INFAUNAL MACROINVERTEBRATES OF THE CHARLOTTE HARBOR ESTUARINE SYSTEM AND SURROUNDING INSHORE WATERS, FLORIDA

By Ernest D. Estevez

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INFAUNAL MACROINVERTEBRATES OF THE CHARLOTTE HARBOR ESTUARINE SYSTEM AND SURROUNDING INSHORE WATERS, FLORIDA

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ABSTRACT

The Charlotte Harbor estuarine system is situated between the mouths of the Myakka, Peace, and Caloosahatchee Rivers and coastal barrier islands. Most of the area is shallow (less than 2 meters) and the predominant benthic environment is sandy and unvegetated.

A total of 25 intertidal and subtidal stations were sampled during two seasons (May-June and September) in 1980 for benthic infauna, sediment, and hydrographic parameters. Nearly all the 48,513 specimens other than nemerteans, nematodes, and oligochaetes were identified to species.

Bottom sediments were similar throughout the area, except at inlets where they were coarser and at upper river stations where they were more organic. Bottom salinity and dissolved oxygen increased along a gradient toward the south and west, especially in September. Species number increased along the same gradient, but densities were highest at river mouths and Pine Island Sound (May-June) or in coastal Charlotte Harbor (September). The middle harbor is a transitional area along the gradient. It is affected by stratification and near-anoxic bottom conditions. Six subsystems had characteristic hydrographic and faunal features that portray the system as an integrated, rather than sharply subdivided, environment. Seasonal trends within and among subsystems were evident, but not extreme, due to relatively dry conditions in 1980.

INTRODUCTION

Estuaries are complex transitional ecosystems between oceanic and riverine environments, noted for their high productivity of sport and commercial fisheries. In addition, estuaries provide a unique and essential habitat for a wide range of plants and animals. Estuaries of the Florida west coast are facing increased development pressure and have become the center of several resource management controversies. Data needed for effective resource management are lacking for many Florida estuaries.

The Charlotte Harbor estuarine system is facing potential environmental problems because of projected large population growth in its basin. The Governor of Florida established a committee composed of local, regional, and State agencies to recommend the course of action that Florida should take in planning for this growth. The committee, through its Technical Advisory Committee (TAC), asked the U.S. Geological Survey to prepare a proposal and a plan of study for a comprehensive environmental assessment of the area. The Survey, in cooperation with the TAC, prepared the proposal in 1980 and the plan of study in 1981. Based on these documents and subsequent meetings, the Survey began a multidiscipline, 7-year study of the basin and estuarine system in 1982.

Purpose and Scope

The overall objective of the Survey study is to describe existing conditions and evaluate the impact of future development on water-related resources of the estuarine system. Central to the objective is the relation between hydrodynamics and water quality. This report addresses one aspect of the study objective--to evaluate the macroinvertebrate infauna of soft bottom environments of Charlotte Harbor and surrounding inshore waters. The report describes the sampling approach and results from a reconnaissance of macroinvertebrate infauna performed in 1980 by the Mote Marine Laboratory (MML). This compilation and analysis was undertaken by MML in cooperation with the U.S. Geological Survey and the Florida Department of Environmental Regulation. Specific objectives of the reconnaissance and report were:

1. To provide a listing of infaunal macroinvertebrates from soft bottom environments;
2. To assess the suitability of infaunal macroinvertebrate sampling methods;
3. To identify spatial and seasonal trends or patterns in benthic communitites and, where possible, relate these patterns to tidal locations, salinity, sediment type, and other environmental parameters.

The 1980 benthic project was limited to the infauna of unvegetated soft bottoms (for example oyster reefs and seagrass beds were not sampled).

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Study Area

Regional Physiography

The Charlotte Harbor estuary and connected inshore waters are formed by the drowned flood plains of three rivers and their associated coastal lagoons (fig. 1). Charlotte Harbor proper (excluding Matlacha Pass and Pine Island Sound) occupies an area of 493 km^2 at mean high water; total area of the Myakka, Peace, and coastal watersheds is about 8,550 km^2. Waters of Matlacha Pass and Pine Island Sound occupy 312 km^2 compared to their small coastal basin of 660 km^2. Pine Island Sound receives negligible drainage directly, whereas the indefinite area of "San Carlos Bay" is supplied by a 3,310 km^2 watershed (excluding Lake Okeechobee and its tributaries) (McNulty and others, 1972).

Regions drained by the three rivers into the study area are shown in figure 2. Most of the Charlotte Harbor area is within the Coastal Lowlands (Cooke, 1945) although the Myakka River heads in the Central Highlands region (Joyner and Sutcliffe, 1976), corresponding to the upper De Soto Plain of White (1970). The Peace River flows from the Polk Uplands and crosses the De Soto Plain before reaching Charlotte Harbor. The Caloosahatchee River originates on the western shore of Lake Okeechobee and is controlled by locks. Coastal areas lie entirely within the Pamlico Terrace (8 meters above sea level). Surface geology of the terrace is a coquinoid limestone with sand and clays although shell hash with limestone, silty sands, and clays are common on higher terraces (Puri and Vernon, 1964).

Land Use

Mean altitudes of Sarasota County (5.5 m), De Soto County (17.1 m), Charlotte County (0.9 m), and Lee County (2.1 m) illustrate the low, flat character of land around the harbor. Native upland vegetation is mostly pine flatwood, with interspersed pine-oak assemblages and grasslands and swamp forests in wet areas. In 1973 most land was used for grazing and farming. Total county area given to these uses in 1973 were: Sarasota, 62 percent; De Soto, 84 percent; Charlotte, 53 percent; and Lee, 36 percent (Barnett and others, 1980; French and Parsons, 1983).

The areas of urban lands in the region increased 2,490 percent between 1945 and 1982 (Harris and others, 1983). Punta Gorda and Fort Myers accounted for 61 percent of total urban lands whereas platted and cleared but unbuilt subdivisions accounted for the balance of urban land. Total population rose by nearly 600 percent in 26 years since 1950. With hundreds of thousands of undeveloped lots surrounding the harbor, another 0.5 to 1.5 million new residents are projected by 2020.

Climate

The study area has a humid, subtropical climate with long, warm, and moist summers and relatively dry winters. Winds are northerly in late fall and winter and southerly at other times. Windiest months are March and April.

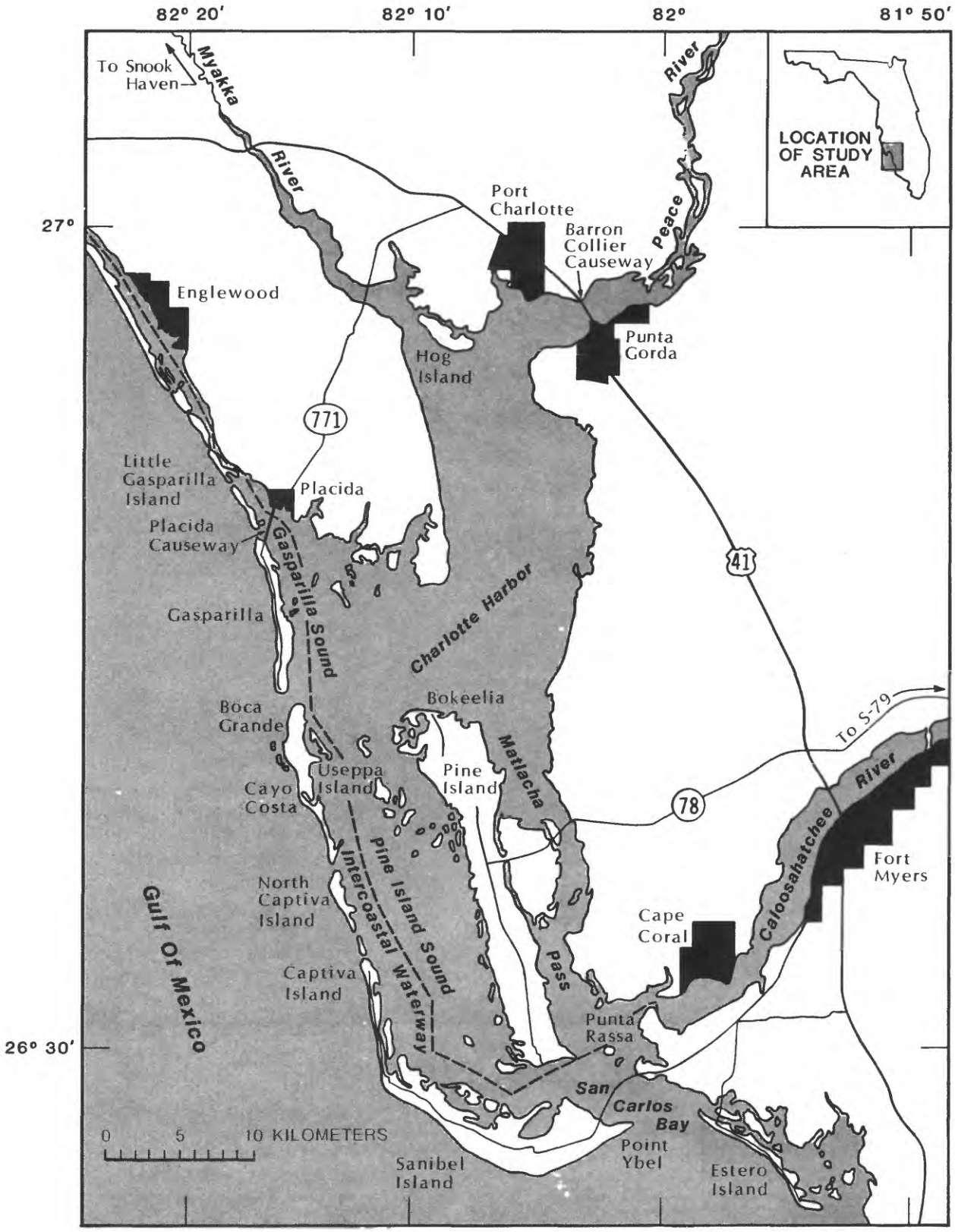

Figure 1.--Charlotte Harbor estuarine system, southwest Florida.

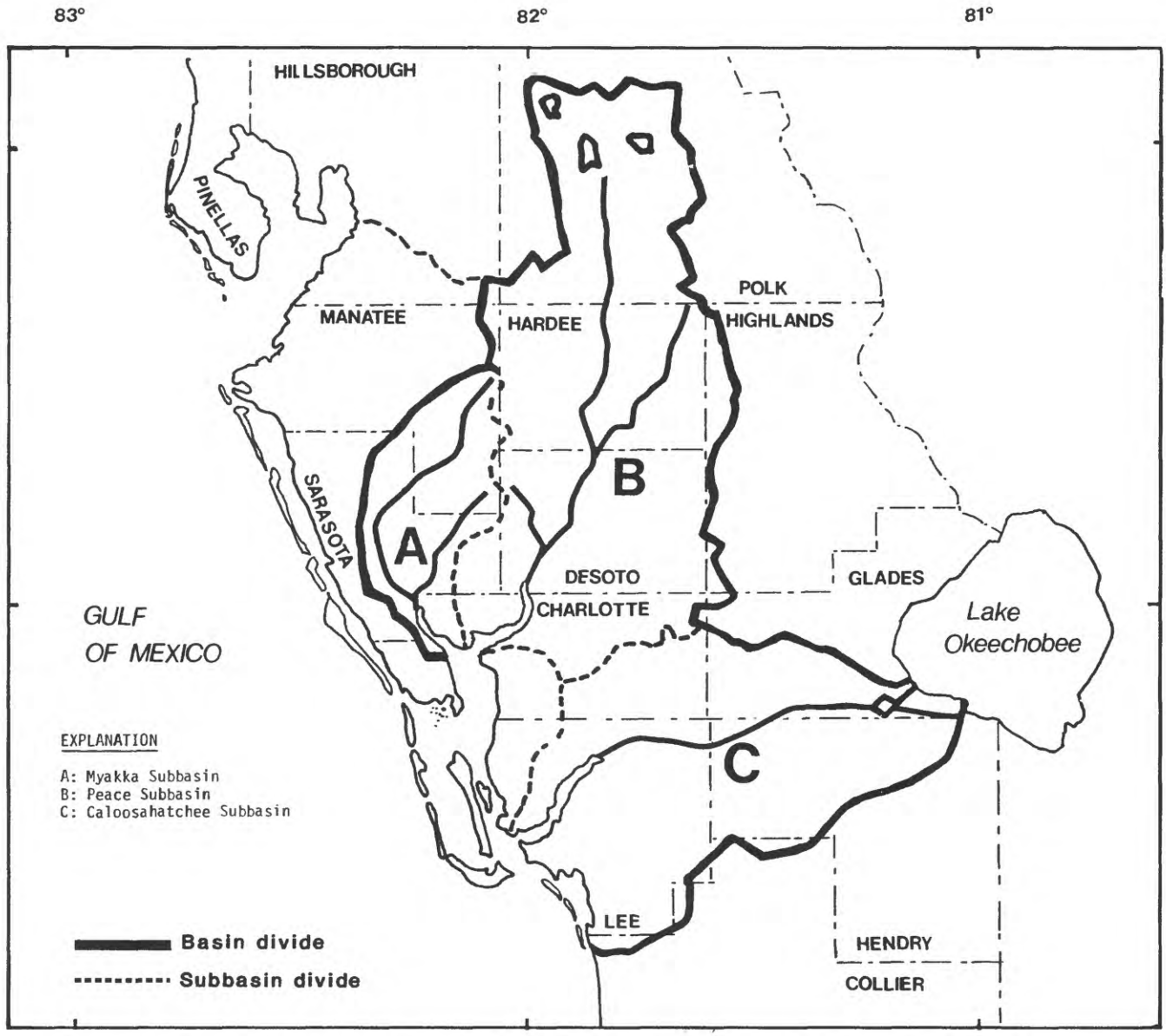

Figure 2.--Drainage basins of the Myakka, Peace, and Caloosahatchee Rivers in Florida

Mean monthly low temperature at Punta Gorda ranges from -1.1°C (January) to 16.9°C (August) and averages 7.6°C. Extreme low temperatures are infrequent; only six major freezes occurred from 1930 through 1979 (South Florida Water Management District, 1980). Temperature changes are most rapid in March through May and September through November. Maximum temperatures range from 30.5°C (January) to 38.0°C (July-August) at Punta Gorda and average 34.4°C. Relative to inland stations, coastal areas are warmer in winter and cooler in summer, by about 3°C.

Coastal sites also receive less rain than inland areas. Estevez (1981) described a 120 to 240 millimeter difference in mean annual rainfall across the long (northeast-southwest) axis of Charlotte Harbor. Between 130 and 155 mm of rain falls in the region per year (South Florida Water Management District, 1980), half during June through September. About 100 thunderstorms occur in the area each year; three-fourths occur from June through September

(Jordan, 1973). Rainfall during a typical water year in southwest Florida declines from October through January; a minor wet period may occur during February through April but May is frequently dry and rainfall increases from June through September. Five direct and 24 indirect hurricane strikes have occurred in or near the study area since 1900.

Hydrology

Discharges of the Myakka, Peace, and Caloosahatchee Rivers correlate closely to rainfall in their respective watersheds although timing of discharge in the Caloosahatchee River is affected by lock operations between Fort Myers and Lake Okeechobee.

Average discharge of the Myakka River is 7.2 m^3/s which reflects no-flow conditions for many days in some years; maximum recorded discharge is 246 m^3/s. Discharges from the Peace and Caloosahatchee Rivers into Charlotte Harbor and San Carlos Bay are much greater by comparison. Average discharge of the Peace River is 32.7 m^3/s with recorded extremes of 1.1 to 1,030 m^3/s. Discharge of the Caloosahatchee River near Olga averages 40.8 m^3/s (range 0.04-606 m^3/s). Figure 3 summarizes the average duration of flows for each river and illustrates (a) lockage effects on Caloosahatchee River discharges compared to Peace River discharge, (b) magnitude of differences between Peace and Myakka Rivers, and (c) frequency of very low discharges in Myakka River (Foose, 1983).

During the 1980 water year spring was relatively wet and summer relatively dry insofar as Myakka and Peace River flows were concerned. Flow data for water year 1980 are given by month for each river in table 1. Overall, the Myakka River contributed an average of about 5 percent of all three rivers' discharge to estuarine waters; the Peace River, 25 percent; and the Caloosahatchee (to San Carlos Bay), 70 percent. The Peace River contributed 80 to 85 percent of gaged discharges to Charlotte Harbor proper.

The relation of Peace River flows in water year 1980 to the previous 5 years is shown in figure 4, adapted from Environmental Quality Laboratory (1981). Peace River data reflect tributary flows to the estuarine study area in general and illustrate the amount of annual and seasonal variation that occurs in river discharge. Annual mean flow ranked 48th of 49 years of record and the 1980 wet season was driest since 1961, being less than half the mean flows of preceding wet seasons (Environmental Quality Laboratory, 1981).

Tides in Charlotte Harbor and adjacent waters are mixed diurnally and semi-diurnally and under ordinary conditions they do not exceed 90 centimeters. Lowest low and highest high tides occur in December through February and June through August, respectively. Fastest tidal currents occur at Boca Grande where maximum flood and ebb speeds are about 1.13 and 0.46 m^3/s, respectively. Currents in Gasparilla Sound and lower Charlotte Harbor are dominated by tidal movements through Boca Grande. The tidal influence of Redfish Pass is limited to central Pine Island Sound. A tidal division in Matlacha Pass occurs in the narrows near State Road 78 bridge (Estevez, 1981).

Tidal effects occur inland to Snook Haven (Myakka River), several kilometers upstream of State Road 771 (Peace River), and the locks at S-79 (Caloosahatchee River). Tidal waters of the study area extend from barrier bars between Gasparilla and Estero Islands inland to U.S. Highway 41 (Myakka River), Interstate 75 (Peace River), and Punta Rassa (Caloosahatchee River).

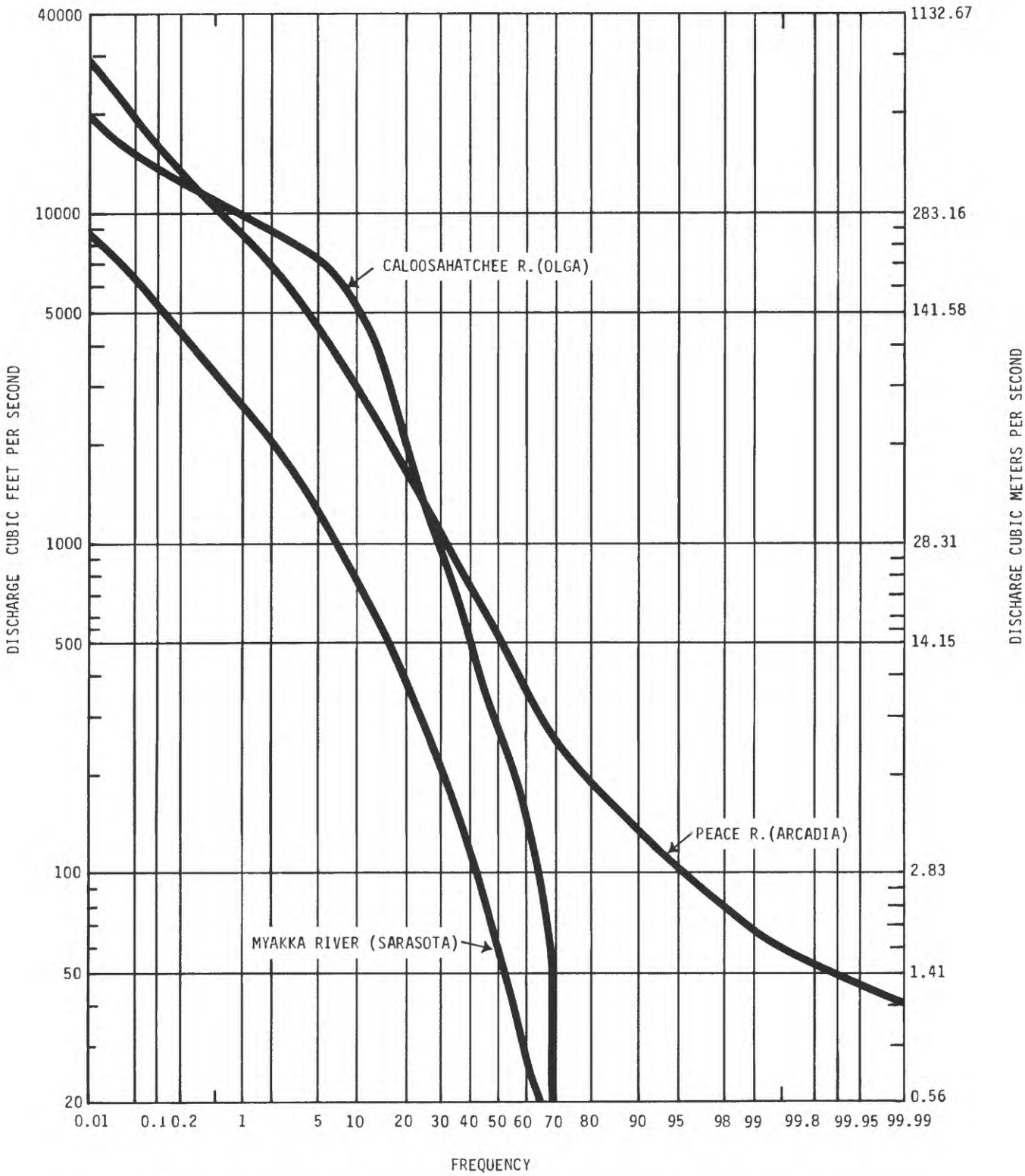

Figure 3.--Frequency distribution of river discharges to the study area (Data from Foose, 1983).

Table 1.--Discharge of the Myakka, Peace, and Caloosahatchee Rivers for water year 1980

[Data from U.S. Geological Survey, 1981]

Date	Mean monthly discharge, cubic meters per second			Combined monthly totals, cubic meters	Contributions to Charlotte Harbor, percent of total		
	Myakka River	Peace River	Caloosahatchee River		Myakka River	Peace River	Caloosahatchee River
			1979				
October	21.6	84.7	168.1	8,481	8	31	61
November	2.4	1.2	34.5	1,387	5	20	75
December	1.2	10.7	33.2	1,398	3	24	74
			1980				
January	.9	11.6	71.0	2,590	1	14	85
February	5.0	19.5	127.6	4,311	<1	13	87
March	5.4	16.2	88.0	3,230	<1	16	84
April	4.8	32.5	93.4	3,918	4	25	71
May	2.6	14.3	48.2	2,018	4	22	74
June	2.8	15.2	17.4	1,060	8	43	49
July	1.8	14.7	15.0	976	6	47	48
August	3.0	14.4	33.4	1,573	6	28	66
September	12.3	16.2	51.6	2,403	15	20	64

Shoreline and Subtidal Environment

Most tidal waters in the region are unstratified, however, upper and middle Charlotte Harbor are vertically stratified during most wet seasons and depending on discharge of the Peace River can have surface salinities near zero as far seaward as Boca Grande (Alberts and others, 1970; Environmental Quality Laboratory, 1981). Salinity in central harbor areas ranges from 0 to 36 parts per thousand (°/oo) and can reach 40 °/oo in tidal creeks and ponds. Taylor (1974) gave summary data for three estuarine areas of the region:

Parameter	Charlotte Harbor Mean	Charlotte Harbor Range	Pine Island Sound Mean	Pine Island Sound Range	San Carlos Bay Mean	San Carlos Bay Range
Salinity, °/oo	28.6	20.0-34.2	34.3	28.5-36.2	32.6	25.5-36.2
Temperature, °C	24.7	16.5-30.9	25.5	19.7-31.2	25.4	19.7-31.6
pH, standard units	7.8	7.3- 8.1	8.0	7.6- 8.3	8.1	7.8- 8.3
Dissolved oxygen, mg/L	4.3	3.4- 5.2	4.1	2.8- 4.9	4.4	3.7- 5.3

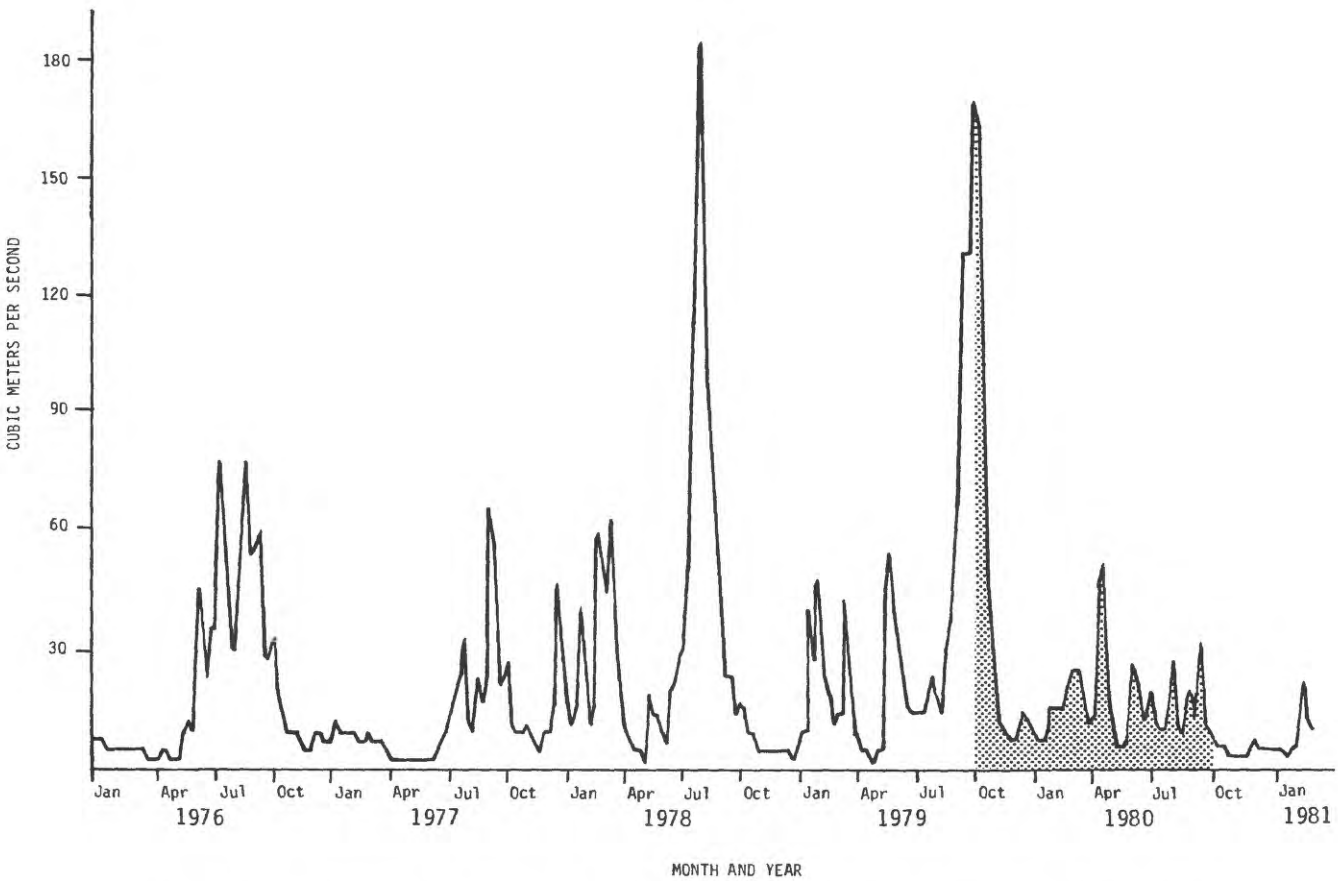

Figure 4.--Seven-day average discharge of the Peace River at Arcadia, January through March 1981, and the 1980 water year (shaded).

Four shoreline types occur in the area: (1) riverine shores are low, narrow to broad, and vegetated by black needlerush (*Juncus roemerianus*) marshes interspersed with mangroves or leather fern (*Acrostichum danaeifolium*); (2) estuarine shores are either beaches or wetlands, primarily forests of black mangrove (*Avicennia germinans*) or red mangrove (*Rhizophora mangle*); (3) forests are separated from open water by low berms, and are narrow to broad; and (4) barrier beaches are narrow unvegetated shores of moderate slope exposed to the Gulf of Mexico, or on inlets between islands.

Much of the shoreline and bathymetry of Charlotte Harbor and surrounding waters is structurally intact. Alterations have been made in some areas, however, where shorelines were filled for development of causeways or where canals were dredged. The Intracoastal Waterway traverses Gasparilla and Pine Island Sounds and enters the Caloosahatchee River. Emergent and submerged spoil border the Intracoastal Waterway (Harris and others, 1983; National Oceanic and Atmospheric Administration, 1981). Also, dredging of oyster shell near Bokeelia and Punta Rassa has altered bathymetry (Whitfield, 1975).

Most of the subtidal parts of Charlotte Harbor are shallow and level (fig. 5). Depths to about 4 meters occur in the upper and middle harbor. A maximum depth of 15.5 meters occurs at one location in Boca Grande. Anoxic or near anoxic conditions occur near the bottom in deep (>3 m) areas of the upper and middle harbor but not near the coast (Fraser, 1981).

Unvegetated sandy bottoms are the most common benthic environment of the Charlotte Harbor estuarine system and adjacent inshore waters. Sediments of the area are structurally intact and relatively free of contaminants, except near residential canals and marinas (Van Vleet and others, 1984).

Mud flats, oyster reefs, and seagrass beds are the dominant intertidal and subtidal bottom types within the study area. Oyster reefs are most abundant in upper Charlotte Harbor, Gasparilla Sound, and the lower Caloosahatchee River-San Carlos Bay areas. Although not studied in Charlotte Harbor or adjacent inland waters, the fauna of oyster reefs typically are diverse and abundant (Wells, 1961). Seagrasses include widgeongrass (*Ruppia maritima*), manatee grass (*Syringodium filiforme*), shoalgrass (*Halodule wrightii*) and turtle grass (*Thalassia testudinum*). The diversity and abundance of seagrass fauna depend on grass species and luxuriance of bed growth, among other factors (Stoner, 1980). Most grassbeds and live oyster reefs occur in shallow water (less than 2 m) although relict reefs occur in deep water near Punta Gorda.

The Florida Department of Natural Resources (Harris and others, 1983) estimated the area of bottom types for the study area in 1945 and 1982:

Type	Area, in hectares		Percent change
	1945	1982	
Salt marsh	2,934	1,435	-51
Mangrove	20,851	22,918	+10
Unvegetated tide flat	4,535	1,102	-76
Oyster reef	326	197	-39
Seagrass beds	33,572	23,672	-29
Open water	116,873	126,548	+ 8

Salt marsh losses were attributed to development. Declines in nonvegetated tidal flats were ascribed to replacement by mangroves; reasons for oyster decline were unclear but estimates may be understated. Seagrass loss was greatest in the Captiva area (40 percent total study area decline) and was attributed to channelization (Harris and others, 1983). Overall, about 80 to 85 percent of the total study area in 1982 can be presumed to be a soft-bottom benthic environment.

