Florida Keys (Including Outer Florida Keys National Marine Sancutary Boundary)-Dry Tortugas Benthic Community Assessment, July 1998

SUBMITTED TO

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
OFFICE OF OCEAN RESOURCES CONSERVATION AND ASSESSMENT
SILVER SPRING, MARYLAND 20910

PREPARED BY

BARRY A. VITTOR & ASSOCIATES, INC.
8060 COTTAGE HILL RD.
MOBILE, ALABAMA 36695
(334) 633-6100

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INTRODUCTION

The Florida Keys to Dry Tortugas region was sampled during July, 1998. 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).

The Florida Keys to Dry Tortugas region and 1998 sampling stations are indicated in Figure 1.

METHODS

Sample Collection And Handling

A Young dredge (area = 0.04 m^2) was used to collect replicate bottom samples at each of 20 stations in and around the Florida Keys to the Dry Tortugas. 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 m 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

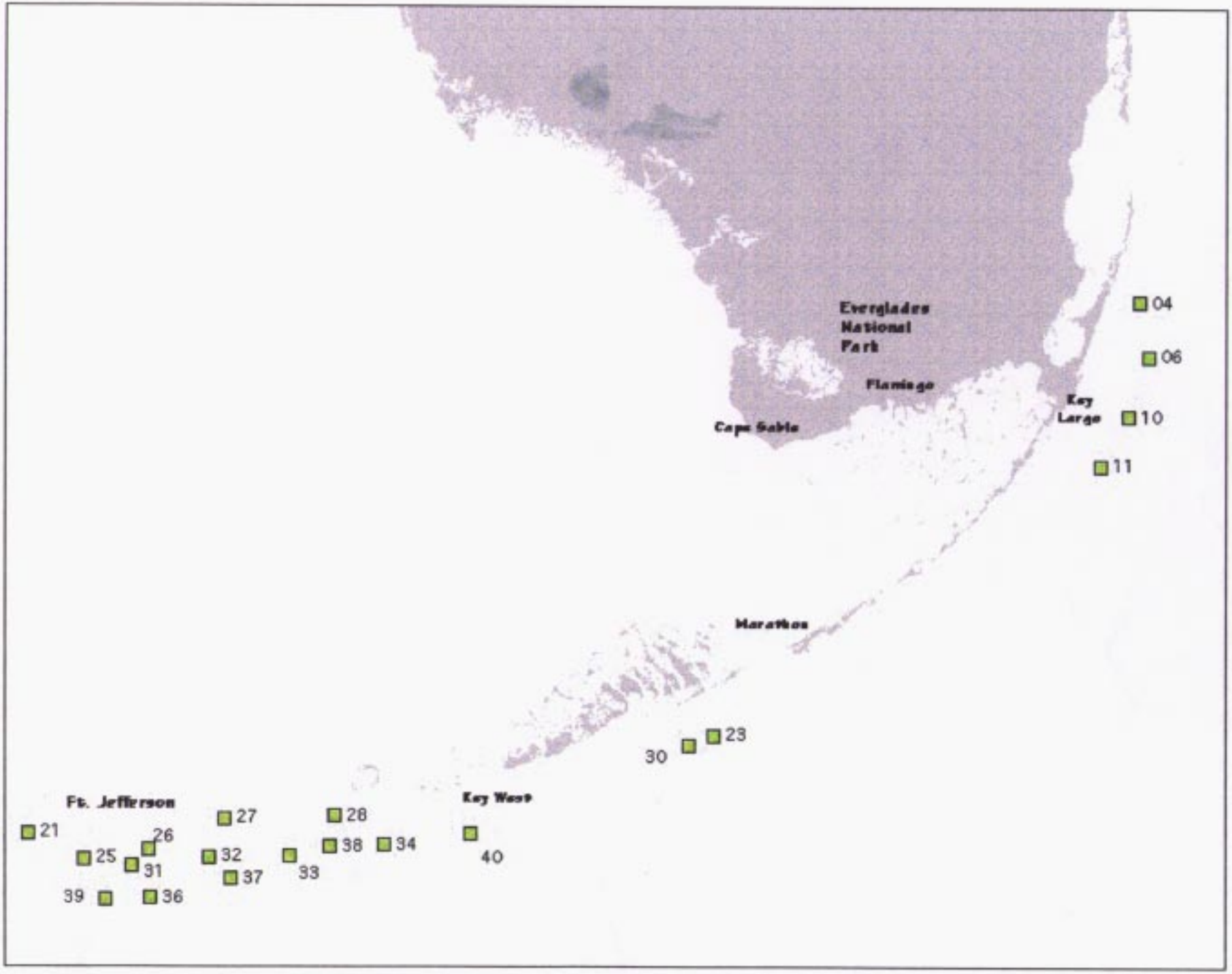

Figure 1. Area sampled for the Florida Keys to Dry Tortugas stations, July 1998.

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

DATA ANALYSIS

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

The QA and QC reports for the Florida Keys to Dry Tortugas samples are 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 and mean number of taxa represented in a given station collection.

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

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

where, S = 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 number of taxa per replicate between stations. Data for total density and mean number of taxa per replicate were ln(x+1) transformed to meet normality assumptions (Shapiro-Wilk W; SAS Institute, 1997). Data were analyzed using one-way ANOVA and non-parametric correlation methods (SAS Institute, 1997).

Faunal Similarities

Cluster analysis was performed on the faunal data to examine between-station differences at the Florida Bay stations and to compare faunal composition at each station

within the study area. Both normal and inverse cluster 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 average linkage method (SAS Institute 1997). In this method, the distance between two clusters is the average distance between pairs of observations, one in each cluster. Taxa used in these analyses were selected according to their percent abundance in the assemblage. Total densities for each of the selected taxa at a given station were ln transformed [x=ln(x+1)] before the analyses.

HABITAT CHARACTERISTICS

Location and sediment data for the 20 stations are given in Table 1 and Figures 2, 3, and 4. Sediment composition at the 20 stations varied considerably from 99% sand at station 26 to 68% clay at station 32 (Table 1; Figure 2). Gravel (presumably shell/coral hash)/sand were predominant at most stations, with silt/clay fractions dominating the sediment at stations 23, 28, 32, 33, 36, 37, 38, and 39 (Figure 3). The total organic carbon (TOC) fraction of the sediment was uniformly low with all values less than 1% (Table 1; Figure 4).

BENTHIC COMMUNITY CHARACTERIZATION

Faunal Composition, Abundance, And Community Structure

Table 2 provides a complete phylogenetic listing for all stations as well as data on taxa abundance and station occurrence. Microsoft ™Excel 5.0 (Macintosh version)

Table 1. Summary of location and sediment data for the Florida Keys to Dry Tortugas stations, July 1998.

Station	Latitude	Longitude	% Gravel	% Sand	% Silt	% Clay	TOC	Textural Description
4	25° 17.7279	80° 11.8190	0.0	99.1	0.0	0.0	0.00	Sand
6	25° 10.8326	80° 11.5929	0.6	99.1	0.0	0.0	0.00	Sand
10	25° 03.8483	80° 15.7853	0.7	99.1	0.0	0.0	0.00	Sand
11	24° 58.4090	80° 20.7503	8.2	91.1	0.0	0.0	0.00	-
21	24° 33.7118	82° 55.4200	0.0	99.4	0.0	0.0	0.00	Sand
23	24° 32.9315	81° 19.3239	0.0	44.9	10.3	44.8	0.00	Sandy clay
25	25° 29.5251	82° 48.2100	8.7	90.7	0.0	0.0	0.00	-
26	24° 29.6240	82° 39.1496	0.0	99.7	0.0	0.0	0.00	Sand
27	24° 32.0444	82° 28.0693	0.0	97.5	0.0	0.0	0.00	Sand
28	24° 30.1888	82° 12.9362	0.0	31.2	10.9	57.9	0.00	Clay
30	24° 32.2213	81° 22.9642	0.0	60.1	5.7	34.2	0.15	Sandy clay
31	24° 27.8660	82° 41.5930	0.0	99.8	0.0	0.0	0.00	Sand
32	24° 27.4829	82° 30.9406	0.0	21.2	10.3	68.5	0.94	Clay
33	24° 26.1274	82° 19.9523	0.0	14.5	18.7	66.9	0.10	Clay
34	24° 25.7072	82° 06.5787	0.0	97.0	0.0	0.0	0.11	Sand
36	24° 23.4319	82° 39.8376	0.0	31.0	9.4	59.6	0.93	Clay
37	24° 24.4069	82° 28.4545	0.0	1.7	45.2	53.1	0.11	Clay
38	24° 26.5316	82° 14.3222	0.0	9.9	13.1	77.1	0.12	Clay
39	24° 24.0353	82° 45.9771	0.0	30.5	22.2	47.3	0.09	Sandy clay
40	24° 25.5124	81° 54.6631	2.8	95.7	0.0	0.0	0.00	Sand

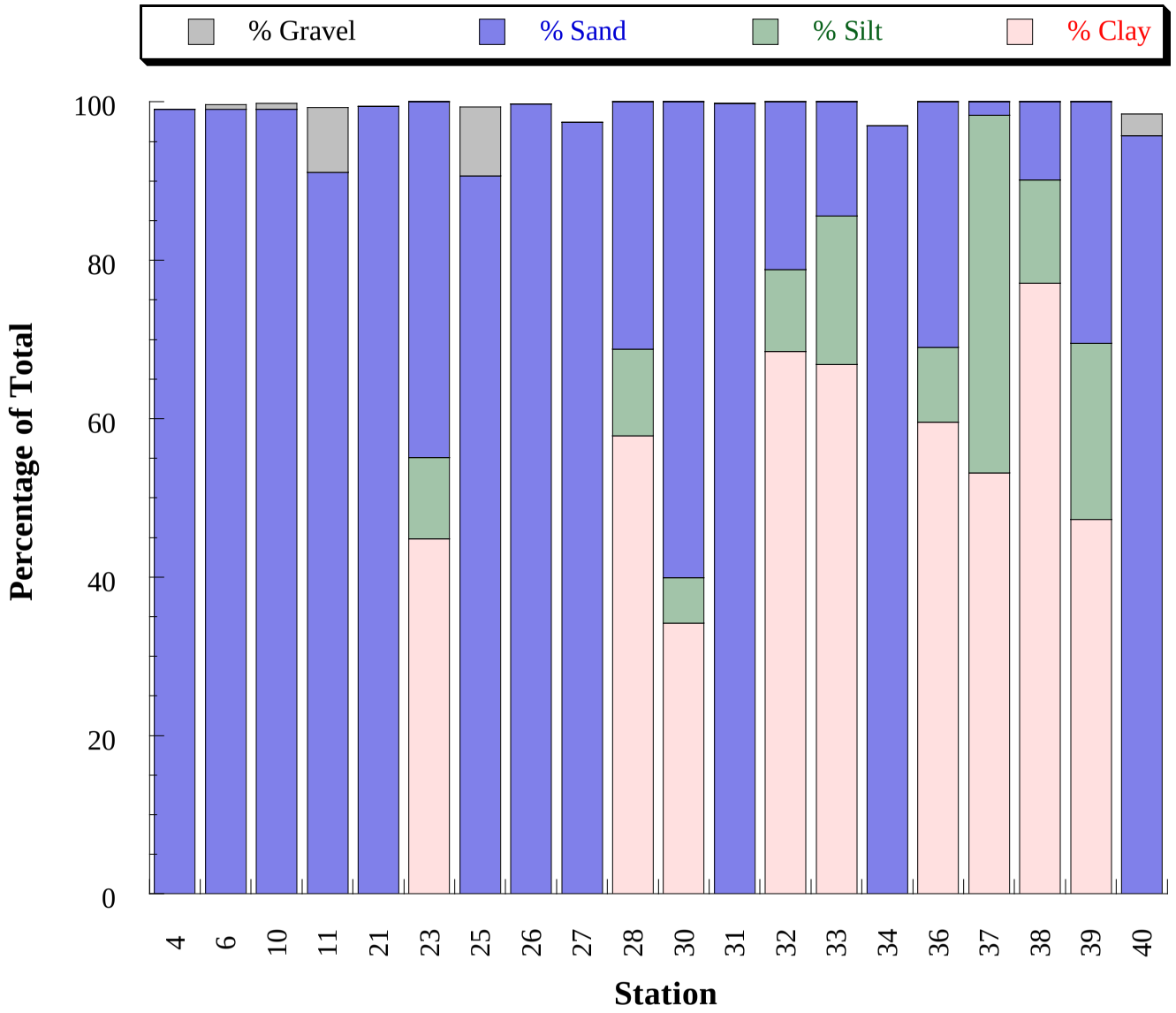

Figure 2. Sediment composition for the Florida Keys to Dry Tortugas stations, July 1998.

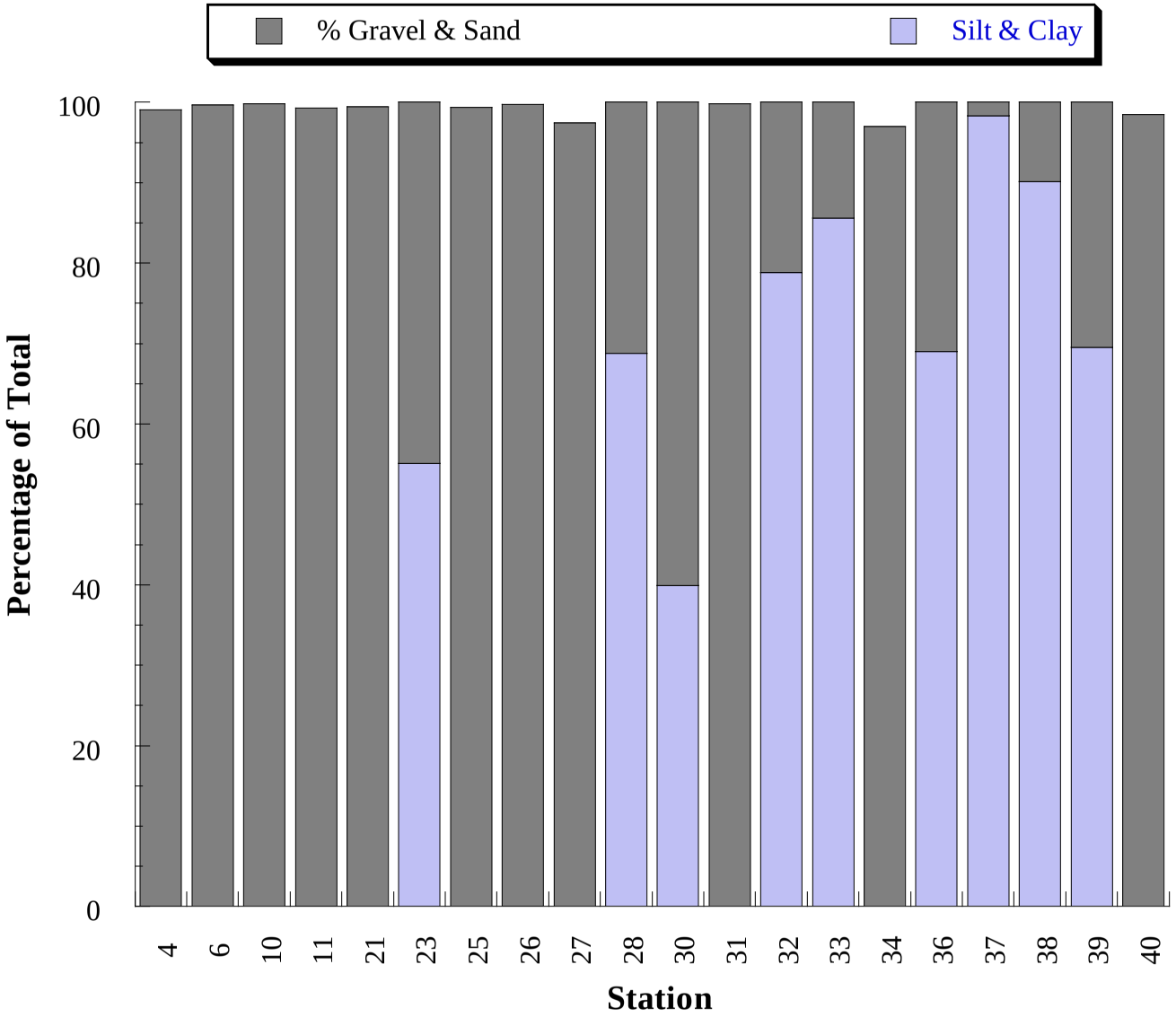

Figure 3. Percent gravel+sand and percent silt+clay content of the sediments for the Florida Keys to Dry Tortugas stations, July 1998.

