva	2	0.09	96.09	2	17
<i>Sigatica semisulcata</i>	Mol	Gast	2	0.09	96.18	1	8
<i>Sthenelais</i> sp. A	Ann	Poly	2	0.09	96.27	1	8
<i>Tanaisius</i> sp. A	Art	Mala	2	0.09	96.36	2	17
<i>Tellina iris</i>	Mol	Biva	2	0.09	96.45	1	8
<i>Acuminodeutopus naglei</i>	Art	Mala	1	0.04	96.49	1	8
<i>Ampelisca</i> (LPIL)	Art	Mala	1	0.04	96.53	1	8
<i>Ampelisca agassizi</i>	Art	Mala	1	0.04	96.58	1	8
<i>Ampelisca parapacifica</i>	Art	Mala	1	0.04	96.62	1	8
<i>Antalis</i> (LPIL)	Mol	Scap	1	0.04	96.67	1	8
<i>Aricidea catherinae</i>	Ann	Poly	1	0.04	96.71	1	8
<i>Aricidea minuta</i>	Ann	Poly	1	0.04	96.76	1	8
<i>Aricidea wassi</i>	Ann	Poly	1	0.04	96.80	1	8
Asteroidea (LPIL)	Ech	Aste	1	0.04	96.85	1	8
<i>Automate</i> (LPIL)	Art	Mala	1	0.04	96.89	1	8
<i>Axiothella</i> (LPIL)	Ann	Poly	1	0.04	96.93	1	8
<i>Batea catharinensis</i>	Art	Mala	1	0.04	96.98	1	8
<i>Bowmaniella</i> (LPIL)	Art	Mala	1	0.04	97.02	1	8
Carditidae (LPIL)	Mol	Biva	1	0.04	97.07	1	8
<i>Ceratocephale oculata</i>	Ann	Poly	1	0.04	97.11	1	8
<i>Corbula contracta</i>	Mol	Biva	1	0.04	97.16	1	8
<i>Diodora</i> (LPIL)	Mol	Gast	1	0.04	97.20	1	8
<i>Dispio uncinata</i>	Ann	Poly	1	0.04	97.25	1	8
<i>Divaricella quadrisulcata</i>	Mol	Biva	1	0.04	97.29	1	8
<i>Ebalia stimpsonii</i>	Art	Mala	1	0.04	97.33	1	8
Eulimidae (LPIL)	Mol	Gast	1	0.04	97.38	1	8
<i>Eurypanopeus depressus</i>	Art	Mala	1	0.04	97.42	1	8
<i>Eusarsiella cresseyi</i>	Art	Ostr	1	0.04	97.47	1	8
<i>Eusarsiella spinosa</i>	Art	Ostr	1	0.04	97.51	1	8
<i>Exogone</i> (LPIL)	Ann	Poly	1	0.04	97.56	1	8
<i>Fabricinuda trilobata</i>	Ann	Poly	1	0.04	97.60	1	8
<i>Glycera dibranchiata</i>	Ann	Poly	1	0.04	97.65	1	8
<i>Goniada</i> (LPIL)	Ann	Poly	1	0.04	97.69	1	8
<i>Hepatus</i> (LPIL)	Art	Mala	1	0.04	97.73	1	8
<i>Heteromastus filiformis</i>	Ann	Poly	1	0.04	97.78	1	8
<i>Heteromysis</i> (LPIL)	Art	Mala	1	0.04	97.82	1	8
<i>Kalliapseudes macsweenyi</i>	Art	Mala	1	0.04	97.87	1	8
<i>Leitoscoloplos</i> (LPIL)	Ann	Poly	1	0.04	97.91	1	8
<i>Leptochela serratorbita</i>	Art	Mala	1	0.04	97.96	1	8
<i>Leptosynapta</i> (LPIL)	Ech	Holo	1	0.04	98.00	1	8
<i>Levinsonia gracilis</i>	Ann	Poly	1	0.04	98.05	1	8
<i>Lioberus castaneus</i>	Mol	Biva	1	0.04	98.09	1	8
<i>Lucina</i> (LPIL)	Mol	Biva	1	0.04	98.13	1	8
<i>Lumbrineris</i> (LPIL)	Ann	Poly	1	0.04	98.18	1	8

Table 6 continued:

Taxa	Phylum	Class	No. of Individuals	% Total	Cumulative %	Station Occurrence	% Station Occurrence
<i>Macromphalina floridana</i>	Mol	Gast	1	0.04	98.22	1	8
<i>Melinna maculata</i>	Ann	Poly	1	0.04	98.27	1	8
<i>Mesochaetopterus</i> (LPIL)	Ann	Poly	1	0.04	98.31	1	8
<i>Metatiron triocellatus</i>	Art	Mala	1	0.04	98.36	1	8
Muricidae (LPIL)	Mol	Gast	1	0.04	98.40	1	8
<i>Nephtys</i> (LPIL)	Ann	Poly	1	0.04	98.45	1	8
<i>Nereis succinea</i>	Ann	Poly	1	0.04	98.49	1	8
<i>Odontosyllis enopla</i>	Ann	Poly	1	0.04	98.53	1	8
Onuphidae (LPIL)	Ann	Poly	1	0.04	98.58	1	8
<i>Opisthodonta</i> sp. B	Ann	Poly	1	0.04	98.62	1	8
<i>Oxyurostylis</i> (LPIL)	Art	Mala	1	0.04	98.67	1	8
<i>Paranaitis speciosa</i>	Ann	Poly	1	0.04	98.71	1	8
<i>Pectinaria gouldii</i>	Ann	Poly	1	0.04	98.76	1	8
<i>Philine sagra</i>	Mol	Gast	1	0.04	98.80	1	8
Pinnidae (LPIL)	Mol	Biva	1	0.04	98.84	1	8
<i>Pinnixa</i> (LPIL)	Art	Mala	1	0.04	98.89	1	8
<i>Pinnotheres</i> (LPIL)	Art	Mala	1	0.04	98.93	1	8
<i>Pionosyllis gesae</i>	Ann	Poly	1	0.04	98.98	1	8
<i>Pista palmata</i>	Ann	Poly	1	0.04	99.02	1	8
<i>Polycirrus</i> (LPIL)	Ann	Poly	1	0.04	99.07	1	8
Polynoidea (LPIL)	Ann	Poly	1	0.04	99.11	1	8
<i>Portunus gibbesii</i>	Art	Mala	1	0.04	99.16	1	8
<i>Processa</i> (LPIL)	Art	Mala	1	0.04	99.20	1	8
<i>Protohaustorius</i> sp. B	Art	Mala	1	0.04	99.24	1	8
<i>Rictaxis punctostriatus</i>	Mol	Gast	1	0.04	99.29	1	8
<i>Sabaco americanus</i>	Ann	Poly	1	0.04	99.33	1	8
<i>Sabellaria</i> sp. A	Ann	Poly	1	0.04	99.38	1	8
<i>Saccocirrus</i> sp. A	Ann	Poly	1	0.04	99.42	1	8
Scaphandridae (LPIL)	Mol	Gast	1	0.04	99.47	1	8
<i>Schistomeringos rudolphi</i>	Ann	Poly	1	0.04	99.51	1	8
<i>Sigambra tentaculata</i>	Ann	Poly	1	0.04	99.56	1	8
<i>Spio pettiboneae</i>	Ann	Poly	1	0.04	99.60	1	8
<i>Strombiformis</i> (LPIL)	Mol	Gast	1	0.04	99.64	1	8
<i>Strombiformis bilineatus</i>	Mol	Gast	1	0.04	99.69	1	8
Syllidae (LPIL)	Ann	Poly	1	0.04	99.73	1	8
<i>Syllis cornuta</i>	Ann	Poly	1	0.04	99.78	1	8
<i>Synasterope setisparsa</i>	Art	Ostr	1	0.04	99.82	1	8
<i>Synelmis ewingi</i>	Ann	Poly	1	0.04	99.87	1	8
<i>Upogebia</i> (LPIL)	Art	Mala	1	0.04	99.91	1	8
<i>Upogebia affinis</i>	Art	Mala	1	0.04	99.96	1	8
Veneridae (LPIL)	Mol	Biva	1	0.04	100.00	1	8

Taxa Key

Ann=Annelida	Cni=Cnidaria	Pla=Platyhelminthes
Olig=Oligochaeta	Anth=Anthozoa	Turb=Turbellaria
Poly=Polychaeta	Ech=Echinodermata	Rhy=Rhynchocoela
Art=Arthropoda	Holo=Holothuroidea	Anop=Anopla
Inse=Insecta	Ophi=Ophiuroidea	Sip=Sipuncula
Mala=Malacostraca	Mol=Mollusca	
Ostr=Ostracoda	Biva=Bivalvia	
Bra=Brachiopoda	Gast=Gastropoda	

Table 7. Percent abundance of dominant benthic macroinfaunal taxa (>5% of the total) for the Fernandina ODMDS stations, 2005.

Taxa	F01	F02	F03	F07	F11	F12	F04	F05	F06	F08	F09	F10
Annelida												
Oligochaeta												
Enchytraeidae (LPIL)								6.5				
Tubificidae (LPIL)								7.4				
Polychaeta												
<i>Aglaophamus verrilli</i>		5.0										
<i>Apoprionospio pygmaea</i>			12.8				13.2			22.0		
<i>Aricidea</i> (LPIL)	5.3											
<i>Armandia maculata</i>									9.2		8.7	
<i>Bhawania heteroseta</i>								10.7				9.7
<i>Goniada littorea</i>										7.3		
<i>Magelona papillicornis</i>							5.7					
<i>Magelona</i> sp. H	28.3	5.0				11.1						
Maldanidae (LPIL)												14.5
<i>Mediomastus</i> (LPIL)												8.3
<i>Nephtys picta</i>										7.3		
Nereididae (LPIL)											6.5	
<i>Paraprionospio pinnata</i>		11.7				11.1						
<i>Polygordius</i> (LPIL)					6.3		26.4			14.6		
<i>Prionospio</i> (LPIL)									7.2			
<i>Prionospio cristata</i>								10.7				7.8
Arthropoda												
Malacostraca												
<i>Albunea paretii</i>				8.0								
<i>Dulichella</i> sp. A											6.5	
<i>Globosolembos smithi</i>									5.4			
<i>Metharpinia floridana</i>				8.0								
Xanthidae (LPIL)												8.7
Chordata												
Leptocardia												
Branchiostoma (LPIL)					18.8							
Echinodermata												
Ophiuroidea												
Ophiuroidea (LPIL)	11.2										10.9	
Mollusca												
Bivalvia												
<i>Anadara transversa</i>									9.6			
<i>Ervilia concentrica</i>					5.4							
<i>Lucina multilineata</i>			10.6									
<i>Pythinella cuneata</i>		6.7										
<i>Tellina</i> (LPIL)	5.9		14.9	8.0		8.9				7.3		
Tellinidae (LPIL)					5.4							
Gastropoda												
<i>Acteocina bidentata</i>			6.4			15.6						
<i>Caecum pulchellum</i>					5.4							
<i>Crepidula plana</i>				8.0								
<i>Kurtziella rubella</i>			6.4									
Odostomia (LPIL)									8.9			

Table 8. Summary of assemblage parameters for the Fernandina ODMDS stations, 2005.

