Florida Keys to Dry Tortugas Benthic Community Assessment, July 1997

SUBMITTED TO

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INTRODUCTION

The Florida Keys to Dry Tortugas region was sampled during July, 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 34 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 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 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 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 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.

Cluster 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

Sediment data for the 34 stations are given in Table 1 and Figures 2, 3 and 4. Sediment composition at the 34 stations varied considerably from 86% sand at station C7 to 64% silt at station A1 (Table 1; Figure 1). Gravel (presumably shell/coral hash) and sand were predominant at most stations, with silt/clay fractions dominating the sediment at stations A1-A6, B12, A28, A29, B30 and SR26 (Figure 2). The total organic carbon (TOC) fraction of the sediment was uniformly low with all values less than 1% (Table 1; Figure 3).

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. Five 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 QA/QC comments, a major taxa table with overall taxa abundance, a mjaor taxa tabla broken down by station, and an assemblage parameter table including data on mean number of taxa, mean density, taxa diversity and taxa evenness by station.

A total of 25,758 organisms, representing 881 taxa, were identified from the 34 stations (Table 3). Polychaetes were the most numerous organisms present representing 46.9% of the total

Table 1. Summary of benthic macroinvertebrate, water quality and sediment data for the Florida Keys to Dry Tortugas stations, July 1997.

Station	Total No. Taxa	Mean Taxa per Repl.	Total No. Indivs.	Density (nos/m²)	Density (Std. Dev.)	H' Diversity	J' Evenness	Bottom Temp (˚C)	Bottom Salinity (ppt)	Dissolved Oxygen (mg/l)	% Gravel	% Sand	% Silt	% Clay	% TOC	Textural Description
A1	69	35.7	338	2817	478	3.31	0.78	18.9	36.1	8.62	0.7	12.9	63.9	22.6	0.14	clayey silt
A2	72	34.3	292	2433	275	3.50	0.82	22.1	36.3	7.39	0.1	26.6	62.2	11.2	0.11	sandy silt
A3	132	69.3	607	5058	1065	4.16	0.85	19.1	36.1	8.30	0.1	32.6	53.2	14.2	0.23	sandy silt
A4	151	77.7	769	6408	2535	4.16	0.83	20.3	36.2	9.31	3.6	49.1	33.9	13.5	0.22	silty sand
A5	73	35.3	217	1808	449	3.83	0.89	26.5	36.3	6.90	0.0	61.5	30.8	7.7	0.36	silty sand
A6	99	52.0	435	3625	261	3.99	0.87	29.8	36.3	6.19	4.5	28.2	51.6	15.7	0.28	sandy silt
C7	152	75.3	537	4475	238	4.55	0.91	19.3	36.1	8.59	5.0	86.4	5.7	-	0.22	sand
A8	152	79.7	1623	13525	3006	3.64	0.72	30.4	36.8	6.32	39.2	59.8	-	-	0.07	sandy gravel
A9	122	63.3	475	3958	939	4.06	0.84	22.3	36.3	7.68	0.1	63.9	23.6	12.4	0.26	silty sand
A10	118	66.7	595	4958	1300	4.10	0.86	27.3	36.5	6.62	-	60.5	33.6	5.9	0.56	silty sand
A11	164	90.0	1112	9267	1365	4.15	0.81	31	36.5	5.88	26.0	72.4	-	-	0.12	gravelly sand
B12	97	58.3	635	5292	1068	3.80	0.83	-	-	-	-	41.4	48.6	9.9	0.17	sandy silt
A13	172	86.0	878	7317	2335	4.20	0.82	31.1	36.8	6.21	0.4	85.2	9.3	5.1	0.21	sand
A14	96	49.7	324	2700	750	4.03	0.88	30.2	36.3	6.35	4.9	69.2	14.9	11.1	0.31	silty sand
A15	121	56.7	408	3400	900	4.30	0.90	25.8	36.8	7.72	11.3	82.4	3.6	-	0.37	gravelly sand
A16	149	76.0	583	4858	870	4.42	0.88	29.2	36.3	7.02	17.6	60.6	2.8	-	0.72	gravelly sand
A17	180	103.7	1628	13567	5510	4.17	0.80	-	-	-	2.5	97.4	-	-	0.59	sand
A18	210	115.3	1393	11608	1836	4.60	0.86	32.4	36.9	5.05	2.1	95.2	-	-	0.23	sand
C19	135	66.3	713	5942	1811	3.93	0.80	31.8	37	5.43	0.5	95.9	-	-	0.18	sand
A20	102	54.3	1054	8783	2577	3.56	0.77	30.6	36.8	6.22	38.0	61.7	-	-	0.07	sandy gravel
A21	157	77.7	726	6050	2206	4.25	0.84	29.7	36.4	7.03	3.5	62.2	23.9	10.4	0.37	silty sand
A22	190	95.3	830	6917	2747	4.51	0.86	30	36.4	7.45	12.8	85.8	-	-	0.31	gravelly sand
C23	41	19.3	207	1725	1309	2.88	0.78	31.9	36.3	5.43	5.6	94.3	-	-	0.29	gravelly sand
A24	199	101.0	1154	9617	633	4.40	0.83	-	-	-	6.0	87.4	-	-	0.11	gravelly sand
A25	198	105.7	2020	16833	4138	3.83	0.72	31.9	36.8	5.17	4.6	67.3	21.3	6.9	0.41	silty sand
A26	150	73.0	645	5375	3045	4.46	0.89	32.2	37	4.82	13.2	84.1	-	-	0.21	gravelly sand
C27	50	25.3	186	1550	1238	3.36	0.86	-	-	-	30.3	69.6	-	-	0.04	sandy gravel
A28	62	33.3	421	3508	905	2.74	0.66	32.1	36.8	4.53	0.2	44.4	37.0	18.4	0.31	sandy silt
A29	87	42.7	370	3083	601	3.94	0.88	32.8	37.3	5.02	1.4	54.9	29.2	14.6	0.82	silty sand
B30	66	33.3	346	2883	995	3.23	0.77	32	37.3	4.59	0.1	37.3	41.3	21.3	0.13	clayey silt
A31	190	96.3	1328	11067	752	4.12	0.79	32.4	37.9	3.49	2.5	85.6	8.1	3.8	0.15	sand
SR23	64	37.7	1357	11308	3129	2.62	0.63	-	-	-	19.9	76.4	-	-	0.67	gravelly sand
SR24	131	62.7	635	5292	2927	4.08	0.84	32.6	38.5	8.36	1.6	75.3	17.4	5.7	0.18	silty sand
SR26	143	73.3	917	7642	3399	3.95	0.80	32.2	37.6	3.98	11.8	31.9	28.1	28.1	0.26	gravelly mud

Figure 1. Sediment composition for the Florida Keys to Dry Tortugas stations, July 1997.

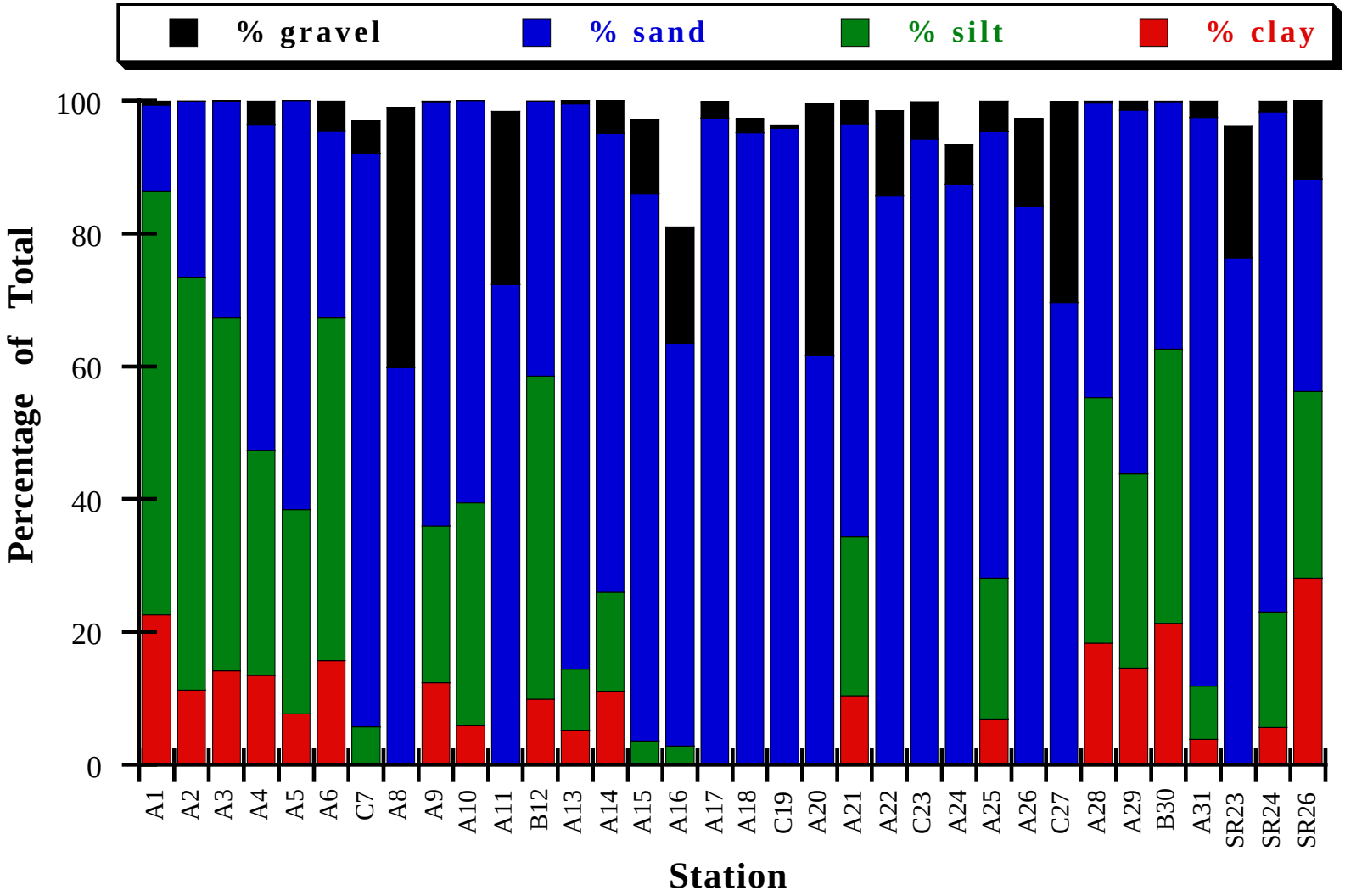


Figure 2. Percent gravel/sand and percent silt/clay content of the sediments for the Florida Keys to Dry Tortugas stations, July 1997.

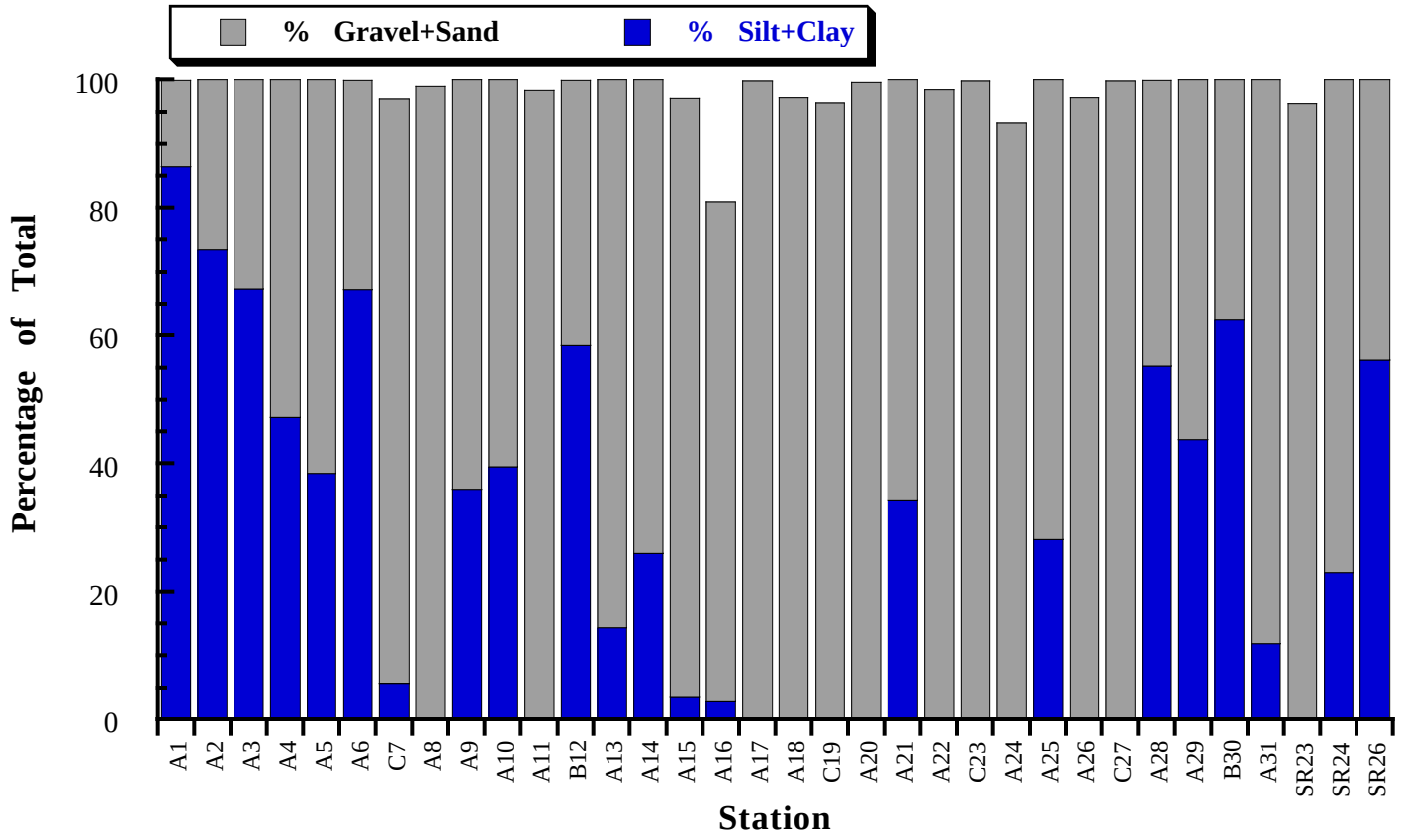


Figure 3. Percent total organic carbon (TOC) content of the sediments for the Florida Keys to Dry Tortugas stations, July 1997.

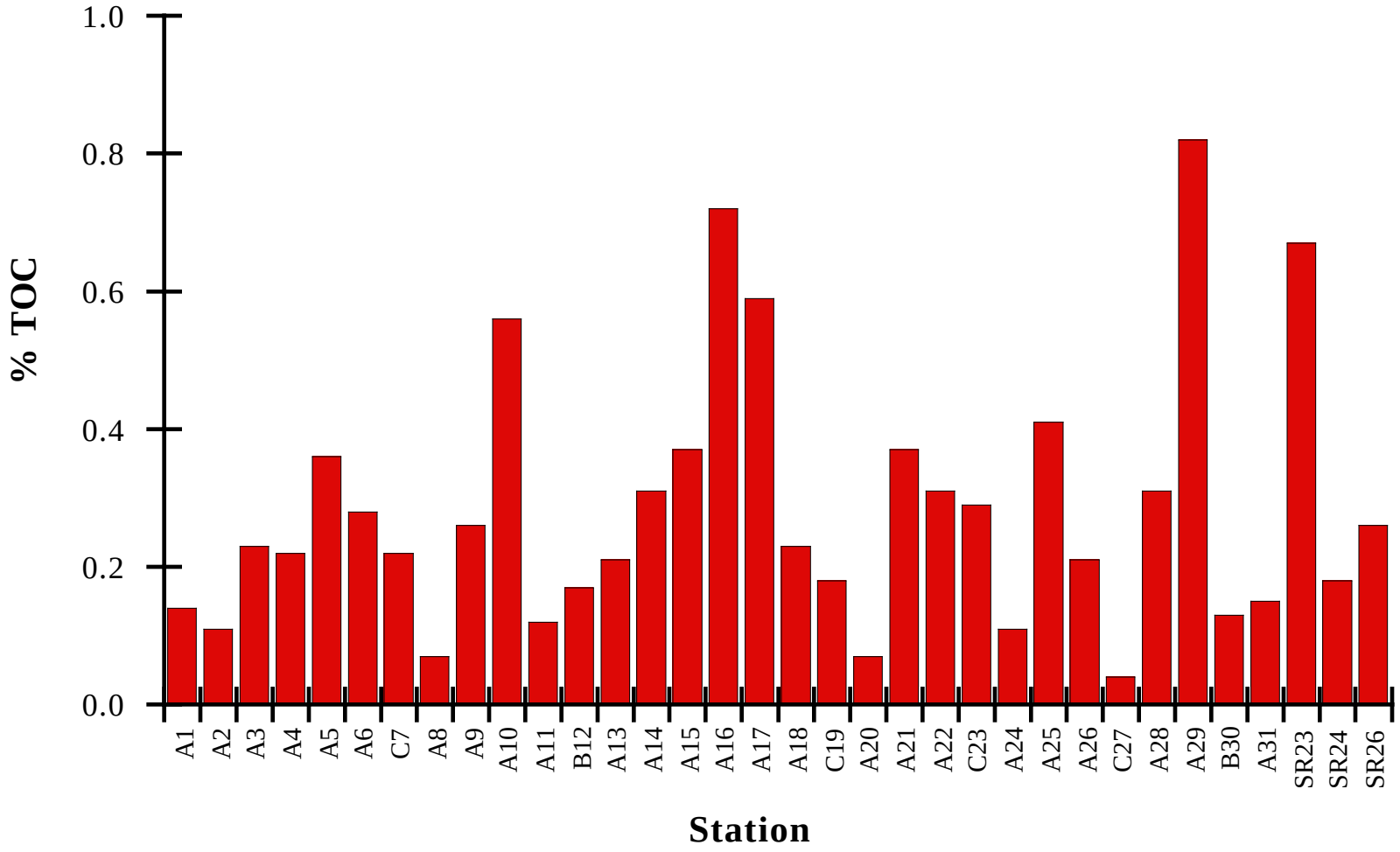


Table 2. Abundance and distribution of taxa for the Florida Keys to Dry Tortugas stations, July 1997. Taxa above the shaded line were included in the cluster analyses.