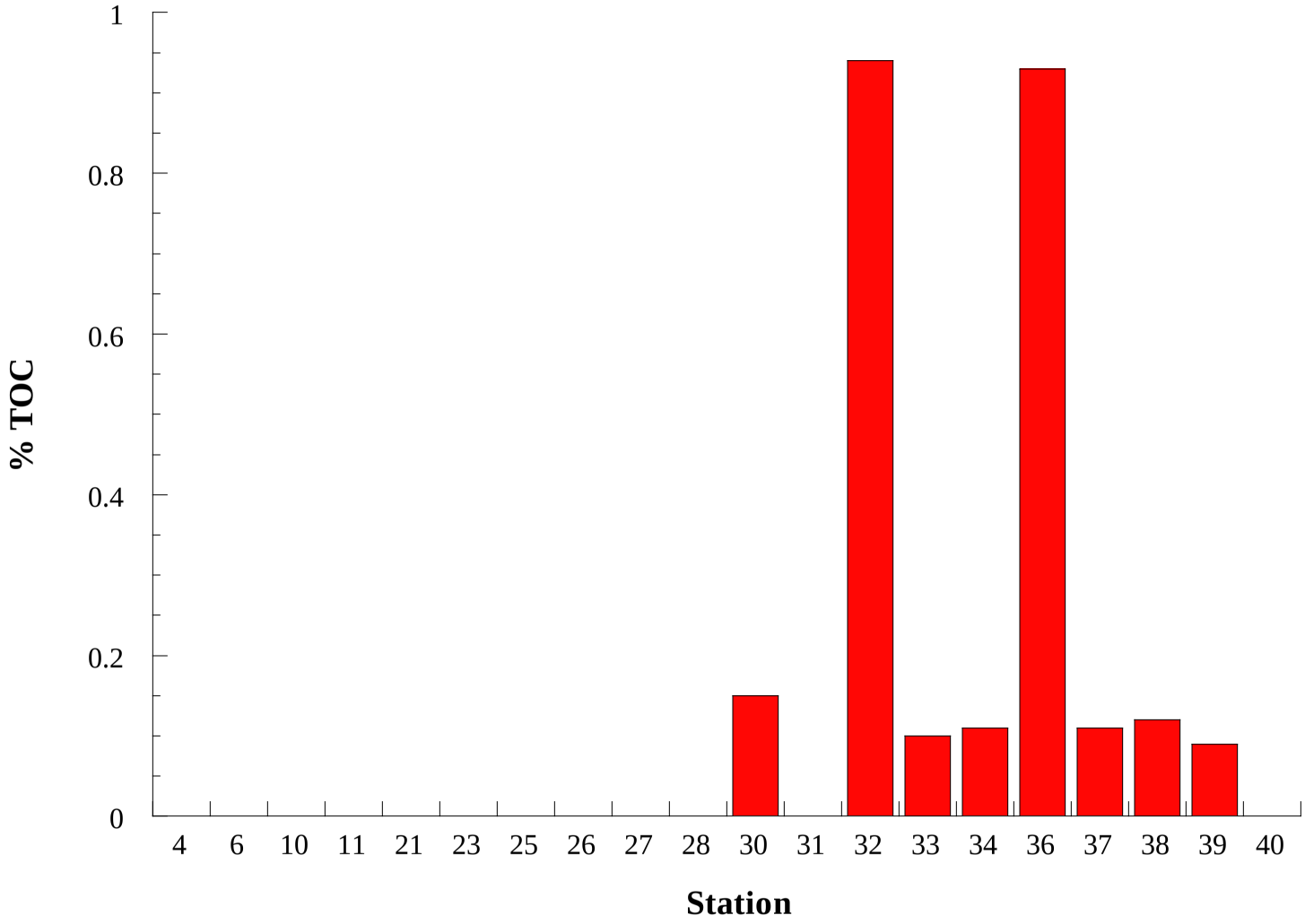

Figure 4. Percent total organic carbon (TOC) content of the sediments for the Florida Keys to Dry Tortugas stations, July 1998.

Table 2. Abundance and distribution of taxa for the Florida Keys to Dry Tortugas stations, July 1998.

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Rhynchocoela (LPIL)	R		220	3.43	3.43	17	85
Sipuncula (LPIL)	S		151	2.35	5.79	14	70
Axiothella mucosa	A	Poly	147	2.29	8.08	5	25
Oligochaeta (LPIL)	A	Olig	141	2.20	10.28	18	90
Lucinidae (LPIL)	M	Biva	121	1.89	12.16	8	40
Bivalvia (LPIL)	M	Biva	119	1.86	14.02	17	85
Capitellidae (LPIL)	A	Poly	116	1.81	15.83	14	70
Maldanidae (LPIL)	A	Poly	109	1.70	17.53	13	65
Litocorsa antennata	A	Poly	109	1.70	19.23	12	60
Sabellidae (LPIL)	A	Poly	105	1.64	20.86	11	55
Aspidosiphon albus	S		102	1.59	22.45	12	60
Chone (LPIL)	A	Poly	87	1.36	23.81	12	60
Lucina radians	M	Biva	87	1.36	25.17	9	45
Ervilia concentrica	M	Biva	83	1.29	26.46	3	15
Haustorius jayneae	Ar	Mala	83	1.29	27.76	1	5
Exogone lourei	A	Poly	79	1.23	28.99	11	55
Fabricinuda trilobata	A	Poly	79	1.23	30.22	8	40
Prionospio cristata	A	Poly	78	1.22	31.44	13	65
Prionospio (LPIL)	A	Poly	78	1.22	32.65	13	65
Rutiderma mollitum	Ar	Ostr	76	1.19	33.84	7	35
Spionidae (LPIL)	A	Poly	75	1.17	35.01	15	75
Tellina (LPIL)	M	Biva	74	1.15	36.16	9	45
Scoletoma verrilli	A	Poly	73	1.14	37.30	14	70
Actiniaria (LPIL)	Cn	Anth	71	1.11	38.41	9	45
Lima pellucida	M	Biva	71	1.11	39.51	5	25
Rutiderma darbyi	Ar	Ostr	66	1.03	40.54	9	45
Sphaerosyllis piriferopsis	A	Poly	65	1.01	41.56	10	50
Axiothella sp.A	A	Poly	59	0.92	42.48	2	10
Synelmis ewingi	A	Poly	59	0.92	43.40	9	45

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Gammaropsis sp.C	Ar	Mala	56	0.87	44.27	8	40
Brachiopoda (LPIL)	B		55	0.86	45.13	12	60
Aspidosiphon muelleri	S		54	0.84	45.97	7	35
Ampharete sp.A	A	Poly	54	0.84	46.81	4	20
Caecum nitidium	M	Gast	51	0.80	47.61	6	30
Paramphinome sp.B	A	Poly	47	0.73	48.34	9	45
Golfingia (LPIL)	S		46	0.72	49.06	8	40
Haplosyllis spongicola	A	Poly	46	0.72	49.77	1	5
Mediomastus (LPIL)	A	Poly	45	0.70	50.48	8	40
Nereididae (LPIL)	A	Poly	42	0.65	51.13	8	40
Prionospio sp.B	A	Poly	41	0.64	51.77	2	10
Trichobranchus glacialis	A	Poly	40	0.62	52.39	6	30
Armandia maculata	A	Poly	39	0.61	53.00	11	55
Lucina multilineata	M	Biva	37	0.58	53.58	3	15
Crassinella martinicensis	M	Biva	37	0.58	54.16	7	35
Asthenothaerus hemphilli	M	Biva	37	0.58	54.73	8	40
Xenanthura brevitelson	Ar	Mala	37	0.58	55.31	9	45
Phtisica marina	Ar	Mala	37	0.58	55.89	1	5
Pitar simpsoni	M	Biva	36	0.56	56.45	11	55
Cirratodactylis floridensis	Ar	Mala	34	0.53	56.98	5	25
Syllidae (LPIL)	A	Poly	33	0.51	57.49	10	50
Hesionidae (LPIL)	A	Poly	30	0.47	57.96	10	50
Mooreonuphis pallidula	A	Poly	30	0.47	58.43	9	45
Pleuromeris tridentata	M	Biva	30	0.47	58.90	6	30
Metharpinia floridana	Ar	Mala	30	0.47	59.36	5	25
Automate (LPIL)	Ar	Mala	30	0.47	59.83	8	40
Ophiuroidea (LPIL)	E	Ophi	30	0.47	60.30	13	65
Lumbrinerides dayi	A	Poly	29	0.45	60.75	7	35
Aricidea philbinae	A	Poly	28	0.44	61.19	3	15
Euchone (LPIL)	A	Poly	28	0.44	61.62	5	25
Terebellidae sp.A	A	Poly	28	0.44	62.06	9	45

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Glycymeris decussata	M	Biva	27	0.42	62.48	3	15
Cossura soyeri	A	Poly	26	0.41	62.89	4	20
Nematonereis hebes	A	Poly	26	0.41	63.29	6	30
Glycera (LPIL)	A	Poly	26	0.41	63.70	6	30
Semele proficua	M	Biva	26	0.41	64.10	5	25
Cerithium (LPIL)	M	Gast	26	0.41	64.51	2	10
Cirratulidae (LPIL)	A	Poly	25	0.39	64.90	11	55
Syllis ortizi	A	Poly	25	0.39	65.29	5	25
Notomastus hemipodus	A	Poly	24	0.37	65.66	4	20
Syllis cornuta	A	Poly	24	0.37	66.04	8	40
Crassinella lunulata	M	Biva	23	0.36	66.40	7	35
Glycera sp.A	A	Poly	22	0.34	66.74	5	25
Lumbrineridae (LPIL)	A	Poly	22	0.34	67.08	7	35
Pionosyllis weismanni	A	Poly	22	0.34	67.43	3	15
Dentatisyllis carolinae	A	Poly	22	0.34	67.77	6	30
Eobrolgus spinosus	Ar	Mala	22	0.34	68.11	5	25
Aricidea (LPIL)	A	Poly	21	0.33	68.44	10	50
Prionospio heterobranchia	A	Poly	21	0.33	68.77	3	15
Eunicidae (LPIL)	A	Poly	20	0.31	69.08	6	30
Magelona pettiboneae	A	Poly	20	0.31	69.39	7	35
Ceratocephale oculata	A	Poly	20	0.31	69.70	7	35
Owenia fusiformis	A	Poly	20	0.31	70.01	5	25
Syllis (LPIL)	A	Poly	20	0.31	70.33	6	30
Alvania auberiana	M	Gast	20	0.31	70.64	2	10
Acteocina candei	M	Gast	20	0.31	70.95	6	30
Cirrophorus (LPIL)	A	Poly	19	0.30	71.25	8	40
Levinsenia gracilis	A	Poly	19	0.30	71.54	9	45
Lucina (LPIL)	M	Biva	19	0.30	71.84	3	15
Photis sp.D	Ar	Mala	19	0.30	72.13	3	15
Branchiostoma (LPIL)	C	Lept	19	0.30	72.43	7	35
Ampharetidae (LPIL)	A	Poly	18	0.28	72.71	8	40

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Nephtys incisa	A	Poly	18	0.28	72.99	2	10
Terebellidae (LPIL)	A	Poly	18	0.28	73.27	9	45
Monticellina dorsobranchial	A	Poly	17	0.27	73.54	8	40
Hesionura coineaui	A	Poly	17	0.27	73.80	4	20
Campylaspis heardi	Ar	Mala	17	0.27	74.07	7	35
Leptochelia (LPIL)	Ar	Mala	17	0.27	74.33	8	40
Protodorvillea kefersteini	A	Poly	16	0.25	74.58	6	30
Paraprionospio pinnata	A	Poly	16	0.25	74.83	4	20
Semele (LPIL)	M	Biva	16	0.25	75.08	4	20
Eusarsiella absens	Ar	Ostr	16	0.25	75.33	4	20
Notomastus (LPIL)	A	Poly	15	0.23	75.57	7	35
Aspidosiphon (LPIL)	S		14	0.22	75.78	7	35
Glycera papillosa	A	Poly	14	0.22	76.00	5	25
Ceratonereis mirabilis	A	Poly	14	0.22	76.22	6	30
Aricidea cerrutii	A	Poly	14	0.22	76.44	5	25
Sigambra tentaculata	A	Poly	14	0.22	76.66	6	30
Semele nuculoides	M	Biva	14	0.22	76.88	6	30
Golfingia sp.HH	S		13	0.20	77.08	5	25
Sipunculus nudus	S		13	0.20	77.28	3	15
Magelona sp.C	A	Poly	13	0.20	77.48	6	30
Syllis maryae	A	Poly	13	0.20	77.69	3	15
Tubulanus (LPIL)	R	Anop	12	0.19	77.87	3	15
Lumbrineris coccinea	A	Poly	12	0.19	78.06	5	25
Galathowenia oculata	A	Poly	12	0.19	78.25	7	35
Sthenolepis sp.A	A	Poly	12	0.19	78.43	4	20
Exogone rolani	A	Poly	12	0.19	78.62	5	25
Nuculana acuta	M	Biva	12	0.19	78.81	4	20
Harpinia sp.A	Ar	Mala	12	0.19	79.00	2	10
Lumbrineris sp.D	A	Poly	11	0.17	79.17	4	20
Semelidae (LPIL)	M	Biva	11	0.17	79.34	4	20
Acuminodeutopus naglei	Ar	Mala	11	0.17	79.51	7	35