Station	Total No. Taxa	Total No. Individuals	Density (nos/m²)	H' Shannon (log e)	d Diversity (log 2)	J' Pielou Evenness	D Margalef Richness	1/S Simpson Diversity	e Equitability
Outside the ODMDS									
F01	50	152	3800.0	3.06	4.42	0.78	9.75	9.88	0.63
F02	32	60	1500.0	3.28	4.73	0.95	7.57	33.40	1.23
F03	20	47	1175.0	2.78	4.02	0.93	4.93	18.02	1.17
F07	21	25	625.0	3.00	4.32	0.98	6.21	75.00	1.40
F11	45	112	2800.0	3.35	4.83	0.88	9.32	19.55	0.94
F12	36	90	2250.0	3.08	4.44	0.86	7.78	16.69	0.89
	34.0		2025.0	3.09		0.90			
Inside the ODMDS									
F04	27	53	1325.0	2.80	4.04	0.85	6.55	11.20	0.88
F05	88	337	8425.0	3.80	5.48	0.85	14.95	26.04	0.77
F06	87	573	14325.0	3.60	5.19	0.81	13.54	22.88	0.63
F08	20	41	1025.0	2.66	3.84	0.89	5.12	13.23	1.03
F09	25	46	1150.0	3.06	4.41	0.95	6.27	29.57	1.25
F10	77	715	17875.0	3.54	5.10	0.81	11.56	19.15	0.67
	54.0		7354.2	3.24		0.86			

Table 9. Summary of assemblage parameters for the Fernandina ODMDS stations, 1989.

Station	Total No. Taxa	Mean No. of Taxa per Repl.	Total No. Individuals	Mean Density (nos/m ²)	Density (Std Dev)	H' Shannon (log e)	J' Pielou Evenness	D Margalef Richness
Inside ODMDS								
5	112	20.7	1095	9240	4608	2.76	0.58	15.86
7	78	14.0	434	3662	1388	3.28	0.75	12.68
8	143	27.9	768	6481	2144	4.13	0.83	21.37
9	220	67.8	8331	70303	22564	3.31	0.61	24.26
10	105	17.1	720	6075	3116	2.68	0.58	15.81
		29.5		19152.2		3.23	0.67	
Outside ODMDS								
1	104	20.4	822	7432	2320	3.44	0.74	15.35
2	93	16.8	638	5383	1957	2.84	0.63	14.25
6	56	10.4	364	3544	1135	2.74	0.68	9.33
11	142	32.0	1213	10236	3778	3.76	0.76	19.86
12	89	18.2	1438	12135	4380	1.93	0.43	12.10
		19.6		7746.0		2.94	0.65	

Figure 1. Sample stations for the Fernandina Beach, Florida ODMDS, 2005.

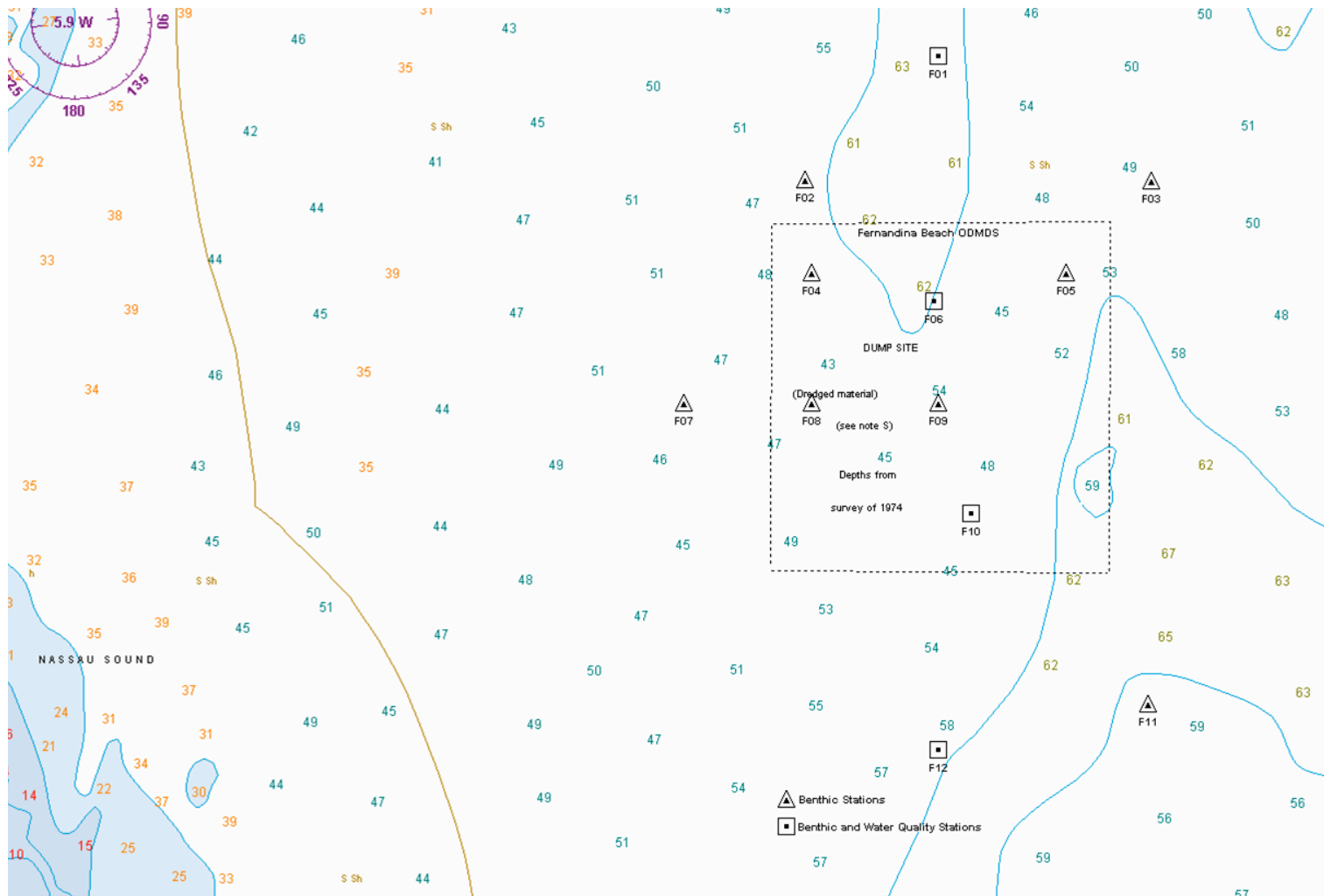


Figure 2. Sediment texture for the Fernandina ODMDS stations, 2005.

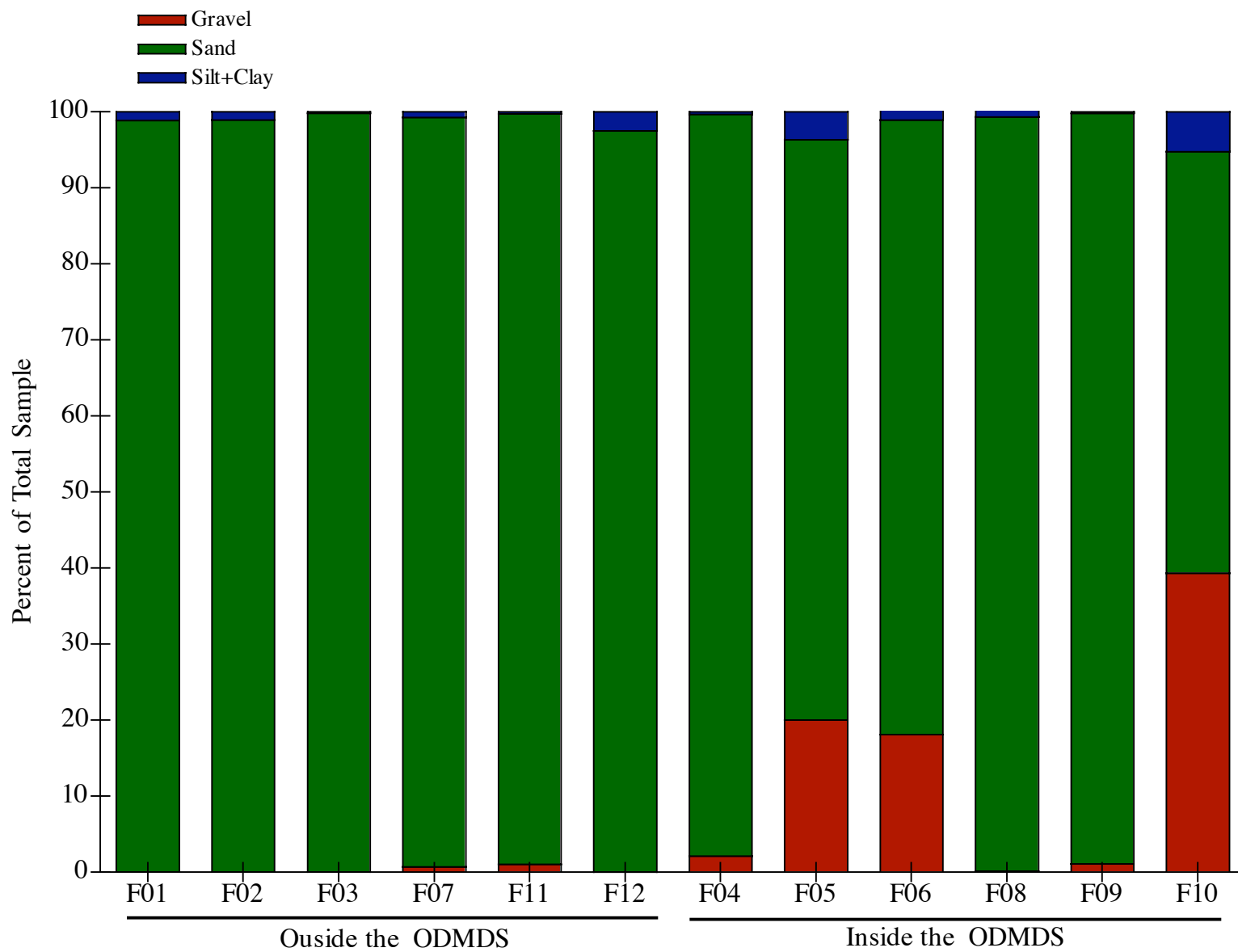


Figure 3. Abundance of major macroinvertebrate taxa groups for the Fernandina ODMDS stations, 2005.

