Sarasota Bay Juvenile Fisheries Habitat Assessment

Protecting Our Water Heritage

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EXECUTIVE SUMMARY

Critical habitat for juvenile estuarine fishery species within the Sarasota Bay system was characterized in relation to a bay segmentation scheme using an integrated approach for mapping of shore type, emergent wetland and submerged habitat features. Habitat feature classes were tabulated in order to derive length or area-based indices (ratios) which summarize the proportion of individual habitat features as a function of total shoreline length or water area within each bay segment. These critical habitat indices provide a means to rank the spatial distribution of critical habitats and to evaluate restoration strategies in relation to goals for establishing a complex of adjacent complementary habitats (i.e., habitat mosaics) throughout the Sarasota Bay system. Knowledge of the proportion of critical habitats can be used to prioritize future restoration projects in order to maximize the multiple habitat requirements of fishery species.

The shoreline mapping revealed that bulkheads presently represent 185.8 linear miles (45.3%) of the shoreline of the SBNEP study area, with riprap representing 38.5 miles (9.4%). These generally unvegetated shoreline areas offer great opportunities for future shoreline enhancement. A total of approximately 7.6 miles (1.8%) of the shoreline is also dominated by nuisance and/or exotic species. Again, these areas offer easy opportunities for enhancement.

The Bays & Estuaries habitat type was the dominant habitat type within the SBNEP study area, comprising approximately 91 % of the area. The Total Intertidal Area represents those habitat types within the bay that are not considered Bays and Estuaries, and includes Beaches Other than Swimming, Mangrove Swamps, Oyster Bars, Salt Barren, Saltwater Marshes and Unvegetated Bottoms. The Total Intertidal Area varied from a low of 0.5% of a bay segment to a high of 32.5% of a bay segment. Bay segments 11 (0.5%), 8 (1.3%), 7 (2.9%) and 10 (2.9%) represent those bay segments with the least Total Intertidal Area. Conversely, bay segment 2 (32.5%), 15 (32.4%), and 9 (25.1%) are the bay segments with the highest percentage of Total Intertidal Area. If possible, habitat restoration activities

should be directed toward those bay segments with the lowest percentage of Total Intertidal Area. However, the Total Intertidal Area ratio should not be the most significant factor considered when prioritizing restoration areas since it is partially influenced by the bay segmentation scheme itself.

In addition to structural (stationary) habitat, conditional (dynamic) habitat was characterized according to its spatial distribution across the Sarasota Bay system. Salinity regime within bay segments and tributary streams was tabulated and used as an indicator to identify those areas classified as oligohaline or mesohaline (< 19 ppt) zones which are utilized by many commercially or recreationally important fishery species during portions of their early life history. Zones exhibiting a oligohaline-mesohaline salinity regime are restricted to tidally inundated portions in lower reaches of tributaries many of which are urbanized and devoid of critical habitat. The priority for future habitat restoration should focus on establishing critical habitats within these salinity zones, considered optimal as fishery nursery habitat.

Fishery communities found within these stationary and dynamic habitats throughout the Sarasota Bay system were characterized during summer and winter seasons in order to identify relationships between species abundance and occurrence within natural versus restored habitats and within microhabitats like marsh edges, channels, subtidal pools or seagrass beds. Knowledge of the species or groups (i.e., guilds) which utilize natural and restored sites and their affinities for microhabitat features can be used to enhance the design of future restoration projects in order to maximize fishery productivity.

Fishery sampling during 2002 revealed a fishery community exhibiting high dominance of bait and forage fishes which comprise a group, or guild, of approximately eleven resident species. Selected taxa, those species considered commercially or recreationally important, exhibited low abundance and typically comprised less than 10 percent of the total catch when averaged across all collections. Two species (i.e., Spot, *Leiostomus xanthurus,* and Striped Mullet, *Mugil cephalus)* dominated the catch of selected taxa and were frequently caught while another seventeen selected taxa were collected in smaller numbers and occurred less frequently in collections.

Overall, the selected taxa were evenly represented at both natural and restored sites. When reviewing the selected taxa data by guilds, the natural sites were observed to have a higher mean density for both resident and transient species, however the restored sites had a slightly higher mean density of nursery species. The monitoring results indicate that the restored microhabitat types are faring fairly well when compared to that of the natural habitat types. Other than the density of transient species, the species composition and density of the restored sites is comparable to and in some cases better than that for the natural sites. However, the natural sites do appear to be more diverse and there may be a lag affect related to species richness. Based upon the varied locations and microhabitat types where selected species were captured, it is recommended that the restoration sites continue to be created as mosaics with various microhabitat types.

Three artificial reef sites were also characterized during the summer and winter seasons in order to identify nursery habitat provided by the artificial reefs. A total of 59,027 individuals represented by 27 different species or species groups were observed during the sampling events. Early juveniles of sardines (Clupeidae spp.), tomtate *(Haemulon aurolineatum)* and pinfish *(Lagodon rhomboides)* were the dominant species observed and exhibited seasonality in their occurrence. Many of the reef dependent species such as tomtate, gray snapper *(Lutjanus griseus)* and gag *(Mycteroperca microlepis)* were observed in much higher densities on the artificial reefs than in the seine samples on other habitat types. This also held true for the commercially important stone crab *(Menippe mercenaria)*. The complexity of the material as well as the length of time since deployment appeared to be factors in the diversity of species that were observed. The artificial reef materials in the SBNEP study area provide a unique habitat type for a variety of reef dependent species and continued deployment of reef material is recommended. Enhancement of existing reefs and the placement of additional material to improve complexity would also enhance juvenile fish habitat qualities.

The habitat restoration working group of the SBNEP recommended the creation of a five-year restoration plan document to provide clear direction to the SBENP program in terms of habitat restoration. This document would be used to develop and improve restoration targets and may assist in obtaining additional funding. As a precursor to the development of this plan, a summary report of recommendations from the Sarasota Bay technical community would be invaluable.

1.0 INTRODUCTION

Sarasota Bay (Bay) was named in the Water Quality Act of 1987 as an estuary of national significance. Following a nomination process, the Sarasota Bay National Estuary Program (SBNEP) was formally established in June 1989 by the U.S. Environmental Protection Agency. The legislation required that federally appropriated funds be used for technical projects to characterize Bay quality for the purpose of formulating specific action plans to restore and protect the Bay. In January 1993, the results of technical investigations and policy deliberations were formulated into a Framework for Action report. After two years of debate, the Comprehensive Conservation and Management Plan (CCMP) evolved and included six action plans related to wastewater, stormwater, wetlands, fisheries, recreation and governance. Additional research and education projects to refine the CCMP and promote implementation have also occurred.

The CCMP includes a goal to restore 18 acres of tidal wetlands and 11 acres of freshwater wetlands annually. Since 1990, the community has restored over 170 acres of estuarine tidal wetlands with continuing projects designed to restore additional wetland acreage. The CCMP also promoted increasing fishery productivity through increased seagrass coverage (from nitrogen reduction and other water quality improvements) and artificial reefs. In 1997, an artificial reef master plan was approved to increase fish habitat using “reef balls” or other artificial reef modules. The CCMP also recommended that a technical project be conducted to monitor and assess the results of artificial reef construction related to potential benefits for fish and shellfish productivity within the Bay. The present study was conceived to address the status of fishery utilization of natural and restored wetland habitats and artificial reefs, as well as to inventory the critical nursery habitats that are important for sustaining adult fish populations. Ultimately, the results of this investigation can be used to guide decisions for improving local habitat restoration efforts.

Previously, the SBNEP conducted characterization studies about Sarasota Bay fish and fisheries (Edwards, 1992a). Similarly, characterization studies were focused on tidal wetlands (Estevez, 1992) and bay bottom habitats (*e.g.*, seagrasses) (Culter, 1992). Emerging from these investigations, various research needs were identified, including:

- How do tidal marshes compare to mangroves in terms of SBNEP goals for water quality and habitat?
- Should wetlands created for fish and invertebrates be designed differently from wetlands created for birds, or for other wetland values?
- By focusing on habitat types that are extensive and common throughout the Bay, ecological relationships can be researched as a priority concern.
- Is the classification of critical habitats according to location, form and species composition paralleled by distinct feeding preferences of fish within these habitats?
- What faunal guilds should be targeted for guiding habitat restoration, preservation and management decisions for the Bay?

As reported by Paperno, Mille and Kadison (2001), the highly productive nature of estuarine habitats and their importance to fish in many life history stages are well documented (Miller *et al.*, 1985; Szedlmayer and Able, 1996; Wantiez *et al.*, 1996; Able and Fahay, 1998; and others). Edwards and Hueter (1992) and Edwards (1992b) observed that many important estuarine fishes have a life history starting with spawning in open coastal waters, followed by movement of planktonic larval stages to very shallow estuarine habitats wherein larvae reach metamorphosis at an age of 3 to 4 weeks. In order for these newly-metamorphosed juveniles (early-juvenile) to survive, they must find specific nursery habitats. For such species, the entire recruitment or year-class strength may be determined by availability of suitable early-juvenile habitat (Edwards, 1989).

In this context, the nature of suitable habitat may be exceedingly complex, encompassing both structural (stationary) components (*e.g.*, vegetative form, bank slope, sediment composition, *etc*.) and conditional (dynamic) components (*e.g.*, freshwater flow, salinity gradient, *etc*.). Browder and Moore (1981) developed this idea into a conceptual model in which production (recruitment) occurs at the intersection of stationary and dynamic habitat.

In other words, only that portion of structural habitat located within a suitable salinity range is highly productive in terms of fishery recruitment. As Edwards (1992b) has observed, if sufficient nursery habitat is not maintained, a biological bottleneck will exist; and management actions may not be effective in maintaining fishery resources. Therefore, the characterization of critical nursery habitat should be given high priority in improvement and management programs for the Bay.

Artificial reefs are constructed primarily for the purpose of providing recreational sports fishing opportunities but also serve to increase hard bottom habitat and the abundance of reef dependent species. There are presently 14 artificial reefs within the SBNEP study area, including five sites that have been constructed within the last year. Artificial reef construction includes material opportunity such as concrete blocks, piling, ceramic insulators and limestone boulders, as well as prefabricated reef ball modules and PVC units. Due to permitting requirements, the artificial reef sites are presently located within the northern two-thirds of the study area, from Roberts Bay in the south to Emerson Point to the north. Artificial reef construction continues to be well-funded and future deployment of new reefs and enhancement of existing reefs is expected to continue.

To date, there has been no quantitative assessment of the artificial reefs in the study area or an analysis of the fish communities and differences between these reefs. As reef deployment continues, opportunities to improve the value of these reefs to various life stages of commercially and recreational important species (selected taxa) are available. The objective of this study is to determine:

- What species, at what life stages and at what density presently use the artificial reef system within the SBNEP study area?
- What characteristics are the most productive, (*i.e.* what material types, complexity, location, *etc*.)?
- What are the temporal and spatial differences of selected taxa use of these artificial reefs?

- Can the productivity of existing reefs be enhanced?

The overall objective is to provide recommendations for the proper siting and constructing of artificial reefs, or enhancement of the existing reefs, to improve the nursery habitat value for commercially and recreational important fish species.

2.0 METHODS

2.1 *Study Area*

Located in the east-central region of the Gulf of Mexico, the Sarasota Bay study area spans approximately 52 square miles of open water in Manatee and Sarasota Counties along the west-central coast of peninsular Florida. It encompasses subtropical, tidal lagoons and a diverse assemblage of emergent and submerged estuarine habitats, including: mangrove forests, salt marshes, salterns, seagrass beds, unvegetated tidal flats, oyster bars and hard bottom, which are separated from gulf waters by a chain of barrier island landforms and tidal inlet channels. Mangrove forests are composed primarily of red (*Rhizophora mangle*), black (*Avicennia germinans*), and white (*Laguncularia racemosa*) mangroves with buttonwood (*Conocarpus erectus*) as a common associate. Salt marshes are dominated by cordgrass (*Spartina alterniflora* and *Spartina patens*) and black needlerush (*Juncus roemerianus*) together with leather fern (*Acrostichum* spp.). Salterns, or salt barrens, occur as high marsh environments with irregular tidal inundation and hypersaline soil conditions sparsely vegetated by saltwort (*Batis maritima*) and glasswort (*Salicornia* spp.) together with saltgrass (*Distichlis spicata*) and jointgrass (*Paspalum vaginatum*). Invasive, nuisance vegetation comprised primarily of Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia*) displace emergent wetland vegetation along upland fringes. Seagrass meadows are dominated by shoal grass (*Halodule wrightii*), turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*) together with a diverse drift algae community. Oyster reefs are common along shoreline fringes and coquina rock outcrops occur sporadically.