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Phoxocephalidae (LPIL)	Ar	Mala	11	0.17	79.68	4	20
Dulichiella appendiculata	Ar	Mala	11	0.17	79.85	1	5
Apseudes (LPIL)	Ar	Mala	11	0.17	80.02	2	10
Leptochela (LPIL)	Ar	Mala	11	0.17	80.20	3	15
Ascidiacea (LPIL)	C	Asci	11	0.17	80.37	2	10
Eunice (LPIL)	A	Poly	10	0.16	80.52	4	20
Orbinia riseri	A	Poly	10	0.16	80.68	1	5
Phyllodoce arenae	A	Poly	10	0.16	80.84	6	30
Polycirrus (LPIL)	A	Poly	10	0.16	80.99	3	15
Varicorbula operculata	M	Biva	10	0.16	81.15	5	25
Automate evermanni	Ar	Mala	10	0.16	81.30	3	15
Notomastus americanus	A	Poly	9	0.14	81.44	2	10
Paleanotus sp.A	A	Poly	9	0.14	81.58	4	20
Heteropodarke lyonsi	A	Poly	9	0.14	81.72	5	25
Onuphidae (LPIL)	A	Poly	9	0.14	81.86	7	35
Scoloplos rubra	A	Poly	9	0.14	82.01	6	30
Paraonidae (LPIL)	A	Poly	9	0.14	82.15	7	35
Phyllodocidae (LPIL)	A	Poly	9	0.14	82.29	6	30
Pisione remota	A	Poly	9	0.14	82.43	5	25
Typosyllis sp.B	A	Poly	9	0.14	82.57	3	15
Ehlersia ferrugina	A	Poly	9	0.14	82.71	4	20
Gastropoda (LPIL)	M	Gast	9	0.14	82.85	5	25
Natica canrena	M	Gast	9	0.14	82.99	4	20
Volvulella persimilis	M	Gast	9	0.14	83.13	3	15
Eurydice convexa	Ar	Mala	9	0.14	83.27	3	15
Callianassidae (LPIL)	Ar	Mala	9	0.14	83.41	5	25
Rutiderma gyre	Ar	Ostr	9	0.14	83.55	4	20
Notomastus tenuis	A	Poly	8	0.12	83.67	4	20
Glycera sp.E	A	Poly	8	0.12	83.80	3	15
Scoletoma impatiens	A	Poly	8	0.12	83.92	3	15
Ceratonereis irritabilis	A	Poly	8	0.12	84.05	5	25

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Cirrophorus lyra	A	Poly	8	0.12	84.17	2	10
Cirrophorus furcatus	A	Poly	8	0.12	84.30	3	15
Sigalionidae (LPIL)	A	Poly	8	0.12	84.42	4	20
Laonice cirrata	A	Poly	8	0.12	84.55	3	15
Autolytus (LPIL)	A	Poly	8	0.12	84.67	4	20
Pionosyllis (LPIL)	A	Poly	8	0.12	84.80	4	20
Odontosyllis enopla	A	Poly	8	0.12	84.92	6	30
Poecilochaetus johnsoni	A	Poly	8	0.12	85.05	5	25
Crenella divaricata	M	Biva	8	0.12	85.17	4	20
Calyptraea centralis	M	Gast	8	0.12	85.30	4	20
Tricolia thalassicola	M	Gast	8	0.12	85.42	1	5
Cumella garrityi	Ar	Mala	8	0.12	85.54	4	20
Amphinomidae (LPIL)	A	Poly	7	0.11	85.65	1	5
Eunice unifrons	A	Poly	7	0.11	85.76	4	20
Glyceridae (LPIL)	A	Poly	7	0.11	85.87	2	10
Aricidea taylori	A	Poly	7	0.11	85.98	4	20
Spiophanes missionensis	A	Poly	7	0.11	86.09	4	20
Opisthodonta sp.B	A	Poly	7	0.11	86.20	3	15
Plakosyllis quadrioculata	A	Poly	7	0.11	86.31	2	10
Vermiliopsis annulata	A	Poly	7	0.11	86.42	2	10
Paraeupolymnia sp.A	A	Poly	7	0.11	86.53	4	20
Pholoe sp.A	A	Poly	7	0.11	86.64	2	10
Tellina sybaritica	M	Biva	7	0.11	86.75	3	15
Turbonilla (LPIL)	M	Gast	7	0.11	86.85	2	10
Atys sandersoni	M	Gast	7	0.11	86.96	5	25
Ampelisca (LPIL)	Ar	Mala	7	0.11	87.07	3	15
Elasmopus sp.C	Ar	Mala	7	0.11	87.18	1	5
Elasmopus (LPIL)	Ar	Mala	7	0.11	87.29	2	10
Tanaissus sp.B	Ar	Mala	7	0.11	87.40	2	10
Amboleberis americana	Ar	Ostr	7	0.11	87.51	2	10
Harbansus paucichelatus	Ar	Ostr	7	0.11	87.62	5	25

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Porifera (LPIL)	Po		6	0.09	87.71	2	10
Phoronis (LPIL)	Ph		6	0.09	87.81	4	20
Schistomeringos pectinata	A	Poly	6	0.09	87.90	4	20
Eunice tubifex	A	Poly	6	0.09	87.99	1	5
Glycera abranchiata	A	Poly	6	0.09	88.09	2	10
Diopatra cuprea	A	Poly	6	0.09	88.18	4	20
Ancistrosyllis hartmanae	A	Poly	6	0.09	88.27	2	10
Spio pettiboneae	A	Poly	6	0.09	88.37	2	10
Syllis danieli	A	Poly	6	0.09	88.46	3	15
Syllis sardai	A	Poly	6	0.09	88.55	4	20
Exogone (LPIL)	A	Poly	6	0.09	88.65	4	20
Grubeosyllis rugulosa	A	Poly	6	0.09	88.74	4	20
Poecilochaetus (LPIL)	A	Poly	6	0.09	88.84	3	15
Semele bellastriata	M	Biva	6	0.09	88.93	2	10
Lyonsia hyalina floridana	M	Biva	6	0.09	89.02	4	20
Solemya occidentalis	M	Biva	6	0.09	89.12	2	10
Rictaxis punctostriatus	M	Gast	6	0.09	89.21	3	15
Caecum imbricatum	M	Gast	6	0.09	89.30	2	10
Marginella apicina	M	Gast	6	0.09	89.40	3	15
Haminoea sp.A	M	Gast	6	0.09	89.49	4	20
Polyplacophora (LPIL)	M	Poly	6	0.09	89.58	4	20
Paramicrodeutopus myersi	Ar	Mala	6	0.09	89.68	4	20
Cyclaspis sp.N	Ar	Mala	6	0.09	89.77	5	25
Aphelochaeta marioni	A	Poly	5	0.08	89.85	2	10
Dorvilleidae (LPIL)	A	Poly	5	0.08	89.93	3	15
Goniadella sp.A	A	Poly	5	0.08	90.00	3	15
Podarkeopsis levifuscina	A	Poly	5	0.08	90.08	5	25
Scoletoma ernesti	A	Poly	5	0.08	90.16	2	10
Inermonephtys inermis	A	Poly	5	0.08	90.24	3	15
Aricidea catherinae	A	Poly	5	0.08	90.32	3	15
Synelmis acuminata	A	Poly	5	0.08	90.39	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Serpulidae (LPIL)	A	Poly	5	0.08	90.47	1	5
Polycirrus plumosus	A	Poly	5	0.08	90.55	2	10
Sabaco americanus	A	Poly	5	0.08	90.63	2	10
Caecum johnsoni	M	Gast	5	0.08	90.71	3	15
Batea carinata	Ar	Mala	5	0.08	90.78	2	10
Cyclaspis unicornis	Ar	Mala	5	0.08	90.86	4	20
Cumella sp.N	Ar	Mala	5	0.08	90.94	3	15
Cheramus (LPIL)	Ar	Mala	5	0.08	91.02	2	10
Eusarsiella radiicosta	Ar	Ostr	5	0.08	91.10	1	5
Amphiuridae (LPIL)	E	Ophi	5	0.08	91.17	3	15
Mesochaetopterus (LPIL)	A	Poly	4	0.06	91.24	3	15
Dodecaceria sp.A	A	Poly	4	0.06	91.30	2	10
Eunice cirrobranchiata	A	Poly	4	0.06	91.36	2	10
Nephtys simoni	A	Poly	4	0.06	91.42	2	10
Ceratonereis (LPIL)	A	Poly	4	0.06	91.49	4	20
Scoloplos texana	A	Poly	4	0.06	91.55	2	10
Scoloplos (LPIL)	A	Poly	4	0.06	91.61	4	20
Leitoscoloplos (LPIL)	A	Poly	4	0.06	91.67	2	10
Aricidea finitima	A	Poly	4	0.06	91.74	2	10
Aricidea suecica	A	Poly	4	0.06	91.80	1	5
Polynoidae (LPIL)	A	Poly	4	0.06	91.86	4	20
Sigalion sp.B	A	Poly	4	0.06	91.92	2	10
Prionospio cirrifera	A	Poly	4	0.06	91.99	3	15
Sphaerosyllis taylori	A	Poly	4	0.06	92.05	3	15
Typosyllis sp.C	A	Poly	4	0.06	92.11	1	5
Pionosyllis gesae	A	Poly	4	0.06	92.17	1	5
Eusyllis kupfferi	A	Poly	4	0.06	92.23	1	5
Branchiomma nigromaculatu	A	Poly	4	0.06	92.30	4	20
Pseudovermilia occidentalis	A	Poly	4	0.06	92.36	3	15
Semele purpurascens	M	Biva	4	0.06	92.42	2	10
Musculus lateralis	M	Biva	4	0.06	92.48	2	10

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Corbula contracta	M	Biva	4	0.06	92.55	2	10
Gouldia cerina	M	Biva	4	0.06	92.61	2	10
Asaphis deflorata	M	Biva	4	0.06	92.67	2	10
Glans dominguensis	M	Biva	4	0.06	92.73	1	5
Haminoea succinea	M	Gast	4	0.06	92.80	3	15
Dentalium eboreum	M	Scap	4	0.06	92.86	2	10
Kupellonura sp.A	Ar	Mala	4	0.06	92.92	3	15
Photis pugnator	Ar	Mala	4	0.06	92.98	2	10
Cumella (LPIL)	Ar	Mala	4	0.06	93.05	3	15
Diogenidae(LPIL)	Ar	Mala	4	0.06	93.11	3	15
Raninoides loevis	Ar	Mala	4	0.06	93.17	3	15
Echinoidea (LPIL)	E	Echi	4	0.06	93.23	2	10
Dasybranchus lumbricoides	A	Poly	3	0.05	93.28	3	15
Mesochaetopterus capensis	A	Poly	3	0.05	93.33	2	10
Chrysopetalum hernancortez	A	Poly	3	0.05	93.37	2	10
Bhawania goodei	A	Poly	3	0.05	93.42	1	5
Dorvillea largidentis	A	Poly	3	0.05	93.47	1	5
Lysidice sp.B	A	Poly	3	0.05	93.51	1	5
Diplocirrus sp.A	A	Poly	3	0.05	93.56	2	10
Glycera sp.F	A	Poly	3	0.05	93.61	1	5
Goniadides carolinae	A	Poly	3	0.05	93.65	3	15
Nereimyra sp.A	A	Poly	3	0.05	93.70	2	10
Scoletoma (LPIL)	A	Poly	3	0.05	93.75	3	15
Nephtyidae (LPIL)	A	Poly	3	0.05	93.79	3	15
Oweniidae (LPIL)	A	Poly	3	0.05	93.84	1	5
Aricidea wassi	A	Poly	3	0.05	93.89	2	10
Fimbriosthenelais hobbsi	A	Poly	3	0.05	93.93	2	10
Dipolydora socialis	A	Poly	3	0.05	93.98	2	10
Parapionosyllis uebelackera	A	Poly	3	0.05	94.03	2	10
Exogone caribensis	A	Poly	3	0.05	94.07	2	10
Grubeosyllis clavata	A	Poly	3	0.05	94.12	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Pectinariidae (LPIL)	A	Poly	3	0.05	94.17	3	15
Abra aequalis	M	Biva	3	0.05	94.21	1	5
Tellinidae (LPIL)	M	Biva	3	0.05	94.26	2	10
Pandora arenosa	M	Biva	3	0.05	94.31	2	10
Thraciidae (LPIL)	M	Biva	3	0.05	94.36	1	5
Montacutidae (LPIL)	M	Biva	3	0.05	94.40	3	15
Pyrunculus caelatus	M	Gast	3	0.05	94.45	3	15
Eulimidae (LPIL)	M	Gast	3	0.05	94.50	1	5
Dentalium antillarum	M	Scap	3	0.05	94.54	1	5
Cylindrobulla beauii	M	Gast	3	0.05	94.59	3	15
Amakusanthura magnifica	Ar	Mala	3	0.05	94.64	3	15
Synopiidae (LPIL)	Ar	Mala	3	0.05	94.68	1	5
Deutella incerta	Ar	Mala	3	0.05	94.73	3	15
Campylaspis sp.M	Ar	Mala	3	0.05	94.78	2	10
Processa (LPIL)	Ar	Mala	3	0.05	94.82	3	15
Alpheidae (LPIL)	Ar	Mala	3	0.05	94.87	2	10
Nanoplax xanthiformis	Ar	Mala	3	0.05	94.92	2	10
Paguridae (LPIL)	Ar	Mala	3	0.05	94.96	2	10
Synasterope setisparsa	Ar	Ostr	3	0.05	95.01	2	10
Eusarsiella cornuta	Ar	Ostr	3	0.05	95.06	1	5
Eusarsiella paniculata	Ar	Ostr	3	0.05	95.10	2	10
Urochordata (LPIL)	C		3	0.05	95.15	3	15
Isolda pulchella	A	Poly	2	0.03	95.18	1	5
Notomastus latericeus	A	Poly	2	0.03	95.21	2	10
Notomastus daueri	A	Poly	2	0.03	95.24	1	5
Scyphoproctus platyproctus	A	Poly	2	0.03	95.28	1	5
Spiochaetopterus oculatus	A	Poly	2	0.03	95.31	2	10
Cirratulus (LPIL)	A	Poly	2	0.03	95.34	2	10
Chaetozone (LPIL)	A	Poly	2	0.03	95.37	1	5
Caulleriella cf. *alata*	A	Poly	2	0.03	95.40	1	5
Caulleriella (LPIL)	A	Poly	2	0.03	95.43	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Pettiboneia duofurca	A	Poly	2	0.03	95.46	2	10
Goniadidae (LPIL)	A	Poly	2	0.03	95.49	2	10
Goniada littorea	A	Poly	2	0.03	95.52	1	5
Goniada teres	A	Poly	2	0.03	95.56	1	5
Goniada (LPIL)	A	Poly	2	0.03	95.59	1	5
Ninoe sp.B	A	Poly	2	0.03	95.62	1	5
Boguea enigmatica	A	Poly	2	0.03	95.65	1	5
Magelona sp.1	A	Poly	2	0.03	95.68	2	10
Nereis succinea	A	Poly	2	0.03	95.71	1	5
Nereis (LPIL)	A	Poly	2	0.03	95.74	2	10
Paraonis fulgens	A	Poly	2	0.03	95.77	1	5
Pilargidae (LPIL)	A	Poly	2	0.03	95.81	2	10
Mystides borealis	A	Poly	2	0.03	95.84	1	5
Harmothoe (LPIL)	A	Poly	2	0.03	95.87	2	10
Sthenelais limicola	A	Poly	2	0.03	95.90	1	5
Sigalion sp.A	A	Poly	2	0.03	95.93	2	10
Fimbriosthenelais minor	A	Poly	2	0.03	95.96	2	10
Sthenelanella sp.A	A	Poly	2	0.03	95.99	1	5
Pseudopolydora (LPIL)	A	Poly	2	0.03	96.02	2	10
Dipolydora tetrabranchia	A	Poly	2	0.03	96.05	1	5
Streptosyllis pettiboneae	A	Poly	2	0.03	96.09	2	10
Exogone atlantica	A	Poly	2	0.03	96.12	2	10
Megalomma bioculatum	A	Poly	2	0.03	96.15	2	10
Streblosoma hartmanae	A	Poly	2	0.03	96.18	1	5
Arabella mutans	A	Poly	2	0.03	96.21	1	5
Pectinaria gouldii	A	Poly	2	0.03	96.24	2	10
Pholoe (LPIL)	A	Poly	2	0.03	96.27	2	10
Musculus (LPIL)	M	Biva	2	0.03	96.30	1	5
Cardiidae (LPIL)	M	Biva	2	0.03	96.34	1	5
Lucina nassula	M	Biva	2	0.03	96.37	1	5
Dosinia discus	M	Biva	2	0.03	96.40	2	10