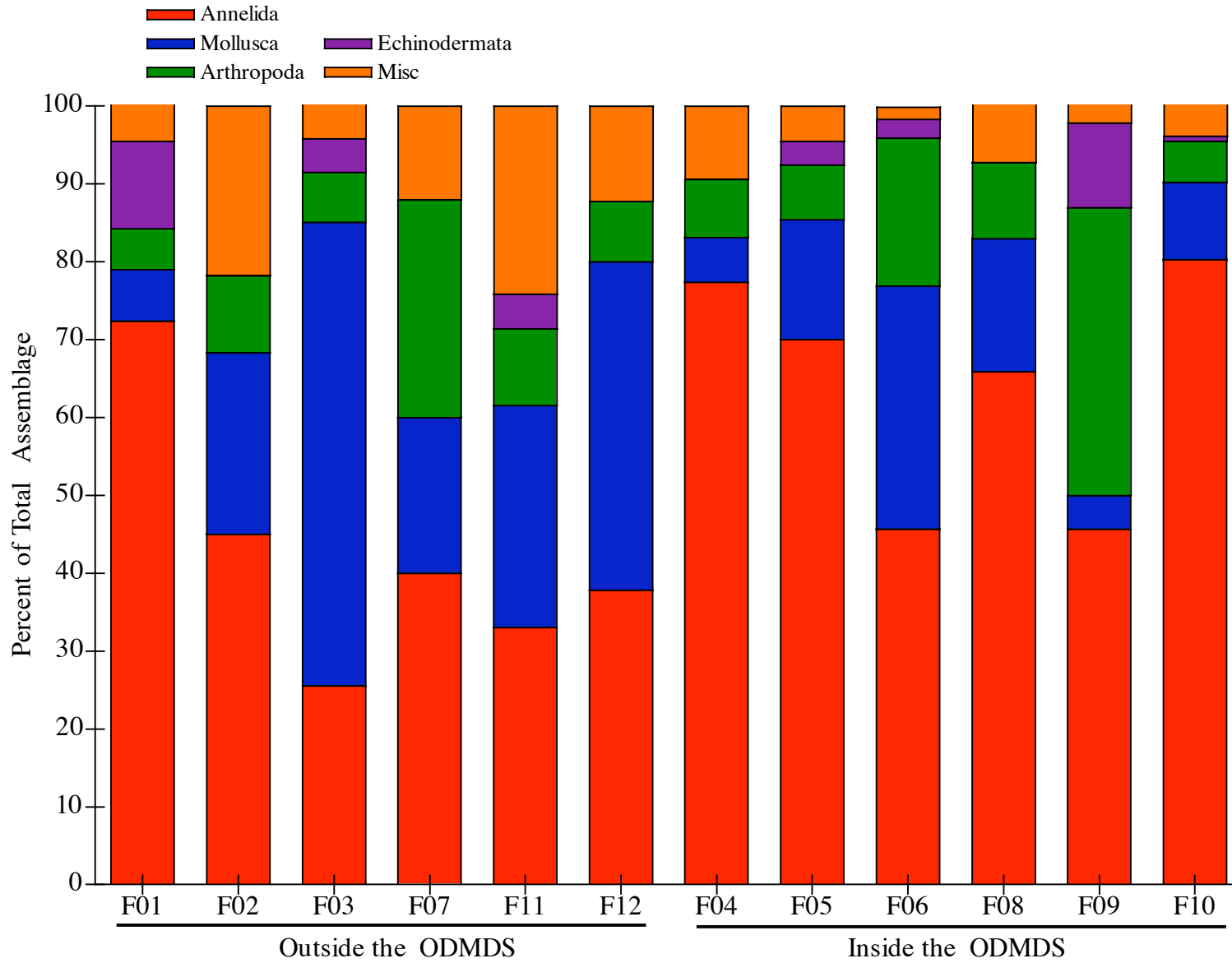


Figure 4. Wet-weight biomass of the major macroinvertebrate groups for the Fernandina ODMDS stations, 2005.

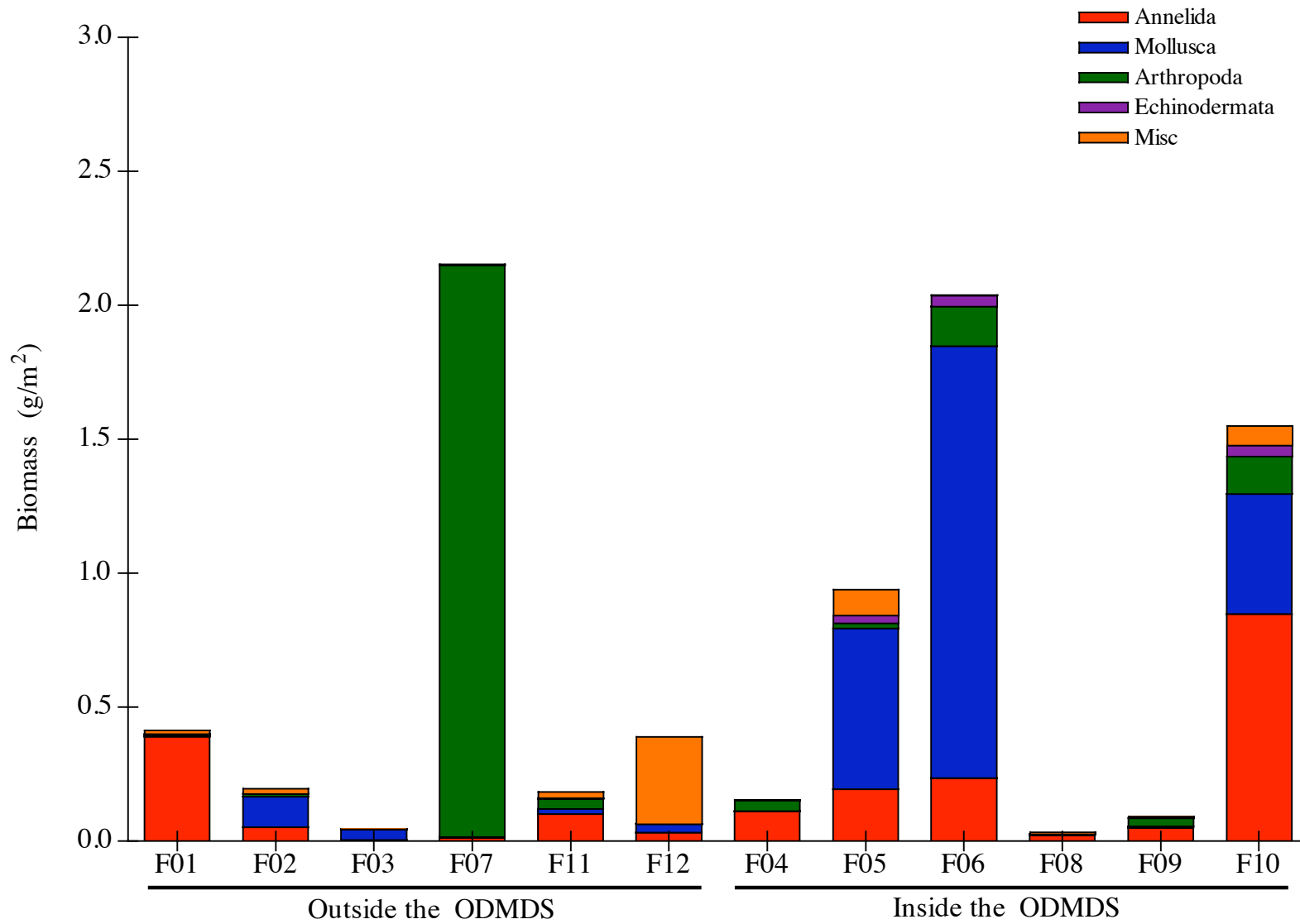


Figure 5. Taxa richness for the Fernandina ODMDS stations, 2005.

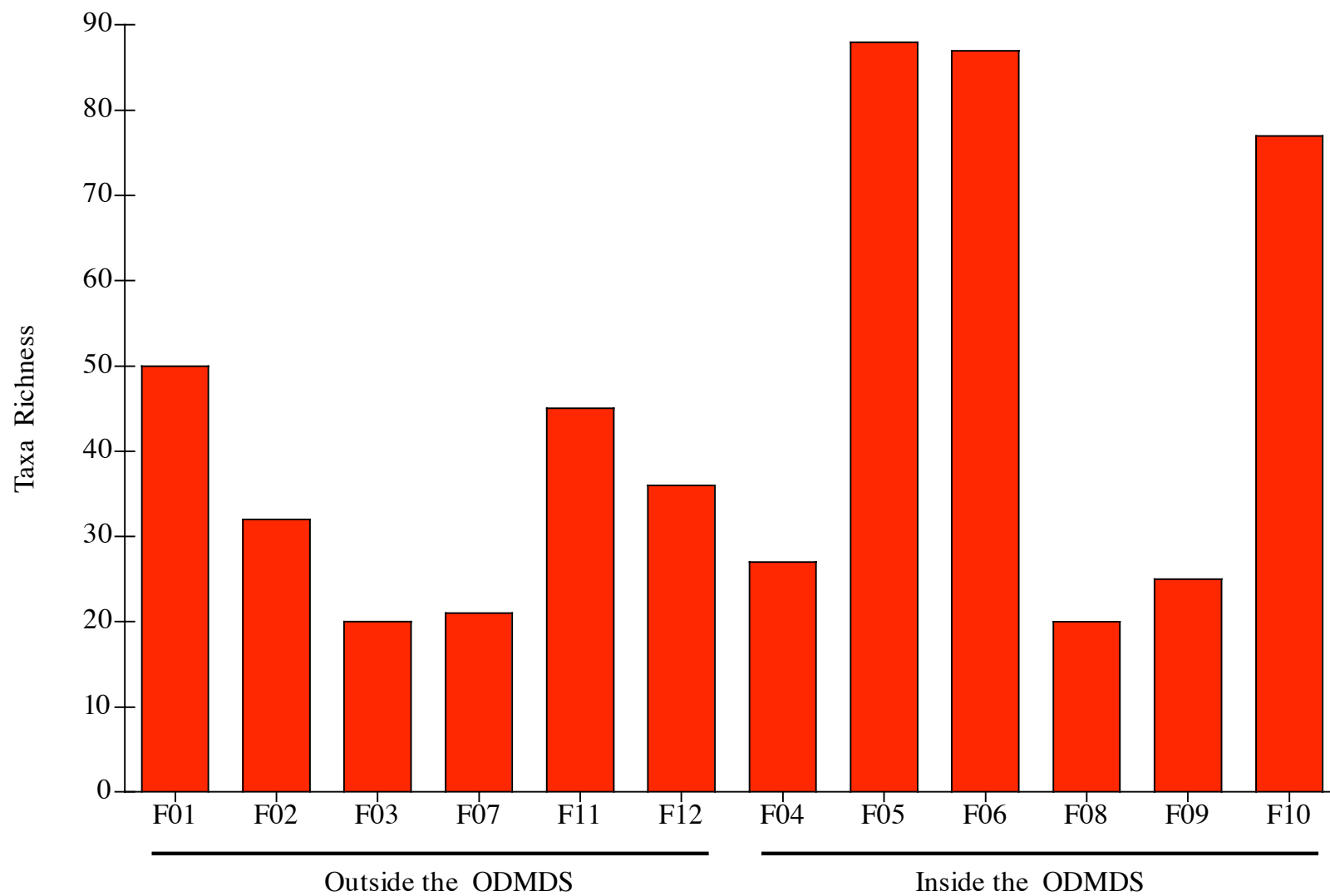


Figure 6. Macroinvertebrate densities for the Fernandina ODMDS stations, 2005.