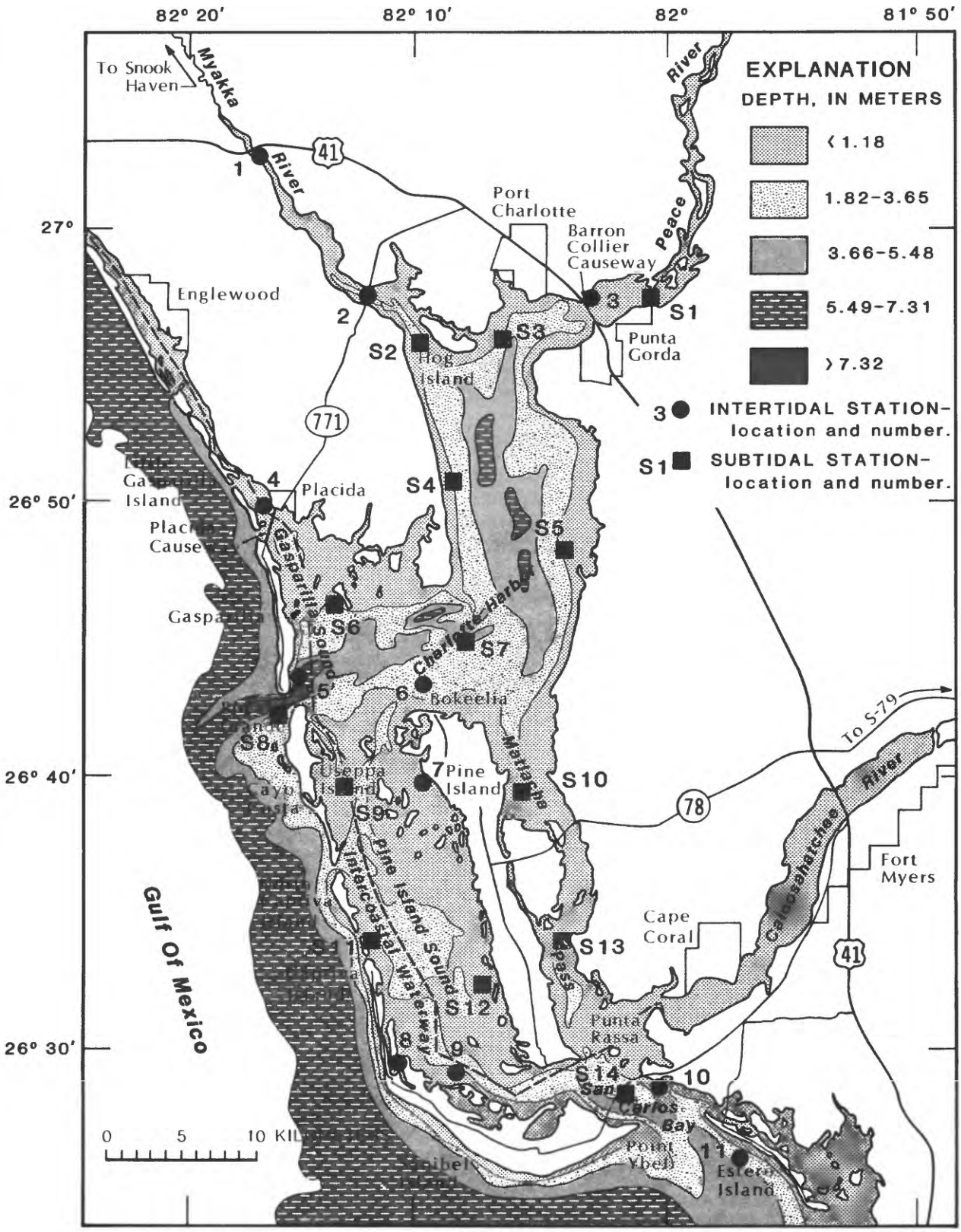

Figure 5.--Bathymetry and location of sampling stations.

Sediments

Sediment origins, transport, and character in tidal waters of the area were described by Huang and Goodell (1967). Soils of the region are better termed surficial sediments owing to their recency and lack of structure. Most are sandy or organic, acidic and marine, and occur in subtidal areas as a mantle 3 meters thick. Marine sediments are quartz sand and carbonate shell mixtures. Sediments are dominated by quartz (greater than 50 percent) except in Boca Grande Pass and areas south of Sanibel Island. Quartz sands originated from Quaternary terraces around the estuaries. Because the rivers run at low grade, they transport more fine than sand-sized sediments downstream, although sediments in tidal areas are predominantly sand-sized. Detrital carbonate shell constitutes the gravel-sized deposits. Huang and Goodell (1967) stated of the area sediments that:

> Mean grain sizes range from 4.68 to -0.84 phi with an overall average of 2.01 phi. However, 90 percent of the means fall between 1.5 to 3.5 phi units***In Charlotte Harbor proper grain size decreases headward; while in the San Carlos Bay area, size decreases south to Sanibel Island***much coarser sediments are present in the deeper channels. Although the percentage of sand decreases on the west or seaward side of the harbor, the mean grain size increases because of the addition of shell gravel.

They also observed that sorting improved regionally from the northwest of the harbor mouth, and decreased from the head to the mouth of the San Carlos Bay. Sediments in channels and the harbor head near Punta Gorda were poorly sorted.

Huang and Goodell (1967) identified montmorillonite, kaolinite, illite, attapulgite, and zeolite among the clay minerals. Montmorillonite is most abundant in the harbor head, the central harbor, and offshore San Carlos Bay, particularly in channels. Among carbonate minerals, magnesium calcite, aragonite, and dolomite are present in sediments of the study area. Aragonite is lowest concentration at the harbor mouth whereas dolomite, which increases with the silt content of sediments, is more common in Charlotte Harbor proper than in San Carlos Bay. Overall carbonates vary from 0.64 percent in the Peace River to 93.87 percent in tidal channels; a general decrease of carbonates was seen with increasing depth. Minerals comprised of phosphates appear on shores and in channels as coarse sand to dark granular sediments, or in shallows, as dark medium sand or silt. Highest concentrations of sedimentary phosphate occur in the central part of the harbor proper. Values for organic carbon range from 0.08 to 3.06 percent but 90 percent of samples are in the range of 0.1 to 1.0 percent. In general, organic carbon (as weight percent) decreases as depth or sorting increases. Organic nitrogen ranges from 0.01 percent to 0.25 percent and is distributed as is organic carbon, but the ratio of organic carbon to nitrogen appears to increase with depth. Total organic matter is about 1.0 percent in surface sediments and 0.7 percent at depths of about 30 cm (Huang and Goodell, 1967).

Previous Studies of Benthic Fauna

Taylor (1974) stated accurately, "To date, there has been no systematic study of invertebrates throughout the Charlotte Harbor region." This observation applies not only to invertebrates generally but to the most commonly studied ecological group of invertebrates, benthic forms. Godcharles and Jaap (1973) reported on molluscs and crustaceans larger than 1 cm, caught with dredges in Charlotte Harbor but not in lower Pine Island Sound, Matlacha Pass, or San Carlos Bay. All samples were taken in at least 3 meters of water. Texas Instruments (1978) used trawls and 5 Ponar grabs (0.52 m^2 each) at stations in upper Charlotte Harbor and the Peace River. Grabs were washed on 0.59 mm screens. Fauna were subsampled where taxonomic groups exceeded 200 individuals and identified to lowest practical levels, "usually genus." All samples were taken in 1976.

Environmental Quality Laboratory (1981) summarized results of quarterly samples at one station near station S-3 in Charlotte Harbor near Punta Gorda. Sampling began March 1976, using 5 Ponar grabs. Samples were washed on 0.59 mm screens. Over 20 consecutive quarters (to December 1980) number of taxa ranged from 3 to 33; density ranged from 14 to 299 individuals per 0.1 m^2; diversity (H') ranged from 0.51 to 2.77; and evenness (J') ranged from 0.43 to 0.99. No correlation of these or other indices was found with flow, temperature, salinity, or dissolved oxygen. The Environmental Quality Laboratory and the Florida Department of Environmental Regulation are also conducting invertebrate studies in the Peace and Myakka Rivers, and Charlotte Harbor, on selected taxa or with different gear and techniques.

In the southern part of the study area, Gunter and Hall (1965) collected large, epibenthic invertebrates by seine and trawl and found more species in Pine Island Sound and San Carlos Bay than the lower Caloosahatchee River. Applied Biology, Inc. (1976), collected benthic samples near an electric power station farther up the Caloosahatchee River. Specimens were identified to genera. The number of taxa per station ranged from 11 to 23; most stations had between 15 and 19 taxa. Densities were highest in April (1975) and lowest in July due to hydrographic conditions. Estevez (1981) summarized numerous other site- or taxon-specific studies in the area.

METHODS OF INVESTIGATION

Station Locations

Approximate station locations were established after a literature search and discussion with scientists familiar with the study area in order to cover a representative range of conditions. In the field, stations were situated on uniform, level bottom where possible. Seagrass beds, oyster reefs, and manmade channels were avoided. Subtidal stations were located in at least 2 meters of water if local conditions allowed. In most cases, a diver inspected the substratum of subtidal sites if the bottom was not visible from the surface. Final stations (11 intertidal, 14 subtidal) were located by adjusting their position for bearings of convenience to prominent landmarks. Positions were mapped in the field and final positions were determined by the U.S. Geological Survey. Station locations are shown in figure 5 and site data are given in table 2. Detailed site locations are available from the Mote Marine Laboratory.

Table 2.--Location and description of sampling stations

Station	Latitude	Longitude	Site description
1	27°02'39"	82°17'32"	Intertidal, 0.8 m; north bank Myakka River south of U.S. 41, behind trailer park near bridge.
2	26°57'17"	82°12'43"	Intertidal, 0.6 m; south bank Myakka River east of SR 771 bridge downstream of creek mouth.
3	26°57'02"	82°03'34"	Intertidal, 0.6 m; east bank of Barron Collier Causeway, north side of Peace River, 50 m from shore.
4	26°49'43"	82°16'15"	Intertidal, 0.6 m; west bank of Placida Causeway, east side of Gasparilla Sound.
5	26°43'07"	82°15'32"	Intertidal, 0.5 m; south end of Gasparilla Island between phosphate dock and pier.
6	26°42'23"	82°09'43"	Intertidal, 0.5 m; north end of Pine Island, 100 m offshore, across from post office.
7	26°39'38"	82°09'19"	Intertidal, 0.6 m; west side of Pine Island, 50 m west of historical marker at indian mound.
8	26°29'08"	82°10'52"	Intertidal, 0.5 m; sand bar east of bridge to Captiva Island. Pass fully closed on sampling dates.
9	26°28'27"	82°08'35"	Intertidal, 0.3 m; 50 m ENE of observation boardwalk, Stop 4.
10	26°29'03"	81°59'53"	Intertidal, 0.7 m; south shore, 180 m from easternmost bridge.
11	26°26'51"	81°56'47"	Intertidal, 0.7 m; 50 m below MHW mark.
S-1	26°57'39"	82°01'05"	Subtidal, 1.7 m; Green "15" in Peace River above Punta Gorda.
S-2	26°55'51"	82°11'06"	Subtidal, 2.6 m; Green "9" lower Myakka River.
S-3	26°55'51"	82°06'20"	Subtidal, 3.5 m; Red "2" between Punta Gorda and Hog Island.

Table 2.--Location and description of sampling stations--Continued

Station	Latitude	Longitude	Site description
S-4	26°51'26"	82°09'00"	Subtidal, 1.9 m; halfway between Green "5" and "7" central Charlotte Harbor, 175 m east of shore.
S-5	26°48'05"	82°03'47"	Subtidal, 2.0 m; NNE entrance to marina.
S-6	26°46'30"	82°14'30"	Subtidal, 2.2 m; near Green "7" (ICW) and Gasparilla Sound.
S-7	26°44'19"	82°10'04"	Subtidal, 3.2 m; red "4" between Pine Island and mainland, lower Charlotte Harbor.
S-8	26°42'30"	82°15'26"	Subtidal, 3.7 m; west of north end of Cayo Costa, south of lighthouse at Boca Grande.
S-9	26°39'43"	82°12'15"	Subtidal, 2.0 m; 200 m east of Useppa Island, upper Pine Island Sound.
S-10	26°39'16"	82°05'11"	Subtidal, 2.5 m; upper Matlacha Pass east of channel.
S-11	26°33'49"	82°11'25"	Subtidal, 1.7 m; between Red "42" and North Captiva Island.
S-12	26°31'50"	82°07'38"	Subtidal, 2.5 m; lower Pine Island Sound.
S-13	26°32'02"	82°03'57"	Subtidal, 3.0 m; lower Matlacha Pass.
S-14	26°27'53"	82°00'22"	Subtidal, 4.0 m; halfway between mainland and Sanibel Island, San Carlos Bay.

Sediments

Two cores were taken from undisturbed sediments at each station on each visit. Each 5-cm-diameter plug penetrated at least 10 cm and retrieved approximately 200 cm^3 of sample, which was transferred to a labeled container and stored on ice. At the laboratory, each plug was rinsed over a 0.063 mm sieve, dried at 100°C for 24 hours, shaken for 30 minutes in a 6-element nest of sieves (1 phi intervals), and weighed by fraction. Formulae and statistics for sediment characteristics at each station are provided in Supplementary Data I. The silt:clay fraction (0.063 mm) was centrifuged at 3,500 revolutions per minute (rpm) for 30 minutes, dried at 100°C for 72 hours, and

weighed. All weights were entered into SEDSTAT[1] software for standard granulometry analysis. Organic content was computed from at least 2 subsamples taken from each well mixed core before wet sieving. The subsamples were dried at 100°C to constant weight and weighed, ashed at 550°C for 60 minutes, and reweighed. Organic content was computed as percent loss in original weight for each subsample. A mean of subsamples values was recorded as the station value for organic content.

Hydrography

Depth was measured with a leadline. Temperature, conductivity, and dissolved oxygen were measured at the surface and bottom at subtidal stations and at middepth at intertidal stations. A YSI Model 57 SCT meter was used to measure temperature, conductivity, and salinity; a YSI Model 33 meter was used for dissolved oxygen.

Fauna

Intertidal samples of sediments were taken with 7.62 cm diameter cores to a depth of 15 cm. Cores were closed at the top with 0.5-mm-mesh screening. Five samples were taken (total sample area=0.114 m^2). Contents of the five cores were pooled and washed as one sample on a 0.5-mm-mesh sieve. Subtidal samples were taken with a petite Ponar grab sampler (0.022-m^2 area). Contents of five grabs were emptied into different buckets and washed as separate samples on a 0.5-mm-mesh sieve (total sample area=0.112 m^2).

Material left on the sieve was rinsed into a prelabeled jar. A 15 percent magnesium chloride ($MgCl_2$) solution (relaxant) was added to each jar, which was shaken and allowed to stand for 30 minutes. After decanting the relaxant, fixative (10 percent formalin in seawater) and stain (rose bengal) were added and the jar was reshaken.

At the laboratory, fixative was replaced with 70 percent isopropyl alcohol. Each sample was separated by agitation over a 0.5-mm sieve into light and heavy fractions for sorting. Heavy fractions were pan sorted and light fractions were sorted under a stereozoom dissection microscope. Sorted fauna from both fractions were combined in labeled vials containing 70 percent isopropyl alcohol and later identified and enumerated to the lowest practical identification level, usually species.

Sampling Dates

Subtidal stations were sampled on May 15, 1980. Intertidal samples were collected on June 16, 1980, and both environments were resampled on September 16, 1980. May and June samples were made 1 to 4 days after a new moon. In September the moon was entering its first quarter. On May and September sampling dates, tides were semidiurnal with high tides occurring around dawn and in the early to late afternoon. On the June date, tides were diurnal; a high tide in mid to late afternoon was followed by a low tide at about midnight.

[1]*The use of brand names in this report is for identification only and does not constitute endorsement by the U.S. Geological Survey.*

RESULTS

Sediments

For all samples combined (N=50) most (72 percent) had fine sands (<3 phi) and only 6 percent had very fine sands (<4 phi). Another 10 percent had coarse sand to gravel. Half of all stations had poorly sorted to moderately sorted sediment (sigma phi, 0.71-2.00) and the remaining stations were moderately well sorted (0.50-0.71). Moreover, 44 percent of all samples were nearly symmetrical relative to skewness (S_k=-0.1-0.1) and most of the remainder (32 percent) were skewed toward coarser particles. The majority of all samples had less than 1 percent silt-clay and combustible organics. Of all samples, 77 percent had less than 2 percent silt-clay and 88 percent had less than 2 percent organic carbon.

In September, subtidal sediments were coarsest near Boca Grande and finest in lower Pine Island Sound. Intertidal sediments were finest in upper Charlotte Harbor and along the western shore of Pine Island Sound. Intertidal organic content was low (1.0 percent) throughout the study area except for upper Gasparilla Sound. Subtidal organic content in September was highest off Punta Gorda, followed by sites near Boca Grande. Lower river areas and lower Pine Island Sound had moderate amounts (0.5-1.0 percent) of organic matter.

Subtidal stations 7 and 12 had highest and lowest mean grain sizes, respectively, of all stations sampled in September. Station S-7 sediments were also strongly skewed toward finer particles. Sediments skewed toward coarse particles included Blind Pass (station 8) and San Carlos Bay (station S-14), which were also more poorly sorted than sediments elsewhere. Best sorted sediments were at stations 2 and S-4 along the western shore of Charlotte Harbor. Station S-4 sediments had lowest organic contents and S-8 (Boca Grande) had fewest silt-clay particles.

Hydrography

Transformations and corrected data for on site observations at each station are provided in Supplementary Data II. Water temperature ranged from 25.5 to 29.0°C overall; salinity, 4.1 to 34.0 °/oo; and dissolved oxygen, 2.6 to 7.4 mg/L. Table 3 summarizes hydrologic data.

Mean salinity in open surface waters fell from 27.6 °/oo to 21.3 °/oo during May through September despite the relatively wet spring and dry summer. Mean bottom salinity was slightly greater than mean surface salinity (23.8 °/oo versus 21.3 °/oo, respectively) in September when intertidal and subtidal sampling coincided. Dispersion about salinity means was greater than for other parameters (standard deviation to 40 percent).

Intertidal dissolved oxygen fell significantly (student t test; $p < 0.05$) from June through September. Open surface waters contained more dissolved oxygen than deeper water by about 0.5 mg/L in May-June and 1.0 mg/L in September. Intertidal and bottom means were similar. Mean temperatures and salinities of intertidal and bottom waters also were very similar in September.

Table 3.--Summary of water-quality data

Parameter	Intertidal (mid-depth)		Subtidal (surface)		Subtidal (bottom)	
	June 1980	September 1980	May 1980	September 1980	May 1980	September 1980
Temperature						
Mean, degrees Celsius	26.0	28.4	27.5	29.1	27.2	28.6
Standard deviation						
Degrees Celsius	.3	.3	.7	.5	.7	.3
Percent of mean	1.1	1.0	2.5	1.7	2.5	1.0
Salinity						
Mean, parts per thousand	23.3	21.3	27.6	21.3	27.9	23.8
Standard deviation						
Parts per thousand	6.5	8.6	5.7	7.7	5.4	5.7
Percent of mean	27.9	40.3	20.6	36.1	19.3	23.9
Dissolved oxygen						
Mean, milligram per liter	6.0	4.6	6.3	5.6	5.8	4.6
Standard deviation						
Milligram per liter	1.4	.4	.4	1.0	.6	1.0
Percent of mean	23.3	17.3	6.3	17.8	10.3	21.7

Since intertidal salinity and dissolved oxygen data had comparable variability they were combined with bottom values to produce a composite description of hydrographic conditions (fig. 6). Bottom salinity was highest in Boca Grande Pass and San Carlos Bay. Gasparilla Sound and most of Pine Island Sound had 25 to 30 ^{o}/oo at bottom; Matlacha Pass had lower salinities. Bottom salinity fell to 5 ^{o}/oo in the Myakka and Peace Rivers, at or before stations 1 and S-1, respectively. Means of dissolved oxygen at bottom were low (<3.5 mg/L) in the Myakka River and between 3.5 and 4.0 mg/L for lower Peace River, upper Charlotte Harbor, and Gasparilla Sound. Highest mean values (>5.5 mg/L) were in San Carlos Bay and lower Pine Island Sound.

Fauna

A total of 546 species representing 15 phyla were collected during the study period (table 4). Annelida (polychaete worms) were most common (197 species), followed by Mollusca (gastropods, bivalves, and related forms; 156 species) and Arthropoda (crustaceans, 133 species; insects, 5 species). Ninety percent of all species were from these three phyla.

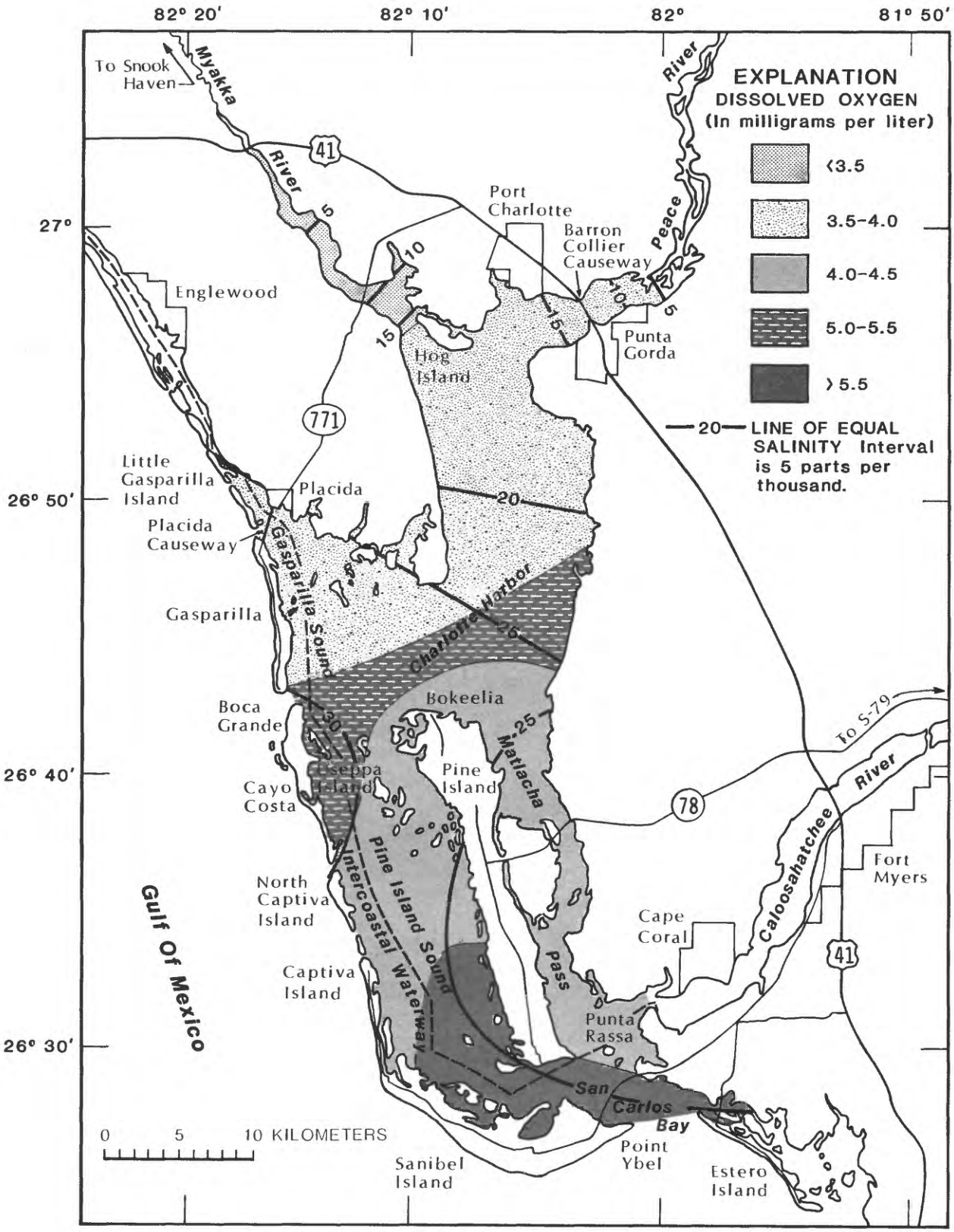

Figure 6.--Bottom salinity and dissolved oxygen, September 1980.

Table 4.--Master list of species

PHYLUM PORIFERA
Porifera spp.

PHYLUM CNIDARIA
Hydrozoa sp.
Hydroidea sp.
Anthozoa sp.
Actinaria sp.
Athenaria spp.
Thenaria spp.

PHYLUM PLATYHELMINTHES
Platyhelminthes spp.
Polycladida sp.
Stylochus sp.
Euplana gracilis
Gnesioceros sp.
Prosthiostomum sp.

PHYLUM RYNCHOCOELA
Nemertina spp.

PHYLUM NEMATODA
Nematoda spp.

PHYLUM ANNELIDA
CLASS POLYCHAETA
Pseudohalosydna sp.
Pseudohalosydna sp.A
Polynoidae sp.
Polynoidae sp.B
Polynoidae sp.A
Malmagreniella sp.B
Grubeulepis augeneri
Pholoe sp.
Sthenelais boa
Sthenelais sp.A
Paleanotus heteroseta
Paramphinome sp.B
Phyllodoce arenae
Phyllodoce castanea
Phyllodocidae sp.A
Eteone heteropoda
Eteone laceta
Eulalia sanguinea
Paranaitis polynoides
Protomystides bidentata
Hesionidae sp.
Gyptis brevipalpa
Micropthalmus sczelkowii
Parahesione luteola
Podarke obscura
Ancistrosyllis hamata
Ancistrosyllis cf hamata
Ancistrosyllis hartmanae
Ancistrosyllis jonesi
Sigambra tentaculata
Sigambra bassi
Pilargidae sp.
Synelmis albini
Syllidae sp.D
Autolytus dentalius
Autolytus sp.A
Trypanosyllis sp.
Typosyllis sp.
Typosyllis cf lutea
Typosyllis sp.B
Exogone dispar
Exogone lourei
Exogone atlantica
Sphaerosyllis sp.
Sphaerosyllis glandulata
Sphaerosyllis taylori
Sphaerosyllis longicauda
Sphaerosyllis piriferopsis
Brania clavata
Ehlersia cornuta
Odontosyllis sp.
Odontosyllis enopla
Syllides sp.
Syllides floridana
Streptosyllis pettiboneae
Parapionosyllis sp.
Parapionosyllis longicirrata
Dentatisyllis carolinae
Plakosyllis quadrioculata
Nereidae sp.
Neanthes acuminata
Neanthes micromma
Neanthes succinea
Nereis falsa
Platynereis dumerilii
Laeonereis culveri
Nephtys simoni

Table 4.--Master list of species--Continued

Aglaophamus verrilli
Glycera sp.
Glycera americana
Hemipodus roseus
Glycinde solitaria
Goniadides carolinae
Onuphidae sp.
Onuphis sp.
Onuphidae sp.A
Diopatra sp.
Diopatra cuprea
Kinbergonuphis simoni
Mooreonuphis nebulosa
Mooreonuphis simoni
Mooreonuphis sp.A
Eunice vittata
Eunice websteri
Lumbrineris latreilli
Lumbrineris verrilli
Lumbrineris ernesti
Lumbrineris cf candida
Lumbrineris sp.D
Arabellidae sp.
Drilonereis longa
Arabella iricolor
Arabella mutans
Dorvilleidae sp.
Ophryotrocha sp.A
Schistomeringos rudolphi
Pettiboneia sp.A
Orbiniidae sp.
Leitoscoloplos sp.
Leitoscoloplos foliosus
Leitoscoloplos fragilis
Naineris sp.
Scoloplos sp.
Scoloplos rubra
Orbinia riseri
Aricidea sp.
Aricidea philbinae
Aricidea cf catherinae
Aricidea fragilis
Aricidea taylori
Aricidea sp.C
Cirrophorus lyra
Cirrophorus furcatus
Polydorid
Spionidae sp.
Apoprionospio pygmaea
Polydora sp.
Polydora socialis
Polydora ligni
Polydora websteri
Prionospio sp.
Prionospio heterobranchia
Prionospio pinnata
Prionospio cristata
Spio pettiboneae
Spiophanes bombyx
Pseudopolydora sp.
Paraprionospio pinnata
Streblospio benedicti
Dispio uncinata
Scololepis squamata
Scololepis texana
Aonides mayaguezensis
Minuspio sp.B
Minuspio cirrobranchiata
Carazziella hobsonae
Magelona pettiboneae
Poecilochaetus johnsoni
Spiochaetopterus costarum oculatus
Caulleriella sp.
Caulleriella sp.A
Tharyx sp.
Tharyx cf dorsobranchialis
Tharyx sp.A
Chaetozone sp.
Chaetozone setosa
Chaetozone sp.A
Cirriformia sp.
Cirriformia sp.A
Acrocirrus frontifilis
Ctenodrilus cirrata
Piromis roberti
Armandia maculata
Travisia hobsonae
Capitellidae sp.
Capitellidae sp.A
Capitella capitata
Capitella jonesi
Heteromastus filiformis
Notomastus latericeus
Mediomastus sp.
Mediomastus ambiseta
Mediomastus californiensis
Decamastus sp.A
Capitellidae Genus A

Table 4.--Master list of species--Continued

Arenicola cristata
Asychis elongata
Clymenella mucosa
Maldane cf sarsi
Axiothella mucosa
Owenia fusiformis
Myriochele oculata
Sabellaria vulgaris
Pectinaria gouldii
Ampharetidae spp.
Amphicteis gunneri
Melinna maculata
Isolda pulchella
Terebellidae sp.
Pista cristata
Pista cf quadrilobata
Polycirrus sp.
Loimia medusa
Amaeana trilobata
Streblosoma hartmanae
Sabellidae sp.
Chone sp.
Chone americana
Megalomma bioculata
Potamilla sp.A
Sabella melanostigmae
Fabricia sabella
Fabricia sp.A
Spirorbis corrugatus
Spirorbis spirillum
Hydroides dianthus
Hydroides protulicola
Questa caudicirra
Boguea enigmatica
Archiannelida sp.
Polygordius sp.
Oligochaeta spp.

PHYLUM MOLLUSCA
CLASS GASTROPODA
Gastropoda sp.
Neritina reclivata
Sayella fusca
Sayella hemphilli
Sayella crosseana
Vitrinellidae sp.
Cyclostremiscus pentagonus
Teinastoma sp.
Caecum sp.
Caecum pulchellum
Caecum imbricatum
Caecum strigosum
Caecum insularum
Batillaria minima
Diastoma varium
Cerithiidae sp.
Cerithium sp.
Cerithium muscarum
Epitonium sp.
Epitonium nautlae
Melanella sp.
Calyptraea centralis
Crepidula sp.
Crepidula plana
Crepidula maculosa
Naticidae sp.
Natica pusilla
Polinices duplicatus
Murex sp.
Mitrella sp.
Mitrella lunata
Anachis obesa
Anachis floridana
Nassarina manilifera
Cantharus cancellarius
Busycon contrarium
Melongena corona
Nassarius vibex
Nassarius albus
Olivella sp.
Olivella dealbata
Olivella minuta
Olivella pusilla
Olivella floralia
Oliva sp.
Granulina ovuliformis
Marginella apicina
Marginella aureocincta
Marginella hartleyanum
Marginella lavalleeana
Columbellidae sp.
Columbella rusticoides
Turridae sp.
Kurtziella sp.
Cryoturris cerinella
Conus jaspideus stearnsi
Odostomia sp.
Odostomia bisuturalis

Table 4.--Master list of species--Continued

Odostomia impressa
Odostomia seminuda
Odostomia producta
Odostomia laevigata
Turbonilla sp.
Turbonilla interrupta
Turbonilla conradi
Turbonilla dalli
Turbonilla sp.F
Acteon punctostriatus
Acteocina canaliculata
Bulla striata
Haminoea succinea
Haminoea elegans
Unela remanei
Nudibranchia spp.
Polycera sp.
Dosinia discus

PHYLUM MOLLUSCA
CLASS POLYPLACOPHORA
Polyplacophora spp.