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Pitar (LPIL)	M	Biva	2	0.03	96.43	1	5
Hiatella arctica	M	Biva	2	0.03	96.46	2	10
Gastrochaena hians	M	Biva	2	0.03	96.49	1	5
Naticidae (LPIL)	M	Gast	2	0.03	96.52	2	10
Natica marochiensis	M	Gast	2	0.03	96.55	1	5
Caecum (LPIL)	M	Gast	2	0.03	96.59	2	10
Turbonilla interrupta	M	Gast	2	0.03	96.62	2	10
Neodrillia cydia	M	Gast	2	0.03	96.65	2	10
Conus (LPIL)	M	Gast	2	0.03	96.68	1	5
Strombiformis bilineatus	M	Gast	2	0.03	96.71	1	5
Cadulus (LPIL)	M	Scap	2	0.03	96.74	1	5
Anthuridae (LPIL)	Ar	Mala	2	0.03	96.77	1	5
Pleurocope floridensis	Ar	Mala	2	0.03	96.80	1	5
Amphipoda (LPIL)	Ar	Mala	2	0.03	96.83	1	5
Ampeliscidae (LPIL)	Ar	Mala	2	0.03	96.87	2	10
Synchelidium americanum	Ar	Mala	2	0.03	96.90	2	10
Listriella sp.G	Ar	Mala	2	0.03	96.93	2	10
Aoridae (LPIL)	Ar	Mala	2	0.03	96.96	2	10
Lembos (LPIL)	Ar	Mala	2	0.03	96.99	2	10
Melitidae (LPIL)	Ar	Mala	2	0.03	97.02	2	10
Shoemakerella cubensis	Ar	Mala	2	0.03	97.05	2	10
Colomastix halichondriae	Ar	Mala	2	0.03	97.08	1	5
Gammaropsis (LPIL)	Ar	Mala	2	0.03	97.12	2	10
Photis (LPIL)	Ar	Mala	2	0.03	97.15	2	10
Pariphinotus seclusis	Ar	Mala	2	0.03	97.18	1	5
Cumacea (LPIL)	Ar	Mala	2	0.03	97.21	1	5
Vaunthompsonia sp.B	Ar	Mala	2	0.03	97.24	1	5
Diastylidae (LPIL)	Ar	Mala	2	0.03	97.27	1	5
Diastylis (LPIL)	Ar	Mala	2	0.03	97.30	1	5
Stomatopoda (LPIL)	Ar	Mala	2	0.03	97.33	1	5
Meiosquilla schmitti	Ar	Mala	2	0.03	97.36	2	10

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Kalliapseudes bahamaensis	Ar	Mala	2	0.03	97.40	2	10
Kalliapseudes sp.C	Ar	Mala	2	0.03	97.43	2	10
Kalliapseudes (LPIL)	Ar	Mala	2	0.03	97.46	1	5
Apseudes sp.A	Ar	Mala	2	0.03	97.49	2	10
Decapoda natantia (LPIL)	Ar	Mala	2	0.03	97.52	1	5
Processidae (LPIL)	Ar	Mala	2	0.03	97.55	2	10
Alpheus (LPIL)	Ar	Mala	2	0.03	97.58	1	5
Goneplacidae (LPIL)	Ar	Mala	2	0.03	97.61	2	10
Speocarcinus lobatus	Ar	Mala	2	0.03	97.65	1	5
Iliacantha intermedia	Ar	Mala	2	0.03	97.68	2	10
Pagurus (LPIL)	Ar	Mala	2	0.03	97.71	1	5
Actinoseta chelisparsa	Ar	Ostr	2	0.03	97.74	2	10
Pseudophilomedes ambon	Ar	Ostr	2	0.03	97.77	1	5
Eusarsiella spinosa	Ar	Ostr	2	0.03	97.80	1	5
Encope aberrans	E	Echi	2	0.03	97.83	2	10
Chloeia viridis	A	Poly	1	0.02	97.85	1	5
Amphicteis scaphobranchiata	A	Poly	1	0.02	97.86	1	5
Scyphoproctus (LPIL)	A	Poly	1	0.02	97.88	1	5
Chaetopteridae (LPIL)	A	Poly	1	0.02	97.89	1	5
Caulleriella sp.A	A	Poly	1	0.02	97.91	1	5
Caulleriella sp.B	A	Poly	1	0.02	97.93	1	5
Caulleriella sp.J	A	Poly	1	0.02	97.94	1	5
Caulleriella sp.K	A	Poly	1	0.02	97.96	1	5
Marphysa sp.F	A	Poly	1	0.02	97.97	1	5
Eunice impexa	A	Poly	1	0.02	97.99	1	5
Glycera americana	A	Poly	1	0.02	98.00	1	5
Glycinde solitaria	A	Poly	1	0.02	98.02	1	5
Goniada maculata	A	Poly	1	0.02	98.04	1	5
Heteropodarke formalis	A	Poly	1	0.02	98.05	1	5
Heteropodarke (LPIL)	A	Poly	1	0.02	98.07	1	5
Hesione picta	A	Poly	1	0.02	98.08	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Magelona sp.L	A	Poly	1	0.02	98.10	1	5
Magelona sp.D	A	Poly	1	0.02	98.11	1	5
Aglaophamus verrilli	A	Poly	1	0.02	98.13	1	5
Nephtys picta	A	Poly	1	0.02	98.14	1	5
Nephtys squamosa	A	Poly	1	0.02	98.16	1	5
Ceratonereis singularis	A	Poly	1	0.02	98.18	1	5
Onuphis eremita oculata	A	Poly	1	0.02	98.19	1	5
Onuphis (LPIL)	A	Poly	1	0.02	98.21	1	5
Kinbergonuphis (LPIL)	A	Poly	1	0.02	98.22	1	5
Orbiniidae (LPIL)	A	Poly	1	0.02	98.24	1	5
Leitoscoloplos fragilis	A	Poly	1	0.02	98.25	1	5
Aricidea sp.A	A	Poly	1	0.02	98.27	1	5
Nereiphylla fragilis	A	Poly	1	0.02	98.28	1	5
Hypereteone heteropoda	A	Poly	1	0.02	98.30	1	5
Malmgreniella maccraryae	A	Poly	1	0.02	98.32	1	5
Harmothoe imbricata	A	Poly	1	0.02	98.33	1	5
Fimbriosthenelais (LPIL)	A	Poly	1	0.02	98.35	1	5
Metaxypsamma uebelackerae	A	Poly	1	0.02	98.36	1	5
Prionospio steenstrupi	A	Poly	1	0.02	98.38	1	5
Scolelepis texana	A	Poly	1	0.02	98.39	1	5
Aonides (LPIL)	A	Poly	1	0.02	98.41	1	5
Sphaerosyllis aciculata	A	Poly	1	0.02	98.43	1	5
Sphaerosyllis (LPIL)	A	Poly	1	0.02	98.44	1	5
Autolytus sp.A	A	Poly	1	0.02	98.46	1	5
Syllis corallicoloides	A	Poly	1	0.02	98.47	1	5
Syllis prolifera	A	Poly	1	0.02	98.49	1	5
Eurysyllis tuberculata	A	Poly	1	0.02	98.50	1	5
Pseudobranchiomma (LPIL)	A	Poly	1	0.02	98.52	1	5
Hydroides (LPIL)	A	Poly	1	0.02	98.53	1	5
Serpula sp.A	A	Poly	1	0.02	98.55	1	5
Loimia sp.A	A	Poly	1	0.02	98.57	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Terebellidae Genus b	A	Poly	1	0.02	98.58	1	5
Terebellides (LPIL)	A	Poly	1	0.02	98.60	1	5
Asclerocheilus mexicanus	A	Poly	1	0.02	98.61	1	5
Sclerobregma stenocerum	A	Poly	1	0.02	98.63	1	5
Eulepethidae (LPIL)	A	Poly	1	0.02	98.64	1	5
Grubeulepis mexicana	A	Poly	1	0.02	98.66	1	5
Macrochaeta sp.A	A	Poly	1	0.02	98.67	1	5
Taylorpholoe hirsuta	A	Poly	1	0.02	98.69	1	5
Bogueidae (LPIL)	A	Poly	1	0.02	98.71	1	5
Nucula aegeenis	M	Biva	1	0.02	98.72	1	5
Anadara notabilis	M	Biva	1	0.02	98.74	1	5
Arca zebra	M	Biva	1	0.02	98.75	1	5
Amygdalum sagittatum	M	Biva	1	0.02	98.77	1	5
Amygdalum (LPIL)	M	Biva	1	0.02	98.78	1	5
Lima locklini	M	Biva	1	0.02	98.80	1	5
Lima (LPIL)	M	Biva	1	0.02	98.81	1	5
Laevicardium laevigatum	M	Biva	1	0.02	98.83	1	5
Lucina pectinata	M	Biva	1	0.02	98.85	1	5
Lucina muricata	M	Biva	1	0.02	98.86	1	5
Tellina texana	M	Biva	1	0.02	98.88	1	5
Macoma tenta	M	Biva	1	0.02	98.89	1	5
Veneridae (LPIL)	M	Biva	1	0.02	98.91	1	5
Chione grus	M	Biva	1	0.02	98.92	1	5
Macrocallista nimbosa	M	Biva	1	0.02	98.94	1	5
Macrocallista maculata	M	Biva	1	0.02	98.96	1	5
Cardiomya perrostrata	M	Biva	1	0.02	98.97	1	5
Nuculana concentrica	M	Biva	1	0.02	98.99	1	5
Pandora (LPIL)	M	Biva	1	0.02	99.00	1	5
Argopecten (LPIL)	M	Biva	1	0.02	99.02	1	5
Carditidae (LPIL)	M	Biva	1	0.02	99.03	1	5
Mysella (LPIL)	M	Biva	1	0.02	99.05	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Caecum pulchellum	M	Gast	1	0.02	99.06	1	5
Caecum floridanum	M	Gast	1	0.02	99.08	1	5
Odostomia (LPIL)	M	Gast	1	0.02	99.10	1	5
Parviturboides interrupta	M	Gast	1	0.02	99.11	1	5
Bactrocythara asarca	M	Gast	1	0.02	99.13	1	5
Olividae (LPIL)	M	Gast	1	0.02	99.14	1	5
Marginella aureocincta	M	Gast	1	0.02	99.16	1	5
Marginella (LPIL)	M	Gast	1	0.02	99.17	1	5
Arene tricarinata	M	Gast	1	0.02	99.19	1	5
Aclis hendersoni	M	Gast	1	0.02	99.20	1	5
Latirus (LPIL)	M	Gast	1	0.02	99.22	1	5
Strombiformis (LPIL)	M	Gast	1	0.02	99.24	1	5
Acteocina lepta	M	Gast	1	0.02	99.25	1	5
Acteocina (LPIL)	M	Gast	1	0.02	99.27	1	5
Dentaliidae (LPIL)	M	Scap	1	0.02	99.28	1	5
Serolis mgrayi	Ar	Mala	1	0.02	99.30	1	5
Eurydice personata	Ar	Mala	1	0.02	99.31	1	5
Eurydice (LPIL)	Ar	Mala	1	0.02	99.33	1	5
Hyssuridae (LPIL)	Ar	Mala	1	0.02	99.35	1	5
Horoloanthura irpex	Ar	Mala	1	0.02	99.36	1	5
Ampelisca sp.C	Ar	Mala	1	0.02	99.38	1	5
Podoceridae (LPIL)	Ar	Mala	1	0.02	99.39	1	5
Rildardanus laminosa	Ar	Mala	1	0.02	99.41	1	5
Acanthohaustorius shoemake	Ar	Mala	1	0.02	99.42	1	5
Eriopisa schoenerae	Ar	Mala	1	0.02	99.44	1	5
Eriopisa (LPIL)	Ar	Mala	1	0.02	99.45	1	5
Ceradocus shoemakeri	Ar	Mala	1	0.02	99.47	1	5
Amphilochidae (LPIL)	Ar	Mala	1	0.02	99.49	1	5
Chevalia carpenteri	Ar	Mala	1	0.02	99.50	1	5
Leucothoe spinicarpa	Ar	Mala	1	0.02	99.52	1	5
Aeginellidae (LPIL)	Ar	Mala	1	0.02	99.53	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Bodotriidae (LPIL)	Ar	Mala	1	0.02	99.55	1	5
Cyclaspis bacescui	Ar	Mala	1	0.02	99.56	1	5
Leuconidae (LPIL)	Ar	Mala	1	0.02	99.58	1	5
Campylaspis sp.U	Ar	Mala	1	0.02	99.59	1	5
Tanaidacea (LPIL)	Ar	Mala	1	0.02	99.61	1	5
Leptochelia sp.D	Ar	Mala	1	0.02	99.63	1	5
Sinelobus stanfordi	Ar	Mala	1	0.02	99.64	1	5
Processa vicina	Ar	Mala	1	0.02	99.66	1	5
Leptochela serratorbita	Ar	Mala	1	0.02	99.67	1	5
Thor manningi	Ar	Mala	1	0.02	99.69	1	5
Thor (LPIL)	Ar	Mala	1	0.02	99.70	1	5
Solenocera (LPIL)	Ar	Mala	1	0.02	99.72	1	5
Pinnixa floridana	Ar	Mala	1	0.02	99.73	1	5
Goneplax sigsbei	Ar	Mala	1	0.02	99.75	1	5
Trapezioplax tridentata	Ar	Mala	1	0.02	99.77	1	5
Cheramus marginatus	Ar	Mala	1	0.02	99.78	1	5
Majidae (LPIL)	Ar	Mala	1	0.02	99.80	1	5
Hypoconcha arcuata	Ar	Mala	1	0.02	99.81	1	5
Upogebiidae (LPIL)	Ar	Mala	1	0.02	99.83	1	5
Clythrocerus (LPIL)	Ar	Mala	1	0.02	99.84	1	5
Ostracoda (LPIL)	Ar	Ostr	1	0.02	99.86	1	5
Asteropella monambon	Ar	Ostr	1	0.02	99.88	1	5
Eusarsiella (LPIL)	Ar	Ostr	1	0.02	99.89	1	5
Rutiderma licinum	Ar	Ostr	1	0.02	99.91	1	5
Ostracoda Family J	Ar	Ostr	1	0.02	99.92	1	5
Ophiophragmus pulcher	E	Ophi	1	0.02	99.94	1	5
Amphiura stimpsoni	E	Ophi	1	0.02	99.95	1	5