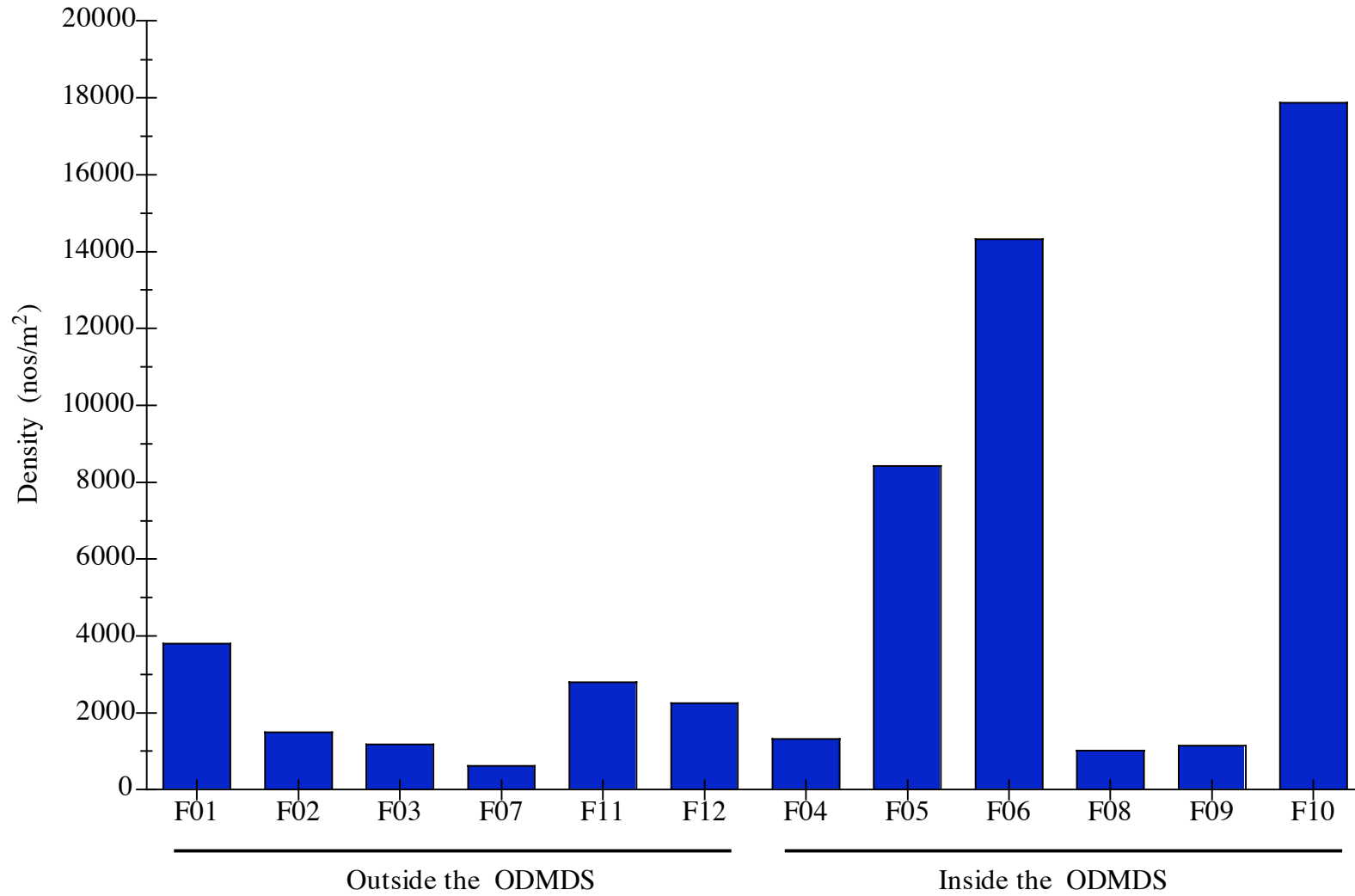


Figure 7. Taxa diversity (H') for the Fernandina ODMDS stations, 2005.

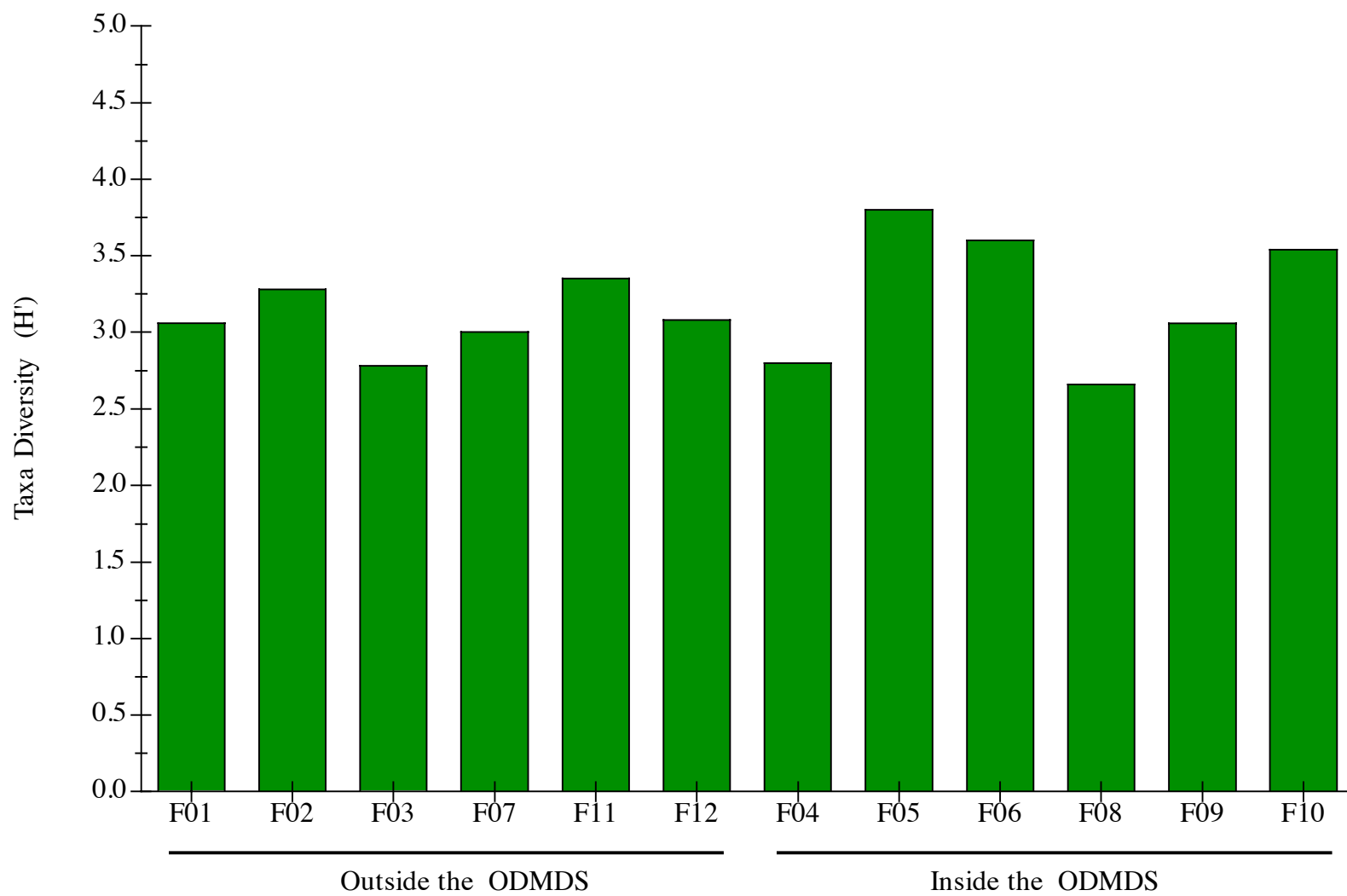


Figure 8. Taxa evenness (J') for the Fernandina ODMDS stations, 2005.

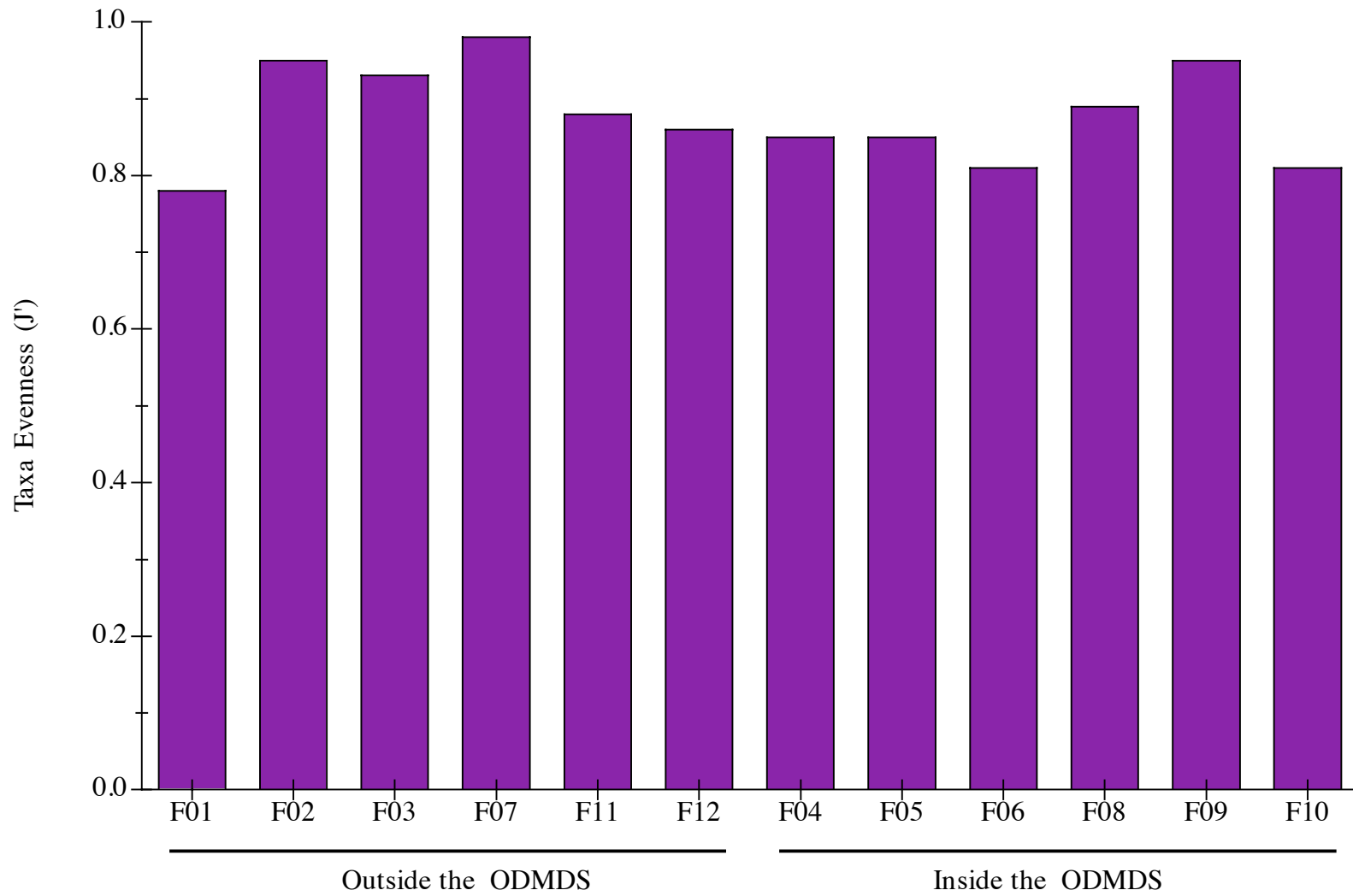


Figure 9. Cluster analysis for the Fernandina ODMDS stations, 2005.

