FLORIDA BAY, FLORIDA
BENTHIC COMMUNITY ASSESSMENT

SUBMITTED TO

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
OFFICE OF OCEAN RESOURCES CONSERVATION AND ASSESSMENT
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INTRODUCTION

Florida Bay was sampled during the summer of 1997. One aspect of this evaluation was benthic community characterization, which was accomplished via sample collection by National Oceanic and Atmospheric Administration (NOAA) personnel and laboratory and data analysis by Barry A. Vittor & Associates, Inc. (BVA).

METHODS

Sample Collection And Handling

A Young dredge (area = 0.04 m^2) was used to collect replicate bottom samples at each of 27 stations in Florida Bay (Figure 1). Macroinfaunal samples were sieved through a 0.5–mm mesh screen and preserved with 10% formalin on ship. Macroinfaunal samples were transported to the BVA laboratory in Mobile, Alabama.

Sediment Analysis

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

Macroinfaunal Sample Analysis

In the laboratory of BVA, benthic samples were inventoried, rinsed gently through a 0.5 mm mesh sieve to remove preservatives and sediment, stained with Rose Bengal, and stored in 70% isopropanol solution until processing. Sample material (sediment, detritus, organisms) was placed in white enamel trays for sorting under Wild M-5A dissecting microscopes. All macroinvertebrates were carefully removed with forceps and placed in labelled glass vials containing 70% isopropanol. Each vial represented a major taxonomic group (e.g. Polychaeta, Mollusca, Arthropoda). All sorted macroinvertebrates were identified to the lowest practical

Figure 1. 1997 Florida Bay Macrobenthic Community Assessment Study Station Locations and Observation Numbers. Stations marked with circles were not sampled 8/12-8/19.

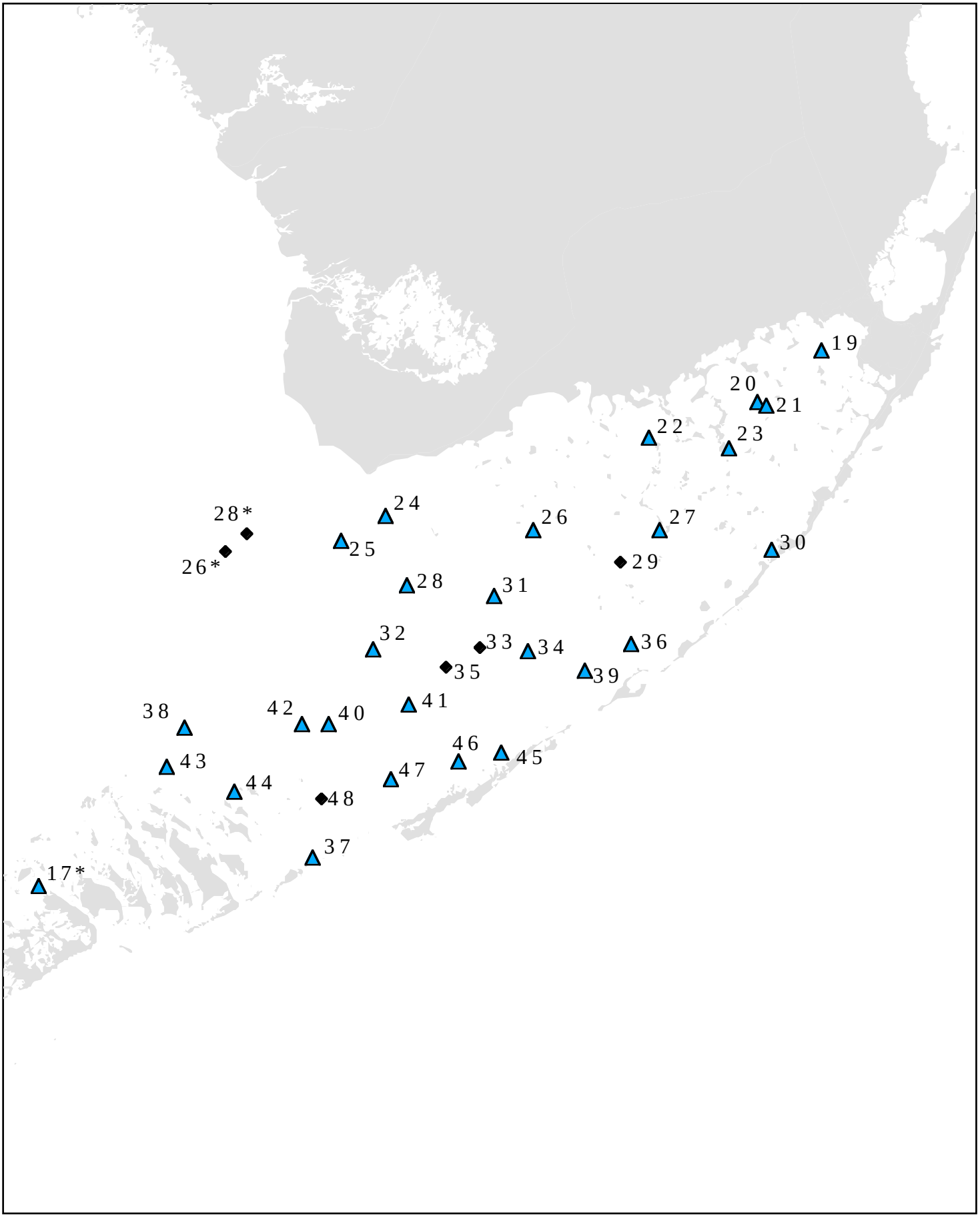


Table 1. Observation numbers and corresponding station identifiers for the Florida Bay stations, August 1997.

Observation number	Station ID
19	WI97LR19
20	WI97LR20
21	WI97LR21
22	WI97LR23
23	WI97LR25
24	WI97LR27
25	WI97LR29
26	WI97LR30
27	WI97LR31
28	WI97LR32
29	WI97LR33
30	WI97LR34
31	WI97LR35
32	WI97LR36
33	WI97LR37
34	WI97LR38
35	WI97LR39
36	WI97LR40
37	WI97LR41
38	WI97LR42
39	WI97LR43
40	WI97LR44
41	WI97LR45
42	WI97LR46
43	WI97LR47
44	WI97LR48
45	WI97LR49
46	WI97LR50
47	WI97LR51
48	WI97LR52
17	WI97MR04
26	WI97MR12
28	WI97MR32

identification level (LPIL), which in most cases was to species level unless the specimen was a juvenile, damaged, or otherwise unidentifiable. The number of individuals of each taxon, excluding fragments, was recorded. A voucher collection was prepared, composed of representative individuals of each species not previously encountered in samples from the region.

DATA ANALYSIS

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

The analytical methodologies utilized for this study were similar to those used in similar benthic community characterization reports prepared for other state and federal agency surveys. Macroinfaunal characterization involves an evaluation of several biological community structure parameters (e.g., species abundance, species composition and species diversity indices) during initial data reduction, followed by pattern and classification analysis for delineation of taxa assemblages. Since species are distributed along environmental gradients, there are generally no distinct boundaries between communities. However, the relationships between habitats and species assemblages often reflect the interactions of physical and biological factors and indicate major ecological trends.

Assemblage Structure

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. 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 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 Pielou's Index (Pielou, 1966), according to the following formula:

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

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

Taxa diversity 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 faunal equitability to 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, $J' = H'/H'_{max}$.

Macroinfaunal data were graphically and statistically analyzed to identify any differences in density and taxa richness between stations. Also, statistical correlations were calculated in an attempt to elucidate relationships between physical, chemical and biological variables. Data for total density and taxa richness were tested for normality (Shapiro-Wilk W; SAS Institute, 1995). The distribution of the density data was not normal and was square-root transformed [$\sqrt{(x+1)}$] to meet normality assumptions. Transformed density data and taxa richness data were analyzed using a one-way ANOVA, while post-hoc comparisons were calculated using paired t-tests (SAS Institute, 1995).

Faunal Similarities

Numerical classification analysis (Boesch 1977) was performed on the faunal data to examine within- and between- stations differences at the Florida Bay stations 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 taxa 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 taxa 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 taxa (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 taxa are in common. Hierarchical clustering of similarity values is achieved using the group-average sorting strategy (Lance and Williams 1967) 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. Taxa used in these analyses were selected according to their percent abundance and percent frequency. Total densities for each of the selected taxa at a given station were natural log transformed [$x=\ln(x+1)$] for the analysis.

HABITAT CHARACTERISTICS

Sediment data for the 27 stations are given in Table 2 and Figures 2, 3 and 4. Sediment composition at the 27 stations showed some variation. Clay and silt dominated at Stations LR-23, LR-25, LR-30, LR-34,LR-35, LR-45, LR-46 and LR-47. Gravelly sand was the main component at most other stations especially LR-27, LR-36, LR-42, LR-49, LR-50 and LR-51 (Table 2;

Figures 2, 3). The total organic carbon (TOC) fraction of the sediment was below 1.0% for every station and ranged from 0.16% to 0.98% at Stations LR-20 and LR-45, respectively (Table 2; Figure 4). These low values are likely due to storm activity prior to sampling in the area. When storms resuspend sediments, organic carbon will remain in the water column longer than other sediment fractions due to its substantially lower density.

BENTHIC COMMUNITY CHARACTERIZATION

Faunal Composition, Abundance, And Community Structure

Table 3 provides a complete phylogenetic listing for all stations as well as data on taxa abundance and station occurrence. Four Microsoft ™Excel 5.0 (Macintosh version) spreadsheets are being provided separately to NOAA which include: raw data on taxa abundance and density by replicate, a complete taxonomic listing with station abundance and occurrence and additional QA/QC comments, a major taxa table with overall taxa abundance, and an assemblage parameter table including data on mean number of taxa, mean density, taxa diversity and taxa evenness by station and site.

A total of 19578 organisms, representing 621 taxa, were identified from the 27 stations (Table 4). Polychaetes were the most numerous organisms present representing 46.0% of the total assemblage, followed in abundance by malacostrans (19.2%), gastropods (8.0%), ostracods (7.5%) and oligochaetes (7.2%). Polychaetes represented 34.6% of the total number of taxa followed by malacostrans (27.9%), gastropods (14.2%) and bivalves (11.0%) (Table 4). The percentage abundance of the major taxa at the 27 stations is given in Figure 5.

The dominant taxa collected from the samples were the annelid class Oligochaeta (LPIL), the polychaete *Exogone rolani*, the tanaid, *Leptochelia* (LPIL), the polychaete family, Sabellidae (LPIL) and the polychaete *Fabricinuda trilobata* representing 7.2%, 6.7%, 3.5%, 2.5% and 2.4% of the total number of individuals, respectively (Table 3). Oligochaeta (LPIL) and Rhynchocoela (LPIL) were the most widely distributed taxa being found at 96.3% and 92.6% of the stations, respectively. Eight additional taxa occurred in at least 80% of the stations (Table 3).

Table 2. Summary of sediment and benthic macroinfaunal data for the Florida Bay stations, August 1997.

Station	Total Taxa	Mean Taxa per Repl.	Total No. Indivs.	Mean Density (no/m2)	Density (Std. Dev.)	H'	J'	Bottom Salinity (ppt)	Bottom DO (mg/l)	% Gravel	% Sand	% Silt	% Clay	TOC	Textural Description
								"	"						
LR-19	78	47.00	1599.00	13325.00	6018.93	3.09	0.71	"	"	2.13	65.19	17.98	14.69	0.42	silty sand
LR-20	67	44.00	1443.00	12025.00	983.93	3.03	0.72	"	"	4.30	62.25	10.46	22.99	0.16	clayey sand
LR-21	61	34.33	662.00	5516.67	3975.42	3.02	0.74	"	"	4.49	60.02	18.14	17.35	0.18	silty sand
LR-23	34	18.33	430.00	3583.33	1013.76	2.41	0.68	"	"	3.19	19.11	48.78	28.92	0.42	clayey sand
LR-25	84	51.33	983.00	8191.67	1566.11	3.28	0.74	"	"	3.52	19.61	37.75	39.13	0.17	silty clay
LR-27	113	57.33	670.00	5583.33	2216.46	3.83	0.81	"	"	14.56	70.32	7.78	7.35	0.34	gravelly muddy sand
LR-29	155	88.33	1089.00	9075.00	4269.73	4.29	0.85	36.30	5.58	5.54	62.79	15.76	15.91	0.51	gravelly muddy sand
LR-30	42	21.33	202.00	1683.33	662.54	2.93	0.78	"	"	0.37	12.83	52.25	34.55	0.63	silty clay
LR-31	67	37.33	681.00	5675.00	1450.65	3.19	0.76	"	"	26.55	31.31	18.78	23.36	0.31	gravelly mud
LR-32	139	82.00	1074.00	8950.00	1310.77	4.20	0.85	"	"	6.04	71.06	6.61	16.29	0.48	gravelly muddy sand
LR-34	105	55.67	522.00	4350.00	1165.12	3.97	0.85	"	"	3.56	30.98	33.62	31.84	0.19	sandy clay
LR-35	117	66.00	780.00	6500.00	1976.90	3.88	0.81	"	"	3.39	39.85	28.88	27.88	0.48	clayey sand
LR-36	141	75.33	772.00	6433.33	1330.02	4.23	0.86	37.00	5.12	1.96	86.69	5.56	5.80	0.28	sand
LR-38	130	65.00	630.00	5250.00	1162.70	4.07	0.84	"	"	4.53	64.65	13.83	17.00	0.29	silty sand
LR-40	107	45.00	442.00	3683.33	4738.82	4.13	0.88	"	"	8.13	54.34	22.20	15.33	0.68	gravelly muddy sand
LR-41	119	59.67	700.00	5833.33	2682.16	3.73	0.78	36.90	4.68	2.99	57.34	24.12	15.56	0.27	silty sand
LR-42	163	86.00	949.00	7908.33	5108.47	4.00	0.79	36.90	5.72	39.79	58.68	0.00	0.00	0.25	sandy gravel
LR-43	81	35.67	372.00	3100.00	3141.36	3.68	0.84	"	"	3.02	78.69	6.39	11.89	0.46	sand
LR-44	88	39.33	279.00	2325.00	1089.44	3.90	0.87	36.90	5.81	1.34	48.10	32.00	18.56	0.32	silty sand
LR-45	73	32.33	199.00	1658.33	1071.31	3.89	0.91	"	"	1.75	33.95	40.19	24.10	0.98	clayey silt
LR-46	111	57.00	513.00	4275.00	600.52	3.99	0.85	"	"	4.06	35.30	32.92	27.71	0.45	clayey silt
LR-47	72	32.00	276.00	2300.00	1700.92	3.66	0.86	37.30	5.84	1.57	16.78	46.39	35.26	0.19	silty clay
LR-48	72	32.33	209.00	1741.67	1398.51	3.84	0.90	"	"	4.54	51.53	26.90	17.03	0.63	silty sand
LR-49	135	66.00	640.00	5333.33	2313.86	4.05	0.83	"	"	6.27	70.19	10.20	13.34	0.40	gravelly muddy sand
LR-50	189	97.33	1663.00	13858.33	8844.82	4.15	0.79	"	"	1.51	74.29	11.23	12.97	0.20	silty sand
LR-51	163	87.00	1412.00	11766.67	1511.90	4.05	0.80	37.80	4.21	5.86	74.65	10.30	9.19	0.26	gravelly muddy sand
MR-04	96	43.67	387.00	3225.00	1631.91	3.72	0.81	"	"	3.39	39.77	33.10	23.73	0.24	clayey sand

Figure 2. Sediment composition for the Florida Bay stations, August 1997.