Table 2. Continued:

Taxon Name	Phylum	Class	No. of Individuals	% Total	Cummulative %	Station Occurrence	Station % Occurrence
Holothuroidea (LPIL)	E	Holo	1	0.02	99.97	1	5
Leptosynapta (LPIL)	E	Holo	1	0.02	99.98	1	5
Astropecten articulatus	E	Aste	1	0.02	100.00	1	5

TAXA KEY

Phylum

Class

A = Annelida
- Olig = Oligochaeta
- Poly = Polychaeta

Ar = Arthropoda
- Mala = Malacostraca
- Ostr = Ostracoda

B = Brachiopoda

C = Chordata
- Asci = Ascidiacea
- Lept = Leptocardia

Cn = Cnidaria

E = Echinodermata
- Aste = Asteroidea
- Echi = Echinoidea
- Holo = Holothuroidea
- Ophi = Ophiuroidea

M = Mollusca
- Biva = Bivalvia
- Gast = Gastropoda
- Scap = Scaphopoda

Ph = Phoronida

Po = Porifera

R = Rhynchocoela
- Anop = Anopla

S = Sipuncula

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, 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.

A total of 6,413 organisms, representing 524 taxa, were identified from the 20 stations (Table 3). Polychaetes were the most numerous organisms present representing 51.1% of the total assemblage, followed in abundance by bivalves (15.6%), other taxa (13.1%) and malacostracans (10.7%). Polychaetes represented 49.2% of the total number of taxa followed by malacostracans (21.2%), bivalves(12.4%) and gastropods (7.8%)(Table 3).

The abundance of major taxa by station are given in Table 4. The number of taxa per station ranged from 26 at Station 37 to 146 at Station 26. The number of organisms per station ranged from 46 at Station 30 to 940 at Station 4. The percentage abundance of the major taxa at the 20 stations is given in Figure 4 and Table 4.

The dominant taxa collected from the samples were Rhynchocoela (LPIL), Sipuncula (LPIL), the polychaete, *Axiothella mucosa,* and the annelid class, Oligochaeta (LPIL) representing 3.4%, 2.4%, 2.9% and 2.2% of the total number of individuals, respectively (Table 2). Oligochaetes, bivalves, and rhynchocoels were the most widely distributed taxa being found at 90.%, 85.0% and 85.0% of the stations, respectively (Table 2). The distribution of dominant taxa representing > 10% of the total assemblage at each station is given in Table 5.

Station mean density and mean number of taxa data are given in Table 6 and Figures 6 and 7. Mean densities per stations exhibited considerable variation and ranged from 76 organisms$\cdot m^{-2}$ at Station 30 to 7,833 organisms$\cdot m^{-2}$ at Station 4 (Table 6; Figure 6). The mean number of taxa per replicate also varied and ranged from 11.7 at Station 30 to 70.3 at Station 26 (Table 6; Figure 7). Anova results showed significant differences between

Table 3. Summary of overall abundance of major taxonomic groups for the Forida Keys to Dry Tortugas stations, July 1998.

TAXA	Total No. Taxa	% Total	Total No. Individuals	% Total
Annelida				
Polychaeta	258	49.2	3279	51.1
Oligochaeta	1	0.2	141	2.2
Mollusca				
Bivalvia	65	12.4	998	15.6
Gastropoda	41	7.8	244	3.8
Other Mollusca	5	1.0	16	0.2
Arthropoda				
Malacostraca	111	21.2	687	10.7
Ostracoda	18	3.4	206	3.2
Other Taxa	25	4.8	842	13.1
TOTAL	**524**		**6413**	

Table 4. Summary of abundance of major taxonomic groups by station for the Florida Keys to Dry Tortugas stations, July1998.

Station	Taxa	No. of Taxa	% of Total	No. of Individuals	% of Total
4	Annelida	64	47.8	439	46.7
	Mollusca	32	23.9	206	21.9
	Arthropoda	28	20.9	255	27.1
	Other Taxa	10	7.5	40	4.3
	TOTAL	134		940	
6	Annelida	42	72.4	136	76.4
	Mollusca	6	10.3	16	9.0
	Arthropoda	5	8.6	12	6.7
	Other Taxa	5	8.6	14	7.9
	TOTAL	58		178	
10	Annelida	31	67.4	82	68.9
	Mollusca	3	6.5	5	4.2
	Arthropoda	6	13.0	20	16.8
	Other Taxa	6	13.0	12	10.1
	TOTAL	46		119	
11	Annelida	75	68.8	269	66.6
	Mollusca	12	11.0	18	4.5
	Arthropoda	12	11.0	36	8.9
	Other Taxa	10	9.2	81	20.0
	TOTAL	109		404	
21	Annelida	57	70.4	251	69.7
	Mollusca	12	14.8	90	25.0
	Arthropoda	7	8.6	10	2.8
	Other Taxa	5	6.2	9	2.5
	TOTAL	81		360	
23	Annelida	41	45.1	112	46.7
	Mollusca	12	13.2	42	17.5
	Arthropoda	29	31.9	51	21.3
	Other Taxa	9	9.9	35	14.6
	TOTAL	91		240	
25	Annelida	64	47.8	182	40.1
	Mollusca	25	18.7	145	31.9
	Arthropoda	37	27.6	96	21.1
	Other Taxa	8	6.0	31	6.8
	TOTAL	134		454	

Table 4. Continued:

Station	Taxa	No. of Taxa	% of Total	No. of Individuals	% of Total
26	Annelida	82	56.2	312	59.8
	Mollusca	30	20.5	104	19.9
	Arthropoda	25	17.1	72	13.8
	Other Taxa	9	6.2	34	6.5
	TOTAL	146		522	
27	Annelida	21	58.3	59	35.5
	Mollusca	12	33.3	96	57.8
	Arthropoda	0	0.0	0	0.0
	Other Taxa	3	8.3	11	6.6
	TOTAL	36		166	
28	Annelida	58	57.4	186	63.1
	Mollusca	22	21.8	42	14.2
	Arthropoda	13	12.9	24	8.1
	Other Taxa	8	7.9	43	14.6
	TOTAL	101		295	
30	Annelida	12	50.0	21	45.7
	Mollusca	4	16.7	9	19.6
	Arthropoda	4	16.7	8	17.4
	Other Taxa	4	16.7	8	17.4
	TOTAL	24		46	
31	Annelida	56	50.0	233	56.4
	Mollusca	24	21.4	67	16.2
	Arthropoda	23	20.5	76	18.4
	Other Taxa	9	8.0	37	9.0
	TOTAL	112		413	
32	Annelida	58	54.2	265	53.2
	Mollusca	23	21.5	110	22.1
	Arthropoda	20	18.7	49	9.8
	Other Taxa	6	5.6	74	14.9
	TOTAL	107		498	
33	Annelida	16	45.7	35	31.3
	Mollusca	10	28.6	25	22.3
	Arthropoda	3	8.6	4	3.6
	Other Taxa	6	17.1	48	42.9
	TOTAL	35		112	

Table 4. Continued:

Station	Taxa	No. of Taxa	% of Total	No. of Individuals	% of Total
34	Annelida	56	54.9	304	58.1
	Mollusca	13	12.7	93	17.8
	Arthropoda	25	24.5	47	9.0
	Other Taxa	8	7.8	79	15.1
	TOTAL	102		523	
36	Annelida	46	49.5	136	43.6
	Mollusca	17	18.3	61	19.6
	Arthropoda	22	23.7	39	12.5
	Other Taxa	8	8.6	76	24.4
	TOTAL	93		312	
37	Annelida	11	42.3	18	24.0
	Mollusca	8	30.8	22	29.3
	Arthropoda	2	7.7	4	5.3
	Other Taxa	5	19.2	31	41.3
	TOTAL	26		75	
38	Annelida	20	47.6	52	37.4
	Mollusca	11	26.2	42	30.2
	Arthropoda	4	9.5	15	10.8
	Other Taxa	7	16.7	30	21.6
	TOTAL	42		139	
39	Annelida	56	65.1	195	46.0
	Mollusca	11	12.8	55	13.0
	Arthropoda	12	14.0	42	9.9
	Other Taxa	7	8.1	132	31.1
	TOTAL	86		424	
40	Annelida	37	59.7	133	68.9
	Mollusca	5	8.1	10	5.2
	Arthropoda	13	21.0	33	17.1
	Other Taxa	7	11.3	17	8.8
	TOTAL	62		193	

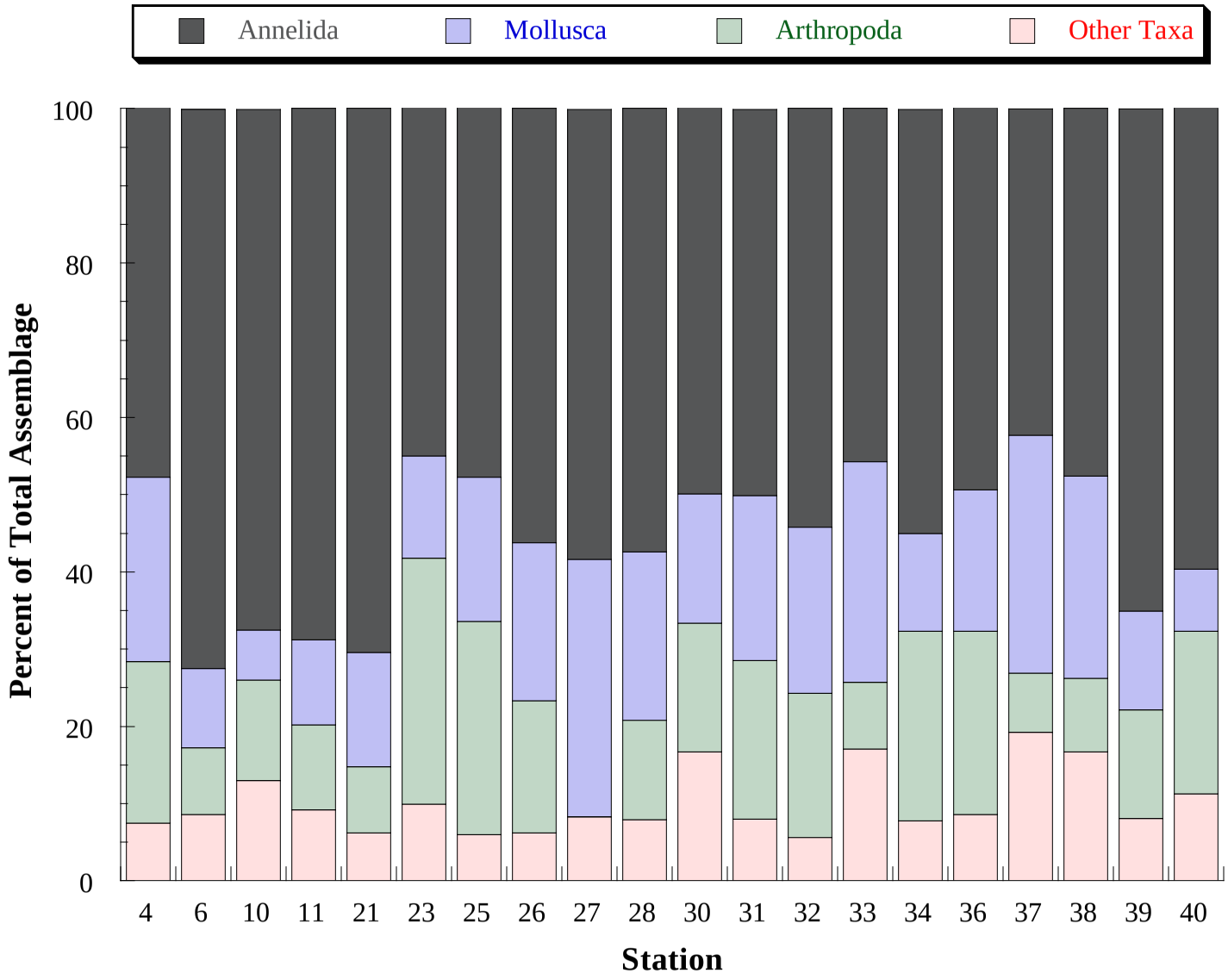

Figure 5. Percent abundance of major taxonomic groups for the Florida Keys to Dry Tortugas stations, July 1998.