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.	Comments
Leptochelia (LPIL)	Ar	Mala	933	3.622	3.622	27	79.4	mature male necessary for species identification
Oligochaeta (LPIL)	A	Olig	895	3.475	7.097	32	94.1	marine and some estuarine specimens only identified to class
Sabellidae (LPIL)	A	Poly	791	3.071	10.168	28	82.4	specimen immature or crown missing
Exogone lourei	A	Poly	776	3.013	13.180	19	55.9	
Scoletoma verrilli	A	Poly	735	2.853	16.034	28	82.4	
Haplosyllis spongicola	A	Poly	592	2.298	18.332	12	35.3	
Syllis cornuta	A	Poly	580	2.252	20.584	16	47.1	
Dentatisyllis carolinae	A	Poly	474	1.840	22.424	15	44.1	
Capitellidae (LPIL)	A	Poly	473	1.836	24.260	31	91.2	immature and/or anterior portion only
Lucinidae (LPIL)	M	Biva	462	1.794	26.054	27	79.4	juvenile specimen
Cirratodactylis floridensis	Ar	Mala	382	1.483	27.537	9	26.5	
Melitidae (LPIL)	Ar	Mala	329	1.277	28.814	19	55.9	specimen lacks third uropod
Prionospio (LPIL)	A	Poly	316	1.227	30.041	27	79.4	missing identification characters
Caecum pulchellum	M	Gast	300	1.165	31.206	23	67.6	
Syllis (LPIL)	A	Poly	299	1.161	32.367	17	50.0	incomplete specimen, posterior portion necessary for species identification
Crassinella lunulata	M	Biva	289	1.122	33.489	20	58.8	
Exogone rolani	A	Poly	281	1.091	34.580	22	64.7	
Rhynchocoela (LPIL)	R		278	1.079	35.659	33	97.1	no identifible characters
Tellina (LPIL)	M	Biva	260	1.009	36.668	22	64.7	due to small size, external and internal characters are not apparent
Armandia maculata	A	Poly	256	0.994	37.662	26	76.5	
Ischnochiton (LPIL)	M	Poly	251	0.974	38.637	4	11.8	juvenile specimen
Aoridae (LPIL)	Ar	Mala	226	0.877	39.514	23	67.6	lacking appendages
Rutiderma darbyi	Ar	Ostr	202	0.784	40.298	14	41.2	
Actiniaria (LPIL)	Cn	Anth	200	0.776	41.075	18	52.9	order is lowest identification level
Lucina multilineata	M	Biva	198	0.769	41.843	12	35.3	
Maldanidae (LPIL)	A	Poly	186	0.722	42.565	21	61.8	fragmented portion, pygidium necessary for positive identification
Bivalvia (LPIL)	M	Biva	184	0.714	43.280	27	79.4	crushed and/or juvenile specimen
Caecum nitidium	M	Gast	184	0.714	43.994	18	52.9	
Ervilia concentrica	M	Biva	183	0.710	44.705	9	26.5	
Chone (LPIL)	A	Poly	171	0.664	45.368	21	61.8	genus is lowest possible identification level
Ampelisca (LPIL)	Ar	Mala	169	0.656	46.025	22	64.7	juvenile specimen or missing characters
Sphaerosyllis piriferopsis	A	Poly	168	0.652	46.677	20	58.8	
Polyplacophora (LPIL)	M	Poly	166	0.644	47.321	12	35.3	immature specimen
Nereididae (LPIL)	A	Poly	162	0.629	47.950	23	67.6	missing identificaton characters and/or immature
Spionidae (LPIL)	A	Poly	146	0.567	48.517	25	73.5	missing identificaton characters and/or immature
Pseudoleptochelia sp. A	Ar	Mala	143	0.555	49.072	7	20.6	
Xenanthura brevitelson	Ar	Mala	143	0.555	49.627	18	52.9	
Anamaera hixoni	Ar	Mala	141	0.547	50.175	3	8.8	
Schistomeringos pectinata	A	Poly	139	0.540	50.714	14	41.2	
Nematonereis hebes	A	Poly	137	0.532	51.246	16	47.1	
Sipuncula (LPIL)	S		134	0.520	51.766	26	76.5	juvenile specimen or missing characters
Lembos (LPIL)	Ar	Mala	133	0.516	52.283	14	41.2	need adult male with all appendages
Mediomastus (LPIL)	A	Poly	132	0.512	52.795	24	70.6	anterior portions only, pygidium needed for species ID
Solemya occidentalis	M	Biva	131	0.509	53.304	14	41.2	
Goniadides carolinae	A	Poly	129	0.501	53.805	8	23.5	
Kalliapseudes bahamaensis	Ar	Mala	127	0.493	54.298	6	17.6	
Ehlersia ferrugina	A	Poly	125	0.485	54.783	13	38.2	
Syllis broomensis	A	Poly	118	0.458	55.241	14	41.2	
Synasterope setisparsa	Ar	Ostr	118	0.458	55.699	11	32.4	
Tubulanus (LPIL)	R	Anop	114	0.443	56.142	25	73.5	genus is lowest identification level
Atys sandersoni	M	Gast	110	0.427	56.569	15	44.1	
Diplodonta (LPIL)	M	Biva	106	0.412	56.980	21	61.8	immature specimen
Ophiuroidea (LPIL)	E	Ophi	106	0.412	57.392	23	67.6	central disk missing characters
Galathowenia oculata	A	Poly	103	0.400	57.792	24	70.6	
Gastropoda (LPIL)	M	Gast	101	0.392	58.184	24	70.6	crushed and/or immature specimen
Chevalia carpenteri	Ar	Mala	100	0.388	58.572	8	23.5	
Cirratulidae (LPIL)	A	Poly	100	0.388	58.960	25	73.5	
Linopherus sp. A	A	Poly	99	0.384	59.345	8	23.5	
Harbansus paucichelatus	Ar	Ostr	98	0.380	59.725	13	38.2	
Caulleriella cf. *alata*	A	Poly	94	0.365	60.090	13	38.2	
Pleuromeris tridentata	M	Biva	94	0.365	60.455	8	23.5	
Phascolion sp. B	S		93	0.361	60.816	11	32.4	
Aricidea philbinae	A	Poly	90	0.349	61.165	10	29.4	
Taylorpholoe hirsuta	A	Poly	90	0.349	61.515	8	23.5	
Terebellides parvus	A	Poly	90	0.349	61.864	20	58.8	
Monticellina dorsobranchialis	A	Poly	89	0.346	62.210	18	52.9	
Ceratonereis mirabilis	A	Poly	87	0.338	62.548	12	35.3	
Spirorbidae (LPIL)	A	Poly	86	0.334	62.881	9	26.5	
Terebellidae (LPIL)	A	Poly	86	0.334	63.215	21	61.8	
Magelona pettiboneae	A	Poly	85	0.330	63.545	18	52.9	
Syllidae (LPIL)	A	Poly	84	0.326	63.871	15	44.1	
Aspidosiphon albus	S		82	0.318	64.190	14	41.2	
Codakia pectinella	M	Biva	80	0.311	64.500	7	20.6	
Prionospio cristata	A	Poly	78	0.303	64.803	15	44.1	
Tellinidae (LPIL)	M	Biva	78	0.303	65.106	14	41.2	
Paraprionospio pinnata	A	Poly	75	0.291	65.397	11	32.4	
Aricidea suecica	A	Poly	74	0.287	65.684	10	29.4	
Cirrophorus lyra	A	Poly	74	0.287	65.972	5	14.7	
Golfingia (LPIL)	S		73	0.283	66.255	16	47.1	
Eusarsiella absens	Ar	Ostr	72	0.280	66.535	10	29.4	
Cerithiidae (LPIL)	M	Gast	70	0.272	66.806	16	47.1	
Aricidea (LPIL)	A	Poly	67	0.260	67.067	25	73.5	
Aspidosiphon (LPIL)	S		67	0.260	67.327	8	23.5	
Semelidae (LPIL)	M	Biva	66	0.256	67.583	18	52.9	
Amboleberis americana	Ar	Ostr	65	0.252	67.835	11	32.4	
Paramphinome sp. B	A	Poly	65	0.252	68.088	13	38.2	
Netamelita barnardi	Ar	Mala	64	0.248	68.336	9	26.5	

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Hesionura coineaui	A	Poly	63	0.245	68.581	5	14.7
Ischnochiton papillosus	M	Poly	63	0.245	68.825	7	20.6
Plakosyllis quadrioculata	A	Poly	63	0.245	69.070	10	29.4
Spathiopus looensis	Ar	Mala	63	0.245	69.314	1	2.9
Cumella garrityi	Ar	Mala	62	0.241	69.555	19	55.9
Nuculana acuta	M	Biva	62	0.241	69.796	9	26.5
Protodorvillea kefersteini	A	Poly	62	0.241	70.036	10	29.4
Amphipoda (LPIL)	Ar	Mala	59	0.229	70.266	21	61.8
Scoloplos rubra	A	Poly	58	0.225	70.491	15	44.1
Sigambra tentaculata	A	Poly	58	0.225	70.716	13	38.2
Ceratocephale oculata	A	Poly	57	0.221	70.937	8	23.5
Lineidae (LPIL)	R	Anop	57	0.221	71.158	23	67.6
Lucina (LPIL)	M	Biva	57	0.221	71.380	8	23.5
Acuminodeutopus naglei	Ar	Mala	56	0.217	71.597	16	47.1
Bulla striata	M	Gast	56	0.217	71.815	9	26.5
Amakusanthura magnifica	Ar	Mala	55	0.214	72.028	15	44.1
Caecum imbricatum	M	Gast	55	0.214	72.242	11	32.4
Lumbrineridae (LPIL)	A	Poly	55	0.214	72.455	21	61.8
Apseudes (LPIL)	Ar	Mala	53	0.206	72.661	10	29.4
Upogebia affinis	Ar	Mala	53	0.206	72.867	11	32.4
Cyclaspis unicornis	Ar	Mala	51	0.198	73.065	9	26.5
Levinsenia gracilis	A	Poly	51	0.198	73.263	13	38.2
Litocorsa antennata	A	Poly	51	0.198	73.461	7	20.6
Lucina nassula	M	Biva	51	0.198	73.659	11	32.4
Paranesidea sp. A	Ar	Ostr	51	0.198	73.857	7	20.6
Aricidea taylori	A	Poly	50	0.194	74.051	16	47.1
Aspidosiphon muelleri	S		49	0.190	74.241	10	29.4
Eunicidae (LPIL)	A	Poly	49	0.190	74.431	14	41.2
Paraeupolymnia sp. A	A	Poly	49	0.190	74.621	14	41.2
Paramicrodeutopus myersi	Ar	Mala	49	0.190	74.812	10	29.4
Semele nuculoides	M	Biva	49	0.190	75.002	15	44.1
Ascidiacea (LPIL)	C	Asci	48	0.186	75.188	12	35.3
Automate (LPIL)	Ar	Mala	48	0.186	75.375	16	47.1
Nereis (LPIL)	A	Poly	48	0.186	75.561	10	29.4
Nereis grayi	A	Poly	48	0.186	75.747	6	17.6
Apoprionospio pygmaea	A	Poly	47	0.182	75.930	4	11.8
Eunice (LPIL)	A	Poly	47	0.182	76.112	9	26.5
Scoletoma ernesti	A	Poly	46	0.179	76.291	12	35.3
Acmaea pustulata	M	Gast	45	0.175	76.466	3	8.8
Carpias (LPIL)	Ar	Mala	45	0.175	76.640	7	20.6
Ceratonereis irritabilis	A	Poly	45	0.175	76.815	4	11.8
Eusarsiella disparalis	Ar	Ostr	45	0.175	76.990	11	32.4
Pontomyia (LPIL)	Ar	Inse	45	0.175	77.164	10	29.4
Syllis ortizi	A	Poly	45	0.175	77.339	6	17.6
Acteocina sp. B	M	Gast	44	0.171	77.510	12	35.3
Pettibonella multiuncinata	A	Poly	41	0.159	77.669	7	20.6
Amphiuridae (LPIL)	E	Ophi	40	0.155	77.824	10	29.4
Decapoda natantia (LPIL)	Ar	Mala	40	0.155	77.980	14	41.2
Sthenelais boa	A	Poly	40	0.155	78.135	7	20.6
Fabricinuda trilobata	A	Poly	39	0.151	78.286	15	44.1
Notomastus (LPIL)	A	Poly	39	0.151	78.438	13	38.2
Aeginellidae (LPIL)	Ar	Mala	38	0.148	78.585	10	29.4
Erichthonius brasiliensis	Ar	Mala	38	0.148	78.733	9	26.5
Acanthochitona pygmaea	M	Poly	37	0.144	78.876	4	11.8
Branchiosyllis exilis	A	Poly	37	0.144	79.020	9	26.5
Hesionidae (LPIL)	A	Poly	37	0.144	79.164	19	55.9
Veneridae (LPIL)	M	Biva	37	0.144	79.307	15	44.1
Olividae (LPIL)	M	Gast	35	0.136	79.443	6	17.6
Ostracoda (LPIL)	Ar	Ostr	35	0.136	79.579	14	41.2
Scyphoproctus platyproctus	A	Poly	35	0.136	79.715	4	11.8
Armandia agilis	A	Poly	34	0.132	79.847	3	8.8
Calozodion wadei	Ar	Mala	34	0.132	79.979	9	26.5
Ceratonereis versipedata	A	Poly	34	0.132	80.111	8	23.5
Deutella incerta	Ar	Mala	34	0.132	80.243	10	29.4
Paracerceis caudata	Ar	Mala	34	0.132	80.375	7	20.6
Syllis gracilis	A	Poly	34	0.132	80.507	3	8.8
Turbonilla (LPIL)	M	Gast	34	0.132	80.639	13	38.2
Eunice unifrons	A	Poly	33	0.128	80.767	9	26.5
Actinoseta hummelincki	Ar	Ostr	32	0.124	80.891	9	26.5
Anthuridae (LPIL)	Ar	Mala	32	0.124	81.016	13	38.2
Asteropterygion oculitristis	Ar	Ostr	32	0.124	81.140	7	20.6
Capitella jonesi	A	Poly	32	0.124	81.264	4	11.8
Nereis panamensis	A	Poly	32	0.124	81.388	5	14.7
Parasterope pollex	Ar	Ostr	32	0.124	81.513	4	11.8
Nereis allenae	A	Poly	31	0.120	81.633	3	8.8
Pseudophilomedes ambon	Ar	Ostr	31	0.120	81.753	11	32.4
Sphaeromatidae (LPIL)	Ar	Mala	31	0.120	81.874	7	20.6
Trichobranchus glacialis	A	Poly	31	0.120	81.994	9	26.5
Acmaea sp. A	M	Gast	30	0.116	82.110	5	14.7
Lysidice notata	A	Poly	30	0.116	82.227	8	23.5
Musculus lateralis	M	Biva	30	0.116	82.343	10	29.4
Notomastus tenuis	A	Poly	30	0.116	82.460	8	23.5
Onuphidae (LPIL)	A	Poly	30	0.116	82.576	5	14.7
Prionospio heterobranchia	A	Poly	30	0.116	82.693	5	14.7
Shoemakerella cubensis	Ar	Mala	30	0.116	82.809	10	29.4
Streblosoma hartmanae	A	Poly	30	0.116	82.926	11	32.4
Diopatra cuprea	A	Poly	29	0.113	83.038	12	35.3
Dorvillea sociablis	A	Poly	29	0.113	83.151	8	23.5
Lumbrineris latreilli	A	Poly	29	0.113	83.263	12	35.3

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Photis pugnator	Ar	Mala	29	0.113	83.376	5	14.7
Sipunculus nudus	S		29	0.113	83.489	11	32.4
Apoprionospio dayi	A	Poly	28	0.109	83.597	1	2.9
Leptochela serratorbita	Ar	Mala	27	0.105	83.702	7	20.6
Mooreonuphis pallidula	A	Poly	27	0.105	83.807	9	26.5
Phtisica marina	Ar	Mala	27	0.105	83.912	3	8.8
Serpulidae (LPIL)	A	Poly	27	0.105	84.017	6	17.6
Varicorbula operculata	M	Biva	27	0.105	84.121	4	11.8
Automate sp. F	Ar	Mala	26	0.101	84.222	9	26.5
Codakia (LPIL)	M	Biva	26	0.101	84.323	5	14.7
Photis (LPIL)	Ar	Mala	26	0.101	84.424	10	29.4
Schistomeringos rudolphi	A	Poly	26	0.101	84.525	8	23.5
Leitoscoloplos foliosus	A	Poly	25	0.097	84.622	4	11.8
Odontosyllis enopla	A	Poly	25	0.097	84.719	9	26.5
Rutiderma mollitum	Ar	Ostr	25	0.097	84.816	6	17.6
Vaunthompsonia sp. B	Ar	Mala	25	0.097	84.913	7	20.6
Alpheus (LPIL)	Ar	Mala	24	0.093	85.007	14	41.2
Aricidea wassi	A	Poly	24	0.093	85.100	11	32.4
Axiothella mucosa	A	Poly	24	0.093	85.193	6	17.6
Branchiomma nigromaculata	A	Poly	24	0.093	85.286	6	17.6
Cnidaria (LPIL)	Cn		24	0.093	85.379	4	11.8
Fimbriosthenelais minor	A	Poly	24	0.093	85.472	13	38.2
Heteropodarke formalis	A	Poly	24	0.093	85.566	4	11.8
Nucula aegeenis	M	Biva	24	0.093	85.659	6	17.6
Phascolion strombi	S		24	0.093	85.752	15	44.1
Phoronis (LPIL)	Ph		24	0.093	85.845	10	29.4
Vermiliopsis annulata	A	Poly	24	0.093	85.938	3	8.8
Apseudes propinquus	Ar	Mala	23	0.089	86.028	6	17.6
Aricidea finitima	A	Poly	23	0.089	86.117	8	23.5
Cirrophorus (LPIL)	A	Poly	23	0.089	86.206	10	29.4
Linga amiantus	M	Biva	23	0.089	86.296	7	20.6
Upogebia (LPIL)	Ar	Mala	23	0.089	86.385	5	14.7
Batea carinata	Ar	Mala	22	0.085	86.470	9	26.5
Ceratonereis (LPIL)	A	Poly	22	0.085	86.556	10	29.4
Cossura soyeri	A	Poly	22	0.085	86.641	5	14.7
Linga pensylvanica	M	Biva	22	0.085	86.726	6	17.6
Polynoidae (LPIL)	A	Poly	22	0.085	86.812	11	32.4
Processidae (LPIL)	Ar	Mala	22	0.085	86.897	12	35.3
Actinoseta chelisparsa	Ar	Ostr	21	0.082	86.979	5	14.7
Poecilochaetus (LPIL)	A	Poly	21	0.082	87.060	7	20.6
Pseudovermilia occidentalis	A	Poly	21	0.082	87.142	2	5.9
Syllis sardai	A	Poly	21	0.082	87.223	5	14.7
Alvania auberiana	M	Gast	20	0.078	87.301	11	32.4
Eusarsiella pilipollicis	Ar	Ostr	20	0.078	87.379	7	20.6
Mysidae (LPIL)	Ar	Mala	20	0.078	87.456	10	29.4
Pariphinotus seclusis	Ar	Mala	20	0.078	87.534	4	11.8
Phyllodocidae (LPIL)	A	Poly	20	0.078	87.612	11	32.4
Pteromeris perplana	M	Biva	20	0.078	87.689	4	11.8
Typosyllis armillaris	A	Poly	20	0.078	87.767	4	11.8
Asthenothaerus hemphilli	M	Biva	19	0.074	87.841	6	17.6
Caecum johnsoni	M	Gast	19	0.074	87.914	6	17.6
Campylaspis heardi	Ar	Mala	19	0.074	87.988	8	23.5
Cyclaspis pustulata	Ar	Mala	19	0.074	88.062	6	17.6
Eusarsiella (LPIL)	Ar	Ostr	19	0.074	88.136	12	35.3
Hyssuridae (LPIL)	Ar	Mala	19	0.074	88.209	6	17.6
Pseudopolydora sp. A	A	Poly	19	0.074	88.283	3	8.8
Dulichiella appendiculata	Ar	Mala	18	0.070	88.353	5	14.7
Elasmopus (LPIL)	Ar	Mala	18	0.070	88.423	5	14.7
Hamineidae (LPIL)	M	Gast	18	0.070	88.493	10	29.4
Polycirrus (LPIL)	A	Poly	18	0.070	88.563	10	29.4
Turridae (LPIL)	M	Gast	18	0.070	88.633	13	38.2
Caecum floridanum	M	Gast	17	0.066	88.699	6	17.6
Eusarsiella radiicosta	Ar	Ostr	17	0.066	88.765	6	17.6
Goniada maculata	A	Poly	17	0.066	88.831	7	20.6
Heteropodarke lyonsi	A	Poly	17	0.066	88.897	2	5.9
Odostomia laevigata	M	Gast	17	0.066	88.963	3	8.8
Paguridae (LPIL)	Ar	Mala	17	0.066	89.029	6	17.6
Saccocirrus parvus	A	Poly	17	0.066	89.095	2	5.9
Crepidula maculosa	M	Gast	16	0.062	89.157	6	17.6
Cumella (LPIL)	Ar	Mala	16	0.062	89.219	7	20.6
Eudevenopus honduranus	Ar	Mala	16	0.062	89.281	4	11.8
Eusarsiella cresseyi	Ar	Ostr	16	0.062	89.343	6	17.6
Kalliapseudes (LPIL)	Ar	Mala	16	0.062	89.405	6	17.6
Magelona sp. L	A	Poly	16	0.062	89.467	5	14.7
Nereis acuminata	A	Poly	16	0.062	89.529	3	8.8
Nereis falsa	A	Poly	16	0.062	89.592	5	14.7
Pitho (LPIL)	Ar	Mala	16	0.062	89.654	5	14.7
Processa (LPIL)	Ar	Mala	16	0.062	89.716	5	14.7
Ceradocus shoemakeri	Ar	Mala	15	0.058	89.774	5	14.7
Corbulidae (LPIL)	M	Biva	15	0.058	89.832	6	17.6
Kalliapseudes sp. C	Ar	Mala	15	0.058	89.891	6	17.6
Leitoscoloplos (LPIL)	A	Poly	15	0.058	89.949	6	17.6
Leitoscoloplos robustus	A	Poly	15	0.058	90.007	4	11.8