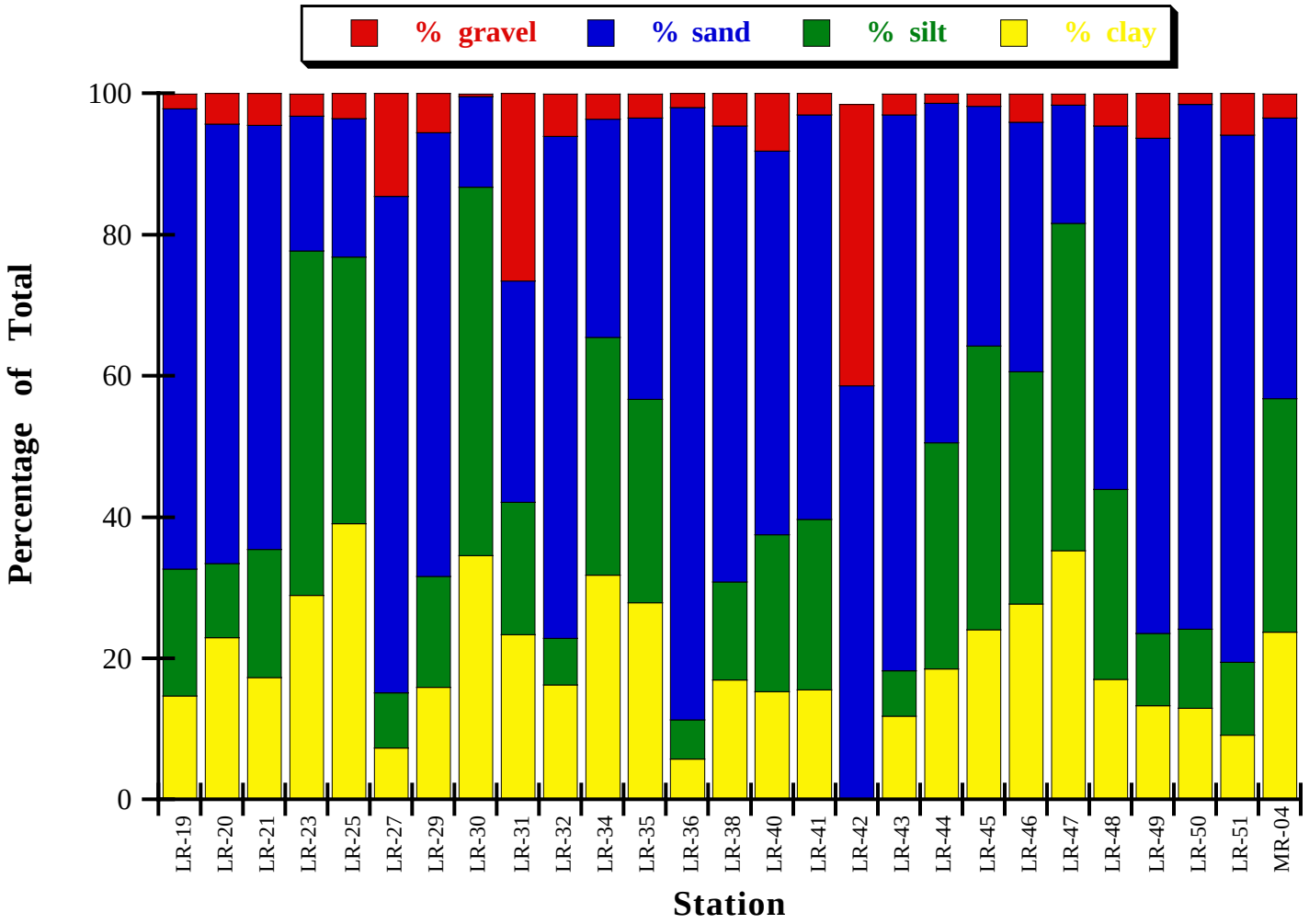


Figure 3. Percent gravel/sand and percent silt/clay content of sediments for the Florida Bay stations, August 1997.

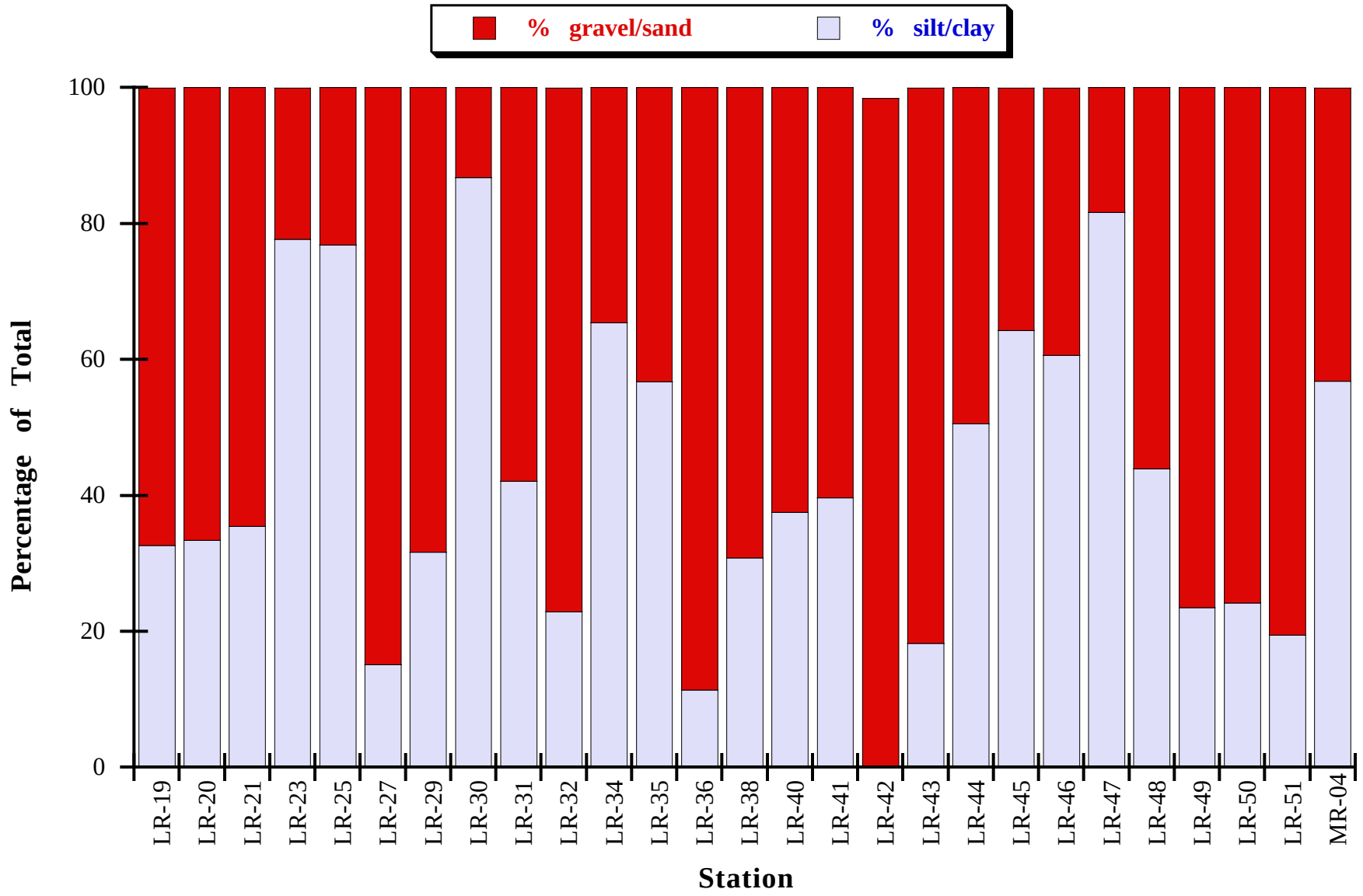


Figure 4. Percent total organic carbon (TOC) content of sediments for the Florida Bay stations, August 1997.

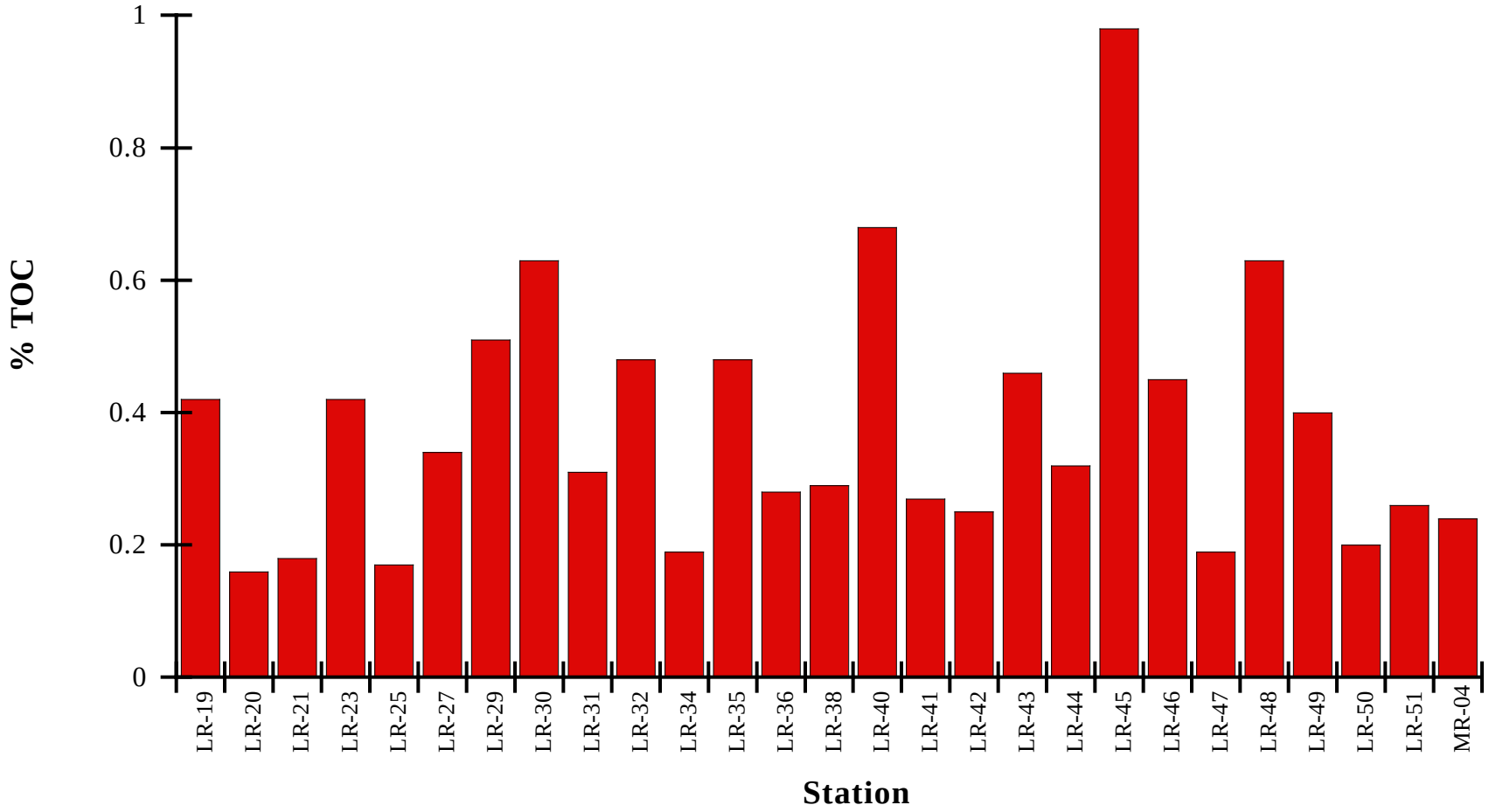


Table 3. Abundance and distribution of taxa for the Florida Bay stations, August 1997.

Taxon	Phylum	Class	No. Inds.	% Total	Cum %	Station Occur	% Station Occur	Comments
Oligochaeta (LPIL)	A	Olig	1408	7.19	7.19	26	96.3	marine and some estuarine specimens only identified to class.
Exogone rolani	A	Poly	1316	6.72	13.91	24	88.9	
Leptochelia (LPIL)	Ar	Mala	675	3.45	17.36	20	74.1	mature male necessary for species identification.
Sabellidae (LPIL)	A	Poly	488	2.49	19.85	22	81.5	missing branchial crown.
Fabricinuda trilobata	A	Poly	471	2.41	22.26	16	59.3	
Parasterope pollex	Ar	Ostr	386	1.97	24.23	15	55.6	
Caecum pulchellum	M	Gast	378	1.93	26.16	23	85.2	
Elasmopus levis	Ar	Mala	376	1.92	28.08	9	33.3	
Syllis cornuta	A	Poly	347	1.77	29.85	21	77.8	
Exogone lourei	A	Poly	340	1.74	31.59	12	44.4	
Scoletoma verrilli	A	Poly	337	1.72	33.31	18	66.7	
Phascolion strombi	S		324	1.65	34.97	23	85.2	
Aricidea taylori	A	Poly	324	1.65	36.62	16	59.3	
Capitellidae (LPIL)	A	Poly	310	1.58	38.21	21	77.8	immature and/or anterior portion only.
Mediomastus (LPIL)	A	Poly	271	1.38	39.59	20	74.1	anterior portions only, pygidium needed for species ID.
Nucula aegeenis	M	Biva	258	1.32	40.91	17	63.0	
Cirrophorus (LPIL)	A	Poly	254	1.30	42.21	22	81.5	immature and/or fragmented portion only.
Monticellina dorsobranchialis	A	Poly	249	1.27	43.48	18	66.7	
Aricidea philbinae	A	Poly	224	1.14	44.62	14	51.9	
Sipuncula (LPIL)	S		212	1.08	45.70	20	74.1	juvenile specimen or missing characters
Rhynchocoela (LPIL)	R		205	1.05	46.75	25	92.6	no identifible characters.
Haplosyllis spongicola	A	Poly	194	0.99	47.74	3	11.1	
Tellina (LPIL)	M	Biva	175	0.89	48.64	14	51.9	due to small size, external and internal characters are not apparent.
Chone (LPIL)	A	Poly	171	0.87	49.51	7	25.9	genus is lowest possible identification.
Grandidierella bonnieroides	Ar	Mala	168	0.86	50.37	14	51.9	
Acuminodeutopus naglei	Ar	Mala	167	0.85	51.22	9	33.3	
Syllis broomensis	A	Poly	164	0.84	52.06	11	40.7	
Schistomeringos pectinata	A	Poly	151	0.77	52.83	22	81.5	
Vaunthompsonia sp.B	Ar	Mala	133	0.68	53.51	12	44.4	
Nematonereis hebes	A	Poly	131	0.67	54.18	12	44.4	
Branchiomma nigromaculatum	A	Poly	131	0.67	54.85	16	59.3	
Caecum nitidium	M	Gast	122	0.62	55.47	9	33.3	
Cylindrobulla beauii	M	Gast	116	0.59	56.06	8	29.6	
Lumbrineridae (LPIL)	A	Poly	115	0.59	56.65	15	55.6	damaged and/or immature specimen.
Aoridae (LPIL)	Ar	Mala	114	0.58	57.23	14	51.9	lacking appendages.
Exogone (LPIL)	A	Poly	108	0.55	57.78	13	48.1	immature and/or antennae missing
Synasterope setisparsa	Ar	Ostr	108	0.55	58.34	15	55.6	
Nereididae (LPIL)	A	Poly	100	0.51	58.85	23	85.2	missing identificaton characters and/or immature.
Apseudes (LPIL)	Ar	Mala	99	0.51	59.35	8	29.6	missing appendages.
Cirratulidae (LPIL)	A	Poly	98	0.50	59.85	19	70.4	anterior fragment, posterior needed for specis ID.
Syllis (LPIL)	A	Poly	98	0.50	60.35	22	81.5	incomplete specimen, posterior portion necessary for species identification.