PHYLUM MOLLUSCA
CLASS BIVALVIA
Bivalvia spp.
Nucula proxima
Nuculana acuta
Solemya occidentalis
Anadara transversa
Glycemeris pectinata
Musculus lateralis
Modiolus modiolus squamosus
Brachidontes exustus
Amygdalum papyrium
Lioberus castaneus
Geukensia demissa granosissima
Cyclopecten sp.
Anomia simplex
Crassostrea virginica
Lucinidae sp.
Lucina sp.
Lucina nassula
Lucina radians
Anodontia alba
Diplodonta punctata
Erycina sp.
Erycina emmonsi
Mysella planulata
Neaeromya floridana
Carditamera floridana
Pteromeris perplana
Astarte sp.
Crassinella lunulata
Cardiidae sp.
Laevicardium sp.
Laevicardium mortoni
Spisula solidissima
Mulina lateralis
Rangia cuneata
Mactra fragilis
Raeta plicatella
Ensis minor
Macomidae sp.
Macoma sp.
Macoma tenta
Macoma constricta
Tellina spp.
Tellina lineata
Tellina versicolor
Tellina alternata
Tellina squamifera
Tellina tampaensis
Tellidora cristata
Donax variabilis
Tagelus sp.
Tagelus plebius
Tagelus divisus
Semelidae sp.
Semele sp.
Semele bellastriata
Semele purpurascens
Semele nuculoides
Abra aequalis
Cumingia tellinoides
Mytilopsis leucophaeta
Polymesoda caroliniana
Transennella conradina
Mercenaria campechiensis
Chione cancellata
Gouldia cerina
Parastarte triquerta
Anomalocardia auberiana
Cooperella atlantica
Chama sp.
Sphenia antillensis
Corbula contracta
Pandora sp.

Table 4.--Master list of species--Continued

Lyonsia hyalina floridana
Asthenothaerus hemiphilli
Bushia elegans
Bivalvia sp.A

PHYLUM MOLLUSCA
CLASS SCAPHOPODA
Dentalium eboreum
Dentalium texasianum
Dentalium laqueatum

PHYLUM ARTHROPODA
CLASS MEROSTOMATA
Limulus polyphemus
CLASS PYCNOGONIDA
Achelia spinosa
Anoplodactylus petiolatus
CLASS CRUSTACEA
Cladocera sp.
Myodocopa spp.
Parasterope pollex
Podocopa spp.
Haplocythidea sp.
Haplocytherida setipunctata
Copepoda spp.
Calanoida spp.
Harpacticoida spp.
Cyclopoida spp.
Macrocyclops albidus
Semibalanus balanoides
Balanus amphitrite amphitrite
Balanus improvisus
Balanus venustus
Mycidacea sp.
Mysidopsis bigelowi
Mysidopsis bahia
Mysidopsis almyra
Mysidopsis furca
Mysidopsis mortenseni
Bowmaniella portoricensis complex
Bowmaniella brasiliensis
Metamysidopsis swifti
Taphromysis bowmani
Anchialina typica
Cumacea sp.
Leucon sp.
Leucon sp.A
Oxyurostylis smithi
Almyracuma sp.
Cumella sp.A
Cyclaspis sp.D
Cyclaspis sp.B
Cyclaspis sp.A
Vaunthomsonia sp.
Tanaidacea spp.
Kalliapseudes sp.
Kalliapseudes sp.A
Hargeria rapax
Anthuridae sp.
Anthuridae sp.A
Cyathura polita
Apanthura magnifica
Apanthura cf signata
Xenanthura brevitelson
Eurydice littoralis
Paracerceis caudata
Cymodoce faxoni
Serolis mgrayi
Erichsonella cf attenuata
Edotea triloba
Munna reynoldsi
Munna cf hayesi
Metoponorthus sp.
Amphipoda sp.
Ampelisca abdita
Ampelisca vadorum
Ampelisca holmesi
Ampelisca sp.B
Gitanopsis sp.
Ampithoidae sp.
Ampithoe longimana
Cymadusa compta
Lembos smithi
Lembos unicornis
Lembos setosus
Lembos spinicarpus inermis
Lembos rectangulatus
Microdeutopus sp.
Microdeutopus myersi
Acuminodeutopus naglei
Batea catharinensis
Batea cf catharinensis
Cerapus sp.A
Corophium lacustre
Corophium simile
Corophium tuberculatum
Corophium louisianum
Ericthonius brasiliensis

Table 4.--Master list of species--Continued

Unciola serrata
Grandidierella bonnieroides
Elasmopus levis
Gammarus mucronatus
Maera cf williamsi
Megaluropus sp.
Melita appendiculata
Acanthohaustorius millsi
Photis pugnator
Photis sp.
Photis melanicus
Microprotopus raneyi
Listriella cf barnardi
Lysianopsis cf alba
Monoculodes nyei
Synchelidium cf americanum
Metharpinia floridanus
Eudevenopus honduranus
Eobrolgus spinosus
Stenopleustes cf gracilis
Podocerus sp.
Parametopella cypris
Stenothoe cf minuta
Tiron tropakis
Tiron triocellatus
Caprella penantis
Paracaprella tenuis
Luconacia incerta
Trachypenaeus constrictus
Lucifer faxoni
Leptochela serratorbita
Periclimenes longicaudatus
Alpheus floridanus
Ogyrides alphaerostris
Hippolyte pleuracanthus
Callianassa sp.
Paguridae sp.
Paguristes hummi
Pagurus brevidactylus
Pagurus carolinensis
Euceramus praelongus
Emerita portoricensis
Brachyura sp.
Majidae sp.
Libinia emarginata
Portunidae sp.
Portunus gibbesii
Xanthidae sp.
Neopanope texana texana
Panopeus herbstii
Pinnotheridae sp.
Pinnixa pearsei
Grapsidae sp.

CLASS INSECTA
Chironomidae spp.
Ceratopogonidae spp.
Coelotanypus spp.
Procladius spp.
Tanytarsus spp.
Polypedilum spp.

PHYLUM SIPUNCULA
Sipuncula spp.
Phascolion sp.

PHYLUM PRIAPULIDA
Priapulida sp.

PHYLUM PHORONIDA
Phoronis architecta

PHYLUM ECTOPROCTA
Bryozoa spp.

PHYLUM BRACHIOPODA
Brachiopoda sp.
Glottidia pyramidata

PHYLUM ECINODERMATA
Ophiolepis sp.
Hemipholis elongata
Amphiuridae sp.
Amphiodia pulchella
Amphipholis sp.
Ophiophragmus sp.
Ophiophragmus filograneus
Ophiophragus wurdmani
Micropholis atra
Micropholis gracillima
Axiognathus squamata
Echinoidea sp.
Mellita quinqueisperforata
Holothuroidea sp.
Leptosynapta sp.
Leptosynapta inharens

PHYLUM HEMICHORDATA
Enteropneusta sp.

Table 4.--Master list of species--Continued

PHYLUM CHORDATA	**SUBPHYLUM VERTEBRATA**
SUBPHYLUM UROCHORDATA	Osteichthyes spp.
Ascidiacea sp.	Anchoa sp.
Molgulidae sp.	Gobiidae sp.
SUBPHYLUM CEPHALOCHORDATA	Gobiosoma bosci
Branchiostoma sp.	Symphurus plagiusa
Branchiostoma caribaeum	

Species Richness

Number of species per station for all collections ranged from 18 to 136 and averaged 58. All intertidal stations averaged 44 species per collection; mean species number per subtidal station fell from 74 (May 1980) to 65 (September). Intertidal and subtidal stations with fewest number of species in May through June were station 11 (Estero Island; N=18) and station S-1 (Peace River; N=36); most were found at station 8 (Blind Pass; N=110) and S-7 (lower Charlotte Harbor; N=131). Intertidal and subtidal stations with fewest number of species in September were station 5 (Boca Grande; N=21) and station S-5 (Pirate Harbor; N=29); most were found at stations 8 (Blind Pass; N=107) and S-7 (lower Charlotte Harbor; N=136).

Table 5 summarizes station data. Supplementary Data III is a listing by stations of species ranked by density and percentage. Species number generally decreased from south to north and west to east, more so in May through June. San Carlos Bay and Pine Island Sound had an average May through June species count of 75 compared to 66 in Matlacha Pass; 62 in Charlotte Harbor; 54 in Gasparilla Sound; and about 38 species in the lower Myakka and Peace Rivers. In September, San Carlos Bay and Pine Island Sound had average species counts of 67 versus 62 in Matlacha Pass; 55 in Charlotte Harbor; 42 in Gasparilla Sound; and 33 in the lower rivers.

Benthic Macroinvertebrate Density

Numbers of individuals per square meter ranged from 737 to 138,432. Mean density for all collections was 18,370 per m^2. Intertidal densities varied over a 10 percent larger range than did subtidal densities although their respective means were similar (18,160 per m^2 versus 18,540 per m^2). Compared to spring, mean intertidal density generally decreased except at station 10 and mean subtidal density decreased in September. Overall, densities in Myakka and Peace Rivers fell during the summer and Charlotte Harbor densities doubled. Intertidal and subtidal stations with lowest densities in May through June were stations 11 (737 per m^2) and S-5 (1,733 per m^2); highest densities were found at station 8 (80,430 per m^2) and S-1 (96,788 per m^2). Two other sites with notably high densities were at station 10 (138,432 per m^2 in September) and lower Charlotte Harbor (number S-7; 69,886 to 126,467 per m^2). May through June densities are shown in figure 7. Intertidal and subtidal sites with lowest densities in September were stations 5 (895 per m^2) and S-1 (2,275 per m^2); highest densities were found at stations 10 (138,432 per m^2) and S-7 (126,467 per m^2). September densities are shown in figure 8.

Table 5.--Summary of faunal data by station

Station No.	May through June 1980			September 1980		
	Number of species	Density, No. per square meter	Equitability J'	Number of species	Density, No. per square meter	Equitability J'
1	32	21,998	0.47	23	8,277	0.54
2	46	9,148	.67	42	4,389	.69
3	37	24,111	.30	26	5,178	.53
4	38	2,079	.64	27	1,141	.80
5	19	998	.75	21	895	.73
6	47	1,728	.83	68	4,617	.79
7	52	2,438	.83	40	6,820	.71
8	110	80,430	.56	107	60,395	.53
9	32	5,938	.60	29	6,732	.64
10	57	11,709	.66	57	138,432	.17
11	18	737	.82	30	1,334	.81
S-1	36	96,788	.40	38	2,275	.74
S-2	38	7,022	.62	36	3,031	.73
S-3	40	21,598	.34	32	3,449	.65
S-4	48	6,737	.69	44	6,986	.63
S-5	50	1,733	.86	29	55,497	.48
S-6	69	4,960	.71	56	2,480	.73
S-7	131	69,886	.31	135	126,467	.45
S-8	82	6,524	.76	51	3,084	.76
S-9	109	7,208	.82	46	2,844	.70
S-10	68	5,555	.72	50	2,613	.84
S-11	108	10,283	.64	135	22,824	.67
S-12	62	6,773	.74	66	4,568	.68
S-13	82	17,189	.71	73	5,919	.69
S-14	118	5,555	.85	112	9,359	.53

Equitability

Species number and density are related to equitability, the evenness of a taxon's distribution compared with enumerated taxa. A sample in which all taxa are equally represented is perfectly equitable (J'=1.0 using method of Pielou, 1966). Values of J' approaching zero indicate numerical dominance by one or few species. Mean equitability for all collections was 0.65 $\pm$ 0.16 and differed little if determined by depth or season. Stations with higher densities had lower equitability (figs. 7 and 8).

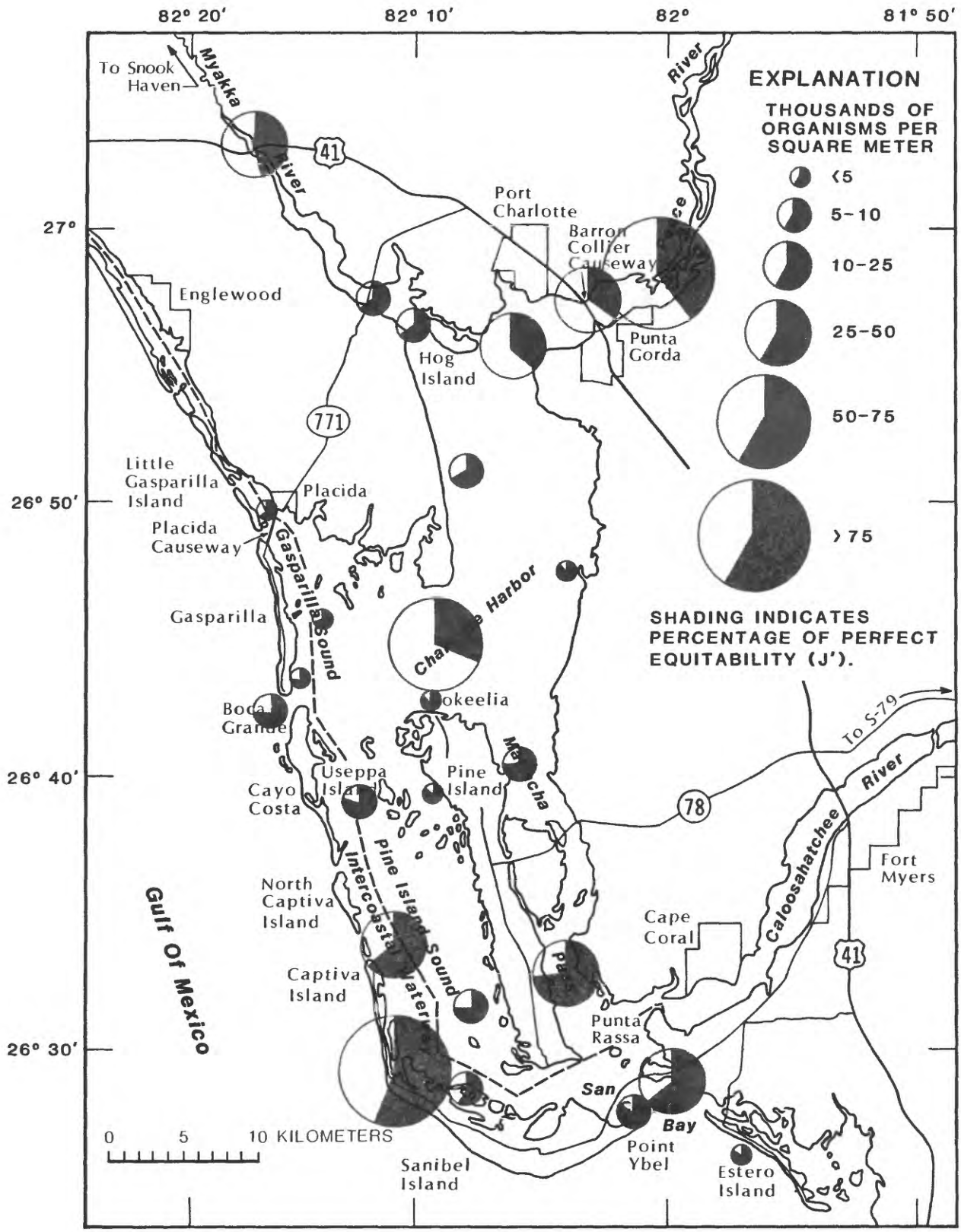

Figure 7.--Faunal density and equitability (J') in May and June 1980.

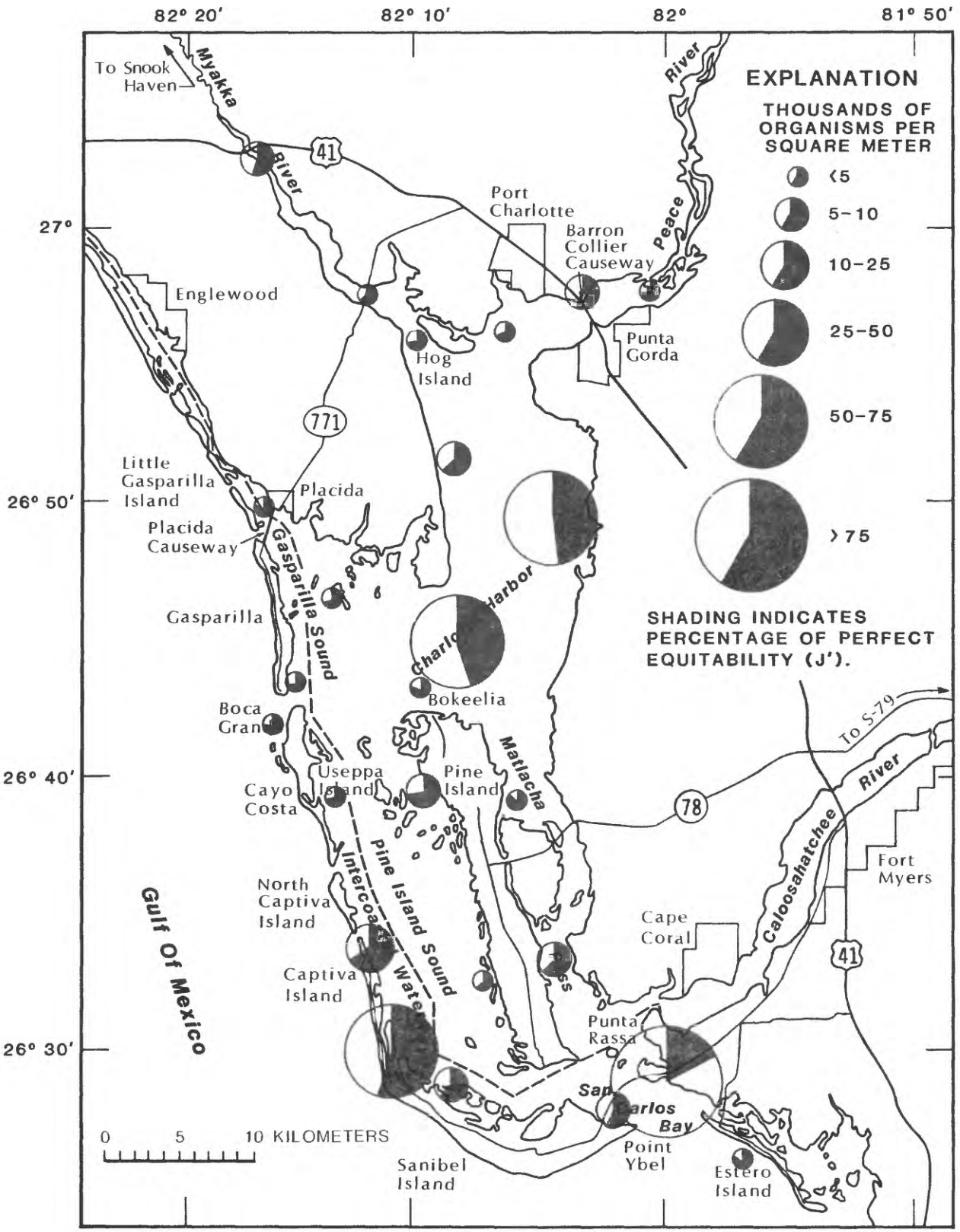

Figure 8.--Faunal density and equitability (J') in September 1980.

Common Species

Commonality refers to number of occurrences of a taxon in samples. In this study commonality ranged from 1 (2 percent of possible 50 samples) to 48 (96 percent). Nemerteans and nematodes were the only taxa more common than 90 percent. Oligochaetes were 82 percent common; others were less common than 70 percent overall. Individual species (as opposed to higher taxa already mentioned) with 50 percent or more commonality included the flatworm, *Stylochus* sp. (50 percent); annelids, *Capitella capitata* (60 percent) and *Glycinde solitaria* (68 percent); the gastropod mollusc, *Acteocina canaliculata* (50 percent); and crustaceans, *Ampelisca holmesi* (56 percent), *Haplocytherida setipunctata* (54 percent), and *Oxyurostylis smithi* (56 percent). Other very common species (>40 percent) are listed below:

CNIDARIA
- *Athenaria* spp.

ANNELIDA
- Polychaeta
  - *Apoprionospio pygmaea*
  - *Aricidea philbinae*
  - *Axiothella mucosa*
  - *Mediomastus ambiseta*
  - *Paraprionospio pinnata*
  - *Pectinaria gouldii*

MOLLUSCA
- Bivalvia
  - *Amygdalum papyrium*
  - *Mysella planulata*
  - *Tellina versicolor*

ARTHROPODA
- Crustacea
  - *Corophium louisianum*
  - *Cyathura polita*
  - *Ericthonius brasiliensis*
  - *Grandidierella bonnieroides*
  - *Hargeria rapax*
  - *Listriella* cf. *barnardi*
  - *Parasterope pollex*

Commonality depended on season. For the taxa named thus far, about three-fourths became less common or remained as common from the spring to fall. It is interesting that 132 uncommon (defined as occurring fewer than five times in a collection) species were present in the spring collection but not the fall, and that 106 uncommon species were added to the fall collection. In both collections more species were uncommon than otherwise (table 6).

Table 6.--Frequency distribution of species commonality

Commonality, number of occurrences	Frequency	
	May through June	September
1	155	122
5	22	15
10	9	7
15	3	0
20	1	1
25	0	0

Dominant Species

Dominance within samples is a measure of a species' relative abundance. Abundance of the numerically dominant ("first") species, as percent of total individuals in a sample, ranged from 9 to 76 percent for all collections. Mean abundance of first species in May through June intertidal samples was 33.1 percent (±17.2 percent) compared to 30.1 percent (±22.1 percent) for subtidal samples. Numerical dominants of intertidal samples in May-June were mostly polychaetes and crustaceans whereas the numerically dominant species of subtidal samples were mostly polychaetes. Species most commonly found within the intertidal samples were: *Apoprionospio pygmaea*, *Mediomastus ambiseta* (Annelida); *Amygdalum papyrium* (Mollusca); *Ampelisca holmesi* (Crustacea). Mean importance of first species in September intertidal and subtidal samples were similar to earlier collections in both cases. Numerical dominants of intertidal samples were mostly molluscs and crustaceans; polychaetes, especially *Paraprionospio pinnata*, were the most frequent subtidal dominants.

The number of species needed in addition to the numerically dominant one to represent 75 percent of all individuals in a sample varied from 1 to 34 in May through June and averaged about 7 and 12 for intertidal and subtidal collections, respectively. Representatives of additionally important spring species, in descending order of commonality, included: *Tellina versicolor* (Mollusca), *Cumella* sp. A., *Ampelisca holmesi*, *Corophium louisianum*, *Grandidierella bonnieroides*, *Parasterope pollex* (Crustacea); *Arcidea philbanae* (Annelida); *Amygdalum papyrium* (Mollusca); and *Haplocytheridia setipunctata* (Crustacea). Other abundant species in September samples were *Capitella capitata*, *Haminoea succinea*, *Pectinaria gouldii* (Annelida); *Tellina versicolor* (Mollusca); *Acanthohaustorius millsi* and *Cyathura polita* (Crustacea).

Species Groups Between Phyla

As neither the intent nor design of this study commend extensive comment on complex community structure, only two findings relative to species groupings in subtidal samples are noteworthy. First, no strong affinities between sets of species were evident where commonality, abundance, or relative importance were used as individual measures of grouping. Second, different areas of the estuarine system had characteristic species groups involving common or abundant species and some less dominant ones, but the groups were not strikingly different when only the common species were considered.

Upper and lower Charlotte Harbor areas provide examples. Communities found in upper harbor stations in May through June usually included *Glycinde solitaria*, *Neanthes succinea*, *Streblospio benedicti* (Annelida); *Amygdalum papyrium* (Mollusca); *Ampelisca abdita*, *Grandidierella bonnieroides* (Crustacea); and *Chironomidae* (Insecta). Lower harbor communities contained *Mediomastus ambiseta*, *Spiochaetopterus costarum* (Annelida); *Acteocina canaliculata*, *Turbonilla conradi* (Mollusca); *Ampelisca holmesi*, *Listriella* cf. *barnardi*, *Oxyurostylis smithi*, and *Parasterope pollex* (Crustacea). September communities in upper harbor stations usually included *Glycinde solitaria*, *Minuspio cirrifera*, *Paraprionospio pinnata*, *Pectinaria gouldii* (Annelida); *Cyclostremiscus pentagonus* (Mollusca); *Ampelisca abdita* (Crustacea). Lower harbor communities commonly contained *Diopatra cuprea*, *Mediomastus ambiseta*, *Minuspio cirrifera* (Annelida); *Tellina versicolor* (Mollusca); *Ampelisca holmesi*, *Oxyurostylis smithi* (Crustacea).

Species Groups Within Phyla

Abundance data for the September period were evaluated among molluscs, polychaetes, and crustaceans using Czekanowski's similarity index and classification was performed using a group-averaged sorting method (Bloom, 1981). Five groupings of stations were generated from mollusc similarity with six stations left ungrouped, three in upriver areas and three near Boca Grande (fig. 9). The two largest groups occurred in the lower harbor. Sanibel Island mollusc assemblages were similar to those in Matlacha Pass and Pine Island Sound fauna resembled San Carlos Bay groups. Gasparilla Sound stations were distinct, as were upper harbor subtidal assemblages.

Polychaete and crustacean groupings were less clear than molluscs but resembled one another by having harbor-wide assemblages (figs. 10 and 11). Subtidal polychaetes from the Peace River, Cape Haze shoreline, and Pine Island Sound were notably similar. Spotty similarity was noted for Myakka River stations and erratic patterns were generated for intertidal stations elsewhere, with only three stations left ungrouped. Crustaceans at subtidal stations were also broadly similar and formed one large group extending from the lower Myakka River through Matlacha Pass to San Carlos Bay. Intertidal station similarity among crustaceans was also high. Four stations were left ungrouped.

DISCUSSION

In a review of 1,500 benthic studies in coastal and estuarine waters of Florida, Mahadevan and others (1984) remarked that Charlotte Harbor is the least studied major estuary in the state. Objectives of this study were to assess methods and adequate station number and location; survey benthic infauna of the system; and identify patterns or trends in and between faunal assemblages.

Methods

A disadvantage in use of cores at depth was the need for divers. Ponar grabs did not always trip, sampled less deeply than cores, and sometimes spilled contents on retrieval from shell-hash or cobble bottoms. Jordan (1978) recommended cores over grabs for sampling infaunal sand communities in Tampa Bay.

The most critical aspect of either technique is replication and corresponding area of bottom sampled (Dennison and Hay, 1967). Species-area curves were examined for September samples from intertidal and subtidal areas. Cumulative species number was plotted against cumulative sample area at stations 4 and 6. Station 4 had 27 species compared to 68 at station 6. In both cases the fifth replicate added new species equivalent to 5 to 10 percent of the station total. At a nearby subtidal station in Pine Island Sound (S-9; 46 species) the fifth replicate added 2 unique species (4 percent total). Upper harbor areas were sampled less adequately. Station S-3 (32 species) gained 5 species, or about 16 percent. Lists for S-2 and S-3 were analyzed together to estimate effects of increased sample area. Doubling replication (up to 0.22 m^2) reduced accumulation of new species in the last (tenth) replicate to 5 percent. Up to 0.35 m^2 may be needed to adequately sample upper harbor areas but actual effort can only be determined through new sampling.

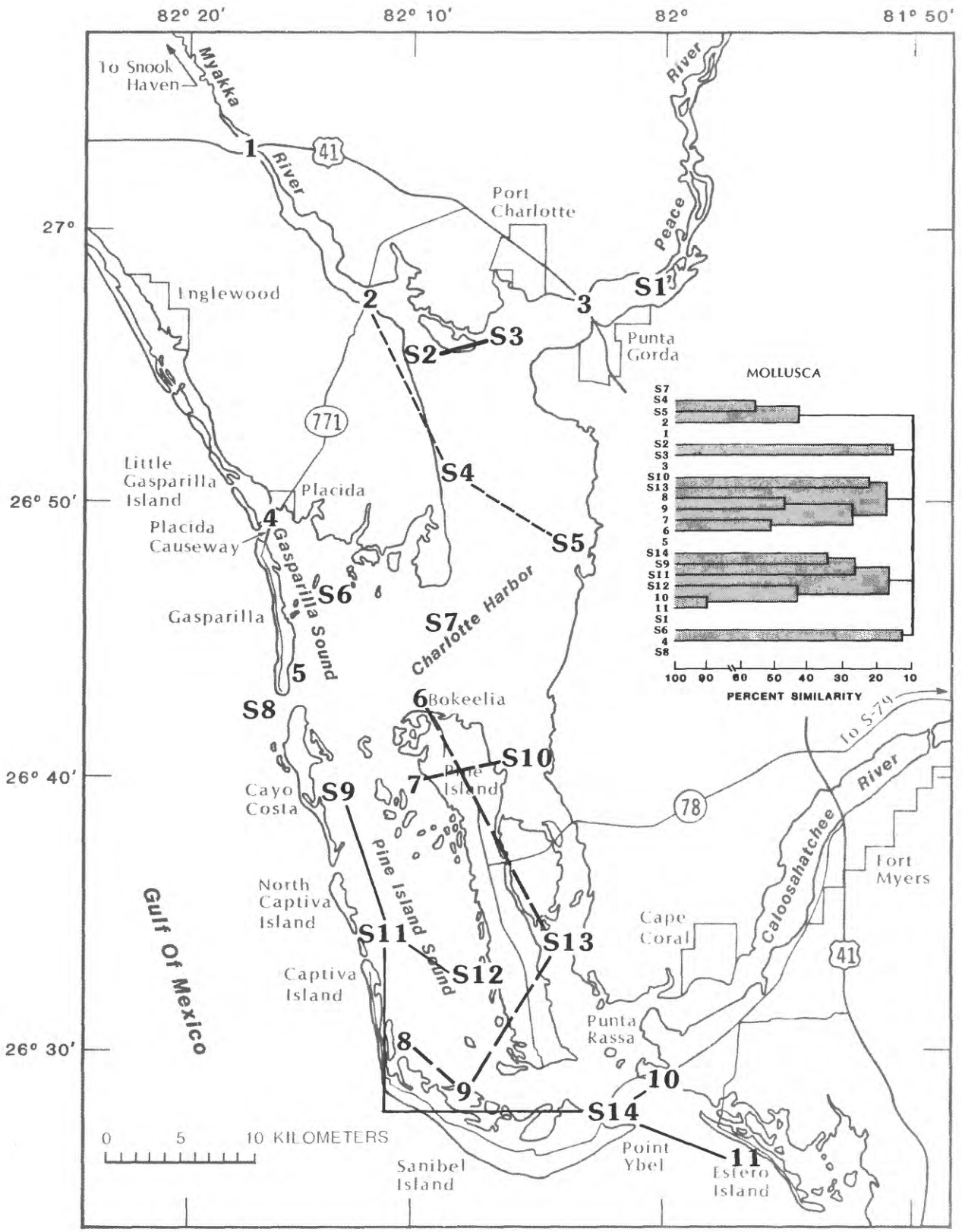

Figure 9.--Similarity of molluscan assemblages (Czekanowski's index), in September 1980.