Table 5. Percentage abundance of dominant taxa (> 10% of the total) for the Florida Keys to Dry Tortugas stations, July 1998.

Taxa	4	6	10	11	21	23	25	26	27	28	30	31	32	33	34	36	37	38	39	40
RHYNCHOCOELA																				
Rhynchocoela (LPIL)													10.4		15.2		13.3			
SIPUNCULA																				
Sipuncula (LPIL)																	18.7		15.6	
Aspidosiphon albus														17.0						
ANNELIDA																				
Polychaeta																				
Capitellidae (LPIL)															11.5					
Axiothella mucosa	12.0																			
Litocorsa antennata		10.1																		13.5
Prionospio sp.B			21.0																	
Haplosyllis spongicola				11.4																
MOLLUSCA																				
Bivalvia																				
Lucinidae (LPIL)															12.6					
Lucina radians																		20.1		
Ervilia concentrica					12.8				18.1											
Glycymeris decussata									12.7											
ARTHROPODA																				
Malacostraca																				
Gammaropsis sp.C			12.6																	

Table 6. Summary of the benthic macroinfaunal data for the Florida Keys to Dry Tortugas stations, July 1998.

Summary by Replicate					Summary by Station								
Station	**Rep**	**Taxa**	**Indvs**	**Density**	**Mean No.Taxa**	**Taxa (SD)**	**Mean Density**	**Density (SD)**	**Taxa**	**Indvs**	**H'**	**J'**	**D**
4	A	81	286	7150	65.67	15.50	7833.3	3944.6	134	940	3.83	0.78	19.43
4	B	66	483	12075									
4	C	50	171	4275									
6	A	31	81	2025	26.00	4.58	1483.3	563.7	58	178	3.60	0.89	11.00
6	B	22	36	900									
6	C	25	61	1525									
10	A	17	27	675	19.67	3.06	991.7	312.6	46	119	3.24	0.85	9.42
10	B	23	40	1000									
10	C	19	52	1300									
11	A	27	51	1275	51.00	25.06	3366.7	2039.7	109	404	4.04	0.86	18.00
11	B	49	139	3475									
11	C	77	214	5350									
21	A	53	167	4175	40.00	11.36	3000.0	1021.3	81	360	3.77	0.86	13.59
21	B	35	100	2500									
21	C	32	93	2325									
23	A	52	112	2800	42.00	12.49	2000.0	787.8	91	240	4.09	0.91	16.42
23	B	28	49	1225									
23	C	46	79	1975									
25	A	67	150	3750	61.67	11.93	3783.3	450.9	134	454	4.39	0.90	21.74
25	B	70	170	4250									
25	C	48	134	3350									

Table 6. Continued:

Summary by Replicate									Summary by Station				
Station	Rep	Taxa	Indvs	Density	Mean No.Taxa	Taxa (SD)	Mean Density	Density (SD)	Taxa	Indvs	H'	J'	D
26	A	62	170	4250	70.33	30.37	4350.0	2676.4	146	522	4.43	0.89	23.17
26	B	104	283	7075									
26	C	45	69	1725									
27	A	14	38	950	17.67	4.73	1383.3	414.1	36	166	2.97	0.83	6.85
27	B	16	57	1425									
27	C	23	71	1775									
28	A	33	71	1775	42.67	27.79	2458.3	1729.4	101	295	4.23	0.92	17.58
28	B	74	177	4425									
28	C	21	47	1175									
30	A	13	18	450	11.67	1.53	383.3	76.4	24	46	3.06	0.96	6.01
30	B	10	12	300									
30	C	12	16	400									
31	A	33	61	1525	55.33	26.08	3441.7	2504.2	112	413	4.24	0.90	18.43
31	B	49	101	2525									
31	C	84	251	6275									
32	A	35	60	1500	57.00	21.52	4150.0	2360.0	107	498	3.98	0.85	17.07
32	B	58	197	4925									
32	C	78	241	6025									
33	A	22	63	1575	17.00	5.00	933.3	559.2	35	112	3.03	0.85	7.21
33	B	12	22	550									
33	C	17	27	675									

Table 6. Continued:

Summary by Replicate									Summary by Station				
Station	Rep	Taxa	Indvs	Density	Mean No.Taxa	Taxa (SD)	Mean Density	Density (SD)	Taxa	Indvs	H'	J'	D
34	A	38	119	2975	52.00	12.77	4358.3	1214.6	102	523	3.64	0.79	16.14
34	B	55	210	5250									
34	C	63	194	4850									
36	A	54	154	3850	45.67	8.02	2600.0	1172.3	93	312	3.93	0.87	16.02
36	B	45	97	2425									
36	C	38	61	1525									
37	A	8	12	300	12.33	5.13	625.0	368.3	26	75	2.85	0.88	5.79
37	B	18	41	1025									
37	C	11	22	550									
38	A	21	49	1225	20.67	0.58	1158.3	94.6	42	139	3.19	0.85	8.31
38	B	20	42	1050									
38	C	21	48	1200									
39	A	41	104	2600	44.00	7.94	3533.3	1927.6	86	424	3.70	0.83	14.05
39	B	53	230	5750									
39	C	38	90	2250									
40	A	28	57	1425	33.33	5.03	1608.3	160.7	62	193	3.77	0.91	11.59
40	B	34	67	1675									
40	C	38	69	1725									

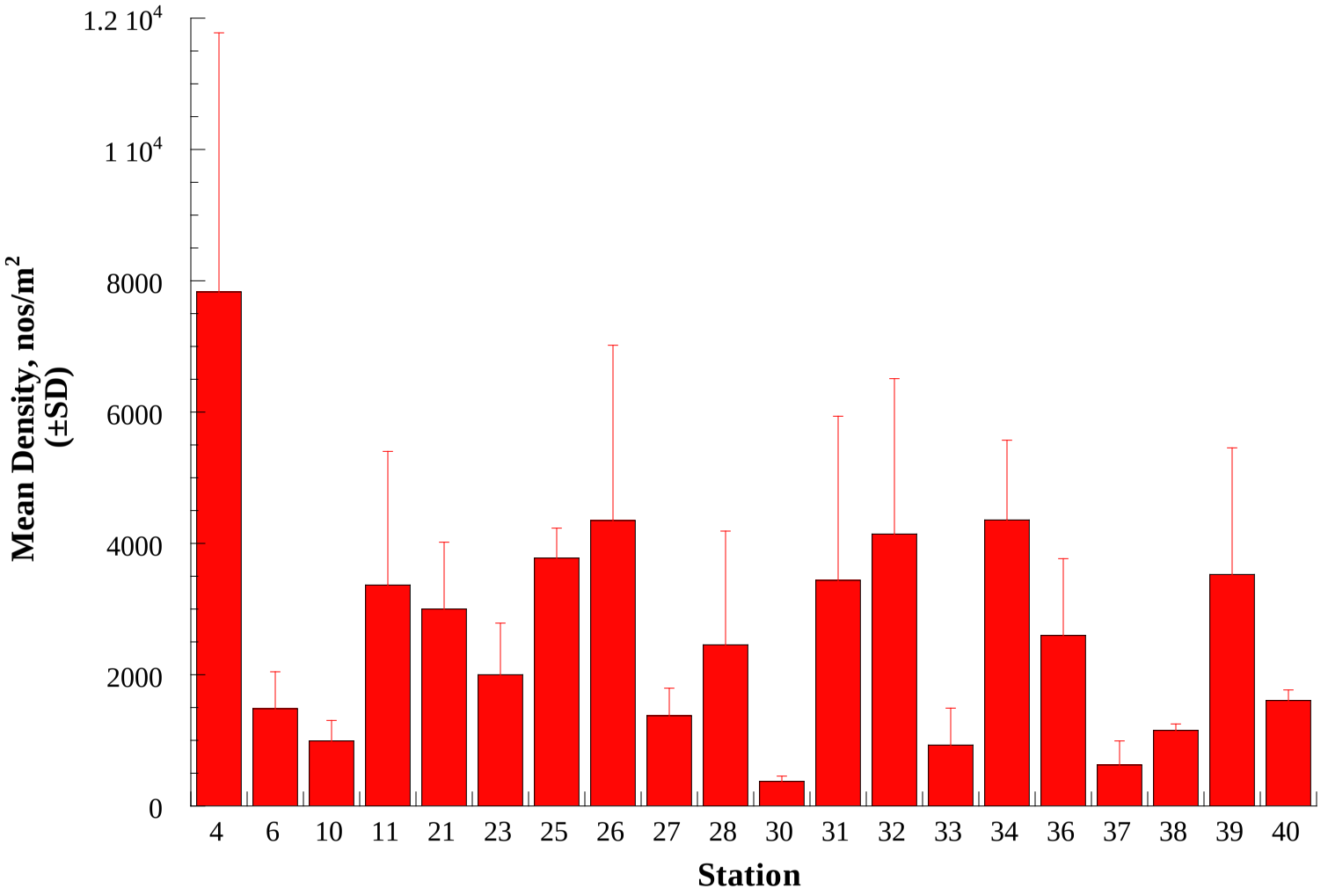

Figure 6. Mean macroinvertebrate densities for the Florida Keys to Dry Tortugas stations, July 1998.

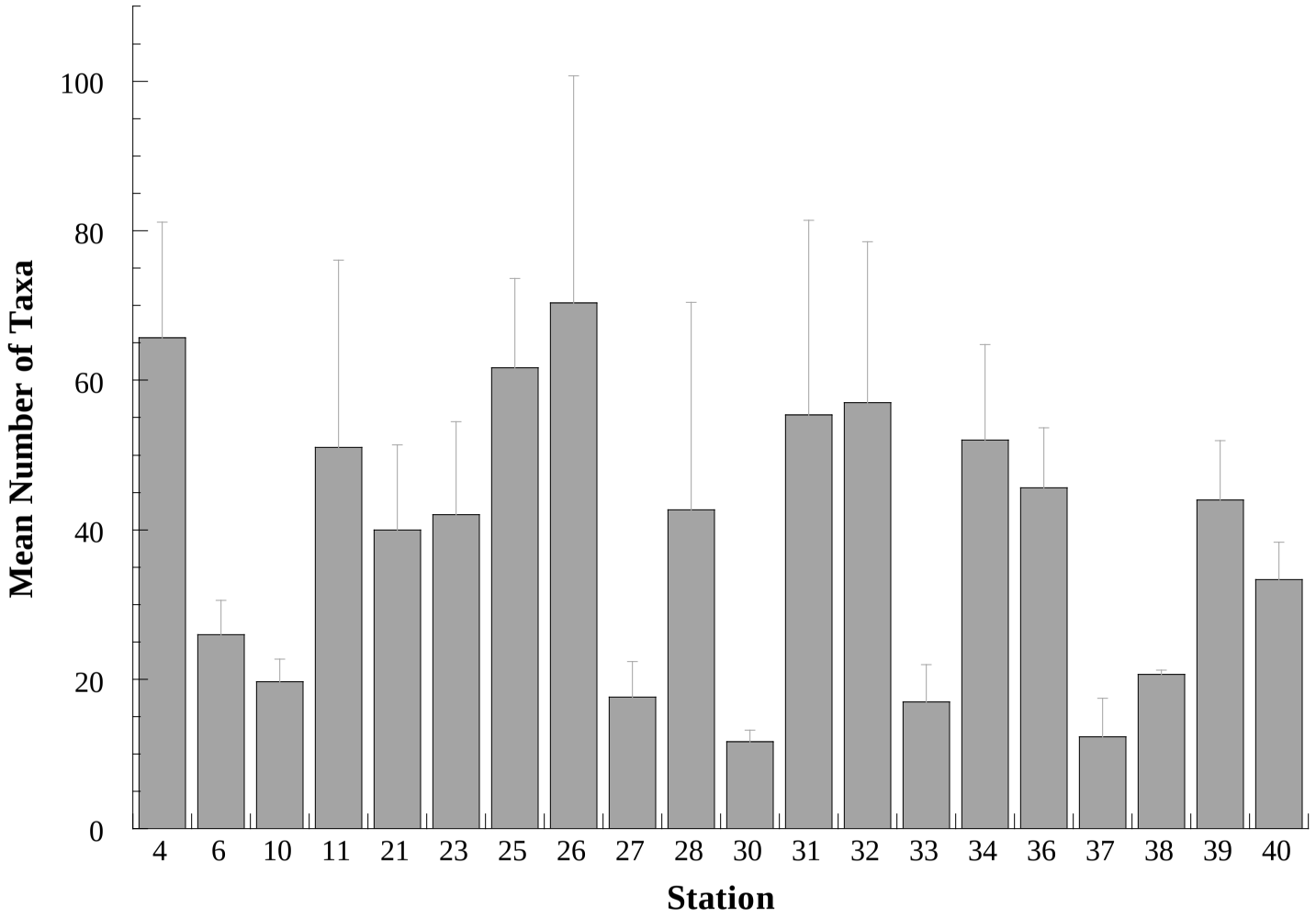

Figure 7. Mean number of macroinvertebrate taxa per replicate for the Florida Keys to Dry Tortugas stations, July 1998.

stations in both mean density and mean number of taxa per replicate (Table 7). Post-hoc analysis displayed significant differences between specific stations (Table 8).

There was a significant positive correlation between station mean density data and % gravel+sand in the sediment, and a significant inverse correlation between density and % silt+ clay in the sediment (Table 9; Figure 8). The number of taxa per replicate was positively correlated with % gravel+sand in the sediment and inversely correlated with % silt+ clay in the sediment (Table 9; Figure 9).

Taxa diversity and eveness are given in Table 6 and Figure 10. Taxa diversity (H') was uniformly high with all stations but two (27 and 37) having diversity values > 3.0; values ranged from 2.85 at Station 37 to 4.43 at Station 26 (Table 6, Figure 10). Taxa evenness (J) was also high with all stations but two (4 and 34) having evenness values > 0.8; values ranged from 0.78 at Station 4 to 0.96 at Station 30 (Table 6; Figure 10).

Cluster Analysis

Normal (stations) and inverse (species) cluster analyses were performed on the Florida Keys to Dry Tortugas data set and displayed as dendrograms (Figures 11 and 12). Selection of the species included in the analyses was based on a minimum representation of 0.80% of total individuals. Transformed density data for the 34 taxa selected were included in a matrix of station and species groups (Table 10). These taxa accounted for 47.6% of the total macroinfaunal assemblage.

Cluster analysis of the 20 stations was interpreted at a five-group level. Stations 27 and 34 each formed single clusters; stations 30, 33, 37, and 38 formed a unique cluster; and stations 6, 10, and 11 formed a unique cluster. The remaining stations made up one large cluster (Figure 11). Cluster analysis of the 34 taxa at the 20 stations was interpreted at a three group level (Figure 12). *Ervilia concentrica* made up a single taxa cluster; *Axiothella mucosa, Haustorius jayneae, Axiothella* sp. A, *Rutiderma mollitum, Lima pellucida, and Caecum nitidium* made up a taxa cluster. The remaining taxa were distributed in one large cluster (Figure 12).