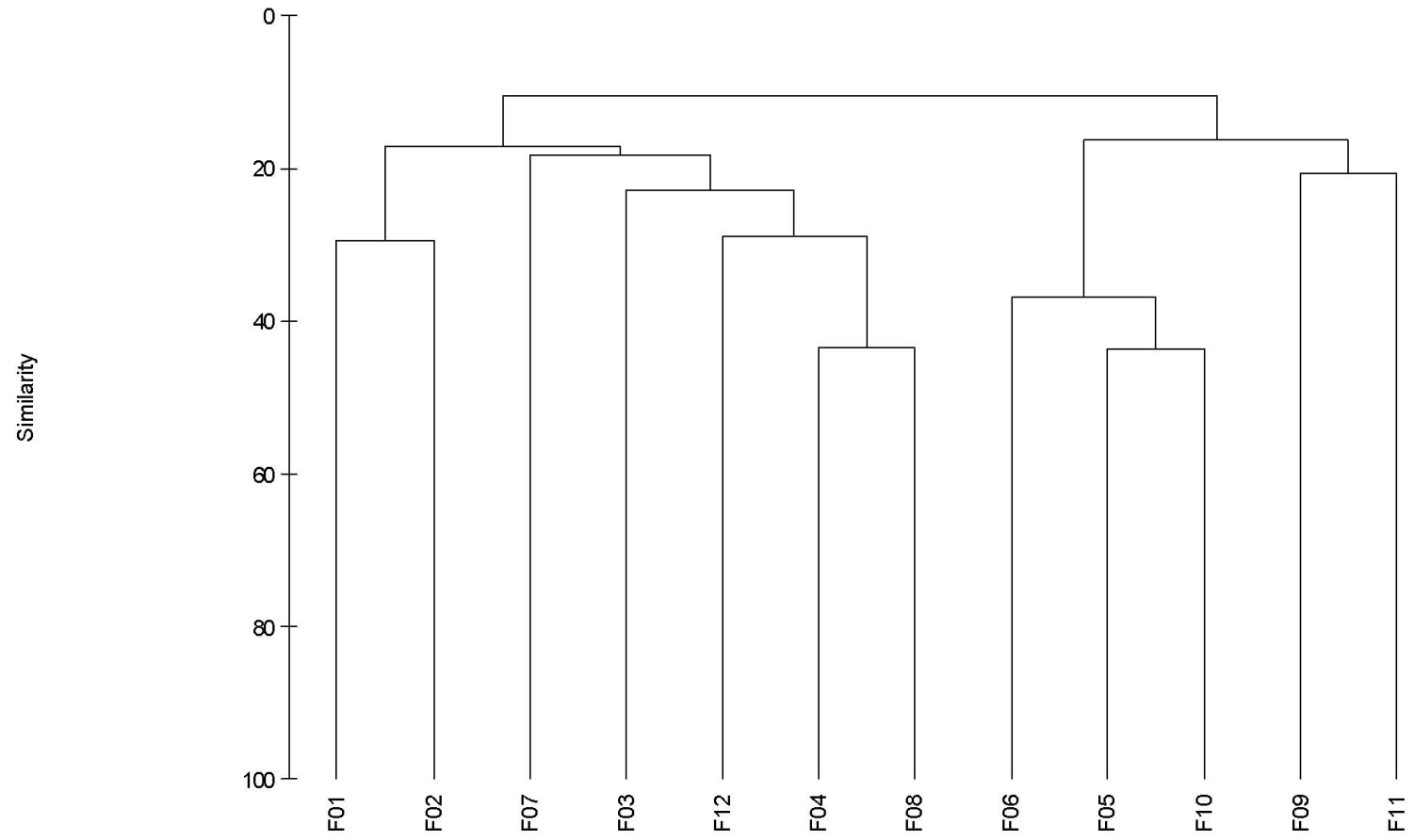


Figure 10. MDS analysis for the Fernandina ODMS stations, 2005.

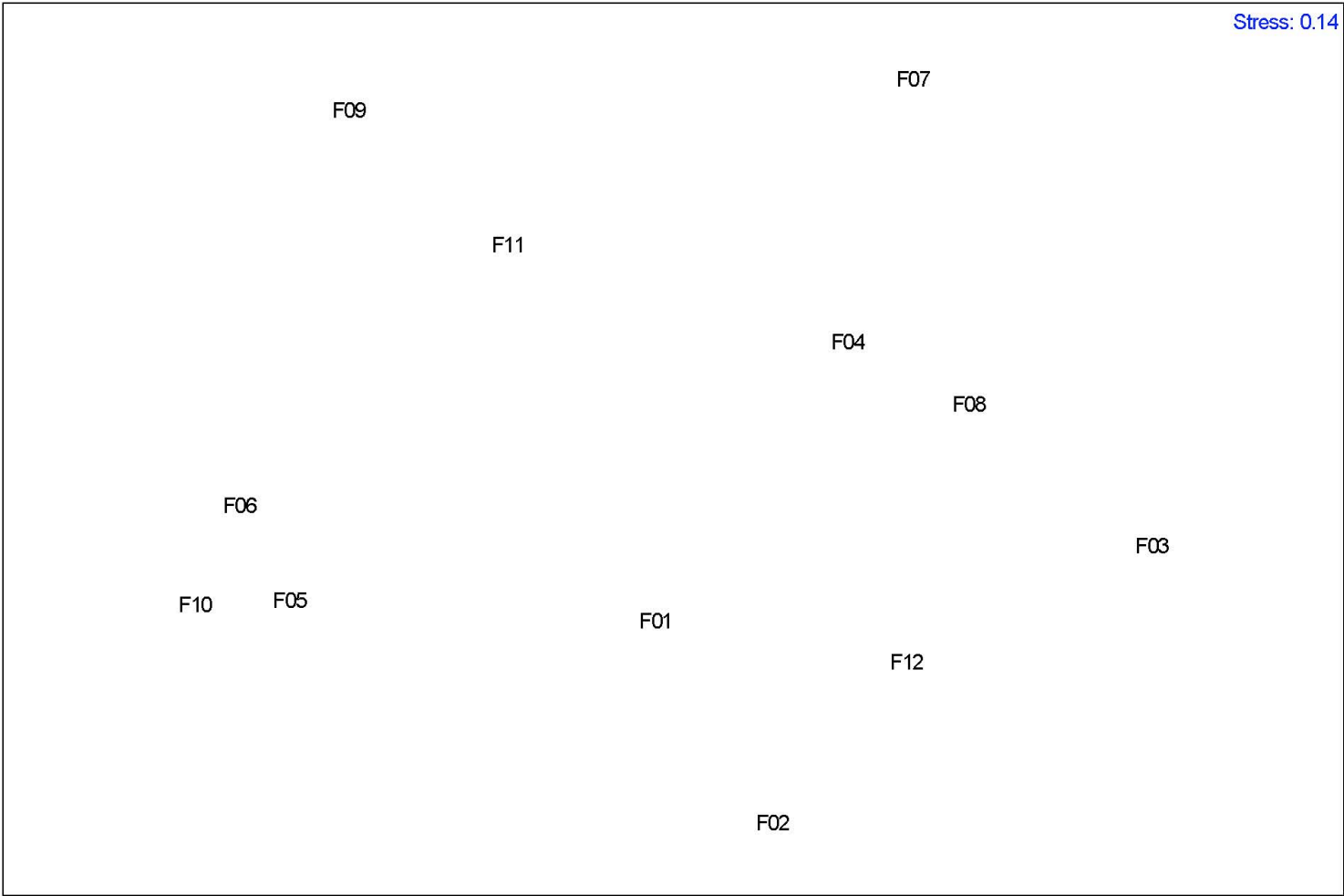


Figure 11. A comparison of sediment texture for the Fernandina ODMDS, 1989 and 2005.