Geographically, the Sarasota Bay study area includes several named subregions, including Anna Maria Sound, Palma Sola Bay, Sarasota Bay, Roberts Bay, Little Sarasota Bay, Dryman Bay and Blackburn Bay, together with several tidal creek basins that occur between the mouth of Tampa Bay on the north and Venice Inlet on the south. The Sarasota Bay study area is urbanized. Since the early 1900s, dredge and fill activities have resulted in significant losses of the ecologically important habitats, and historically semi-isolated tidal current regimes within embayments have been joined through the construction of an Intra3coastal Waterway (ICW) channel that hydrologically links all embayments. Mosquito ditching further exacerbated the problem of wetland habitat loss. Salinity of bay waters is determined by tides and runoff, salinity ranges predominate in euhaline (23-35 ppt) or polyhaline (15-28 ppt) classes (Bulger *et al.* 1990). The drainage basin of the Sarasota Bay study area encompasses a land area of approximately 280 square miles and the headwaters of several tidal creeks which flow relatively short distances into the Bay exhibit significant channelization which has altered historical patterns of surface water runoff to the Bay.

A variety of tidal wetland restoration projects have been constructed since the 1980s throughout the Bay. Most projects exist adjacent to public-owned uplands and are dispersed throughout the Sarasota Bay study area where mangrove-marsh platforms linked by tidal channels and subtidal pools have been built. In addition, submerged lands have been enhanced through construction of artificial reefs using a variety of recycled materials and constructed reef modules.

2.2 *Habitat Mapping & GIS Database*

Separate protocols were developed for mapping and GIS database development for a) shore type features, b) tidal wetlands features, and c) seagrass features within the study area according to a bay segmentation scheme (Figure 2.2-1) previously adopted by the SBNEP for its technical projects. A detailed photointerpretation key (Sauers, 2001) was assembled to guide the work process of mapping and GIS database development. Dates of aerial photography encompassed 1998, 1999 and 2001. Imagery was derived from source photography at scales between 1 : 8,000 and 1 : 24,000 and included true color diapositives,

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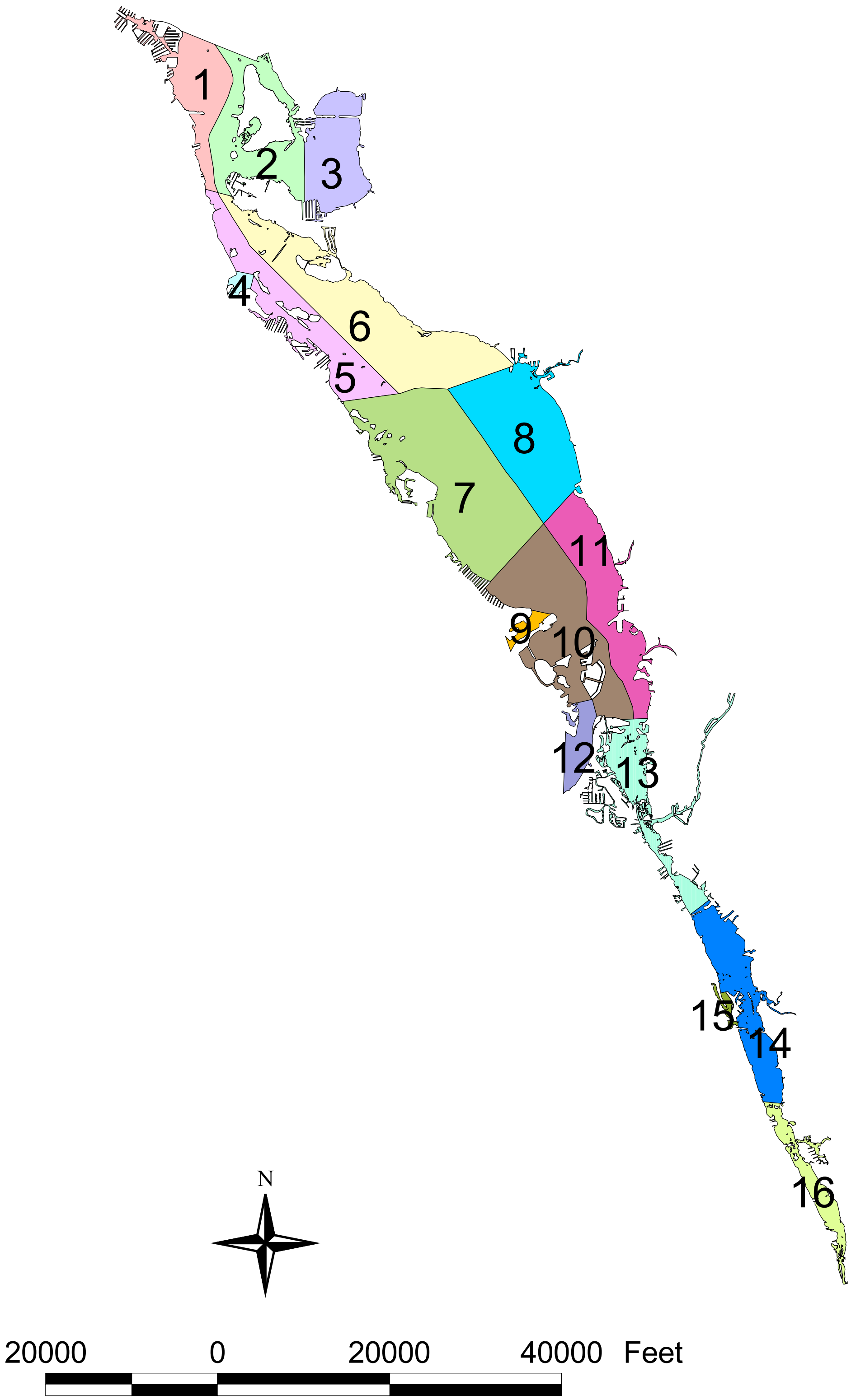

STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure 2.2-1
Bay Segmentation Scheme
Sarasota Bay NEP Study Area

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Palmetto, Florida

digital color-infrared orthographic quarter quadrangles, and digital black and white panchromatic sectional images as obtained from the Southwest Florida Water Management District (SWFWMD), Manatee and Sarasota County Governments. Digital mosaics according to Section-Township-Range boundaries of color-infrared imagery were compiled by Sarasota County Government from digital orthographic quarter quadrangles obtained from SWFWMD with 1-meter pixel resolution. Black and white imagery as digital mosaics according to Section-Township-Range boundaries were compiled by and obtained from Manatee and Sarasota County Governments with 1-foot pixel resolution.

Shore type features were mapped along an arc representing the apparent shoreline (*i.e.*, land-water interface) via photointerpretation and groundtruthing according to a cover classification system including geomorphic, shore morphology and intertidal vegetation tiers, with from six to ten feature types (classes) in each tier. A custom extension in the ArcView v.3.2a (ESRI 1996) software environment was developed by VHB to implement route system and dynamic segmentation functionality and to allow each distinct shore type feature class to be mapped as an "event" along a shoreline arc or "route". Technicians simultaneously viewed digital imagery and mapped shore type features in the ArcView software environment. Polyline shoreline features larger than 5-meters in length were mapped. Delineation and coding corrections or addition of new polyline features were made on the basis of field observations during groundtruthing. Query analyses were performed to tabulate and chart the proportion of feature classes within the entire study area and within each bay segment zone.

Tidal flats features were mapped via photointerpretation and groundtruthing according to a project-specific, refined Florida Land Use, Cover and Forms Classification System-FLUCFCS (Florida Department of Transportation, 1999) adapted from SWFWMD feature classes used in its 1999 land cover map and GIS database. Unique FLUCFCS codes for salt barrens, oyster bars and unvegetated bottoms were added to existing SWFWMD tidal wetlands feature classes and mapped according to the SBNEP bay segmentation scheme using a geometric intersect operation in the ARC/INFO (ESRI 1999) software environment.

Technicians simultaneously viewed digital imagery and mapped tidal flats features in the ArcView software environment. Polygon tidal flats features larger than 20-meters in length of major axis were mapped. Delineation and coding corrections or addition of new polygon features were made on the basis of field observations during groundtruthing. Query analyses were performed to tabulate and chart the proportion of feature classes within the entire study area and within each bay segment zone.

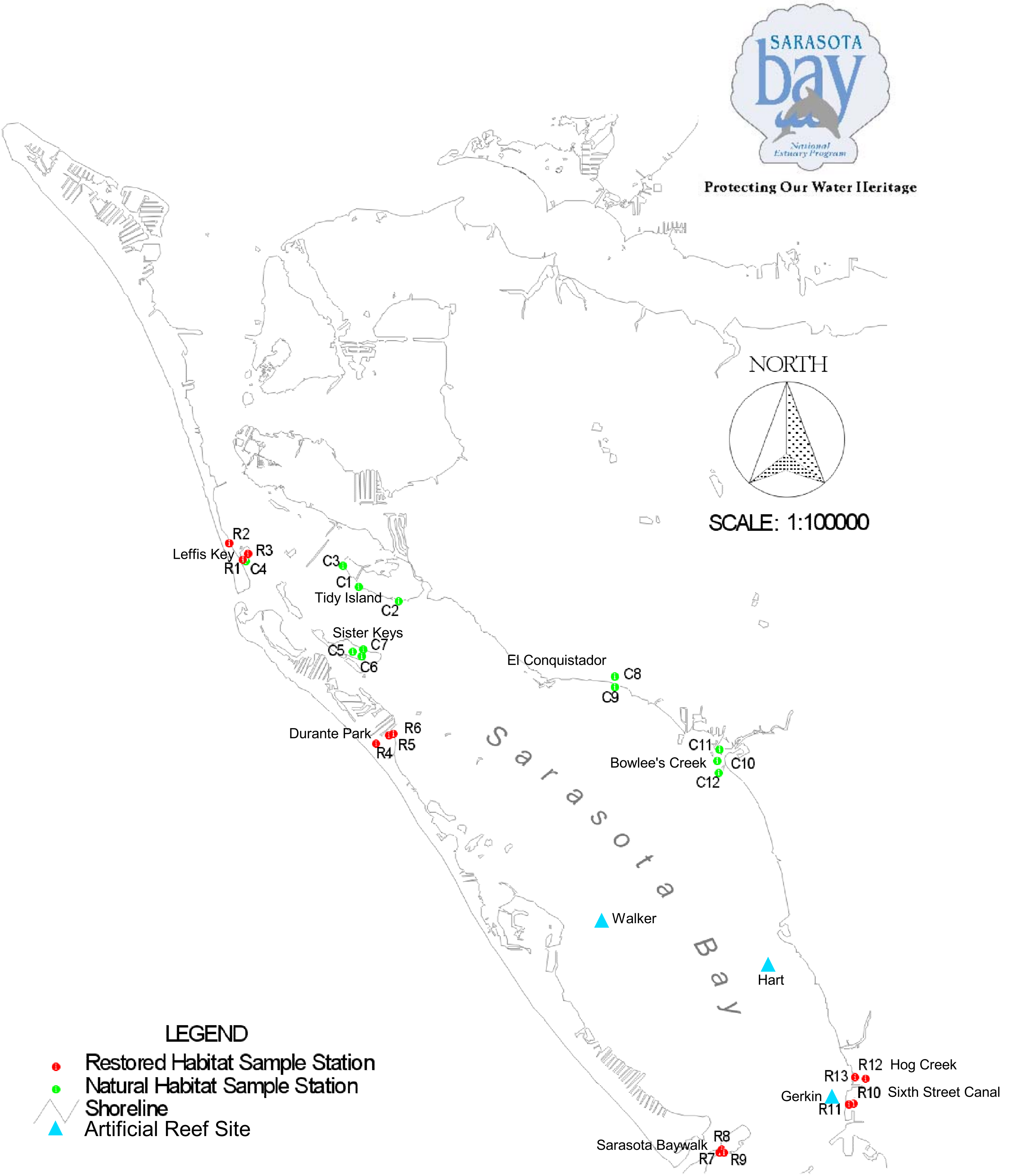
Seagrass features were derived from the 1999 SWFWMD feature classes used in its 1999 seagrasses land cover map and GIS database. No additional photointerpretation or groundtruthing was applied to the map. The existing SWFWMD seagrass feature classes were mapped according to the SBNEP bay segmentation scheme using a geometric intersect operation in the ArcINFO (ESRI 1999) software environment. According to methodology adopted by SWFWMD, polygon seagrass features greater than 0.5 acre were mapped. No delineation or coding corrections or were made to seagrass or tidal flats feature classes; however, new polygon features were added in tributary areas (*i.e.*, bays and estuaries feature class only) to delimit the same study area as provided for the tidal wetlands GIS database. Query analyses were performed to tabulate and chart the proportion of feature classes within the entire study area and within each bay segment zone.