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Rutiderma darbyi	Ar	Ostr	98	0.50	60.85	12	44.4	
Syllidae (LPIL)	A	Poly	97	0.50	61.35	16	59.3	specimen damaged
Shoemakerella cubensis	Ar	Mala	97	0.50	61.84	12	44.4	
Harbansus paucichelatus	Ar	Ostr	94	0.48	62.33	11	40.7	
Paranesidea sp.A	Ar	Ostr	94	0.48	62.81	10	37.0	
Melitidae (LPIL)	Ar	Mala	92	0.47	63.28	16	59.3	specimen lacks third uropod.
Varohios sp.A	Ar	Mala	92	0.47	63.75	2	7.4	
Xenanthura brevitelson	Ar	Mala	90	0.46	64.20	4	14.8	
Cumella garrityi	Ar	Mala	82	0.42	64.62	13	48.1	
Ampelisca abdita	Ar	Mala	77	0.39	65.02	11	40.7	
Calyptraea centralis	M	Gast	76	0.39	65.41	7	25.9	
Maldanidae (LPIL)	A	Poly	75	0.38	65.79	13	48.1	fragmented portion, pygidium necessary for positive identification.
Eusarsiella cornuta	Ar	Ostr	75	0.38	66.17	10	37.0	
Armandia maculata	A	Poly	75	0.38	66.55	12	44.4	
Solemya occidentalis	M	Biva	75	0.38	66.94	9	33.3	
Paraeupolymnia sp.A	A	Poly	75	0.38	67.32	17	63.0	
Tubulanus (LPIL)	R		74	0.38	67.70	18	66.7	genus is lowest identification level.
Eusarsiella absens	Ar	Ostr	74	0.38	68.08	13	48.1	
Cirrophorus lyra	A	Poly	73	0.37	68.45	11	40.7	
Pagurapseudes largoensis	Ar	Mala	72	0.37	68.82	5	18.5	
Sphaerosyllis piriferopsis	A	Poly	70	0.36	69.17	13	48.1	
Notomastus tenuis	A	Poly	68	0.35	69.52	12	44.4	
Oxyurostylis smithi	Ar	Mala	67	0.34	69.86	6	22.2	
Amphiuridae (LPIL)	E	Ophi	63	0.32	70.19	19	70.4	immature specimen.
Brachidontes exustus	M	Biva	62	0.32	70.50	3	11.1	
Actiniaria (LPIL)	Cn	Anth	59	0.30	70.80	15	55.6	order is lowest identification level.
Olivella (LPIL)	M	Gast	58	0.30	71.10	8	29.6	immature specimen
Scoletoma tenuis	A	Poly	57	0.29	71.39	3	11.1	
Pettibonella multiuncinata	A	Poly	53	0.27	71.66	7	25.9	
Ceratonereis irritabilis	A	Poly	52	0.27	71.93	12	44.4	
Pseudoleptochelia sp.A	Ar	Mala	52	0.27	72.19	5	18.5	
Bulla striata	M	Gast	52	0.27	72.46	14	51.9	
Scyphoproctus platyproctus	A	Poly	51	0.26	72.72	10	37.0	
Golfingia sp.HH	S		51	0.26	72.98	8	29.6	
Ophiuroidea (LPIL)	E	Ophi	50	0.26	73.24	16	59.3	
Batea carinata	Ar	Mala	50	0.26	73.49	11	40.7	
Eusarsiella disparalis	Ar	Ostr	49	0.25	73.74	7	25.9	
Lucina radians	M	Biva	48	0.25	73.99	14	51.9	
Carpias algicola	Ar	Mala	47	0.24	74.23	6	22.2	
Dulichiella appendiculata	Ar	Mala	47	0.24	74.47	9	33.3	
Leucothoe spinicarpa	Ar	Mala	47	0.24	74.71	4	14.8	
Amakusanthura magnifica	Ar	Mala	46	0.23	74.94	13	48.1	
Ceratonereis versipedata	A	Poly	46	0.23	75.18	7	25.9	
Caecum imbricatum	M	Gast	45	0.23	75.41	4	14.8	
Lembos (LPIL)	Ar	Mala	44	0.22	75.63	10	37.0	
Erichthonius brasiliensis	Ar	Mala	44	0.22	75.86	7	25.9	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Asteropella monambon	Ar	Ostr	44	0.22	76.08	9	33.3	
Eusarsiella paniculata	Ar	Ostr	43	0.22	76.30	6	22.2	
Bivalvia (LPIL)	M	Biva	42	0.21	76.51	16	59.3	
Eusarsiella (LPIL)	Ar	Ostr	41	0.21	76.72	10	37.0	
Capitella capitata	A	Poly	41	0.21	76.93	10	37.0	
Fimbriosthenelais minor	A	Poly	41	0.21	77.14	10	37.0	
Lucina nassula	M	Biva	41	0.21	77.35	13	48.1	
Grubeosyllis rugulosa	A	Poly	41	0.21	77.56	6	22.2	
Ampelisca (LPIL)	Ar	Mala	40	0.20	77.77	11	40.7	
Prionospio (LPIL)	A	Poly	40	0.20	77.97	14	51.9	
Protodorvillea kefersteini	A	Poly	40	0.20	78.17	5	18.5	
Patelloida pustulata	M	Gast	40	0.20	78.38	10	37.0	
Terebellidae (LPIL)	A	Poly	39	0.20	78.58	16	59.3	
Schwartziella bryerea	M	Gast	38	0.19	78.77	7	25.9	
Deutella incerta	Ar	Mala	38	0.19	78.97	3	11.1	
Gastropoda (LPIL)	M	Gast	37	0.19	79.16	20	74.1	
Corophiidae (LPIL)	Ar	Mala	37	0.19	79.34	2	7.4	
Carpias (LPIL)	Ar	Mala	37	0.19	79.53	4	14.8	
Goniadides carolinae	A	Poly	37	0.19	79.72	7	25.9	
Ceratocephale oculata	A	Poly	37	0.19	79.91	7	25.9	
Eusarsiella zostericola	Ar	Ostr	37	0.19	80.10	5	18.5	
Haplocytheridea setipunctata	Ar	Ostr	36	0.18	80.28	1	3.7	
Cumella (LPIL)	Ar	Mala	35	0.18	80.46	11	40.7	
Cerapus sp.B	Ar	Mala	35	0.18	80.64	4	14.8	
Aricidea (LPIL)	A	Poly	34	0.17	80.82	13	48.1	
Melinna maculata	A	Poly	34	0.17	80.99	6	22.2	
Spionidae (LPIL)	A	Poly	33	0.17	81.16	10	37.0	
Eusarsiella spinosa	Ar	Ostr	33	0.17	81.33	10	37.0	
Hesionidae (LPIL)	A	Poly	32	0.16	81.49	14	51.9	
Cerithiopsis greeni	M	Gast	32	0.16	81.65	3	11.1	
Pseudophilomedes ambon	Ar	Ostr	31	0.16	81.81	6	22.2	
Eunice imogena	A	Poly	31	0.16	81.97	1	3.7	
Acteocina candei	M	Gast	30	0.15	82.12	11	40.7	
Nereis grayi	A	Poly	30	0.15	82.28	7	25.9	
Axiothella mucosa	A	Poly	30	0.15	82.43	5	18.5	
Paramphinome sp.B	A	Poly	30	0.15	82.58	4	14.8	
Eobrolgus spinosus	Ar	Mala	30	0.15	82.74	5	18.5	
Anthuridae (LPIL)	Ar	Mala	29	0.15	82.88	10	37.0	
Scyphoproctus (LPIL)	A	Poly	29	0.15	83.03	5	18.5	
Exogone dispar	A	Poly	29	0.15	83.18	9	33.3	
Isolda pulchella	A	Poly	29	0.15	83.33	8	29.6	
Tellinidae (LPIL)	M	Biva	28	0.14	83.47	5	18.5	
Actinoseta chelisparsa	Ar	Ostr	28	0.14	83.61	5	18.5	
Galathowenia oculata	A	Poly	28	0.14	83.76	3	11.1	
Terebellides parvus	A	Poly	28	0.14	83.90	11	40.7	
Syllis sardai	A	Poly	28	0.14	84.04	6	22.2	
Paracerceis caudata	Ar	Mala	27	0.14	84.18	10	37.0	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Harrieta faxoni	Ar	Mala	27	0.14	84.32	9	33.3	
Caecum floridanum	M	Gast	27	0.14	84.46	3	11.1	
Lysidice notata	A	Poly	27	0.14	84.59	8	29.6	
Scoloplos rubra	A	Poly	27	0.14	84.73	9	33.3	
Eunice (LPIL)	A	Poly	26	0.13	84.87	9	33.3	
Nereis (LPIL)	A	Poly	26	0.13	85.00	12	44.4	
Lucinidae (LPIL)	M	Biva	25	0.13	85.13	8	29.6	
Nereis acuminata	A	Poly	25	0.13	85.25	4	14.8	
Linga amiantus	M	Biva	25	0.13	85.38	5	18.5	
Ehlersia ferrugina	A	Poly	25	0.13	85.51	7	25.9	
Asteropterygion occulitristis	Ar	Ostr	25	0.13	85.64	6	22.2	
Polyplacophora (LPIL)	M	Poly	24	0.12	85.76	9	33.3	
Cymadusa compta	Ar	Mala	24	0.12	85.88	5	18.5	
Notomastus latericeus	A	Poly	24	0.12	86.00	6	22.2	
Pleuromeris tridentata	M	Biva	24	0.12	86.13	3	11.1	
Bittium varium	M	Gast	24	0.12	86.25	2	7.4	
Eunicidae (LPIL)	A	Poly	23	0.12	86.37	9	33.3	
Polycirrus (LPIL)	A	Poly	23	0.12	86.48	7	25.9	
Eusarsiella childi	Ar	Ostr	23	0.12	86.60	1	3.7	
Chiridota rotifera	E	Holo	23	0.12	86.72	1	3.7	
Golfingia (LPIL)	S		22	0.11	86.83	5	18.5	
Odostomia (LPIL)	M	Gast	22	0.11	86.94	7	25.9	
Nuculana acuta	M	Biva	22	0.11	87.06	2	7.4	
Paranebalia belizensis	Ar	Mala	22	0.11	87.17	8	29.6	
Caulleriella cf. *alata*	A	Poly	22	0.11	87.28	8	29.6	
Syllis danieli	A	Poly	22	0.11	87.39	2	7.4	
Branchiosyllis exilis	A	Poly	22	0.11	87.51	8	29.6	
Edotia lyonsi	Ar	Mala	22	0.11	87.62	7	25.9	
Nereis falsa	A	Poly	21	0.11	87.73	7	25.9	
Prionospio heterobranchia	A	Poly	21	0.11	87.83	5	18.5	
Taylorpholoe hirsuta	A	Poly	21	0.11	87.94	7	25.9	
Tricolia thalassicola	M	Gast	21	0.11	88.05	3	11.1	
Sphaeromatidae (LPIL)	Ar	Mala	20	0.10	88.15	10	37.0	
Nassarius albus	M	Gast	20	0.10	88.25	10	37.0	
Sabaco americanus	A	Poly	20	0.10	88.35	6	22.2	
Olivella dealbata	M	Gast	20	0.10	88.46	7	25.9	
Aricidea finitima	A	Poly	20	0.10	88.56	1	3.7	
Nassarius (LPIL)	M	Gast	19	0.10	88.66	1	3.7	
Turbonilla (LPIL)	M	Gast	19	0.10	88.75	9	33.3	
Platynereis dumerilli	A	Poly	19	0.10	88.85	8	29.6	
Streblosoma hartmanae	A	Poly	19	0.10	88.95	8	29.6	
Schwengelia hendersoni	M	Gast	19	0.10	89.04	1	3.7	
Malmgreniella maccraryae	A	Poly	19	0.10	89.14	8	29.6	
Phyllodocidae (LPIL)	A	Poly	18	0.09	89.23	7	25.9	
Ceratonereis (LPIL)	A	Poly	18	0.09	89.32	9	33.3	
Transennella (LPIL)	M	Biva	18	0.09	89.42	2	7.4	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Marginella aureocincta	M	Gast	18	0.09	89.51	9	33.3	
Chione cancellata	M	Biva	18	0.09	89.60	7	25.9	
Nereis panamensis	A	Poly	18	0.09	89.69	5	18.5	
Eusarsiella pilipollicis	Ar	Ostr	18	0.09	89.78	6	22.2	
Eulimidae (LPIL)	M	Gast	17	0.09	89.87	2	7.4	
Eusarsiella elofsoni	Ar	Ostr	17	0.09	89.96	7	25.9	
Paracypridina floridensis	Ar	Ostr	17	0.09	90.04	4	14.8	
Tellina similis	M	Biva	17	0.09	90.13	5	18.5	
Dorvillea sociablis	A	Poly	17	0.09	90.22	6	22.2	
Marginella apicina	M	Gast	16	0.08	90.30	4	14.8	
Erichsonella filiformis	Ar	Mala	16	0.08	90.38	4	14.8	
Lumbrineris latreilli	A	Poly	16	0.08	90.46	8	29.6	
Marginella lavalleeana	M	Gast	16	0.08	90.55	7	25.9	
Leptosynapta multigranula	E	Holo	16	0.08	90.63	1	3.7	
Glycinde solitaria	A	Poly	16	0.08	90.71	4	14.8	
Orbiniidae (LPIL)	A	Poly	15	0.08	90.79	5	18.5	
Paraonidae (LPIL)	A	Poly	15	0.08	90.86	10	37.0	
Cerithiidae (LPIL)	M	Gast	15	0.08	90.94	9	33.3	
Amphipoda (LPIL)	Ar	Mala	15	0.08	91.02	7	25.9	
Cumacea (LPIL)	Ar	Mala	15	0.08	91.09	3	11.1	
Ostracoda (LPIL)	Ar	Ostr	15	0.08	91.17	8	29.6	
Ascidiacea (LPIL)	C	Asci	15	0.08	91.25	2	7.4	
Trichobranchus glacialis	A	Poly	15	0.08	91.32	6	22.2	
Crepidula maculosa	M	Gast	15	0.08	91.40	4	14.8	
Asteropella pax	Ar	Ostr	15	0.08	91.48	5	18.5	
Cycloapseudes sp.A	Ar	Mala	15	0.08	91.55	1	3.7	
Acteocina sp.B	M	Gast	15	0.08	91.63	3	11.1	
Cerithium (LPIL)	M	Gast	14	0.07	91.70	5	18.5	
Capitella jonesi	A	Poly	14	0.07	91.77	8	29.6	
Apseudes propinquus	Ar	Mala	14	0.07	91.84	4	14.8	
Ceradocus shoemakeri	Ar	Mala	14	0.07	91.91	3	11.1	
Sphaerosyllis taylori	A	Poly	14	0.07	91.99	6	22.2	
Lineidae (LPIL)	R		13	0.07	92.05	7	25.9	
Olividae (LPIL)	M	Gast	13	0.07	92.12	5	18.5	
Mysidae (LPIL)	Ar	Mala	13	0.07	92.19	9	33.3	
Pinnixa (LPIL)	Ar	Mala	13	0.07	92.25	5	18.5	
Marginella (LPIL)	M	Gast	13	0.07	92.32	5	18.5	
Paguristes (LPIL)	Ar	Mala	13	0.07	92.38	6	22.2	
Tellina iris	M	Biva	13	0.07	92.45	5	18.5	
Ischnochiton (LPIL)	M	Poly	12	0.06	92.51	2	7.4	
Elasmopus (LPIL)	Ar	Mala	12	0.06	92.57	5	18.5	
Pectinaria gouldii	A	Poly	12	0.06	92.63	6	22.2	
Laevicardium laevigatum	M	Biva	12	0.06	92.70	6	22.2	
Dasybranchus lunulatus	A	Poly	12	0.06	92.76	5	18.5	
Serolis mgrayi	Ar	Mala	12	0.06	92.82	2	7.4	
Branchiosyllis oculata	A	Poly	12	0.06	92.88	4	14.8	
Nereis pelagica	A	Poly	12	0.06	92.94	3	11.1	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Kalliapseudes sp.C	Ar	Mala	12	0.06	93.00	2	7.4	
Tellina tampaensis	M	Biva	12	0.06	93.06	4	14.8	
Eunice unifrons	A	Poly	12	0.06	93.12	7	25.9	
Rissoidae (LPIL)	M	Gast	11	0.06	93.18	3	11.1	
Xanthidae (LPIL)	Ar	Mala	11	0.06	93.24	6	22.2	
Strombiformis (LPIL)	M	Gast	11	0.06	93.29	7	25.9	
Caulleriella (LPIL)	A	Poly	11	0.06	93.35	8	29.6	
Mediomastus californiensis	A	Poly	11	0.06	93.41	4	14.8	
Lyonsia hyalina floridana	M	Biva	11	0.06	93.46	2	7.4	
Eusarsiella ovalis	Ar	Ostr	11	0.06	93.52	2	7.4	
Leitoscoloplos robustus	A	Poly	11	0.06	93.57	5	18.5	
Apseudes sp.A	Ar	Mala	11	0.06	93.63	1	3.7	
Cubanocuma sp.A	Ar	Mala	11	0.06	93.69	2	7.4	
Transennella stimpsoni	M	Biva	11	0.06	93.74	4	14.8	
Aclididae (LPIL)	M	Gast	10	0.05	93.79	6	22.2	
Kalliapseudes (LPIL)	Ar	Mala	10	0.05	93.85	3	11.1	
Antalis antillarum	M	Scap	10	0.05	93.90	6	22.2	
Volvarina avenacea	M	Gast	10	0.05	93.95	5	18.5	
Chevalia carpenteri	Ar	Mala	10	0.05	94.00	4	14.8	
Tagelus divisus	M	Biva	10	0.05	94.05	2	7.4	
Nearomya floridana	M	Biva	10	0.05	94.10	4	14.8	
Asthenothaerus hemphilli	M	Biva	10	0.05	94.15	3	11.1	
Ceratonereis mirabilis	A	Poly	10	0.05	94.20	7	25.9	
Arabella mutans	A	Poly	10	0.05	94.25	6	22.2	
Eusarsiella sp.E	Ar	Ostr	10	0.05	94.30	3	11.1	
Tellina versicolor	M	Biva	10	0.05	94.36	6	22.2	
Dentaliidae (LPIL)	M	Scap	9	0.05	94.40	1	3.7	
Oxyurostylis (LPIL)	Ar	Mala	9	0.05	94.45	3	11.1	
Photis (LPIL)	Ar	Mala	9	0.05	94.49	4	14.8	
Anodontia alba	M	Biva	9	0.05	94.54	3	11.1	
Syllis alosae	A	Poly	9	0.05	94.59	3	11.1	
Elasmopus balkomanus	Ar	Mala	9	0.05	94.63	1	3.7	
Anamixis cavitura	Ar	Mala	9	0.05	94.68	4	14.8	
Corophium ellisi	Ar	Mala	9	0.05	94.72	1	3.7	
Odontosyllis enopla	A	Poly	9	0.05	94.77	7	25.9	
Lightiella floridana	Ar	Bran	9	0.05	94.82	2	7.4	
Mesanthura floridensis	Ar	Mala	9	0.05	94.86	5	18.5	
Podarkeopsis levifuscina	A	Poly	9	0.05	94.91	7	25.9	
Lucina muricata	M	Biva	9	0.05	94.95	2	7.4	
Trachycardium muricatum	M	Biva	9	0.05	95.00	4	14.8	
Ischnochiton papillosus	M	Poly	9	0.05	95.05	4	14.8	
Atys riiseana	M	Gast	9	0.05	95.09	4	14.8	
Ostracoda Family P	Ar	Ostr	8	0.04	95.13	2	7.4	
Dorvilleidae (LPIL)	A	Poly	8	0.04	95.17	6	22.2	
Turridae (LPIL)	M	Gast	8	0.04	95.21	6	22.2	
Decapoda Natantia (LPIL)	Ar	Mala	8	0.04	95.25	4	14.8	
Sarsiellidae (LPIL)	Ar	Ostr	8	0.04	95.30	4	14.8	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Capitella (LPIL)	A	Poly	8	0.04	95.34	1	3.7	
Diplodonta (LPIL)	M	Biva	8	0.04	95.38	4	14.8	
Nudibranchia (LPIL)	M	Gast	8	0.04	95.42	6	22.2	
Asteropella (LPIL)	Ar	Ostr	8	0.04	95.46	5	18.5	
Potamethus (LPIL)	A	Poly	8	0.04	95.50	1	3.7	
Exogone atlantica	A	Poly	8	0.04	95.54	3	11.1	
Pilargis berkeleyae	A	Poly	8	0.04	95.58	4	14.8	
Laeonereis culveri	A	Poly	8	0.04	95.62	1	3.7	
Scoletoma ernesti	A	Poly	8	0.04	95.66	3	11.1	
Paranathura floridensis	Ar	Mala	8	0.04	95.70	6	22.2	
Cirrophorus furcatus	A	Poly	8	0.04	95.75	2	7.4	
Odostomia laevigata	M	Gast	8	0.04	95.79	4	14.8	
Cirriformia sp.A	A	Poly	8	0.04	95.83	3	11.1	
Euclymene sp.B	A	Poly	8	0.04	95.87	1	3.7	
Marginellidae (LPIL)	M	Gast	7	0.04	95.90	4	14.8	
Lysianassidae (LPIL)	Ar	Mala	7	0.04	95.94	4	14.8	
Pagurus (LPIL)	Ar	Mala	7	0.04	95.98	2	7.4	
Notomastus (LPIL)	A	Poly	7	0.04	96.01	4	14.8	
Anomalocardia auberiana	M	Biva	7	0.04	96.05	1	3.7	
Corbula contracta	M	Biva	7	0.04	96.08	1	3.7	
Leptochelia forresti	Ar	Mala	7	0.04	96.12	3	11.1	
Musculus lateralis	M	Biva	7	0.04	96.15	3	11.1	
Glycymeris pectinata	M	Biva	7	0.04	96.19	2	7.4	
Proscoloplos sp.A	A	Poly	7	0.04	96.23	3	11.1	
Leptochelia sp.D	Ar	Mala	7	0.04	96.26	3	11.1	
Turbellaria (LPIL)	Pl	Turb	6	0.03	96.29	4	14.8	
Nephtyidae (LPIL)	A	Poly	6	0.03	96.32	5	18.5	
Polynoidae (LPIL)	A	Poly	6	0.03	96.35	5	18.5	
Mytilidae (LPIL)	M	Biva	6	0.03	96.38	5	18.5	
Montacutidae (LPIL)	M	Biva	6	0.03	96.41	6	22.2	
Columbellidae (LPIL)	M	Gast	6	0.03	96.44	5	18.5	
Philomedidae (LPIL)	Ar	Ostr	6	0.03	96.48	3	11.1	
Crepidula (LPIL)	M	Gast	6	0.03	96.51	4	14.8	
Leptosynapta (LPIL)	E	Holo	6	0.03	96.54	2	7.4	
Corophium (LPIL)	Ar	Mala	6	0.03	96.57	3	11.1	
Trachycardium (LPIL)	M	Biva	6	0.03	96.60	2	7.4	
Lucina (LPIL)	M	Biva	6	0.03	96.63	4	14.8	
Chione (LPIL)	M	Biva	6	0.03	96.66	5	18.5	
Strombiformis hemphilli	M	Gast	6	0.03	96.69	3	11.1	