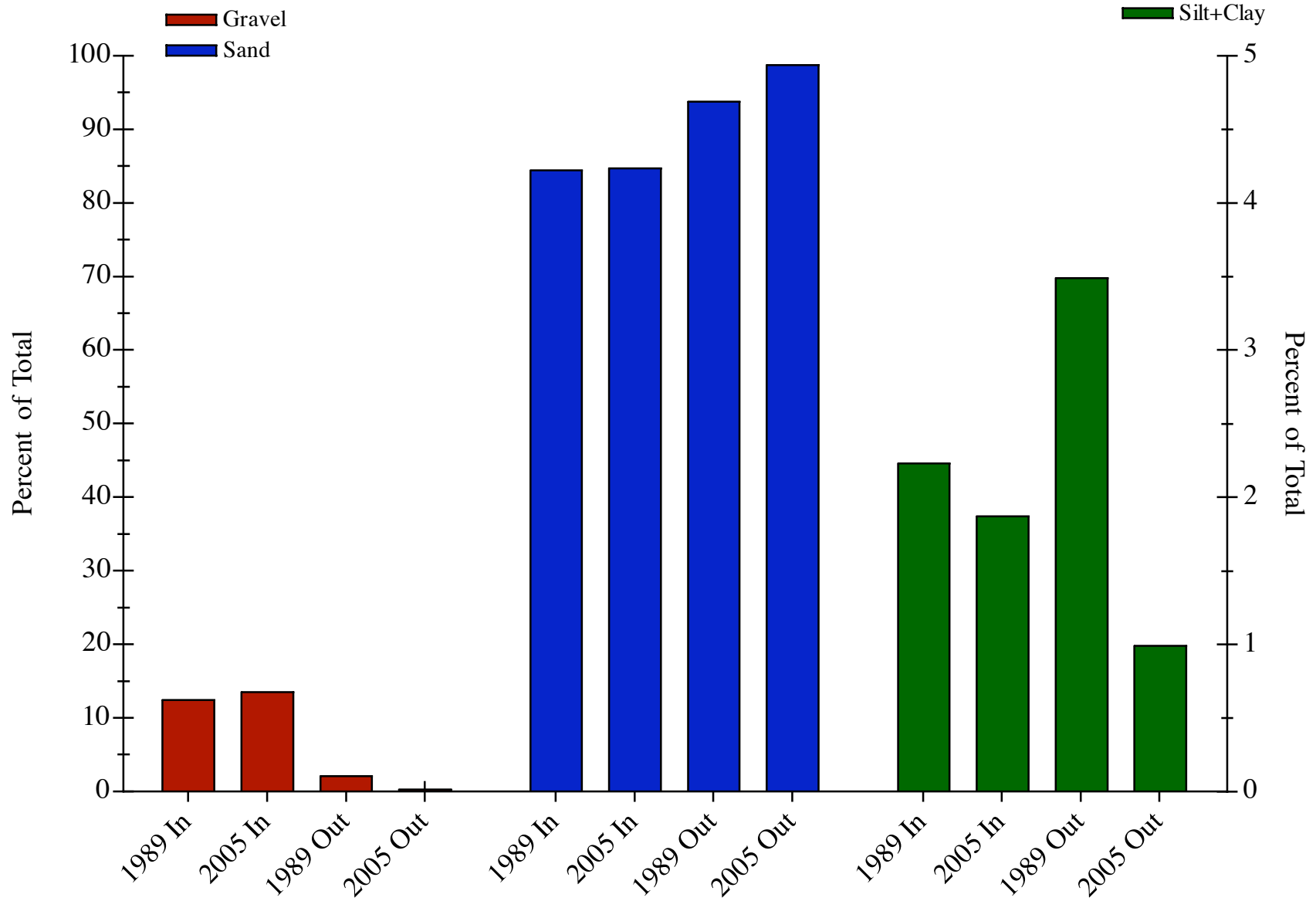
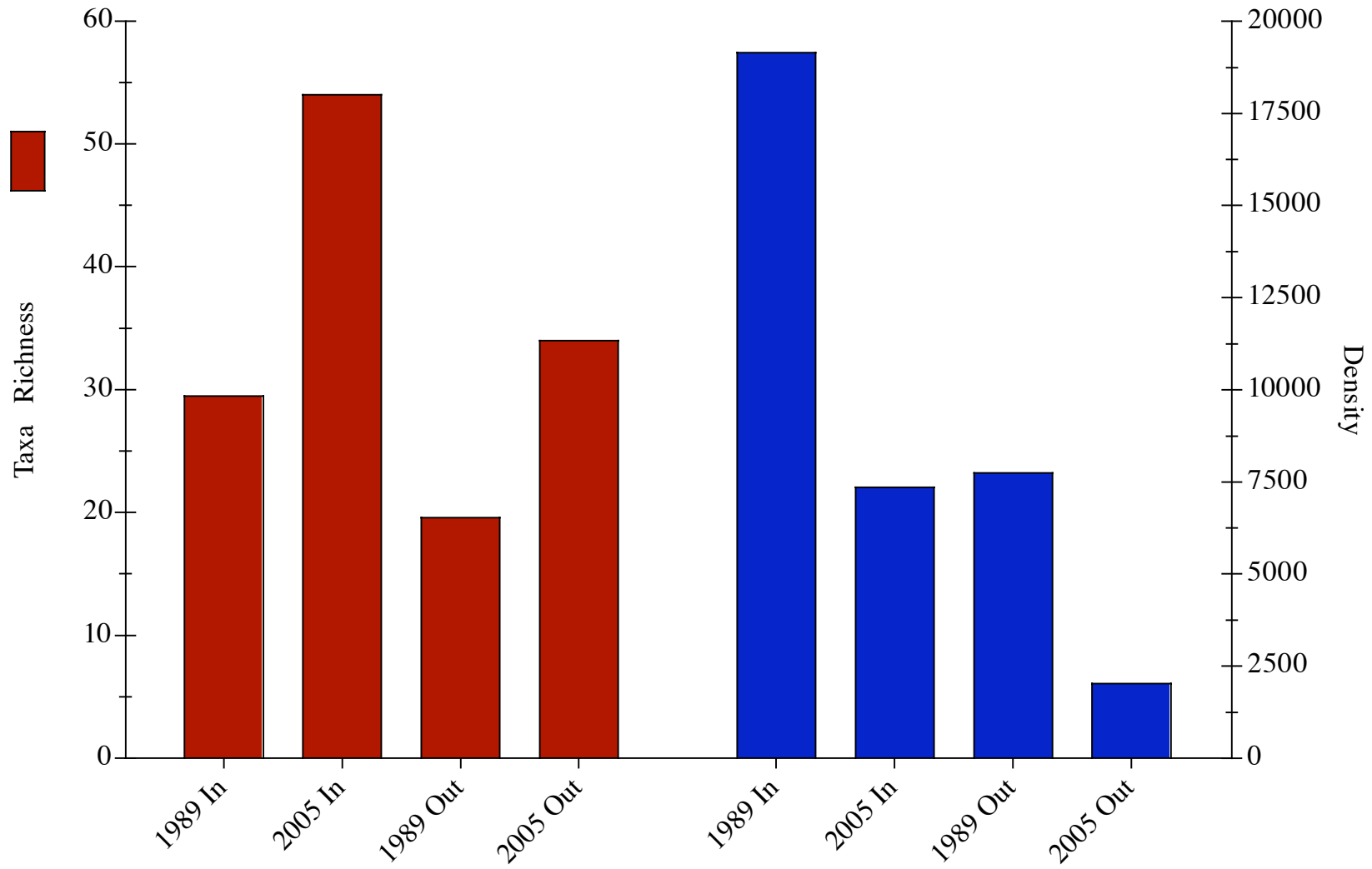


Figure 12. A comparison of taxa richness and density data for the Fernandina ODMDS, 1989 and 2005.



APPENDICES

Appendix I. Results of the Simpler Analysis.

Group Inside the ODMDS

Average similarity: 13.38

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Tellina (LPIL)	4.33	2.34	0.69	17.52	17.52
Paraprionospio pinnata	3.67	1.21	0.44	9.06	26.58
Aspidosiphon albus	1.17	1.06	1.11	7.91	34.49
Magelona sp. H	9.33	1.01	0.43	7.52	42.01
Nereididae (LPIL)	2.00	0.71	0.75	5.32	47.33
Apoprionospio pygmaea	1.83	0.69	0.58	5.16	52.49
Ophiuroidea (LPIL)	4.00	0.55	0.46	4.14	56.63
Acteocina bidentata	3.00	0.51	0.42	3.78	60.41
Caecum pulchellum	1.50	0.33	0.44	2.47	62.88
Acteocina candei	1.17	0.33	0.44	2.47	65.36
Mooreonuphis pallidula	0.83	0.33	0.42	2.45	67.80
Lineidae (LPIL)	1.00	0.30	0.41	2.21	70.01
Goniada littorea	0.83	0.30	0.44	2.21	72.22
Capitellidae (LPIL)	0.50	0.30	0.44	2.21	74.42
Owenia fusiformis	1.33	0.27	0.45	2.02	76.44
Mediomastus (LPIL)	1.00	0.27	0.42	2.01	78.45
Branchiostoma (LPIL)	3.83	0.22	0.46	1.67	80.11
Phoronis (LPIL)	0.50	0.21	0.47	1.55	81.66
Metharpinia floridana	0.83	0.19	0.26	1.45	83.12
Aglaophamus verrilli	1.00	0.19	0.26	1.41	84.53
Prionospio (LPIL)	0.67	0.13	0.26	1.00	85.53
Polygordius (LPIL)	1.50	0.13	0.26	0.99	86.51
Lucina multilineata	1.00	0.12	0.26	0.93	87.44
Americhelidium americanum	0.33	0.12	0.26	0.87	88.31
Sipuncula (LPIL)	0.33	0.10	0.26	0.73	89.04
Magelona papillicornis	0.33	0.10	0.26	0.73	89.77
Kurtziella rubella	0.67	0.10	0.26	0.73	90.49

Group Outside the ODMDS

Average similarity: 12.97

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Polygordius (LPIL)	10.00	1.88	0.56	14.50	14.50
Apoprionospio pygmaea	2.67	0.99	0.26	7.66	22.16
Bhawania heteroseta	19.50	0.76	0.41	5.83	28.00
Armandia maculata	10.00	0.73	0.56	5.66	33.66
Prionospio cristata	17.17	0.73	0.40	5.64	39.30
Ophiuroidea (LPIL)	4.50	0.59	0.70	4.53	43.82
Rhynchocoela (LPIL)	3.00	0.58	0.81	4.46	48.28
Crassinella lunulata	9.00	0.55	0.57	4.24	52.52
Prionospio (LPIL)	10.33	0.35	0.53	2.70	55.21
Branchiostoma (LPIL)	1.33	0.33	0.66	2.56	57.77
Nephtys picta	1.50	0.29	0.52	2.27	60.04
Mediomastus (LPIL)	13.50	0.28	0.36	2.15	62.19
Paraprionospio pinnata	0.67	0.27	0.26	2.08	64.27
Acteocina bidentata	0.67	0.21	0.38	1.63	65.90
Exogone lourei	4.00	0.20	0.45	1.55	67.45
Tubificidae (LPIL)	5.83	0.20	0.50	1.54	68.99
Capitellidae (LPIL)	3.83	0.18	0.55	1.42	70.41
Anadara transversa	10.83	0.18	0.45	1.39	71.80
Gouldia cerina	7.50	0.17	0.31	1.33	73.13
Parapionosyllis longicirrata	4.33	0.16	0.43	1.26	74.39
Nereididae (LPIL)	4.17	0.16	0.47	1.22	75.61
Phyllodocidae (LPIL)	2.33	0.14	0.68	1.11	76.72
Bivalvia (LPIL)	2.67	0.14	0.44	1.10	77.82
Magelona papillicornis	0.67	0.14	0.26	1.09	78.91
Goniada littorea	0.67	0.14	0.26	1.09	80.00
Asteropterygion oculitristis	0.33	0.14	0.26	1.09	81.10
Americhelidium americanum	0.33	0.14	0.26	1.09	82.19
Laonice cirrata	2.67	0.13	0.41	0.97	83.16
Cirratulidae (LPIL)	3.33	0.12	0.71	0.95	84.11
Neomegamphopus (LPIL)	2.50	0.11	0.39	0.86	84.97
Dipolydora socialis	0.83	0.11	0.38	0.82	85.79
Ampharetidae (LPIL)	2.17	0.10	0.44	0.79	86.59
Maldanidae (LPIL)	18.33	0.09	0.36	0.68	87.27
Liljeborgia sp. A	1.50	0.08	0.36	0.63	87.90

Magelona pettiboneae	1.83	0.08	0.46	0.59	88.49
Caecum johnsoni	1.67	0.08	0.38	0.58	89.07
Scoloplos rubra	0.67	0.07	0.45	0.54	89.61
Dulichella sp. A	2.67	0.06	0.26	0.50	90.11

Groups Inside & Outside the ODMDS

Average dissimilarity = 89.71

Species	Group O Av.Abund	Group I Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Polygordius (LPIL)	1.50	10.00	3.67	0.87	4.09	4.09
Magelona sp. H	9.33	0.00	3.38	0.55	3.77	7.86
Bhawania heteroseta	0.00	19.50	3.21	0.80	3.57	11.43
Prionospio cristata	0.00	17.17	2.91	0.79	3.24	14.67
Maldanidae (LPIL)	0.17	18.33	2.44	0.50	2.72	17.39
Armandia maculata	0.67	10.00	2.25	0.78	2.50	19.89
Apoprionospio pygmaea	1.83	2.67	2.24	0.71	2.50	22.39
Mediomastus (LPIL)	1.00	13.50	2.12	0.82	2.36	24.76
Ophiuroidea (LPIL)	4.00	4.50	2.03	0.87	2.26	27.02
Tellina (LPIL)	4.33	0.50	1.98	0.92	2.21	29.23
Prionospio (LPIL)	0.67	10.33	1.82	0.86	2.02	31.25
Paraprionospio pinnata	3.67	0.67	1.78	0.85	1.98	33.23
Anadara transversa	0.00	10.83	1.73	0.56	1.93	35.16
Branchiostoma (LPIL)	3.83	1.33	1.65	0.47	1.84	37.00
Crassinella lunulata	0.17	9.00	1.58	1.11	1.76	38.76
Acteocina bidentata	3.00	0.67	1.50	0.57	1.67	40.43
Tubificidae (LPIL)	0.50	5.83	1.44	0.68	1.60	42.03
Nereididae (LPIL)	2.00	4.17	1.33	1.16	1.48	43.51
Odostomia (LPIL)	0.00	8.50	1.31	0.44	1.45	44.97
Rhynchozoela (LPIL)	1.17	3.00	1.23	0.90	1.38	46.34
Gouldia cerina	0.17	7.50	1.09	0.76	1.22	47.56
Enchytraeidae (LPIL)	0.17	4.33	1.02	0.52	1.13	48.69
Goniadides carolinae	0.17	6.33	0.94	0.62	1.05	49.74
Globosolembos smithi	0.00	5.17	0.79	0.44	0.88	50.63
Dulichella sp. A	0.00	2.67	0.77	0.65	0.86	51.49
Exogone lourei	0.33	4.00	0.75	0.98	0.84	52.33
Capitellidae (LPIL)	0.50	3.83	0.72	1.03	0.81	53.14
Aricidea (LPIL)	1.50	1.67	0.72	0.66	0.80	53.93