Vanasse Hangen Brustlin, Inc. produced final GIS products for the SBNEP. These products included ArcView data files and selected paper map printouts at small scale sufficient to reveal the bay segmentation scheme and interpret summary Tables and charts. Electronic files, tabular and chart data repose with the City of Sarasota, Sarasota Bay National Estuary Program.

2.3 Critical Natural & Restored Habitat Assessment

<u>Sampling</u>

Fishery utilization of natural and restored shore-fringing habitats by juvenile fishery species within the SBNEP study area was characterized by using a fixed-station sampling strategy. Sampling stations were chosen with two goals in mind: 1) to optimize geographic coverage



STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure 2.3-1
Fishery and Artificial Reef
Sampling Stations
Northern Portion of Study Area

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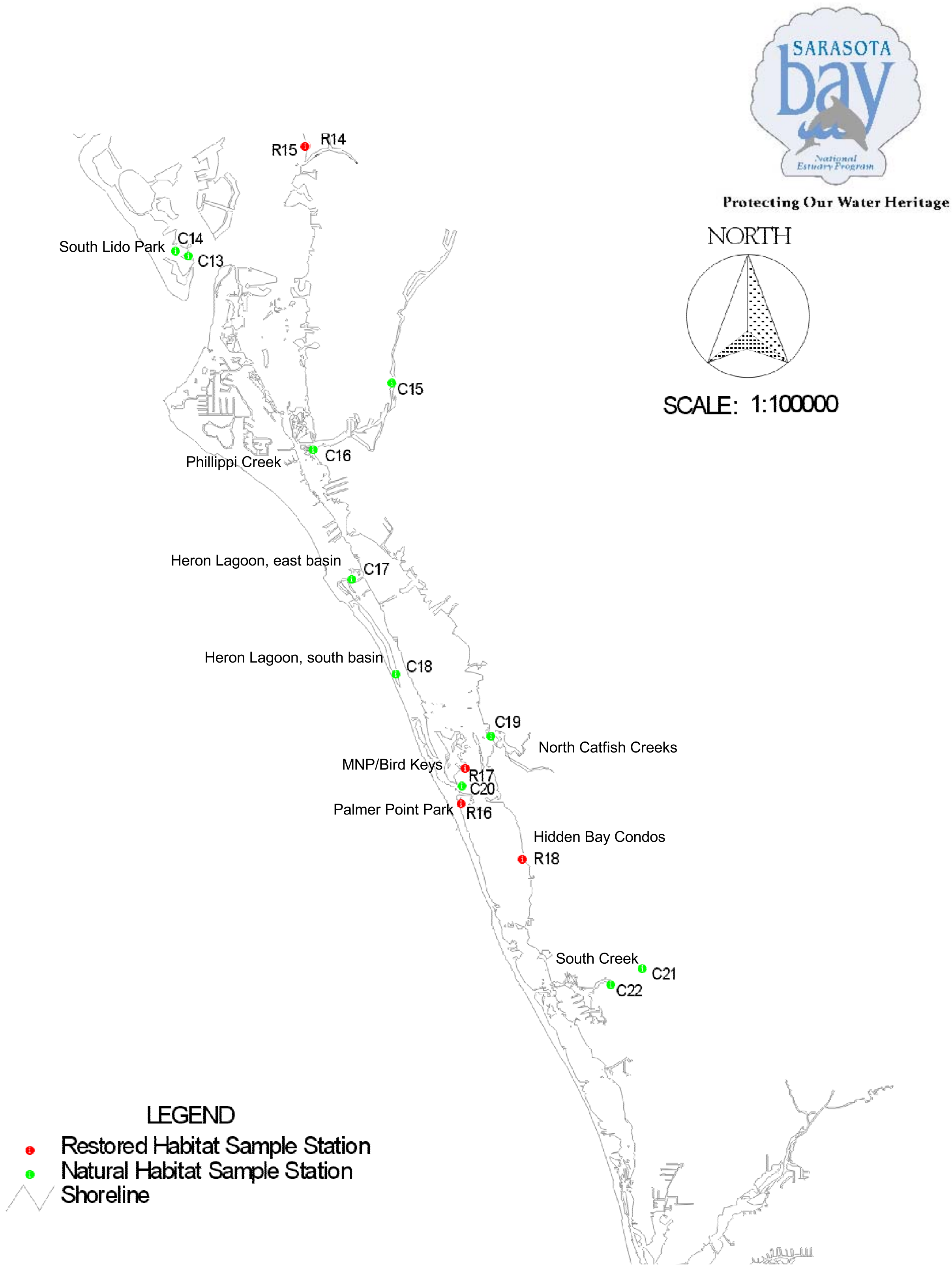
Palmetto, Florida



STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure 2.3-2
Fishery Sampling Stations
Southern Portion of Study Area

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Palmetto, Florida

across SBNEP-sponsored habitat restoration sites and 2) to detect differences in faunal assemblages that are related to local habitat characteristics. A preliminary inventory was made in August 2001 of microhabitat features at ten completed habitat restoration sites located within 5 of 16 bay segments throughout the study area. A similar inventory was made of microhabitat features at existing natural habitat sites in the study area. Multiple sampling stations were selected within sites for distinct geographic locations, and natural site stations were chosen which mimic the habitats occurring among the restoration site stations in order to serve as "controls" for those samples taken from restored sites. Sample stations were located within or directly adjacent to the targeted microhabitat features observed within all sites. Figures 2.3-1 and 2.3-2 depict the sampling station locations and Table 2.3-1 generally describes the sampling stations by location and habitat features.

A total of forty fixed seine stations were sampled by collecting two consecutive hauls during a five-day period during each of two seasonal periods (February and June) corresponding to peak recruitment of selected taxa considered commercially or recreationally important. Eighteen fixed seine stations were established in restored sites, and twenty-two fixed seine stations were established in natural sites (see Figures 2.3-1 and 2.3-2 and Table 2.3-1). Both 21.3-meter and 6.1-meter center bag seines with 3.2mm delta mesh were deployed in various techniques along shorelines where water depths were less than 1.8-meters. A 21.3-meter seine was deployed in one of two different ways: a) seine gently hauled adjacent to or away from the shoreline with wings held 15.5-meters apart for a distance of 9.1-meters across an area of about 140 m^2 (standard-offshore sets); b) seine gently deployed from boat along steeply-sloped shorelines in a semicircular pattern (arc with radius 6.7-meters) and the area swept was 68 m^2. A smaller 6.1-meter seine was deployed in one of three different ways: a) seine gently hauled adjacent to or away from the shoreline with wings held 4.3-meters apart for a distance of 9.1-meters across an area of 39 m^2; b) seine gently deployed along shoreline in a semicircular pattern (arc with radius 2.0-meters) and the area swept was 3 m^2; and c) seine gently hauled along full width of narrow channel for some fixed distance and the area swept varied among three stations between 23 m^2 and 36 m^2.

Table 2.3-1. Index of fishery sampling stations and sample groups in Sarasota Bay for SBNEP fishery habitat assessment during February and June 2002. Target habitats reflect features located within and adjacent to seine stations. Microhabitats reflect features directly sampled by gear deployment techniques.

NATURAL HABITAT FISHERY SAMPLING STATIONS			SAMPLED MICROHABITATS
STATIONS	LOCATION CODES	TARGET HABITATS	
C1	Tidy Island--TI	Tidal Channel, Salt Flat	Seagrass
C2	Tidy Island--TI	Vegetated Low Marsh (*Spartina*)	Marsh Edge
C3	Tidy Island--TI	Beach, Mudflat, Seagrass Flat	Marsh Edge
C4	Leffis Key--SLK	Beach, Seagrass Flat (*Thalassia*)	Seagrass
C5	Sister Keys--SLK	Subtidal Pool, Mangrove Fringe	Subtidal Pool
C6	Sister Keys--SLK	Tidal Lagoon, Mangrove Fringe	Channel
C7	Sister Keys--SLK	Seagrass Flat (*Halodule*)	Seagrass
C8	El Conquistador--EBC	Vegetated Low Marsh (*Juncus*)	Channel
C9	El Conquistador--EBC	Tidal Lagoon (Mangrove), Oyster Bar	Seagrass
C10	Bowlees Creek--EBC	Oyster Bar, Seagrass Flat	Subtidal Pool
C11	Bowlees Creek--EBC	Tidal Lagoon, Mangrove Fringe	Channel
C12	Bowlees Creek--EBC	Beach, Seagrass Flat	Seagrass
C13	South Lido Park--SLP	Seagrass Flat (*Thalassia*), Beach	Seagrass
C14	South Lido Park--SLP	Tidal Lagoon (Mangrove), Mudflat	Seagrass
C15	Phillippi Creek--PC	Riverine Channel, Low Marsh (*Typha*)	Marsh Edge
C16	Phillippi Creek--PC	Oyster Bar, Subtidal Pool	Subtidal Pool
C17	Heron Lagoon--HL	Tidal Lagoon, Subtidal Pool	Marsh Edge
C18	Heron Lagoon--HL	Tidal Lagoon, Mangrove Fringe	Seagrass
C19	North/Catfish Creeks--MNP	Tidal Lagoon (Mangrove), Oyster Bar	Subtidal Pool
C20	MNP/ Bird Keys--MNP	Seagrass Flat, High Marsh	Seagrass
C21	South Creek--OSP	Riverine Channel (Leather Fern)	Channel
C22	South Creek--OSP	Vegetated Low Marsh (*Juncus*)	Marsh Edge

RESTORED HABITAT FISHERY SAMPLING STATIONS			SAMPLED MICROHABITATS
STATIONS	LOCATION CODES	TARGET HABITATS	
R1	Leffis Key--LK	Seagrass Flat, Tidal Lagoon	Seagrass
R2	Leffis Key--LK	Tidal Channel, Mudflat	Channel
R3	Leffis Key--LK	Subtidal Pool, Mangrove Fringe	Subtidal Pool
R4	Durante Park--DP	Vegetated Low Marsh (*Juncus*)	Marsh Edge
R5	Durante Park--DP	Tidal Channel, Mudflat	Channel
R6	Durante Park--DP	Seagrass Flat, Beach	Seagrass
R7	Sarasota Baywalk--SBW	Salt Flat, Transitional High Marsh	Subtidal Pool
R8	Sarasota Baywalk--SBW	Vegetated Low Marsh, Subtidal Pool	Marsh Edge
R9	Sarasota Baywalk--SBW	Mudflat, Mangrove Fringe	Seagrass
R10	Sixth Street Canal--SSC	Mudflat, Mangrove Fringe, Oyster Bar	Subtidal Pool
R11	Sixth Street Canal--SSC	Tidal Lagoon, Seagrass Flat	Marsh Edge
R12	Hog Creek--HC	Low Marsh (*Typha*), Subtidal Pool	Marsh Edge
R13	Hog Creek--HC	Tidal Lagoon, Mangrove Fringe	Channel
R14	Selby Gardens Pond--SGP	Vegetated Low Marsh (*Juncus*)	Subtidal Pool
R15	Selby Shoreline--SS	Beach, Seagrass Flat	Seagrass
R16	Palmer Point Park--LSB	Transitional High Marsh, Salt Flat	Marsh Edge
R17	MNP/Bird Keys--LSB	Salt Flat, Seagrass Flat	Seagrass
R18	Hidden Bay Condos--LSB	Vegetated Low Marsh, Tidal Lagoon	Channel

A standard-offshore technique was employed with both seines in open waters or near shoreline margins. A boat-river technique was employed with both seines along steeply sloped shorelines or shorelines with extensive overhanging vegetation. In narrow channels or small subtidal pools, a non-standard technique of a straight line tow of variable distance was employed. A detailed description of each sampling technique is provided in the FMRI FIM protocols.

All samples were collected during daylight hours, some near dawn or dusk periods, and were processed in the field. All fish and selected shellfish or invertebrates captured in the gear were identified in the field to the lowest practical taxon, measured to the nearest millimeter and enumerated; those fish positively identified were then released. From each sample, up to 10 individuals of each fish and invertebrate taxon were randomly culled, measured and their lengths recorded, except up to 40 fish of selected taxa (commercially or recreationally important) were measured and remaining individuals counted. Unidentified specimens or other representative specimens were retained for laboratory verification of taxon identification or confirmation of field identification. Some taxa were not identified to species (*Brevoortia* spp., *Menidia* spp.) because of the possibility of hybridization in the study area or because they were not morphologically or meristically distinguishable at small juvenile sizes (*Eucinostomus* spp. < 40 mm SL, *Gobiosoma* spp. < 20 mm SL, or *Strongylura* spp. [*marina* and *timucu* only] < 100 mm SL). Very abundant collections were subsampled using a Motoda Box and processed after large, rare or selected taxa were sorted and separately processed from the sample. Physical data including water temperature (^{o}C), salinity (%), and conductivity (mhos) were recorded with each sample by using an YSI SCT Meter or YSI 610D/600 Sonde.