Arabella multidentata	A	Poly	6	0.03	96.72	3	11.1	
Gibberosus myersi	Ar	Mala	6	0.03	96.75	1	3.7	
Limnoria simulata	Ar	Mala	6	0.03	96.78	2	7.4	
Aricidea suecica	A	Poly	6	0.03	96.81	6	22.2	
Cyclaspis varians	Ar	Mala	6	0.03	96.84	3	11.1	
Ampharetidae (LPIL)	A	Poly	5	0.03	96.87	4	14.8	
Onuphidae (LPIL)	A	Poly	5	0.03	96.89	3	11.1	
Serpulidae (LPIL)	A	Poly	5	0.03	96.92	4	14.8	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Ischnochitonidae (LPIL)	M	Poly	5	0.03	96.95	2	7.4	
Phoxocephalidae (LPIL)	Ar	Mala	5	0.03	96.97	4	14.8	
Hippolytidae (LPIL)	Ar	Mala	5	0.03	97.00	4	14.8	
Paguridae (LPIL)	Ar	Mala	5	0.03	97.02	4	14.8	
Polygordius (LPIL)	A	Poly	5	0.03	97.05	4	14.8	
Limnoria (LPIL)	Ar	Mala	5	0.03	97.07	4	14.8	
Tharyx acutus	A	Poly	5	0.03	97.10	2	7.4	
Schwartziella catesbyana	M	Gast	5	0.03	97.12	3	11.1	
Sthenolepis cf. *grubei*	A	Poly	5	0.03	97.15	2	7.4	
Pteria colymbus	M	Biva	5	0.03	97.18	2	7.4	
Pyrgocythara coxi	M	Gast	5	0.03	97.20	2	7.4	
Eusarsiella cresseyi	Ar	Ostr	5	0.03	97.23	1	3.7	
Pinnixa floridana	Ar	Mala	5	0.03	97.25	1	3.7	
Alpheus floridanus	Ar	Mala	5	0.03	97.28	3	11.1	
Colomastix halichondriae	Ar	Mala	5	0.03	97.30	2	7.4	
Neomegamphopus hiatus	Ar	Mala	5	0.03	97.33	2	7.4	
Amygdalum papyria	M	Biva	5	0.03	97.35	3	11.1	
Lembos rectangulatus	Ar	Mala	5	0.03	97.38	1	3.7	
Amakusanthura signata	Ar	Mala	5	0.03	97.41	1	3.7	
Dipolydora socialis	A	Poly	5	0.03	97.43	3	11.1	
Cyclaspis sp.O	Ar	Mala	5	0.03	97.46	2	7.4	
Clymenella torquata	A	Poly	5	0.03	97.48	2	7.4	
Opheliidae (LPIL)	A	Poly	4	0.02	97.50	2	7.4	
Veneridae (LPIL)	M	Biva	4	0.02	97.52	4	14.8	
Paratanaidae (LPIL)	Ar	Mala	4	0.02	97.54	2	7.4	
Neomegamphopus (LPIL)	Ar	Mala	4	0.02	97.56	1	3.7	
Cerapus (LPIL)	Ar	Mala	4	0.02	97.58	3	11.1	
Leitoscoloplos (LPIL)	A	Poly	4	0.02	97.60	4	14.8	
Erichsonella attenuata	Ar	Mala	4	0.02	97.62	1	3.7	
Listriella barnardi	Ar	Mala	4	0.02	97.65	2	7.4	
Zebina browniana	M	Gast	4	0.02	97.67	2	7.4	
Dosinia discus	M	Biva	4	0.02	97.69	1	3.7	
Cerithium eburneum	M	Gast	4	0.02	97.71	3	11.1	
Anachis floridana	M	Gast	4	0.02	97.73	2	7.4	
Metaprotella hummelincki	Ar	Mala	4	0.02	97.75	2	7.4	
Ophiostigma isocanthum	E	Ophi	4	0.02	97.77	3	11.1	
Podocerus kleidus	Ar	Mala	4	0.02	97.79	1	3.7	
Skogsbergia lerneri	Ar	Ostr	4	0.02	97.81	1	3.7	
Triptychus niveus	M	Gast	4	0.02	97.83	1	3.7	
Architectonica nobilis	M	Gast	4	0.02	97.85	1	3.7	
Eusarsiella nodimarginus	Ar	Ostr	4	0.02	97.87	2	7.4	
Granulina ovuliformis	M	Gast	4	0.02	97.89	4	14.8	
Lumbrineris sp.D	A	Poly	4	0.02	97.91	1	3.7	
Campylaspis sp.U	Ar	Mala	4	0.02	97.93	3	11.1	
Conus stearnsi	M	Gast	4	0.02	97.95	4	14.8	
Haminoea succinea	M	Gast	4	0.02	97.97	2	7.4	
Porifera (LPIL)	Po		3	0.02	97.99	2	7.4	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Goniadidae (LPIL)	A	Poly	3	0.02	98.00	2	7.4	
Trichobranchidae (LPIL)	A	Poly	3	0.02	98.02	1	3.7	
Vitrinellidae (LPIL)	M	Gast	3	0.02	98.03	3	11.1	
Philine (LPIL)	M	Gast	3	0.02	98.05	2	7.4	
Paranebalia (LPIL)	Ar	Mala	3	0.02	98.06	2	7.4	
Alpheus (LPIL)	Ar	Mala	3	0.02	98.08	3	11.1	
Lysidice (LPIL)	A	Poly	3	0.02	98.09	1	3.7	
Streptosyllis (LPIL)	A	Poly	3	0.02	98.11	1	3.7	
Kinbergonuphis (LPIL)	A	Poly	3	0.02	98.13	2	7.4	
Vaunthompsonia (LPIL)	Ar	Mala	3	0.02	98.14	2	7.4	
Pseudopolydora (LPIL)	A	Poly	3	0.02	98.16	3	11.1	
Epialtus dilatatus forma elongat	Ar	Mala	3	0.02	98.17	2	7.4	
Eusarsiella gigacantha	Ar	Ostr	3	0.02	98.19	2	7.4	
Chione grus	M	Biva	3	0.02	98.20	2	7.4	
Tharyx kirkegaardi	A	Poly	3	0.02	98.22	2	7.4	
Ceratonereis longicirrata	A	Poly	3	0.02	98.23	1	3.7	
Macrocallista maculata	M	Biva	3	0.02	98.25	2	7.4	
Loimia medusa	A	Poly	3	0.02	98.26	2	7.4	
Nereis micromma	A	Poly	3	0.02	98.28	2	7.4	
Codakia orbiculata	M	Biva	3	0.02	98.29	2	7.4	
Mooreonuphis pallidula	A	Poly	3	0.02	98.31	2	7.4	
Pista palmata	A	Poly	3	0.02	98.32	2	7.4	
Cirolana parva	Ar	Mala	3	0.02	98.34	1	3.7	
Lima pellucida	M	Biva	3	0.02	98.36	2	7.4	
Magelona pettiboneae	A	Poly	3	0.02	98.37	3	11.1	
Streptosyllis pettiboneae	A	Poly	3	0.02	98.39	1	3.7	
Diplodonta punctata	M	Biva	3	0.02	98.40	1	3.7	
Cyclaspis pustulata	Ar	Mala	3	0.02	98.42	3	11.1	
Hargeria rapax	Ar	Mala	3	0.02	98.43	1	3.7	
Pitar simpsoni	M	Biva	3	0.02	98.45	2	7.4	
Ampelisca sp.A	Ar	Mala	3	0.02	98.46	1	3.7	
Salmacina sp.A	A	Poly	3	0.02	98.48	1	3.7	
Protula sp.A	A	Poly	3	0.02	98.49	1	3.7	
Typosyllis sp.B	A	Poly	3	0.02	98.51	1	3.7	
Leiocapitella sp.B	A	Poly	3	0.02	98.52	1	3.7	
Listriella sp.G	Ar	Mala	3	0.02	98.54	3	11.1	
Goniada teres	A	Poly	3	0.02	98.55	2	7.4	
Cerodrillia thea	M	Gast	3	0.02	98.57	1	3.7	
Lembos unifasciatus reductus	Ar	Mala	3	0.02	98.59	1	3.7	
Glyceridae (LPIL)	A	Poly	2	0.01	98.60	2	7.4	
Magelonidae (LPIL)	A	Poly	2	0.01	98.61	2	7.4	
Mesodesmatidae (LPIL)	M	Biva	2	0.01	98.62	1	3.7	
Paranthuridae (LPIL)	Ar	Mala	2	0.01	98.63	2	7.4	
Ampithoidae (LPIL)	Ar	Mala	2	0.01	98.64	2	7.4	
Aeginellidae (LPIL)	Ar	Mala	2	0.01	98.65	2	7.4	
Diastylidae (LPIL)	Ar	Mala	2	0.01	98.66	1	3.7	
Nannastacidae (LPIL)	Ar	Mala	2	0.01	98.67	1	3.7	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Palaemonidae (LPIL)	Ar	Mala	2	0.01	98.68	2	7.4	
Diogenidae(LPIL)	Ar	Mala	2	0.01	98.69	2	7.4	
Cylindroleberididae (LPIL)	Ar	Ostr	2	0.01	98.70	1	3.7	
Holothuroidea (LPIL)	E	Holo	2	0.01	98.71	2	7.4	
Phoronis (LPIL)	Ph		2	0.01	98.72	1	3.7	
Armandia (LPIL)	A	Poly	2	0.01	98.73	1	3.7	
Scoloplos (LPIL)	A	Poly	2	0.01	98.74	2	7.4	
Glycymeris (LPIL)	M	Biva	2	0.01	98.75	2	7.4	
Cirriformia (LPIL)	A	Poly	2	0.01	98.76	2	7.4	
Laevicardium (LPIL)	M	Biva	2	0.01	98.77	1	3.7	
Gammaropsis (LPIL)	Ar	Mala	2	0.01	98.78	1	3.7	
Megalomma (LPIL)	A	Poly	2	0.01	98.79	2	7.4	
Rissoina (LPIL)	M	Gast	2	0.01	98.80	1	3.7	
Scoletoma (LPIL)	A	Poly	2	0.01	98.81	2	7.4	
Dulichiella (LPIL)	Ar	Mala	2	0.01	98.82	2	7.4	
Amphioplus abditus	E	Ophi	2	0.01	98.83	1	3.7	
Glycera americana	A	Poly	2	0.01	98.84	2	7.4	
Periclimenes americanus	Ar	Mala	2	0.01	98.85	2	7.4	
Phyllodoce arenae	A	Poly	2	0.01	98.86	1	3.7	
Typosyllis armillaris	A	Poly	2	0.01	98.87	1	3.7	
Fallotritella biscaynensis	Ar	Mala	2	0.01	98.88	2	7.4	
Diodora cayenensis	M	Gast	2	0.01	98.89	1	3.7	
Laonice cirrata	A	Poly	2	0.01	98.90	2	7.4	
Dorvillea clavata	A	Poly	2	0.01	98.91	2	7.4	
Pilumnus dasypodus	Ar	Mala	2	0.01	98.92	1	3.7	
Pettiboneia duofurca	A	Poly	2	0.01	98.93	2	7.4	
Haminoea elegans	M	Gast	2	0.01	98.94	2	7.4	
Ophiolepis elegans	E	Ophi	2	0.01	98.95	1	3.7	
Pitar fulminatus	M	Biva	2	0.01	98.96	1	3.7	
Owenia fusiformis	A	Poly	2	0.01	98.97	1	3.7	
Syllis gracilis	A	Poly	2	0.01	98.98	2	7.4	
Syllis hyalina	A	Poly	2	0.01	98.99	1	3.7	
Caecum johnsoni	M	Gast	2	0.01	99.00	1	3.7	
Tegula lividomaculata	M	Gast	2	0.01	99.01	2	7.4	
Asteropella maclaughlinae	Ar	Ostr	2	0.01	99.02	2	7.4	
Modiolus modiolus squamosus	M	Biva	2	0.01	99.03	2	7.4	
Amphilochus neopolitanus	Ar	Mala	2	0.01	99.04	2	7.4	
Alpheus normanni	Ar	Mala	2	0.01	99.06	1	3.7	
Astralium phoebium	M	Gast	2	0.01	99.07	1	3.7	
Rictaxis punctostriatus	M	Gast	2	0.01	99.08	2	7.4	
Acanthochitona pygmaea	M	Poly	2	0.01	99.09	2	7.4	
Amaea retifera	M	Gast	2	0.01	99.10	1	3.7	
Globosolembos smithi	Ar	Mala	2	0.01	99.11	1	3.7	
Pionosyllis sp.D	A	Poly	2	0.01	99.12	2	7.4	
Hydroides sp.E	A	Poly	2	0.01	99.13	2	7.4	
Glycera sp.E	A	Poly	2	0.01	99.14	2	7.4	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Caulleriella sp.K	A	Poly	2	0.01	99.15	2	7.4	
Bemlos spinicarpus spinicarpus	Ar	Mala	2	0.01	99.16	1	3.7	
Sinelobus stanfordi	Ar	Mala	2	0.01	99.17	1	3.7	
Cumingia tellinoides	M	Biva	2	0.01	99.18	2	7.4	
Macoma tenta	M	Biva	2	0.01	99.19	2	7.4	
Paracaprella tenuis	Ar	Mala	2	0.01	99.20	2	7.4	
Scoloplos texana	A	Poly	2	0.01	99.21	2	7.4	
Cyclaspis unicornis	Ar	Mala	2	0.01	99.22	2	7.4	
Syllis variegata	A	Poly	2	0.01	99.23	1	3.7	
Brachiopoda (LPIL)	B		1	0.01	99.23	1	3.7	
Sigalionidae (LPIL)	A	Poly	1	0.01	99.24	1	3.7	
Poecilochaetidae (LPIL)	A	Poly	1	0.01	99.24	1	3.7	
Corbulidae (LPIL)	M	Biva	1	0.01	99.25	1	3.7	
Muricidae (LPIL)	M	Gast	1	0.01	99.25	1	3.7	
Pyramidellidae (LPIL)	M	Gast	1	0.01	99.26	1	3.7	
Acmaeidae (LPIL)	M	Gast	1	0.01	99.26	1	3.7	
Trochidae (LPIL)	M	Gast	1	0.01	99.27	1	3.7	
Cyclostrematidae (LPIL)	M	Gast	1	0.01	99.27	1	3.7	
Hamineidae (LPIL)	M	Gast	1	0.01	99.28	1	3.7	
Turbinidae (LPIL)	M	Gast	1	0.01	99.28	1	3.7	
Calyptraeidae (LPIL)	M	Gast	1	0.01	99.29	1	3.7	
Cylindrobullidae (LPIL)	M	Gast	1	0.01	99.30	1	3.7	
Bateidae (LPIL)	Ar	Mala	1	0.01	99.30	1	3.7	
Synopiidae (LPIL)	Ar	Mala	1	0.01	99.31	1	3.7	
Amphilochidae (LPIL)	Ar	Mala	1	0.01	99.31	1	3.7	
Colomastigidae (LPIL)	Ar	Mala	1	0.01	99.32	1	3.7	
Leucothoidae (LPIL)	Ar	Mala	1	0.01	99.32	1	3.7	
Mysidacea (LPIL)	Ar	Mala	1	0.01	99.33	1	3.7	
Tanaidacea (LPIL)	Ar	Mala	1	0.01	99.33	1	3.7	
Pagurapseudidae (LPIL)	Ar	Mala	1	0.01	99.34	1	3.7	
Processidae (LPIL)	Ar	Mala	1	0.01	99.34	1	3.7	
Pinnotheridae (LPIL)	Ar	Mala	1	0.01	99.35	1	3.7	
Goneplacidae (LPIL)	Ar	Mala	1	0.01	99.35	1	3.7	
Callianassidae (LPIL)	Ar	Mala	1	0.01	99.36	1	3.7	
Majidae (LPIL)	Ar	Mala	1	0.01	99.36	1	3.7	
Decapoda (LPIL)	Ar	Mala	1	0.01	99.37	1	3.7	
Ophiuridae (LPIL)	E	Ophi	1	0.01	99.37	1	3.7	
Echinoidea (LPIL)	E	Echi	1	0.01	99.38	1	3.7	
Marphysa (LPIL)	A	Poly	1	0.01	99.38	1	3.7	
Aglaophamus (LPIL)	A	Poly	1	0.01	99.39	1	3.7	
Poecilochaetus (LPIL)	A	Poly	1	0.01	99.39	1	3.7	
Dosinia (LPIL)	M	Biva	1	0.01	99.40	1	3.7	
Caecum (LPIL)	M	Gast	1	0.01	99.40	1	3.7	
Listriella (LPIL)	Ar	Mala	1	0.01	99.41	1	3.7	
Podocerus (LPIL)	Ar	Mala	1	0.01	99.41	1	3.7	
Paracaprella (LPIL)	Ar	Mala	1	0.01	99.42	1	3.7	
Gibberosus (LPIL)	Ar	Mala	1	0.01	99.42	1	3.7	
Cyclaspis (LPIL)	Ar	Mala	1	0.01	99.43	1	3.7	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Trachypenaeus (LPIL)	Ar	Mala	1	0.01	99.43	1	3.7	
Dasybranchus (LPIL)	A	Poly	1	0.01	99.44	1	3.7	
Pista (LPIL)	A	Poly	1	0.01	99.44	1	3.7	
Antalis (LPIL)	M	Scap	1	0.01	99.45	1	3.7	
Monoculodes (LPIL)	Ar	Mala	1	0.01	99.45	1	3.7	
Melita (LPIL)	Ar	Mala	1	0.01	99.46	1	3.7	
Thor (LPIL)	Ar	Mala	1	0.01	99.46	1	3.7	
Aspidosiphon (LPIL)	S		1	0.01	99.47	1	3.7	
Paranthura (LPIL)	Ar	Mala	1	0.01	99.47	1	3.7	
Periclimenes (LPIL)	Ar	Mala	1	0.01	99.48	1	3.7	
Chaetozone (LPIL)	A	Poly	1	0.01	99.48	1	3.7	
Euclymene (LPIL)	A	Poly	1	0.01	99.49	1	3.7	
Alvania (LPIL)	M	Gast	1	0.01	99.49	1	3.7	
Ophiactis (LPIL)	E	Ophi	1	0.01	99.50	1	3.7	
Protodorvillea (LPIL)	A	Poly	1	0.01	99.50	1	3.7	
Bowmaniella (LPIL)	Ar	Mala	1	0.01	99.51	1	3.7	
Mastobranchus (LPIL)	A	Poly	1	0.01	99.51	1	3.7	
Ophryotrocha (LPIL)	A	Poly	1	0.01	99.52	1	3.7	
Volvarina (LPIL)	M	Gast	1	0.01	99.52	1	3.7	
Edotia (LPIL)	Ar	Mala	1	0.01	99.53	1	3.7	
Actinoseta (LPIL)	Ar	Ostr	1	0.01	99.54	1	3.7	
Neopanope (LPIL)	Ar	Mala	1	0.01	99.54	1	3.7	
Pionosyllis (LPIL)	A	Poly	1	0.01	99.55	1	3.7	
Pitar (LPIL)	M	Biva	1	0.01	99.55	1	3.7	
Eriopisa (LPIL)	Ar	Mala	1	0.01	99.56	1	3.7	
Branchiosyllis (LPIL)	A	Poly	1	0.01	99.56	1	3.7	
Odontosyllis (LPIL)	A	Poly	1	0.01	99.57	1	3.7	
Paraeupolymnia (LPIL)	A	Poly	1	0.01	99.57	1	3.7	
Crepidula aculeata	M	Gast	1	0.01	99.58	1	3.7	
Calliostoma adelae	M	Gast	1	0.01	99.58	1	3.7	
Tellina aequistriata	M	Biva	1	0.01	99.59	1	3.7	
Aspidosiphon albus	S		1	0.01	99.59	1	3.7	
Thor amboinensis	Ar	Mala	1	0.01	99.60	1	3.7	
Leucon americanus	Ar	Mala	1	0.01	99.60	1	3.7	
Hiatella arctica	M	Biva	1	0.01	99.61	1	3.7	
Kalliapseudes bahamaensis	Ar	Mala	1	0.01	99.61	1	3.7	
Eusarsiella bakeri	Ar	Ostr	1	0.01	99.62	1	3.7	
Streblospio benedicti	A	Poly	1	0.01	99.62	1	3.7	
Bowmaniella brasiliensis	Ar	Mala	1	0.01	99.63	1	3.7	
Lioberus castaneus	M	Biva	1	0.01	99.63	1	3.7	
Persicula catenata	M	Gast	1	0.01	99.64	1	3.7	
Aricidea catherinae	A	Poly	1	0.01	99.64	1	3.7	
Questa caudicirra	A	Poly	1	0.01	99.65	1	3.7	
Aricidea cerrutii	A	Poly	1	0.01	99.65	1	3.7	
Lumbrineris coccinea	A	Poly	1	0.01	99.66	1	3.7	
Polydora cornuta	A	Poly	1	0.01	99.66	1	3.7	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Pyramidella crenulata	M	Gast	1	0.01	99.67	1	3.7	
Diopatra cuprea	A	Poly	1	0.01	99.67	1	3.7	
Glycera dibranchiata	A	Poly	1	0.01	99.68	1	3.7	
Crenella divarcella	M	Biva	1	0.01	99.68	1	3.7	
Glans dominguensis	M	Biva	1	0.01	99.69	1	3.7	
Penaeus duorarum	Ar	Mala	1	0.01	99.69	1	3.7	
Eriopisa elongata	Ar	Mala	1	0.01	99.70	1	3.7	
Holothuria floridana	E	Holo	1	0.01	99.70	1	3.7	
Carditamera floridana	M	Biva	1	0.01	99.71	1	3.7	
Mithrax forceps	Ar	Mala	1	0.01	99.71	1	3.7	
Ingolfiella fuscina	Ar	Mala	1	0.01	99.72	1	3.7	
Campylaspis heardi	Ar	Mala	1	0.01	99.72	1	3.7	
Nephtys incisa	A	Poly	1	0.01	99.73	1	3.7	
Pherusa inflata	A	Poly	1	0.01	99.73	1	3.7	
Mexicope kensleyi	Ar	Mala	1	0.01	99.74	1	3.7	
Acteocina lepta	M	Gast	1	0.01	99.74	1	3.7	
Drilonereis longa	A	Poly	1	0.01	99.75	1	3.7	
Crassinella lunulata	M	Biva	1	0.01	99.75	1	3.7	
Thor manningi	Ar	Mala	1	0.01	99.76	1	3.7	
Phtisica marina	Ar	Mala	1	0.01	99.77	1	3.7	
Allothyone mexicana	E	Holo	1	0.01	99.77	1	3.7	
Exogone naidinoides	A	Poly	1	0.01	99.78	1	3.7	
Triphora nigrocineta	M	Gast	1	0.01	99.78	1	3.7	
Euryplax nitida	Ar	Mala	1	0.01	99.79	1	3.7	
Pseudovermilia occidentalis	A	Poly	1	0.01	99.79	1	3.7	
Leucozonia ocellata	M	Gast	1	0.01	99.80	1	3.7	
Portunus ordwayi	Ar	Mala	1	0.01	99.80	1	3.7	
Latreutes parvulus	Ar	Mala	1	0.01	99.81	1	3.7	
Urosalpinx perrugata	M	Gast	1	0.01	99.81	1	3.7	
Megalomma pigmentum	A	Poly	1	0.01	99.82	1	3.7	
Cleantioides planicauda	Ar	Mala	1	0.01	99.82	1	3.7	
Mysella planulata	M	Biva	1	0.01	99.83	1	3.7	
Syllis prolifera	A	Poly	1	0.01	99.83	1	3.7	
Plakosyllis quadrioculata	A	Poly	1	0.01	99.84	1	3.7	
Piromis roberti	A	Poly	1	0.01	99.84	1	3.7	
Ampelisca schellenbergi	Ar	Mala	1	0.01	99.85	1	3.7	
Anachis semiplicata	M	Gast	1	0.01	99.85	1	3.7	
Rocinela signata	Ar	Mala	1	0.01	99.86	1	3.7	
Anomia simplex	M	Biva	1	0.01	99.86	1	3.7	
Leiocapitella sp.A	A	Poly	1	0.01	99.87	1	3.7	
Glycera sp.A	A	Poly	1	0.01	99.87	1	3.7	
Reticulocythereis sp.A	Ar	Ostr	1	0.01	99.88	1	3.7	
Euclymene sp.A	A	Poly	1	0.01	99.88	1	3.7	
Opisthodonta sp.A	A	Poly	1	0.01	99.89	1	3.7	
Apomatus sp.A	A	Poly	1	0.01	99.89	1	3.7	
Caulleriella sp.B	A	Poly	1	0.01	99.90	1	3.7	