Parapionosyllis longicirrata	0.00	4.33	0.69	0.81	0.77	54.71
Caecum pulchellum	1.50	0.17	0.69	0.65	0.77	55.48
Nephtys picta	0.17	1.50	0.68	0.72	0.76	56.24
Xanthidae (LPIL)	0.00	1.17	0.65	0.46	0.73	56.96
Bivalvia (LPIL)	0.50	2.67	0.65	0.94	0.72	57.68
Cirratulidae (LPIL)	0.50	3.33	0.63	0.89	0.70	58.38
Goniada littorea	0.83	0.67	0.62	0.68	0.69	59.07
Lucina multilineata	1.00	0.00	0.62	0.41	0.69	59.76
Aspidosiphon albus	1.17	0.00	0.61	1.00	0.68	60.44
Acteocina candeii	1.17	0.17	0.56	0.72	0.63	61.07
Mooreonuphis pallidula	0.83	1.17	0.56	0.94	0.62	61.69
Ampharetidae (LPIL)	0.00	2.17	0.55	0.76	0.62	62.31
Owenia fusiformis	1.33	0.50	0.55	0.69	0.62	62.92
Ervilia concentrica	1.17	0.17	0.54	0.53	0.61	63.53
Magelona papillicornis	0.33	0.67	0.54	0.63	0.60	64.13
Pleuromeris tridentata	0.00	3.33	0.53	0.48	0.59	64.72
Lumbrineris latreilli	0.17	2.83	0.51	0.66	0.57	65.28
Neomegamphopus (LPIL)	0.17	2.50	0.49	1.02	0.55	65.83
Lineidae (LPIL)	1.00	0.17	0.49	0.59	0.54	66.37
Phyllodocidae (LPIL)	0.17	2.33	0.47	1.08	0.53	66.90
Metharpinia floridana	0.83	0.00	0.46	0.52	0.52	67.42
Laonice cirrata	0.00	2.67	0.46	0.79	0.51	67.93
Aspidosiphon gosnoldi	0.67	1.50	0.46	0.81	0.51	68.45
Aglaophamus verrilli	1.00	0.00	0.44	0.52	0.49	68.94
Glycera americana	0.50	0.50	0.44	0.57	0.49	69.43
Liljeborgia sp. A	0.50	1.50	0.41	0.72	0.46	69.89
Dipolydora socialis	0.17	0.83	0.41	0.60	0.46	70.35
Tellinidae (LPIL)	1.00	0.00	0.40	0.37	0.44	70.79
Autolytus (LPIL)	0.00	2.67	0.39	0.57	0.44	71.23
Kurtziella rubella	0.67	0.00	0.39	0.43	0.43	71.66
Magelona pettiboneae	0.00	1.83	0.39	0.88	0.43	72.09
Caecum johnsoni	0.33	1.67	0.38	0.84	0.42	72.51
Pythinella cuneata	0.67	0.00	0.37	0.35	0.42	72.93
Phascolion strombi	0.67	0.00	0.37	0.35	0.42	73.34
Paguridae (LPIL)	0.00	0.83	0.37	0.53	0.41	73.76
Turbellaria (LPIL)	0.17	2.17	0.35	0.62	0.39	74.15
Cyclaspis varians	0.50	0.17	0.34	0.54	0.38	74.52
Chone (LPIL)	0.00	1.67	0.33	0.60	0.36	74.89
Apanthura cracenta	0.00	1.33	0.32	0.44	0.36	75.24

Hesionidae (LPIL)	0.17	2.00	0.31	0.79	0.35	75.59
Eunicidae (LPIL)	0.00	0.83	0.31	0.67	0.34	75.94
Anodontia alba	0.67	0.00	0.30	0.36	0.34	76.27
Mesanthura (LPIL)	0.00	0.33	0.29	0.41	0.33	76.60
Apocorophium simile	0.00	0.33	0.29	0.41	0.33	76.93
Ampelisca vadorum	0.00	0.33	0.29	0.41	0.33	77.26
Photis (LPIL)	0.50	0.50	0.29	0.56	0.33	77.58
Asteropterygion oculitristis	0.17	0.33	0.29	0.65	0.32	77.91
Dentalium laqueatum	0.50	0.00	0.28	0.35	0.31	78.22
Nephtys simoni	0.00	0.33	0.28	0.42	0.31	78.53
Phyllodoce (LPIL)	0.00	1.17	0.27	0.81	0.30	78.83
Glycera (LPIL)	0.17	0.50	0.27	0.66	0.30	79.13
Crepidula plana	0.33	0.00	0.27	0.34	0.30	79.43
Albunea paretii	0.33	0.00	0.27	0.34	0.30	79.72
Spiophanes missionensis	0.33	0.50	0.26	0.67	0.29	80.02
Americhelidium americanum	0.33	0.33	0.26	0.66	0.29	80.31
Turridae (LPIL)	0.50	0.00	0.26	0.48	0.29	80.60
Goneplacidae (LPIL)	0.00	1.50	0.26	0.63	0.29	80.89
Lumbrineridae (LPIL)	0.33	1.00	0.26	0.75	0.29	81.18
Polycirrus eximius	0.17	1.17	0.25	0.82	0.28	81.46
Phoronis (LPIL)	0.50	0.17	0.25	0.65	0.28	81.74
Scoloplos rubra	0.00	0.67	0.24	0.73	0.27	82.01
Sipuncula (LPIL)	0.33	0.17	0.23	0.58	0.26	82.27
Aoridae (LPIL)	0.00	1.50	0.23	0.44	0.26	82.53
Diopatra cuprea	0.00	0.67	0.22	0.61	0.25	82.78
Protohadzia schoenerae	0.00	1.67	0.21	0.44	0.23	83.01
Tellina iris	0.33	0.00	0.21	0.35	0.23	83.25
Sigatica semisulcata	0.33	0.00	0.21	0.35	0.23	83.48
Lucinidae (LPIL)	0.33	0.00	0.21	0.35	0.23	83.71
Eusarsiella sp. L	0.33	0.00	0.21	0.35	0.23	83.95
Spionidae (LPIL)	0.33	0.50	0.21	0.58	0.23	84.18
Glyceridae (LPIL)	0.33	0.17	0.21	0.51	0.23	84.41
Armandia agilis	0.17	0.33	0.20	0.59	0.22	84.63
Spiochaetopterus oculatus	0.50	0.17	0.19	0.60	0.22	84.85
Schistomeringos pectinata	0.00	1.50	0.19	0.52	0.22	85.07
Metatiron tropakis	0.17	0.17	0.19	0.50	0.22	85.28
Diplodonta (LPIL)	0.33	0.50	0.19	0.74	0.21	85.49
Spiophanes bombyx	0.33	0.50	0.19	0.75	0.21	85.71
Nephtyidae (LPIL)	0.00	0.33	0.19	0.53	0.21	85.91

Amakusanthura magnifica	0.00	0.33	0.19	0.53	0.21	86.12
Brachiopoda (LPIL)	0.33	0.00	0.19	0.35	0.21	86.33
Apseudes sp. A	0.33	0.00	0.19	0.35	0.21	86.54
Tectonatica pusilla	0.33	0.17	0.18	0.58	0.20	86.74
Mediomastus californiensis	0.00	0.33	0.18	0.55	0.20	86.94
Sabellaria vulgaris	0.00	0.33	0.17	0.49	0.19	87.13
Semele (LPIL)	0.00	0.33	0.17	0.49	0.19	87.33
Gibberosus myersi	0.33	0.00	0.17	0.52	0.19	87.52
Cnidaria (LPIL)	0.17	0.33	0.17	0.53	0.19	87.71
Aricidea taylori	0.33	0.00	0.17	0.54	0.19	87.89
Tharyx acutus	0.00	1.33	0.17	0.44	0.19	88.08
Syllis gracilis	0.00	1.33	0.17	0.44	0.19	88.27
Dentatisyllis carolinae	0.00	1.33	0.17	0.44	0.19	88.46
Arabella mutans	0.00	1.33	0.17	0.44	0.19	88.64
Pisione remota	0.00	0.67	0.16	0.44	0.18	88.82
Ensis directus	0.00	0.67	0.16	0.44	0.18	89.00
Lucina (LPIL)	0.00	0.17	0.15	0.41	0.17	89.17
Kupellonura sp. B	0.00	0.83	0.15	0.81	0.17	89.35
Magelona (LPIL)	0.33	0.00	0.15	0.36	0.17	89.51
Bemlos brunneomaculatus	0.17	0.67	0.15	0.60	0.17	89.68
Amphiuridae (LPIL)	0.00	0.83	0.14	0.61	0.16	89.84
Exogone atlantica	0.17	0.50	0.14	0.68	0.15	89.99
Scoletoma (LPIL)	0.33	0.17	0.14	0.49	0.15	90.15

Appendix II. Taxa listing for the Fernandina ODMDS stations, 2005.

Client: EPA

Project Date: 08/01/2005

Project: EPA Fernandina ODMDS

Total Number of Taxa: 255

ANNELIDA

CLASS OLIGOCHAETA

Order TUBIFICIDA

FAMILY ENCHYTRAEIDAE

Enchytraeidae (LPIL)

FAMILY TUBIFICIDAE

Tubificidae (LPIL)

CLASS POLYCHAETA

Order ARCHANNELIDA

FAMILY POLYGORDIIDAE

Polygordius (LPIL)

FAMILY SACCOCIRRIDAE

Saccocirrus sp. A

Order CAPITELLIDA

FAMILY CAPITELLIDAE

Capitellidae (LPIL)

Heteromastus filiformis

Mediomastus (LPIL)

Mediomastus californiensis

FAMILY MALDANIDAE

Maldanidae (LPIL)

Axiothella (LPIL)

Sabaco americanus

Order EUNICIDA

FAMILY DORVILLEIDAE

Schistomeringos pectinata

Schistomeringos rudolphi

FAMILY EUNICIDAE

Eunicidae (LPIL)

Eunice (LPIL)

FAMILY LUMBRINERIDAE

Lumbrineridae (LPIL)

Lumbrinerides acuta

Lumbrineris (LPIL)

Lumbrineris latreilli

Scoletoma (LPIL)

FAMILY OENONIDAE

Arabella multidentata

Arabella mutans

FAMILY ONUPHIDAE

Onuphidae (LPIL)