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Listriella sp. G	Ar	Mala	15	0.058	90.065	5	14.7
Orbinia riseri	A	Poly	15	0.058	90.123	4	11.8
Platynereis dumerilli	A	Poly	15	0.058	90.182	6	17.6
Pseudobranchiomma (LPIL)	A	Poly	15	0.058	90.240	4	11.8
Aclididae (LPIL)	M	Gast	14	0.054	90.294	9	26.5
Caulleriella sp. K	A	Poly	14	0.054	90.349	1	2.9
Cyclaspis (LPIL)	Ar	Mala	14	0.054	90.403	9	26.5
Cyclaspis sp. N	Ar	Mala	14	0.054	90.457	5	14.7
Cylindrobulla beauii	M	Gast	14	0.054	90.512	5	14.7
Eusarsiella sp. E	Ar	Ostr	14	0.054	90.566	5	14.7
Jaspidella blanesi	M	Gast	14	0.054	90.620	5	14.7
Kupellonura sp. A	Ar	Mala	14	0.054	90.675	5	14.7
Majidae (LPIL)	Ar	Mala	14	0.054	90.729	10	29.4
Pitar (LPIL)	M	Biva	14	0.054	90.783	7	20.6
Pitho anisodon	Ar	Mala	14	0.054	90.838	4	11.8
Tellina iris	M	Biva	14	0.054	90.892	5	14.7
Acteocina (LPIL)	M	Gast	13	0.050	90.943	3	8.8
Ampelisca sp. C	Ar	Mala	13	0.050	90.993	4	11.8
Anachis hotessieriana	M	Gast	13	0.050	91.044	3	8.8
Aricidea cerrutii	A	Poly	13	0.050	91.094	4	11.8
Cycloapseudes sp. A	Ar	Mala	13	0.050	91.144	2	5.9
Hippolytidae (LPIL)	Ar	Mala	13	0.050	91.195	7	20.6
Lembos unifasciatus reductus	Ar	Mala	13	0.050	91.245	4	11.8
Metharpinia floridana	Ar	Mala	13	0.050	91.296	4	11.8
Pagurapseudes (LPIL)	Ar	Mala	13	0.050	91.346	1	2.9
Phyllodoce arenae	A	Poly	13	0.050	91.397	7	20.6
Questa caudicirra	A	Poly	13	0.050	91.447	4	11.8
Abra aequalis	M	Biva	12	0.047	91.494	4	11.8
Acmaea (LPIL)	M	Gast	12	0.047	91.540	4	11.8
Aglaophamus verrilli	A	Poly	12	0.047	91.587	5	14.7
Apseudes sp. O	Ar	Mala	12	0.047	91.634	2	5.9
Asteropella monambon	Ar	Ostr	12	0.047	91.680	6	17.6
Bermudaclis tampaensis	M	Gast	12	0.047	91.727	4	11.8
Buccinidae (LPIL)	M	Gast	12	0.047	91.773	6	17.6
Calyptraea centralis	M	Gast	12	0.047	91.820	5	14.7
Dorvilleidae (LPIL)	A	Poly	12	0.047	91.867	8	23.5
Gouldia cerina	M	Biva	12	0.047	91.913	8	23.5
Lumbrineris coccinea	A	Poly	12	0.047	91.960	4	11.8
Paracypridina floridensis	Ar	Ostr	12	0.047	92.006	5	14.7
Pectinaria gouldii	A	Poly	12	0.047	92.053	6	17.6
Phoxocephalidae (LPIL)	Ar	Mala	12	0.047	92.100	6	17.6
Scolelepis squamata	A	Poly	12	0.047	92.146	3	8.8
Syllis prolifera	A	Poly	12	0.047	92.193	7	20.6
Tabatzius muelleri	Ar	Mala	12	0.047	92.239	1	2.9
Tellina mera	M	Biva	12	0.047	92.286	7	20.6
Eusarsiella cornuta	Ar	Ostr	11	0.043	92.329	5	14.7
Exogone (LPIL)	A	Poly	11	0.043	92.371	7	20.6
Exogone atlantica	A	Poly	11	0.043	92.414	6	17.6
Montacutidae (LPIL)	M	Biva	11	0.043	92.457	10	29.4
Synchelidium americanum	Ar	Mala	11	0.043	92.499	3	8.8
Tanaissus sp. B	Ar	Mala	11	0.043	92.542	1	2.9
Thraciidae (LPIL)	M	Biva	11	0.043	92.585	3	8.8
Alpheus floridanus	Ar	Mala	10	0.039	92.624	8	23.5
Arabella mutans	A	Poly	10	0.039	92.662	4	11.8
Asychis elongatus	A	Poly	10	0.039	92.701	4	11.8
Branchiostoma (LPIL)	C		10	0.039	92.740	4	11.8
Chione (LPIL)	M	Biva	10	0.039	92.779	8	23.5
Crassinella martinicensis	M	Biva	10	0.039	92.818	4	11.8
Eulimidae (LPIL)	M	Gast	10	0.039	92.857	5	14.7
Eunice websteri	A	Poly	10	0.039	92.895	1	2.9
Eusarsiella spinosa	Ar	Ostr	10	0.039	92.934	7	20.6
Fimbriosthenelais (LPIL)	A	Poly	10	0.039	92.973	8	23.5
Marginella (LPIL)	M	Gast	10	0.039	93.012	4	11.8
Odostomia (LPIL)	M	Gast	10	0.039	93.051	6	17.6
Pisione remota	A	Poly	10	0.039	93.090	2	5.9
Sclerobregma stenocerum	A	Poly	10	0.039	93.128	1	2.9
Synelmis ewingi	A	Poly	10	0.039	93.167	3	8.8
Xanthidae (LPIL)	Ar	Mala	10	0.039	93.206	6	17.6
Acanthochitona (LPIL)	M	Poly	9	0.035	93.241	5	14.7
Acteocina candei	M	Gast	9	0.035	93.276	4	11.8
Alpheidae (LPIL)	Ar	Mala	9	0.035	93.311	4	11.8
Ampelisca bicarinata	Ar	Mala	9	0.035	93.346	6	17.6
Ancistrosyllis hartmanae	A	Poly	9	0.035	93.381	3	8.8
Apseudes orghidani	Ar	Mala	9	0.035	93.416	2	5.9
Brania wellfleetensis	A	Poly	9	0.035	93.451	2	5.9
Cerapus sp. B	Ar	Mala	9	0.035	93.486	4	11.8
Eurythoe sp. B	A	Poly	9	0.035	93.520	2	5.9
Glycera sp. A	A	Poly	9	0.035	93.555	2	5.9
Grubeosyllis clavata	A	Poly	9	0.035	93.590	6	17.6
Lyonsia hyalina floridana	M	Biva	9	0.035	93.625	4	11.8
Notomastus daueri	A	Poly	9	0.035	93.660	3	8.8
Paleanotus sp. A	A	Poly	9	0.035	93.695	5	14.7
Pseudophilomedes polyancistrus	Ar	Ostr	9	0.035	93.730	2	5.9

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Rictaxis punctostriatus	M	Gast	9	0.035	93.765	5	14.7
Santia milleri	Ar	Mala	9	0.035	93.800	3	8.8
Sarsiellidae (LPIL)	Ar	Ostr	9	0.035	93.835	7	20.6
Scoloplos (LPIL)	A	Poly	9	0.035	93.870	7	20.6
Strombiformis (LPIL)	M	Gast	9	0.035	93.905	7	20.6
Tanaidacea (LPIL)	Ar	Mala	9	0.035	93.940	8	23.5
Tellina sybaritica	M	Biva	9	0.035	93.975	4	11.8
Zebina browniana	M	Gast	9	0.035	94.010	3	8.8
Apseudes sp. A	Ar	Mala	8	0.031	94.041	3	8.8
Apseudidae (LPIL)	Ar	Mala	8	0.031	94.072	3	8.8
Calyptraeidae (LPIL)	M	Gast	8	0.031	94.103	5	14.7
Chaetopleura (LPIL)	M	Poly	8	0.031	94.134	1	2.9
Crassinella (LPIL)	M	Biva	8	0.031	94.165	5	14.7
Diplodonta semiaspera	M	Biva	8	0.031	94.196	3	8.8
Eobrolgus spinosus	Ar	Mala	8	0.031	94.227	2	5.9
Goniadidae (LPIL)	A	Poly	8	0.031	94.258	5	14.7
Haminoea sp. A	M	Gast	8	0.031	94.289	3	8.8
Kinbergonuphis simoni	A	Poly	8	0.031	94.320	4	11.8
Lembos unicornis	Ar	Mala	8	0.031	94.351	2	5.9
Magelona sp. C	A	Poly	8	0.031	94.382	6	17.6
Marginella apicina	M	Gast	8	0.031	94.413	1	2.9
Mooreonuphis (LPIL)	A	Poly	8	0.031	94.444	2	5.9
Pagurus (LPIL)	Ar	Mala	8	0.031	94.476	6	17.6
Palaemonidae (LPIL)	Ar	Mala	8	0.031	94.507	6	17.6
Podarkeopsis levifuscina	A	Poly	8	0.031	94.538	5	14.7
Protohadzia schoenerae	Ar	Mala	8	0.031	94.569	2	5.9
Spio (LPIL)	A	Poly	8	0.031	94.600	2	5.9
Acmaeidae (LPIL)	M	Gast	7	0.027	94.627	3	8.8
Acteocina bidentata	M	Gast	7	0.027	94.654	2	5.9
Acteocina canaliculata	M	Gast	7	0.027	94.681	4	11.8
Ampelisca agassizi	Ar	Mala	7	0.027	94.708	5	14.7
Ampithoe sp. C	Ar	Mala	7	0.027	94.736	4	11.8
Cardiomya perrostrata	M	Biva	7	0.027	94.763	5	14.7
Ceratonereis singularis	A	Poly	7	0.027	94.790	1	2.9
Chione cancellata	M	Biva	7	0.027	94.817	6	17.6
Crenella divaricata	M	Biva	7	0.027	94.844	5	14.7
Cymadusa compta	Ar	Mala	7	0.027	94.871	3	8.8
Diaphorosoma magnavena	A	Poly	7	0.027	94.899	1	2.9
Dorvillea clavata	A	Poly	7	0.027	94.926	3	8.8
Eunice antillensis	A	Poly	7	0.027	94.953	1	2.9
Eurypylus rousei	Ar	Ostr	7	0.027	94.980	3	8.8
Eusarsiella ozotothrix	Ar	Ostr	7	0.027	95.007	2	5.9
Glycymeris (LPIL)	M	Biva	7	0.027	95.035	5	14.7
Glycymeris pectinata	M	Biva	7	0.027	95.062	3	8.8
Goneplacidae (LPIL)	Ar	Mala	7	0.027	95.089	5	14.7
Lembos smithi	Ar	Mala	7	0.027	95.116	1	2.9
Lumbrinerides dayi	A	Poly	7	0.027	95.143	3	8.8
Lumbrineris sp. D	A	Poly	7	0.027	95.170	3	8.8
Naineris bicornis	A	Poly	7	0.027	95.198	3	8.8
Nassarius albus	M	Gast	7	0.027	95.225	2	5.9
Neomegamphopus (LPIL)	Ar	Mala	7	0.027	95.252	4	11.8
Nuculana (LPIL)	M	Biva	7	0.027	95.279	2	5.9
Olivella dealbata	M	Gast	7	0.027	95.306	1	2.9
Paraonidae (LPIL)	A	Poly	7	0.027	95.333	5	14.7
Pectinariidae (LPIL)	A	Poly	7	0.027	95.361	2	5.9
Prionotoleberis salomani	Ar	Ostr	7	0.027	95.388	2	5.9
Pseudophilomedes (LPIL)	Ar	Ostr	7	0.027	95.415	5	14.7
Sigalionidae (LPIL)	A	Poly	7	0.027	95.442	6	17.6
Spiophanes cf. *missionensis*	A	Poly	7	0.027	95.469	5	14.7
Strombiformis bilineatus	M	Gast	7	0.027	95.497	3	8.8
Syllis corallicoloides	A	Poly	7	0.027	95.524	3	8.8
Tegula lividomaculata	M	Gast	7	0.027	95.551	2	5.9
Tricolia thalassicola	M	Gast	7	0.027	95.578	4	11.8
Ampharetidae (LPIL)	A	Poly	6	0.023	95.601	6	17.6
Arene tricarinata	M	Gast	6	0.023	95.625	4	11.8
Asteropella (LPIL)	Ar	Ostr	6	0.023	95.648	3	8.8
Autolytus (LPIL)	A	Poly	6	0.023	95.671	4	11.8
Bhawania heteroseta	A	Poly	6	0.023	95.695	3	8.8
Branchiopoda (LPIL)	Ar	Bran	6	0.023	95.718	4	11.8
Caecum (LPIL)	M	Gast	6	0.023	95.741	5	14.7
Caulleriella (LPIL)	A	Poly	6	0.023	95.764	4	11.8
Cumacea (LPIL)	Ar	Mala	6	0.023	95.788	4	11.8
Excorallana (LPIL)	Ar	Mala	6	0.023	95.811	1	2.9
Gammaropsis (LPIL)	Ar	Mala	6	0.023	95.834	5	14.7
Ingolfiella fuscina	Ar	Mala	6	0.023	95.858	3	8.8
Leucothoe spinicarpa	Ar	Mala	6	0.023	95.881	4	11.8
Loimia medusa	A	Poly	6	0.023	95.904	4	11.8
Lysianassidae (LPIL)	Ar	Mala	6	0.023	95.927	6	17.6
Lysidice sp. B	A	Poly	6	0.023	95.951	1	2.9
Marginellidae (LPIL)	M	Gast	6	0.023	95.974	3	8.8
Mesanthura floridensis	Ar	Mala	6	0.023	95.997	5	14.7
Mexieulepis weberi	A	Poly	6	0.023	96.021	3	8.8
Notomastus americanus	A	Poly	6	0.023	96.044	2	5.9
Notomastus hemipodus	A	Poly	6	0.023	96.067	4	11.8
Owenia fusiformis	A	Poly	6	0.023	96.091	3	8.8
Pagurapseudes largoensis	Ar	Mala	6	0.023	96.114	3	8.8

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Photis sp. D	Ar	Mala	6	0.023	96.137	2	5.9
Processa bermudensis	Ar	Mala	6	0.023	96.160	4	11.8
Pseudophilomedes zeta	Ar	Ostr	6	0.023	96.184	2	5.9
Rhepoxynius epistomus	Ar	Mala	6	0.023	96.207	2	5.9
Synopiidae (LPIL)	Ar	Mala	6	0.023	96.230	5	14.7
Tharyx acutus	A	Poly	6	0.023	96.254	3	8.8
Ungulinidae (LPIL)	M	Biva	6	0.023	96.277	1	2.9
Vitrinellidae (LPIL)	M	Gast	6	0.023	96.300	3	8.8
Acoetidae (LPIL)	A	Poly	5	0.019	96.320	3	8.8
Actinoseta (LPIL)	Ar	Ostr	5	0.019	96.339	2	5.9
Ampelisca abdita	Ar	Mala	5	0.019	96.358	4	11.8
Ampelisca sp. A	Ar	Mala	5	0.019	96.378	2	5.9
Ampithoe (LPIL)	Ar	Mala	5	0.019	96.397	3	8.8
Aphelochaeta marioni	A	Poly	5	0.019	96.417	2	5.9
Asteropella maclaughlinae	Ar	Ostr	5	0.019	96.436	4	11.8
Branchiomma (LPIL)	A	Poly	5	0.019	96.455	1	2.9
Carpias bermudensis	Ar	Mala	5	0.019	96.475	1	2.9
Chaetozone (LPIL)	A	Poly	5	0.019	96.494	5	14.7
Chione grus	M	Biva	5	0.019	96.514	3	8.8
Decapoda reptantia (LPIL)	Ar	Mala	5	0.019	96.533	4	11.8
Elasmopus sp. C	Ar	Mala	5	0.019	96.553	2	5.9
Eriopisa (LPIL)	Ar	Mala	5	0.019	96.572	1	2.9
Eusarsiella nodimarginus	Ar	Ostr	5	0.019	96.591	2	5.9
Fimbriosthenelais hobbsi	A	Poly	5	0.019	96.611	2	5.9
Glans dominguensis	M	Biva	5	0.019	96.630	2	5.9
Glycera (LPIL)	A	Poly	5	0.019	96.650	2	5.9
Haminoea succinea	M	Gast	5	0.019	96.669	3	8.8
Harpinia (LPIL)	Ar	Mala	5	0.019	96.688	1	2.9
Lembos spinicarpus spinicarpus	Ar	Mala	5	0.019	96.708	2	5.9
Leptochelia sp. D	Ar	Mala	5	0.019	96.727	3	8.8
Opisthodonta sp. B	A	Poly	5	0.019	96.747	3	8.8
Paratanaidae (LPIL)	Ar	Mala	5	0.019	96.766	4	11.8
Pettiboneia duofurca	A	Poly	5	0.019	96.785	5	14.7
Philine (LPIL)	M	Gast	5	0.019	96.805	4	11.8
Pinnotheridae (LPIL)	Ar	Mala	5	0.019	96.824	4	11.8
Podocerus (LPIL)	Ar	Mala	5	0.019	96.844	1	2.9
Polycirrus plumosus	A	Poly	5	0.019	96.863	4	11.8
Potamethus (LPIL)	A	Poly	5	0.019	96.883	3	8.8
Scoletoma candida	A	Poly	5	0.019	96.902	2	5.9
Scoloplos capensis	A	Poly	5	0.019	96.921	1	2.9
Sicyonia (LPIL)	Ar	Mala	5	0.019	96.941	3	8.8
Sinelobus stanfordi	Ar	Mala	5	0.019	96.960	2	5.9
Transennella stimpsoni	M	Biva	5	0.019	96.980	2	5.9
Turbonilla conradi	M	Gast	5	0.019	96.999	4	11.8
Vermetidae (LPIL)	M	Gast	5	0.019	97.018	1	2.9
Acanthohaustorius shoemakeri	Ar	Mala	4	0.016	97.034	1	2.9
Accalathura crenulata	Ar	Mala	4	0.016	97.049	2	5.9
Amphicteis (LPIL)	A	Poly	4	0.016	97.065	2	5.9
Anamixis cavitura	Ar	Mala	4	0.016	97.081	4	11.8
Aplysiidae (LPIL)	M	Gast	4	0.016	97.096	1	2.9
Armandia (LPIL)	A	Poly	4	0.016	97.112	2	5.9
Branchiosyllis oculata	A	Poly	4	0.016	97.127	3	8.8
Carditidae (LPIL)	M	Biva	4	0.016	97.143	3	8.8
Chaetopteridae (LPIL)	A	Poly	4	0.016	97.158	1	2.9
Cirolanidae (LPIL)	Ar	Mala	4	0.016	97.174	1	2.9
Cirriformia (LPIL)	A	Poly	4	0.016	97.189	2	5.9
Conus jaspideus stearnsi	M	Gast	4	0.016	97.205	3	8.8
Crassatellidae (LPIL)	M	Biva	4	0.016	97.220	1	2.9
Cylindroleberididae (LPIL)	Ar	Ostr	4	0.016	97.236	4	11.8
Dasybranchus lunulatus	A	Poly	4	0.016	97.251	1	2.9
Dentalium texasianum	M	Scap	4	0.016	97.267	3	8.8
Euphrosine triloba	A	Poly	4	0.016	97.282	1	2.9
Excorallana tricornis tricorni	Ar	Mala	4	0.016	97.298	1	2.9
Glycera abranchiata	A	Poly	4	0.016	97.313	4	11.8
Harrieta faxoni	Ar	Mala	4	0.016	97.329	2	5.9
Ischyroceridae (LPIL)	Ar	Mala	4	0.016	97.345	2	5.9
Kinbergonuphis (LPIL)	A	Poly	4	0.016	97.360	3	8.8
Kinbergonuphis sp. C	A	Poly	4	0.016	97.376	3	8.8
Listriella (LPIL)	Ar	Mala	4	0.016	97.391	3	8.8
Microprotopus (LPIL)	Ar	Mala	4	0.016	97.407	1	2.9
Nereis micromma	A	Poly	4	0.016	97.422	2	5.9
Nuculana concentrica	M	Biva	4	0.016	97.438	3	8.8
Orbiniidae (LPIL)	A	Poly	4	0.016	97.453	3	8.8
Oxyurostylis smithi	Ar	Mala	4	0.016	97.469	2	5.9
Paranebalia (LPIL)	Ar	Mala	4	0.016	97.484	2	5.9
Paraonis pygoenigmatica	A	Poly	4	0.016	97.500	1	2.9
Periclimenes americana	Ar	Mala	4	0.016	97.515	2	5.9
Pista (LPIL)	A	Poly	4	0.016	97.531	3	8.8
Pitar simpsoni	M	Biva	4	0.016	97.546	2	5.9
Pitho aculeata	Ar	Mala	4	0.016	97.562	1	2.9
Podocerus kleidus	Ar	Mala	4	0.016	97.577	2	5.9
Psammolyce arenosa	A	Poly	4	0.016	97.593	3	8.8
Scaphandridae (LPIL)	M	Gast	4	0.016	97.609	3	8.8
Scolelepis texana	A	Poly	4	0.016	97.624	3	8.8
Semele bellastriata	M	Biva	4	0.016	97.640	2	5.9
Turbonilla dalli	M	Gast	4	0.016	97.655	2	5.9