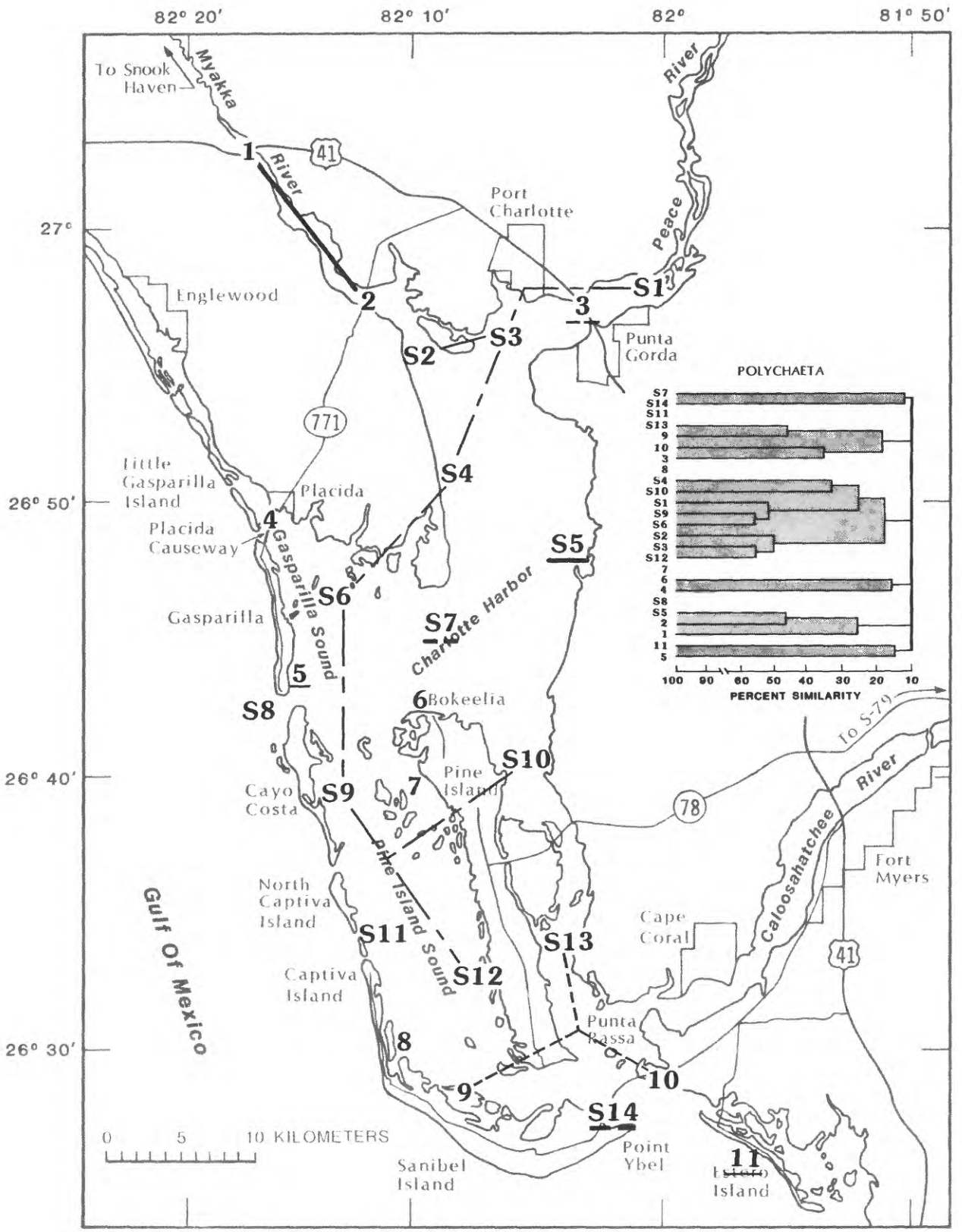

Figure 10.--Similarity of polychaete assemblages (Czekanowski's index), in September 1980.

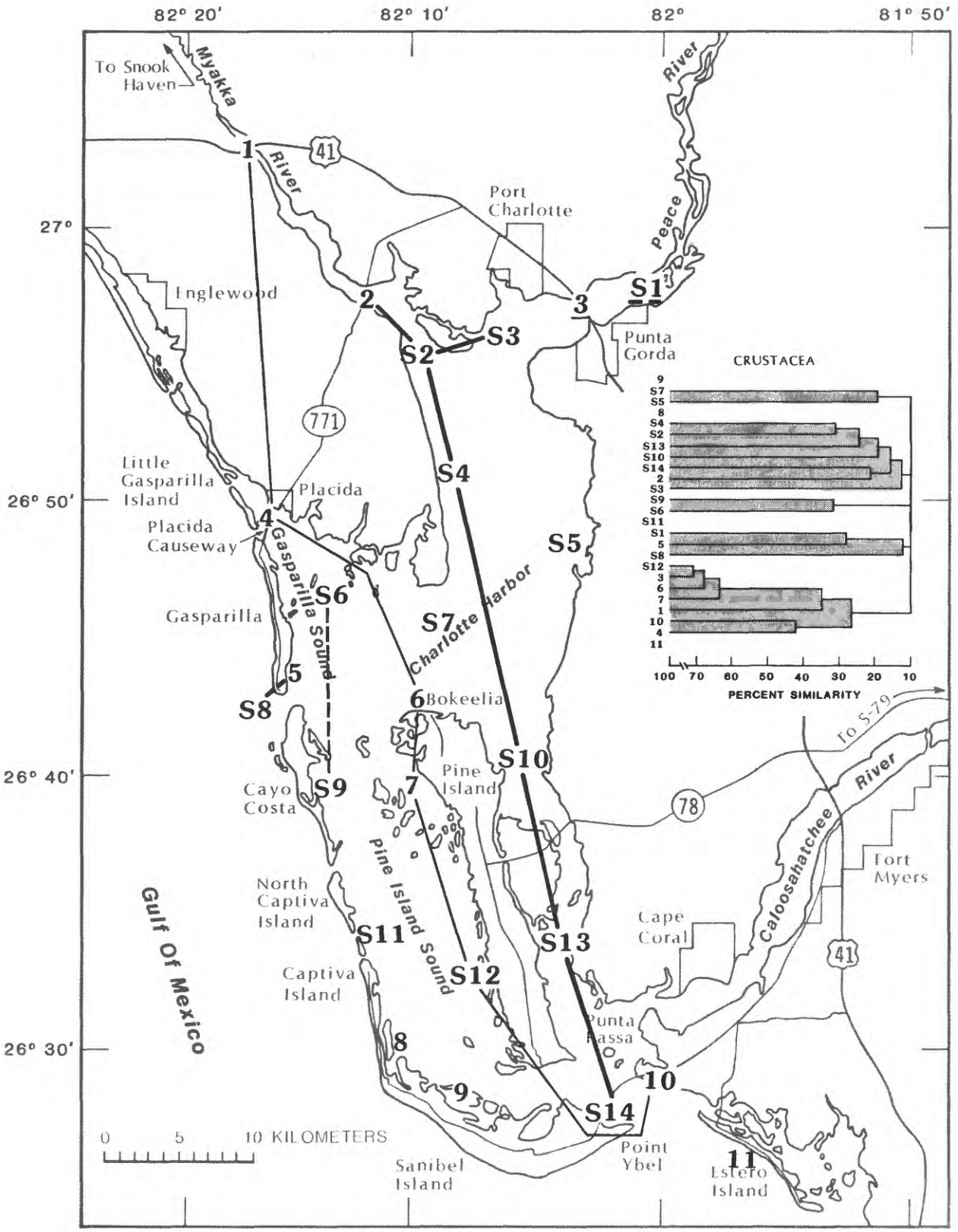

Figure 11.--Similarity of crustacean assemblages (Czekanowski's index), in September 1980.

Effect of Depth

The estuarine system of Charlotte Harbor is less than 3 meters deep in most areas; Gasparilla and eastern Pine Island Sound, and Matlacha Pass are shallower than 1 meter except in channels. Intertidal areas are expansive with 24,000 hectares vegetated by tidal forests and marshes (Harris and others, 1983). By comparison to these unstudied benthic areas, intertidal infaunal communities in Tampa Bay, a large estuarine system north of Charlotte Harbor on the Florida Gulf coast, are well studied. Intertidal species richness and density in Tampa Bay are lower than in subtidal areas; intertidal faunal assemblages are peripheral elements of subtidal communities but do exhibit similar patterns of recruitment and dominance (Bloom and others, 1972; Santos and Simon, 1974; Dauer and Simon, 1975).

In the Charlotte Harbor area, mean intertidal and subtidal depths were 0.6 meter and 2.6 meters, respectively. Most intertidal stations had fewer species than subtidal ones and there were few species which were strictly intertidal. Species richness at Blind Pass was exceptional (110 to 136 species) and is discussed in the next section. Intertidal densities ranged more than in subtidal areas and generally decreased over summer as did subtidal densities.

Station Selection

Intertidal and subtidal stations occupied in this study were exposed to a representative range of depth, current speed, fetch, and hydrographic variables. Middle Charlotte Harbor between stations S-3 and S-7 is a zone of rapid transition among these parameters and should have had additional stations. Manmade environments such as residential canals, navigation channels, and artificially nourished beaches were intentionally avoided, so new sampling in those areas may be useful. Blind Pass (station 8) had exceptional species richness among intertidal stations, which may be related to its evanescent nature: the pass opens and closes due to storms and longshore drift of beach sediments. The Pass was closed in 1980. The channel and flood-tidal delta east of the inlet had poorly sorted, coarsely skewed sand with moderate amounts of silt-clay and organics. This combination of factors acted as a favorable environment for a fauna already diverse from recent connections to the Gulf, and proximity to San Carlos Bay and shallow shelf waters where infaunal diversity is very high (Mahadevan and others, 1984). Faunal interactions between inshore stations and oyster reefs or major seagrass meadows deserve study insofar as the roles of these other benthic habitats as refuges and sources of novel species in the Charlotte Harbor system are unknown.

Fauna

Estevez (1981) tabulated nearly 600 polychaete, gastropod, bivalve, and crustacean species from reports on Charlotte Harbor and adjacent waters, including oyster reefs and seagrasses. This study identified 486 species in the same 4 groups, out of 541 total species, from only soft bottom environments. Simon and Mahadevan (1985) opined that up to 1,500 species are represented in similar benthic environments of Tampa Bay, the nearest estuary comparable to Charlotte Harbor.

Seasonal and Aperiodic Changes in the Fauna

The 1980 water year was unusual insofar as tributary discharges were concerned. April, normally the month with lowest flows, had higher rates than other months. The wet season was the driest since 1961; accounting for small changes in salinity between May through June and September compared to wetter years (Estevez, 1981). In the Charlotte Harbor estuarine system, our sampling revealed high diversity at river mouths and inshore coastal areas for both seasons (table 5). Species number dropped during summer. In May through June density paralleled diversity (for example, middle harbor areas were transitional) but in September the middle harbor had highest densities (figs. 7 and 8). Densities increased at 6 of 11 intertidal stations, and subtidal densities decreased in the lower river areas but increased in the middle harbor during summer. Species replacement was high in both collections.

Definitive long-term data are unavailable to confirm evidence for seasonality in benthic fauna within the study area. Environmental Quality Laboratory (1981) monitored one station in the upper harbor 1,800 meters from station S-3, beginning March 1976. Species richness averaged by calendar quarter was highest (11) in the fourth quarter (October-December) and lowest (7) in the third quarter (July-September). Mean quarterly density was highest in the second quarter (ending in June) and lowest in the third quarter. Our results from station S-3 in May through June and September parallel these findings. Greater diversity and density values from station S-3 compared with the Environmental Quality Laboratory station can be explained by increased sample area, although both sampling efforts in the upper harbor were probably inadequate. The 1976 through 1980 monitoring data near S-3 showed an increase in diversity in 1980 over prior years which is consistent with annual variation observed in Tampa Bay. Data on seasonality for other areas of the estuarine system are unavailable from any source, although our synoptic hydrographic data suggest the potential for an equally strong faunal response to seasonally varying salinity gradients in Pine Island Sound, as described below.

In September, density ranged from 20,000-40,000 per m^2 in outer harbor areas to 4,000-6,000 per m^2 in the river areas; inlets had lowest densities overall. This pattern contrasted to May through June when highest mean density (37,309 per m^2) was in the Peace River (area 2). Richness and density data suggest that (1) infaunal patterns are associated with salinity and dissolved oxygen throughout the estuarine system, (2) hydrographic factors correspond to infaunal diversity and abundance better than sediment characteristics, (3) sediment characteristics are important near inlets, and (4) the estuarine system may be divisible into subsystems reflecting different environmental conditions along latitudinal and longitudinal gradients.

Benthic infaunal communities respond to various rates of catastrophic (aperiodic, extreme) perturbations as well as annual cycles of change in estuarine conditions. Examples from Tampa Bay are several (Dauer and Simon, 1976; Conner, 1977; Santos and Bloom, 1980; Bell and Devlin, 1983). The configuration of a benthic assemblage depends in part upon the recency and severity of such disturbances. In Charlotte Harbor and nearby estuaine waters these disturbances include freezes, droughts and floods, and population

flushes of dinoflagellates called red tide blooms. Estevez (1981) summarized their specific effects on estuaries and tabulated 24 red tides, 29 hurricanes, and 12 major freezes in the region since 1900. The probability of some part of the estuarine system being affected by at least one such disturbance in a year was 80 to 85 percent. A hurricane in 1972 and a freeze in 1979 preceded sampling in 1980 but their effects cannot be assessed relative to the present study because antecedent data are lacking.

Spatial Patterns in the Fauna

Benthic infauna are affected as much by ranges of physical factors as by their instantaneous values (Boesch, 1977). Sediment data are available from Huang and Goodell (1967), but long-term or synoptic data on other factors (temperature, salinity, or dissolved oxygen) are lacking for most areas of the estuarine system.

Granulometry of all areas was generally very similar except for Boca Grande and San Carlos Bay (table 7). On the other hand, bottom salinity and dissolved oxygen values were distributed as distinct gradients across subsystems (fig. 6, table 7). Trends in hydrographic and faunal data (figs. 6, 9-11) from September 1980 were used to delineate six ecological subsystems (fig. 12).

Table 7.--Geographic subsystems of the study area

[Mean size: f, fine; m, medium. Sorting: ms, moderately sorted; ps, poorly sorted. Skewness: ns, nearly symmetrical; cs, coarsely skewed]

Property	Subsystem 1	2	3	4	5	6
			Sediment			
Mean size	f	f	f	f	f	m
Sorting	ms	ms	ms	ms	ms	ps
Skewness	ns	ns	ns	ns	ns	cs
Silt-clay, average percent	2.34 (± 2.45)	1.15 (± 1.19)	2.60 (3.23)	1.37 (± .41)	1.48 (± 1.23)	0.91 (± 1.15)
Organic content, average percent	.83 (± .57)	.95 (± 1.16)	1.18 (± 1.32)	.47 (± .16)	.63 (± .27)	1.17 (1.04)
			Bottom water quality			
Mean salinity, parts per thousand	11.5 (± 7.3)	11.9 (± 6.5)	25.3 (± 2.3)	22.8 (± 4.2)	28.6 (± 2.4)	28.5 (± 2.1)
Mean dissolved oxygen, milligram per liter	3.3 (± 1.0)	4.5 (± .6)	4.6 (± .8)	4.7 (± .7)	5.2 (± .6)	5.3 (± .5)

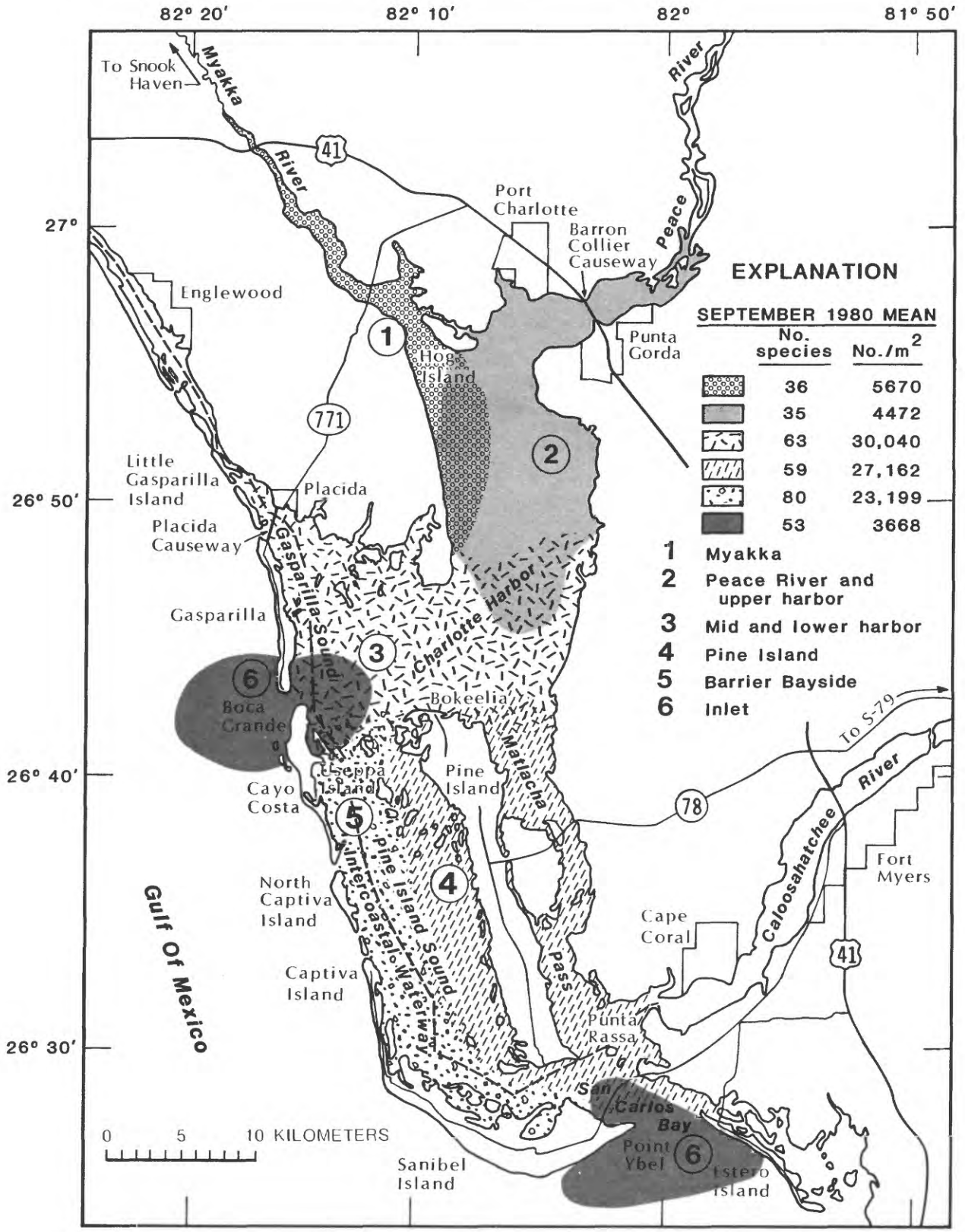

Figure 12.--Hydrographic and infaunal subsystems of the Charlotte Harbor estuarine system.

Distribution, commonality, and abundance data for infauna in the study area suggest that soft-bottom communities are points along continua of species combinations rather than discrete entities (Boesch, 1977). Numerous species were common to many stations and occurred in more than one estuarine subsystem. The polychaetes *Capitella capitata* and *Glycinde solitaria* and the crustaceans *Ampelisca holmesi*, *Haplocytherida setipunctata*, and *Oxyurostylis smithi* were nearly ubiquitous. Combinations of common species are characteristic of faunal distributions along estuarine gradients, as illustrated in the Results section for upper and lower harbor assemblages. East to west differences in crustacean assemblages can be demonstrated for neighboring waters in the lower harbor (fig. 11). Mollusc assemblages varied most along a north to south axis (fig. 9) whereas polychaetes were common and abundant over large areas (fig. 10) but differed by species.

The number of species (species richness) was averaged for stations in each subsystem. In September, the average number was highest in subsystems 5 and 3, the Barrier Bayside and middle to lower harbor areas (80 and 63 species, respectively). Areas adjacent to the Barrier Bayside stations had the next highest values (Matlacha Pass, 60 species; inlets, 53 species) and river areas had fewest species (35-36). In May-June, the average number of species was highest in the Barrier Bayside and Peace River areas and intermediate in the central harbor.

Recognition of geographic subsystems modeled after those proposed in figure 12 may be helpful in the design and interpretation of future studies of community structure. Differences in fauna between the Barrier Bayside and Pine Island zones, for examples, may be due to basic trophic differences among the species characteristic of the areas. Polychaetes more common in Pine Island Sound than elsewhere in the harbor included *Aricidea philbanae*, *Scololepis texana*, *Polydora ligni*, *Scoloplos rubra*, and *Streblospio benedicti*; in the Barrier Bayside system *Sabella melanostigmata*, *Prionospio heterobranchia*, *Carazziella hobsonae*, and *Polydora socialis* occurred together. Molluscs were a characteristic element of Barrier Bayside assemblages and included *Olivella minuta* and *O. pusella*, *Tellina versicolor*, *Marginella apicina*, and *M. lavalleeana*, whereas *Acteocina canaliculata* and *Tellina tampaensis* were among the few mollusc species represented in the Pine Island subsystem. This pattern was reversed for common crustaceans in that most occurred in Pine Island and few were found in Barrier Bayside waters with regularity. Pine Island crustaceans included *Ampelisca abdita* and *A. holmesi*, *Mysidopsis bigelowi* and *Oxyurostylis smithi*.

The patterns for three major taxa throughout the whole study area revealed more clustering for molluscs than polychaetes or crustaceans. Clustering was particularly strong in the lower harbor which may be attributed to the higher number of mollusc species and individuals there. Pine Island Sound clusters resembled those in San Carlos Bay whereas Blind Pass was similar to Matlacha Pass, suggesting an effect of habitat exposure on the fauna. Mollusc clusters were not affected by depth whereas polychaetes and crustaceans were. In the two latter cases, similarity of the fauna was higher between subtidal sites than between subtidal and intertidal ones. Harbor-wide clusters of subtidal crustaceans was expected because of their mobility, whereas the same dispersion of a polychaete assemblage was a surprise. Clusters of crustaceans differed between Pine Island Sound and Matlacha Pass whereas polychaete clusters were more generally similar in both areas.

The patterns thus described suggest that mollusc dispersion coincides best with harbor-wide gradients of hydrographic or sediment features and commend that group for monitoring projects of large geographic scope. Worms and crustaceans seem best fit for site specific comparisons where the isolated effects of one or another parameter are under study.

Trends in species richness and density illustrate the transitional nature of zone 3, middle and lower Charlotte Harbor, between riverine and gulf coastal environments. Insights to infaunal dynamics along the salinity-dissolved oxygen gradients (and other unstudied ones such as particulate foodstuffs) apply to a relatively dry water year. More significant differences in benthic characteristics are expected when Charlotte Harbor and San Carlos Bays are freshened by greater discharges by their respective tributaries. It may be that salinity and its associated effects have more pronounced consequences in benthic communities accustomed to the least variation in those parameters, instead of those areas where variations are extreme but regular.

SUMMARY AND CONCLUSIONS

The first major objective of this investigation was to survey macroinvertebrate infauna of the dominant bottom environment of the study area, namely the unvegetated, sandy benthos.

Collections during May through September of 1980, a water year in which spring was wetter and summer was drier than normal, produced 546 species of marine and estuarine invertebrates in 15 phyla. This list is larger than previously available for all benthic environments in the area but probably understates maximum diversity since no samples were taken in winter or from either the Caloosahatchee River or Estero Bay.

The second objective was to assess sampling methods and locations. Because of Ponar grab spillage, manual coring was preferred over grabs, even in subtidal areas. Total sample area of 0.10 to 0.20 meter is probably adequate for most parts of the estuarine system. The deep transitional areas from Cape Haze to Punta Gorda where anoxic conditions may be caused by stratification will need larger sampling areas, as may adjacent areas during summers of wetter years.

Intertidal sampling could be reduced and subtidal sampling increased, especially in the middle harbor area. Once hydrologic interactions between Pine Island Sound, Matlacha Pass, and San Carlos Bay are better known, additional stations would help document dynamics of their diverse infaunal communities. Having data on a station offshore Sanibel and Estero Islands would allow evaluation of shelf-estuary interactions.

The third objective was to identify patterns or trends in communities. Subtidal areas had more species than intertidal areas and changed more over summer, from higher to lower species numbers. Density ranged greatly. Subtidal densities decreased during summer, especially in upper harbor areas. Density in mid to lower harbor areas increased during the same period.

Sediment characteristics were more similar across the study area than hydrographic features. Trends in diversity and density corresponded to salinity and dissolved oxygen gradients, and could be interpreted from both the observed and probable range and persistence of these gradients.

Most species were uncommon and numerically rare. Replacement of rare species was high between collections. Common species were often dominant. Combinations of these species occurred in areas of the estuarine system but in varying ratios. The roles of these species alone and in characteristic assemblages deserves attention. Overall, communities of the system are combinations of a broadly dispersed fauna rather than separate or coherent groups. Species number and density trended across the study area both latitudinally and longitudinally.

Similarity analysis revealed geographic clustering of molluscs and broadly dispersed assemblages of polychaetes and crustaceans. Mollusc groupings did not correspond to tidal position and both mollusc and crustacean similarity patterns distinguished Pine Island Sound from Matlacha Pass. Monitoring of harbor-wide subtidal areas would be feasible using only molluscs, whereas site specific analyses of polychaete or crustacean community structure would be helpful in assessing particular impacts of known origin.

Unvegetated sandy bottoms are the most common benthic environment of the Charlotte Harbor estuarine system and adjacent inshore waters and are populated by a rich macroinvertebrate infauna. Sediments of the area are structurally intact and relatively free of contaminants, except near residential canals and marinas, so patterns of benthic diversity or density can be related to natural events with greater certainty than in less pristine estuaries.

New infaunal studies in the area should turn to the trophic role of key species (Word, 1980); the role of infauna in controlling events within overlying waters (Cloern, 1982); and the nature of infauna communities in natural areas (oyster reefs and seagrass beds) and areas affected by man (residential canals, navigation channels, and petroleum-contaminated sediments).

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Supplementary data I.--Sediment formulae and statistics

Sediment statistics were determined by the following formulae from Folk (1974), where phi = -log x; x = particle size in millimeters.

A. Median = phi value at 50 percent level.
B. Mean grain size (Mz) - overall size measure.

$$Mz = \frac{\text{phi } 16 + \text{phi } 50 + \text{phi } 84}{3}$$

mm	phi	Class
>2.0	<-1	Gravel
>1.0	< 0	Very coarse sand
>0.5	< 1	Coarse sand
>0.25	< 2	Medium sand
>0.125	< 3	Fine sand
>0.0625	< 4	Very fine sand
<0.0625	> 4	Silt clay

C. Inclusive graphic standard deviation (sorting coefficient) (sigma), a measure of uniformity of sorting.

$$\text{sigma} = \frac{\text{phi } 84 - \text{phi } 16}{4} + \frac{\text{phi } 95 - \text{phi } 5}{6.6}$$

Values	Degree of sorting
<0.35 sigma	Very well sorted
0.35 sigma - 0.50 sigma	Well sorted
0.50 sigma - 0.71 sigma	Moderately well sorted
0.71 sigma - 1.00 sigma	Poorly sorted
1.00 sigma - 2.00 sigma	Poorly sorted
2.00 sigma - 4.00 sigma	Very poorly sorted

D. Inclusive graphic skewness (Sk) - degree of asymmetry between central part of grain size composition curve and tail portions of the curve.

$$Sk = \frac{\text{phi } 16 + \text{phi } 18 + 2(\text{phi } 50)}{2\ (\text{phi } 84 - \text{phi } 16)} + \frac{\text{phi } 5 + \text{phi } 95 - 2(\text{phi } 50)}{2\ (\text{phi } 95 = \text{phi } 5)}$$

Sk values	Degree of sorting
+1.00 - +0.30	Strongly fine-skewed
+0.30 - +0.10	Fine-skewed
+0.10 - -0.10	Nearly symmetrical
-0.10 - -0.30	Coarse skewed
-0.30 - -1.00	Strongly coarse-skewed

E. Graphic kurtosis (Kg) - ratio between sorting in tails of the granulometric curve and sorting of the new central portion of the curve.

$$Kg = \frac{\text{phi 95 - phi 5}}{2.44\ (\text{phi 75-phi 25})}$$

Kg values	Degree of kurtosis
<0.67	Very platykurtic
0.67 - 0.90	Platykurtic
0.90 - 1.11	Mesokurtic
1.11 - 1.50	Keptokurtic
1.50 - 3.00	Very leptokurtic
>3.00	Extremely leptokurtic

Sediment characteristics for intertidal stations (1-11 collected June 1980) and subtidal stations (S1-S14 collected May 1980).

Station No.	Median, phi	Mean, phi	Sorting, sigma	Skewness, phi	Kurtosis, phi	Silt-clay, percent total	Organics, percent total
1	2.48	2.45	1.04	-.11	1.24	3.69	3.65
2	1.57	1.59	.53	.16	1.23	.52	.43
3	2.03	2.03	.68	.03	.77	.63	.59
4	2.71	2.81	.61	.24	.88	1.82	.63
5	1.88	1.86	1.02	-.24	1.29	.23	.46
6	2.60	2.66	.55	.22	1.10	.42	.28
7	2.66	2.75	.65	.15	1.10	.98	.73
8	2.18	1.77	1.43	-.41	1.30	3.61	1.48
9	2.50	2.50	.60	-.04	1.54	1.07	1.86
10	2.52	2.50	.96	-.09	1.31	2.59	1.23
11	2.58	2.63	.69	.03	1.47	.38	.33
S-1	2.48	2.47	.76	-.01	1.34	2.31	.54
S-2	2.50	2.52	.73	.03	1.40	3.60	.86
S-3	2.84	2.84	.72	.03	.70	1.58	1.77
S-4	2.59	2.60	.59	.14	1.40	.09	.20
S-5	2.23	2.16	.70	-.10	.89	.29	.54
S-6	2.86	2.92	.68	.11	.78	3.46	.38
S-7	1.63	-3.24	1.14	.36	.42	.30	1.53
S-8	-.78	-.60	1.12	.32	.98	.07	1.26
S-9	2.72	2.84	.76	.24	1.06	6.97	1.14
S-10	2.38	2.32	.65	-.10	1.26	.07	.28
S-11	2.70	2.80	.61	.24	.87	.76	.35
S-12	3.36	3.27	.65	-.20	1.18	6.76	.29
S-13	2.59	2.65	.71	.05	1.29	.29	.43
S-14	2.42	2.02	1.35	-.14	0.52	5.13	1.32

Sediment characteristics for intertidal stations and subtidal stations (1-11 and S1-S14, respectively) collected September 1980.

Station No.	Median, phi	Mean, phi	Sorting, sigma	Skewness, phi	Kurtosis, phi	Silt-clay, percent total	Organics, percent total
1	2.28	2.29	1.06	.02	1.10	5.68	1.43
2	1.62	1.69	.55	.27	1.13	.46	1.13
3	1.80	1.90	.67	.21	.80	.37	.27
4	2.90	2.96	.86	.05	1.04	8.32	3.22
5	2.14	2.05	.79	-.26	.95	.30	.39
6	2.73	2.79	.77	.02	.96	1.35	.28
7	2.61	2.69	.71	.05	1.46	.87	.49
8	.83	.66	1.55	-.13	.78	.84	1.00
9	2.52	2.52	.61	-.04	1.55	1.39	.69
10	2.43	2.35	.72	-.11	1.37	1.60	.56
11	2.84	2.79	1.03	-.28	1.31	.48	.48
S-1	2.48	2.48	.57	-.03	1.42	.77	.75
S-2	2.44	2.39	.78	-.05	1.30	2.67	.65
S-3	2.76	2.67	1.15	-.29	1.33	2.92	2.64
S-4	2.54	2.54	.53	.05	1.31	.54	.12
S-5	2.25	2.17	.69	-.13	.91	.67	.22
S-6	2.66	2.75	.71	.10	1.14	1.78	.35
S-7	.10	.45	1.43	.34	1.28	.86	1.82
S-8	.73	.62	1.32	-.10	.88	.23	1.19
S-9	2.86	2.91	.62	.13	.76	.46	.34
S-10	2.26	2.20	.76	-.03	.96	.89	.28
S-11	3.07	3.03	.66	-.09	.74	3.23	.48
S-12	3.16	3.09	.63	-.17	.76	1.72	.70
S-13	2.62	2.70	.64	.16	1.24	1.78	.48
S-14	2.19	1.78	1.73	-.34	.74	2.63	.88

Supplementary data II.--Hydrographic characteristics

Salinities were computed from conductivity, and dissolved oxygen data were corrected for salinity and temperature on the basis of relationships given by Riley and Skirrow, 1975 (p. 561-562).