Species were assigned to one of three guild categories (i.e., nursery, transient, or resident) based on similar exploitation of resources available within sampled habitats or to group species that demonstrate similar functional use of habitats as documented in scientific literature of life history profiles. Nursery species were grouped due to their cyclical or seasonal use of habitats as juveniles before migrating offshore as adults, and selected species (*i.e.*, commercial or recreational importance) were given priority for assignment to this guild. Transient species were grouped due to their regular migrations between bay habitats on a diel or seasonal basis, occurring as occasional or accidental visitors to the estuary, and forage or spawn in lower reaches of the estuary. Resident species were grouped due to their restricted distribution to one or few habitats and spend their entire life cycle, through reproduction and growth to maturity, within the confines of the estuary and seldom, if ever, leave the estuary. Guild assignments were used in the analysis of community structure.

Various characteristics of microhabitat including bottom type, bottom vegetation type, shore type, inundation or overhang condition of shore type, bycatch type and quantity were recorded with each sample together with percent cover of the type classes. Additional characteristics of the bank slope and its distance from the sample were also recorded with each sample. Characteristics of the gear, its wing depth, the seine center-bag depth and the direction towed in relation to current or wind was also recorded with each sample. The coding of gear deployment technique, sample stratum, bottom vegetation and habitat characteristics were used to assign samples to specific microhabitat groups for data analysis and statistical treatment.

<u>Data Analysis</u>

All records from field datasheets were entered into a relational database customized by FMRI-FIM in the MSAccess software environment. The database was extracted to appropriate grid files in MSExcel software environment format and statistical and community analysis software programs were used to compute parameters.

Fish size was measured and reported as standard length (SL) in millimeters. In addition to the up to 40 randomly culled specimens of selected taxa (up to 10 specimens for non-selected taxa), unmeasured specimens were proportionally adjusted for the length-frequency plots to reflect the size structure of the entire sample(s).

Due to variable catch efficiencies and selectivity of the gears used in this study, raw abundance data for each species were tabulated separately for each gear. In addition, raw abundance data for each species were converted to faunal density on the basis of catch per unit of $100m^2$ area (CPUA) for each sample collected. Faunal density-CPUA values for each species were then used as individual count data for pooled seasonal or sample groups density computations. In order to help normalize faunal density data from contagiously distributed organisms, all individual CPUA data were log-transformed ($\log_e(x + 1)$) prior to similarity calculations, community structure analyses, and during various other statistical treatments.

Unidentified species complexes (*i.e., Menidia* spp., *Anchoa* spp., Clupeidae spp., *Eucinostomus* spp., *Fundulus* spp., *Gobiosoma* spp., *Brevoortia* spp., *Mugil* spp., and *Strongylura* spp.) were treated as a separate, single species for all analyses. With the above exceptions, all species were included in the calculation of descriptive indices of community structure recommended by Livingston (1976) or Florida Marine Research Institute (2000). These included species composition, number of individuals, frequency, percentage occurrence in samples, relative abundance (mean number of individuals per haul), faunal density (mean number of individuals, CPUA, per haul), species richness (mean number of species per haul), Shannon-Wiener diversity (rare species were not excluded). Index calculations were based on pooled seasonal data.

Station-related and location-related density differences were determined by all taxa, by selected taxa only, or by species groups according to guild assignment (nursery, resident, transient). Additional microhabitat type-related density differences between natural versus restored sites were determined by all taxa, by selected taxa only, or by species groups according to guild assignment (nursery, resident, transient).

Physicochemical parameters of surface water (i.e., temperature, conductivity and salinity) were measured and recorded during each trip to fishery sampling stations (i.e., 4 trips to each station over 2 seasonal periods). However, equipment malfunction resulted in missing data values for some trips and stations during each seasonal period. Therefore, statistical analysis of water temperature (n = 143) and salinity (n = 130) differences at stations was made for pooled seasonal data. Data for physicochemical parameters were tabulated and analyzed using MSExcel2000 with the Analyse-it (v. 1.63) add-on software application. A non-parametric Kruskal-Wallis test was used for comparisons of temperature and salinity between stations. Null hypotheses were tested separately for temperature and salinity, as follows, H_0: measured parameter values at all stations are the same; H_A: measured parameter values at all stations are not the same. Statistical significance tests were made at the 5% significance level ($\alpha = 0.05$) by comparing the Kruskal-Wallis test statistic (H_C) to the critical value of the Chi-square test statistic (χ^2) and for determining whether to reject, or accept, the null hypothesis, H_0.

2.4 Artificial Reef Habitat Assessment

The initial task under the artificial reef assessment was to review all existing information available on the construction of the artificial reefs. Existing data reviewed was from Sarasota County files and included information on the dates of material placement, the material type, quantity of material, any historic mapping and monitoring data, or any anecdotal evidence on the success of the reef deployment. In addition, available GPS coordinate data were obtained to locate all the reef material.

Reef Characterization

Prior to sampling station selection, all of the existing reef sites were characterized. Reef characterization involved a reconnaissance-level survey of each reef site using SCUBA gear. The reef was characterized according to its structure, configuration and location. Survey data also identified material type (*e.g.,* concrete blocks, reef balls, ceramic insulators, limestone boulders, PVC structures, *etc*.), approximate areal extent, height (or relief) of material and complexity. Complexity is a very important factor and is a measure of the number and variety of niches available on the reef for finfish. A scale of 1 to 5 was used to characterize complexity. A rank of one is lowest (representing a flat surface flush with a substrate), while a five is the highest rank (indicative of a reef with a wide variety of holes, shapes, and sizes and vertical relief). In addition to the physical data collected from each reef site, the proximity of the site to tidal passes, tidal creeks and other estuarine habitats was measured from navigational charts.

The reconnaissance survey occurred during September of 2001 and coincided with an extreme red tide event in the bay system. This red tide devastated several of the reef sites, resulting in mortality of both invertebrate and finfish species. However, some sites were less impacted, with live specimens being observed. Due to the timing of this extreme red tide event, monitoring was postponed until February for the initial sampling period.

Station Selection

Based upon the results of the reconnaissance-level survey, the Gerkin, Hart and Walker reef sites (Figure 2.3-1) were selected for monitoring. These sites were selected due to the variety of material types, the different ages of the deployed material, the variable proximity to the tidal passes, and because they all contained prefabricated reef ball units. These three reefs encompassed all of the material types that were deployed within the Sarasota Bay National Estuary Program study area.

Survey Methodology

Each selected reef site was monitoring by point-census and linear transect methods. The point-census stations focused on small specific areas on each reef that contained a unique material type (*e.g.*, reef ball, PVC reef, concrete block piles, *etc*.) Conversely, linear transects were of variable lengths and were established to repetitively survey large areas of specific material types.

Reef sites were specifically located and marked to allow subsequent repetitive sampling. This involved the selection and marking of each station location. Concrete blocks coated with white anti-fouling paint and black-stenciled site identification numbers marked the location of each point-census station and the end of each linear transect. The substrate surface area occupied by the reef material being surveyed was also measured using a fiberglass tape to calculate fish density. Accurate navigational data for each station location was obtained using a GPS differential unit.

Three-point-census locations were established on the Hart and Walker reefs and four were established at the Gerkin site (a total of ten point-census locations between the three reef sites). The point-census survey involved a five-minute count of all species observed within one-meter of the point-census material during each event. Point-census locations also provided for replicate sampling of the same material type (*e.g.*, reef ball) at each site during the same sampling event, as well as subsequent successive sampling events. The SCUBA diver surveyed the material for a distance of one-meter for one minute in each of the four quadrants around the material. During the final minute of observation, the observer fully investigated the material from close range to record cryptic species.

At least one linear transect was monitored at each reef site. A total of four linear transects locations were surveyed (two at the Walker site). A SCUBA diver slowly swam along the linear transect while recording the number and species of all individuals observed within one meter of the reef structure. The emphasis of this survey method was to provide counts of all selected taxa. Therefore, the diver thoroughly inspected all nooks and crannies of the reef structure while proceeding along the transect.

Survey results were recorded using an underwater slate. The slate was pre-labeled with common reef fish species names to allow for quick recording and to maximize the direct visual observation time. The slate results were subsequently transcribed to field data sheets. Observed individuals were placed into one of four size classes, early juvenile (EJ), juvenile (JUV), sub-adult (SA), and adult (A). All individuals were identified to the lowest practical taxonomic level and some of the early juveniles were captured and returned to the laboratory for positive identification. Some fish species were too numerous to count (Clupeidae spp. and larval fish), so the numbers of these species were visually estimated.

All point-census and linear transect surveys generally occurred over a five-day period during February and June 2002. Surveys were not conducted during the same day as survey plot establishment. Two replicate surveys were conducted during each of the sampling seasons (total of four surveys at each station). Replicate surveys within each season occurred at least one day apart. Within the sampling window, the survey dates were scheduled to maximize visibility in the water column (*i.e.*, during calm periods).

<u>Sampling Stations</u>

Monitoring station summary information is provided in Table 2.4-1. At the Gerkin site, two point-census locations occurred at one or two reef ball units. Additional point-census locations occurred at PVC ribcage design and a PVC web design. The PVC ribcage design was roughly 1.2 m x 2.4 m at the base, with curved 5 cm PVC pipe arching to provide about 1.2 m of vertical relief. The PVC web unit is approximately 1.5 m high and has a geoweb plastic material in a roughly triangular shape. The linear transect at the Gerkin site occurred along a string of four PVC ribcage units.

At the Hart site, two of the point-census locations were individual reef ball units. The third point-census location was a small pile of concrete block. The linear transect at this location included three reef ball units on top of a large concrete block pile covering approximately 36 m^2.

Reef ball units (both single modules and pairs) comprised all of the point-census locations at the Walker reef site. Two linear transects were monitored at the Walker site, with one being along a staggered string of 16 reef balls. The second linear transect at this site included four sets of reef balls in concrete units (each unit contains four reef balls imbedded in a concrete slab).

The depth of the water at the reef sampling stations varied from 2.4 m to 4.6 m. The Gerkin site was 3,800 m from a tidal pass, while the Walker site was most distant at 6,100 m from a pass). The reef ball units and concrete block piles had similar complexity with a rank of

Table 2.4-1 Physical parameters of artificial reef assessment stations.

Reef	Site	Station Type	Distance to Pass (m)	Depth (m)	Material Type[1]	Complexity	Relief (m)	Surface Area (m-2)
Gerkin	GL1	Linear	3800	4.6	PVC RC (4)	3	1.2	23.44
Gerkin	GP1	Point	3800	2.4	RB (2)	2	0.8	1.31
Gerkin	GP2	Point	3800	2.4	RB	2	0.8	0.66
Gerkin	GP3	Point	3800	4.3	PVC RC	3	1.2	5.86
Gerkin	GP4	Point	3800	4.3	PVC Web	3	1.5	2.75
Hart	HL1	Linear	4800	3.1	CB, RB (3)	4	1.2	35.72
Hart	HP1	Point	4800	3.1	RB	2	0.8	0.66
Hart	HP2	Point	4800	3.1	CB	2	0.3	3.91
Hart	HP3	Point	4800	3.1	RB	2	0.8	0.66
Walker	WL1	Linear	6100	3.7	RB in concrete (4)	3	0.9	20.00
Walker	WL2	Linear	6100	3.1	RB (16)	3	0.8	10.48
Walker	WP1	Point	6100	3.1	RB	2	0.8	0.66
Walker	WP2	Point	6100	3.1	RB	2	0.8	0.66
Walker	WP3	Point	6100	3.1	RB (2)	2	0.8	1.31

[1]CB – Concrete block pile; CB, RB (3) – three reef balls on a concrete block pile; PVC RC – PVC "rib cage," PVC Web – PVC web design; RB – reef ball(s)

two; while the PVC ribcage, PVC web, reef ball in concrete, and multiple reef ball units had a complexity of three. The linear transect at the Hart site, which included both concrete blocks and reef balls, had the highest complexity rank at four. The relief of the reef material (height above the bottom) varied from a low of 0.3 m for the concrete block pile at the Hart site to a high of 1.5 m for the PVC web unit at the Gerkin site. The surface area of the bottom encompassed by the artificial reef surveyed varied from a low of 0.66 m^2 for an individual reef ball unit to a high of roughly 36 m^2 for the Hart linear transects area.