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Uromunna reynoldsi	Ar	Mala	4	0.016	97.671	3	8.8
Alpheus normanni	Ar	Mala	3	0.012	97.682	2	5.9
Amakusanthura signata	Ar	Mala	3	0.012	97.694	2	5.9
Ampelisca vadorum	Ar	Mala	3	0.012	97.706	2	5.9
Ampharete sp. A	A	Poly	3	0.012	97.717	3	8.8
Amphilochidae (LPIL)	Ar	Mala	3	0.012	97.729	3	8.8
Ampithoidae (LPIL)	Ar	Mala	3	0.012	97.741	2	5.9
Anachis (LPIL)	M	Gast	3	0.012	97.752	2	5.9
Atyidae (LPIL)	Ar	Mala	3	0.012	97.764	1	2.9
Bateidae (LPIL)	Ar	Mala	3	0.012	97.775	2	5.9
Cadulus quadridentatus	M	Scap	3	0.012	97.787	1	2.9
Callianassidae (LPIL)	Ar	Mala	3	0.012	97.799	3	8.8
Cardiomya (LPIL)	M	Biva	3	0.012	97.810	3	8.8
Conus (LPIL)	M	Gast	3	0.012	97.822	3	8.8
Conus floridanus	M	Gast	3	0.012	97.834	2	5.9
Crepidula (LPIL)	M	Gast	3	0.012	97.845	2	5.9
Cubanocuma sp. A	Ar	Mala	3	0.012	97.857	1	2.9
Cumingia coarctata	M	Biva	3	0.012	97.869	1	2.9
Drilonereis longa	A	Poly	3	0.012	97.880	2	5.9
Eusarsiella texana	Ar	Ostr	3	0.012	97.892	1	2.9
Glycera americana	A	Poly	3	0.012	97.904	3	8.8
Glycera sp. F	A	Poly	3	0.012	97.915	3	8.8
Goniada teres	A	Poly	3	0.012	97.927	2	5.9
Goniadella sp. A	A	Poly	3	0.012	97.939	2	5.9
Granulina ovuliformis	M	Gast	3	0.012	97.950	2	5.9
Haplocytheridea setipunctata	Ar	Ostr	3	0.012	97.962	1	2.9
Hiatella arctica	M	Biva	3	0.012	97.973	2	5.9
Hippomedon sp. A	Ar	Mala	3	0.012	97.985	3	8.8
Isolda pulchella	A	Poly	3	0.012	97.997	3	8.8
Ithycythara lanceolata	M	Gast	3	0.012	98.008	2	5.9
Laonice cirrata	A	Poly	3	0.012	98.020	2	5.9
Latreutes fucorum	Ar	Mala	3	0.012	98.032	3	8.8
Levinsenia (LPIL)	A	Poly	3	0.012	98.043	2	5.9
Lima pellucida	M	Biva	3	0.012	98.055	1	2.9
Limnoria (LPIL)	Ar	Mala	3	0.012	98.067	2	5.9
Lucina blanda	M	Biva	3	0.012	98.078	1	2.9
Lumbrinerides (LPIL)	A	Poly	3	0.012	98.090	1	2.9
Lysilla sp. B	A	Poly	3	0.012	98.102	2	5.9
Macoma (LPIL)	M	Biva	3	0.012	98.113	2	5.9
Macoma brevifrons	M	Biva	3	0.012	98.125	2	5.9
Macrochaeta sp. A	A	Poly	3	0.012	98.137	3	8.8
Mactridae (LPIL)	M	Biva	3	0.012	98.148	2	5.9
Maera caroliniana	Ar	Mala	3	0.012	98.160	2	5.9
Magelona sp. I	A	Poly	3	0.012	98.171	2	5.9
Marginella lavalleeana	M	Gast	3	0.012	98.183	2	5.9
Marphysa (LPIL)	A	Poly	3	0.012	98.195	2	5.9
Metaprotella sp. A	Ar	Mala	3	0.012	98.206	2	5.9
Nearomya floridana	M	Biva	3	0.012	98.218	1	2.9
Nudibranchia (LPIL)	M	Gast	3	0.012	98.230	3	8.8
Ophiostigma isocanthum	E	Ophi	3	0.012	98.241	2	5.9
Paracerceis (LPIL)	Ar	Mala	3	0.012	98.253	1	2.9
Periclimenes longicaudatus	Ar	Mala	3	0.012	98.265	1	2.9
Philine sagra	M	Gast	3	0.012	98.276	2	5.9
Philomedidae (LPIL)	Ar	Ostr	3	0.012	98.288	2	5.9
Pista quadrilobata	A	Poly	3	0.012	98.300	2	5.9
Porifera (LPIL)	Po		3	0.012	98.311	2	5.9
Prionospio cirrifera	A	Poly	3	0.012	98.323	1	2.9
Prionospio steenstrupi	A	Poly	3	0.012	98.334	2	5.9
Pyramidellidae (LPIL)	M	Gast	3	0.012	98.346	2	5.9
Rissoidae (LPIL)	M	Gast	3	0.012	98.358	2	5.9
Scaphopoda (LPIL)	M	Scap	3	0.012	98.369	3	8.8
Sphaerosyllis (LPIL)	A	Poly	3	0.012	98.381	3	8.8
Spiochaetopterus oculatus	A	Poly	3	0.012	98.393	3	8.8
Tellina aequistriata	M	Biva	3	0.012	98.404	3	8.8
Tellina martinicensis	M	Biva	3	0.012	98.416	2	5.9
Thor (LPIL)	Ar	Mala	3	0.012	98.428	3	8.8
Trichobranchidae (LPIL)	A	Poly	3	0.012	98.439	2	5.9
Trypanosyllis coeliaca	A	Poly	3	0.012	98.451	3	8.8
Turbinidae (LPIL)	M	Gast	3	0.012	98.463	1	2.9
Turbonilla interrupta	M	Gast	3	0.012	98.474	3	8.8
Typosyllis sp. B	A	Poly	3	0.012	98.486	1	2.9
Vitrinella multistriata	M	Gast	3	0.012	98.498	1	2.9
Volvulella persimilis	M	Gast	3	0.012	98.509	2	5.9
Acteonidae (LPIL)	M	Gast	2	0.008	98.517	1	2.9
Alvania sp. I	M	Gast	2	0.008	98.525	1	2.9
Amphicteis gunneri	A	Poly	2	0.008	98.532	2	5.9
Amphiodia trychna	E	Ophi	2	0.008	98.540	2	5.9
Amygdalum sagittatum	M	Biva	2	0.008	98.548	2	5.9
Anchialina typica	Ar	Mala	2	0.008	98.556	2	5.9
Antalis antillarum	M	Scap	2	0.008	98.564	2	5.9
Arcinella cornuta	M	Biva	2	0.008	98.571	1	2.9
Arene (LPIL)	M	Gast	2	0.008	98.579	1	2.9
Asteroidea (LPIL)	E	Aste	2	0.008	98.587	1	2.9
Automate evermanni	Ar	Mala	2	0.008	98.595	1	2.9
Bowmaniella (LPIL)	Ar	Mala	2	0.008	98.602	2	5.9

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Bushia (LPIL)	M	Biva	2	0.008	98.610	1	2.9
Caecum cooperi	M	Gast	2	0.008	98.618	1	2.9
Campylaspis (LPIL)	Ar	Mala	2	0.008	98.626	2	5.9
Ceradocus (LPIL)	Ar	Mala	2	0.008	98.633	1	2.9
Cerapus (LPIL)	Ar	Mala	2	0.008	98.641	1	2.9
Cerithium eburneum	M	Gast	2	0.008	98.649	1	2.9
Cerodrillia thea	M	Gast	2	0.008	98.657	1	2.9
Chloeia viridis	A	Poly	2	0.008	98.664	2	5.9
Cirrophorus furcatus	A	Poly	2	0.008	98.672	2	5.9
Columbellidae (LPIL)	M	Gast	2	0.008	98.680	2	5.9
Corbula contracta	M	Biva	2	0.008	98.688	1	2.9
Cyclaspis bacescui	Ar	Mala	2	0.008	98.696	1	2.9
Diodora cayenensis	M	Gast	2	0.008	98.703	2	5.9
Diopatra neotridens	A	Poly	2	0.008	98.711	1	2.9
Dodecaceria sp. A	A	Poly	2	0.008	98.719	2	5.9
Eupolymnia (LPIL)	A	Poly	2	0.008	98.727	1	2.9
Eurydice personata	Ar	Mala	2	0.008	98.734	2	5.9
Eusarsiella elofsoni	Ar	Ostr	2	0.008	98.742	2	5.9
Eusarsiella greyi	Ar	Ostr	2	0.008	98.750	2	5.9
Eusarsiella paniculata	Ar	Ostr	2	0.008	98.758	2	5.9
Fissurellidae (LPIL)	M	Gast	2	0.008	98.765	1	2.9
Grubeulepis mexicana	A	Poly	2	0.008	98.773	1	2.9
Gyptis pluriseta	A	Poly	2	0.008	98.781	1	2.9
Haminoea petiti	M	Gast	2	0.008	98.789	2	5.9
Hesione picta	A	Poly	2	0.008	98.796	2	5.9
Hydroides sp. E	A	Poly	2	0.008	98.804	2	5.9
Ischnochitonidae (LPIL)	M	Poly	2	0.008	98.812	1	2.9
Leptochelia forresti	Ar	Mala	2	0.008	98.820	2	5.9
Linga (LPIL)	M	Biva	2	0.008	98.828	1	2.9
Lioberus castaneus	M	Biva	2	0.008	98.835	1	2.9
Lysidice (LPIL)	A	Poly	2	0.008	98.843	1	2.9
Maera (LPIL)	Ar	Mala	2	0.008	98.851	2	5.9
Magelona (LPIL)	A	Poly	2	0.008	98.859	2	5.9
Magelona sp. G	A	Poly	2	0.008	98.866	2	5.9
Mediomastus californiensis	A	Poly	2	0.008	98.874	2	5.9
Megalomma (LPIL)	A	Poly	2	0.008	98.882	2	5.9
Megalomma pigmentum	A	Poly	2	0.008	98.890	2	5.9
Metatiron triocellatus	Ar	Mala	2	0.008	98.897	2	5.9
Mitrella ocellata	M	Gast	2	0.008	98.905	1	2.9
Monoculodes (LPIL)	Ar	Mala	2	0.008	98.913	1	2.9
Naineris (LPIL)	A	Poly	2	0.008	98.921	2	5.9
Notomastus latericeus	A	Poly	2	0.008	98.928	2	5.9
Olivella (LPIL)	M	Gast	2	0.008	98.936	1	2.9
Opheliidae (LPIL)	A	Poly	2	0.008	98.944	2	5.9
Ophiostigma (LPIL)	E	Ophi	2	0.008	98.952	2	5.9
Oxyurostylis (LPIL)	Ar	Mala	2	0.008	98.960	2	5.9
Pandora (LPIL)	M	Biva	2	0.008	98.967	2	5.9
Paranthura (LPIL)	Ar	Mala	2	0.008	98.975	1	2.9
Parapionosyllis uebelackerae	A	Poly	2	0.008	98.983	2	5.9
Pectinidae (LPIL)	M	Biva	2	0.008	98.991	1	2.9
Periclimenes (LPIL)	Ar	Mala	2	0.008	98.998	1	2.9
Persicula (LPIL)	M	Gast	2	0.008	99.006	1	2.9
Persicula fluctuata	M	Gast	2	0.008	99.014	1	2.9
Pherusa inflata	A	Poly	2	0.008	99.022	2	5.9
Photis melanicus	Ar	Mala	2	0.008	99.029	2	5.9
Pitar fulminatus	M	Biva	2	0.008	99.037	1	2.9
Plicatula gibbosa	M	Biva	2	0.008	99.045	1	2.9
Portunidae (LPIL)	Ar	Mala	2	0.008	99.053	2	5.9
Portunus (LPIL)	Ar	Mala	2	0.008	99.060	2	5.9
Portunus ordwayi	Ar	Mala	2	0.008	99.068	2	5.9
Prionospio perkinsi	A	Poly	2	0.008	99.076	1	2.9
Processa hemphilli	Ar	Mala	2	0.008	99.084	2	5.9
Proscoloplos (LPIL)	A	Poly	2	0.008	99.092	1	2.9
Pyrgocythara coxi	M	Gast	2	0.008	99.099	2	5.9
Rildardanus laminosa	Ar	Mala	2	0.008	99.107	1	2.9
Scoletoma (LPIL)	A	Poly	2	0.008	99.115	2	5.9
Semele proficua	M	Biva	2	0.008	99.123	2	5.9
Sigalion sp. A	A	Poly	2	0.008	99.130	1	2.9
Sigambra grubii	A	Poly	2	0.008	99.138	1	2.9
Sphaerosyllis taylori	A	Poly	2	0.008	99.146	2	5.9
Spio pettiboneae	A	Poly	2	0.008	99.154	2	5.9
Spiophanes bombyx	A	Poly	2	0.008	99.161	2	5.9
Syllis danieli	A	Poly	2	0.008	99.169	2	5.9
Tectonatica pusilla	M	Gast	2	0.008	99.177	2	5.9
Tellina similis	M	Biva	2	0.008	99.185	2	5.9
Trypanosyllis (LPIL)	A	Poly	2	0.008	99.192	2	5.9
Upogebiidae (LPIL)	Ar	Mala	2	0.008	99.200	2	5.9
Volvarina avenacea	M	Gast	2	0.008	99.208	2	5.9
Acanthochitona spiculosa	M	Poly	1	0.004	99.212	1	2.9
Acteocina lepta	M	Gast	1	0.004	99.216	1	2.9
Actinocythereis sp. A	Ar	Ostr	1	0.004	99.220	1	2.9
Alpheus bouvieri	Ar	Mala	1	0.004	99.224	1	2.9
Amphicteis scaphobranchiata	A	Poly	1	0.004	99.227	1	2.9
Ampithoe longimana	Ar	Mala	1	0.004	99.231	1	2.9

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Anachis pulchella	M	Gast	1	0.004	99.235	1	2.9
Anachis semiplicata	M	Gast	1	0.004	99.239	1	2.9
Anadara (LPIL)	M	Biva	1	0.004	99.243	1	2.9
Anomalocardia auberiana	M	Biva	1	0.004	99.247	1	2.9
Antalis (LPIL)	M	Scap	1	0.004	99.251	1	2.9
Aonides mayaguezensis	A	Poly	1	0.004	99.255	1	2.9
Apoprionospio (LPIL)	A	Poly	1	0.004	99.258	1	2.9
Arca zebra	M	Biva	1	0.004	99.262	1	2.9
Arcidae (LPIL)	M	Biva	1	0.004	99.266	1	2.9
Arcinella (LPIL)	M	Biva	1	0.004	99.270	1	2.9
Argopecten gibbus	M	Biva	1	0.004	99.274	1	2.9
Arigomphus pallidus	Ar	Inse	1	0.004	99.278	1	2.9
Aspidosiphon sp. C	S		1	0.004	99.282	1	2.9
Asteropella pax	Ar	Ostr	1	0.004	99.286	1	2.9
Astraea caelata	M	Gast	1	0.004	99.290	1	2.9
Astropecten articulatus	E	Aste	1	0.004	99.293	1	2.9
Autolytus sp. B	A	Poly	1	0.004	99.297	1	2.9
Bodotriidae (LPIL)	Ar	Mala	1	0.004	99.301	1	2.9
Brachiopoda (LPIL)	B		1	0.004	99.305	1	2.9
Bryozoa (LPIL)	Bz		1	0.004	99.309	1	2.9
Caecidae (LPIL)	M	Gast	1	0.004	99.313	1	2.9
Calyptraea (LPIL)	M	Gast	1	0.004	99.317	1	2.9
Campylaspis sp. M	Ar	Mala	1	0.004	99.321	1	2.9
Cancellaria reticulata	M	Gast	1	0.004	99.324	1	2.9
Cancellariidae (LPIL)	M	Gast	1	0.004	99.328	1	2.9
Cantharus (LPIL)	M	Gast	1	0.004	99.332	1	2.9
Cantharus cancellarius	M	Gast	1	0.004	99.336	1	2.9
Carpias algicola	Ar	Mala	1	0.004	99.340	1	2.9
Caulleriella sp. A	A	Poly	1	0.004	99.344	1	2.9
Caulleriella sp. J	A	Poly	1	0.004	99.348	1	2.9
Ceradocus sheardi	Ar	Mala	1	0.004	99.352	1	2.9
Cerodrillia (LPIL)	M	Gast	1	0.004	99.356	1	2.9
Chama congregata	M	Biva	1	0.004	99.359	1	2.9
Chironomidae (LPIL)	Ar	Inse	1	0.004	99.363	1	2.9
Chrysopetalidae (LPIL)	A	Poly	1	0.004	99.367	1	2.9
Cirratulus sp. B	A	Poly	1	0.004	99.371	1	2.9
Cirsotrema dalli	M	Gast	1	0.004	99.375	1	2.9
Clymenella torquata	A	Poly	1	0.004	99.379	1	2.9
Codakia orbicularis	M	Biva	1	0.004	99.383	1	2.9
Colomastix halichondriae	Ar	Mala	1	0.004	99.387	1	2.9
Cumingia tellinoides	M	Biva	1	0.004	99.390	1	2.9
Cyclostremiscus beauii	M	Gast	1	0.004	99.394	1	2.9
Cymadusa (LPIL)	Ar	Mala	1	0.004	99.398	1	2.9
Dasybranchus lumbricoides	A	Poly	1	0.004	99.402	1	2.9
Dipolydora (LPIL)	A	Poly	1	0.004	99.406	1	2.9
Dorvillea (LPIL)	A	Poly	1	0.004	99.410	1	2.9
Dorvillea largidentis	A	Poly	1	0.004	99.414	1	2.9
Dosinia discus	M	Biva	1	0.004	99.418	1	2.9
Echinoidea (LPIL)	E	Echi	1	0.004	99.422	1	2.9
Epialtus dilatus	Ar	Mala	1	0.004	99.425	1	2.9
Epitonium (LPIL)	M	Gast	1	0.004	99.429	1	2.9
Epitonium angulatum	M	Gast	1	0.004	99.433	1	2.9
Euclymene (LPIL)	A	Poly	1	0.004	99.437	1	2.9
Eulepethidae (LPIL)	A	Poly	1	0.004	99.441	1	2.9
Eunice imogena	A	Poly	1	0.004	99.445	1	2.9
Eunice rubra	A	Poly	1	0.004	99.449	1	2.9
Eurydice (LPIL)	Ar	Mala	1	0.004	99.453	1	2.9
Eurydice convexa	Ar	Mala	1	0.004	99.456	1	2.9
Euryplax nitida	Ar	Mala	1	0.004	99.460	1	2.9
Eusarsiella childi	Ar	Ostr	1	0.004	99.464	1	2.9
Eusarsiella dispar	Ar	Ostr	1	0.004	99.468	1	2.9
Fabia tellinae	Ar	Mala	1	0.004	99.472	1	2.9
Fasciolariidae (LPIL)	M	Gast	1	0.004	99.476	1	2.9
Fimbriosthenelais sp. A	A	Poly	1	0.004	99.480	1	2.9
Gastrochaena hians	M	Biva	1	0.004	99.484	1	2.9
Glycera dibranchiata	A	Poly	1	0.004	99.488	1	2.9
Glycera sp. E	A	Poly	1	0.004	99.491	1	2.9
Glycymerididae (LPIL)	M	Biva	1	0.004	99.495	1	2.9
Goneplax sigsbei	Ar	Mala	1	0.004	99.499	1	2.9
Graptacme eborea	M	Scap	1	0.004	99.503	1	2.9
Grubeosyllis (LPIL)	A	Poly	1	0.004	99.507	1	2.9
Grubeosyllis rugulosa	A	Poly	1	0.004	99.511	1	2.9
Haustoriidae (LPIL)	Ar	Mala	1	0.004	99.515	1	2.9
Heliacus bisulcatus	M	Gast	1	0.004	99.519	1	2.9
Hemiaegina minuta	Ar	Mala	1	0.004	99.522	1	2.9
Hemitoma emarginata	M	Gast	1	0.004	99.526	1	2.9
Hemus cristulipes	Ar	Mala	1	0.004	99.530	1	2.9
Heterocrypta granulata	Ar	Mala	1	0.004	99.534	1	2.9
Hexapanopeus hemphilli	Ar	Mala	1	0.004	99.538	1	2.9
Hippolyte (LPIL)	Ar	Mala	1	0.004	99.542	1	2.9
Holothuroidea (LPIL)	E	Holo	1	0.004	99.546	1	2.9
Hyboscolex quadricincta	A	Poly	1	0.004	99.550	1	2.9
Ingolfiella (LPIL)	Ar	Mala	1	0.004	99.554	1	2.9
Iphimedia zora	Ar	Mala	1	0.004	99.557	1	2.9
Isaeidae (LPIL)	Ar	Mala	1	0.004	99.561	1	2.9