Numbers 1-11 and S1-S14 denote intertidal and subtidal stations, respectively. Depths are given as: S, surface; M, mid-depth; B, bottom. Salinity units are parts per thousand (°/oo).

A. Intertidal stations

June 16, 1980

Station No.	Temperature, °C	Salinity, °/oo	Corrected dissolved oxygen, mg/L
1-M	25.6	10.5	5.3
2-M	25.7	28.2	5.1
3-M	26.3	29.5	5.3
4-M	25.8	18.0	5.6
5-M	26.3	13.0	5.9
6-M	26.3	24.8	6.9
7-M	26.3	28.5	6.4
8-M	25.5	27.0	5.0
9-M	25.7	26.0	5.6
10-M	26.3	25.1	5.5
11-M	26.1	25.4	9.9

September 16, 1980

Station No.	Temperature, °C	Salinity, °/oo	Corrected dissolved oxygen, mg/L
1-M	28.2	4.1	3.2
2-M	28.5	6.9	4.7
3-M	28.0	14.2	4.1
4-M	28.6	25.0	3.7
5-M	28.1	27.2	4.6
6-M	28.6	25.6	4.3
7-M	28.0	26.6	4.4
8-M	28.5	27.0	4.7
9-M	29.0	26.1	5.9
10-M	28.5	25.3	5.2
11-M	28.0	26.3	5.9

B. Subtidal stations

May 15, 1980

Station No.	Temperature, °C	Salinity, °/oo	Corrected dissolved oxygen, mg/L
S1-S	28.0	17.4	5.4
S1-B	28.0	18.0	5.6
S2-S	28.0	21.0	5.9
S2-B	27.5	21.2	5.2
S3-S	27.5	21.5	6.1
S3-B	26.0	22.6	5.2
S4-S	27.5	24.2	6.7
S4-B	26.0	25.0	4.3
S5-S	28.0	25.6	6.4
S5-B	27.5	26.2	6.2
S6-S	27.5	31.6	5.6
S6-B	27.3	31.9	5.8
S7-S	27.0	33.5	6.9
S7-B	27.0	32.8	6.7
S8-S	26.0	33.6	6.5
S8-B	27.0	34.0	5.7
S9-S	27.5	32.8	6.6
S9-B	27.4	32.8	6.5
S10-S	28.5	23.4	6.4
S10-B	28.4	23.5	5.6
S11-S	26.8	33.3	6.6
S11-B	26.8	33.5	6.6
S12-S	27.5	31.0	6.3
S12-B	28.0	30.7	5.6
S13-S	28.1	23.9	6.2
S13-B	27.6	24.1	5.9
S14-S	26.5	33.5	6.1
S14-B	26.5	33.5	6.2

September 16, 1980

Station No.	Temperature, °C	Salinity, °/oo	Corrected dissolved oxygen, mg/L
S1-S	29.5	5.1	4.2
S2-S	30.0	10.1	6.2
S2-B	29.0	15.2	2.6
S3-S	30.0	17.3	7.3
S3-B	28.5	18.5	4.3
S4-S	29.0	18.3	7.4
S4-B	28.5	19.8	2.7
S5-S	29.6	21.9	5.4
S5-B	29.2	22.0	5.4
S6-S	29.0	27.4	4.3
S6-B	28.5	28.3	4.1
S7-S	29.0	23.4	6.2
S7-B	28.5	25.7	5.6
S8-S	29.0	30.1	5.3
S8-B	28.1	30.6	5.1
S9-S	28.9	30.5	5.4
S9-B	28.9	30.8	5.3
S10-S	29.5	15.6	4.4
S10-B	28.5	17.2	4.1
S11-S	28.5	27.7	6.3
S11-B	28.5	29.4	4.8
S12-S	28.5	24.3	6.1
S12-B	28.5	24.3	5.9
S13-S	29.0	17.7	4.4
S13-B	29.0	17.7	4.4
S14-S	28.5	29.0	5.5
S14-B	28.1	29.9	5.4

Supplementary data III.--Station reports of species ranked by density and percent total station density

EXPLANATION

cf . . . . similar to the specified taxon
sp . . . . a distinct but unnamed form in the specified taxon
spp. . . . a group of distinct but unnamed forms in the specified taxon
t. . . . . trace occurrence, always less than 1.0 percent of total station density

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 1 - DRY SEASON		
Corophium louisianum	7972.83	36
Grandidierella bonnieroides	7814.96	36
Laeonereis culveri	3227.72	15
Streblospio benedicti	692.90	3
Sayella fusca	605.19	3
Chironomidae spp.	219.27	1
Cyathura polita	192.96	1
Bivalvia sp. A	157.87	1
Polydora ligni	122.79	1
Polydora sp.	114.02	1
Edotea triloba	105.25	t
Haplocytherida setipunctata	105.25	t
Stylochus sp.	105.25	t
Gitanopsis sp.	87.71	t
Pancopeus herbstii	87.71	t
Hargeria rapax	52.62	t
Oligochaeta spp.	43.85	t
Vaunthomsonia sp.	43.85	t
Bowmaniella brasiliensis	35.08	t
Copepoda spp.	35.08	t
Gastropoda sp.	35.08	t
Rangia cuneata	35.08	t
Mysidopsis bahia	17.54	t
Mycidacopa spp.	17.54	t
Nemertina spp.	8.77	t
Gobiosoma bosci	8.77	t
Nematoda spp.	8.77	t
Munna reynoldsi	8.77	t
Cumacea sp.	8.77	t
Neritina reclivata	8.77	t
Nereis falsa	8.77	t
Polymesoda caroliniana	8.77	t
* STATION 2 - DRY SEASON		
Sayella fusca	2815.49	31
Amygdalum papyrium	929.72	10
Mysella planulata	885.87	10
Ampelisca abdita	877.10	10
Grandidierella bonnieroides	657.82	7
Cumella sp. A	605.19	7
Capitella capitata	359.61	4
Scoloplos texana	333.29	4
Bowmaniella brasiliensis	184.19	2
Brachyura sp.	131.56	1
Nemertina spp.	131.56	1
Semibalanus balanoides	114.02	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 2 - DRY SEASON		
Acteocina canaliculata	105.25	1
Edotea triloba	96.48	1
Haplocytherida setipunctata	78.93	1
Vaunthomsonia sp.	78.93	1
Tellina alternata	61.39	1
Nematoda spp.	61.39	1
Paraprionospio pinnata	61.39	1
Oxyurostylis smithi	52.62	1
Laeonereis culveri	43.85	t
Pectinaria gouldii	43.85	t
Streblospio benedicti	43.85	t
Tellina spp.	43.85	t
Mysidopsis almyra	35.08	t
Lucinidae sp.	35.08	t
Heteromastus filiformis	35.08	t
Hargeria rapax	26.31	t
Corophium louisianum	17.54	t
Mysidopsis furca	17.54	t
Etecone heteropoda	17.54	t
Glycinde solitaria	17.54	t
Mitrella lunata	17.54	t
Limulus polyphemus	17.54	t
Mysidopsis bahia	17.54	t
Leitoscoloplos sp.	8.77	t
Pinnixa pearsei	8.77	t
Neanthes succinea	8.77	t
Macomidae sp.	8.77	t
Corbula contracta	8.77	t
Geukensia demissa granosissima	8.77	t
Cyathura polita	8.77	t
Ampelisca holmesi	8.77	t
Oligochaeta spp.	8.77	t
Callianassa sp.	8.77	t
Spiophanes bombyx	8.77	t
* STATION 3 - DRY SEASON		
Grandidierella bonnieroides	18375.24	76
Amygdalum papyrium	2359.39	10
Cyathura polita	964.81	4
Ampelisca abdita	675.36	3
Nemertina spp.	236.81	1
Corophium louisianum	184.19	1
Neanthes succinea	149.10	1
Bowmaniella brasiliensis	122.79	1
Hargeria rapax	114.02	t
Pectinaria gouldii	114.02	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION 3 - DRY SEASON		
Stylochus sp.	96.48	t
Polydora socialis	87.71	t
Laeonereis culveri	61.39	t
Oligochaeta spp.	52.62	t
Semibalanus balanoides	43.85	t
Heteromastus filiformis	43.85	t
Mysella planulata	43.85	t
Limulus polyphemus	35.08	t
Capitella capitata	35.08	t
Cumella sp. A	35.08	t
Polydora sp.	26.31	t
Acteocina canaliculata	26.31	t
Haplocytherida setipunctata	26.31	t
Medicomastus californiensis	26.31	t
Glycinde solitaria	26.31	t
Mysidopsis furca	26.31	t
Edotea triloba	17.54	t
Balanus improvisus	17.54	t
Geukensia demissa granosissima	17.54	t
Haminoea succinea	8.77	t
Gitanopsis sp.	8.77	t
Neopanope texana texana	8.77	t
Nereidae sp.	8.77	t
Euplana gracilis	8.77	t
Gammarus mucronatus	8.77	t
Brachyura sp.	8.77	t
Macoma sp.	8.77	t
* STATION 4 - DRY SEASON		
Capitella capitata	824.47	40
Prionospio heterobranchia	377.15	18
Aricidea philbinae	114.02	5
Ampelisca holmesi	96.48	5
Neanthes succinea	96.48	5
Heteromastus filiformis	96.48	5
Oligochaeta spp.	61.39	3
Nemertina spp.	52.62	3
Tharyx sp.	26.31	1
Tellina versicolor	26.31	1
Cyathura polita	26.31	1
Aricidea fragilis	17.54	1
Scoloplos texana	17.54	1
Kalliapseudes sp. A	17.54	1
Grandidierella bonnieroides	17.54	1
Nematoda spp.	17.54	1
Spiophanes bombyx	8.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 4 - DRY SEASON		
Semibalanus balanoides	8.77	t
Abra aequalis	8.77	t
Holothuroidea sp.	8.77	t
Leitoscoloplos foliosus	8.77	t
Anodontia alba	8.77	t
Ampelisca abdita	8.77	t
Leitoscoloplos fragilis	8.77	t
Sabella melanostigmae	8.77	t
Amygdalum papyrium	8.77	t
Carditamera floridana	8.77	t
Cerapus sp. A	8.77	t
Polydora socialis	8.77	t
Geukensia demissa granosissima	8.77	t
Erycina sp.	8.77	t
Marginella apicina	8.77	t
Glycinde solitaria	8.77	t
Hargeria rapax	8.77	t
Laevicardium mortoni	8.77	t
Ehlersia cornuta	8.77	t
Apoprionospio pygmaea	8.77	t
Hesionidae sp.	8.77	t
* STATION 5 - DRY SEASON		
Dispio uncinata	427.63	43
Spio pettiboneae	87.72	9
Capitella capitata	76.75	8
Minuspio cirrobranchiata	65.79	7
Streptosyllis pettiboneae	54.82	5
Branchiostoma caribaeum	32.89	3
Phoronis architecta	32.89	3
Donax variabilis	32.89	3
Nematoda spp.	21.93	2
Tiron tropakis	21.93	2
Protomystides bidentata	21.93	2
Oligochaeta spp.	21.93	2
Bowmaniella brasiliensis	21.93	2
Cyathura polita	21.93	2
Eudevenopus honduranus	10.96	1
Chone sp.	10.96	1
Cyclaspis sp. B	10.96	1
Nemertina spp.	10.96	1
Ophiophragmus filograneus	10.96	1

Species or taxonomic category	Density (No./m^2)	Percent
* STATION 6 - DRY SEASON		
Apoprionospio pygmaea	245.58	14
Tellina versicolor	219.27	13
Spiophanes bombyx	149.10	9
Acanthohaustorius millsi	131.56	8
Haplocytherida setipunctata	114.02	7
Nemertina spp.	105.25	6
Cyathura polita	70.16	4
Ampelisca holmesi	61.39	4
Oxyurostylis smithi	52.62	3
Bowmaniella brasiliensis	52.62	3
Spionidae sp.	26.31	2
Monoculodes nyei	26.31	2
Glottidia pyramidata	26.31	2
Orbiniidae sp.	26.31	2
Lucina sp.	26.31	2
Mysella planulata	26.31	2
Glycera americana	26.31	2
Kinbergonuphis simoni	17.54	1
Brachiopoda sp.	17.54	1
Acteocina canaliculata	17.54	1
Parasterope pollex	17.54	1
Alpheus floridanus	17.54	1
Nassarius albus	17.54	1
Polydora ligni	17.54	1
Listriella cf. barnardi	17.54	1
Mulina lateralis	17.54	1
Polydora socialis	8.77	1
Synchelidium cf. americanum	8.77	1
Elasmopus levis	8.77	1
Nematoda spp.	8.77	1
Spiochaetopterus costarum oculatus	8.77	1
Actinaria sp.	8.77	1
Oligochaeta spp.	8.77	1
Pinnixa pearsei	8.77	1
Balanus improvisus	8.77	1
Ensis minor	8.77	1
Branchiostoma caribaeum	8.77	1
Mellita quinquiesperforta	8.77	1
Terebellidae sp.	8.77	1
Laevicardium sp.	8.77	1
Myadocopa spp.	8.77	1
Naticidae sp.	8.77	1
Chone americana	8.77	1
Leitoscoloplos fragilis	8.77	1
Eudevenopus honduranus	8.77	1
Caulleriella sp.	8.77	1
Glycinde solitaria	8.77	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 7 - DRY SEASON		
Oligochaeta. spp.	350.84	14
Microphthalmus. sczelkowii	236.81	10
Nematoda. spp.	219.27	9
Axiothella. mucosa	149.10	6
Capitella. capitata	122.79	5
Polydora. socialis	114.02	5
Olivella. minuta	96.48	4
Asychis. elongata	87.71	4
Etecne. heteropoda	78.93	3
Nemertina. spp.	78.93	3
Leitoscoloplos. fragilis	78.93	3
Ampelisca. abdita	70.16	3
Prionospio. heterobranchia	70.16	3
Acteocina. canaliculata	61.39	3
Hargeria. rapax	61.39	3
Neanthes. succinea	43.85	2
Parastarte. triquerta	35.08	1
Leitoscoloplos. foliosus	35.08	1
Lyonsia. hyalina. floridana	35.08	1
Bivalvia. spp.	26.31	1
Polycladida. sp.	26.31	1
Arenicola. cristata	17.54	1
Crepidula. plana	17.54	1
Vaunthomsonia. sp.	17.54	1
Edotea. triloba	17.54	1
Tellina. tampaensis	17.54	1
Kalliapseudes. sp. A	17.54	1
Exogone. atlantica	17.54	1
Nemertina. spp.	17.54	1
Scoloplos. texana	17.54	1
Corophium. louisianum	17.54	1
Typosyllis. cf. lutea	8.77	t
Tharyx. sp.	8.77	t
Podarke. obscura	8.77	t
Oliva. sp.	8.77	t
Turbonilla. sp.	8.77	t
Laeonereis. culveri	8.77	t
Glottidia. pyramidata	8.77	t
Phascolion. sp.	8.77	t
Diopatra. cuprea	8.77	t
Heteromastus. filiformis	8.77	t
Erichsonella. cf. attenuata	8.77	t
Macrocyclops. albidus	8.77	t
Aricidea. fragilis	8.77	t
Columbellidae. sp.	8.77	t
Copepoda. spp.	8.77	t
Chione. cancellata	8.77	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION 7 - DRY SEASON		
Marginella apicina	8.77	t
Kinbergonuphis simoni	8.77	t
Mysella planulata	8.77	t
Amygdalum papyrium	8.77	t
Carditamera floridana	8.77	t
* STATION 8 - DRY SEASON		
Kalliapseudes sp. A	22725.66	28
Polydora socialis	9262.17	12
Ampelisca holmesi	9209.55	11
Kinbergonuphis simoni	6622.10	8
Corophium louisianum	5245.05	7
Hargeria rapax	5192.43	6
Fabricia sabella	3850.46	5
Nearthes acuminata	3043.53	4
Axiothella mucosa	2236.60	3
Prionospio heterobranchia	1973.47	2
Myodocopa spp.	1078.83	1
Oxyurostylis smithi	824.47	1
Ehlersia cornuta	806.93	1
Nematoda spp.	798.16	1
Capitella capitata	727.99	1
Cumella sp. A	587.65	1
Ampelisca abdita	412.23	1
Nemertina spp.	403.46	1
Grandidierella bonnieroides	385.92	t
Scoloplos texana	385.92	t
Caulleriella sp.	333.29	t
Exogone atlantica	306.98	t
Lysippe hyalina floridana	289.44	t
Athenaria spp.	280.67	t
Mysella planulata	254.35	t
Chone americana	219.27	t
Laeonereis culveri	149.10	t
Olivella pusilla	140.33	t
Cyathura polita	131.56	t
Tharyx sp.	122.79	t
Oligochaeta spp.	122.79	t
Acteocina canaliculata	114.02	t
Phascolion sp.	105.25	t
Crepidula maculosa	105.25	t
Magelona pettiboneae	105.25	t
Copepoda spp.	96.48	t
Edotea triloba	87.71	t
Phyllodoce castanea	78.93	t
Parastarte triquerta	70.16	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 8 - DRY SEASON		
Actecon punctostriatus	70.16	t
Turbonilla dalli	70.16	t
Anthuridae sp. A	61.39	t
Haplocytherida setipunctata	61.39	t
Stylochus sp.	52.62	t
Lysianopsis cf. alba	52.62	t
Aricidea philbinae	43.85	t
Etecone heteropoda	43.85	t
Scoloplos rubra	43.85	t
Laevicardium mortoni	35.08	t
Leitoscoloplos fragilis	35.08	t
Ericthonius brasiliensis	35.08	t
Brania clavata	35.08	t
Mysidopsis furca	35.08	t
Marginella apicina	35.08	t
Amphiuridae sp.	35.08	t
Cirriformia sp.	35.08	t
Nassarius vibex	26.31	t
Tharyx sp.	26.31	t
Leitoscoloplos foliosus	26.31	t
Gyptis brevipalpa	26.31	t
Leptosynapta sp.	26.31	t
Prosthiostomum sp.	26.31	t
Amphiuridae sp.	26.31	t
Sayella fusca	26.31	t
Leitoscoloplos sp.	17.54	t
Paracerceis caudata	17.54	t
Taphromysis bowmani	17.54	t
Heteromastus filiformis	17.54	t
Ophiophragmus filogranеus	17.54	t
Anomalocardia auberiana	17.54	t
Bowmaniella brasiliensis	17.54	t
Vitrinellidae sp.	17.54	t
Parasterope pollex	17.54	t
Paracaprella tenuis	17.54	t
Cirrophorus lyra	17.54	t
Streptosyllis pettiboneae	17.54	t
Listriella cf. barnardi	17.54	t
Nassarius albus	17.54	t
Mediomastus sp.	17.54	t
Melinna maculata	17.54	t
Megaluropus sp.	17.54	t
Megalomma bioculata	8.77	t
Boguea enigmatica	8.77	t
Mysidopsis bigelowi	8.77	t
Acuminodeutopus naglei	8.77	t
Sayella crosseana	8.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 8 - DRY SEASON		
Platyhelminthes. spp.	8.77	t
Cerapus. sp. A	8.77	t
Schistomeringos. rudolphi	8.77	t
Anadontia. alba	8.77	t
Tellina. spp.	8.77	t
Ampithoe. longimana	8.77	t
Melita. appendiculata	8.77	t
Amygdalum. papyrium	8.77	t
Cymadoce. faxoni	8.77	t
Polycirrus. sp.	8.77	t
Amphipoda. sp.	8.77	t
Polycladida. sp.	8.77	t
Polycladida. sp.	8.77	t
Orbinia. riseri	8.77	t
Polyplacophora. spp.	8.77	t
Polyplacophora. spp.	8.77	t
Potamilla. sp. A	8.77	t
Semele. sp.	8.77	t
Polinices. duplicatus	8.77	t
Crassinella. lunulata	8.77	t
Gammarus. mucronatus	8.77	t
Granulina. ovuliformis	8.77	t
Turbonilla. sp.	8.77	t
Syllidae. sp. D	8.77	t
* STATION 9 - DRY SEASON		
Hargeria. rapax	2061.18	35
Xenanthura. brevitelson	1412.13	24
Typosyllis. cf. lutea	675.36	11
Aricidea. philbinae	605.19	10
Parastarte. triquerta	219.27	4
Fabricia. sabella	157.87	3
Marginella. apicina	105.25	2
Grandidierella. bonnieroides	96.48	2
Acteocina. canaliculata	61.39	1
Tharyx. sp.	61.39	1
Cyathura. polita	52.62	1
Corophium. louisianum	52.62	1
Osteichthyes. spp.	35.08	1
Granulina. ovuliformis	35.08	1
Spirorbis. spirillum	26.31	t
Heteromastus. filiformis	26.31	t
Sphaerosyllis. longicauda	26.31	t
Ampithoe. longimana	26.31	t
Anomalocardia. auberiana	26.31	t
Erichsonella. cf. attenuata	26.31	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION 9 - DRY SEASON		
Oligochaeta. spp.	26.31	t
Tellina. tampaensis	17.54	t
Exogone. atlantica	17.54	t
Laeonereis. culveri	17.54	t
Magelona. pettiboneae	8.77	t
Metaponorthus. sp.	8.77	t
Tellina. spp.	8.77	t
Kalliapseudes. sp. A	8.77	t
Copepoda. spp.	8.77	t
Leitoscoloplos. sp.	8.77	t
Axiothella. mucosa	8.77	t
Gastropoda. sp.	8.77	t
* STATION 10 - DRY SEASON		
Tharyx. sp.	2841.80	24
Parastarte. triquerta	2604.98	22
Phascolion. sp.	1394.58	12
Aricidea. philbinae	535.03	5
Acteocina. canaliculata	429.77	4
Carditamera. floridana	385.92	3
Lyonsia. hyalina. floridana	350.84	3
Kinbergonuphis. simoni	350.84	3
Heteromastus. filiformis	333.29	3
Oligochaeta. spp.	228.04	2
Myadocopa. spp.	210.50	2
Granulina. ovuliformis	175.42	1
Nematoda. spp.	175.42	1
Capitella. capitata	140.33	1
Cerithium. muscarum	140.33	1
Nassarius. albus	131.56	1
Tellina. tampaensis	122.79	1
Etecone. heteropoda	96.48	1
Edotea. triloba	78.93	1
Hargeria. rapax	70.16	1
Nemertina. spp.	70.16	1
Prionospio. heterobranchia	61.39	1
Tellina. lineata	52.62	t
Scolelepis. texana	52.62	t
Exogone. atlantica	43.85	t
Marginella. apicina	43.85	t
Crepidula. maculosa	43.85	t
Ampelisca. holmesi	35.08	t
Mysella. planulata	35.08	t
Copepoda. spp.	35.08	t
Athenaria. spp.	35.08	t
Melinna. maculata	35.08	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 10 - DRY SEASON		
Cyathura polita	35.08	t
Limulus polyphemus	35.08	t
Sphaerosyllis longicauda	26.31	t
Vaunthomsonia sp.	26.31	t
Pectinaria gouldii	26.31	t
Spiochaetopterus costarum oculatus	17.54	t
Bivalvia spp.	17.54	t
Ensis minor	17.54	t
Leitoscoloplos foliosus	17.54	t
Haplocytherida setipunctata	17.54	t
Cerapus sp. A	8.77	t
Anomalocardia auberiana	8.77	t
Pista cristata	8.77	t
Nassarina manilifera	8.77	t
Melongena corona	8.77	t
Leitoscoloplos fragilis	8.77	t
Glycinde solitaria	8.77	t
Glycera americana	8.77	t
Laeonereis culveri	8.77	t
Ampithoe longimana	8.77	t
Xenanthura brevitelson	8.77	t
Taphromysis bowmani	8.77	t
Semelidae sp.	8.77	t
Amphiuridae sp.	8.77	t
Axiothella mucosa	8.77	t
* STATION 11 - DRY SEASON		
Tellina versicolor	166.64	23
Dispio uncinata	122.79	17
Cyclaspis sp. B	87.71	12
Metamysidopsis swifti	78.93	11
Magelona pettiboneae	70.16	10
Donax variabilis	52.62	7
Glycinde solitaria	26.31	4
Nemertina spp.	26.31	4
Phyllodoce arenae	17.54	2
Copepoda spp.	17.54	2
Brachyura sp.	8.77	1
Chone americana	8.77	1
Tharyx sp.	8.77	1
Armandia maculata	8.77	1
Etecone heteropoda	8.77	1
Olivella floralia	8.77	1
Mysidopsis furca	8.77	1
Spisula solidissima	8.77	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-1 - DRY SEASON		
Amygdalum papyrium	61188.28	63
Grandidierella bonnieroides	9633.23	10
Amphicteis gunneri	7011.04	7
Cyclaspis sp. A	6455.49	7
Corophium louisianum	5077.72	5
Streblospio benedicti	1955.53	2
Polydora websteri	1444.43	1
Cyathura polita	1033.32	1
Edotea triloba	488.88	1
Gitanopsis sp.	422.21	t
Mulina lateralis	311.10	t
Nearthes succinea	266.66	t
Geukensia demissa granosissima	244.44	t
Nemertina spp.	177.77	t
Stylochus sp.	166.66	t
Euplana gracilis	144.44	t
Tellina versicolor	144.44	t
Nemertina spp.	122.22	t
Chironomidae spp.	77.77	t
Polymesoda caroliniana	77.77	t
Capitella capitata	66.66	t
Mytilopsis leucophaeta	33.33	t
Neopanope texana texana	33.33	t
Nematoda spp.	33.33	t
Hydroidea sp.	22.22	t
Cooperella atlantica	22.22	t
Nudibranchia spp.	22.22	t
Grapsidae sp.	22.22	t
Copepoda spp.	11.11	t
Glycinde solitaria	11.11	t
Oligochaeta spp.	11.11	t
Bowmaniella brasiliensis	11.11	t
Apanthura cf. signata	11.11	t
Gastropoda sp.	11.11	t
Macoma constricta	11.11	t
Ampelisca abdita	11.11	t
* STATION S-2 - DRY SEASON		
Cumella sp. A	2968.59	42
Pectinaria gouldii	764.36	11
Paraprionospio pinnata	711.04	10
Parasterope pollex	373.29	5
Amygdalum papyrium	346.63	5
Ampelisca abdita	337.74	5
Leucon sp.	302.19	4
Oxyurostylis smithi	186.64	3

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-2 - DRY SEASON		
Nearthes. succinea	159.98	2
Medicmastus. ambiseta	115.54	2
Copepoda. spp.	97.76	1
Acteon. punctostriatus	62.21	1
Axiognathus. squamata	53.32	1
Grandidierella. bonnieroides	53.32	1
Stylochus. sp.	53.32	1
Odostomia. sp.	44.44	1
Tharyx. sp.	44.44	1
Mysella. planulata	44.44	1
Glycinde. solitaria	35.55	t
Nemertina. spp.	26.66	t
Mulina. lateralis	26.66	t
Ogyrides. alphaerostris	26.66	t
Glycera. americana	26.66	t
Corophium. louisianum	17.77	t
Ampelisca. vadorum	17.77	t
Monoculodes. nyei	17.77	t
Ampelisca. holmesi	8.88	t
Cyathura. polita	8.88	t
Paracaprella. tenuis	8.88	t
Spiochaetopterus. costarum. oculatus	8.88	t
Capitella. jonesi	8.88	t
Streblospio. benedicti	8.88	t
Aparthura. cf. signata	8.88	t
Oligochaeta. spp.	8.88	t
Phyllodoce. arenae	8.88	t
Portunidae. sp.	8.88	t
Pinnixa. pearsei	8.88	t
Chone. americana	8.88	t
* STATION S-3 - DRY SEASON		
Cumella. sp. A	13420.88	62
Leucon. sp. A	5457.23	25
Oxyurostylis. smithi	684.37	3
Paraprionospio. pinnata	604.38	3
Glycinde. solitaria	159.98	1
Sigambra. bassi	151.09	1
Ampelisca. abdita	151.09	1
Pectinaria. gouldii	115.54	1
Odostomia. sp.	62.21	t
Odostomia. bisuturalis	62.21	t
Paracaprella. tenuis	62.21	t
Nearthes. succinea	62.21	t
Pinnixa. pearsei	53.32	t
Parasterope. pollex	53.32	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-3 - DRY SEASON		
Minuspio. sp. B	44.44	t
Ancistrosyllis. jonesi	44.44	t
Amygdalum. papyrium	35.55	t
Ericthonius. brasiliensis	35.55	t
Nemertina. spp.	35.55	t
Monoculodes. nyei	26.66	t
Ampelisca. holmesi	26.66	t
Acteon. punctostriatus	26.66	t
Medicomastus. ambiseta	26.66	t
Portunidae. sp.	17.77	t
Ampelisca. vadorum	17.77	t
Edotea. triloba	17.77	t
Medicomastus. sp.	17.77	t
Sthenelais. sp. A	17.77	t
Mysidopsis. bigelowi	8.88	t
Axiognathus. squamata	8.88	t
Macoma. tenta	8.88	t
Enteropneusta. sp.	8.88	t
Axiognathus. squamata	8.88	t
Mysella. planulata	8.88	t
Leptochela. serratorbita	8.88	t
Fabricia. sabella	8.88	t
Sayella. fusca	8.88	t
Amphipholis. sp.	8.88	t
Chone. americana	8.88	t
Mysidopsis. furca	8.88	t
* STATION S-4 - DRY SEASON		
Cumella. sp. A	1146.55	17
Pectinaria. gouldii	1128.77	17
Oxyurostylis. smithi	791.03	12
Amygdalum. papyrium	737.70	11
Parasterope. pollex	577.72	9
Apoprionospio. pygmaea	533.28	8
Abra. aequalis	373.29	6
Mysella. planulata	195.53	3
Ampelisca. holmesi	186.64	3
Tellina. versicolor	115.54	2
Sthenelais. sp. A	97.76	1
Ericthonius. brasiliensis	62.21	1
Acuminodeutopus. naglei	62.21	1
Acteocina. canaliculata	53.32	1
Molgulidae. sp.	44.44	1
Paraprionospio. pinnata	44.44	1
Acteon. punctostriatus	35.55	1
Spiophanes. bombyx	35.55	1

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-4 - DRY SEASON		
Maccoma. tenta	35.55	1
Edotea. triloba	35.55	1
Glycinde. solitaria	35.55	1
Monoculodes. nyei	35.55	1
Stylochus. sp.	26.66	t
Ampelisca. abdita	26.66	t
Glottidia. pyramidata	26.66	t
Grapsidae. sp.	26.66	t
Nemertina. spp.	26.66	t
Odostomia. bisuturalis	26.66	t
Bivalvia. spp.	17.77	t
Anachis. obesa	17.77	t
Hargeria. rapax	17.77	t
Nearthes. succinea	17.77	t
Lucina. sp.	8.88	t
Mitrella. lunata	8.88	t
Pseudohalosydna. sp. A	8.88	t
Mulina. lateralis	8.88	t
Osteichthyes. spp.	8.88	t
Gastropoda. sp.	8.88	t
Mysidopsis. bigelowi	8.88	t
Lycensia. hyalina. floridana	8.88	t
Phyllodoce. arenae	8.88	t
Listriella. cf. barnardi	8.88	t
Glycera. sp.	8.88	t
Copepoda. spp.	8.88	t
* STATION S-5 - DRY SEASON		
Apoprionospio. pygmaea	248.86	14
Echinoidea. sp.	195.53	11
Tellina. versicolor	151.09	9
Cyathura. polita	79.99	5
Nemertina. spp.	71.10	4
Haplocytherida. setipunctata	53.32	3
Erichthonius. brasiliensis	53.32	3
Owenia. fusiformis	53.32	3
Spiophanes. bombyx	44.44	3
Ampelisca. holmesi	44.44	3
Gitanopsis. sp.	44.44	3
Eudevenopus. honduranus	44.44	3
Mysidopsis. bigelowi	44.44	3
Edotea. triloba	35.55	2
Copepoda. spp.	35.55	2
Branchiostoma. caribaeum	35.55	2
Glottidia. pyramidata	35.55	2
Cyclaspis. sp. B	35.55	2