Data Analysis

All data was entered into a MS Access database. This database was extracted and analyzed using MS Excel and SPSS software. The substrate area of the material was used to convert the raw abundance data to density to calculate the catch-per-unit-area (CPUA) measure based upon 100 m^2.

Species not identifiable down to species level were pooled into multi-species complexes and treated as individual species for all subsequent data analyses. Included in these species complexes were larval fish, Gobiidae spp., Scorpaenidae spp., *Prionotus* spp., Blennidae spp., Balistidae spp., Clupeidae spp., *Calamus* spp., and *Eucinostomus* spp. Summary statistics were developed from the raw abundance numbers by both dominant taxa and select taxa after pooling all sites and sampling seasons. Summary statistics include the number of individuals for that size class, the relative abundance for each taxon, the percent of sample for which the taxon was observed and totals for each size class.

One species group (Clupeidae spp.) was removed from the database after the initial summary statistics discussed above. This species was excluded due to the high numbers observed within the some samples, and transient nature, which would unduly sway the data analyses. Larval fish were not excluded, despite occasional high numbers, however, because nursery habitat value was the focus of the study. Subsequent analyses were based upon faunal density, following the removal of Clupeidae spp. as mentioned above.

Between reef site-related density differences, within reef site-related density differences and artificial reef material type-related density differences were determined by all taxa (except Clupeidae spp.), select taxa and size class.

Untransformed data were tested for normality by reviewing box plots and normality plots, identifying the five highest and five lowest mean densities by analysis factor and testing using the Kolmogorov-Smirnov and Shapiro-Wilk statistics. Data were generally not normally distributed. Data were transformed (log 10) and retested. Data were slightly more normally distributed after transformation and log transformed mean densities were used in subsequent statistical tests. Homogeneity of variance was variable for means and medians depending on the analysis factor. Data were tested for significant differences among selected analysis factors using univariate analysis of variance (unianova) where alpha = 0.05. P values were reported for significantly different analysis factors.

3.0 RESULTS

3.1 Habitat Mapping and GIS Database

The SBNEP shoreline has a total length of 2,166,490 feet (410.3 miles). Table 3.1-1 summarizes the total shoreline length and area for each bay segment. The geomorphology, shoreline morphology and intertidal vegetation categories within the study area are summarized in Table 3.1-2. The percentage for each feature within the geomorphology, shore morphology and intertidal vegetation tiers is graphically depicted in Figure 3.1-1.

Altered shorelines are the dominant feature (1,379,127 feet) within the geomorphology tier, totaling 63.7% of the available shoreline length. The remaining feature classes range from 21.3% (460,823 feet) for linear shoreline down to creek mouth at one percent. Within the shore morphology tier, bulkhead was the dominant shore type at 45.3% (981,120 feet), followed by deep wetland fringing at 25.3%. (547,190 feet) The remaining feature types ranged from 3.5 (75,201 feet) to 9% (203,089 feet) of the linear distance of the shoreline. No vegetation is present along 50.5% (1,094,429 feet) of the shoreline of the SBNEP study

Table 3.1-1 Summary of total shoreline length and area by bay segment.

Bay Segment	Shoreline Length (Feet)	Area (Acres)
1	147,722	1,766.13
2	160,790	2,958.85
3	187,319	2,107.87
4	11,971	136.23
5	128,138	2,422.00
6	152,539	5,044.50
7	157,307	5,614.00
8	114,913	3,450.16
9	26,790	213.00
10	123,922	3,409.22
11	112,218	2,399.76
12	29,170	625.35
13	445,607	1,624.92
14	175,242	2,007.53
15	22,326	74.27
16	170,516	840.36

Table 3.1-2 Summary of geomorphology, shore morphology and intertidal vegetation features within the NEP study area.

Feature	Length (feet)	Percentage
Geomorphology		
Altered	1,379,127	63.7
Bight	48,346	2.2
Tidal Creek	116,747	5.4
Embayment	150,212	6.9
Linear Shoreline	460,873	21.3
Creek Mouth	11,186	0.5
Shore Morphology		
Bulkhead	981,120	45.3
Riprap	203,089	9.4
Beach	93,229	4.3
Upland Shoreline	82,445	3.8
Patchy Wetland Fringing	75,201	3.5
Solid Wetland Fringing	184,216	8.5
Deep Wetland Fringing	547,190	25.3
Intertidal Vegetation		
Australian Pine	7,726	0.4
Brazilian Pepper	29,090	1.3
Cattail	3,067	0.1
Juncus	3,172	0.1
Leather Fern	8,111	0.4
Mangrove	903,210	41.7
None	1,094,429	50.5
Other Vegetation	52,925	2.4
Spartina	11,898	0.5
Terrestrial Vegetation	52,863	2.4
Total Length	2,166,490	

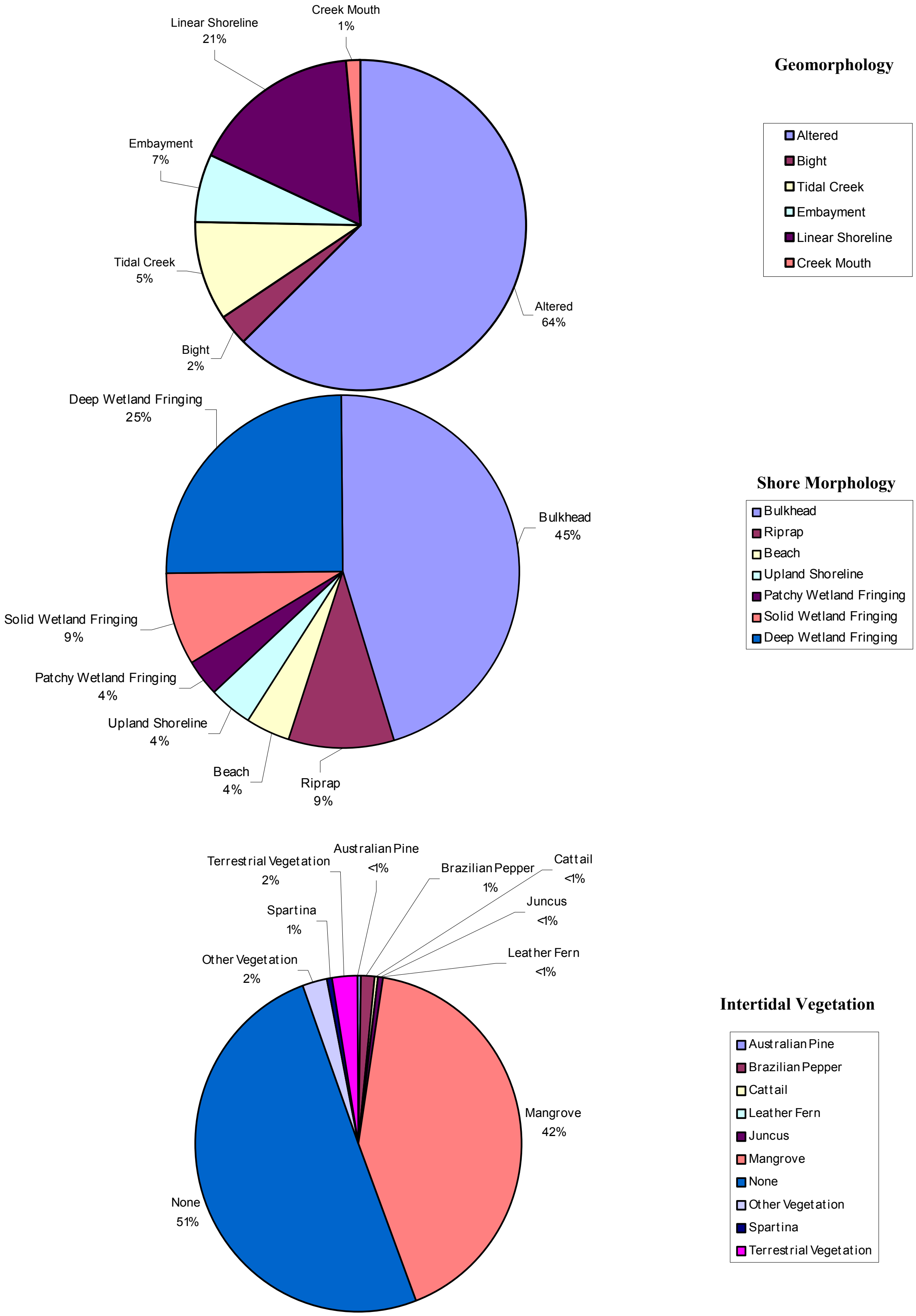


Figure 3.1-1. Pie charts depicting the total percentage of each geomorphology, shore morphology, and intertidal vegetation feature within the SBNEP area.

area, 41.7% (903,210 feet) of the shoreline is dominated by mangrove vegetation and remaining vegetation types each account for less than 2% of the shoreline.

Table 3.1-3 provides the proportion of each feature class within the geomorphology, shore morphology and intertidal vegetation tiers by bay segment. Figures 3.1-2 through 3.1-4 graphically depict the percentage of each feature class within the geomorphology, shore morphology and intertidal vegetation tiers, respectively. The percent of each feature class within each tier varies widely across the SBNEP study area. This reflects the variable nature of shoreline alteration and natural habitat distribution within the bay system. It is important to note that upland-cut canal systems are included in the bay segmentation scheme. The canal systems tend to overstate the linear shoreline length occupied by altered habitat, seawalls, bulkheads and areas of no intertidal vegetation. The upland-cut canal systems figure most prominently into bay segments 3, 6, 7, 10 and 13.

Included in Table 3.1-3 is the linear length of each bay segment as well as the total water area within that bay segment in acres. The shoreline length divided by the total water area of the bay segment results in a value known as the shoreline index (feet/acres). The shoreline index is graphically depicted by bay segment on Figure 3.1-5. The shoreline index essentially provides the ratio of shoreline length relative to the water area in that segment. Within the SBNEP study area, the overall shoreline index is 62 feet/acre.

Appendix A contains graphic depictions of the geomorphology, shore morphology and intertidal vegetation tiers within the SBNEP study area. These map layouts help to provide a general overview of the feature classes within each tier, but are not able to show the detail available on the GIS work product.

Table 3.1-3 Proportion of feature classes within geomorphology, shore morphology and intertidal vegetation tiers.

SHORE TYPE	Segment 1	%	Segment 2	%	Segment 3	%	Segment 4	%
Segment Length (feet)								
Geomorphology								
Altered	133,534	90	47,074	29	122,862	66	5,944	50
Bight	518	0	8,932	6	3,115	2	1,606	13
Tidal Creek	0	0	500	0	5,018	3	0	0
Embayment	359	0	23,822	15	14,668	8	0	0
Linear Shoreline	13,311	9	80,462	50	41,656	22	4,352	36
Creek Mouth	0	0	0	0	0	0	69	1
Shore Morphology								
Beach	1,819	1	4,923	3	11,348	6	2,409	20
Bulkhead	121,292	82	31,635	20	112,831	60	5,524	46
Deep Wetland Fringing	6,610	4	95,149	59	35,075	19	1,848	15
Patchy Wetland Fringing	7,140	5	6,749	4	6,433	3	553	5
Riprap	5,907	4	5,689	4	5,111	3	420	4
Solid Wetland Fringing	4,954	3	15,977	10	14,500	8	1,217	10
Upland Shoreline	0	0	668	0	2,020	1	0	0
Intertidal Vegetation								
Australian Pine	0	0	71	0	600	0	0	0
Brazilian Pepper	0	0	0	0	210	0	0	0
Cattail	0	0	0	0	0	0	0	0
Leather Fern	0	0	0	0	0	0	0	0
Juncus	0	0	0	0	0	0	0	0
Mangrove	24,963	17	121,990	76	55,808	30	3,618	30
None	121,541	82	38,417	24	125,604	67	8,353	70
Other Vegetation	1,065	1	0	0	0	0	0	0
Spartina	0	0	312	0	277	0	0	0
Terrestrial Vegetation	153	0	0	0	4,820	3	0	0
Total Segment Length (feet)	147,722		160,790		187,319		11,971	
Total Water Area (acres)	1,766.13		2,958.85		2,107.87		136.23	
Shoreline Index (ft/acres)	83.6		54.3		88.9		87.9	

Table 3.1-3. (Continued)