Table 3. (continued)	Phylum	Class	Nos.	% Total	Cum. %	Sta. Ocuur	% Occur	Comments
Euphrosine sp.B	A	Poly	1	0.01	99.90	1	3.7	
Oxyurostylis sp.B	Ar	Mala	1	0.01	99.91	1	3.7	
Ampelisca sp.C	Ar	Mala	1	0.01	99.91	1	3.7	
Photis sp.D	Ar	Mala	1	0.01	99.92	1	3.7	
Podarke sp.D	A	Poly	1	0.01	99.92	1	3.7	
Drilonereis sp.E	A	Poly	1	0.01	99.93	1	3.7	
Corophium sp.I	Ar	Mala	1	0.01	99.93	1	3.7	
Magelona sp.I	A	Poly	1	0.01	99.94	1	3.7	
Scolelepis squamata	A	Poly	1	0.01	99.94	1	3.7	
Eupleura sulcidentata	M	Gast	1	0.01	99.95	1	3.7	
Circulus suppressus	M	Gast	1	0.01	99.95	1	3.7	
Laevicardium sybariticum	M	Biva	1	0.01	99.96	1	3.7	
Metatiron triocellatus	Ar	Mala	1	0.01	99.96	1	3.7	
Seba tropica	Ar	Mala	1	0.01	99.97	1	3.7	
Synopia ultramarina	Ar	Mala	1	0.01	99.97	1	3.7	
Capulus ungaricus	M	Gast	1	0.01	99.98	1	3.7	
Lepidasthenia varia	A	Poly	1	0.01	99.98	1	3.7	
Trypanosyllis vittigera	A	Poly	1	0.01	99.99	1	3.7	
Arca zebra	M	Biva	1	0.01	99.99	1	3.7	
Hippolyte zostericola	Ar	Mala	1	0.01	100.00	1	3.7	