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-5 - DRY SEASON		
Acanthohaustorius millsi	26.66	2
Oxyurostylis smithi	26.66	2
Mysella planulata	26.66	2
Polydora socialis	26.66	2
Nemertina spp.	26.66	2
Acuminodeutopus naglei	17.77	1
Cumella sp. A	17.77	1
Tiron tropakis	17.77	1
Synchelidium cf. americanum	17.77	1
Lembos spinicarpus inermis	17.77	1
Listriella cf. barnardi	17.77	1
Gastropoda sp.	8.88	1
Cerapus sp. A	8.88	1
Aricidea philbinae	8.88	1
Phyllodoce arenae	8.88	1
Parasterope pollex	8.88	1
Laimia medusa	8.88	1
Paguridae sp.	8.88	1
Parametopella cypris	8.88	1
Lucina sp.	8.88	1
Glycinde solitaria	8.88	1
Monoculodes nyei	8.88	1
Phoronis architecta	8.88	1
Mysidopsis mortenseni	8.88	1
Nassarius vibex	8.88	1
Minuspio sp. B	8.88	1
Mitrella lunata	8.88	1
Nematoda spp.	8.88	1
Paracaprella tenuis	8.88	1
Natica pusilla	8.88	1
Tiron triocellatus	8.88	1
Myodocopa spp.	8.88	1
* STATION S-6 - DRY SEASON		
Medicomastus ambiseta	1528.73	31
Haplocytherida setipunctata	435.51	9
Apoprionospio pygmaea	319.96	6
Tellina versicolor	302.19	6
Nucula proxima	239.97	5
Chaetozone sp.	168.87	3
Solemya occidentalis	159.98	3
Kinbergonuphis simoni	133.32	3
Ampelisca holmesi	106.65	2
Turbonilla interrupta	106.65	2
Kalliapseudes sp. A	88.88	2
Nuculana acuta	79.99	2

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-6 - DRY SEASON		
Copepoda. spp.	71.10	1
Nemertina. spp.	71.10	1
Tharyx. sp.	62.21	1
Aricidea. philbinae	53.32	1
Myodocopa. spp.	53.32	1
Olivella. pusilla	53.32	1
Nematoda. spp.	53.32	1
Parasterope. pollex	53.32	1
Phascolion. sp.	53.32	1
Aricidea. fragilis	44.44	1
Mysidopsis. bigelowi	44.44	1
Abra. aequalis	35.55	1
Notomastus. latericeus	35.55	1
Leitoscoloplos. fragilis	26.66	1
Diplodonta. punctata	26.66	1
Odostomia. sp.	26.66	1
Lucina. radians	26.66	1
Oxyurostylis. smithi	26.66	1
Vaunthomsonia. sp.	26.66	1
Ampharetidae. spp.	17.77	t
Dentalium. texasianum	17.77	t
Axiothella. mucosa	17.77	t
Lucifer. faxoni	17.77	t
Armandia. maculata	17.77	t
Cyathura. polita	17.77	t
Leitoscoloplos. foliosus	17.77	t
Carazziella. hobsonae	17.77	t
Glycinde. solitaria	17.77	t
Lucina. sp.	17.77	t
Porifera. spp.	17.77	t
Spiophanes. bombyx	17.77	t
Hydrozoa. sp.	8.88	t
Caulleriella. sp.	8.88	t
Synchelidium. cf. americanum	8.88	t
Spiochaetopterus. costarum. oculatus	8.88	t
Mercenaria. campechiensis	8.88	t
Phyllodoce. arenae	8.88	t
Lyonsia. hyalina. floridana	8.88	t
Sabellidae. sp.	8.88	t
Megalomma. bioculata	8.88	t
Parapriionospio. pinnata	8.88	t
Macoma. tenta	8.88	t
Pectinaria. gouldii	8.88	t
Magelona. pettiboneae	8.88	t
Turbonilla. dalli	8.88	t
Lucina. nassula	8.88	t
Dosinia. discus	8.88	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-6 - DRY SEASON		
Sphaerosyllis taylori	8.88	t
Minuspio sp. B	8.88	t
Listriella cf. barnardi	8.88	t
Pinnixa pearsei	8.88	t
Monoculodes nyei	8.88	t
Erichthonius brasiliensis	8.88	t
Natica pusilla	8.88	t
Pharonis architecta	8.88	t
Micropholis gracillima	8.88	t
Oligochaeta spp.	8.88	t
* STATION S-7 - DRY SEASON		
Fabricia sabella	52154.78	75
Chone americana	2275.32	3
Goniadides carolinae	1270.98	2
Corophium louisianum	1182.10	2
Tiron triocellatus	1102.11	2
Axiothella mucosa	719.92	1
Erichthonius brasiliensis	702.15	1
Crassinella lunulata	684.37	1
Exogone dispar	586.60	1
Acteon punctostriatus	533.28	1
Nematoda spp.	479.95	1
Vaunthompsonia sp.	391.07	1
Microdeutopus sp.	382.18	1
Eulalia sanguinea	373.29	1
Mediomastus sp.	373.29	1
Kalliapseudes sp. A	355.52	1
Micropratopus raneyi	328.85	t
Oligochaeta spp.	311.08	t
Phyllodoce arenae	293.30	t
Lembos unicornis	275.52	t
Nemertina spp.	257.75	t
Photis melanicus	248.86	t
Aricidea sp. C	248.86	t
Acuminodeutopus naglei	248.86	t
Anadara transversa	248.86	t
Kinbergonuphis simoni	231.08	t
Ampithoe longimana	204.42	t
Myodocopa spp.	186.64	t
Munna cf. hayesi	177.76	t
Photis sp.	159.98	t
Lioberus castaneus	151.09	t
Abra aequalis	124.43	t
Lucifer faxoni	115.54	t
Isolda pulchella	97.76	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-7 - DRY SEASON		
Phyllodoce castanea	88.88	t
Lyonsia hyalina floridana	88.88	t
Glycera americana	88.88	t
Amygdalum papyrium	88.88	t
Lucina sp.	79.99	t
Gitanopsis sp.	71.10	t
Molgulidae sp.	71.10	t
Podarke obscura	71.10	t
Copepoda spp.	53.32	t
Spio pettiboneae	53.32	t
Sphaerosyllis sp.	53.32	t
Polycirrus sp.	53.32	t
Cyclaspis sp. B	53.32	t
Amaeana trilobata	53.32	t
Cumella sp. A	44.44	t
Sthenelais sp. A	44.44	t
Mooreonuphis sp. A	44.44	t
Cardiidae sp.	44.44	t
Spiophanes bombyx	44.44	t
Anachis obesa	35.55	t
Chaetozone sp.	35.55	t
Apoprionospio pygmaea	35.55	t
Leitoscoloplos foliosus	35.55	t
Cyathura polita	35.55	t
Hemipholis elongata	35.55	t
Phascolion sp.	35.55	t
Crepidula plana	35.55	t
Diplodonta punctata	26.66	t
Glottidia pyramidata	26.66	t
Paguridae sp.	26.66	t
Spiochaetopterus costarum oculatus	26.66	t
Corbula contracta	26.66	t
Euceramus praelongus	26.66	t
Macoma tenta	26.66	t
Grandidierella bonnieroides	26.66	t
Ampelisca abdita	17.77	t
Axiognathus squamata	17.77	t
Hydrozoa sp.	17.77	t
Cymadusa compta	17.77	t
Hydroidea sp.	17.77	t
Tagelus divisus	17.77	t
Paleanotus heteroseta	17.77	t
Tircon tropakis	17.77	t
Stylochus sp.	17.77	t
Paramphinome sp. B	17.77	t
Ampharetidae spp.	17.77	t
Eudevenopus honduranus	17.77	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-7 - DRY SEASON		
Asthenothaerus hemiphilli	17.77	t
Polydora socialis	17.77	t
Odostomia sp.	17.77	t
Oxyurostylis smithi	17.77	t
Semele bellastriata	17.77	t
Branchiostoma sp.	17.77	t
Sphaerosyllis taylori	17.77	t
Polygordius sp.	8.88	t
Pista cf. quadrilobata	8.88	t
Terebellidae sp.	8.88	t
Aonides mayaguezensis	8.88	t
Xanthidae sp.	8.88	t
Holothuroidea sp.	8.88	t
Mysidopsis mortenseni	8.88	t
Pholoe sp.	8.88	t
Brachiopoda sp.	8.88	t
Caecum strigosum	8.88	t
Paranaitis polynoides	8.88	t
Cirrophorus lyra	8.88	t
Portunus gibbesii	8.88	t
Calyptraea centralis	8.88	t
Pagurus carolinensis	8.88	t
Monoculodes nyei	8.88	t
Glycemeris pectinata	8.88	t
Dentatisyllis carolinae	8.88	t
Pectinaria gouldii	8.88	t
Caulleriella sp.	8.88	t
Natica pusilla	8.88	t
Crepidula maculosa	8.88	t
Musculus lateralis	8.88	t
Echinoidea sp.	8.88	t
Pseudohalosydna sp.	8.88	t
Epitonium sp.	8.88	t
Parasterope pollex	8.88	t
Leucon sp. A	8.88	t
Scoloplos sp.	8.88	t
Mysidopsis bigelowi	8.88	t
Tharyx sp.	8.88	t
Minuspio sp. B	8.88	t
Paraprionospio pinnata	8.88	t
Brania clavata	8.88	t
Gastropoda sp.	8.88	t
Cerapus sp. A	8.88	t
Nephtys simoni (?)	8.88	t
Sipuncula spp.	8.88	t
Athenaria spp.	8.88	t
Owenia fusiformis	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-7 - DRY SEASON		
Medicomastus ambiseta	8.88	t
Pandora sp.	8.88	t
Parametopella cypris	8.88	t
* STATION S-8 - DRY SEASON		
Crassinella lunulata	782.14	12
Euplana gracilis	702.15	11
Podarke obscura	622.16	10
Copepoda spp.	453.28	7
Dosinia discus	444.40	7
Parapionosyllis longicirrata	346.63	5
Polygordius sp.	319.96	5
Hemipodus roseus	284.41	4
Oligochaeta spp.	231.08	4
Paramphinome sp. B	222.20	3
Metharpinia floridanus	195.53	3
Branchiostoma caribaeum	159.98	2
Amphiuridae sp.	151.09	2
Eurydice littoralis	151.09	2
Lucifer faxoni	97.76	1
Typosyllis sp.	79.99	1
Caecum sp.	71.10	1
Sphaerosyllis taylori	62.21	1
Anadara transversa	53.32	1
Nemertina spp.	53.32	1
Natica pusilla	44.44	1
Caulleriella sp.	35.55	1
Athenaria spp.	35.55	1
Megaluropus sp.	35.55	1
Erichthonius brasiliensis	35.55	1
Eulalia sanguinea	35.55	1
Semele nuculoides	26.66	t
Phatis melanicus	26.66	t
Portunidae sp.	26.66	t
Platyhelminthes spp.	26.66	t
Terebellidae sp.	26.66	t
Polyplacophora spp.	26.66	t
Tanaidacea spp.	26.66	t
Unciola serrata	26.66	t
Myodocopa spp.	26.66	t
Mitrella sp.	26.66	t
Ampithoe longimana	26.66	t
Brachyura sp.	17.77	t
Cumella sp. A	17.77	t
Grapsidae sp.	17.77	t
Brania clavata	17.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-8 - DRY SEASON		
Amphiodia.pulchella	17.77	t
Axiothella.mucosa	17.77	t
Bivalvia.spp.	17.77	t
Amygdalum.papyrium	17.77	t
Haplocytherida.setipunctata	17.77	t
Monoculodes.nyei	17.77	t
Stylochus.sp.	17.77	t
Sphaerosyllis.sp.	17.77	t
Semibalanus.balanoides	17.77	t
Tharyx.sp.	17.77	t
Arabella.iricolor	8.88	t
Ascidiacea.sp.	8.88	t
Acrocirrus.frontifilis	8.88	t
Balanus.improvisus	8.88	t
Achelia.spinosa	8.88	t
Goniadides.carolinae	8.88	t
Hydrozoa.sp.	8.88	t
Erycina.emmonsi	8.88	t
Ehlersia.cornuta	8.88	t
Cyclaspis.sp.B	8.88	t
Cyathura.polita	8.88	t
Exogone.dispar	8.88	t
Fabricia.sabella	8.88	t
Leptosynapta.sp.	8.88	t
Emerita.portoricensis	8.88	t
Nematoda.spp.	8.88	t
Spisula.solidissima	8.88	t
Leitoscoloplos.fragilis	8.88	t
Paguridae.sp.	8.88	t
Eunice.websteri	8.88	t
Stylochus.sp.	8.88	t
Mellita.quinqueisperforta	8.88	t
Tiron.tropakis	8.88	t
Limulus.polyphemus	8.88	t
Vaunthomsonia.sp.	8.88	t
Paleanotus.heteroseta	8.88	t
Lembos.spinicarpus.inermis	8.88	t
Gitanopsis.sp.	8.88	t
Lembos.unicornis	8.88	t
Odontosyllis.enopla	8.88	t
Parasterope.pollex	8.88	t
* STATION S-9 - DRY SEASON		
Mediomastus.ambiseta	871.02	12
Oligochaeta.spp.	435.51	6
Copepoda.spp.	417.73	6

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-9 - DRY SEASON		
Balanus improvisus	373.29	5
Tellina versicolor	346.63	5
Abra aequalis	248.86	3
Macoma tenta	248.86	3
Nemertina spp.	239.97	3
Nematoda spp.	213.31	3
Parasterope pollex	213.31	3
Turbonilla conradi	204.42	3
Olivella pusilla	186.64	3
Anadara transversa	168.87	2
Streblosoma hartmanae	151.09	2
Stenopleustes cf. gracilis	133.32	2
Acteocina canaliculata	115.54	2
Ericthonius brasiliensis	115.54	2
Prionospio heterobranchia	115.54	2
Mysella planulata	97.76	1
Solemya occidentalis	97.76	1
Ampelisca abdita	79.99	1
Capitella capitata	79.99	1
Mysidopsis bahia	79.99	1
Parapriionospio pinnata	79.99	1
Glycinde solitaria	62.21	1
Corophium louisianum	62.21	1
Exogone dispar	62.21	1
Mysidopsis bigelowi	62.21	1
Oxyurostylis smithi	62.21	1
Spiochaetopterus costarum oculatus	62.21	1
Geukensia demissa granosissima	53.32	1
Granulina ovuliformis	53.32	1
Spiophanes bombyx	53.32	1
Amphiuridae sp.	44.44	1
Leitoscoloplos foliosus	44.44	1
Microprotopus raneyi	44.44	1
Neanthes acuminata	44.44	1
Phyllodoce arenae	44.44	1
Synchelidium cf. americanum	44.44	1
Tharyx sp.	44.44	1
Ampelisca holmesi	35.55	t
Myodocopa spp.	35.55	t
Phyllodoce castanea	35.55	t
Thenaria spp.	35.55	t
Cerapus sp. A	26.66	t
Caulleriella sp.	26.66	t
Chione cancellata	26.66	t
Chone americana	26.66	t
Caprella penantis	26.66	t
Ampithoe longimana	26.66	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-9 - DRY SEASON		
Anachis.obesa	26.66	t
Kalliapseudes.sp.A	26.66	t
Odostomia.producta	26.66	t
Myriochele.oculata	26.66	t
Lyonsia.hyalina.floridana	26.66	t
Pectinaria.gouldii	26.66	t
Marginella.apicina	17.77	t
Scoloplos.rubra	17.77	t
Athenaria.spp.	17.77	t
Lucina.sp.	17.77	t
Haminoea.succinea	17.77	t
Hargeria.rapax	17.77	t
Cardiidae.sp.	17.77	t
Odostomia.seminuda	17.77	t
Gouldia.cerina	17.77	t
Haplocytherida.setipunctata	17.77	t
Hydroidea.sp.	17.77	t
Nucula.proxima	17.77	t
Capitella.jonesi	17.77	t
Odontosyllis.enopla	8.88	t
Cumella.sp.A	8.88	t
Polydora.socialis	8.88	t
Stylochus.sp.	8.88	t
Columbella.rusticoides	8.88	t
Conus.jaspideus.stearnsi	8.88	t
Odostomia.sp.	8.88	t
Cirrophorus.lyra	8.88	t
Aricidea.philbinae	8.88	t
Axiothella.mucosa	8.88	t
Metharpinia.floridanus	8.88	t
Polynoidae.sp.	8.88	t
Chaetozone.sp.	8.88	t
Sphaerosyllis.taylori	8.88	t
Osteichthyes.spp.	8.88	t
Apoprionospio.pygmaea	8.88	t
Stenothoe.cf.minuta	8.88	t
Batea.catharinensis	8.88	t
Musculus.lateralis	8.88	t
Lumbrineris.verrilli	8.88	t
Asthenothaerus.hemiphilli	8.88	t
Natica.pusilla	8.88	t
Fabricia.sabella	8.88	t
Phascolion.sp.	8.88	t
Euplana.gracilis	8.88	t
Piromis.roberti	8.88	t
Edotea.triloba	8.88	t
Nassarius.vibex	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-9 - DRY SEASON		
Gastropoda. sp.	8.88	t
Listriella. cf. barnardi	8.88	t
Erichsonella. cf. attenuata	8.88	t
Tagelus. plebius	8.88	t
Gitanopsis. sp.	8.88	t
Tellina. squamifera	8.88	t
Hydroides. dianthus	8.88	t
Hippolyte. pleuracanthus	8.88	t
Eulalia. sanguinea	8.88	t
Raeta. plicatella	8.88	t
Epitonium. nautlae	8.88	t
Sphaerosyllis. longicauda	8.88	t
* STATION S-10 - DRY SEASON		
Ampelisca. holmesi	1102.11	20
Parasterope. pollex	719.92	13
Mediomastus. ambiseta	631.04	11
Listriella. cf. barnardi	444.40	8
Erichthonius. brasiliensis	435.51	8
Oxyurostylis. smithi	213.31	4
Cumella. sp. A	195.53	4
Glycinde. solitaria	177.76	3
Megaluropus. sp.	142.20	3
Acteocina. canaliculata	115.54	2
Ampelisca. abdita	97.76	2
Amygdalum. papyrium	71.10	1
Nemertina. spp.	71.10	1
Balanus. improvisus	62.21	1
Neanthes. succinea	62.21	1
Corophium. louisianum	53.32	1
Mysella. planulata	53.32	1
Sayella. fusca	53.32	1
Turbonilla. conradi	44.44	1
Kinbergonuphis. simoni	44.44	1
Spiochaetopterus. costarum. oculatus	44.44	1
Mysidopsis. furca	44.44	1
Cymadusa. compta	44.44	1
Mysidopsis. bahia	44.44	1
Haminoea. succinea	44.44	1
Nematoda. spp.	35.55	1
Mulina. lateralis	35.55	1
Paraprionospio. pinnata	26.66	t
Paracaprella. tenuis	17.77	t
Grandidierella. bonnieroides	17.77	t
Athenaria. spp.	17.77	t
Edotea. triloba	17.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-10 - DRY SEASON		
Oligochaeta. spp.	17.77	t
Gastropoda. sp.	17.77	t
Macoma. tenta	17.77	t
Capitella. capitata	17.77	t
Bowmaniella. brasiliensis	17.77	t
Tellina. versicolor	17.77	t
Melinna. maculata	8.88	t
Apoprionospio. pygmaea	8.88	t
Leitoscoloplos. fragilis	8.88	t
Laevicardium. mortoni	8.88	t
Bitanopsis. sp.	8.88	t
Hargeria. rapax	8.88	t
Armandia. maculata	8.88	t
Aricidea. philbinae	8.88	t
Acuminodeutopus. naglei	8.88	t
Phoronis. architecta	8.88	t
Diastoma. varium	8.88	t
Copepoda. spp.	8.88	t
Haplocytherida. setipunctata	8.88	t
Ensis. minor	8.88	t
Phascolion. sp.	8.88	t
Odostomia. sp.	8.88	t
Ophiophragmus. sp.	8.88	t
Crepidula. sp.	8.88	t
Polydora. websteri	8.88	t
Pinnixa. pearsei	8.88	t
Eteone. heteropoda	8.88	t
Caecum. pulchellum	8.88	t
Thenaria. spp.	8.88	t
Mitrella. lunata	8.88	t
Turridae. sp.	8.88	t
Paracerceis. caudata	8.88	t
Odostomia. bisuturalis	8.88	t
Erichsonella. cf. attenuata	8.88	t
Lucina. sp.	8.88	t
Owenia. fusiformis	8.88	t
* STATION S-11 - DRY SEASON		
Spirorbis. corrugatus	4186.24	41
Ericthonius. brasiliensis	639.93	6
Nematoda. spp.	595.49	6
Oligochaeta. spp.	337.74	3
Ampithoe. longimana	275.52	3
Corophium. louisianum	204.42	2
Aricidea. philbinae	195.53	2
Mediomastus. ambiseta	186.64	2

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-11 - DRY SEASON		
Polydora.socialis	142.20	1
Tellina.versicolor	115.54	1
Caprella.penantis	115.54	1
Kinbergonuphis.simoni	115.54	1
Mediomastus.sp.	115.54	1
Acteocina.canaliculata	115.54	1
Balanus.amphitrite.amphitrite	97.76	1
Elasmopus.levis	97.76	1
Odontosyllis.enopla	97.76	1
Anadara.transversa	88.88	1
Cerapus.sp.A	88.88	1
Olivella.pusilla	88.88	1
Lucinacia.incerta	88.88	1
Tharyx.sp.	79.99	1
Nudibranchia.spp.	79.99	1
Marginella.apicina	79.99	1
Nemertina.spp.	79.99	1
Abra.aequalis	71.10	1
Exogone.dispar	71.10	1
Microprotopus.raneyi	71.10	1
Turbonilla.conradi	62.21	1
Leitoscoloplos.foliosus	62.21	1
Stenopleustes.cf.gracilis	62.21	1
Terebellidae.sp.	62.21	1
Thenaria.spp.	62.21	1
Aricidea.taylori	53.32	1
Chione.cancellata	53.32	1
Oxyurostylis.smithi	53.32	1
Axiothella.mucosa	44.44	t
Ampelisca.abdita	44.44	t
Granulina.ovuliformis	44.44	t
Cyathura.polita	44.44	t
Hippolyte.pleuracanthus	44.44	t
Paracaprella.tenuis	44.44	t
Balanus.improvisus	35.55	t
Crassinella.lunulata	35.55	t
Mysella.planulata	35.55	t
Sphaerosyllis.taylori	35.55	t
Prionospio.heterobranchia	35.55	t
Chone.americana	26.66	t
Bushia.elegans	26.66	t
Turbonilla.sp.F	26.66	t
Sabellaria.vulgaris	26.66	t
Marginella.aureocincta	26.66	t
Apoprionospio.pygmaea	26.66	t
Copepoda.spp.	17.77	t
Ampelisca.holmesi	17.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-11 - DRY SEASON		
Musculus. lateralis	17.77	t
Bivalvia. spp.	17.77	t
Bryozoa. spp.	17.77	t
Hargeria. rapax	17.77	t
Lucina. sp.	17.77	t
Gitanopsis. sp.	17.77	t
Acuminodeutopus. naglei	17.77	t
Lucifer. faxoni	17.77	t
Prosthiostomum. sp.	17.77	t
Nuculana. acuta	17.77	t
Mitrella. lunata	17.77	t
Hydroidea. sp.	17.77	t
Fabricia. sabella	17.77	t
Spiochaetopterus. costarum. oculatus	17.77	t
Stenothoe. cf. minuta	17.77	t
Gnesioceros. sp.	17.77	t
Myriochele. oculata	17.77	t
Mediomastus. californiensis	17.77	t
Sayella. fusca	17.77	t
Capitella. capitata	17.77	t
Paraprionospio. pinnata	8.88	t
Sthenelais. boa	8.88	t
Natica. pusilla	8.88	t
Armandia. maculata	8.88	t
Gastropoda. sp.	8.88	t
Autolytus. sp. A	8.88	t
Crepidula. plana	8.88	t
Euplana. gracilis	8.88	t
Geukensia. demissa. granosissima	8.88	t
Olivella. sp.	8.88	t
Haminoea. succinea	8.88	t
Mycidacea. sp.	8.88	t
Pagurus. brevidactylus	8.88	t
Amygdalum. papyrium	8.88	t
Athenaria. spp.	8.88	t
Dentalium. laqueatum	8.88	t
Hydrozoa. sp.	8.88	t
Glycinde. solitaria	8.88	t
Tiron. tropakis	8.88	t
Typosyllis. sp. B	8.88	t
Parapionosyllis. sp.	8.88	t
Phyllodoce. arenae	8.88	t
Nassarius. albus	8.88	t
Turridae. sp.	8.88	t
Spiophanes. bombyx	8.88	t
Parasterope. pollex	8.88	t
Macoma. tenta	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-11 - DRY SEASON		
Listriella.cf.barnardi	8.88	t
Nucula.proxima	8.88	t
Melanella.sp.	8.88	t
Monoculodes.nyei	8.88	t
Cumingia.tellinoides	8.88	t
Portunidae.sp.	8.88	t
* STATION S-12 - DRY SEASON		
Spiochaetopterus.costarum.oculatus	1262.09	19
Mediomastus.ambiseta	844.36	12
Turbonilla.conradi	622.16	9
Parasterope.pollex	559.94	8
Nematoda.spp.	551.05	8
Mediomastus.sp.	417.73	6
Glycinde.solitaria	311.08	5
Haplocytherida.setipunctata	142.20	2
Paraprionospio.pinnata	133.32	2
Tellina.versicolor	133.32	2
Listriella.cf.barnardi	115.54	2
Chaetozone.sp.	115.54	2
Nemertina.spp.	106.65	2
Acteocina.canaliculata	97.76	1
Kinbergonuphis.simoni	88.88	1
Oligochaeta.spp.	79.99	1
Ampelisca.holmesi	79.99	1
Mysidopsis.bigelowi	62.21	1
Macoma.tenta	62.21	1
Apoprionospio.pygmaea	53.32	1
Lucifer.faxoni	53.32	1
Oxyurostylis.smithi	44.44	1
Odostomia.sp.	44.44	1
Leitoscoloplos.foliosus	44.44	1
Copepoda.spp.	44.44	1
Cumella.sp.A	35.55	1
Polydora.socialis	35.55	1
Asychis.elongata	35.55	1
Mediomastus.californiensis	35.55	1
Odostomia.bisuturalis	35.55	1
Carazziella.hobsonae	35.55	1
Leitoscoloplos.fragilis	26.66	t
Mysidopsis.furca	26.66	t
Chaetozone.setosa	26.66	t
Athenaria.spp.	26.66	t
Anachis.obesa	26.66	t
Odostomia.seminuda	26.66	t
Ampelisca.abdita	26.66	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-12 - DRY SEASON		
Leitoscoloplos. sp.	26.66	t
Phyllodoce. arenae	17.77	t
Turbonilla. interrupta	17.77	t
Abra. aequalis	17.77	t
Neanthes. acuminata	17.77	t
Minuspio. sp. B	17.77	t
Stenopleustes. cf. gracilis	17.77	t
Scolelepis. squamata	17.77	t
Nuculana. acuta	17.77	t
Astarte. sp.	8.88	t
Capitellidae. sp.	8.88	t
Mercenaria. campechiensis	8.88	t
Phyllodoce. castanea	8.88	t
Chone. americana	8.88	t
Nassarius. albus	8.88	t
Grapsidae. sp.	8.88	t
Scoloplos. rubra	8.88	t
Sthenelais. boa	8.88	t
Eulalia. sanguinea	8.88	t
Mysella. planulata	8.88	t
Erichthonius. brasiliensis	8.88	t
Maldane. cf. sarsi	8.88	t
Lumbrineris. sp. D	8.88	t
Periclimenes. longicaudatus	8.88	t
* STATION S-13 - DRY SEASON		
Ampelisca. abdita	2622.19	15
Ampelisca. holmesi	2499.97	15
Cerapus. sp. A	2177.75	13
Parasterope. pollex	1211.09	7
Cumella. sp. A	977.76	6
Aricidea. philbinae	844.43	5
Hargeria. rapax	599.99	3
Myodocopa. spp.	577.77	3
Oxyurostylis. smithi	477.77	3
Capitella. capitata	466.66	3
Tharyx. sp.	466.66	3
Mysella. planulata	311.10	2
Nemertina. spp.	211.10	1
Mediomastus. sp.	211.10	1
Amygdalum. papyrium	211.10	1
Caecum. pulchellum	199.99	1
Mediomastus. ambiseta	199.99	1
Acteocina. canaliculata	155.55	1
Acuminodeutopus. naglei	144.44	1
Grandidierella. bonnieroides	144.44	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-13 - DRY SEASON		
Nematoda. spp.	133.33	1
Kalliapseudes. sp.	122.22	1
Odostomia. bisuturalis	111.11	1
Paracerceis. caudata	111.11	1
Tellina. versicolor	111.11	1
Scoloplos. rubra	99.99	1
Abra. aequalis	99.99	1
Mitrella. lunata	88.88	1
Macoma. tenta	88.88	1
Erichsonella. cf. attenuata	88.88	1
Edotea. triloba	77.77	t
Cirrophorus. lyra	66.66	t
Chone. americana	66.66	t
Phyllodoce. arenae	66.66	t
Xenanthura. brevitelson	66.66	t
Megalurcpus. sp.	66.66	t
Glycinde. solitaria	66.66	t
Ascidiacea. sp.	55.55	t
Corophium. louisianum	55.55	t
Haplocytherida. setipunctata	44.44	t
Parapriconospio. pinnata	44.44	t
Lyonsia. hyalina. floridana	44.44	t
Ericthonius. brasiliensis	44.44	t
Paracaprella. tenuis	33.33	t
Spiochaetopterus. costarum. oculatus	33.33	t
Bowmaniella. brasiliensis	33.33	t
Fabricia. sabella	33.33	t
Cymadusa. compta	33.33	t
Anadara. transversa	22.22	t
Musculus. lateralis	22.22	t
Copepoda. spp.	22.22	t
Oligochaeta. spp.	22.22	t
Melinna. maculata	22.22	t
Monoculodes. nyei	22.22	t
Tagelus. divisus	22.22	t
Sayella. fusca	22.22	t
Phascolion. sp.	22.22	t
Acteon. punctostriatus	22.22	t
Kinbergonuphis. simoni	11.11	t
Aricidea. taylori	11.11	t
Fabricia. sabella	11.11	t
Amphicteis. gunneri	11.11	t
Odostomia. impressa	11.11	t
Hydrozoa. sp.	11.11	t
Thenaria. spp.	11.11	t
Lumbrineris. sp. D	11.11	t
Pinnixa. pearsei	11.11	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-13 - DRY SEASON		
Diopatra cuprea	11.11	t
Sphenia antillensis	11.11	t
Mysidopsis furca	11.11	t
Tellina tampaensis	11.11	t
Magelona pettiboneae	11.11	t
Nassarius albus	11.11	t
Gitanopsis sp.	11.11	t
Metharpinia floridanus	11.11	t
Balanus improvisus	11.11	t
Polydora sp.	11.11	t
Bivalvia spp.	11.11	t
Granulina ovuliformis	11.11	t
Isolda pulchella	11.11	t
Parametopella cypris	11.11	t
Spiochaetopterus costarum oculatus	11.11	t
* STATION S-14 - DRY SEASON		
Medicomastus ambiseta	479.95	9
Nematoda spp.	426.62	8
Medicomastus sp.	408.84	7
Nemertina spp.	328.85	6
Tellina versicolor	239.97	4
Fabricia sabella	159.98	3
Cumella sp. A	124.43	2
Kinbergonuphis simoni	115.54	2
Lucifer faxoni	115.54	2
Ampelisca holmesi	97.76	2
Exogone dispar	97.76	2
Oligochaeta spp.	97.76	2
Nuculana acuta	97.76	2
Sphaerosyllis taylori	97.76	2
Olivella pusilla	88.88	2
Oxyurostylis smithi	88.88	2
Anadara transversa	79.99	1
Copepoda spp.	79.99	1
Sphaerosyllis longicauda	79.99	1
Solemya occidentalis	79.99	1
Ascidiacea sp.	71.10	1
Erichthonius brasiliensis	71.10	1
Diplodonta punctata	71.10	1
Mycocopa spp.	71.10	1
Turbonilla conradi	71.10	1
Acuminodeutopus naglei	62.21	1
Sthenelais sp. A	62.21	1
Abra aequalis	53.32	1
Medicomastus californiensis	53.32	1