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Kurtziella atrostyla	M	Gast	1	0.004	99.565	1	2.9
Lembos ovalipes	Ar	Mala	1	0.004	99.569	1	2.9
Lembos spinicarpus inermis	Ar	Mala	1	0.004	99.573	1	2.9
Lepidasthenia varia	A	Poly	1	0.004	99.577	1	2.9
Lepidonotus variabilis	A	Poly	1	0.004	99.581	1	2.9
Leucosiidae (LPIL)	Ar	Mala	1	0.004	99.585	1	2.9
Listriella barnardi	Ar	Mala	1	0.004	99.588	1	2.9
Listriella sp. F	Ar	Mala	1	0.004	99.592	1	2.9
Lucifer faxoni	Ar	Mala	1	0.004	99.596	1	2.9
Lumbrineris januarii	A	Poly	1	0.004	99.600	1	2.9
Lyonsia beana	M	Biva	1	0.004	99.604	1	2.9
Macrocallista maculata	M	Biva	1	0.004	99.608	1	2.9
Magelonidae (LPIL)	A	Poly	1	0.004	99.612	1	2.9
Malmgreniella maccraryae	A	Poly	1	0.004	99.616	1	2.9
Mangelia quadrilineata	M	Gast	1	0.004	99.620	1	2.9
Marphysa sp. F	A	Poly	1	0.004	99.623	1	2.9
Meiosquilla schmitti	Ar	Mala	1	0.004	99.627	1	2.9
Mesanthura (LPIL)	Ar	Mala	1	0.004	99.631	1	2.9
Metaprotella hummelincki	Ar	Mala	1	0.004	99.635	1	2.9
Mitrella (LPIL)	M	Gast	1	0.004	99.639	1	2.9
Mitrella lunata	M	Gast	1	0.004	99.643	1	2.9
Modiolus modiolus squamosus	M	Biva	1	0.004	99.647	1	2.9
Mooreonuphis nebulosa	A	Poly	1	0.004	99.651	1	2.9
Mytilidae (LPIL)	M	Biva	1	0.004	99.654	1	2.9
Naineris sp. A	A	Poly	1	0.004	99.658	1	2.9
Nassariidae (LPIL)	M	Gast	1	0.004	99.662	1	2.9
Natica marochiensis	M	Gast	1	0.004	99.666	1	2.9
Naticidae (LPIL)	M	Gast	1	0.004	99.670	1	2.9
Nebaliidae (LPIL)	Ar	Mala	1	0.004	99.674	1	2.9
Nematoneris (LPIL)	A	Poly	1	0.004	99.678	1	2.9
Neodrillia cydia	M	Gast	1	0.004	99.682	1	2.9
Neomegamphopus hiatus	Ar	Mala	1	0.004	99.686	1	2.9
Neopanope packardii	Ar	Mala	1	0.004	99.689	1	2.9
Nephtys picta	A	Poly	1	0.004	99.693	1	2.9
Nuculana aegeensis	M	Biva	1	0.004	99.697	1	2.9
Oenonidae (LPIL)	A	Poly	1	0.004	99.701	1	2.9
Oliva sayana	M	Gast	1	0.004	99.705	1	2.9
Ophiodermatidae (LPIL)	E	Ophi	1	0.004	99.709	1	2.9
Ophiophragmus (LPIL)	E	Ophi	1	0.004	99.713	1	2.9
Ophiotrichidae (LPIL)	E	Ophi	1	0.004	99.717	1	2.9
Opisthodonta sp. A	A	Poly	1	0.004	99.720	1	2.9
Oweniidae (LPIL)	A	Poly	1	0.004	99.724	1	2.9
Panopeus simpsoni	Ar	Mala	1	0.004	99.728	1	2.9
Paranebalia longipes	Ar	Mala	1	0.004	99.732	1	2.9
Paranthuridae (LPIL)	Ar	Mala	1	0.004	99.736	1	2.9
Paraonidae Genus a	A	Poly	1	0.004	99.740	1	2.9
Parasterope (LPIL)	Ar	Ostr	1	0.004	99.744	1	2.9
Parasterope zeta	Ar	Ostr	1	0.004	99.748	1	2.9
Parthenope (LPIL)	Ar	Mala	1	0.004	99.752	1	2.9
Parthenope granulata	Ar	Mala	1	0.004	99.755	1	2.9
Parthenopidae (LPIL)	Ar	Mala	1	0.004	99.759	1	2.9
Pasiphaeidae (LPIL)	Ar	Mala	1	0.004	99.763	1	2.9
Penaeidae (LPIL)	Ar	Mala	1	0.004	99.767	1	2.9
Petaloproctus (LPIL)	A	Poly	1	0.004	99.771	1	2.9
Pholoe sp. A	A	Poly	1	0.004	99.775	1	2.9
Phyllophoridae (LPIL)	E	Holo	1	0.004	99.779	1	2.9
Pilargis berkeleyae	A	Poly	1	0.004	99.783	1	2.9
Pilumnus (LPIL)	Ar	Mala	1	0.004	99.786	1	2.9
Pilumnus dasypodus	Ar	Mala	1	0.004	99.790	1	2.9
Pinnixa (LPIL)	Ar	Mala	1	0.004	99.794	1	2.9
Piromis roberti	A	Poly	1	0.004	99.798	1	2.9
Pitho quadridentata	Ar	Mala	1	0.004	99.802	1	2.9
Podarke sp. D	A	Poly	1	0.004	99.806	1	2.9
Podochela (LPIL)	Ar	Mala	1	0.004	99.810	1	2.9
Podocopa Family B	Ar	Ostr	1	0.004	99.814	1	2.9
Polycirrus sp. A	A	Poly	1	0.004	99.818	1	2.9
Polycirrus sp. G	A	Poly	1	0.004	99.821	1	2.9
Polydora (LPIL)	A	Poly	1	0.004	99.825	1	2.9
Potamethus sp. A	A	Poly	1	0.004	99.829	1	2.9
Pseudoleptochelia (LPIL)	Ar	Mala	1	0.004	99.833	1	2.9
Pseudopolydora (LPIL)	A	Poly	1	0.004	99.837	1	2.9
Questidae (LPIL)	A	Poly	1	0.004	99.841	1	2.9
Raninoides loevis	Ar	Mala	1	0.004	99.845	1	2.9
Reticulocythereis sp. A	Ar	Ostr	1	0.004	99.849	1	2.9
Rissoina catesbyana	M	Gast	1	0.004	99.852	1	2.9
Rocinela signata	Ar	Mala	1	0.004	99.856	1	2.9
Rutiderma (LPIL)	Ar	Ostr	1	0.004	99.860	1	2.9
Rutiderma gyre	Ar	Ostr	1	0.004	99.864	1	2.9
Sabellaria sp. A	A	Poly	1	0.004	99.868	1	2.9
Scalibregmatidae (LPIL)	A	Poly	1	0.004	99.872	1	2.9
Scolelepis (LPIL)	A	Poly	1	0.004	99.876	1	2.9
Scyphoproctus (LPIL)	A	Poly	1	0.004	99.880	1	2.9
Seila adamsi	M	Gast	1	0.004	99.884	1	2.9
Serolis mgrayi	Ar	Mala	1	0.004	99.887	1	2.9
Sigalion sp. B	A	Poly	1	0.004	99.891	1	2.9
Sigambra (LPIL)	A	Poly	1	0.004	99.895	1	2.9

Table 2 continued:

Taxa	Phylum	Class	No. of Individuals	% of Total	Cumulative %	Station Occur.	% Station Occur.
Solemya (LPIL)	M	Biva	1	0.004	99.899	1	2.9
Speocarcinus lobatus	Ar	Mala	1	0.004	99.903	1	2.9
Sphaerosyllis aciculata	A	Poly	1	0.004	99.907	1	2.9
Spiophanes (LPIL)	A	Poly	1	0.004	99.911	1	2.9
Squilla (LPIL)	Ar	Mala	1	0.004	99.915	1	2.9
Stenothoidae (LPIL)	Ar	Mala	1	0.004	99.918	1	2.9
Sthenelais (LPIL)	A	Poly	1	0.004	99.922	1	2.9
Sthenolepis sp. A	A	Poly	1	0.004	99.926	1	2.9
Streptosyllis (LPIL)	A	Poly	1	0.004	99.930	1	2.9
Syllis alternata	A	Poly	1	0.004	99.934	1	2.9
Tegula fasciata	M	Gast	1	0.004	99.938	1	2.9
Tellidora cristata	M	Biva	1	0.004	99.942	1	2.9
Tellina gouldii	M	Biva	1	0.004	99.946	1	2.9
Tellina listeri	M	Biva	1	0.004	99.950	1	2.9
Tellina texana	M	Biva	1	0.004	99.953	1	2.9
Tellina versicolor	M	Biva	1	0.004	99.957	1	2.9
Terebella pterochaeta	A	Poly	1	0.004	99.961	1	2.9
Terebridae (LPIL)	M	Gast	1	0.004	99.965	1	2.9
Thalenessa sp. C	A	Poly	1	0.004	99.969	1	2.9
Tharyx (LPIL)	A	Poly	1	0.004	99.973	1	2.9
Tornidae (LPIL)	M	Gast	1	0.004	99.977	1	2.9
Trachycardium egmont	M	Biva	1	0.004	99.981	1	2.9
Trachypenaeus similis	Ar	Mala	1	0.004	99.984	1	2.9
Transennella conradina	M	Biva	1	0.004	99.988	1	2.9
Tricolia (LPIL)	M	Gast	1	0.004	99.992	1	2.9
Trochidae (LPIL)	M	Gast	1	0.004	99.996	1	2.9
Turbonilla sp. AC	M	Gast	1	0.004	100.000	1	2.9

TAXA KEY

Phylum
    Class

A = Annelida
    Olig = Oligochaeta
    Poly = Polychaeta
Ar = Arthropoda
    Bran = Branchiopoda
    Inse = Insecta
    Mala = Malacostraca
    Ostr = Ostracoda
B = Brachiopoda
Bz = Bryozoa
C = Chordata
    Asci = Ascidiacea
Cn = Cnidaria
    Anth = Anthozoa
E = Echinodermata
    Aste = Asteroidea
    Echi = Echinoidea
    Holo = Holothuroidea
    Ophi = Ophiuroidea
M = Mollusca
    Biva = Bivalvia
    Gast = Gastropoda
    Poly = Polyplacophora
    Scap = Scaphopoda
Ph = Phoronida
Po = Porifera
R = Rhynchocoela
    Anop = Anopla
S = Sipuncula

Table 3. Summary of abundance of major taxonomic groups for the Florida Keys to Dry Tortugas study, July 1997.

Taxa	Total No. Indivs.	% Total	Total No. Taxa	% Total
Annelida				
Polychaeta	12090	46.9	317	36.0
Oligochaeta	895	3.5	1	0.1
Arthropoda				
Malacostraca	5080	19.7	233	26.4
Ostracoda	1092	4.2	51	5.8
Insecta	47	0.2	3	0.3
Branchiopoda	6	0.0	1	0.1
Mollusca				
Bivalvia	2898	11.3	103	11.7
Gastropoda	1625	6.3	125	14.2
Other Mollusca	551	2.1	14	1.6
Other Taxa	1474	5.7	33	3.7
TOTAL	**25758**		**881**	

assemblage, followed in abundance by malacostracans (19.7%), bivalves (11.3%) and gastropods (6.3%). Polychaetes represented 36.0% of the total number of taxa followed by malacostracans (26.4%), gastropods (14.2%) and bivalves (11.7%)(Table 3). The percentage abundance of the major taxa at the 36 stations is given in Figure 4 and Table 4.

The dominant taxa collected from the samples were the tanaid, *Leptochelia* (LPIL), the annelid class Oligochaeta (LPIL), the polychaete family Sabellidae and the polychaete, *Exogone lourei* representing 3.6%, 3.5%, 3.1% and 3.0% of the total number of individuals, respectively (Table 2). Oligochaetes, capitellid polychaetes and rhynchocoels were the most widely distributed taxa being found at 94.1%, 91.2% and 97.1% of the stations, respectively (Table 2). The distribution of dominant taxa representing > 5% 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 1 and Figures 5 and 6. Mean densities per stations exhibited considerable variation and ranged from 1,550 organisms$\cdot m^{-2}$ at Station C27 to 16,833 organisms$\cdot m^{-2}$ at Station A45 (Table 1; Figure 5). The mean number of taxa per replicate also varied and ranged from 19.3 at Station C23 to 115.5 at Station A18 (Table 1; Figure 6). There were significant differences between stations in both mean density and mean number of taxa per replicate (Table 5).

There was a significant positive correlation between station mean density data and % gravel+sand in the sediment and salinity, and a significant inverse correlation between density and % silt+ clay in the sediment (Table 6; Figures 7, 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 6; Figure 9). There were additional significant correlations between various physical and chemical parameters: DO was inversely correlated with salinity and positively correlated with % gravel+sand (Table 6, Figure 10); and salinity was positively correlated with % gravel+sand and inversely correlated with % silt+clay (Table 6; Figure 11).

Taxa diversity and evenness are given in Table 1 and Figure 12. Taxa diversity (H') was uniformly high with all stations but three (C23, A28, SR23) having diversity values > 3.0; values

Figure 4. Percent abundance of major taxa for the Florida Keys to Dry Tortugas stations, July 1997.

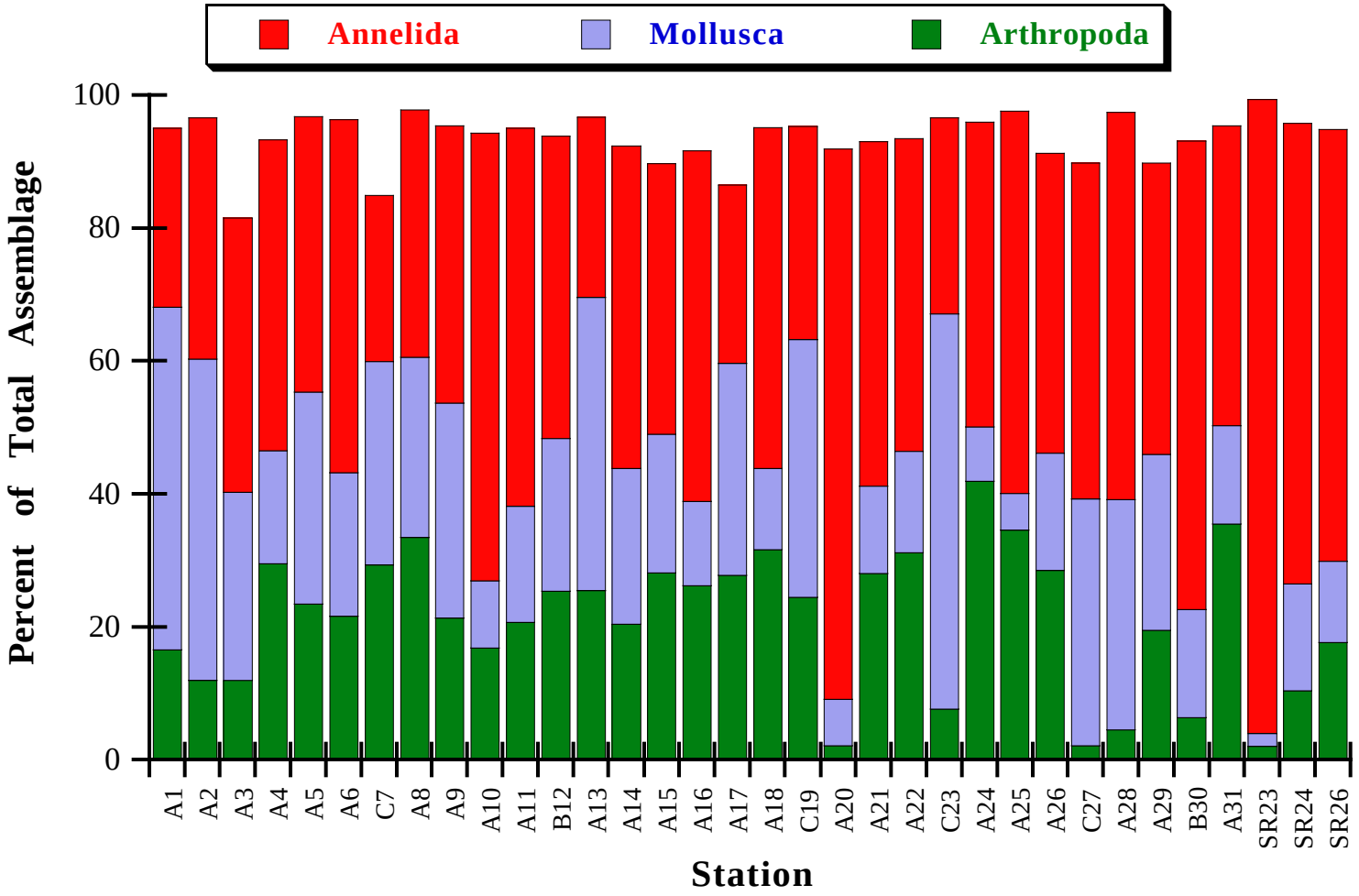


Table 4. Percent abundance of major taxa for the Florida Keys to Dry Tortugas stations, July 1997.

Station	Phylum	Total No. of Taxa	% Taxa	Total No. of Individuals	% Individuals
A1	Annelida	19	27.5	91	26.9
	Mollusca	26	37.7	174	51.5
	Arthropoda	19	27.5	56	16.6
	Miscellaneous	5	7.2	17	5.0
	TOTAL	69		338	
A2	Annelida	25	34.7	106	36.3
	Mollusca	21	29.2	141	48.3
	Arthropoda	20	27.8	35	12.0
	Miscellaneous	6	8.3	10	3.4
	TOTAL	72		292	
A3	Annelida	44	33.3	250	41.2
	Mollusca	36	27.3	172	28.3
	Arthropoda	41	31.1	130	21.4
	Miscellaneous	11	8.3	55	9.1
	TOTAL	132		607	
A4	Annelida	59	39.1	360	46.8
	Mollusca	35	23.2	131	17.0
	Arthropoda	46	30.5	227	29.5
	Miscellaneous	11	7.3	51	6.6
	TOTAL	151		769	
A5	Annelida	30	41.1	90	41.5
	Mollusca	21	28.8	69	31.8
	Arthropoda	18	24.7	51	23.5
	Miscellaneous	4	5.5	7	3.2
	TOTAL	73		217	
A6	Annelida	38	38.4	231	53.1
	Mollusca	26	26.3	94	21.6
	Arthropoda	30	30.3	94	21.6
	Miscellaneous	5	5.1	16	3.7
	TOTAL	99		435	
C7	Annelida	62	40.8	134	25.0
	Mollusca	31	20.4	164	30.5
	Arthropoda	44	28.9	158	29.4
	Miscellaneous	15	9.9	81	15.1
	TOTAL	152		537	

Table 4 continued:

Station	Phylum	Total No. of Taxa	% Taxa	Total No. of Individuals	% Individuals
A8	Annelida	70	46.1	604	37.2
	Mollusca	35	23.0	440	27.1
	Arthropoda	39	25.7	544	33.5
	Miscellaneous	8	5.3	35	2.2
	TOTAL	152		1623	
A9	Annelida	43	35.2	198	41.7
	Mollusca	35	28.7	154	32.4
	Arthropoda	36	29.5	101	21.3
	Miscellaneous	8	6.6	22	4.6
	TOTAL	122		475	
A10	Annelida	58	49.2	401	67.4
	Mollusca	20	16.9	60	10.1
	Arthropoda	35	29.7	100	16.8
	Miscellaneous	5	4.2	34	5.7
	TOTAL	118		595	
A11	Annelida	75	45.7	632	56.8
	Mollusca	41	25.0	195	17.5
	Arthropoda	37	22.6	230	20.7
	Miscellaneous	11	6.7	55	4.9
	TOTAL	164		1112	
B12	Annelida	38	39.2	288	45.4
	Mollusca	22	22.7	146	23.0
	Arthropoda	30	30.9	161	25.4
	Miscellaneous	7	7.2	40	6.3
	TOTAL	97		635	
A13	Annelida	61	35.5	238	27.1
	Mollusca	43	25.0	387	44.1
	Arthropoda	60	34.9	224	25.5
	Miscellaneous	8	4.7	29	3.3
	TOTAL	172		878	
A14	Annelida	45	46.9	157	48.5
	Mollusca	18	18.8	76	23.5
	Arthropoda	25	26.0	66	20.4
	Miscellaneous	8	8.3	25	7.7
	TOTAL	96		324	

Table 4 continued:

Station	Phylum	Total No. of Taxa	% Taxa	Total No. of Individuals	% Individuals
A15	Annelida	49	40.5	166	40.7
	Mollusca	25	20.7	85	20.8
	Arthropoda	37	30.6	115	28.2
	Miscellaneous	10	8.3	42	10.3
	TOTAL	121		408	
A16	Annelida	67	45.0	307	52.7
	Mollusca	25	16.8	74	12.7
	Arthropoda	44	29.5	153	26.2
	Miscellaneous	13	8.7	49	8.4
	TOTAL	149		583	
A17	Annelida	64	35.6	436	26.8
	Mollusca	56	31.1	520	31.9
	Arthropoda	48	26.7	452	27.8
	Miscellaneous	12	6.7	220	13.5
	TOTAL	180		1628	
A18	Annelida	86	41.0	713	51.2
	Mollusca	40	19.0	170	12.2
	Arthropoda	72	34.3	442	31.7
	Miscellaneous	12	5.7	68	4.9
	TOTAL	210		1393	
C19	Annelida	54	40.0	228	32.0
	Mollusca	25	18.5	277	38.8
	Arthropoda	47	34.8	175	24.5
	Miscellaneous	9	6.7	33	4.6
	TOTAL	135		713	
A20	Annelida	60	58.8	873	82.8
	Mollusca	15	14.7	73	6.9
	Arthropoda	17	16.7	23	2.2
	Miscellaneous	10	9.8	85	8.1
	TOTAL	102		1054	
A21	Annelida	67	42.7	376	51.8
	Mollusca	20	12.7	96	13.2
	Arthropoda	58	36.9	203	28.0
	Miscellaneous	12	7.6	51	7.0
	TOTAL	157		726	

Table 4 continued:

Station	Phylum	Total No. of Taxa	% Taxa	Total No. of Individuals	% Individuals
A22	Annelida	86	45.3	391	47.1
	Mollusca	45	23.7	126	15.2
	Arthropoda	48	25.3	259	31.2
	Miscellaneous	11	5.8	54	6.5
	TOTAL	190		830	
C23	Annelida	16	39.0	61	29.5
	Mollusca	16	39.0	123	59.4
	Arthropoda	5	12.2	16	7.7
	Miscellaneous	4	9.8	7	3.4
	TOTAL	41		207	
A24	Annelida	78	39.2	529	45.8
	Mollusca	40	20.1	95	8.2
	Arthropoda	72	36.2	483	41.9
	Miscellaneous	9	4.5	47	4.1
	TOTAL	199		1154	
A25	Annelida	91	46.0	1162	57.5
	Mollusca	27	13.6	112	5.5
	Arthropoda	71	35.9	699	34.6
	Miscellaneous	9	4.5	47	2.3
	TOTAL	198		2020	
A26	Annelida	59	39.3	291	45.1
	Mollusca	35	23.3	114	17.7
	Arthropoda	43	28.7	184	28.5
	Miscellaneous	13	8.7	56	8.7
	TOTAL	150		645	
C27	Annelida	25	50.0	94	50.5
	Mollusca	15	30.0	69	37.1
	Arthropoda	4	8.0	4	2.2
	Miscellaneous	6	12.0	19	10.2
	TOTAL	50		186	
A28	Annelida	25	40.3	245	58.2
	Mollusca	18	29.0	146	34.7
	Arthropoda	14	22.6	19	4.5
	Miscellaneous	5	8.1	11	2.6
	TOTAL	62		421	

Table 4 continued:

Station	Phylum	Total No. of Taxa	% Taxa	Total No. of Individuals	% Individuals
A29	Annelida	30	34.5	162	43.8
	Mollusca	24	27.6	98	26.5
	Arthropoda	25	28.7	72	19.5
	Miscellaneous	8	9.2	38	10.3
	TOTAL	87		370	
B30	Annelida	29	43.9	244	70.5
	Mollusca	20	30.3	56	16.2
	Arthropoda	11	16.7	22	6.4
	Miscellaneous	6	9.1	24	6.9
	TOTAL	66		346	
A31	Annelida	81	42.6	599	45.1
	Mollusca	43	22.6	197	14.8
	Arthropoda	54	28.4	471	35.5
	Miscellaneous	12	6.3	61	4.6
	TOTAL	190		1328	
SR23	Annelida	38	59.4	1293	95.3
	Mollusca	11	17.2	26	1.9
	Arthropoda	11	17.2	28	2.1
	Miscellaneous	4	6.3	10	0.7
	TOTAL	64		1357	
SR24	Annelida	65	49.6	440	69.3
	Mollusca	30	22.9	102	16.1
	Arthropoda	30	22.9	66	10.4
	Miscellaneous	6	4.6	27	4.3
	TOTAL	131		635	
SR26	Annelida	60	42.0	595	64.9
	Mollusca	38	26.6	112	12.2
	Arthropoda	36	25.2	162	17.7
	Miscellaneous	9	6.3	48	5.2
	TOTAL	143		917	

Table 5. Percent abundance of dominant taxa (> 5% of the total) for the Florida Keys to Dry Tortugas stations, July 1997

TAXA	A1	A2	A3	A4	A5	A6	C7	A8	A9	A10	A11	B12	A13	A14	A15	A16	A17	A18	C19	A20	A21	A22
Cnidaria																						
Actiniaria (LPIL)															5.1							
Annelida																						
Linopherus sp. A																				6.4		
Capitellidae (LPIL)																				15.1		
Goniadides carolinae											7.2											
Heteropodarke lyonsi																						
Scoletoma verrilli	14.8	11.6	5.8			6.2			11.4	5.4		7.9										
Armandia maculata														9.3							5.8	
Armandia agilis																						
Aricidea philbinae												8.7										
Hesionura coineaui																						
Spionidae (LPIL)																						
Paraprionospio pinnata										5.0												
Prionospio (LPIL)									5.5	7.2										6.1		
Syllis cornuta																						
Syllis (LPIL)																						
Exogone lourei																						
Exogone rolani																						
Dentatisyllis carolinae																						
Haplosyllis spongicola											8.0							7.8			8.8	
Sabellidae (LPIL)				13.8						6.6					5.9	5.8						
Chone (LPIL)																						5.8
Terebellides parvus			5.8																			
Oligochaeta (LPIL)						10.8		5.2												5.9		
Mollusca																						
Bivalvia (LPIL)		14.0							5.3													
Lucinidae (LPIL)	9.5	9.9	10.9	6.8					12.4					9.6							5.4	
Lucina multilineata																			20.8			
Codakia pectinella	16.0																					
Tellinidae (LPIL)					5.1																	
Tellina (LPIL)												9.3										
Varicorbula operculata	6.5																					
Crassinella lunulata							6.9				6.7				5.1							
Nuculana acuta		5.1																				
Ervilia concentrica																						
Caecum pulchellum													18.9									
Atys sandersoni																						
Ischnochiton (LPIL)								15.3														
Arthropoda																						
Ampelisca (LPIL)				5.3																		
Melitidae (LPIL)								14.2														
Netamelita barnardi					11.1																	
Anamaera hixoni								8.1														
Cyclaspis unicornis	6.5																					
Kalliapseudes bahamaensis																						
Pseudoleptochelia sp. A																						
Leptochelia (LPIL)											9.5					7.4						
Cirratodactylis floridensis																	14.4					9.3
Tanaissus sp. B																						
Synasterope setisparsa																						
Eusarsiella absens												6.8										

Table 5 continued:

TAXA	C23	A24	A25	A26	C27	A28	A29	B30	A31	SR23	SR24	SR26
Cnidaria												
Actiniaria (LPIL)												
Annelida												
Linopherus sp. A												
Capitellidae (LPIL)							6.5					
Goniadides carolinae												
Heteropodarke lyonsi	7.2											
Scoletoma verrilli						36.6	7.8	30.3				
Armandia maculata												
Armandia agilis	7.2				7.5							
Aricidea philbinae												
Hesionura coineaui					6.5							
Spionidae (LPIL)					6.5							
Paraprionospio pinnata												
Prionospio (LPIL)												
Syllis cornuta										24.0	8.2	
Syllis (LPIL)										6.0		
Exogone lourei										15.4		12.3
Exogone rolani												8.7
Dentatisyllis carolinae			6.2							14.4		
Haplosyllis spongicola				7.1					17.5			
Sabellidae (LPIL)			14.4									
Chone (LPIL)												
Terebellides parvus												
Oligochaeta (LPIL)		5.7			5.9			6.1		10.8	13.2	8.1
Mollusca												
Bivalvia (LPIL)												
Lucinidae (LPIL)	7.2											
Lucina multilineata												
Codakia pectinella												
Tellinidae (LPIL)												
Tellina (LPIL)						12.6						
Varicorbula operculata												
Crassinella lunulata												
Nuculana acuta												
Ervilia concentrica	30.0				17.7							
Caecum pulchellum												
Atys sandersoni						10.7						
Ischnochiton (LPIL)												
Arthropoda												
Ampelisca (LPIL)												
Melitidae (LPIL)												
Netamelita barnardi												
Anamaera hixoni												
Cyclaspis unicornis												
Kalliapseudes bahamaensis			5.0									
Pseudoleptochelia sp. A									6.4			
Leptochelia (LPIL)		6.5	14.6						7.6			
Cirratodactylis floridensis												
Tanaissus sp. B	5.3											
Synasterope setisparsa		6.5										
Eusarsiella absens												

Figure 5. Mean macroinvertebrate densities for the Florida Keys to Dry Tortugas stations, July 1997.

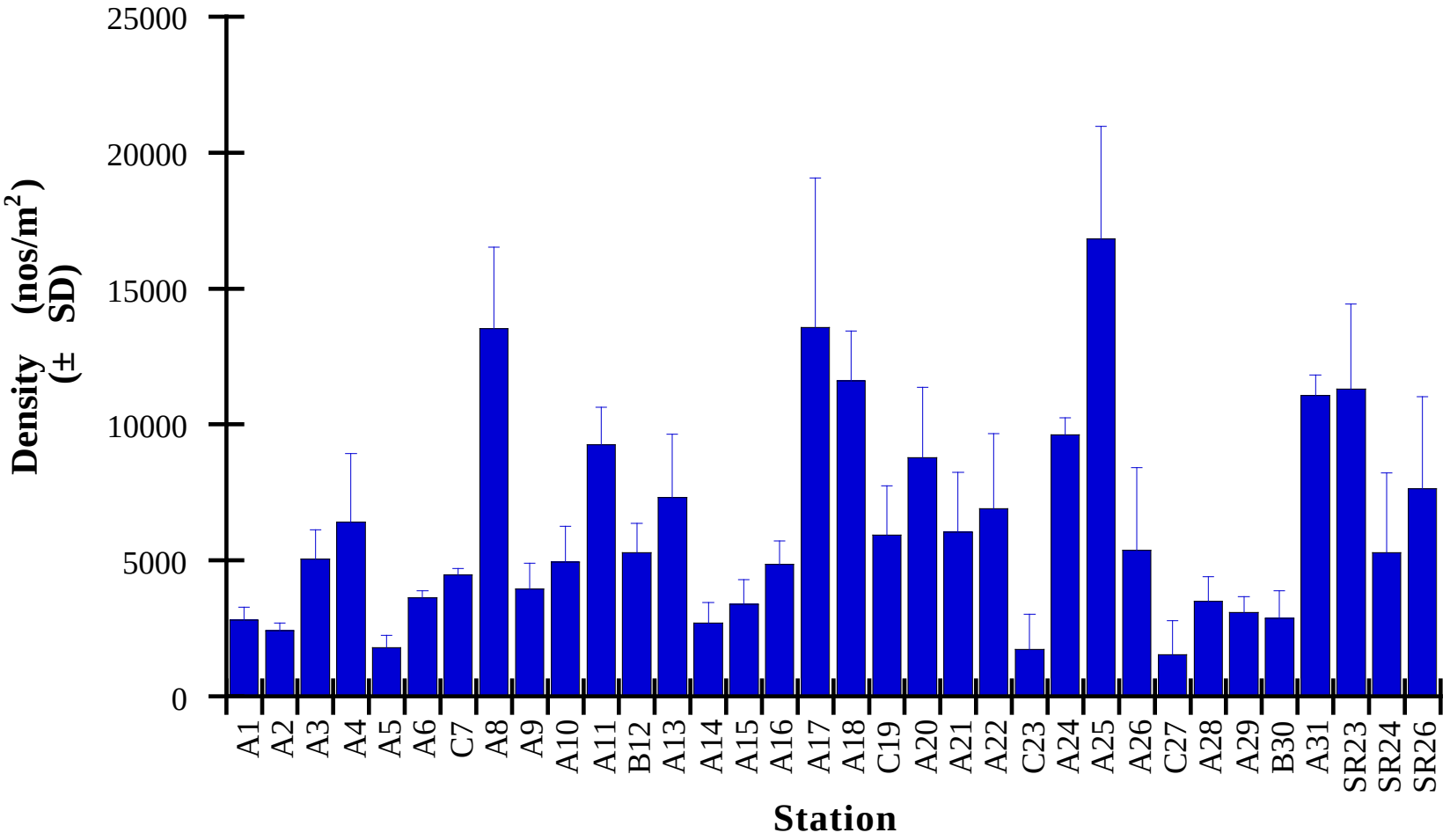


Figure 6. Mean number of macroinvertebrate taxa per replicate for the Florida Keys to Dry Tortugas stations, July 1997.

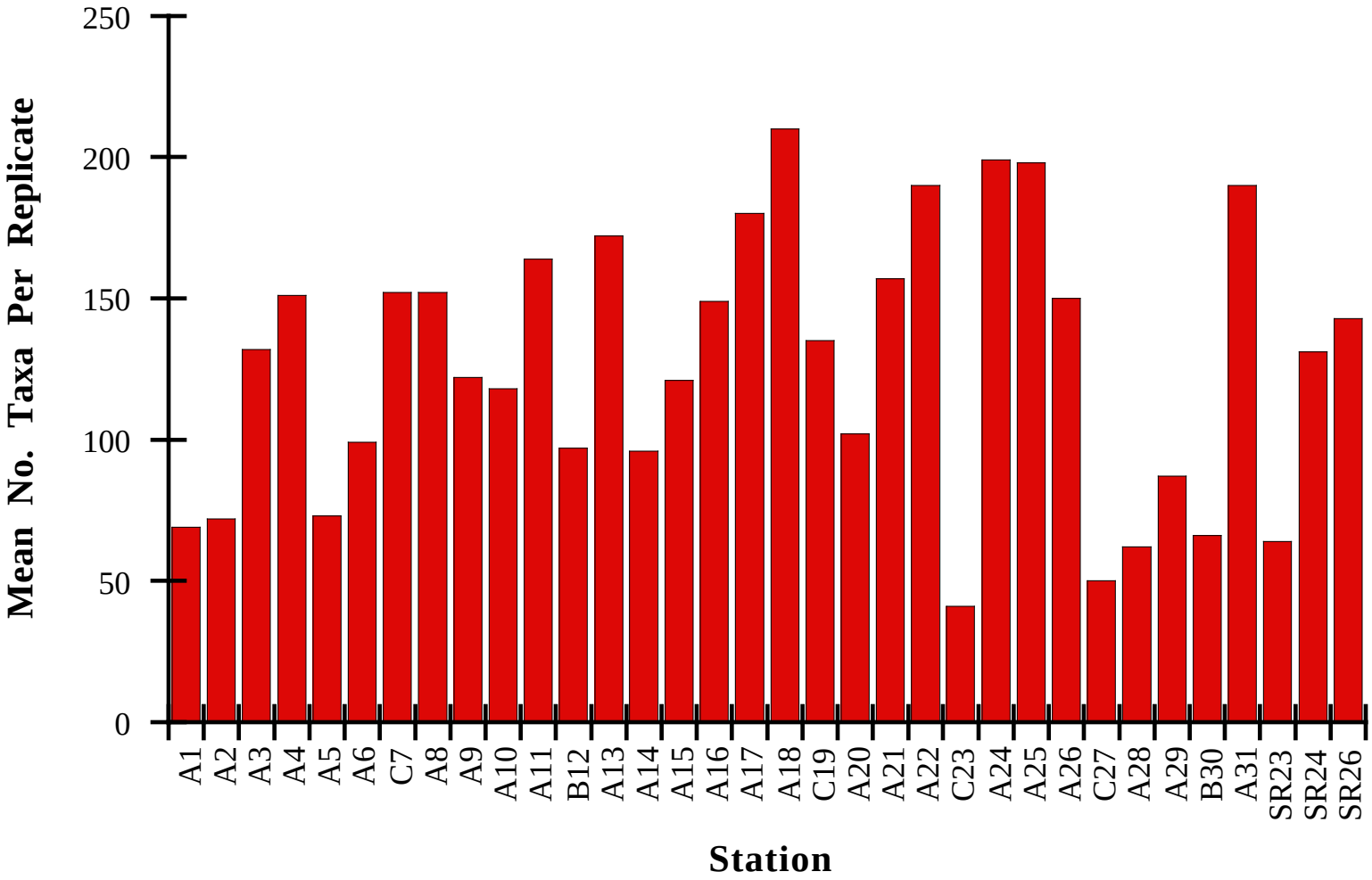


Table 6. ANOVA results for differences in macroinvertebrate densities and number of taxa between stations for the Florida Keys to Dry Tortugas stations, July 1997.

Density Results

Shapiro-Wilk W Test for Normality

W = 0.96 Prob < W = 0.10

ANOVA Table

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob>F
Model	33	41.4	1.3	**9.97**	**<0.0001**
Error	68	8.6	0.1		
Total	101	50.0	0.5		

Taxa Results

Shapiro-Wilk W Test for Normality

W=0.97 Prob < W=0.06

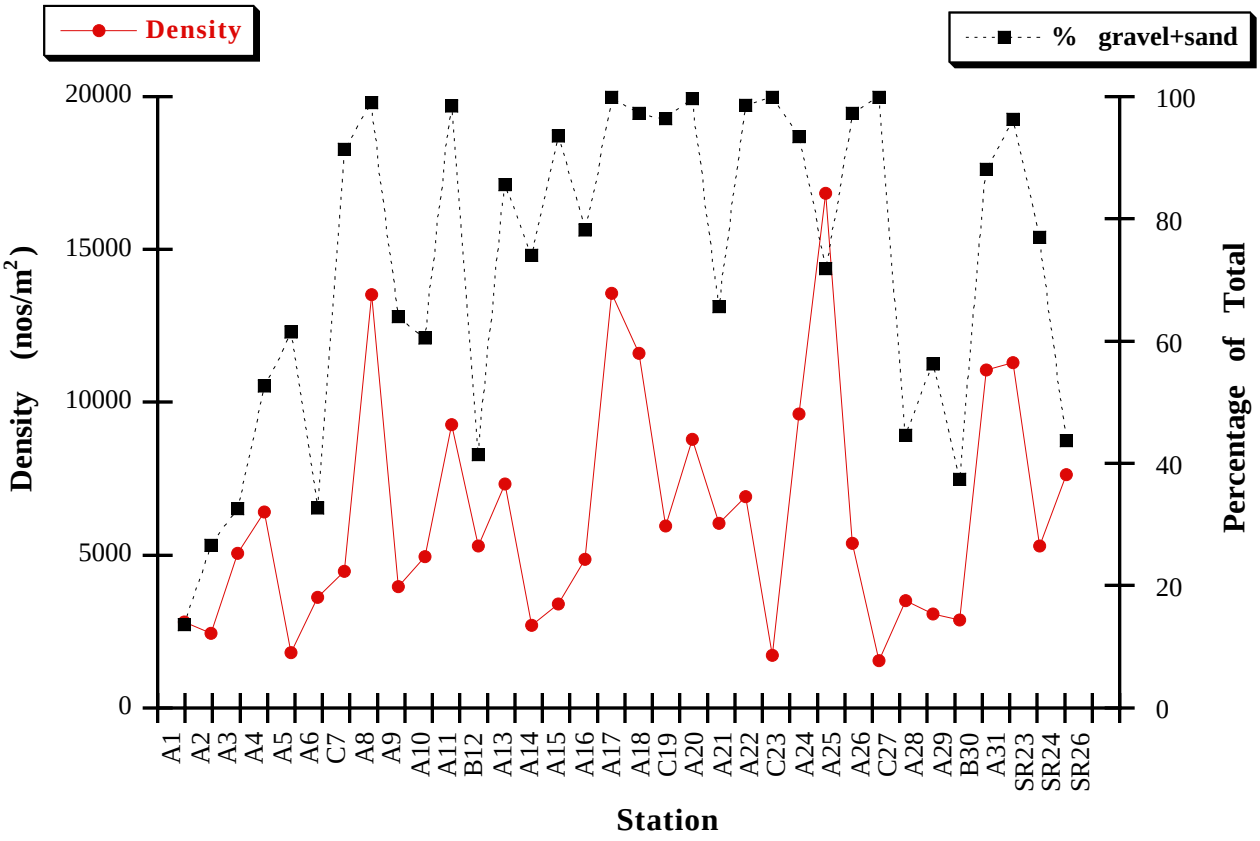
ANOVA Table

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob>F
Model	33	63280.9	1917.6	**9.46**	**<0.0001**
Error	68	13780.7	202.7		
Total	101	77061.6	763.0		

Table 7. Correlation coefficients for the Florida Keys to Dry Tortugas data, July 1997.

Variable	By Variable	Correlation (Spearman's Rho)	Significance Probability	Sign
ln(Density+1)	Taxa/Rep	0.7998	<0.0001	****
DO	Taxa/Rep	-0.0239	0.8260	
	ln(Density+1)	-0.1909	0.0765	
Salinity	Taxa/Rep	0.1738	0.1074	
	ln(Density+1)	0.3305	0.0018	**
	DO	-0.6782	<0.0001	****
TOC	Taxa/Rep	0.0263	0.7930	
	ln(Density+1)	-0.0325	0.7455	
	DO	0.0051	0.9629	
	Salinity	-0.1347	0.2135	
% Gravel+Sand	Taxa/Rep	0.2674	0.0066	**
	ln(Density+1)	0.3552	0.0002	***
	DO	-0.1436	0.1845	
	Salinity	0.2491	0.0200	*
	TOC	-0.0936	0.3494	
% Silt+Clay	Taxa/Rep	-0.3323	0.0006	***
	ln(Density+1)	-0.4322	<0.0001	****
	DO	0.2123	0.0483	*
	Salinity	-0.3238	0.0022	**
	% Gravel+Sand	-0.9613	<0.0001	****
	TOC	0.0923	0.3564	

Figure 7. Mean macroinvertebrate densities versus % gravel+sand and % silt+clay content of the sediment for the Florida Keys to Dry Tortugas stations, July 1997.