Taxa Key

A = Annelida
    Olig = Oligochaeta
    Poly = Polychaeta
Ar = Arthropoda
    Bran = Branchiura
    Mala = Malacostraca
    Ostr = Ostracoda
B = Branchiopoda
C = Chordata
    Asci = Ascidiacea
Cn = Cnidaria
    Anth = Anthozoa
E = Echinodermata
    Echi = Echinoidea
    Holo = Holothuroidea
    Ophi = Ophiuroidea
M = Mollusca
    Biva = Bivalvia
    Gast = Gastropoda
Ph = Phoronida
Pl = Platyhelminthes
    Turb = Turbellaria
Po = Porifera
R = Rhynchocoela
S = Sipuncula

Table 4. Summary of abundance of major taxonomic groups for the Florida Bay stations August 1997.

TAXA	Total No. Taxa	% Total	Total No. Individuals	% Total
ANNELIDA				
Polychaeta	215	34.62	9010	46.02
Oligochaeta	1	0.16	1408	7.19
ARTHROPODA				
Malacostraca	173	27.86	3750	19.15
Ostracoda	38	6.12	1475	7.53
Other Arthropoda	1	0.16	9	0.05
MOLLUSCA				
Gastropoda	88	14.17	1558	7.96
Bivalvia	68	10.95	1134	5.79
Other Mollusca	8	1.29	72	0.37
OTHER TAXA	29	4.67	1162	5.94
TOTAL	**621**		**19578**	

Figure 5. Percent abundance of major taxa for the Florida Bay stations, August 1997.

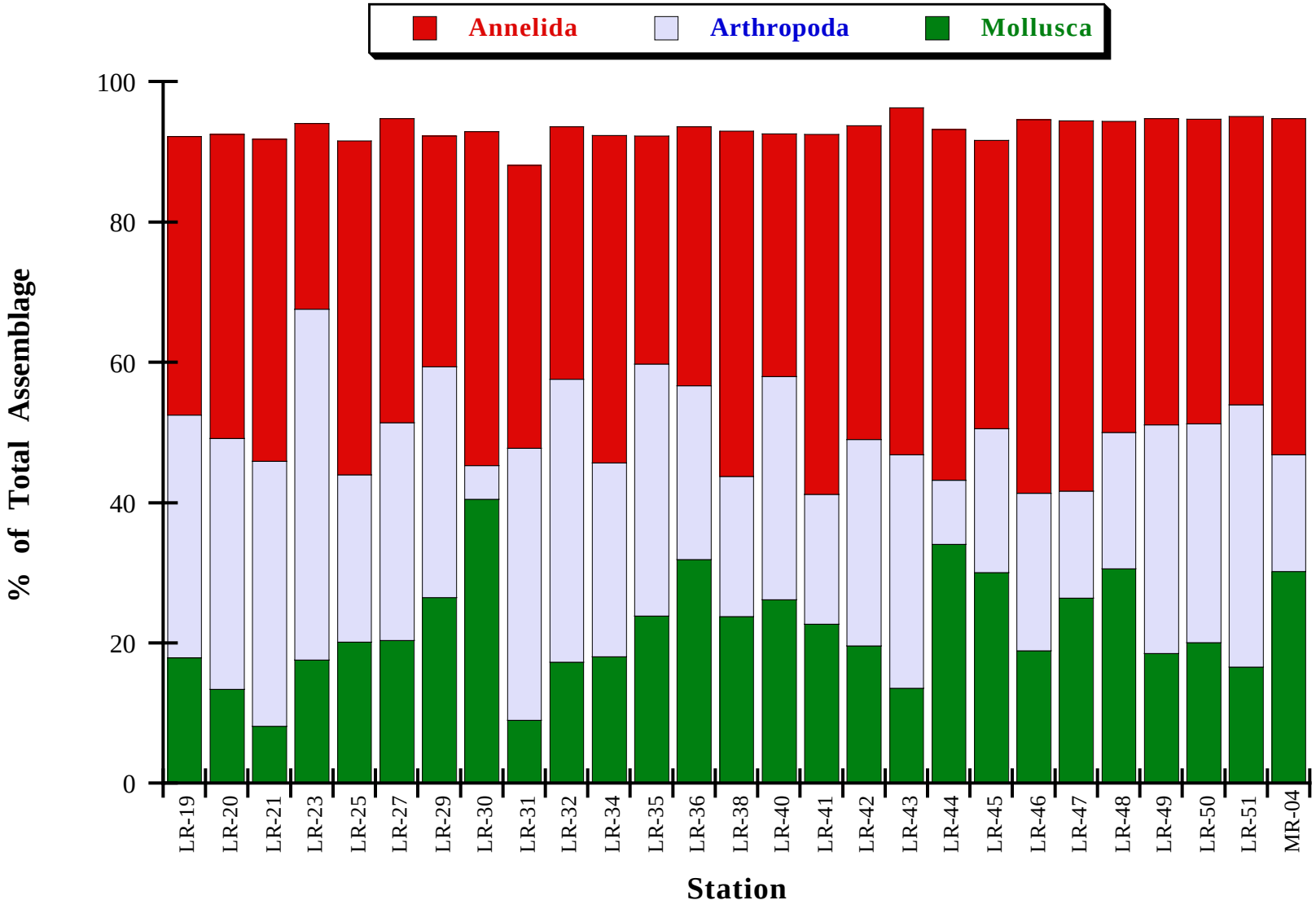


Table 5. Percentage abundance of dominant taxa (> 10%) for the Florida Bay stations, August 1997.

	STATION																										
TAXA	**LR-19**	**LR-20**	**LR-21**	**LR-23**	**LR-25**	**LR-27**	**LR-29**	**LR-30**	**LR-31**	**LR-32**	**LR-34**	**LR-35**	**LR-36**	**LR-38**	**LR-40**	**LR-41**	**LR-42**	**LR-43**	**LR-44**	**LR-45**	**LR-46**	**LR-47**	**LR-48**	**LR-49**	**LR-50**	**LR-51**	**MR-04**
SIPUNCULA																											
Phascolion strombi				22.8																							
ANNELIDA																											
Capitellidae (LPIL)																		10.2									
Scoletoma verrilli												12.7															
Aricidea taylori		10.6																									
Cirrophorus (LPIL)																						11.2					
Exogone rolani	12.9		13.3		16.9																			15.8	14.0		10.9
Haplosyllis spongicola																	18.1										
Fabricinuda trilobata	14.1																										
Oligochaeta (LPIL)	13.9	21.8	21.5		14.4			19.3	12.9										11.5								17.1
MOLLUSCA																											
Nucula aegeenis												12.9	10.6														
Caecum pulchellum						16.7																					
ARTHROPODA																											
Oxyurostylis smithi				11.2																							
Leptochelia (LPIL)									19.5							16.3		10.5									
Apseudes (LPIL)											10.5																
Haplocytheridea setipunctata								17.8																			
Parasterope pollex				25.3																							
Percent of Total per Station	**41.0**	**32.4**	**34.7**	**59.3**	**31.3**	**16.7**	**0.0**	**37.1**	**32.5**	**0.0**	**10.5**	**25.6**	**10.6**	**0.0**	**0.0**	**16.3**	**18.1**	**20.7**	**11.5**	**0.0**	**0.0**	**11.2**	**0.0**	**15.8**	**14.0**	**0.0**	**27.9**

The distribution of dominant taxa representing >10% of the total assemblage at each station is given in Table 5.

Station mean density data are given in Table 2 and Figure 6. Mean densities ranged from 1658 organisms·m^{-2} at Station LR-45 to 13858 organisms·m^{-2} at Station LR-50 (Table 2; Figure 6). There were significant differences in densities between stations (Table 6; Figure 6). Station taxa richness data is given in Table 2 and Figure 7. The mean number of taxa per replicate ranged from 18.3 at Station LR-23 to 97.3 at Station LR-50 (Table 2; Figure 7).

ANOVA analyses were performed on transformed density and taxa richness data for the Florida Bay stations. ANOVA and post-hoc test results for density and taxa richness data are given in tables 6 and 7, respectively. In general, stations LR-19, LR-20,LR-30, LR-45, LR-48, LR-50 and LR-51 had significantly higher densities than the remaining stations (Table 6). Significant differences in taxa richness among the Florida Bay stations were also evident. Stations LR-23, LR-29, LR-30, LR-32, LR-42, LR-50 and LR-51 had significantly higher numbers of taxa than did the remaining stations.

There was a significant positive correlation between station mean density data and the % gravel+sand in the sediment and a significant negative correlation between station densities and % silt+clay in the sediment (Table 8). There was no correlation between station densities and TOC. There was a significant positive correlation between taxa richness and % gravel+sand and a significant negative correlation between taxa richness and % silt+clay. There was no correlation between taxa richness and TOC (Table 8).

Taxa diversity and evenness are given in Table 2 and Figure 8. Taxa diversity (H') was uniformly high with 25 of 27 stations having diversity values > 3.0; values ranged from 2.41 at Station LR-23 to 4.29 at Station LR-29. Taxa evenness (J) was also high with 26 of 27 stations having evenness values > 0.7; values ranged from 0.68 at Station LR-23 to 0.91 at Station LR-45.

Figure 6. Mean macroinfaunal densities for the Florida Bay stations, August 1997.