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-14 - DRY SEASON		
Phascolion. sp.	53.32	1
Tharyx. sp.	53.32	1
Corbula. contracta	44.44	1
Nucula. proxima	44.44	1
Lumbrineris. verrilli	44.44	1
Vaunthomsonia. sp.	44.44	1
Aricidea. philbinae	35.55	1
Polycirrus. sp.	35.55	1
Glottidia. pyramidata	35.55	1
Marginella. apicina	35.55	1
Monoculodes. nyei	35.55	1
Prosthiostomum. sp.	35.55	1
Capitellidae. Genus. A	35.55	1
Cirrophorus. lyra	26.66	t
Axiothella. mucosa	26.66	t
Caulleriella. sp.	26.66	t
Ampithoe. longimana	26.66	t
Amygdalum. papyrium	26.66	t
Micropratopus. raneyi	26.66	t
Photis. melanicus	26.66	t
Lucina. sp.	26.66	t
Phyllodoce. arenae	26.66	t
Tiron. triocellatus	26.66	t
Owenia. fusiformis	26.66	t
Apoprionospio. pygmaea	17.77	t
Phoronis. architecta	17.77	t
Notomastus. latericeus	17.77	t
Chaetozone. sp.	17.77	t
Leitoscoloplos. foliosus	17.77	t
Glycera. americana	17.77	t
Chone. americana	17.77	t
Paraprionospio. pinnata	17.77	t
Parasterope. pollex	17.77	t
Podocerus. sp.	17.77	t
Polydora. socialis	17.77	t
Pircmis. roberti	17.77	t
Grandidierella. bonnieroides	17.77	t
Crassinella. lunulata	17.77	t
Myriochele. oculata	17.77	t
Minuspio. sp. B	17.77	t
Macoma. tenta	17.77	t
Euceramus. praelongus	17.77	t
Brania. clavata	17.77	t
Pinnixa. pearsei	17.77	t
Cryoturris. cerinella	8.88	t
Porturidae. sp.	8.88	t
Ehlersia. cornuta	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-14 - DRY SEASON		
Ampharetidae. spp.	8.88	t
Dentalium. laqueatum	8.88	t
Apanthura. cf. signata	8.88	t
Haplocytherida. setipunctata	8.88	t
Caprella. penantis	8.88	t
Sipuncula. spp.	8.88	t
Aricidea. taylori	8.88	t
Neopanope. texana. texana	8.88	t
Semele. sp.	8.88	t
Paguridae. sp.	8.88	t
Goniadides. carolinae	8.88	t
Mysidopsis. bahia	8.88	t
Serolis. mgrayi	8.88	t
Pettiboneia. sp. A	8.88	t
Corophium. louisianum	8.88	t
Nudibranchia. spp.	8.88	t
Spiochaetopterus. costarum. oculatus	8.88	t
Polycladida. sp.	8.88	t
Megalurapus. sp.	8.88	t
Sthenelais. sp. A	8.88	t
Terebellidae. sp.	8.88	t
Hydrozoa. sp.	8.88	t
Amphiuridae. sp.	8.88	t
Stenopleustes. cf. gracilis	8.88	t
Busycon. contrarium	8.88	t
Marginella. hartleyanum	8.88	t
Glycinde. solitaria	8.88	t
Paracaprella. tenuis	8.88	t
Eulalia. sanguinea	8.88	t
Hargeria. rapax	8.88	t
Capitella. jonesi	8.88	t
Spio. pettiboneae	8.88	t
Clymenella. mucosa	8.88	t
Grapsidae. sp.	8.88	t
Stylochus. sp.	8.88	t
Calyptraea. centralis	8.88	t
Ancistrosyllis. hamata	8.88	t
Listriella. cf. barnardi	8.88	t
Spiophanes. bombyx	8.88	t
Pectinaria. gouldii	8.88	t
Lumbrineris. sp. D	8.88	t
Melita. appendiculata	8.88	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION 1 - WET SEASON		
Haplocytherida.setipunctata	4019.91	49
Nematoda.spp.	2088.95	25
Laeonereis.culveri	394.96	5
Odostomia.sp.	394.96	5
Cladocera.sp.	351.08	4
Chironomidae.spp.	175.54	2
Bivalvia.spp.	166.76	2
Cyathura.polita	157.98	2
Almyracuma.sp.	105.32	1
Grandidierella.bonnieroides	87.77	1
Neopanope.texana.texana	61.43	1
Mulina.lateralis	52.66	1
Corophium.louisianum	43.88	1
Streblospio.benedicti	43.88	1
Vaunthomsonia.sp.	35.10	t
Tellina.versicolor	26.33	t
Amphicteis.gunneri	17.55	t
Apanthura.cf.signata	8.77	t
Leitoscoloplos.sp.	8.77	t
Gastropoda.sp.	8.77	t
Musculus.lateralis	8.77	t
Polymesoda.caroliniana	8.77	t
Sipuncula.spp.	8.77	t
* STATION 2 - WET SEASON		
Amygdalum.papyrium	1439.44	33
Streblospio.benedicti	737.27	17
Pectinaria.gouldii	333.52	8
Tellina.spp.	219.42	5
Odostomia.sp.	184.31	4
Cumella.sp.A	157.98	4
Ampelisca.holmesi	149.21	3
Acteocina.canaliculata	122.87	3
Laeonereis.culveri	122.87	3
Medicomastus.sp.	114.10	3
Nassarius.vibex	96.54	2
Nematoda.spp.	70.21	2
Nemertina.spp.	52.66	1
Ampelisca.abdita	52.66	1
Almyracuma.sp.	52.66	1
Sayella.fusca	43.88	1
Neanthes.succinea	43.88	1
Tagelus.plebius	43.88	1
Glycinde.solitaria	35.10	1
Bowmaniella.brasiliensis	35.10	1
Stylochus.sp.	35.10	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 2 - WET SEASON		
Diopatra cuprea	26.33	1
Edotea triloba	26.33	1
Gastropoda sp.	17.55	t
Cerapus sp. A	17.55	t
Amphicteis gunneri	17.55	t
Pagurus brevidactylus	8.77	t
Cyathura polita	8.77	t
Heteromastus filiformis	8.77	t
Xenanthura brevitelson	8.77	t
Mysella planulata	8.77	t
Oxyurostylis smithi	8.77	t
Ampelisca vadorum	8.77	t
Eteone heteropoda	8.77	t
Spiochaetopterus costarum oculatus	8.77	t
Haplocytherida setipunctata	8.77	t
Grapsidae sp.	8.77	t
Grandidierella bonnieroides	8.77	t
Mysidopsis bahia	8.77	t
Mysidopsis furca	8.77	t
Acteon punctostriatus	8.77	t
Hydrozoa sp.	8.77	t
* STATION 3 - WET SEASON		
Leitoscoloplos foliosus	2325.93	45
Odostomia laevigata	1079.58	21
Haplocytherida setipunctata	921.59	18
Nematoda spp.	114.10	2
Laeonereis culveri	114.10	2
Balanus improvisus	87.77	2
Tagelus plebius	87.77	2
Nemertina spp.	78.99	2
Heteromastus filiformis	78.99	2
Tellina spp.	61.43	1
Amygdalum papyrium	43.88	1
Polydora ligni	26.33	1
Almyracuma sp.	26.33	1
Glycinde solitaria	17.55	t
Mysidopsis bigelowi	17.55	t
Mysidopsis furca	8.77	t
Oligochaeta spp.	8.77	t
Nassarius vibex	8.77	t
Cumella sp. A	8.77	t
Grandidierella bonnieroides	8.77	t
Bowmaniella brasiliensis	8.77	t
Corophium louisianum	8.77	t
Sayella fusca	8.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 3 - WET SEASON		
Edotea triloba	8.77	t
Metoponorthus sp.	8.77	t
Vaunthomsonia sp.	8.77	t
* STATION 4 - WET SEASON		
Capitella jonesi	272.09	24
Haplocytherida setipunctata	157.98	14
Capitella capitata	105.32	9
Scolelepis texana	96.54	8
Nearthes acuminata	87.77	8
Polydora ligni	70.21	6
Copepoda spp.	52.66	5
Nematoda spp.	52.66	5
Tellina spp.	43.88	4
Cirriformia sp. A	26.33	2
Oligochaeta spp.	26.33	2
Axiothella mucosa	17.55	2
Kalliapseudes sp. A	8.77	1
Capitellidae sp. A	8.77	1
Crepidula maculosa	8.77	1
Armandia maculata	8.77	1
Bivalvia spp.	8.77	1
Heteromastus filiformis	8.77	1
Ampelisca holmesi	8.77	1
Acteocina canaliculata	8.77	1
Mercenaria campechiensis	8.77	1
Hargeria rapax	8.77	1
Paraprionospio pinnata	8.77	1
Corophium louisianum	8.77	1
Leitoscoloplos foliosus	8.77	1
Fabricia sp. A	8.77	1
Ehlersia cornuta	8.77	1
* STATION 5 - WET SEASON		
Dispio uncinata	377.41	42
Eudevenopus honduranus	87.77	10
Acanthohaustorius millsi	70.21	8
Leitoscoloplos sp.	61.43	7
Leitoscoloplos fragilis	52.66	6
Streptosyllis pettiboneae	35.10	4
Branchiostoma sp.	35.10	4
Megaluropus sp.	26.33	3
Donax variabilis	26.33	3
Bowmaniella brasiliensis	17.55	2
Nematoda spp.	17.55	2

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 5 - WET SEASON		
Eteone.heteropoda	8.77	1
Capitella.jonesi	8.77	1
Athenaria.spp.	8.77	1
Athenaria.spp.	8.77	1
Apoprionospio.pygmaea	8.77	1
Spionidae.sp.	8.77	1
Lumbrineris.ernesti	8.77	1
Tiron.tropakis	8.77	1
Magelona.pettiboneae	8.77	1
Hydroidea.sp.	8.77	1
* STATION 6 - WET SEASON		
Haplocytherida.setipunctata	1044.47	23
Oligochaeta.spp.	280.86	6
Kinbergonuphis.simoni	219.42	5
Diopatra.cuprea	201.87	4
Parastarte.triquerta	184.31	4
Magelona.pettiboneae	175.54	4
Acteocina.canaliculata	175.54	4
Nemertina.spp.	166.76	4
Tellina.tampaensis	166.76	4
Oxyurostylis.smithi	122.87	3
Spiochaetopterus.costarum.oculatus	122.87	3
Spiophanes.bombyx	114.10	2
Copepoda.spp.	105.32	2
Nearthes.acuminata	105.32	2
Prionospio.heterobranchia	105.32	2
Stylochus.sp.	105.32	2
Tellina.spp.	105.32	2
Ericthonius.brasiliensis	87.77	2
Nematoda.spp.	87.77	2
Polydora.websteri	70.21	2
Apoprionospio.pygmaea	61.43	1
Ampelisca.holmesi	52.66	1
Mysella.planulata	52.66	1
Paguridae.sp.	52.66	1
Nearthes.succinea	43.88	1
Scoloplos.texana	43.88	1
Tellina.versicolor	43.88	1
Haminoea.succinea	35.10	1
Lembos.smithi	35.10	1
Transennella.conradina	26.33	1
Glycinde.solitaria	26.33	1
Capitella.jonesi	26.33	1
Phyllodoce.arenae	17.55	t
Balanus.improvisus	17.55	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 6 - WET SEASON		
Marginella.apicina	17.55	t
Mitrella.lunata	17.55	t
Phoronis.architecta	17.55	t
Polynoidae.sp.A	17.55	t
Portunidae.sp.	8.77	t
Mysidopsis.furca	8.77	t
Polydorid	8.77	t
Aricidea.philbinae	8.77	t
Phyllodoce.castanea	8.77	t
Mysidopsis.bahia	8.77	t
Cyathura.polita	8.77	t
Bitanopsis.sp.	8.77	t
Etecne.heteropoda	8.77	t
Malmgraniella.sp.B	8.77	t
Lembos.rectangulatus	8.77	t
Hargeria.rapax	8.77	t
Spionidae.sp.	8.77	t
Tagelus.plebius	8.77	t
Turbonilla.sp.	8.77	t
Laevicardium.mortoni	8.77	t
Podarke.obscura	8.77	t
Lysianopsis.cf.alba	8.77	t
Listriella.cf.barnardi	8.77	t
Lucina.radians	8.77	t
Axiothella.mucosa	8.77	t
Brachidontes.exustus	8.77	t
Leitoscoloplos.sp.	8.77	t
Carazziella.hobsonae	8.77	t
Chone.americana	8.77	t
Scoloplos.rubra	8.77	t
Bivalvia.spp.	8.77	t
Gobiidae.sp.	8.77	t
Ophiophragus.wurdmani	8.77	t
Apanthura.magnifica	8.77	t
* STATION 7 - WET SEASON		
Haplocytherida.setipunctata	1606.20	24
Dorvilleidae.sp.	1360.45	20
Nematoda.spp.	605.61	9
Oligochaeta.spp.	526.62	8
Anomalocardia.auberiana	359.86	5
Micropthalmus.sczelkowii	324.75	5
Tellina.tampaensis	254.53	4
Phascolion.sp.	254.53	4
Acteocina.canaliculata	201.87	3
Parastarte.triquerta	184.31	3

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 7 - WET SEASON		
Polydora websteri	184.31	3
Copepoda spp.	149.21	2
Laeonereis culveri	131.65	2
Cerithium muscarum	70.21	1
Heteromastus filiformis	70.21	1
Olivella minuta	70.21	1
Capitella capitata	61.43	1
Leitoscoloplos foliosus	61.43	1
Typosyllis cf. lutea	35.10	1
Prionospio pinnata	26.33	t
Nemertina spp.	26.33	t
Almyracuma sp.	26.33	t
Axiothella mucosa	26.33	t
Polydora ligni	26.33	t
Odostomia producta	17.55	t
Gastropoda sp.	17.55	t
Magelona pettiboneae	17.55	t
Sayella hemphilli	17.55	t
Chone americana	8.77	t
Haminoea succinea	8.77	t
Gobiidae sp.	8.77	t
Leitoscoloplos fragilis	8.77	t
Odostomia sp.	8.77	t
Leitoscoloplos sp.	8.77	t
Athenaria spp.	8.77	t
Eteone heteropoda	8.77	t
Kurtziella sp.	8.77	t
Brachyura sp.	8.77	t
Streptosyllis pettiboneae	8.77	t
Phoronis architecta	8.77	t
* STATION 8 - WET SEASON		
Hargeria rapax	24672.43	41
Nematoda spp.	8671.77	14
Exogone dispar	5292.59	9
Ehlersia cornuta	2905.22	5
Prionospio heterobranchia	1746.64	3
Kinbergonuphis simoni	1535.99	3
Laeonereis culveri	1518.43	3
Kalliapseudes sp. A	1395.55	2
Polydora ligni	1342.89	2
Parastarte triquerta	965.48	2
Gammarus mucronatus	675.83	1
Myadocopa spp.	667.05	1
Harpacticoida spp.	605.61	1
Anomalocardia auberiana	561.73	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 8 - WET SEASON		
Acteocina canaliculata	535.40	1
Grandidierella bonnieroides	456.40	1
Granulina ovuliformis	438.85	1
Ophryotrocha sp. A	430.07	1
Leitoscoloplos foliosus	394.96	1
Neanthes acuminata	368.63	1
Cymadusa compta	333.52	1
Athenaria spp.	298.42	t
Calanoida spp.	263.31	t
Phyllodoce castanea	254.53	t
Axiothella mucosa	254.53	t
Phascolion sp.	245.75	t
Haplocytherida setipunctata	228.20	t
Oligochaeta spp.	193.09	t
Ampelisca holmesi	157.98	t
Nemertina spp.	157.98	t
Anthozoa sp.	140.43	t
Fabricia sabella	122.87	t
Caulleriella sp.	105.32	t
Cirriformia sp. A	105.32	t
Lyonsia hyalina floridana	105.32	t
Apanthura magnifica	105.32	t
Parasterope pollex	87.77	t
Edotea triloba	87.77	t
Odostomia producta	87.77	t
Mysidopsis bigelowi	87.77	t
Lysianopsis cf. alba	78.99	t
Cirrophorus lyra	70.21	t
Amygdalum papyrium	70.21	t
Sphaerosyllis longicauda	70.21	t
Brachidontes exustus	61.43	t
Schistomeringos rudolphi	52.66	t
Cerapus sp. A	52.66	t
Chone americana	52.66	t
Tellina tampaensis	52.66	t
Gyptis brevipalpa	43.88	t
Cerithium muscarum	43.88	t
Abra aequalis	43.88	t
Oxyurostylis smithi	43.88	t
Capitella capitata	43.88	t
Aricidea philbinae	43.88	t
Magelona pettiboneae	43.88	t
Stylochus sp.	43.88	t
Amphiuridae sp.	35.10	t
Caecum pulchellum	35.10	t
Hippolyte pleuracanthus	35.10	t
Haminoea elegans	35.10	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION B - WET SEASON		
Marginella.lavalleeana	35.10	t
Turbonilla.dalli	26.33	t
Scoloplos.rubra	26.33	t
Tharyx.cf.dorsobranchialis	26.33	t
Ophiophragmus.filograneus	26.33	t
Typosyllis.cf.lutea	26.33	t
Sabella.melanostigmae	26.33	t
Taphromysis.bowmani	26.33	t
Chione.cancellata	26.33	t
Marginella.apicina	26.33	t
Mysella.planulata	26.33	t
Cyclaspis.sp.A	26.33	t
Nudibranchia.spp.	17.55	t
Streblospio.benedicti	17.55	t
Parahesione.luteola	17.55	t
Paracaprella.tenuis	17.55	t
Cyclopoida.spp.	17.55	t
Stylochus.sp.	17.55	t
Brania.clavata	17.55	t
Diastoma.varium	17.55	t
Corophium.louisianum	17.55	t
Sphaerosyllis.taylori	17.55	t
Phoronis.architecta	17.55	t
Anoplodactylus.petiolatus	17.55	t
Leptosynapta.inhaerens	17.55	t
Crepidula.maculosa	8.77	t
Erichsonella.cf.attenuata	8.77	t
Olivella.pusilla	8.77	t
Glycinde.solitaria	8.77	t
Listriella.cf.barnardi	8.77	t
Bowmaniella.portoricensis.complex	8.77	t
Turridae.sp.	8.77	t
Bulla.striata	8.77	t
Sipuncula.spp.	8.77	t
Lumbrineris.ernesti	8.77	t
Donax.variabilis	8.77	t
Acteon.punctostriatus	8.77	t
Laevicardium.mortoni	8.77	t
Spiophanes.bombyx	8.77	t
Sphaerosyllis.piriferopsis	8.77	t
Mediomastus.sp.	8.77	t
Ampelisca.sp.B	8.77	t
Nudibranchia.spp.	8.77	t
Arabella.mutans	8.77	t
Brachyura.sp.	8.77	t
Eteone.heteropoda	8.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 9 - WET SEASON		
Xenanthura. brevitelson	2159.16	32
Parastarte. triquerta	1290.23	19
Aricidea. philbinae	921.59	14
Harpacticoida. spp.	746.05	11
Fabricia. sabella	430.07	6
Hargeria. rapax	201.87	3
Haplocytherida. setipunctata	131.65	2
Marginella. apicina	105.32	2
Aricidea. sp.	105.32	2
Typosyllis. cf. lutea	87.77	1
Cerithiidae. sp.	78.99	1
Acteocina. canaliculata	78.99	1
Laeonereis. culveri	52.66	1
Capitella. capitata	52.66	1
Anomalocardia. auberiana	43.88	1
Nematoda. spp.	35.10	1
Parapionosyllis. longicirrata	26.33	t
Almyracuma. sp.	17.55	t
Granulina. ovuliformis	17.55	t
Grandidierella. bonnieroides	17.55	t
Nemertina. spp.	17.55	t
Oligochaeta. spp.	17.55	t
Phascolion. sp.	17.55	t
Tellina. tampaensis	17.55	t
Tharyx. cf. dorsobranchialis	17.55	t
Bivalvia. spp.	17.55	t
Lyonsia. hyalina. floridana	8.77	t
Leitoscoloplos. foliosus	8.77	t
Heteromastus. filiformis	8.77	t
* STATION 10 - WET SEASON		
Odostomia. producta	4002.35	3
Acteocina. canaliculata	2282.04	2
Batillaria. minima	1843.19	1
Lyonsia. hyalina. floridana	1562.32	1
Leitoscoloplos. foliosus	983.03	1
Phascolion. sp.	904.04	1
Aricidea. philbinae	710.94	1
Laeonereis. culveri	605.61	t
Tharyx. cf. dorsobranchialis	605.61	t
Tellina. tampaensis	438.85	t
Haplocytherida. setipunctata	359.86	t
Heteromastus. filiformis	289.64	t
Haminoea. succinea	236.98	t
Haminoea. elegans	193.09	t
Nemertina. spp.	140.43	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION 10 - WET SEASON		
Almyracuma. sp.	131.65	t
Axiothella. mucosa	114.10	t
Cerithium. muscarum	96.54	t
Nassarius. vibex	96.54	t
Prionospio. heterobranchia	87.77	t
Anomalocardia. auberiana	87.77	t
Polydora. ligni	87.77	t
Capitella. capitata	78.99	t
Sayella. hemphilli	70.21	t
Nematoda. spp.	61.43	t
Portunidae. sp.	52.66	t
Exogone. dispar	52.66	t
Ophiophragmus. filograneus	43.88	t
Tellina. lineata	43.88	t
Oligochaeta. spp.	43.88	t
Gastropoda. sp.	26.33	t
Eteone. heteropoda	26.33	t
Granulina. ovuliformis	26.33	t
Glycera. americana	26.33	t
Hargeria. rapax	26.33	t
Stylochus. sp.	26.33	t
Cerithium. sp.	17.55	t
Amphicteis. gunneri	17.55	t
Drilonereis. longa	17.55	t
Phyllodoce. castanea	17.55	t
Myodocopa. spp.	17.55	t
Xenanthura. brevitelson	17.55	t
Fabricia. sabella	17.55	t
Copepoda. spp.	17.55	t
Marginella. apicina	17.55	t
Melinna. maculata	8.77	t
Melongena. corona	8.77	t
Turbonilla. conradi	8.77	t
Sphaerosyllis. longicauda	8.77	t
Scoloplos. texana	8.77	t
Bivalvia. spp.	8.77	t
Caecum. pulchellum	8.77	t
Cyathura. polita	8.77	t
Sayella. fusca	8.77	t
Crepidula. plana	8.77	t
Diopatra. cuprea	8.77	t
Parastarte. triquerta	0.00	88

Species or taxonomic category	Density (No./m^2)	Percent
* STATION 11 - WET SEASON		
Tellina. versicolor	333.52	25
Spirorbis. corrugatus	122.87	9
Donax. variabilis	114.10	9
Portunidae. sp.	96.54	7
Crepidula. plana	78.99	6
Sphenia. antillensis	78.99	6
Copepoda. spp.	78.99	6
Cyclaspis. sp. B	52.66	4
Nemertina. spp.	43.88	3
Armandia. maculata	43.88	3
Dispio. uncinata	35.10	3
Micropratopus. raneyi	35.10	3
Glycinde. solitaria	26.33	2
Apoprionospio. pygmaea	26.33	2
Ericthonius. brasiliensis	17.55	1
Polydora. ligni	17.55	1
Magelona. pettiboneae	17.55	1
Glottidia. pyramidata	8.77	1
Bivalvia. spp.	8.77	1
Cumella. sp. A	8.77	1
Haplocytherida. setipunctata	8.77	1
Hydroidea. sp.	8.77	1
Oligochaeta. spp.	8.77	1
Nematoda. spp.	8.77	1
Sabella. melanostigmae	8.77	1
Stylochus. sp.	8.77	1
Eteone. heteropoda	8.77	1
Lumbrineris. cf. candida	8.77	1
Polynoidae. sp.	8.77	1
Leitoscoloplos. sp.	8.77	1
* STATION S-1 - WET SEASON		
Apoprionospio. pygmaea	657.71	29
Acanthohaustorius. millsi	346.63	15
Mellita. quinqueisperforata	177.76	8
Eudevenopus. honduranus	133.32	6
Cyclaspis. sp. A	97.76	4
Spio. pettiboneae	97.76	4
Nematoda. spp.	88.88	4
Chironomidae. spp.	79.99	4
Nemertina. spp.	79.99	4
Branchiostoma. sp.	71.10	3
Natica. pusilla	53.32	2
Cyathura. polita	44.44	2
Oxyurostylis. smithi	35.55	2
Parasterope. pollex	35.55	2

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-1 - WET SEASON		
Minuspio sp. B	17.77	1
Listriella cf. barnardi	17.77	1
Exogone dispar	17.77	1
Bowmaniella portoricensis complex	17.77	1
Lucina sp.	17.77	1
Tharyx sp.	17.77	1
Glycinde solitaria	17.77	1
Onuphidae sp.	8.88	t
Laevicardium mortoni	8.88	t
Pectinaria gouldii	8.88	t
Brachyura sp.	8.88	t
Abra aequalis	8.88	t
Ancistrosyllis cf. hamata	8.88	t
Tiron triocellatus	8.88	t
Owenia fusiformis	8.88	t
Travisia hobsonae	8.88	t
Lumbrineris sp. D	8.88	t
Munna cf. hayesi	8.88	t
Harpacticoida spp.	8.88	t
Cyclaspis sp. B	8.88	t
Armandia maculata	8.88	t
Anachis obesa	8.88	t
Phoronis architecta	8.88	t
Phyllodoce arenae	8.88	t
* STATION S-2 - WET SEASON		
Parapriionospio pinnata	924.35	30
Pectinaria gouldii	355.52	12
Mediomastus sp.	248.86	8
Enteropneusta sp.	213.31	7
Glycinde solitaria	159.98	5
Parahesione luteola	142.20	5
Stylochus sp.	133.32	4
Cyclaspis sp. A	124.43	4
Nemertina spp.	115.54	4
Pinnotheridae sp.	106.65	4
Minuspio sp. B	97.76	3
Xenanthura brevitelson	53.32	2
Cyclostremiscus pentagonus	35.55	1
Neanthes succinea	26.66	1
Nematoda spp.	26.66	1
Gyptis brevipalpa	26.66	1
Amygdalum papyrium	26.66	1
Ampelisca abdita	26.66	1
Corophium louisianum	17.77	1
Glottidia pyramidata	17.77	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-2 - WET SEASON		
Pinnixa.pearsei	17.77	1
Oligochaeta.spp.	8.88	t
Ampelisca.holmesi	8.88	t
Cyathura.polita	8.88	t
Ogyrides.alphaerostris	8.88	t
Cerapus.sp.A	8.88	t
Acteocina.canaliculata	8.88	t
Grandidierella.bonnieroides	8.88	t
Acteon.punctostriatus	8.88	t
Odostomia.sp.	8.88	t
Phyllodoce.arenae	8.88	t
Parasterope.pollex	8.88	t
Polydora.ligni	8.88	t
Streblospio.benedicti	8.88	t
Glycera.americana	8.88	t
Tharyx.sp.	8.88	t
* STATION S-3 - WET SEASON		
Paraprionospio.pinnata	853.24	25
Parasterope.pollex	799.92	23
Minuspio.sp.B	595.49	t
Cyclostremiscus.pentagonus	373.29	4
Carazziella.hobsonae	124.43	3
Hesionidae.sp.	106.65	2
Cyclaspis.sp.A	79.99	2
Macoma.tenta	62.21	2
Ampelisca.abdita	62.21	2
Hemipholis.elongata	53.32	1
Pinnixa.pearsei	44.44	1
Sthenelais.sp.A	44.44	1
Nudibranchia.spp.	26.66	1
Leucon.sp.A	26.66	1
Pectinaria.gouldii	17.77	1
Sigambra.bassi	17.77	1
Glycinde.solitaria	17.77	t
Paramphinome.sp.B	17.77	1
Mediomastus.ambiseta	8.88	t
Goniadides.carolinae	8.88	t
Amygdalum.papyrium	8.88	t
Nassarius.vibex	8.88	t
Pettiboneia.sp.A	8.88	t
Ancistrosyllis.cf.hamata	8.88	t
Stylochus.sp.	8.88	t
Pinnotheridae.sp.	8.88	t
Oxyurostylis.smithi	8.88	t
Tellina.versicolor	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-3 - WET SEASON		
Anadara transversa	8.88	t
Gyptis brevipalpa	8.88	t
Calanoida spp.	8.88	t
* STATION S-4 - WET SEASON		
Amygdalum papyrium	2799.72	40
Pectinaria gouldii	835.47	12
Nemertina spp.	488.84	7
Cyclaspis sp. A	373.29	5
Glottidia pyramidata	328.85	5
Glycinde solitaria	311.08	4
Haminoea succinea	231.08	3
Mediomastus ambiseta	213.31	3
Acteon punctostriatus	204.42	3
Paraprionospio pinnata	195.53	3
Apoprionospio pygmaea	159.98	2
Oxyurostylis smithi	142.20	2
Caecum pulchellum	79.99	1
Stylochus sp.	71.10	1
Natica pusilla	62.21	1
Parasterope pollex	44.44	1
Cyclostremiscus pentagonus	35.55	1
Parahesione luteola	35.55	1
Nematoda spp.	35.55	1
Odostomia sp.	26.66	t
Ampelisca abdita	26.66	t
Oligochaeta spp.	26.66	t
Minuspio sp. B	26.66	t
Calanoida spp.	26.66	t
Diopatra sp.	17.77	t
Neanthes succinea	17.77	t
Acuminodeutopus naglei	17.77	t
Mysella planulata	8.88	t
Scoloplos rubra	8.88	t
Phyllodoce castanea	8.88	t
Exogone lourei	8.88	t
Nucula proxima	8.88	t
Scolelepis texana	8.88	t
Mysidopsis bigelowi	8.88	t
Owenia fusiformis	8.88	t
Streblospio benedicti	8.88	t
Tellina versicolor	8.88	t
Turbonilla dalli	8.88	t
Lucina nassula	8.88	t
Spiophanes bombyx	8.88	t
Polynoidae sp.	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-4 - WET SEASON		
Nereidae. sp.	8.88	t
Acteocina. canaliculata	8.88	t
Gyptis. brevipalpa	8.88	t
* STATION S-5 - WET SEASON		
Grandidierella. bonnieroides	19953.56	36
Corophium. louisianum	13491.98	24
Ampelisca. abdita	11874.37	21
Amygdalum. papyrium	6079.39	11
Cyathura. polita	1653.16	3
Nematoda. spp.	444.40	1
Streblospio. benedicti	417.73	1
Amphicteis. gunneri	364.40	1
Edotea. triloba	311.08	1
Tagelus. sp.	231.08	t
Laeonereis. culveri	151.09	t
Ampelisca. holmesi	88.88	t
Euplana. gracilis	71.10	t
Nemertina. spp.	62.21	t
Paraopeus. herbstii	62.21	t
Polydora. ligni	53.32	t
Gitanopsis. sp.	26.66	t
Ampelisca. sp. B	26.66	t
Cyclaspis. sp. A	17.77	t
Capitella. capitata	17.77	t
Oligochaeta. spp.	17.77	t
Mulina. lateralis	17.77	t
Brachyura. sp.	8.88	t
Brachidontes. exustus	8.88	t
Modiolus. modiolus. squamosus	8.88	t
Nearthes. succinea	8.88	t
Harpacticoida. spp.	8.88	t
Munna. cf. hayesi	8.88	t
Stylochus. sp.	8.88	t
* STATION S-6 - WET SEASON		
Apoprionospio. pygmaea	631.04	25
Mediomastus. ambiseta	391.07	16
Carazziella. hobsonae	195.53	8
Paraprionospio. pinnata	177.76	7
Nemertina. spp.	142.20	6
Chone. americana	71.10	3
Glycinde. solitaria	62.21	3
Mysella. planulata	53.32	2
Nematoda. spp.	44.44	2