Diopatra cuprea

Mooreonuphis pallidula

Onuphis eremita oculata

Order OPHELIIDA
FAMILY OPHELIIDAE
Armandia agilis
Armandia maculata
Order ORBINIIDA
FAMILY ORBINIIDAE
Leitoscoloplos (LPIL)
Scoloplos rubra
FAMILY PARAONIDAE
Aricidea (LPIL)
Aricidea catherinae
Aricidea minuta
Aricidea taylori
Aricidea wassi
Cirrophorus (LPIL)
Cirrophorus ilvana
Levinsenia gracilis
Order OWENIIDA
FAMILY OWENIIDAE
Owenia fusiformis
Order PHYLLODOCIDA
FAMILY CHRYSOPETALIDAE
Bhawania heteroseta
Paleanotus sp. A
FAMILY GLYCERIDAE
Glyceridae (LPIL)
Glycera (LPIL)
Glycera americana
Glycera dibranchiata
FAMILY GONIADIDAE
Goniada (LPIL)
Goniada littorea
Goniadides carolinae
FAMILY HESIONIDAE
Hesionidae (LPIL)
Podarke obscura
FAMILY NEPHTYIDAE
Nephtyidae (LPIL)
Aglaophamus verrilli
Nephtys (LPIL)
Nephtys picta
Nephtys simoni
FAMILY NEREIDAE
Nereididae (LPIL)
Ceratocephale oculata
Nereis succinea
FAMILY PHYLLODOCIDAE
Phyllodocidae (LPIL)
Eumida sanguinea
Paranaitis speciosa
Phyllodoce (LPIL)

FAMILY PILARGIIDAE

Litocorsa antennata
Sigambra tentaculata
Synelmis ewingi

FAMILY PISIONIDAE

Pisione remota

FAMILY POLYNOIDAE

Polynoidae (LPIL)
Lepidonotus sp. A

FAMILY SIGALIONIDAE

Psammolyce arenosa
Sthenelais sp. A

FAMILY SYLLIDAE

Syllidae (LPIL)
Autolytus (LPIL)
Brania wellfleetensis
Dentatisyllis carolinae
Ehlersia ferrugina
Exogone (LPIL)
Exogone atlantica
Exogone lourei
Odontosyllis enopla
Opisthodonta sp. B
Parapionosyllis longicirrata
Pionosyllis gesae
Syllis cornuta
Syllis gracilis

Order SABELLIDA

FAMILY SABELLIDAE

Sabellidae (LPIL)
Chone (LPIL)
Fabricinuda trilobata

FAMILY SERPULIDAE

Filigranula sp. A

Order SPIONIDA

FAMILY CHAETOPTERIDAE

Mesochaetopterus (LPIL)
Spiochaetopterus oculatus

FAMILY CIRRATULIDAE

Cirratulidae (LPIL)
Tharyx acutus

FAMILY MAGELONIDAE

Magelona (LPIL)
Magelona papillicornis
Magelona pettiboneae
Magelona sp. H

FAMILY SPIONIDAE

Spionidae (LPIL)
Aonides mayaguezensis
Apoprionospio pygmaea
Dipolydora socialis
Dispio uncinata
Laonice cirrata

Paraprionospio pinnata
Prionospio (LPIL)
Prionospio cristata
Spio pettiboneae
Spiophanes bombyx
Spiophanes missionensis

Order TERESELLIDA

FAMILY AMPHARETIDAE

Ampharetidae (LPIL)

Melinna maculata

FAMILY PECTINARIIDAE

Pectinaria gouldii

FAMILY SABELLARIIDAE

Sabellaria sp. A

Sabellaria vulgaris

FAMILY TERESELLIDAE

Terebellidae (LPIL)

Pista palmata

Polycirrus (LPIL)

Polycirrus eximius

ARTHROPODA

CLASS MALACOSTRACA

Order AMPHIPODA

FAMILY AMPELISCIDAE

Ampelisca (LPIL)

Ampelisca agassizi

Ampelisca parapacifica

Ampelisca vadorum

FAMILY AORIDAE

Aoridae (LPIL)

Acuminodeutopus naglei

Bemlos brunneomaculatus

Globosolembos smithi

Rildardanus laminosa

FAMILY BATEIDAE

Batea catharinensis

FAMILY COROPHIIDAE

Apocorophium simile

FAMILY HAUSTORIIDAE

Protohaustorius sp. B

FAMILY ISAEIDAE

Photis (LPIL)

FAMILY LILJEBORGIIDAE

Liljeborgia sp. A

FAMILY MELITIDAE

Melitidae (LPIL)

Dulichella sp. A

Maera (LPIL)

Maera sp. D

Protohadzia schoenerae

FAMILY MELPHIDIPPIDAE

Gibberosus myersi

FAMILY NEOMEGAMPHOPIDAE

Neomegamphopus (LPIL)

Neomegamphopus kalanii

FAMILY OEDICEROTIDAE

Americhelidium americanum

FAMILY PHOXOCEPHALIDAE

Metharpinia floridana

FAMILY PLATYISCHNOPIDAE

Eudevenopus honduranus

FAMILY SYNOPIIDAE

Metatiron triocellatus

Metatiron tropakis

Order CUMACEA

FAMILY BODOTRIIDAE

Cyclaspis varians

FAMILY DIASTYLIDAE

Oxyurostylis (LPIL)

Order DECAPODA

Decapoda (LPIL)

FAMILY ALBUNEIDAE

Albunea paretii

FAMILY ALPHEIDAE

Automate (LPIL)

FAMILY CALAPPIDAE

Hepatus (LPIL)

FAMILY GONEPLACIDAE

Goneplacidae (LPIL)

Panoplax depressa

FAMILY HIPPOLYTIDAE

Latreutes parvulus

FAMILY LEUCOSIIDAE

Ebalia stimpsonii

FAMILY PAGURIDAE

Paguridae (LPIL)

FAMILY PARTHENOPIDAE

Heterocrypta granulata

FAMILY PASIPHAEIDAE

Leptochela serratorbita

FAMILY PINNOTHERIDAE

Pinnotheridae (LPIL)

Pinnixa (LPIL)

Pinnotheres (LPIL)

FAMILY PORCELLANIDAE

Euceramus praelongus

FAMILY PORTUNIDAE

Portunus gibbesii

FAMILY PROCESSIDAE

Processa (LPIL)

Processa hemphilli

FAMILY UPOGEBIIDAE

Upogebia (LPIL)

Upogebia affinis

FAMILY XANTHIDAE

Xanthidae (LPIL)

Eurypanopeus depressus

Order ISOPODA

FAMILY ANTHURIDAE

Amakusanthura magnifica

Apanthura cracenta

Mesanthura (LPIL)

FAMILY HYSSURIDAE

Kupellonura sp. B

Order MYSIDACEA

FAMILY MYSIDAE

Bowmaniella (LPIL)

Heteromysis (LPIL)

Order TANAIDACEA

FAMILY APSEUDIDAE

Apseudes sp. A

FAMILY KALLIAPSEUDIDAE

Kalliapseudes macsweenyi

FAMILY NOTOTANAIDAE

Tanaissus sp. A

CLASS OSTRACODA

Order MYODOCOPINA

FAMILY CYLINDROLEBERIDIDAE

Asteropterygion oculitristis

Synasterope setisparsa

FAMILY SARSIELLIDAE

Eusarsiella cresseyi

Eusarsiella sp. L

Eusarsiella spinosa

BRACHIOPODA

Brachiopoda (LPIL)

CHORDATA

CLASS LEPTOCARDIA

Order AMPHIOXI

FAMILY BRANCHIOSTOMIDAE

Branchiostoma (LPIL)

CNIDARIA

Cnidaria (LPIL)

ECHINODERMATA

CLASS ASTEROIDEA

Asteroidea (LPIL)

CLASS HOLOTHUROIDEA

Order APODIDA

FAMILY SYNAPTIDAE

Leptosynapta (LPIL)

CLASS OPHIUROIDEA

Ophiuroidea (LPIL)

Order OPHIURIDA

FAMILY AMPHIURIDAE

Amphiuridae (LPIL)

MOLLUSCA

CLASS BIVALVIA

Bivalvia (LPIL)

Order ARCOIDA

FAMILY ARCIDAE

Anadara transversa

Order MYOIDA

FAMILY CORBULIDAE

Corbula contracta

Order MYTILOIDA

FAMILY MYTILIDAE

Mytilidae (LPIL)

Lioberus castaneus

Order NUCULOIDA

FAMILY NUCULIDAE

Nucula aegeenis

Order OSTREOIDA

FAMILY ANOMIIDAE

Anomia simplex

FAMILY PECTINIDAE

Pectinidae (LPIL)

Order PTERIOIDA

FAMILY PINNIDAE

Pinnidae (LPIL)

Order VENEROIDA

FAMILY CARDITIDAE

Carditidae (LPIL)

Pleuromeris tridentata

FAMILY CRASSATELLIDAE

Crassinella lunulata

FAMILY LUCINIDAE

Lucinidae (LPIL)

Anodontia alba

Divaricella quadrisulcata

Lucina (LPIL)

Lucina multilineata

FAMILY MESODESMATIDAE

Ervilia concentrica

FAMILY MONTACUTIDAE

Montacutidae (LPIL)

Pythinella cuneata

FAMILY SEMELIDAE

Semele (LPIL)

FAMILY SOLENIDAE

Ensis directus

FAMILY TELLINIDAE

Tellinidae (LPIL)

Tellina (LPIL)

Tellina iris

FAMILY UNGULINIDAE

Diplodonta (LPIL)

Diplodonta punctata

FAMILY VENERIDAE

Veneridae (LPIL)

Gouldia cerina

CLASS GASTROPODA

Order ARCHAEOGASTROPODA

FAMILY FISSURELLIDAE

Diodora (LPIL)

Order CEPHALASPIDEA

FAMILY ACTEONIDAE

Rictaxis punctostriatus

FAMILY PHILINIDAE

Philine sagra

FAMILY SCAPHANDRIDAE

Scaphandridae (LPIL)

Acteocina bidentata

Acteocina candei

Order MESOGASTROPODA

FAMILY CAECIDAE

Caecum floridanum

Caecum johnsoni

Caecum pulchellum

FAMILY CALYPTRAEIDAE

Calyptraea centralis

Crepidula plana

FAMILY EULIMIDAE

Eulimidae (LPIL)

Strombiformis (LPIL)

Strombiformis bilineatus

FAMILY NATICIDAE

Sigatica semisulcata

Tectonatica pusilla

FAMILY TORNIDAE

Macromphalina floridana

Order NEOGASTROPODA

FAMILY COLUMBELLIDAE

Mitrella lunata

FAMILY MURICIDAE

Muricidae (LPIL)

FAMILY TURRIDAE

Turridae (LPIL)

Kurtziella rubella

Order PYRAMIDELLOIDA

FAMILY PYRAMIDELLIDAE

Odostomia (LPIL)

Turbonilla (LPIL)

CLASS POLYPLACOPHORA

Polyplacophora (LPIL)

CLASS SCAPHOPODA

Order DENTALIIDA

FAMILY DENTALIIDAE

Antalis (LPIL)

Dentalium laqueatum

PHORONIDA

FAMILY PHORONIDAE

Phoronis (LPIL)

PLATYHELMINTHES

CLASS TURBELLARIA

Turbellaria (LPIL)

RHYNCHOCOELA

Rhynchocoela (LPIL)

CLASS ANOPLA

Order HETERONEMERTEA

FAMILY LINEIDAE

Lineidae (LPIL)

Order PALEONEMERTEA

FAMILY TUBULANIDAE

Tubulanus (LPIL)

SIPUNCULA

Sipuncula (LPIL)

FAMILY ASPIDOSIPHONIDAE

Aspidosiphon (LPIL)

Aspidosiphon albus

Aspidosiphon gosnoldi

FAMILY GOLFINGIIDAE

Golfingia (LPIL)

Phascolion strombi