SHORE TYPE	Segment 5	%	Segment 6	%	Segment 7	%	Segment 8	%
Segment Length (feet)								
Geomorphology								
Altered	86,786	68	72,112	47	125,260	80	98,428	86
Bight	1,008	1	6,071	4	1,111	1	750	1
Tidal Creek	0	0	1,586	1	0	0	0	0
Embayment	1,447	1	12,186	8	1,551	1	508	0
Linear Shoreline	38,898	30	59,999	39	29,385	19	14,235	12
Creek Mouth	0	0	585	0	0	0	993	1
Shore Morphology								
Beach	7,755	6	3,484	2	772	1	5,134	4
Bulkhead	71,051	55	56,153	37	75,617	48	75,029	65
Deep Wetland Fringing	26,632	21	58,590	38	26,407	17	9,961	9
Patchy Wetland Fringing	2,800	2	4,428	3	10,897	7	4,021	4
Riprap	4,987	4	7,642	5	25,459	16	17,779	15
Solid Wetland Fringing	14,913	12	22,017	14	17,871	11	2,858	2
Upland Shoreline	0	0	225	0	284	0	130	0
Intertidal Vegetation								
Australian Pine	0	0	0	0	0	0	340	0
Brazilian Pepper	0	0	0	0	329	0	1,235	1
Cattail	0	0	400	0	0	0	0	0
Leather Fern	0	0	0	0	0	0	0	0
Juncus	0	0	0	0	0	0	389	0
Mangrove	58,838	46	89,047	58	71,554	45	23,117	20
None	69,042	54	58,771	39	81,160	52	88,561	77
Other Vegetation	0	0	225	0	619	0	0	0
Spartina	258	0	4,096	3	0	0	1,177	1
Terrestrial Vegetation	0	0	0	0	3,645	2	94	0
Total Segment Length (feet)	128,138		152,539		157,307		114,913	
Total Water Area (acres)	2,422.00		5,044.50		5,614.00		3,450.16	
Shoreline Index (ft/acres)	52.9		30.2		28.0		33.3	

Table 3.1-3. (Continued)

SHORE TYPE	Segment 9	%	Segment 10	%	Segment 11	%	Segment 12	%
Segment Length (feet)								
Geomorphology								
Altered	13,284	50	106,193	86	92,248	82	8,446	29
Bight	2,965	11	1,911	2	640	1	533	2
Tidal Creek	0	0	3,650	3	5,413	5	0	0
Embayment	10,408	39	2,544	2	164	0	10,504	36
Linear Shoreline	133	0	9,513	8	13,548	12	9,687	33
Creek Mouth	0	0	111	0	204	0	0	0
Shore Morphology								
Beach	13,809	52	3,375	3	15,179	14	9,491	33
Bulkhead	4,966	19	85,925	69	66,761	59	1,263	4
Deep Wetland Fringing	960	4	22,783	18	5,086	5	11,335	39
Patchy Wetland Fringing	2,067	8	345	0	1,728	2	736	3
Riprap	2,921	11	6,140	5	17,412	16	6,073	21
Solid Wetland Fringing	2,067	8	4,836	4	5,524	5	119	0
Upland Shoreline	0	0	519	0	527	0	153	1
Intertidal Vegetation								
Australian Pine	0	0	767	1	125	0	459	2
Brazilian Pepper	0	0	209	0	630	1	52	0
Cattail	0	0	0	0	0	0	0	0
Leather Fern	0	0	0	0	0	0	0	0
Juncus	0	0	0	0	180	0	0	0
Mangrove	5,121	19	28,930	23	17,325	15	12,433	43
None	20,945	78	89,514	72	87,569	78	15,458	53
Other Vegetation	171	1	3,074	2	4,306	4	329	1
Spartina	37	0	164	0	725	1	0	0
Terrestrial Vegetation	516	2	1,265	1	1,357	1	440	2
Total Segment Length (feet)	26,790		123,922		112,218		29,170	
Total Water Area (acres)	213.00		3409.22		2,399.76		625.35	
Shoreline Index (ft/acres)	125.8		36.3		46.8		46.6	

Table 3.1-3. (Continued)

SHORE TYPE	Segment 13	%	Segment 14	%	Segment 15	%	Segment 16	%
Segment Length (feet)								
Geomorphology								
Altered	305,761	69	53,146	30	7,276	33	100,773	59
Bight	8,553	2	6,653	4	593	3	6,352	4
Tidal Creek	60,170	14	21,565	12	0	0	18,846	11
Embayment	28,394	6	33,464	19	6,137	27	11,499	7
Linear Shoreline	36,972	8	57,893	33	8,320	37	32,234	19
Creek Mouth	5,757	1	2,522	1	0	0	812	0
Shore Morphology								
Beach	5,058	1	4,562	3	442	2	3,669	2
Bulkhead	208,142	47	32,517	19	7,203	32	25,210	15
Deep Wetland Fringing	87,378	20	92,384	53	10,815	48	56,176	33
Patchy Wetland Fringing	17,112	4	4,738	3	125	1	5,329	3
Riprap	37,367	8	11,661	7	73	0	48,449	28
Solid Wetland Fringing	35,423	8	17,490	10	3,514	16	20,937	12
Upland Shoreline	55,128	12	11,891	7	154	1	10,746	6
Intertidal Vegetation								
Australian Pine	4,229	1	275	0	154	1	707	0
Brazilian Pepper	18,151	4	4,264	2	0	0	4,010	2
Cattail	1,214	0	1,148	1	0	0	305	0
Leather Fern	130	0	1,571	1	0	0	902	1
Juncus	3,974	1	2,853	2	0	0	1,284	1
Mangrove	159,184	36	112,306	64	14,884	67	104,090	61
None	202,696	45	34,977	20	6,786	30	45,036	26
Other Vegetation	32,013	7	8,085	5	462	2	2,576	2
Spartina	1,523	0	2,165	1	0	0	1,164	1
Terrestrial Vegetation	22,493	5	7,599	4	40	0	10,441	6
Total Segment Length (feet)	445,607		175,242		22,326		170,516	
Total Water Area (acres)	1,624.92		2007.53		74.27		840.36	
Shoreline Index (ft/acres)	274.2		87.3		300.6		202.9	

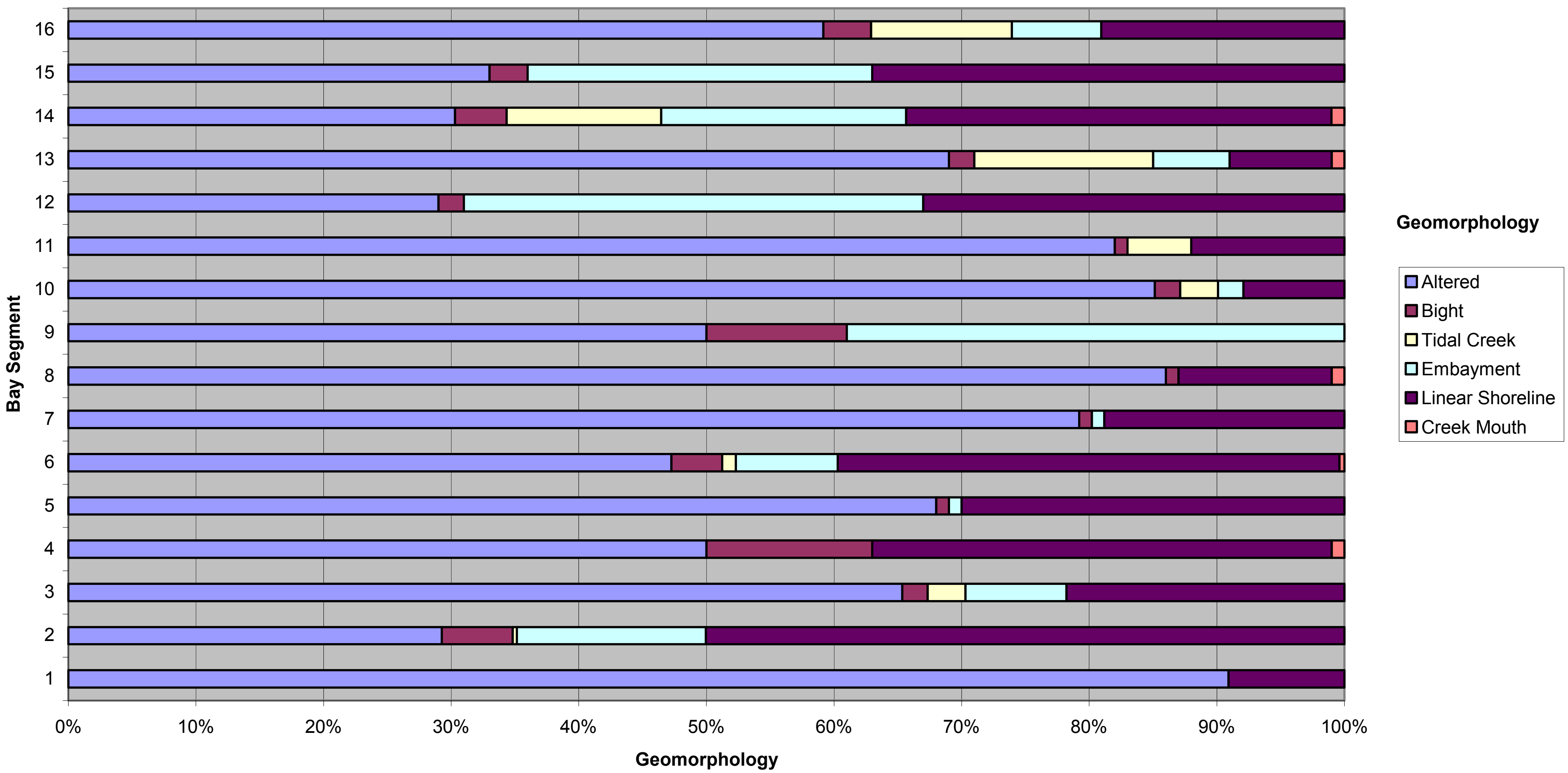


Figure 3. 1-2. Percentage of geomorphology feature classes within each bay segment.

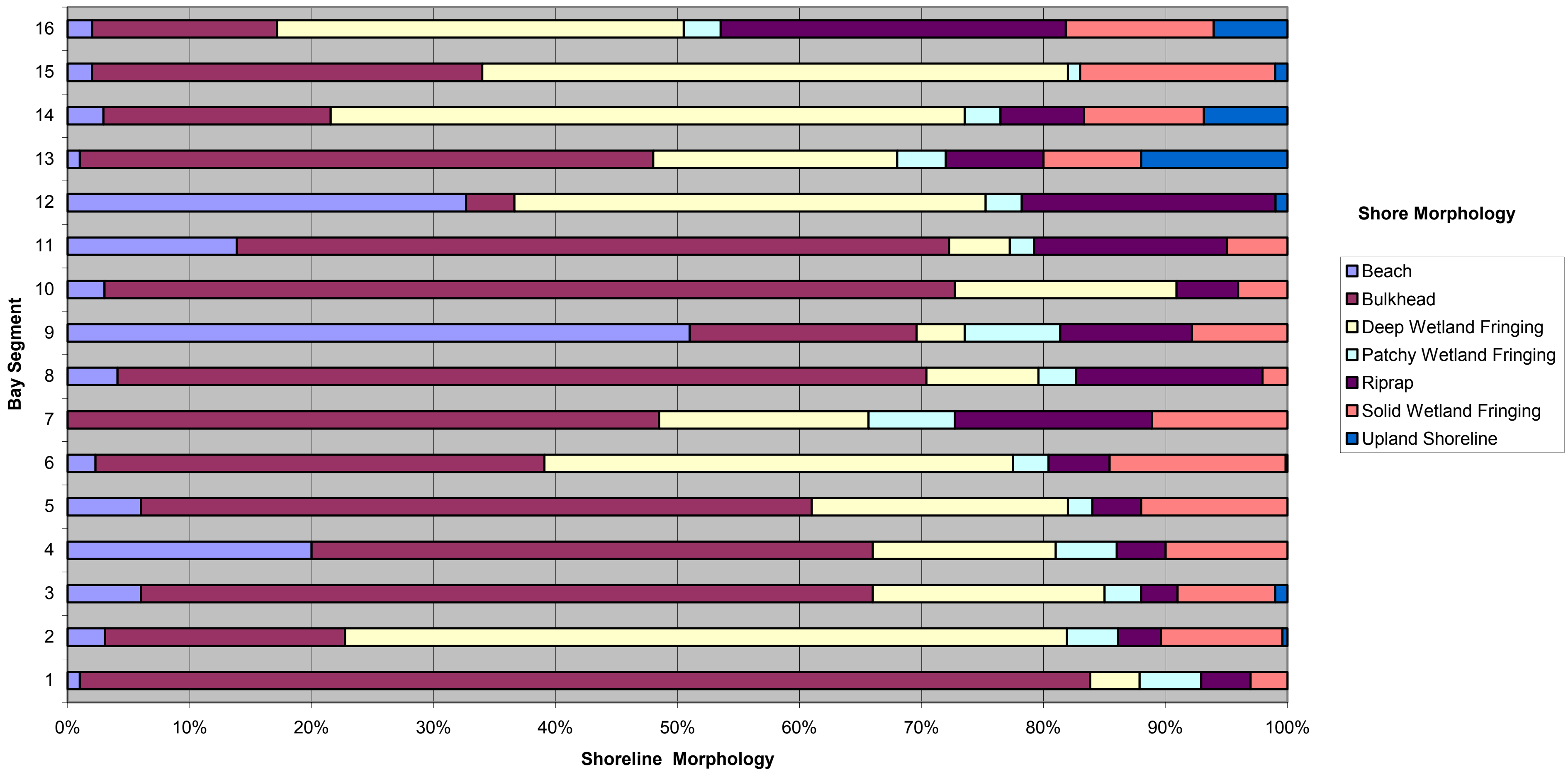


Figure 3.1-3 Percentage of shore morphology feature classes within each bay segment.