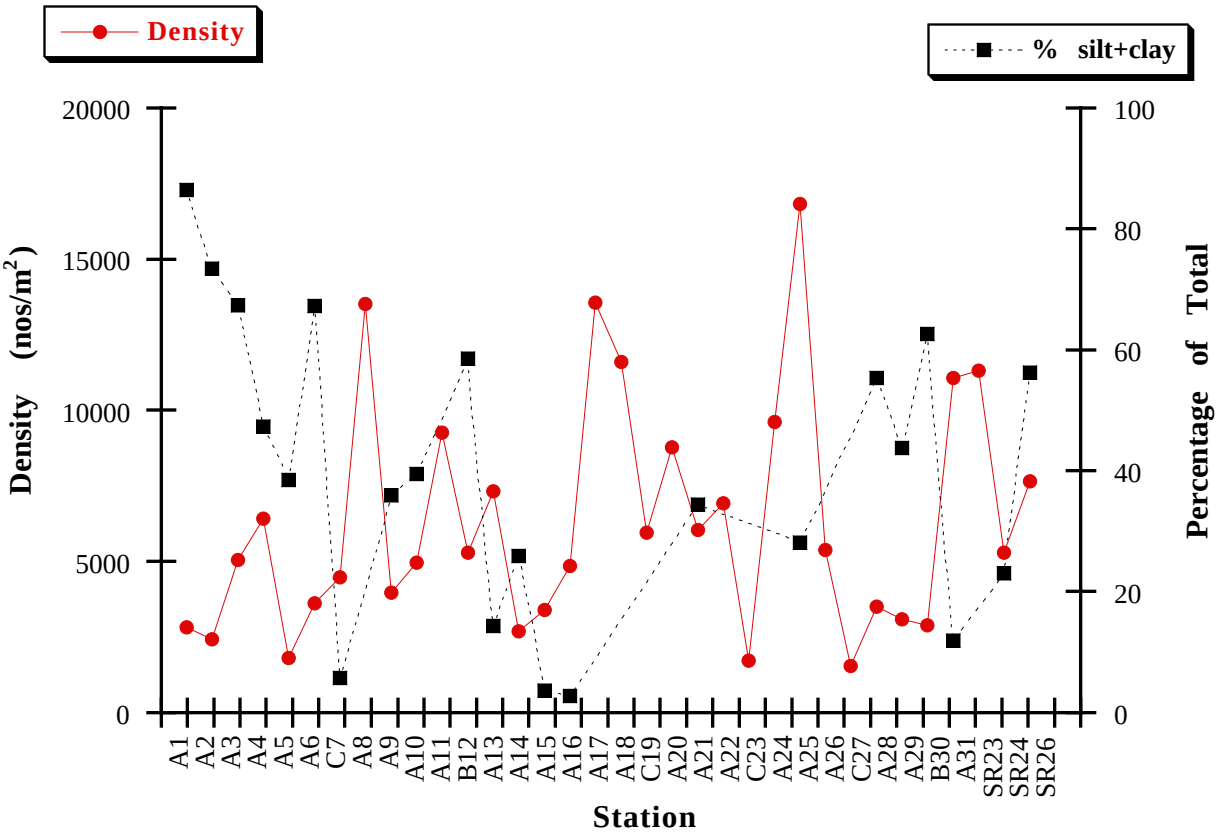


Figure 8. Mean macroinvertebrate densities versus bottom salinity for the Florida Keys to Dry Tortugas stations, July 1997.

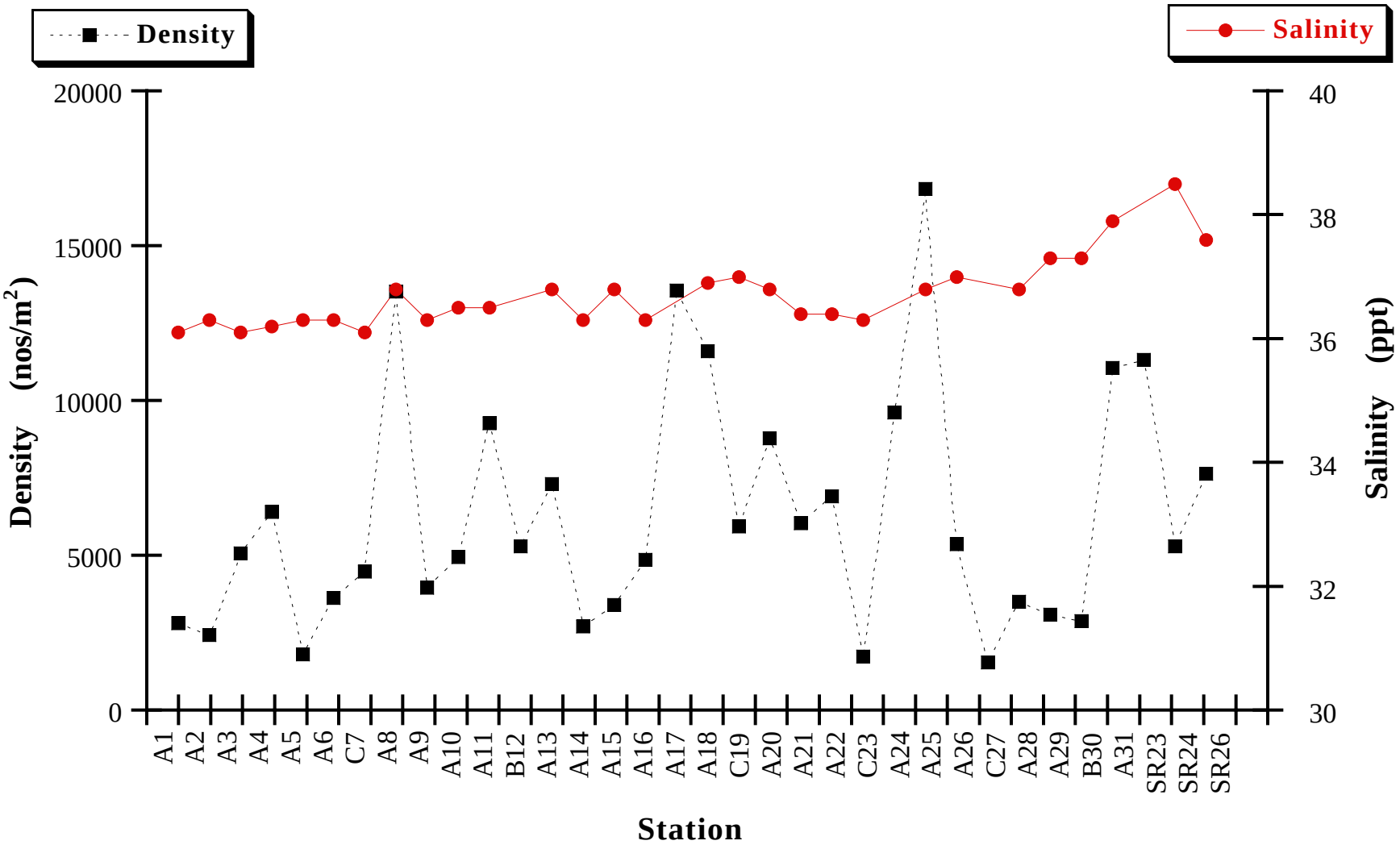
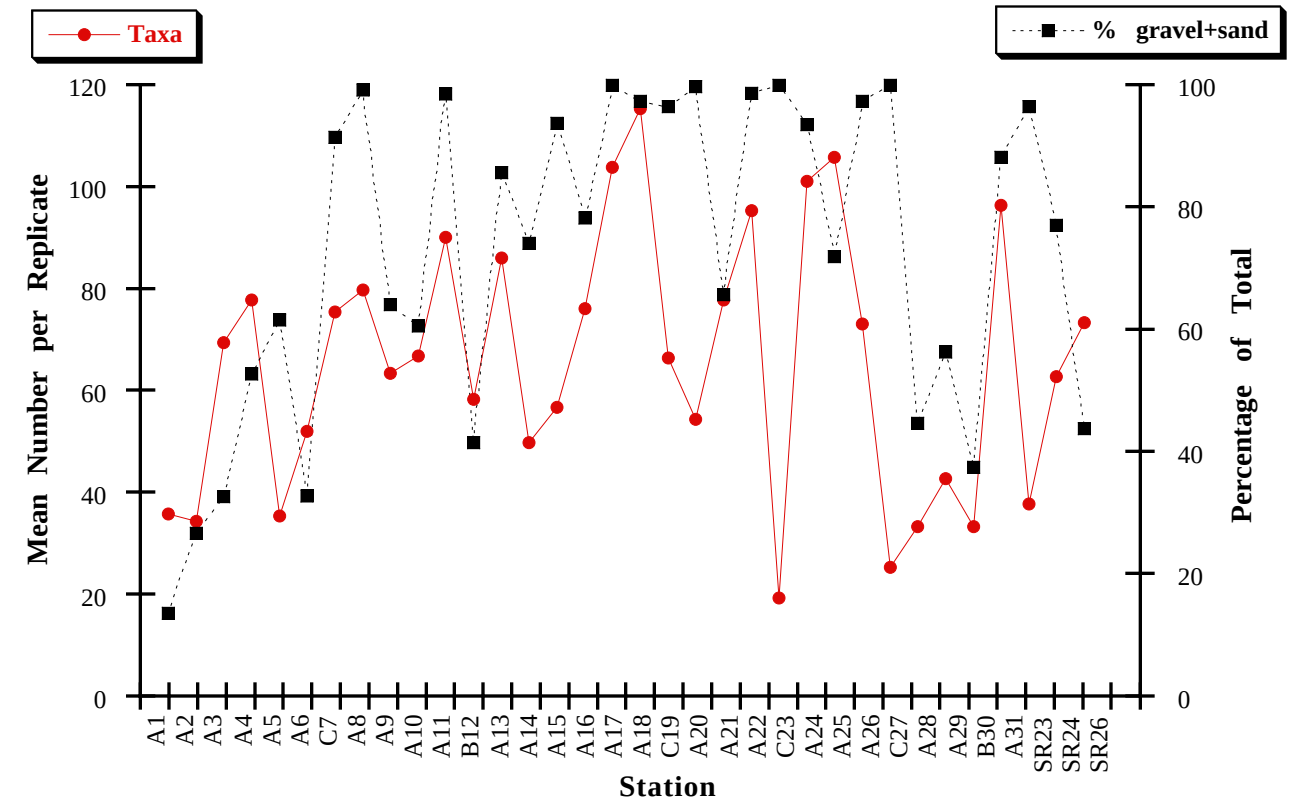


Figure 9. Mean number of macroinvertebrate taxa versus % gravel+sand and % silt+clay content of the sediment for the Florida Keys to Dry Tortugas stations, July 1997.



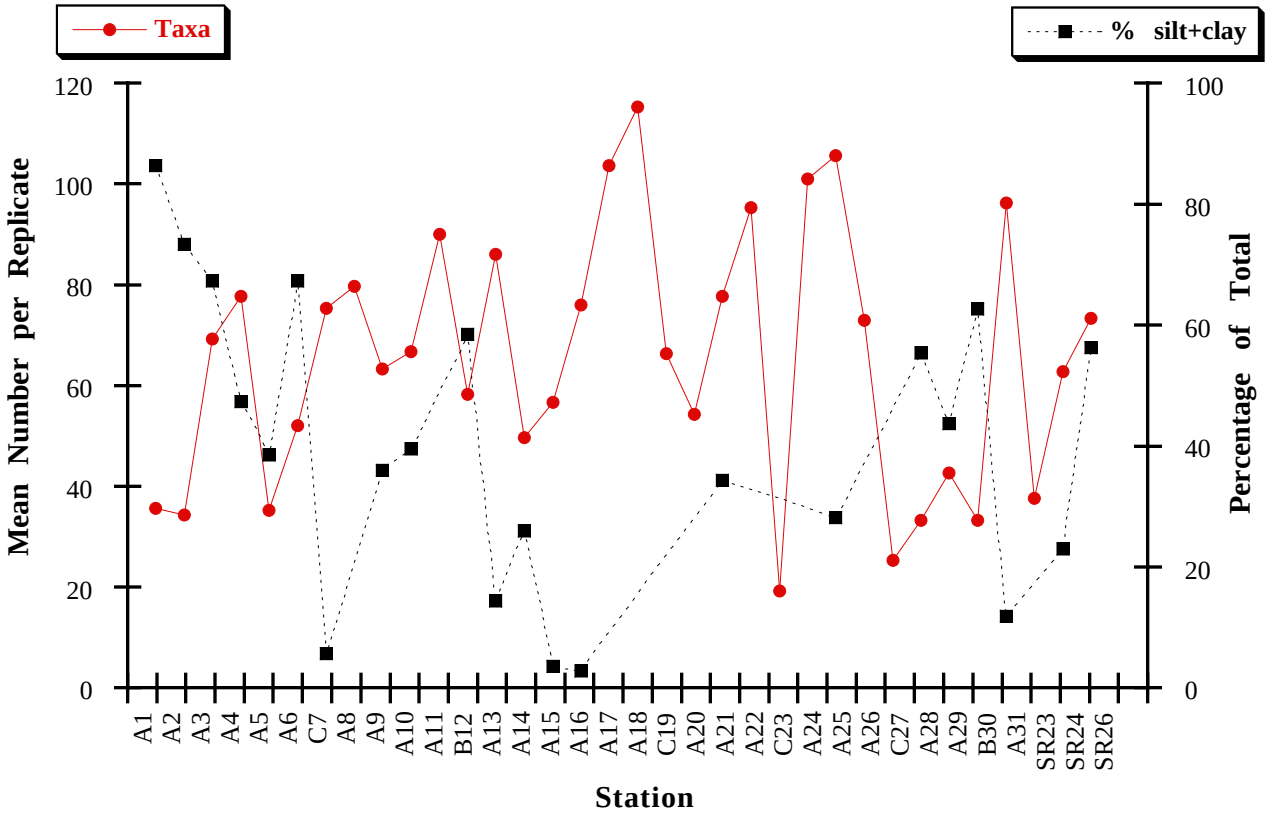
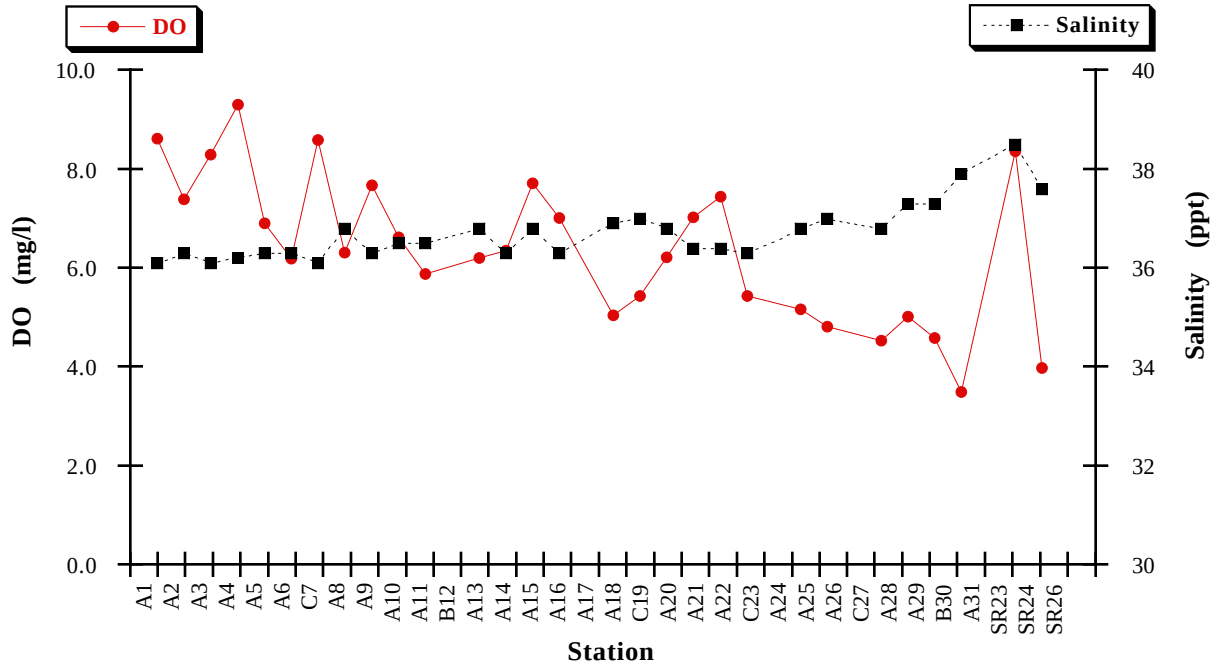


Figure 10. Bottom dissolved oxygen (DO) versus bottom salinity and % silt+clay content of the sediment for the Florida Keys to Dry Tortugas stations, July 1997.



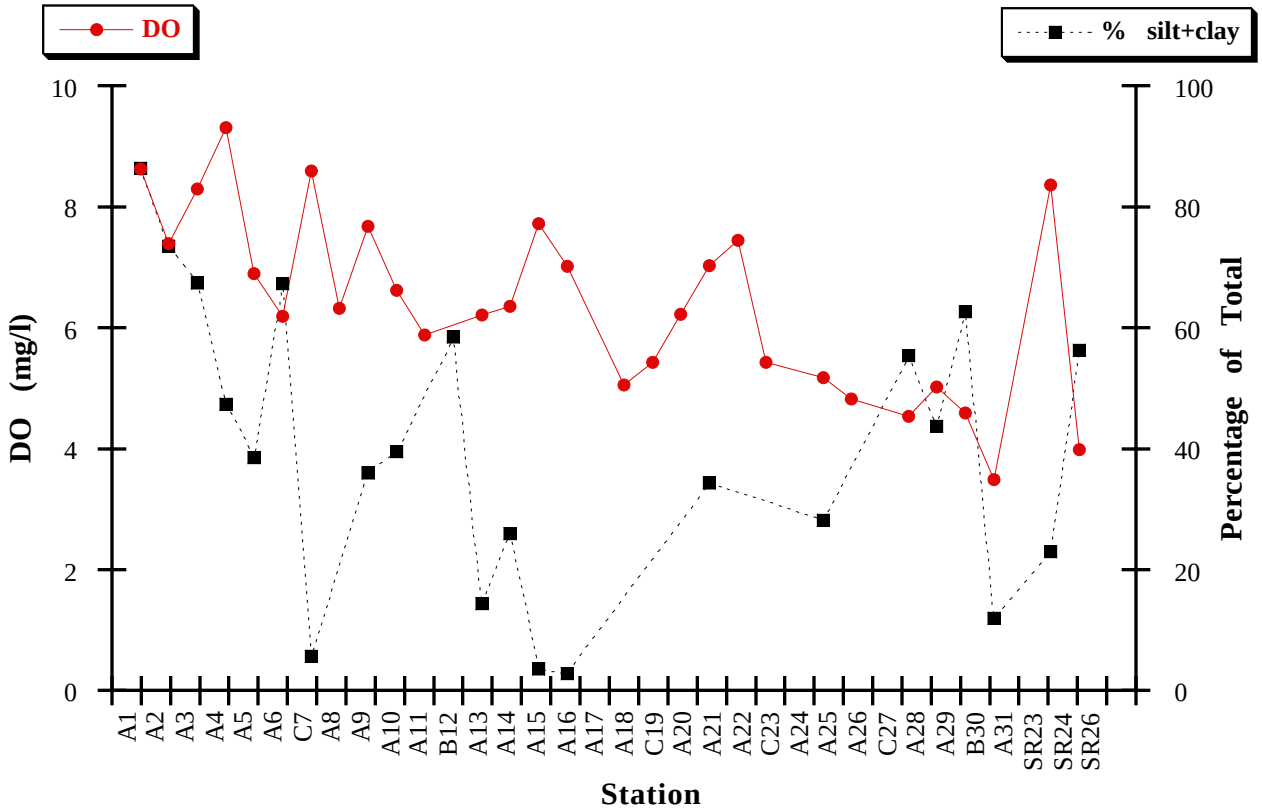
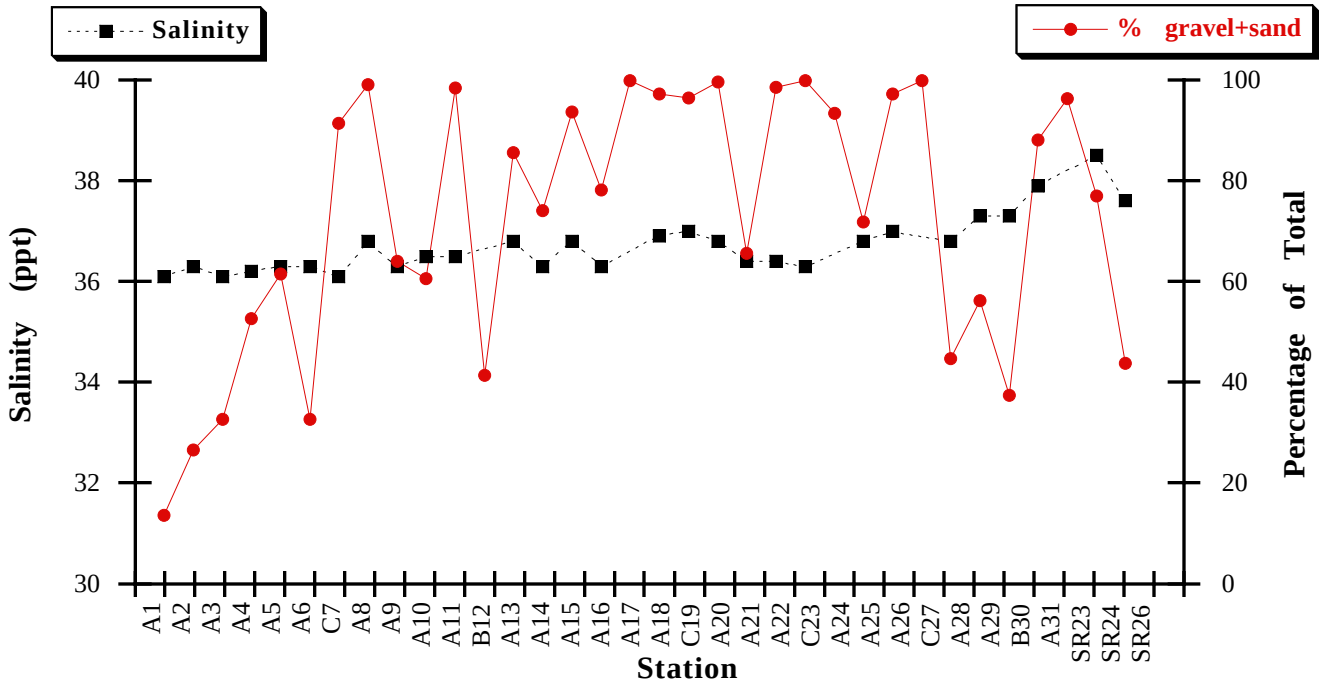


Figure 11. Salinity versus % gravel+sand and % silt+clay content of the sediment for the Florida Keys to Dry Tortugas stations, July 1997.