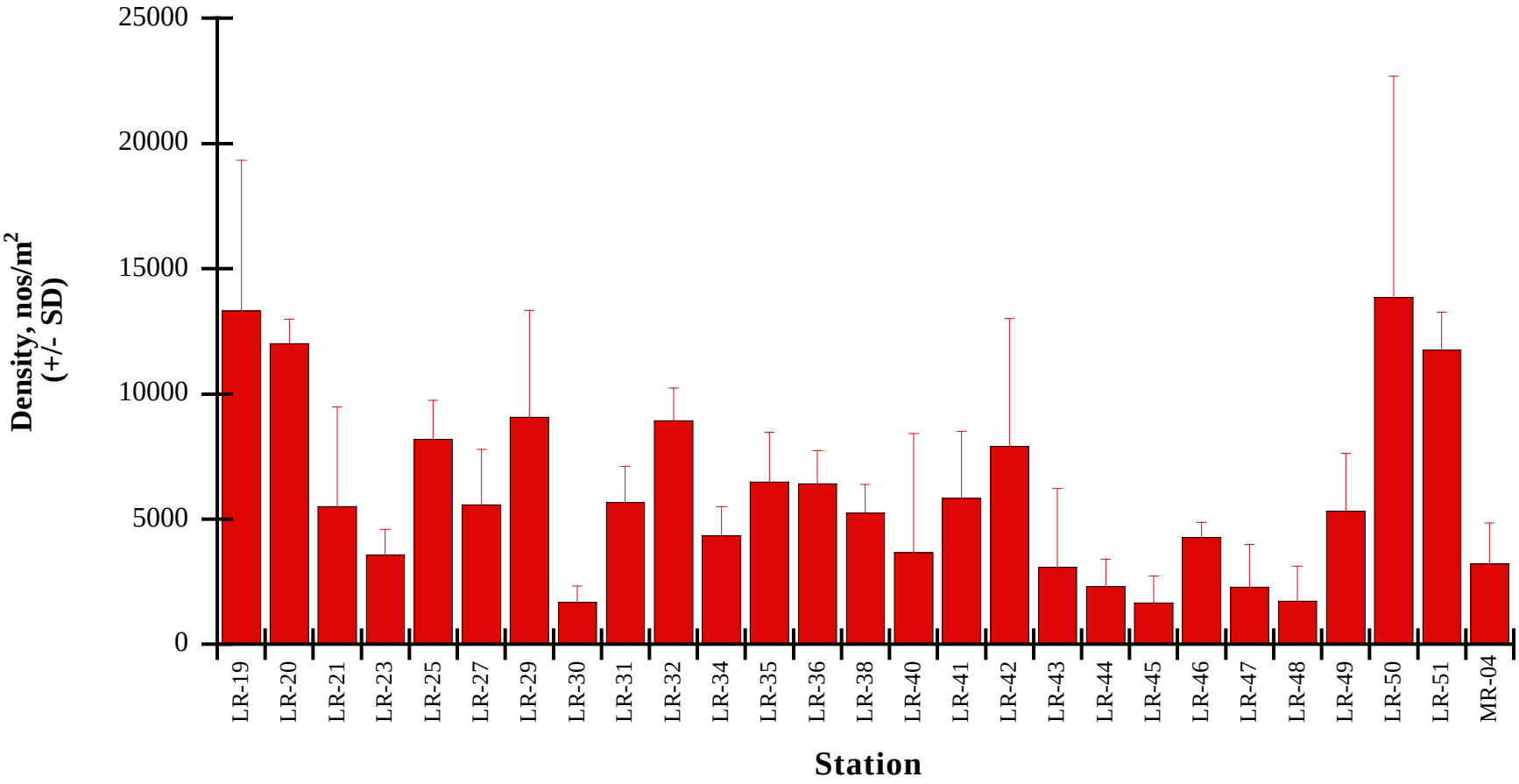


Table 6. ANOVA and post-hoc comparison results for density differences among stations for the Florida Bay samples, August 1997.

Shapiro-Wilk W test for Normality

W=0.98 Prob < W =0.66

ANOVA Table

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Model	26	40843.99	1570.92	**4.24**	**< 0.0001**
Error	54	20022.57	370.79		
Total	80	60866.56	760.83		

Table 6. Continued

Paired t-test comparisons for density by station.

	LR-19	LR-50	LR-20	LR-51	LR-32	LR-29	LR-25	LR-42	LR-35	LR-36	LR-41	LR-31	LR-27
LR-19		ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*
LR-50			ns	ns	ns	ns	ns	ns	*	*	*	*	*
LR-20				ns	ns	ns	ns	ns	ns	ns	*	*	*
LR-51					ns	ns	ns	ns	ns	ns	*	*	*
LR-32						ns	ns	ns	ns	ns	ns	ns	ns
LR-29							ns	ns	ns	ns	ns	ns	ns
LR-25								ns	ns	ns	ns	ns	ns
LR-42									ns	ns	ns	ns	ns
LR-35										ns	ns	ns	ns
LR-36											ns	ns	ns
LR-41												ns	ns
LR-31													ns
LR-27													
LR-38													
LR-49													
LR-21													
LR-34													
LR-46													
LR-23													
MR-04													
LR-43													
LR-40													
LR-44													
LR-47													
LR-30													
LR-48													
LR-45													

* = significantly different at $p < 0.05$; ns = not significant

Table 6. Continued

Paired t-test comparisons for density by station, (continued).

	LR-38	LR-49	LR-21	LR-34	LR-46	LR-23	MR-04	LR-43	LR-40	LR-44	LR-47	LR-30	LR-48	LR-45
LR-19	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-50	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-20	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-51	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-32	ns	ns	ns	ns	ns	*	*	*	*	*	*	*	*	*
LR-29	ns	ns	ns	ns	ns	*	*	*	*	*	*	*	*	*
LR-25	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*	*	*
LR-42	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*	*
LR-35	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*
LR-36	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*
LR-41	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*
LR-31	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*
LR-27	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*
LR-38		ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*
LR-49			ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
LR-21				ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
LR-34					ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
LR-46						ns	ns	ns	ns	ns	ns	ns	ns	ns
LR-23							ns	ns	ns	ns	ns	ns	ns	ns
MR-04								ns	ns	ns	ns	ns	ns	ns
LR-43									ns	ns	ns	ns	ns	ns
LR-40										ns	ns	ns	ns	ns
LR-44											ns	ns	ns	ns
LR-47												ns	ns	ns
LR-30													ns	ns
LR-48														ns
LR-45														

* = significantly different at $p < 0.05$; ns = not significant

Figure 7. Mean number of macroinvertebrate taxa per replicate for the Florida Bay stations, August 1997.

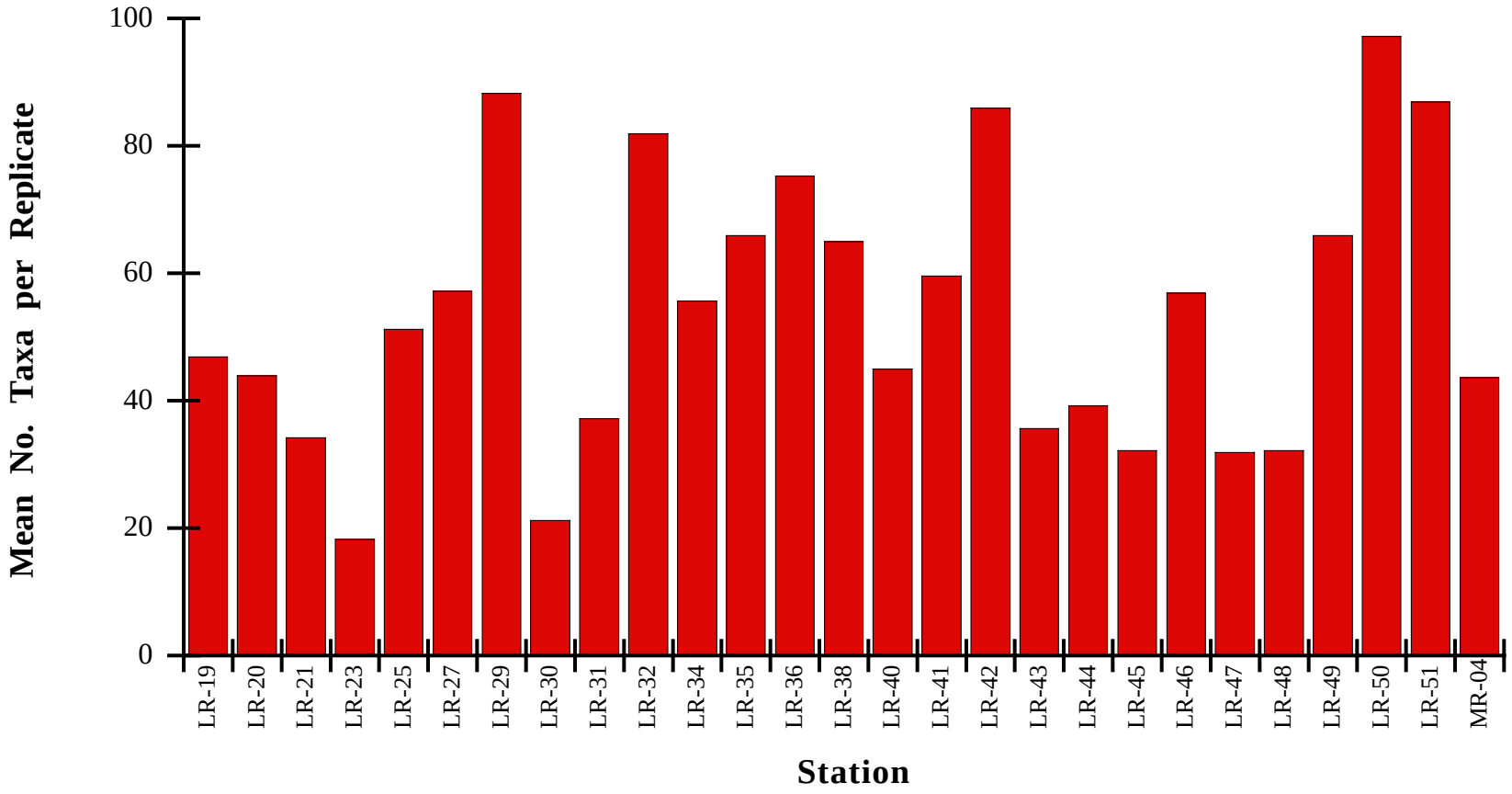


Table 7. ANOVA and post-hoc comparison results for taxa differences among stations for the Florida Bay samples, August 1997.

Shapiro-Wilk W test for Normality

W=0.97 Prob < W =0.12

ANOVA Table

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Model	26	36306.62	1396.41	**4.64**	**< 0.0001**
Error	54	16246.67	300.86		
Total	80	52553.28	656.92		

Table 7. Continued

Paired t-test comparisons for taxa by station.

	LR-50	LR-29	LR-51	LR-42	LR-32	LR-36	LR-49	LR-35	LR-38	LR-41	LR-27	LR-46	LR-34
LR-50		ns	ns	ns	ns	ns	*	*	*	*	*	*	*
LR-29			ns	ns	ns	ns	ns	ns	ns	*	*	*	*
LR-51				ns	ns	ns	ns	ns	ns	*	*	*	*
LR-42					ns	ns	ns	ns	ns	ns	ns	*	*
LR-32						ns	ns	ns	ns	ns	ns	ns	ns
LR-36							ns	ns	ns	ns	ns	ns	ns
LR-49								ns	ns	ns	ns	ns	ns
LR-35									ns	ns	ns	ns	ns
LR-38										ns	ns	ns	ns
LR-41											ns	ns	ns
LR-27												ns	ns
LR-46													ns
LR-34													
LR-25													
LR-19													
LR-40													
LR-20													
MR-04													
LR-44													
LR-31													
LR-43													
LR-21													
LR-48													
LR-45													
LR-47													
LR-30													
LR-23													

* = significantly different at $p < 0.05$; ns = not significant

Table 7. Continued

Paired t-test comparisons for taxa by station, (continued).

	LR-25	LR-19	LR-40	LR-20	MR-04	LR-44	LR-31	LR-43	LR-21	LR-48	LR-45	LR-47	LR-30	LR-23
LR-50	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-29	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-51	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-42	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-32	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-36	ns	*	*	*	*	*	*	*	*	*	*	*	*	*
LR-49	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*	*
LR-35	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*	*
LR-38	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*	*
LR-41	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
LR-27	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
LR-46	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
LR-34	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
LR-25		ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
LR-19			ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
LR-40				ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
LR-20					ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
MR-04						ns	ns	ns	ns	ns	ns	ns	ns	ns
LR-44							ns	ns	ns	ns	ns	ns	ns	ns
LR-31								ns	ns	ns	ns	ns	ns	ns
LR-43									ns	ns	ns	ns	ns	ns
LR-21										ns	ns	ns	ns	ns
LR-48											ns	ns	ns	ns
LR-45												ns	ns	ns
LR-47													ns	ns
LR-30														ns
LR-23														

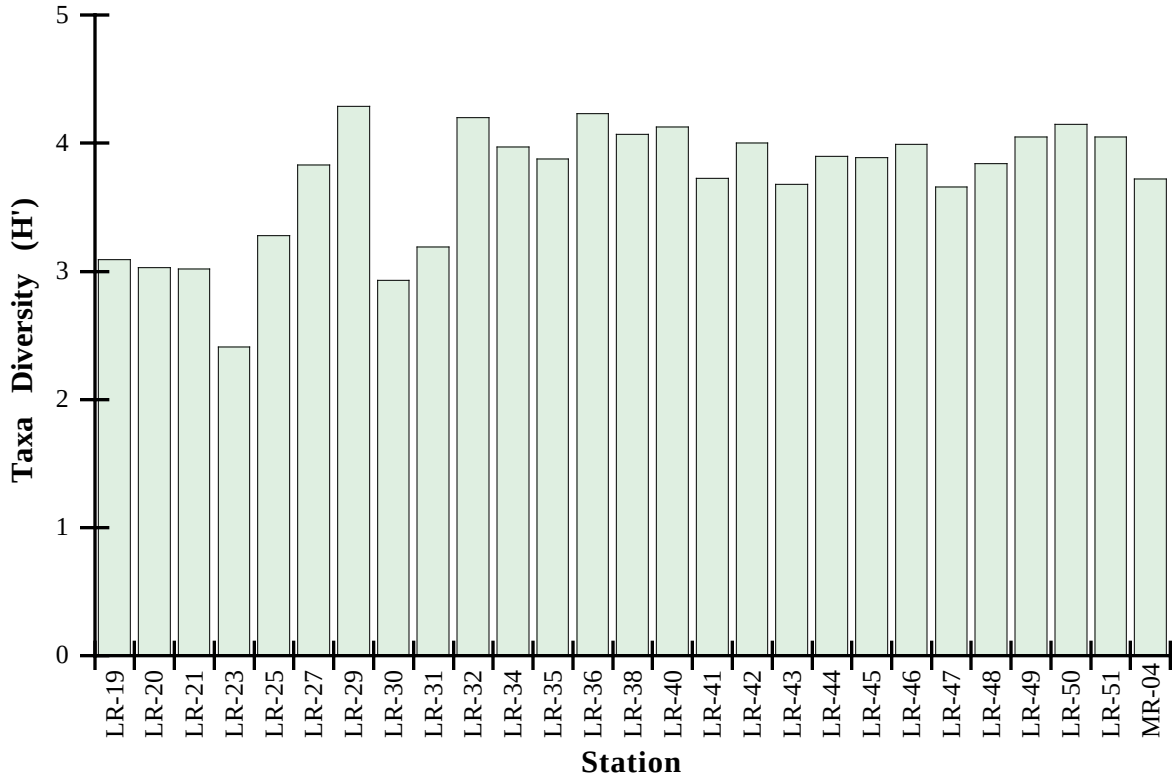
* = significantly different at $p < 0.05$; ns = not significant

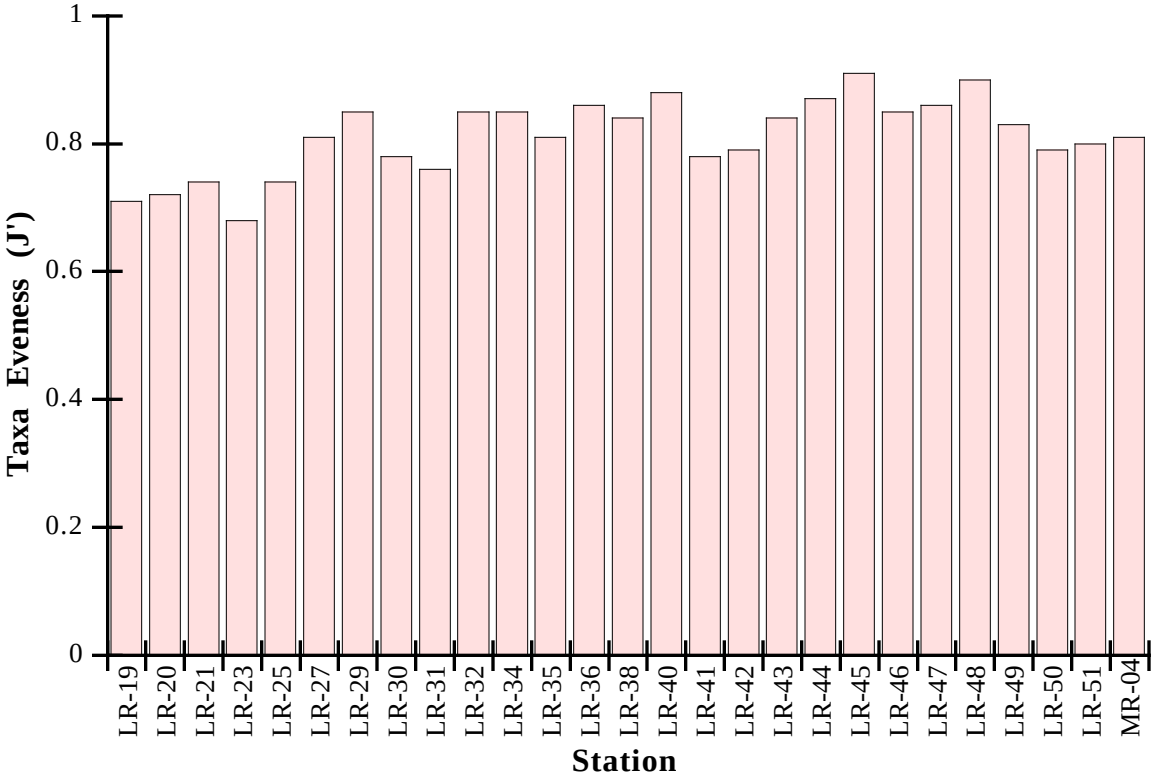
Table 8. Spearman Rho correlation coefficients, Florida Bay stations, August 1997.