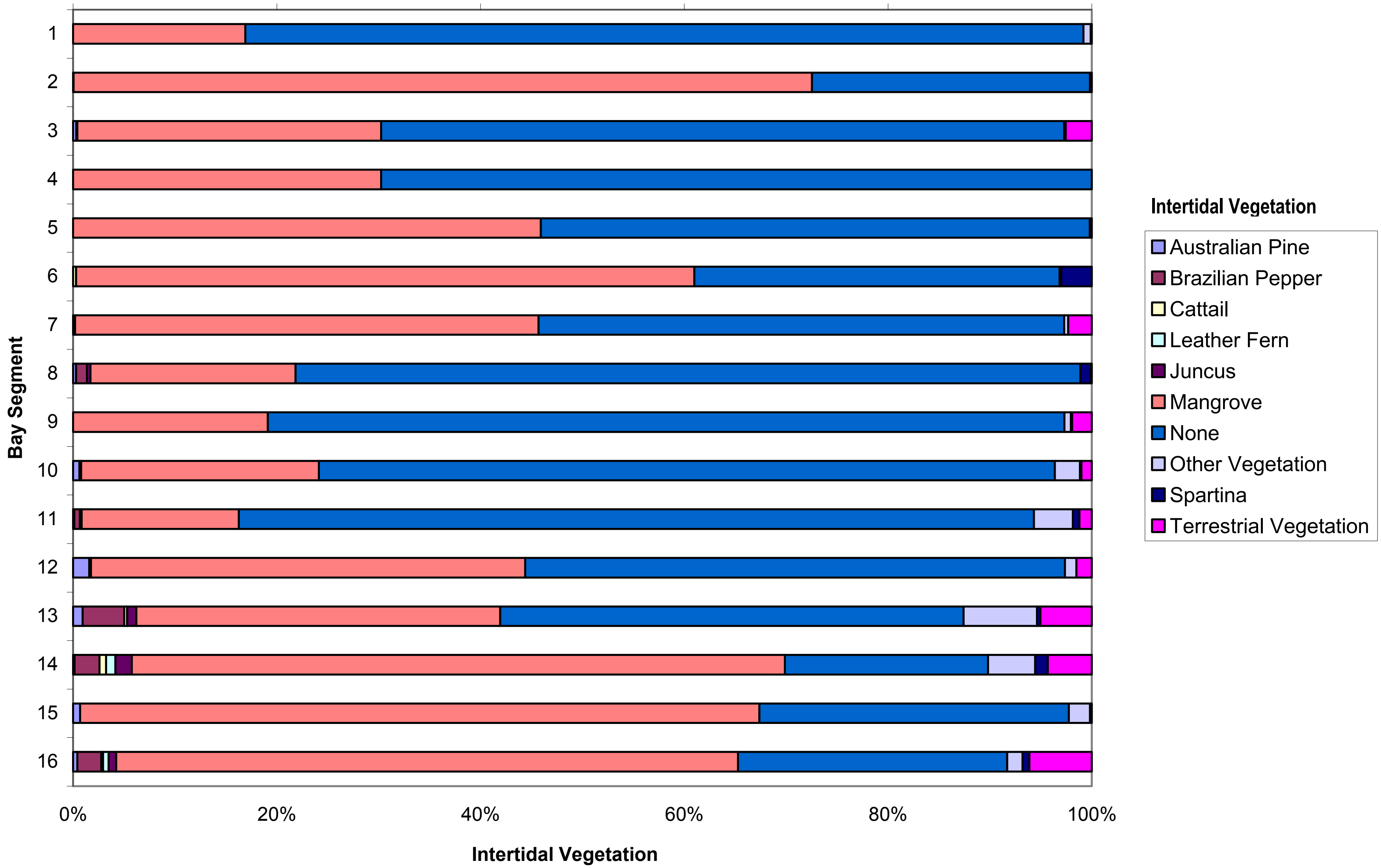


Figure 3.1-4. Percentage of intertidal vegetation feature classes within each bay segment.

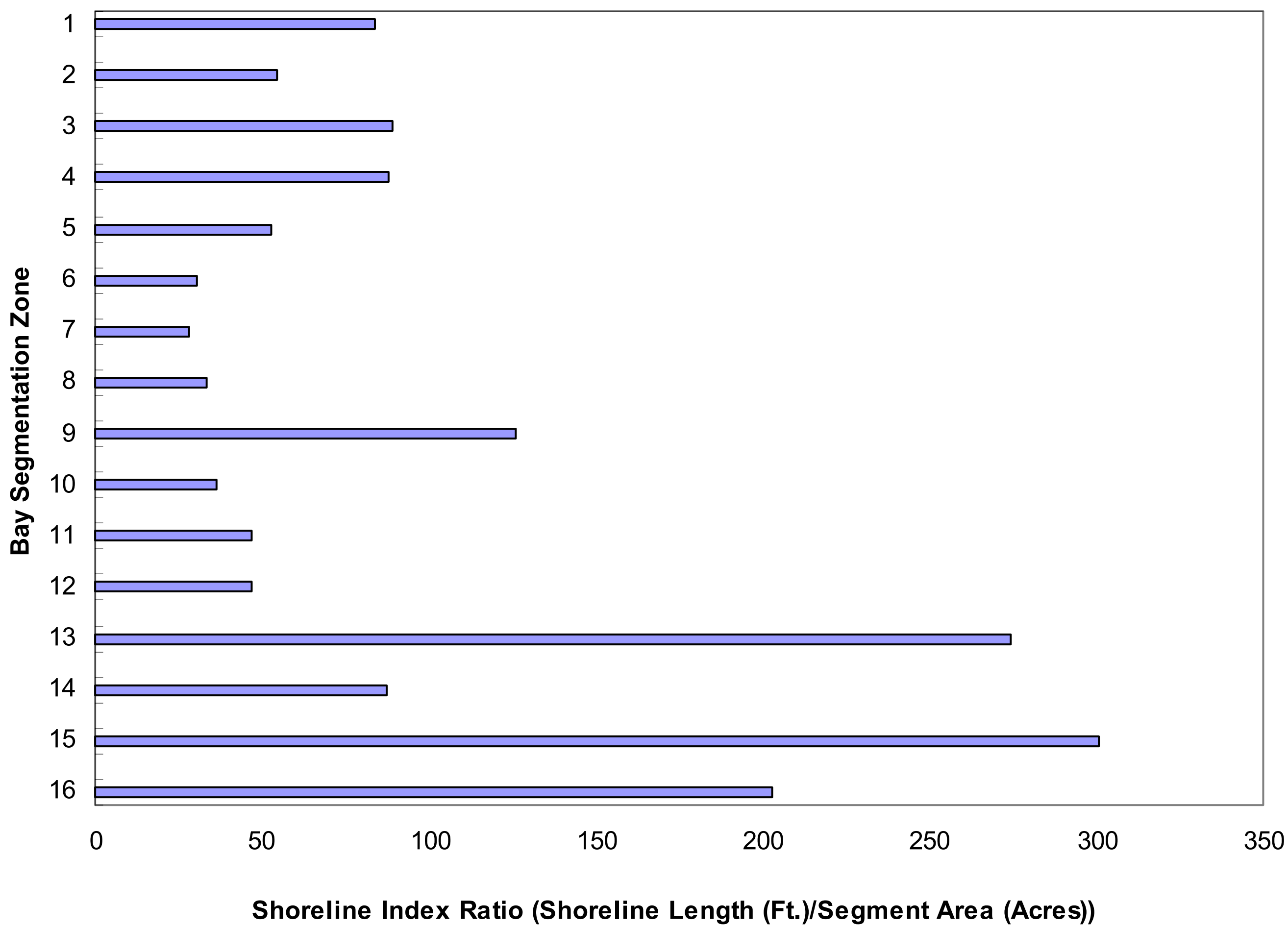


Figure 3.1-5. Shoreline index (feet/acre) for each bay segment.

Tidal Wetlands

The composition of tidal wetland features within each bay segment is presented in Table 3.1-4. Maps depicting these tidal wetland features are provided in Appendix A. Figure 3.1-6 depicts the percentages of the tidal wetland features within the SBNEP study area. Bays and Estuaries is the dominant feature class at 91.1% (31,588.6 acres), followed by Mangrove Swamps at 6.7% (2,340.3 acres)

The tidal wetland feature class acreage is presented by bay segment in Table 3.1-4 along with its associated percentage of that bay segment. A total intertidal area is also presented in Table 3.1-4 and reflects the acreage of the feature classes less the Bays and Estuaries class. The percentage of the total intertidal area by bay segment is graphically presented in Figure 3.1-7. The percentage of each tidal wetland feature class is presented by bay segment in Appendix A.

3.2 Critical Nursery and Restored Habitat Assessment

Physicochemical Parameters

Fishery sampling activity was limited to two seasonal periods (February and June 2002) and each sampling period of five days duration (Figure 3.2-1). Lacking complete seasonal representation of physicochemical conditions or faunal communities, no attempt was made to analyze the correlation between physicochemical parameters and fish community structure. However, an analysis was made to describe the conditional (dynamic) habitat components of temperature and salinity between fishery sampling stations. Water temperature and salinity values were recorded during SBNEP fishery sampling activity and are plotted for each station as depicted in Figures 3.2-2 and 3.2-3. These results depict typical winter-summer ranges of physicochemical parameters within shallow water, shore fringing habitats of Sarasota Bay.

Table 3.1-4 Composition of tidal wetland features by bay segment.

Bay Segment Number	1		2		3		4	
	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)
Bays & Estuaries	1,664.5	94.2	1,996.6	67.5	1,869.8	88.7	107.1	78.6
Beaches Other than Swimming	0.0	0.0	0.0	0.0	12.2	0.6	1.3	0.9
Mangrove Swamps	72.9	4.1	846.9	28.6	202.8	9.6	9.6	7.0
Oyster Bars	0.0	0.0	6.5	0.2	2.0	0.1	0.0	0.0
Salt Barren	0.0	0.0	8.3	0.3	0.6	0.0	0.0	0.0
Saltwater Marshes	0.0	0.0	4.4	0.1	12.0	0.6	0.0	0.0
Unvegetated Bottoms	28.7	1.6	96.1	3.2	8.6	0.4	18.3	13.4
Total intertidal area (no BE)	101.7	5.8	962.2	32.5	238.3	11.3	29.1	21.4
Total area of all water features	1,766.1	100.0	2,958.5	100.0	2,108.1	100.0	136.2	100.0

Bay Segment Number	5		6		7		8	
	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)
Bays & Estuaries	2,240.3	92.5	4,526.3	89.7	5,453.3	97.1	3,406.7	98.7
Beaches Other than Swimming	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mangrove Swamps	147.2	6.1	417.5	8.3	130.8	2.3	11.2	0.3
Oyster Bars	0.0	0.0	5.7	0.1	0.0	0.0	10.3	0.3
Salt Barren	<0.0	<0.1	16.7	0.3	0.0	0.0	0.8	0.0
Saltwater Marshes	0.0	0.0	32.8	0.7	<0.0	0.0	0.0	0.0
Unvegetated Bottoms	33.9	1.4	45.6	0.9	29.9	0.5	21.2	0.6
Total intertidal area (no BE)	181.7	7.5	518.2	10.3	160.7	2.9	43.5	1.3
Total area of all water features	2,422.0	100.0	5,044.5	100.0	5614.0	100.0	3,450.2	100.0

BE – Bays and Estuaries

Table 3.1-4 (Continued)