Table 7. ANOVA results for differences in number of taxa and macroinvertebrate densities between stations for the Florida Keys to Dry Tortugas stations, July 1998.

Taxa Results

Shapiro-Wilk W Test for Normality

W= 0.97 Prob < W = 0.2218

ANOVA Table

Source	DF	Sum of Squares	Means Square	F Ratio	Prob >F
Model	19	16.5	0.9	**8.89**	**<0.0001**
Error	40	3.9	0.1		
Total	59	20.4	0.3		

Density Results

Shapiro-Wilk W Test for Normality

W= 0.97 Prob < W = 0.4590

ANOVA Table

Source	DF	Sum of Squares	Means Square	F Ratio	Prob >F
Model	19	31	1.6	**6.74**	**<0.0001**
Error	40	9.7	0.2		
Total	59	40.6	0.7		

Table 8. Significant differences between number of taxa per station (top) and station densities (bottom) for the Florida Keys to Dry Tortugas stations, July 1998

Stations	26	4	25	32	31	34	11	36	39	23	21	28	40	6	38	10	27	33	37	30
26		ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*
4			ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*
25				ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*
32					ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*
31						ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*
34							ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*
11								ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*
36									ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*
39										ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
23											ns	ns	ns	ns	ns	ns	ns	ns	*	*
21												ns	ns	ns	ns	ns	ns	ns	*	*
28													ns	ns	ns	ns	ns	ns	*	*
40														ns	ns	ns	ns	ns	*	*
6															ns	ns	ns	ns	ns	ns
38																ns	ns	ns	ns	ns
10																	ns	ns	ns	ns
27																		ns	ns	ns
33																			ns	ns
37																				ns
30																				

* indicates significant differences between stations at alpha=0.05
ns=not significant

Stations	4	34	25	26	32	39	21	31	11	36	28	23	40	6	27	38	10	33	37	30
4		ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*	*	*	*	*
34			ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*	*
25				ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
26					ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
32						ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
39							ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
21								ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
31									ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
11										ns	ns	ns	ns	ns	ns	ns	ns	ns	*	*
36											ns	ns	ns	ns	ns	ns	ns	ns	ns	*
28												ns	ns	ns	ns	ns	ns	ns	ns	*
23													ns	ns	ns	ns	ns	ns	ns	*
40														ns	ns	ns	ns	ns	ns	ns
6															ns	ns	ns	ns	ns	ns
27																ns	ns	ns	ns	ns
38																	ns	ns	ns	ns
10																		ns	ns	ns
33																			ns	ns
37																				ns
30																				

* indicates significant differences between stations at alpha=0.05
ns=not significant

Table 9. Correlation coefficients for the Florida Keys to Dry Tortugas data, July 1998.

Variable	By Variable	Correlation (Spearman's Rho)	Significance Probability	Sign
Density	Taxa/Rep	0.953	<0.0001	****
% Gravel+Sand	Taxa/Rep	0.2948	0.0222	*
	Density	0.2654	0.0404	*
% Silt+Clay	Taxa/Rep	-0.3242	0.0115	*
	Density	-0.3364	0.0086	**
	% Gravel+Sand	-0.9136	<0.0001	****
TOC	Taxa/Rep	-0.2066	0.1133	NS
	Density	-0.2049	0.1133	NS
	% Gravel+Sand	-0.7344	<0.0001	****
	% Silt+Clay	0.7203	<0.0001	****

NS=Not Significant

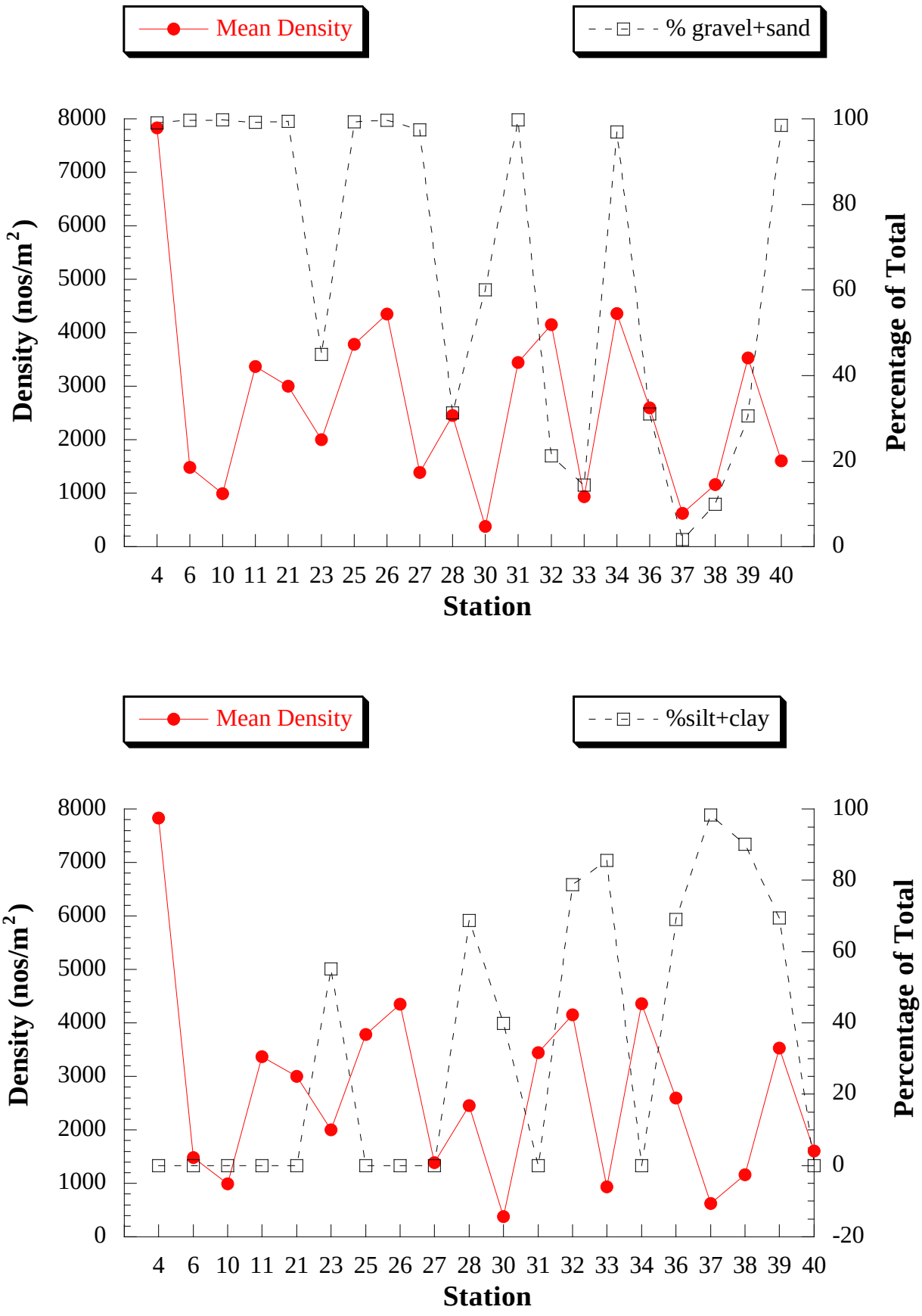

Figure 8. Mean macroinvertebrate densities versus % gravel+sand (top panel) and % silt+clay (bottom panel) for the Florida Keys to Dry Tortugas stations, July 1998.

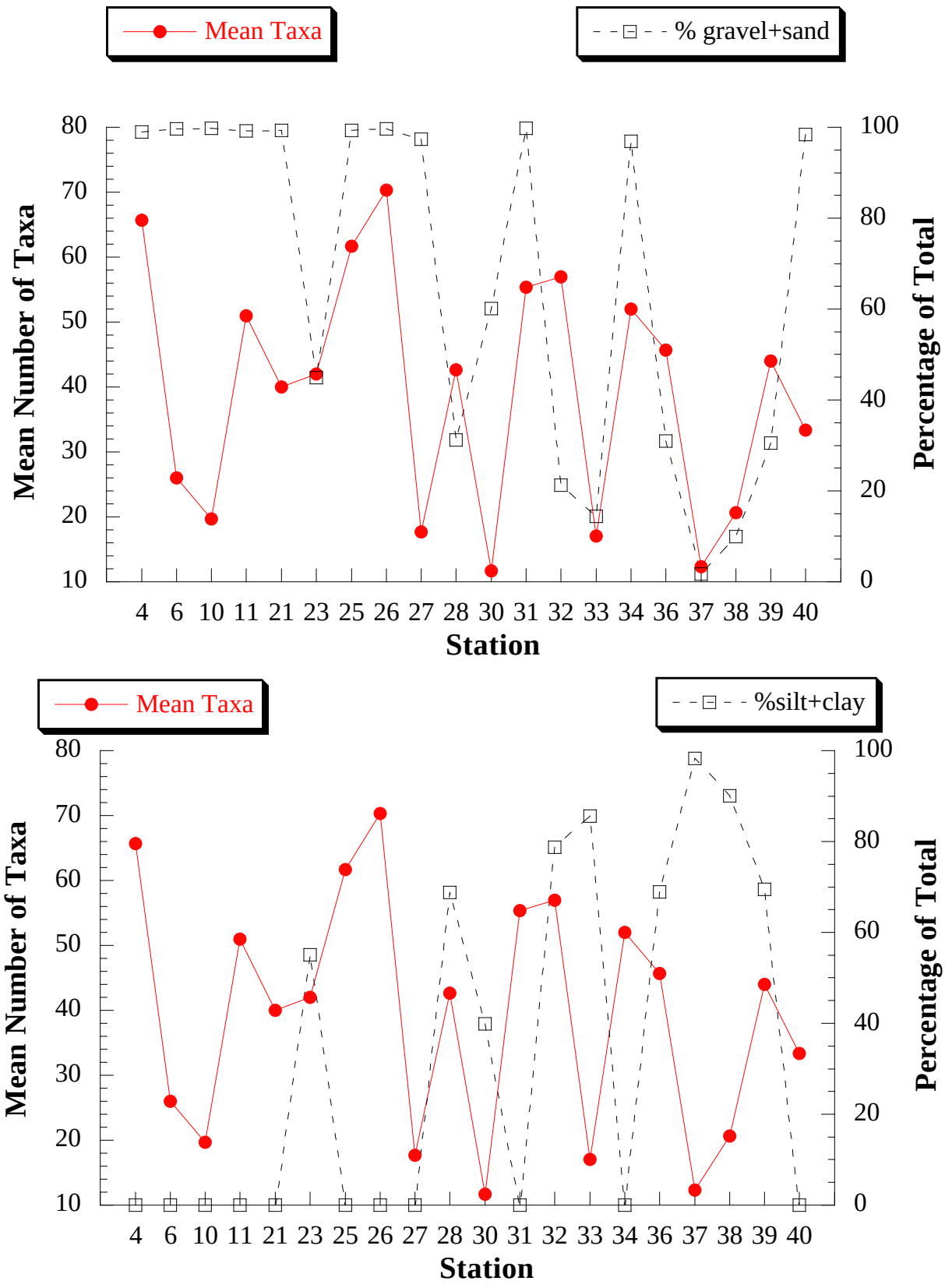

Figure 9. Mean number of macroinvertebrate taxa per replicate versus % gravel+sand (top panel) and % silt+clay (bottom panel) for the Florida Keys to Dry Tortugas stations, July 1998.

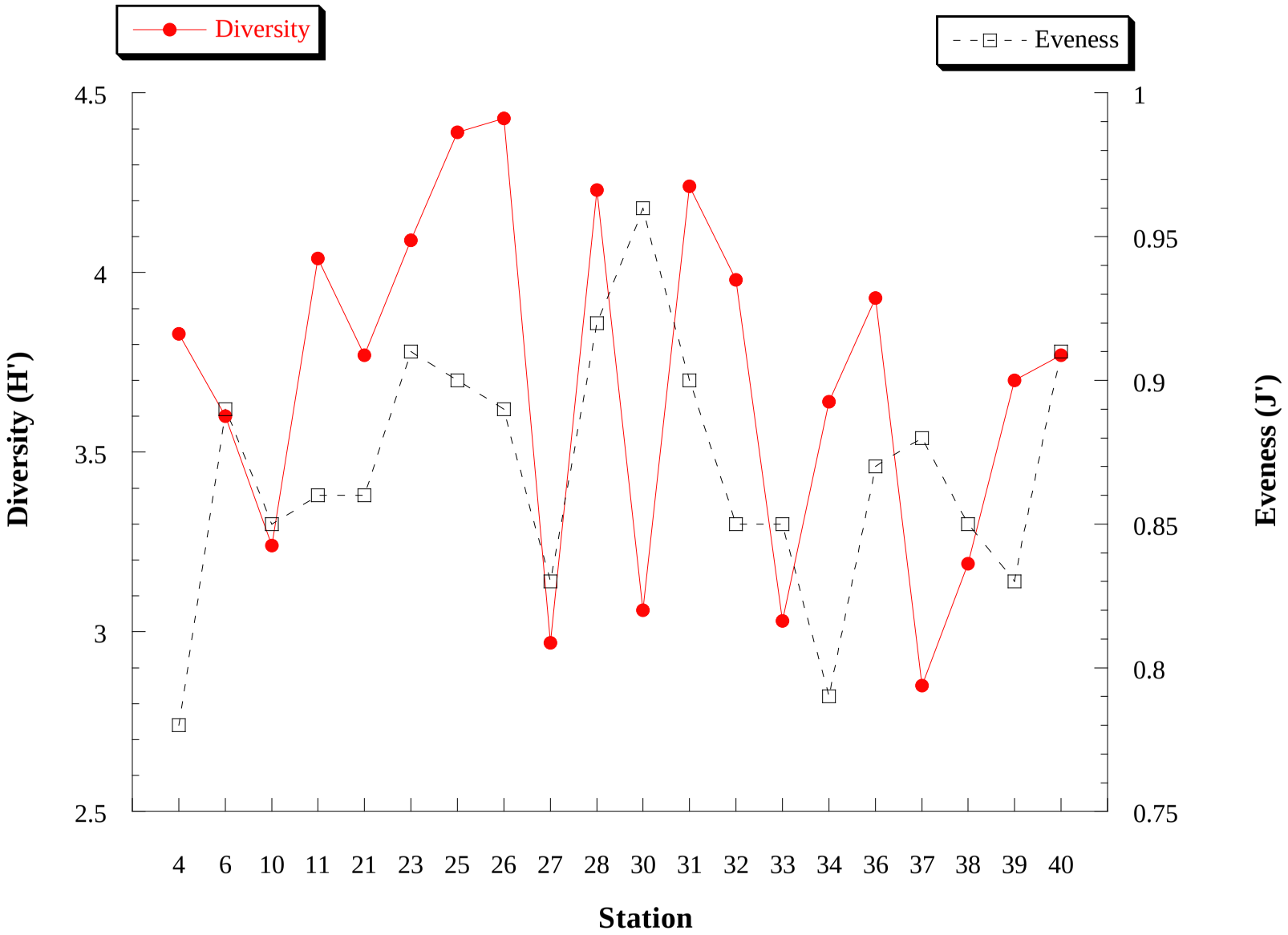

Figure 10. Taxa diversity (H') and eveness (J') for the Florida Keys to Dry Tortugas stations, July 1998.