Variable	By Variable	Correlation	Probability	sign
% gravel/sand	Taxa	0.5411	<.0001	*
% gravel/sand	Density	0.4358	<.0001	*
% silt/clay	Taxa	-0.5413	<.0001	*
% silt/clay	Density	-0.4361	<.0001	*
TOC	Taxa	-0.105	0.351	ns
TOC	Density	-0.3132	0.0044	ns
TOC	% gravel/sand	-0.0476	0.6727	ns
TOC	% silt/clay	0.0476	0.6727	ns

* = significant correlation; ns = not significant

Figure 8. Taxa diversity (H') and taxa eveness (J') for the Florida Bay stations, August 1997.





Numerical Classification Analysis

Normal (stations) and inverse (species) classification analyses were performed on the Florida Bay data set and are displayed as dendrograms (Figures 9 and 10). The 20 taxa which were included in the analysis accounted for over 45.0% of the macroinfaunal assemblage collected.

Normal (station) classification of the 27 stations was interpreted at a four-group level (10–25% level of similarity). Group 1 contained only Station LR-30 with a macroinfaunal assemblage dominated by the annelid class, Oligochaeta (LPIL) (Table 5; Figure 9). Group 2 contained only station LR-23 with a macroinfaunal assemblage dominated by the ostracod *Parasterope pollex* (Table 5; Figure 9). Group 3 contained Stations LR-19, LR-20, LR-21, LR-25 and LR-31 these were dominated by several annelid species with the exception of LR-31 which contained a large percentage of the tanaid *Leptochelia* (LPIL) (Table 5; Figure 9). Group 4 contained the remaining stations with a diverse assemblage of macroinvertebrate taxa (Table 5; Figure 9).

Classification of the 20 most abundant taxa identified at the 27 stations was interpreted at a two–group level (35-40% similarity; Table 5 and Figure 10). Group 1 included three polychaete taxa, one ostracod species, one amphipod species and one sipuculid species. Group 2 included the remaining 14 species (Table 5; Figure 10).

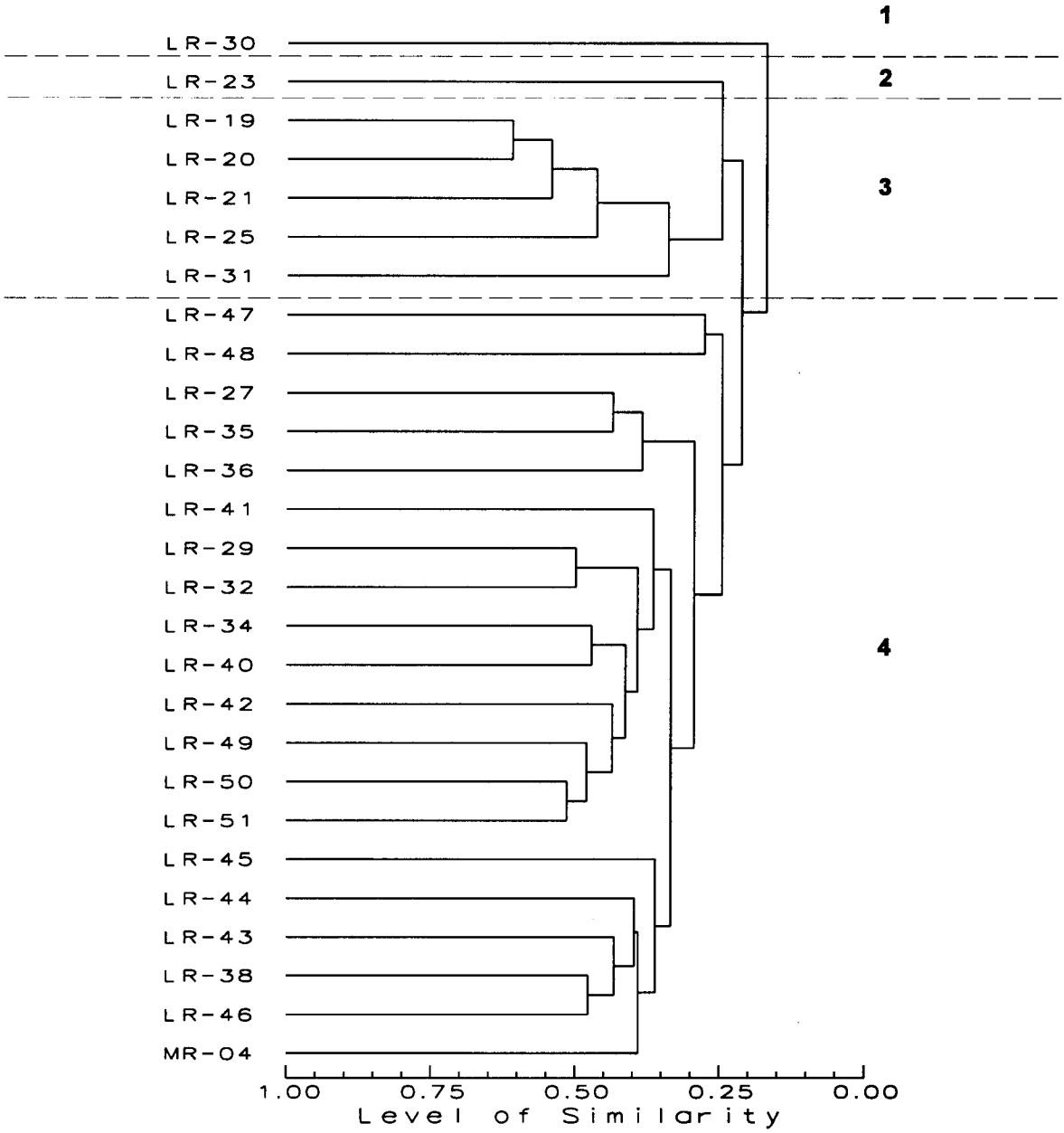


Figure 9. Normal (station) classification analysis for the Florida Bay stations, August 1997. Large, bolded numbers (1, 2, 3, 4) denote station groupings.

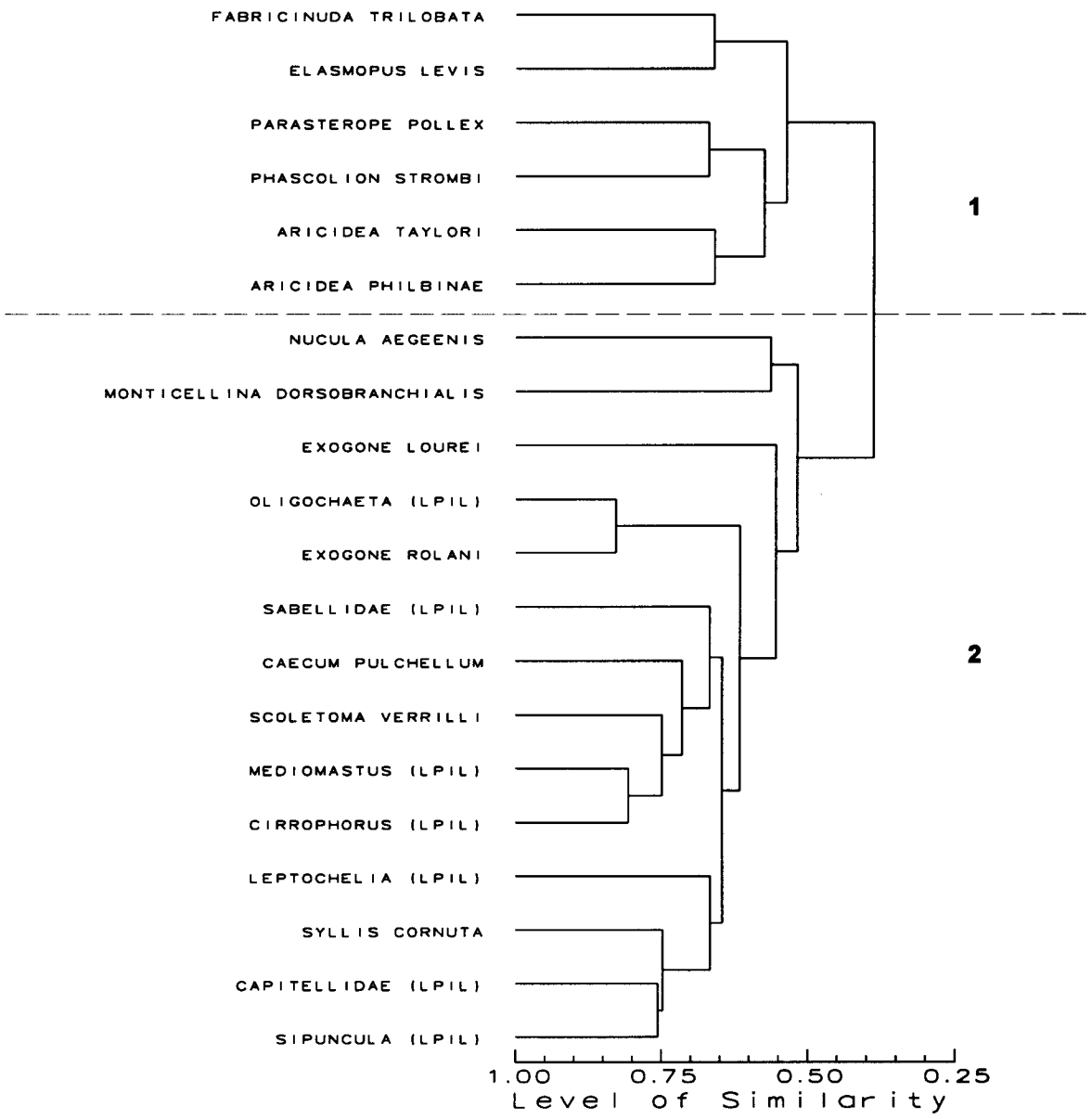


Figure 10. Inverse (taxa) classification analysis for the Florida Bay stations, August 1997. Large, bolded numbers (1, 2) denote taxa groupings.

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APPENDIX

BARRY A. VITTOR & ASSOCIATES, INC.
ENVIRONMENTAL RESEARCH & CONSULTING
8060 Cottage Hill Road Mobile, Alabama 36695
Phone (334) 633-6100 Fax (334) 633-6738

QUALITY ASSURANCE STATEMENT

Client/Project NOAA

Work Assignment Title Florida Bay 1997

Work Assignment Number FB97 Task Number 4

Description of Data Set or Deliverable: 81 Benthic macroinvertebrate samples collected in August of 1997; Young Dredge grabs.

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

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

Carl Mahy 8/12/98

Signature of QA Officer or Reviewer Date

Barry A. Vittor 8-21-98

Signature of Project Manager Date

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Phone (334) 633-6100 Fax (334) 633-6738

QUALITY CONTROL REWORKS

Client/Project NOAA
Work Assignment Title Florida Bay 1997
Work Assignment Number FB97 Task Number 4

Sorting Results:

Sample #	% Accuracy
LR19-1	100%
LR19-3	100%
LR23-1	97.2%
LR30-3	97.2%
LR36-3	100%
LR43-3	95.2%
LR48-2	91.8% (see additional QCs)
LR47-1	97%
LR27-3	100%
LR49-2	100%
LR34-3	100%
LR46-3	100%
LR42-2	100%
LR45-2	100%

Taxonomy Results:

Sample #	Taxa	% Accuracy
LR36-3	Crust./Moll.	96%
LR23-2	Crust./Moll.	97%
LR19-1	Crust./Moll.	96%
LR20-2	Crust./Moll.	96%
LR50-1	Crust./Moll.	96%
LR25-1	Crust./Moll.	95.3%
LR31-3	Crust./Moll.	97.7%
LR44-2	Crust./Moll.	96.6%
LR43-3	Poly./Misc.	100%
LR38-3	Poly./Misc.	95.9%
LR36-2	Poly./Misc.	96.7%
LR50-2	Poly./Misc.	97%
LR42-1	Poly./Misc.	96.6%
LR23-2	Poly./Misc.	100%
LR20-1	Poly./Misc.	96%
LR31-3	Poly./Misc.	97.2%
LR40-1	Poly./Misc.	95.5%

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Taxonomy Results (continued):

Sample #	Taxa	% Accuracy
LR44-1	Poly./Misc.	95.7%
LR50-1	Poly./Misc.	97.7%
LR31-1	Poly./Misc.	97.4%

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

Signature of QA Officer or Reviewer — Date 8/12/98

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ADDITION QUALITY CONTROL REWORKS

Client/Project NOAA

Work Assignment Title Florida Bay 1997

Work Assignment Number FB96 Task Number 4

Dept.: Sorting

Personnel.: SNC

Reasons requiring reworks: Accuracy rate for sample LR-48-2 was below acceptable rate of 95%. All samples sorted by this technician were reworked.

Results of reworks:

Sample #	% Accuracy
LR-21-1	91%
LR-21-2	98%
LR-23-2	98%
LR-29-3	82%
LR-32-1	98%
LR-34-1	93%
LR-35-3	87%
LR-38-1	100%
LR-40-2	100%
LR-41-2	94%
LR-43-1	83%
LR-44-3	76%
LR-46-1	97%
LR-49-1	98%
MR-04-3	100%

Description of outstanding issues or deficiencies which may affect data quality:
All individuals found in reworks were added to the data.
Due to the frequent failures of this sorter, retraining procedures were employed to pinpoint the problem area. This revealed that the sorter was rushing through her samples and overloading her enamel tray with debris and organisms. The reworks on another set of samples proved that corrective action was successful. There are no deficiences that are outstanding. Data quality is assured.

Carl M Vittor 8/6/98

Signature of QA Officer or Reviewer Date