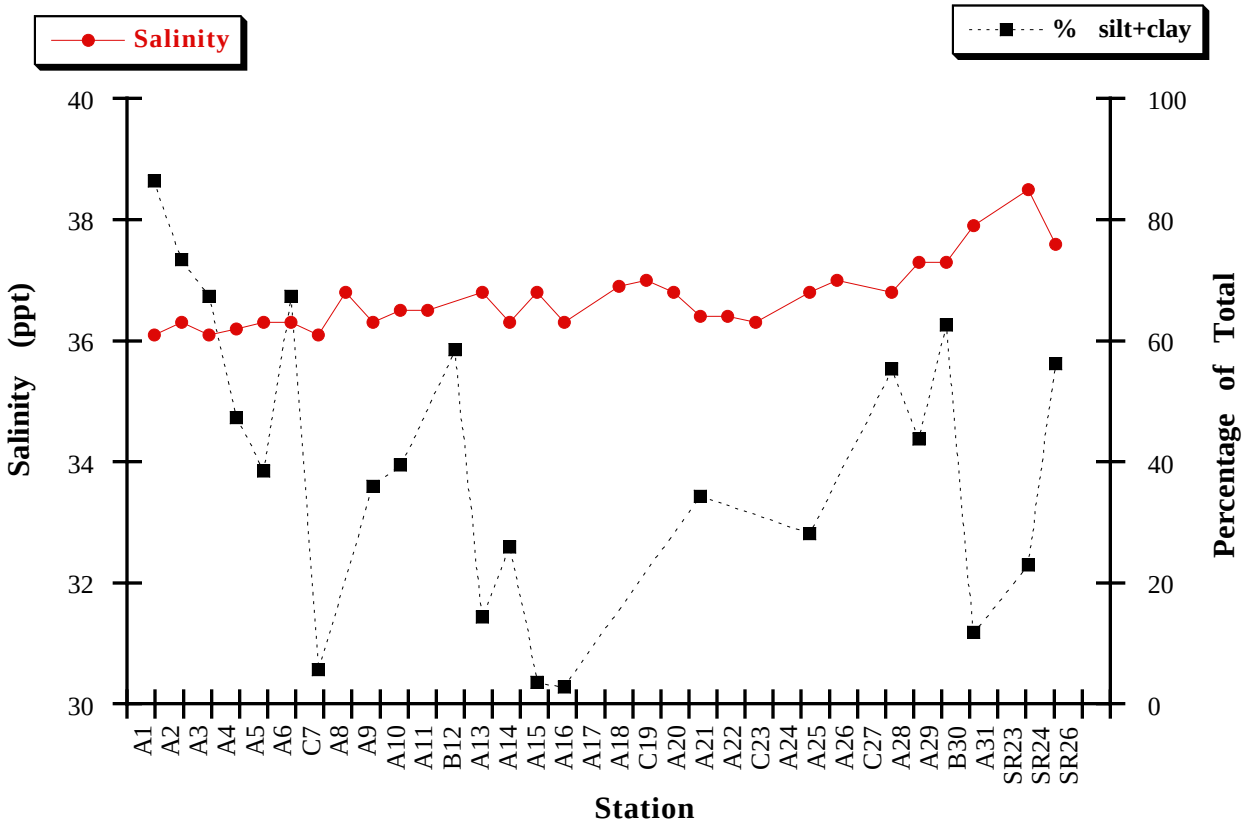
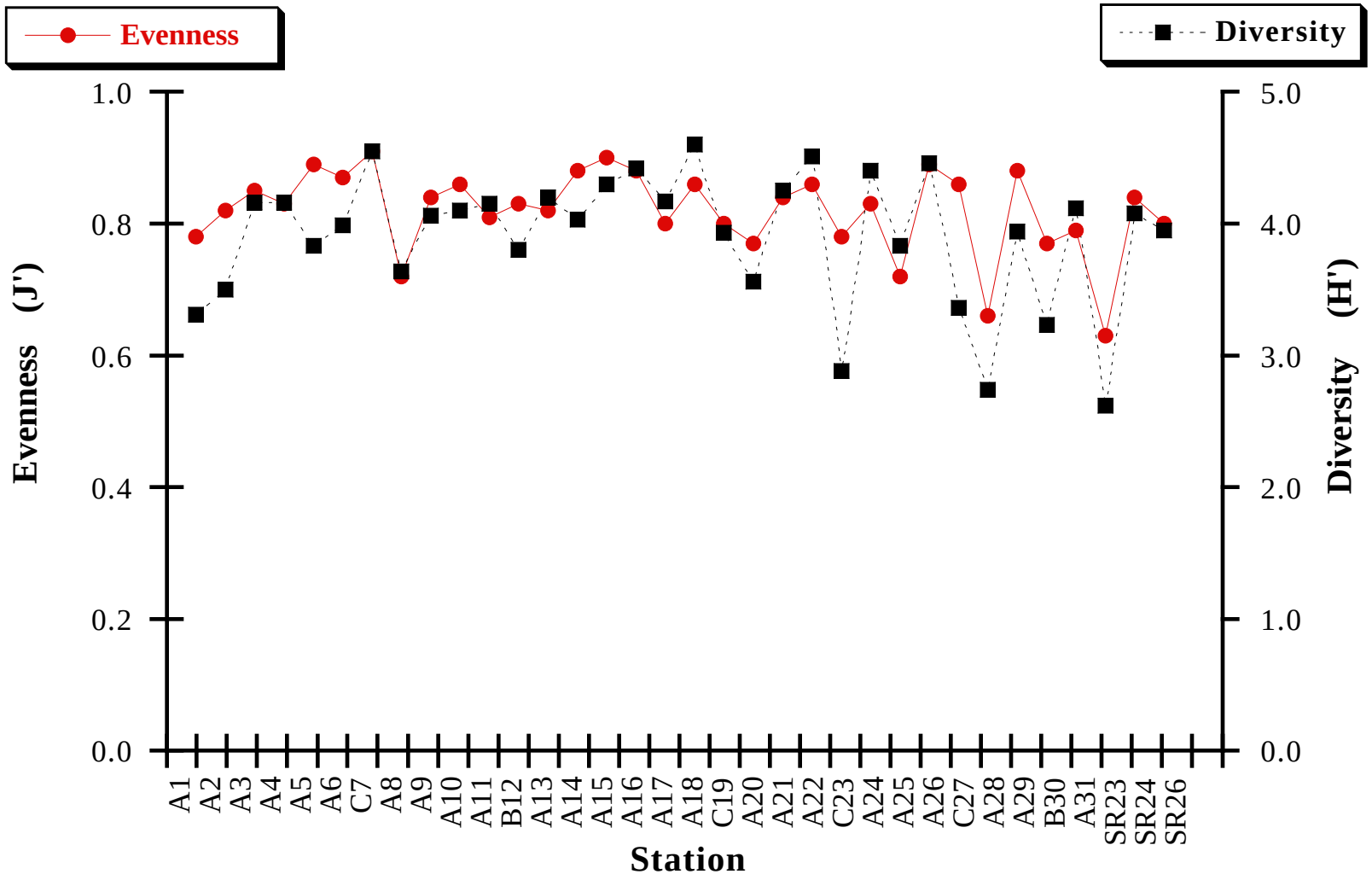


Figure 12. Taxa diversity (H') and evenness (J') for the Florida Keys to Dry Tortugas stations, July 1997.



ranged from 2.62 at Station SR23 to 4.60 at Station A18 (Table 1, Figure 12). Taxa evenness (J) was also high with all stations but one (A28) having evenness values > 0.7; values ranged from 0.66 at Station A28 to 0.91 at Station C7 (Table 1; Figure 12).

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 13 and 14). Selection of the species included in the analyses was based on a minimum representation of 0.40% of total individuals. Transformed density data for the 56 taxa selected were included in a matrix of station and species groups. These taxa accounted for 47.8% of the total macroinfaunal assemblage.

Cluster analysis of the 34 stations was interpreted at a six-group level. Stations C23 and C27 formed a single clusters; stations B12, A13 and C19 formed a unique cluster; stations A11, A17, A22 and A24 formed a station cluster; and stations A20, SR23, SR24, SR26 and A8 formed a unique cluster. The remaining stations made up two larger clusters (Figure 13). Cluster analysis of the 56 taxa at the 34 stations was interpreted at a six group level (Figure 14). *Diplodonta* (LPIL) and the Tellinidae (LPIL) made up single taxa clusters; *Lucina multilineata*, *Harbansus paucichelatus* and *Xenanthura brevitelson* made up a taxa cluster; and *Ischnochiton* (LPIL), *Anamaera hixoni* and *Ervilia concentrica* made up a unique cluster. The remaining taxa were distributed in two larger clusters (Figure 14).

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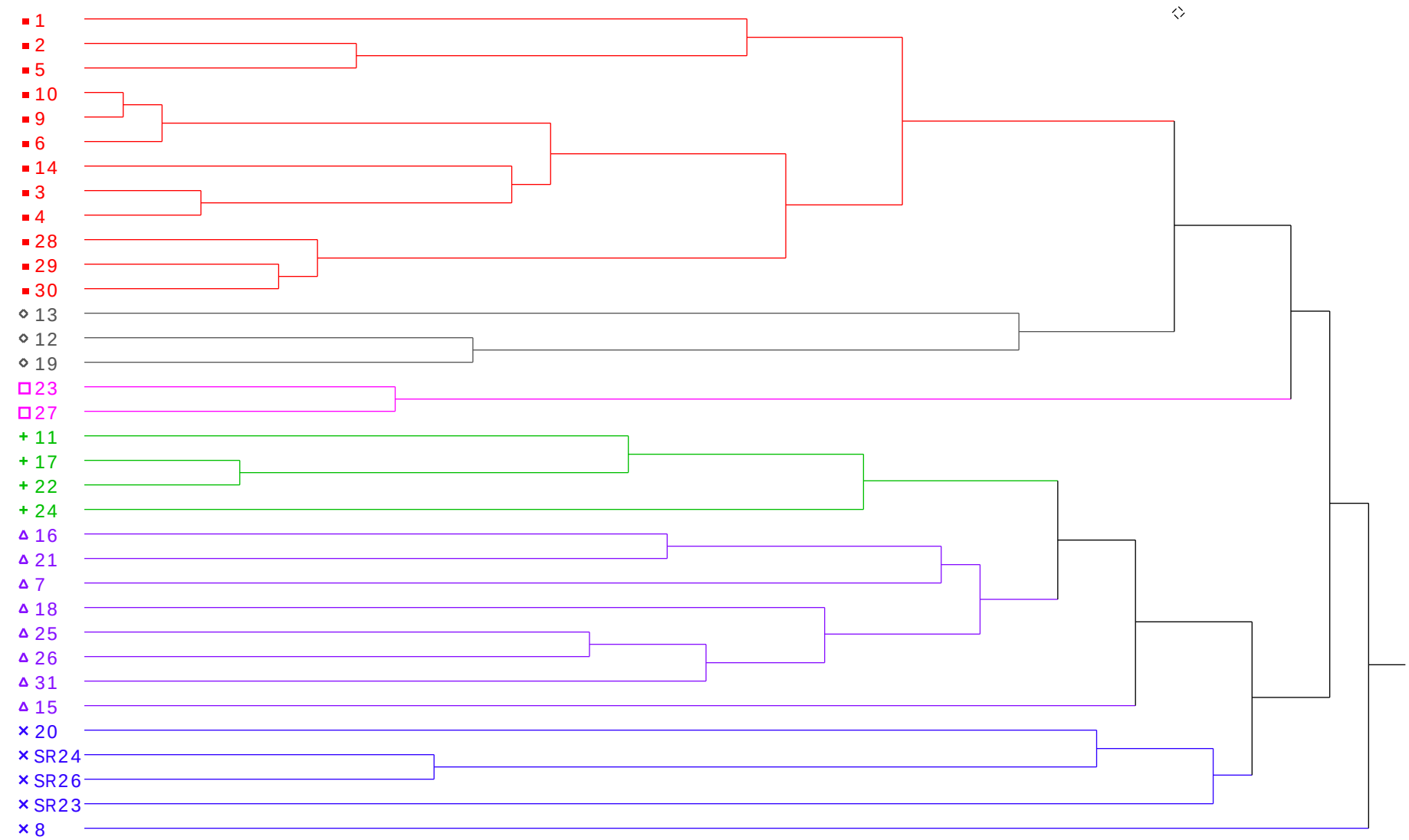
Figure 13. Station dendrogram from the cluster analysis for the Florida Keys to Dry Tortugas stations, July 1997.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SR24
SR26
SR23
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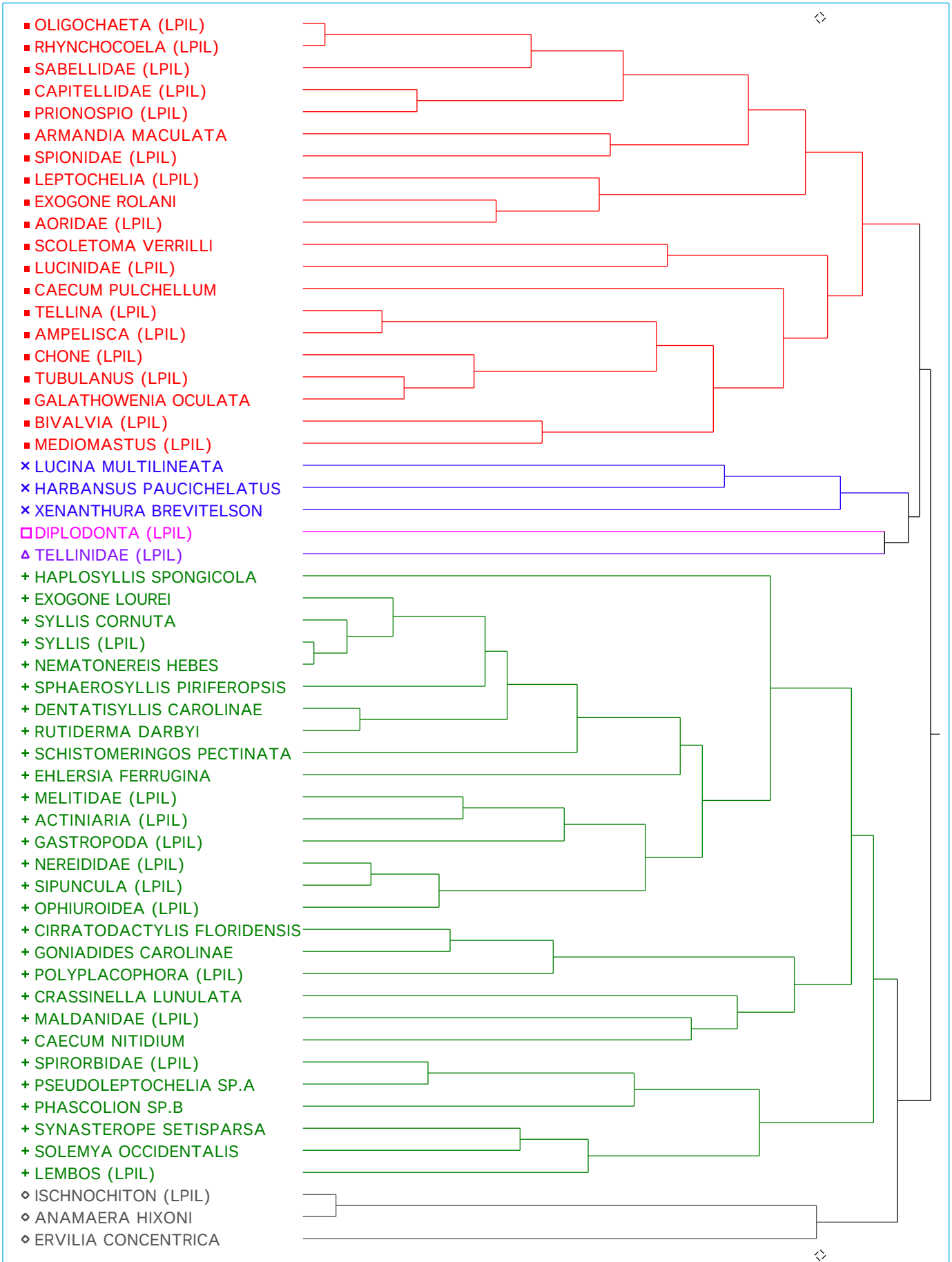
Figure 14. Taxa dendrogram from the cluster analysis for the Florida Keys to Dry Tortugas stations, July 1997.


OLIGOCHAETA (LPIL)
RHYNCHOCOELA (LPIL)
SABELLIDAE (LPIL)
CAPITELLIDAE (LPIL)
PRIONOSPIO (LPIL)
ARMANDIA MACULATA
SPIONIDAE (LPIL)
LEPTOCHELIA (LPIL)
EXOGONE ROLANI
AORIDAE (LPIL)
SCOLETOMA VERRILLI
LUCINIDAE (LPIL)
CAECUM PULCHELLUM
TELLINA (LPIL)
AMPELISCA (LPIL)
CHONE (LPIL)
TUBULANUS (LPIL)
GALATHOWENIA OCULATA
BIVALVIA (LPIL)
MEDIOMASTUS (LPIL)
LUCINA MULTILINEATA
HARBANSUS PAUCICHELATUS
XENANTHURA BREVITELSON
DIPLODONTA (LPIL)
TELLINIDAE (LPIL)
HAPLOSYLLIS SPONGICOLA
EXOGONE LOUREI
SYLLIS CORNUTA
SYLLIS (LPIL)
NEMATONEREIS HEBES
SPHAEROSYLLIS PIRIFEROPSIS
DENTATISYLLIS CAROLINAE
RUTIDERMA DARBYI
SCHISTOMERINGOS PECTINATA
EHLERSIA FERRUGINA
MELITIDAE (LPIL)
ACTINIARIA (LPIL)
GASTROPODA (LPIL)
NEREIDIDAE (LPIL)
SIPUNCULA (LPIL)
OPHIUROIDEA (LPIL)
CIRRATODACTYLIS FLORIDENSIS
GONIADIDES CAROLINAE
POLYPLACOPHORA (LPIL)
CRASSINELLA LUNULATA
MALDANIDAE (LPIL)
CAECUM NITIDIUM
SPIRORBIDAE (LPIL)
PSEUDOLEPTOCHELIA SP.A
PHASCOLION SP.B
SYNASTEROPE SETISPARSA
SOLEMYA OCCIDENTALIS
LEMBOS (LPIL)
ISCHNOCHITON (LPIL)
ANAMAERA HIXONI
ERVILIA CONCENTRICA

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: 1997 Florida Keys - Dry Tortugas

Work Assignment Number: FE-97-16-FB Task Number: 3

Description of Data Set or Deliverable: 102 Benthic macroinvertebrate samples collected in July and 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 QC results follow (see attachment). All taxonomic data were entered into computer and printed. This list was checked for accuracy against original taxonomic data sheets.

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

_____

Signature of QA Officer or Reviewer Date

_____

Signature of Project Manager Date

QUALITY CONTROL REWORKS

Client/Project: NOAA

Work Assignment Title: FE-97-16-FB Task Number: 3

Sorting Results:

Sample #	% Accuracy
A10-003	100%
A28-001	100%
A4-002	100%
A3-003	100%
A5-003	100%
A10-001	100%
A13-001	98%
A5-002	100%
A2-001	100%
A10-002	100%
A1-001	100%

Taxonomy Results:

Sample #	Taxa	% Accuracy
C27-003	Crust./Moll.	100%
SR26-001	Crust./Moll.	95%
A8-002	Crust./Moll.	97%
C23-002	Crust./Moll.	100%
A17-003	Crust./Moll.	96%
A9-002	Crust./Moll.	96%
A20-002	Crust./Moll.	97%
C23-003	Crust./Moll.	96%
A18-001	Crust./Moll.	96%
A5-003	Crust./Moll.	100%
SR23-001	Poly./Misc.	98.8%
C23-001	Poly./Misc.	96.3%
A8-002	Poly./Misc.	98.4%
SR23-002	Poly./Misc.	95.3%
A1-003	Poly./Misc.	100%
A9-001	Poly./Misc.	100%
A16-003	Poly./Misc.	97.7%
A22-002	Poly./Misc.	97.6%
A25-002	Poly./Misc.	97.9%

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

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Signature of QA Officer or Reviewer Date