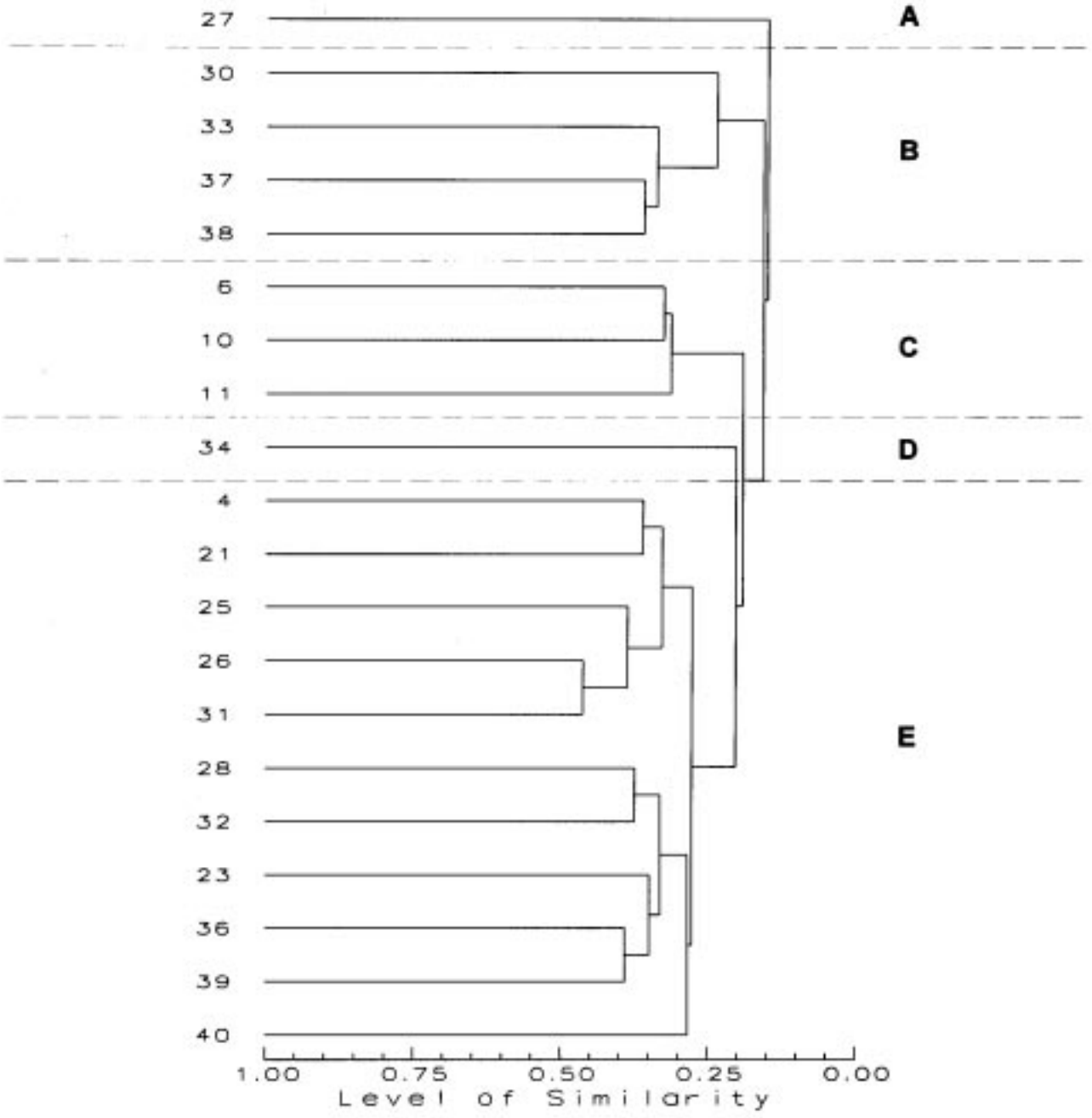

Figure 11. Normal (station) dendrogram from cluster analysis for the Florida Keys to Dry Tortugas stations, July 1998.

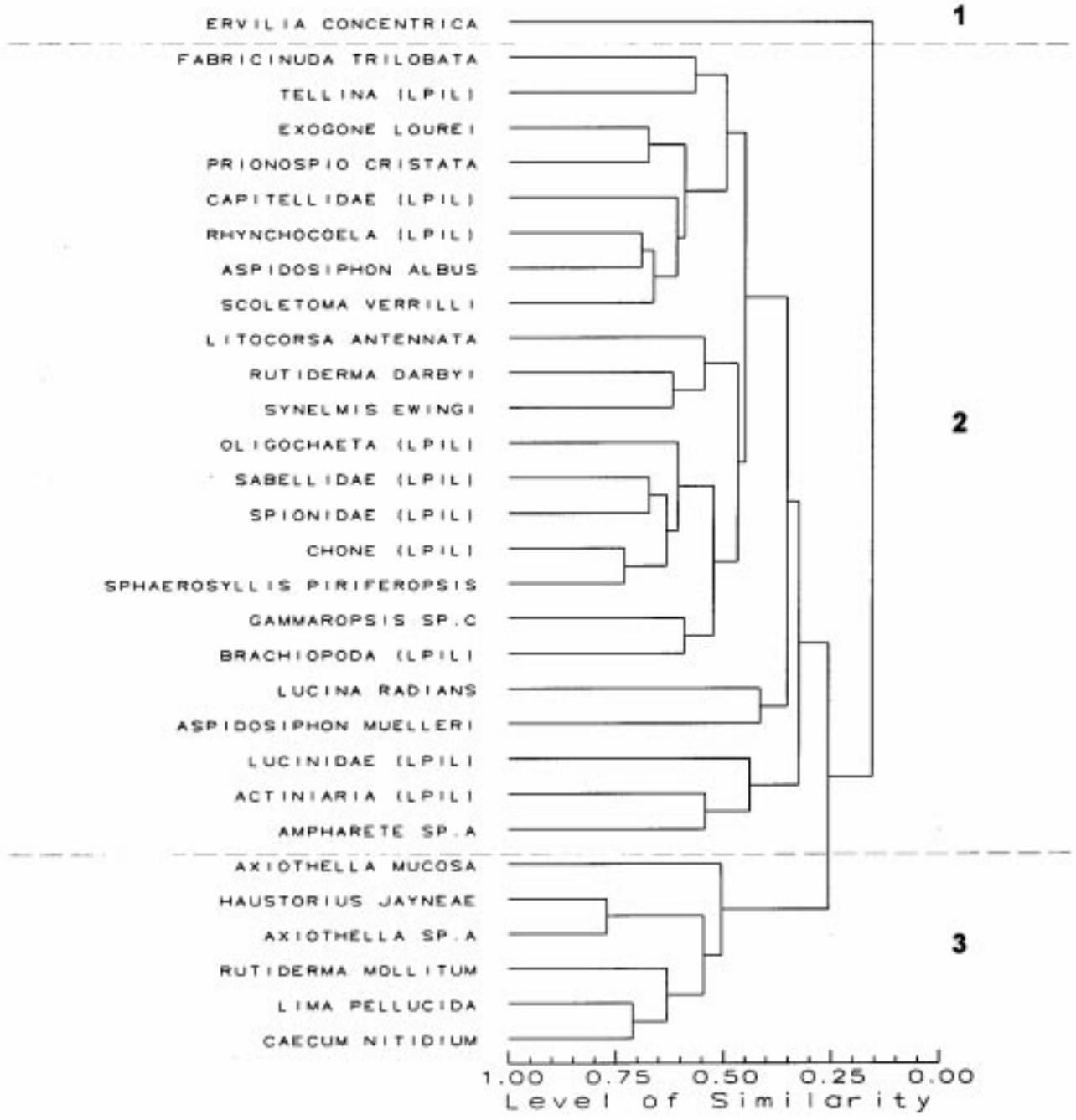

Figure 12. Inverse (taxa) dendrogram from cluster analysis for the Florida Keys to Dry Tortugas stations, July 1998.

Table10. Two-way matrix of station and species groups for the Florida Keys to Dry Tortugas stations, July 1998.

	A	B				C			D	E											
	27	**30**	**33**	**37**	**38**	**6**	**10**	**11**	**34**	**4**	**21**	**25**	**26**	**31**	**28**	**32**	**23**	**36**	**39**	**40**	
Ervilia concentrica	30										46	7									**1**
Fabricinuda trilobata									1	1			6	36	3	13		10	9		
Tellina (LPIL)			1							4		33	20	1	4	8		1	2		
Exogone lourei		1								2	5	1	4		5	3	10	29	12	7	
Prionospio cristata			3		2		2			4	4	7	7		1	22	2	4	16	4	
Capitellidae (LPIL)		3		1	5				60	1		1	5	2	9	7	9	7	1	5	
Rhynchocoela (LPIL)			17	10	8		3	7	26	12	2	5	4	5	10	52	10	15	30	4	
Aspidosiphon albus	2	2	19	5	6				4	9					12	5	7	17	14		
Scoletoma verrilli			6	2	1			3	1	11	1		2		11	24	2	1	5	3	
Litocorsa antennata		4			3	18		2	13	7	17			4			3	6	6	26	
Rutiderma darbyi										36	2	3	6	9			3	1	2	4	
Synelmis ewingi								2	13		19	4	6	4			4	2		5	
Oligochaeta (LPIL)	13	3	2	1			8	6	1	41	16	2	9	13	5	8	1	5	2	5	**2**
Sabellidae (LPIL)							1	11		7	3	13	36	9	10	1	10	4			
Spionidae (LPIL)	5	3				3	1	8		5	4	9	2	3	5	4	16		6	1	
Chone (LPIL)						2		10	1		3	23	17	13	1	9		3	2	3	
Sphaerosyllis piriferopsis						4	1	13			1	8	10	12	11				1	4	
Gammaropsis sp.C						2	15	11				6	4	8		1		9			
Brachiopoda (LPIL)			1			3	4	34	1				2	1		2	1	2	3	1	
Lucina radians		3		6	28					1				2	1		19	4	23		
Aspidosiphon muelleri		1			1	4					3			13			6	26			
Lucinidae (LPIL)	14		5						66	4			14	3		2		13			
Actiniaria (LPIL)			2	1	9				32		1			4				4	17	1	
Ampharete sp.A									47	1								1	5		
Axiothella mucosa								1		113	1		18		14						
Haustorius jayneae										83											
Axiothella sp.A										53				6							**3**
Rutiderma mollitum						7		6		50	2	3	1	7							
Lima pellucida										56	8	2	4	1							
Caecum nitidium										25	16	2		5	2	1					

LITERATURE CITED

Pielou, E.C. 1966. The measurement of diversity in different types of biological collections.Journal of Theoretical Biology 13:131-144.

SAS Institute. 1997. JMP Version 3.2 for the Macintosh. SAS Institute. Cary, NC.

APPENDIX

QUALITY ASSURANCE STATEMENT

Client/Project NOAA

Work Assignment Title Florida Keys/Dry Tortugas

Work Assignment Number Task Number

Description of Data Set or Deliverable: 60 Benthic macroinvertebrate samples collected in July of 1998; 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

_____

Signature of QA Officer or Reviewer Date

_____

Signature of Project Manager Date

QUALITY CONTROL REWORKS

Client/Project NOAA

Work Assignment Title Florida Keys/Dry Tortugas Task Number

Sorting Results:

Sample #	% Accuracy
23-003	100%
6-001	100%
31-001	100%
32-002	100%
23-002	100%
6-002	100%
39-001	100%

Taxonomy Results:

Sample #	Taxa	% Accuracy
36-002	Crust./Moll.	96.8%
30-002	Crust./Moll.	100%
4-001	Crust./Moll.	95.3%
4-002	Crust./Moll.	98.6%
33-002	Crust./Moll.	100%
25-002	Crust./Moll.	96.9%
21-001	Poly./Misc.	97.9%
27-003	Poly./Misc.	96.7%
26-003	Poly./Misc.	100%
4-003	Poly./Misc.	96%
4-001	Poly./Misc.	99.4%
30-001	Poly./Misc.	100%
31-003	Poly./Misc.	95.7%
37-001	Poly./Misc.	100%
40-001	Poly./Misc.	97.6%
6-001	Poly/Misc	100%
11-003	Poly/Misc	97.8%

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

_____

Signature of QA Officer or Reviewer Date

Identification Level Comments

Taxon Name	Comments
Rhynchocoela (LPIL)	no identifiable characters.
Sipuncula (LPIL)	juvenile specimen or missing characters
Axiothella mucosa	
Oligochaeta (LPIL)	marine and some estuarine specimens only identified to class.
Lucinidae (LPIL)	juvenile specimen.
Bivalvia (LPIL)	crushed and/or juvenile specimen.
Capitellidae (LPIL)	immature and/or anterior portion only.
Maldanidae (LPIL)	fragmented portion, pygidium necessary for positive identification.
Litocorsa antennata	
Sabellidae (LPIL)	missing branchial crown.
Aspidosiphon albus	
Chone (LPIL)	genus is lowest possible identification.
Lucina radians	
Ervilia concentrica	
Haustorius jayneae	
Exogone lourei	
Fabricinuda trilobata	
Prionospio cristata	
Prionospio (LPIL)	missing identification characters
Rutiderma mollitum	
Spionidae (LPIL)	missing identificaton characters and/or immature
Tellina (LPIL)	due to small size, external and internal characters are not apparent.
Scoletoma verrilli	
Actiniaria (LPIL)	order is lowest identification level.
Lima pellucida	
Rutiderma darbyi	
Sphaerosyllis piriferopsis	
Axiothella sp.A	
Synelmis ewingi	
Gammaropsis sp.C	
Brachiopoda (LPIL)	phylum is lowest identification level.
Aspidosiphon muelleri	
Ampharete sp.A	
Caecum nitidium	