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-6 - WET SEASON		
Axiothella mucosa	44.44	2
Corbula contracta	44.44	2
Listriella cf. barnardi	44.44	2
Phascolion sp.	35.55	1
Athenaria spp.	35.55	1
Poecilochaetus johnsoni	35.55	1
Scoloplos texana	26.66	1
Kalliapseudes sp. A	26.66	1
Tharyx cf. dorsobranchialis	26.66	1
Tharyx sp. A	26.66	1
Parasterope pollex	17.77	1
Cirrophorus lyra	17.77	1
Oxyurostylis smithi	17.77	1
Solemya occidentalis	17.77	1
Hargeria rapax	8.88	t
Dosinia discus	8.88	t
Lucina nassula	8.88	t
Aglaophamus verrilli	8.88	t
Acteocina canaliculata	8.88	t
Oligochaeta spp.	8.88	t
Aricidea philbinae	8.88	t
Syllides sp.	8.88	t
Diplodonta punctata	8.88	t
Sthenelais sp. A	8.88	t
Microphalis atra	8.88	t
Stylochus sp.	8.88	t
Tellina spp.	8.88	t
Prionospio heterobranchia	8.88	t
Mulina lateralis	8.88	t
Brachyura sp.	8.88	t
Exogone atlantica	8.88	t
Axiognathus squamata	8.88	t
Lyonsia hyalina floridana	8.88	t
Ehlersia cornuta	8.88	t
Eudevenopus honduranus	8.88	t
Laevicardium mortoni	8.88	t
Onuphis sp.	8.88	t
Chaetozone sp.	8.88	t
Lumbrineris sp. D	8.88	t
Haplocytherida setipunctata	8.88	t
Asthenothaerus hemiphilli	8.88	t
Aricidea fragilis	8.88	t
Minuspio sp. B	8.88	t
Lucifer faxoni	8.88	t
Calanoida spp.	8.88	t
Polydora socialis	8.88	t
Leitoscoloplos foliosus	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-7 - WET SEASON		
Fabricia.sabella	55247.81	44
Axiothella.mucosa	31667.94	25
Corophium.louisianum	5901.63	5
Erichthonius.brasiliensis	3208.56	3
Nematoda.spp.	3128.57	2
Exogone.dispar	2915.26	2
Chone.americana	1857.59	1
Crassinella.lunulata	1857.59	1
Pholoe.sp.	1582.06	1
Vaunthompsonia.sp.	1182.10	1
Tellina.spp.	1004.34	1
Microdeutopus.myersi	959.90	1
Ancmia.simplex	915.46	1
Tagelus.divisus	835.47	1
Podarke.obscura	817.69	1
Caecum.strigosum	702.15	1
Ophiolepis.sp.	666.60	1
Mycdoccpa.spp.	639.93	1
Paleanotus.heteroseta	631.04	t
Oligochaeta.spp.	559.94	t
Nemertina.spp.	524.39	t
Paramphinome.sp.B	435.51	t
Questa.caudicirra	382.18	t
Sphaerosyllis.taylori	382.18	t
Caulleriella.sp.	373.29	t
Maera.cf.williamsi	346.63	t
Chione.cancellata	319.96	t
Goniadides.carolinae	319.96	t
Brania.clavata	311.08	t
Cerapus.sp.A	302.19	t
Anthuridae.sp.	266.64	t
Hemipodus.roseus	257.75	t
Tiron.triocellatus	239.97	t
Sphaerosyllis.glandulata	222.20	t
Polydora.socialis	222.20	t
Microprotopus.raneyi	213.31	t
Boguea.enigmatica	195.53	t
Cumella.sp.A	159.98	t
Asthenothaerus.hemiphilli	151.09	t
Lycnsia.hyalina.floridana	151.09	t
Phyllodoce.castanea	142.20	t
Kinbergonuphis.simoni	142.20	t
Corbula.contracta	133.32	t
Holothuroidea.sp.	133.32	t
Gitanopsis.sp.	133.32	t
Aricidea.cf.catherinae	124.43	t
Balanus.venustus	124.43	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-7 - WET SEASON		
Anthuridae. sp.	124.43	t
Semele. purpurascens	124.43	t
Acuminodeutopus. naglei	124.43	t
Transennella. conradina	115.54	t
Spio. pettiboneae	115.54	t
Mediomastus. sp.	97.76	t
Paguridae. sp.	97.76	t
Isolda. pulchella	88.88	t
Crepidula. plana	88.88	t
Phascolion. sp.	88.88	t
Polyplacophora. spp.	88.88	t
Photis. pugnator	88.88	t
Eunice. vittata	79.99	t
Lembos. smithi	79.99	t
Lioberus. castaneus	79.99	t
Priapulida. sp.	79.99	t
Paracaprella. tenuis	79.99	t
Teinastoma. sp.	71.10	t
Munna. cf. hayesi	71.10	t
Calanoida. spp.	71.10	t
Haplocytherida. setipunctata	71.10	t
Phyllodoce. arenae	62.21	t
Harpacticoida. spp.	62.21	t
Cardiidae. sp.	62.21	t
Branchiostoma. sp.	62.21	t
Podocopa. spp.	53.32	t
Glycemeris. pectinata	53.32	t
Platyhelminthes. spp.	53.32	t
Acrocirrus. frontifilis	53.32	t
Anadara. transversa	53.32	t
Caecum. imbricatum	44.44	t
Natica. pusilla	44.44	t
Calyptraea. centralis	35.55	t
Caecum. insularum	35.55	t
Eunice. vittata	35.55	t
Turbonilla. sp.	35.55	t
Myriochele. oculata	35.55	t
Sphenia. antillensis	35.55	t
Olivella. dealbata	26.66	t
Dentatisyllis. carolinae	26.66	t
Archiannelida. sp.	26.66	t
Panopeus. herbstii	26.66	t
Scoloplos. rubra	26.66	t
Minuspio. sp. B	26.66	t
Parapionosyllis. longicirrata	26.66	t
Pseudopolydora. sp.	26.66	t
Serolis. mgrayi	26.66	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-7 - WET SEASON		
Brachyura. sp.	17.77	t
Caecum. pulchellum	17.77	t
Dosinia. discus	17.77	t
Lembos. setosus	17.77	t
Cyclaspis. sp. D	17.77	t
Mitrella. lunata	17.77	t
Listriella. cf. barnardi	17.77	t
Odontosyllis. sp.	17.77	t
Lumbrineris. latreilli	17.77	t
Batea. cf. catharinensis	17.77	t
Cyclaspis. sp. A	17.77	t
Holothuroidea. sp.	17.77	t
Oxyurostylis. smithi	17.77	t
Aonides. mayaguezensis	8.88	t
Ampharetidae. spp.	8.88	t
Anachis. obesa	8.88	t
Ampelisca. abdita	8.88	t
Ancistrosyllis. hartmanae	8.88	t
Brachidontes. exustus	8.88	t
Dentalium. laqueatum	8.88	t
Diastoma. varium	8.88	t
Eudevenopus. honduranus	8.88	t
Prionospio. cristata	8.88	t
Cyclopecten. sp.	8.88	t
Marginella. apicina	8.88	t
Polycirrus. sp.	8.88	t
Cooperella. atlantica	8.88	t
Kalliapseudes. sp. A	8.88	t
Glycinde. solitaria	8.88	t
Scoloplos. sp.	8.88	t
Neanthes. micromma	8.88	t
Porifera. spp.	8.88	t
Sabellaria. vulgaris	8.88	t
Microphalis. atra	8.88	t
Leptosynapta. inharens	8.88	t
Naineris. sp.	8.88	t
Ptercmeris. perplana	8.88	t
Synelmis. albini	8.88	t
Plakosyllis. quadrioculata	8.88	t
Pectinaria. gouldii	8.88	t
Trypanosyllis. sp.	8.88	t
Trypanosyllis. sp.	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-8 - WET SEASON		
Calanoida. spp.	551.05	18
Megaluropus. sp.	506.61	16
Streptosyllis. pettiboneae	257.75	8
Eudevenopus. honduranus	248.86	8
Metharpinia. floridanus	177.76	6
Spio. pettiboneae	159.98	5
Paramphinome. sp. B	142.20	5
Oligochaeta. spp.	106.65	3
Erichthonius. brasiliensis	79.99	3
Hemipodus. roseus	71.10	2
Nematoda. spp.	71.10	2
Axiothella. mucosa	62.21	2
Crassostrea. virginica	53.32	2
Branchiostoma. sp.	44.44	1
Harpacticoida. spp.	44.44	1
Cyclaspis. sp. B	35.55	1
Podarke. obscura	35.55	1
Brania. clavata	26.66	1
Apanthura. magnifica	26.66	1
Lucifer. faxoni	26.66	1
Parapionosyllis. longicirrata	26.66	1
Polydora. socialis	26.66	1
Apoprionospio. pygmaea	17.77	1
Caecum. strigosum	17.77	1
Scolelepis. texana	17.77	1
Eurydice. littoralis	17.77	1
Unela. remanei	17.77	1
Polydora. sp.	8.88	t
Piromis. roberti	8.88	t
Brachidontes. exustus	8.88	t
Mysidopsis. bigelowi	8.88	t
Spiochaetopterus. costarum. oculatus	8.88	t
Myodocopa. spp.	8.88	t
Medicomastus. ambiseta	8.88	t
Polyplacophora. spp.	8.88	t
Nemertina. spp.	8.88	t
Paracaprella. tenuis	8.88	t
Corbula. contracta	8.88	t
Sphaerosyllis. longicauda	8.88	t
Athenaria. spp.	8.88	t
Trachypenaeus. constrictus	8.88	t
Prionospio. sp.	8.88	t
Anchoa. sp.	8.88	t
Laeonereis. culveri	8.88	t
Cyclopoida. spp.	8.88	t
Pagurus. carolinensis	8.88	t
Phyllodoce. castanea	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-8 - WET SEASON		
Micropthalmus sczelkowii	8.88	t
Munna cf. hayesi	8.88	t
Anchialina typica	8.88	t
Ampithoe longimana	8.88	t
* STATION S-9 - WET SEASON		
Apoprionospio pygmaea	1093.22	38
Armandia maculata	195.53	7
Nematoda spp.	168.87	6
Oligochaeta spp.	142.20	5
Mediomastus ambiseta	133.32	5
Olivella pusilla	106.65	4
Tellina spp.	88.88	3
Glycinde solitaria	79.99	3
Paraprionospio pinnata	79.99	3
Polydora socialis	71.10	3
Acteocina canaliculata	62.21	2
Carazziella hobsonae	62.21	2
Spio pettiboneae	53.32	2
Ampelisca holmesi	44.44	2
Athenaria spp.	35.55	1
Calanoida spp.	35.55	1
Aricidea fragilis	35.55	1
Chone americana	26.66	1
Minuspio sp. B	26.66	1
Listriella cf. barnardi	26.66	1
Capitella jonesi	17.77	1
Aricidea philbinae	17.77	1
Cirrophorus lyra	17.77	1
Haminoea succinea	17.77	1
Podarke obscura	17.77	1
Caecum pulchellum	8.88	t
Ampithoe longimana	8.88	t
Ampithoidae sp.	8.88	t
Leitoscoloplos foliosus	8.88	t
Natica pusilla	8.88	t
Sabella melanostigmae	8.88	t
Marginella apicina	8.88	t
Spionidae sp.	8.88	t
Myriochele oculata	8.88	t
Parapionosyllis longicirrata	8.88	t
Nearthes acuminata	8.88	t
Scoloplos texana	8.88	t
Gastropoda sp.	8.88	t
Lumbrineris verrilli	8.88	t
Nemertina spp.	8.88	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-9 - WET SEASON		
Stylochus. sp.	8.88	t
Pseudopolydora. sp.	8.88	t
Prionospio. heterobranchia	8.88	t
Phoronis. architecta	8.88	t
Parasterope. pollex	8.88	t
Paracaprella. tenuis	8.88	t
* STATION S-10 - WET SEASON		
Listriella. cf. barnardi	328.85	13
Mediomastus. ambiseta	302.19	12
Mysidopsis. bigelowi	168.87	6
Haminoea. succinea	142.20	5
Nemertina. spp.	133.32	5
Diopatra. cuprea	133.32	5
Polydora. ligni	124.43	5
Oxyurostylis. smithi	115.54	4
Mysidopsis. bahia	106.65	4
Glycinde. solitaria	106.65	4
Paraprionospio. pinnata	88.88	3
Streblospio. benedicti	79.99	3
Ampelisca. holmesi	71.10	3
Acteocina. canaliculata	62.21	2
Oligochaeta. spp.	53.32	2
Cyclaspis. sp. A	44.44	2
Calanoida. spp.	35.55	1
Apoprionospio. pygmaea	35.55	1
Scoloplos. rubra	35.55	1
Stylochus. sp.	35.55	1
Scolelepis. texana	26.66	1
Mysella. planulata	26.66	1
Tellina. tampaensis	26.66	1
Edotea. triloba	17.77	1
Minuspio. sp. B	17.77	1
Capitella. capitata	17.77	1
Onuphidae. sp.	17.77	1
Athenaria. spp.	17.77	1
Nematoda. spp.	17.77	1
Mediomastus. sp.	17.77	1
Acuminodeutopus. naglei	17.77	1
Aricidea. philbinae	17.77	1
Phascolion. sp.	17.77	1
Aglaophamus. verrilli	8.88	t
Ampelisca. abdita	8.88	t
Ampithoe. longimana	8.88	t
Cymadusa. compta	8.88	t
Kinbergonuphis. simoni	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-10 - WET SEASON		
Dentalium.laqueatum	8.88	t
Eteone.laceta	8.88	t
Myodocopa.spp.	8.88	t
Eteone.heteropoda	8.88	t
Fabricia.sabella	8.88	t
Pagurus.brevidactylus	8.88	t
Streblospio.benedicti	8.88	t
Phoronis.architecta	8.88	t
Erichthonius.brasiliensis	8.88	t
Pectinaria.gouldii	8.88	t
Mulina.lateralis	8.88	t
Tellina.versicolor	8.88	t
* STATION S-11 - WET SEASON		
Streblosoma.hartmanae	4541.76	20
Oligochaeta.spp.	3048.58	13
Nematoda.spp.	2666.40	12
Cymadusa.compta	1350.97	6
Sabella.melanostigmae	1084.33	5
Spirorbis.corrugatus	977.67	4
Aricidea.philbinae	506.61	2
Mediomastus.ambiseta	479.95	2
Balanus.venustus	479.95	2
Sabellaria.vulgaris	471.06	2
Prionospio.heterobranchia	426.62	2
Thenaria.spp.	399.96	2
Axiothella.mucosa	319.96	1
Ascidiacea.sp.	311.08	1
Polydora.ligni	311.08	1
Erichthonius.brasiliensis	275.52	1
Glycinde.solitaria	266.64	1
Olivella.pusilla	231.08	1
Nemertina.spp.	231.08	1
Brania.clavata	204.42	1
Granulina.ovuliformis	204.42	1
Paraprionospio.pinnata	151.09	1
Calanoida.spp.	142.20	1
Paracaprella.tenuis	142.20	1
Tellina.versicolor	142.20	1
Polydora.websteri	133.32	1
Apoprionospio.pygmaea	133.32	1
Marginella.lavalleeana	106.65	t
Turbonilla.conradi	97.76	t
Luconacia.incerta	88.88	t
Carazziella.hobsonae	88.88	t
Exogone.dispar	88.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-11 - WET SEASON		
Batea cf catharinensis	79.99	t
Mediomastus sp.	79.99	t
Crassostrea virginica	79.99	t
Olivella minuta	79.99	t
Polydora socialis	71.10	t
Marginella apicina	71.10	t
Haminoea succinea	71.10	t
Onuphidae sp.	71.10	t
Spiochaetopterus costarum oculatus	71.10	t
Boguea enigmatica	71.10	t
Ehlersia cornuta	62.21	t
Laevicardium mortoni	62.21	t
Capitella jonesi	62.21	t
Ampelisca holmesi	62.21	t
Microprotopus raneyi	62.21	t
Erichsonella cf attenuata	53.32	t
Armandia maculata	53.32	t
Syllides floridana	53.32	t
Mycdocopa spp.	53.32	t
Cerapus sp. A	44.44	t
Tharyx cf dorsobranchialis	44.44	t
Listriella cf barnardi	44.44	t
Lembos setosus	44.44	t
Acteocina canaliculata	35.55	t
Neanthes acuminata	35.55	t
Musculus lateralis	35.55	t
Grandidierella bonnieroides	35.55	t
Kinbergonuphis simoni	35.55	t
Paguridae sp.	35.55	t
Harpacticoida spp.	26.66	t
Pinnotheridae sp.	26.66	t
Nudibranchia spp.	26.66	t
Hippolyte pleuracanthus	26.66	t
Enteropneusta sp.	26.66	t
Sphaerosyllis longicauda	26.66	t
Leitoscoloplos foliosus	26.66	t
Exogone atlantica	26.66	t
Lucina nassula	26.66	t
Pectinaria gouldii	26.66	t
Ampelisca abdita	26.66	t
Mediomastus californiensis	26.66	t
Brachyura sp.	17.77	t
Polymesoda caroliniana	17.77	t
Dentalium eboreum	17.77	t
Fabricia sabella	17.77	t
Abra aequalis	17.77	t
Autolytus dentalius	17.77	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-11 - WET SEASON		
Poecilochaetus johnsoni	17.77	t
Minuspio sp. B	17.77	t
Paracerceis caudata	17.77	t
Nearthes succinea	17.77	t
Diopatra cuprea	17.77	t
Lumbrineris sp. D	17.77	t
Magelona pettiboneae	17.77	t
Polynoidae sp. B	17.77	t
Stenothoe cf. minuta	17.77	t
Corophium tuberculatum	17.77	t
Aricidea taylori	17.77	t
Bryozoa spp.	17.77	t
Amygdalum papyrium	17.77	t
Corophium lacustre	17.77	t
Ctenodrilus cirrata	17.77	t
Typosyllis cf. lutea	8.88	t
Dentalium laqueatum	8.88	t
Parahesione luteola	8.88	t
Gitanopsis sp.	8.88	t
Apanthura magnifica	8.88	t
Nereidae sp.	8.88	t
Myriochele oculata	8.88	t
Libinia emarginata	8.88	t
Platynereis dumerilii	8.88	t
Lucina sp.	8.88	t
Stylochus sp.	8.88	t
Melinna maculata	8.88	t
Platyhelminthes spp.	8.88	t
Ampithoe longimana	8.88	t
Mysella planulata	8.88	t
Majidae sp.	8.88	t
Polynoidae sp. A	8.88	t
Hydroides protulicola	8.88	t
Macoma tenta	8.88	t
Glottidia pyramidata	8.88	t
Cyclaspis sp. A	8.88	t
Elasmopus levis	8.88	t
Pseudopolydora sp.	8.88	t
Oxyurostylis smithi	8.88	t
Amphiuridae sp.	8.88	t
Phyllodoce arenae	8.88	t
Xanthidae sp.	8.88	t
Corophium simile	8.88	t
Anachis floridana	8.88	t
Euplana gracilis	8.88	t
Athenaria spp.	8.88	t
Tellidora cristata	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-11 - WET SEASON		
Mactra.fragilis	8.88	t
Xenanthura.brevitelson	8.88	t
Aricidea.fragilis	8.88	t
Phyllodoce.castanea	8.88	t
Tiron.triocellatus	8.88	t
Polycera.sp.	8.88	t
Schistomeringos.rudolphi	8.88	t
Parastarte.triquerta	8.88	t
Phoronis.architecta	8.88	t
* STATION S-12 - WET SEASON		
Paraprionospio.pinnata	1333.20	29
Haplocytherida.setipunctata	942.12	14
Mediomastus.ambiseta	213.31	5
Tellina.versicolor	195.53	4
Minuspio.sp.B	186.64	4
Myodocopa.spp.	159.98	4
Carazziella.hobsonae	115.54	3
Nemertina.spp.	115.54	3
Spiochaetopterus.costarum.oculatus	115.54	3
Calanoida.spp.	79.99	2
Schistomeringos.rudolphi	71.10	2
Oligochaeta.spp.	71.10	2
Oxyurostylis.smithi	53.32	1
Tharyx.cf.dorsobranchialis	44.44	1
Nematoda.spp.	44.44	1
Listriella.cf.barnardi	35.55	1
Cyclaspis.sp.A	35.55	1
Phascolion.sp.	35.55	1
Scoloplos.rubra	35.55	1
Acteocina.canaliculata	35.55	1
Macoma.tenta	26.66	1
Chaetozone.setosa	26.66	1
Aricidea.philbinae	26.66	1
Notomastus.latericeus	26.66	1
Nuculana.acuta	26.66	1
Axiognathus.squamata	26.66	1
Magelona.pettiboneae	26.66	1
Haplocythidea.sp.	17.77	t
Neaeromya.floridana	17.77	t
Athenaria.spp.	17.77	t
Parasterope.pollex	17.77	t
Myodocopa.spp.	17.77	t
Odostomia.sp.	17.77	t
Owenia.fusiformis	17.77	t
Diopatra.cuprea	17.77	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-12 - WET SEASON		
Brachyura. sp.	17.77	t
Balanus. venustus	17.77	t
Diplodonta. punctata	17.77	t
Grubeulepis. augeneri	17.77	t
Ampelisca. holmesi	17.77	t
Mysidopsis. bigelowi	8.88	t
Cymadusa. compta	8.88	t
Pectinaria. gouldii	8.88	t
Chaetozone. sp. A	8.88	t
Axiothella. mucosa	8.88	t
Nearthes. succinea	8.88	t
Streptosyllis. pettiboneae	8.88	t
Athenaria. spp.	8.88	t
Chaetozone. sp.	8.88	t
Mooreonuphis. simoni	8.88	t
Glycinde. solitaria	8.88	t
Leitoscoloplos. fragilis	8.88	t
Sigambra. tentaculata	8.88	t
Phascolion. sp.	8.88	t
Nassarius. vibex	8.88	t
Phoronis. architecta	8.88	t
Microdeutopus. myersi	8.88	t
Olivella. pusilla	8.88	t
Kinbergonuphis. simoni	8.88	t
Prionospio. heterobranchia	8.88	t
Harpacticoida. spp.	8.88	t
Mysella. planulata	8.88	t
Gyptis. brevipalpa	8.88	t
Apoprionospio. pygmaea	8.88	t
Pilargidae. sp.	8.88	t
Lumbrineris. verrilli	8.88	t
* STATION S-13 - WET SEASON		
Aricidea. philbinae	1484.29	25
Acteocina. canaliculata	888.79	15
Ampelisca. holmesi	862.13	15
Glycinde. solitaria	204.42	3
Cyclaspis. sp. A	195.53	3
Nemertina. spp.	159.98	3
Xenanthura. brevitelson	142.20	2
Capitella. capitata	142.20	2
Diastoma. varium	133.32	2
Scoloplos. texana	115.54	2
Prionospio. heterobranchia	97.76	2
Onuphidae. sp.	97.76	2
Axiothella. mucosa	79.99	1

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-13 - WET SEASON		
Haminoea succinea	79.99	1
Mediomastus ambiseta	62.21	1
Lumbrineris verrilli	53.32	1
Phascolion sp.	53.32	1
Tharyx cf dorsobranchialis	53.32	1
Paraprionospio pinnata	53.32	1
Batea cf catharinensis	44.44	1
Odostomia bisuturalis	44.44	1
Ampelisca abdita	44.44	1
Polydora ligni	44.44	1
Athenaria spp.	35.55	1
Odostomia impressa	35.55	1
Chone americana	35.55	1
Caecum pulchellum	35.55	1
Nematoda spp.	26.66	t
Lyonsia hyalina floridana	26.66	t
Tellina tampaensis	26.66	t
Scoloplos rubra	26.66	t
Cirrophorus furcatus	26.66	t
Typosyllis cf lutea	26.66	t
Calanoida spp.	26.66	t
Acuminodeutopus naglei	26.66	t
Turbonilla dalli	17.77	t
Cerapus sp. A	17.77	t
Brachyura sp.	17.77	t
Eobrolgus spinosus	17.77	t
Mediomastus sp.	17.77	t
Mysidopsis bigelowi	17.77	t
Spiochaetopterus costarum oculatus	17.77	t
Mitrella lunata	17.77	t
Oxyurostylis smithi	17.77	t
Thenaria spp.	17.77	t
Eteone laceta	8.88	t
Grandidierella bonnieroides	8.88	t
Magelona pettiboneae	8.88	t
Tellina versicolor	8.88	t
Neanthes succinea	8.88	t
Amphiuridae sp.	8.88	t
Ampelisca sp. B	8.88	t
Amphicteis gunneri	8.88	t
Kinbergonuphis simoni	8.88	t
Corophium lacustre	8.88	t
Mycocopa spp.	8.88	t
Acteon punctostriatus	8.88	t
Paracaprella tenuis	8.88	t
Nassarius vibex	8.88	t
Kalliapseudes sp. A	8.88	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-13 - WET SEASON		
Microdeutopus myersi	8.88	t
Gitanopsis sp.	8.88	t
Panopeus herbstii	8.88	t
Turridae sp.	8.88	t
Typosyllis sp.	8.88	t
Crassostrea virginica	8.88	t
Listriella cf. barnardi	8.88	t
Megalomma bioculata	8.88	t
Fabricia sabella	8.88	t
Cantharus cancellarius	8.88	t
Pagurus brevidactylus	8.88	t
Streblospio benedicti	8.88	t
Oligochaeta spp.	8.88	t
* STATION S-14 - WET SEASON		
Fabricia sabella	4995.05	53
Axiothella mucosa	622.16	7
Nematoda spp.	462.17	5
Nemertina spp.	204.42	2
Mediomastus ambiseta	186.64	2
Exogone dispar	186.64	2
Olivella pusilla	124.43	1
Prionospio cristata	124.43	1
Tharyx cf. dorsobranchialis	106.65	1
Ampelisca holmesi	106.65	1
Tellina versicolor	97.76	1
Microdeutopus myersi	97.76	1
Aricidea philbinae	88.88	1
Mysidopsis spp.	79.99	1
Lumbrineris verrilli	71.10	1
Calanoida spp.	71.10	1
Prionospio heterobranchia	62.21	1
Aricidea cf. catherinae	62.21	1
Minuspio sp. B	53.32	1
Oligochaeta spp.	53.32	1
Acuminodeutopus naglei	53.32	1
Phascolion sp.	44.44	t
Apoprionospio pygmaea	44.44	t
Abra aequalis	44.44	t
Myriochele oculata	35.55	t
Erichthonius brasiliensis	35.55	t
Isolda pulchella	35.55	t
Marginella apicina	35.55	t
Branchiostoma caribaeum	35.55	t
Brachyura sp.	35.55	t
Paraprionospio pinnata	35.55	t

Species or taxonomic category	Density (No./m^2)	Per-cent
* STATION S-14 - WET SEASON		
Chaetozone. sp. A	26.66	t
Cyclaspis. sp. A	26.66	t
Kalliapseudes. sp. A	26.66	t
Poecilochaetus. johnsoni	26.66	t
Orbiniidae. sp.	26.66	t
Turbonilla. interrupta	26.66	t
Phoronis. architecta	26.66	t
Phyllodoce. arenae	26.66	t
Streptosyllis. pettiboneae	26.66	t
Solemya. occidentalis	26.66	t
Vaunthomsonia. sp.	26.66	t
Megaluropus. sp.	17.77	t
Leptochela. serratorbita	17.77	t
Diplodonta. punctata	17.77	t
Euceramus. praelongus	17.77	t
Aricidea. taylori	17.77	t
Tharyx. sp.	17.77	t
Nearthes. succinea	17.77	t
Kinbergonuphis. simoni	17.77	t
Lioberus. castaneus	17.77	t
Sphaerosyllis. taylori	17.77	t
Pettiboneia. sp. A	17.77	t
Lysonsia. hyalina. floridana	17.77	t
Onuphidae. sp. A	17.77	t
Phyllodoce. castanea	17.77	t
Harpacticoida. spp.	17.77	t
Holothuroidea. sp.	17.77	t
Polydora. socialis	17.77	t
Phyllodocidae. sp. A	8.88	t
Spio. pettiboneae	8.88	t
Lucifer. faxoni	8.88	t
Decamastus. sp. A	8.88	t
Cyathura. polita	8.88	t
Paguridae. sp.	8.88	t
Dentalium. laqueatum	8.88	t
Oxyurostylis. smithi	8.88	t
Sigambra. tentaculata	8.88	t
Paracaprella. tenuis	8.88	t
Eudevenopus. honduranus	8.88	t
Gastropoda. sp.	8.88	t
Macoma. tenta	8.88	t
Murex. sp.	8.88	t
Tharyx. sp. A	8.88	t
Medicmastus. californiensis	8.88	t
Crepidula. plana	8.88	t
Mooreonuphis. nebulosa	8.88	t
Typosyllis. cf. lutea	8.88	t

Species or taxonomic category	Density (No./m^2)	Percent
* STATION S-14 - WET SEASON		
Symphurus plagiusa	0.00	t
Gyptis brevipalpa	0.00	t
Turbonilla sp.	0.00	t
Thenaria spp.	0.00	t
Paramphinome sp. B	0.00	t
Dorvilleidae sp.	0.00	t
Ehlersia cornuta	0.00	t
Cyclaspis sp. D	0.00	t
Xanthidae sp.	0.00	t
Caulleriella sp. A	0.00	t
Pinnotheridae sp.	0.00	t
Hydroidea sp.	0.00	t
Acteocina canaliculata	0.00	t
Corbula contracta	0.00	t
Grandidierella bonnieroides	0.00	t
Pagurisetes hummi	0.00	t
Typosyllis sp.	0.00	t
Athenaria spp.	0.00	t
Tiron tricellatus	0.00	t
Amphicteis gunneri	0.00	t
Natica pusilla	0.00	t
Chama sp.	0.00	t
Schistomeringos rudolphi	0.00	t
Armandia maculata	0.00	t
Sercis mgrayi	0.00	t
Marginella lavalleeana	0.00	t
Exogone atlantica	0.00	t
Lysianopsis cf. alba	0.00	t
Pectinaria gouldii	0.00	t
Bivalvia spp.	0.00	t
Cerapus sp. A	0.00	t
Balanus venustus	0.00	t
Anadara transversa	0.00	t
Arabellidae sp.	0.00	t

* GOVERNMENT PRINTING OFFICE: 1986 - 631135 / 40003