Bay Segment Number	9		10		11		12	
	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)
Bays & Estuaries	159.7	74.9	3,312.0	97.1	2,387.6	99.5	554.0	88.6
Beaches Other than Swimming	5.0	2.4	0.0	0.0	0.0	0.0	2.0	0.3
Mangrove Swamps	35.4	16.6	46.4	1.4	0.6	0.0	63.9	10.2
Oyster Bars	0.0	0.0	0.4	0.0	2.9	0.1	0.3	0.1
Salt Barren	0.3	0.1	0.7	0.0	0.0	0.0	0.0	0.0
Saltwater Marshes	1.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Unvegetated Bottoms	11.5	5.4	49.7	1.5	8.7	0.4	5.1	0.8
Total intertidal area (no BE)	53.4	25.1	97.2	2.9	12.2	0.5	71.3	11.4
Total area of all water features	213.0	100.0	3,409.2	100.0	2,399.8	100.0	625.3	100.0

Bay Segment Number	13		14		15		16		Total	
	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)	Feature Acreage (Acres)	Percent of Total Water Area in Segment (%)
Bays & Estuaries	1,445.4	89.0	1,666.6	83.0	50.2	67.6	748.7	89.1	31,588.6	91.1
Beaches Other than Swimming	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	21.6	0.1
Mangrove Swamps	146.7	9.0	147.1	7.3	5.5	7.3	55.9	6.7	2,340.3	6.7
Oyster Bars	21.0	1.3	28.6	1.4	0.1	0.1	5.6	0.7	83.5	0.2
Salt Barren	2.1	0.1	8.2	0.4	0.2	0.3	1.7	0.2	39.7	0.1
Saltwater Marshes	0.4	0.0	10.3	0.5	4.7	6.4	2.3	0.3	68.2	0.2
Unvegetated Bottoms	9.2	0.6	146.3	7.3	13.6	18.3	26.1	3.1	552.3	1.6
Total intertidal area (no BE)	179.4	11.0	340.9	17.0	24.1	32.4	91.6	10.9	3105.6	8.9
Total area of all water features	1,624.9	100.0	2,007.5	100.0	74.3	100.0	840.4	100.0	34,694.2	100.0

BE – Bays and Estuaries

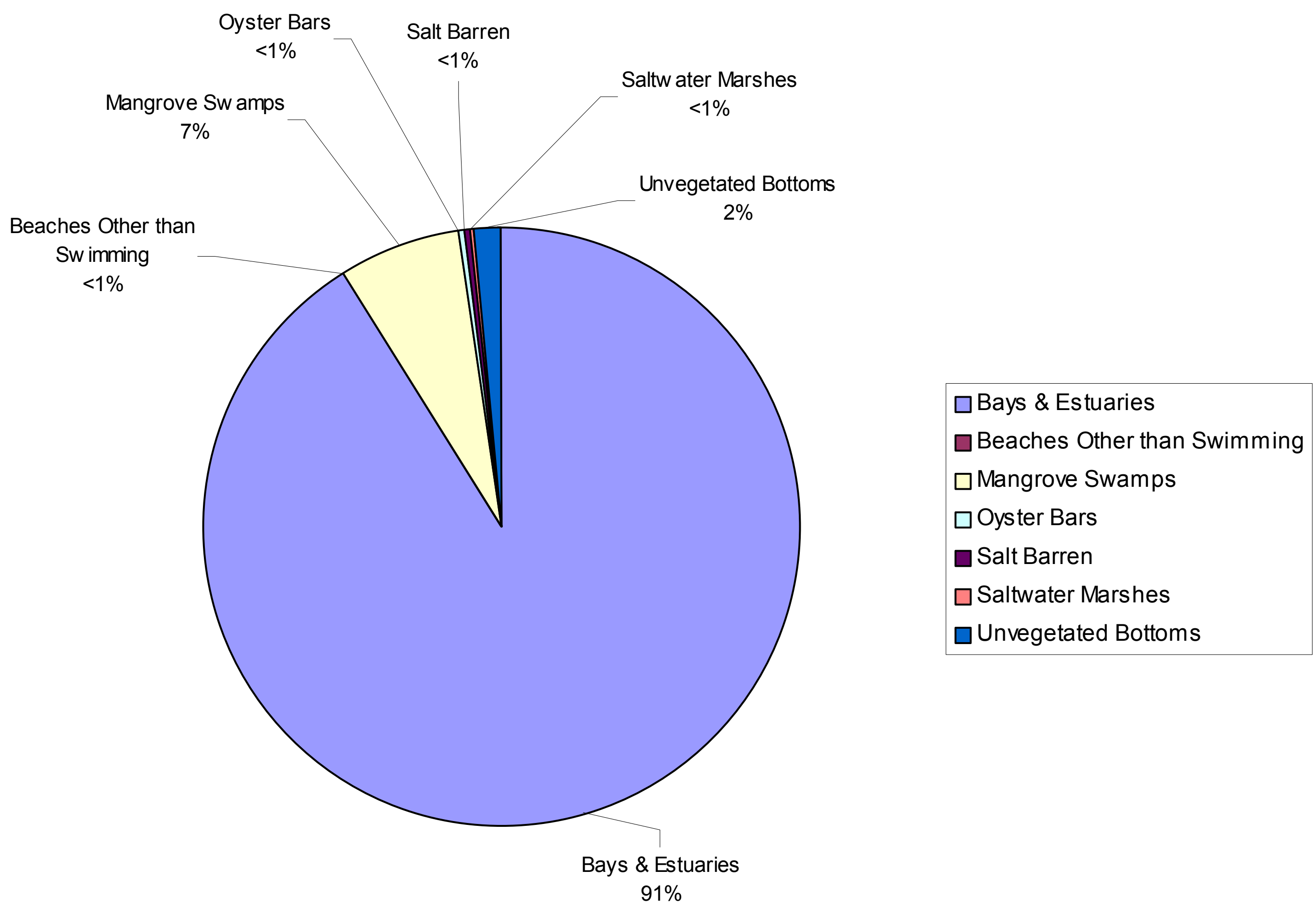


Figure 3.1-6. Tidal wetland feature class percentages for entire Sarasota Bay study area.

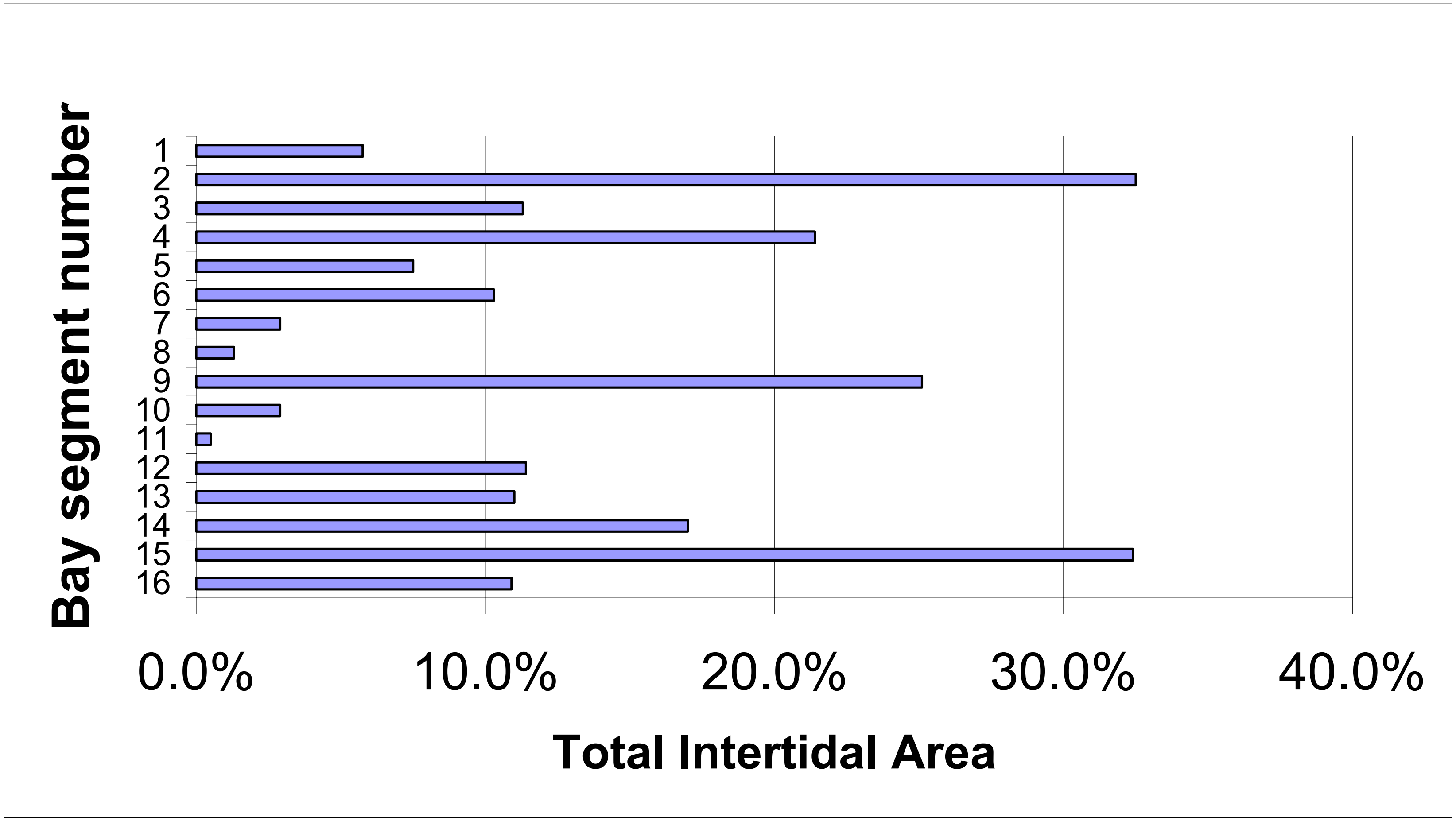
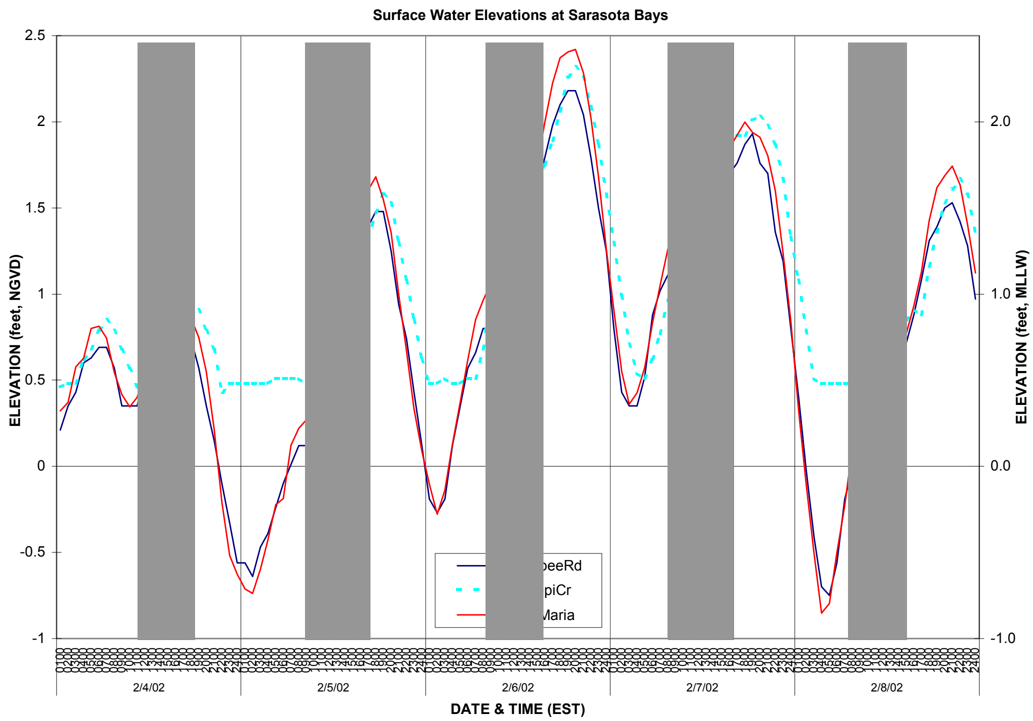


Figure 3.1-7. Percentage of total intertidal area (total area less bays and estuaries) by bay segment.

Figure 3.2-1. Plot of water surface elevations and daily sampling activity windows during two 5-day periods of Sarasota Bay Fishery Habitat Assessment in February and June 2002. Water level records derived from continuously recording tide gauge monitoring stations which span north, middle and south portions of SBNEP study area. NOTE: Shaded rectangles (windows) denote time span of daily sampling activity for fishery sample collections.



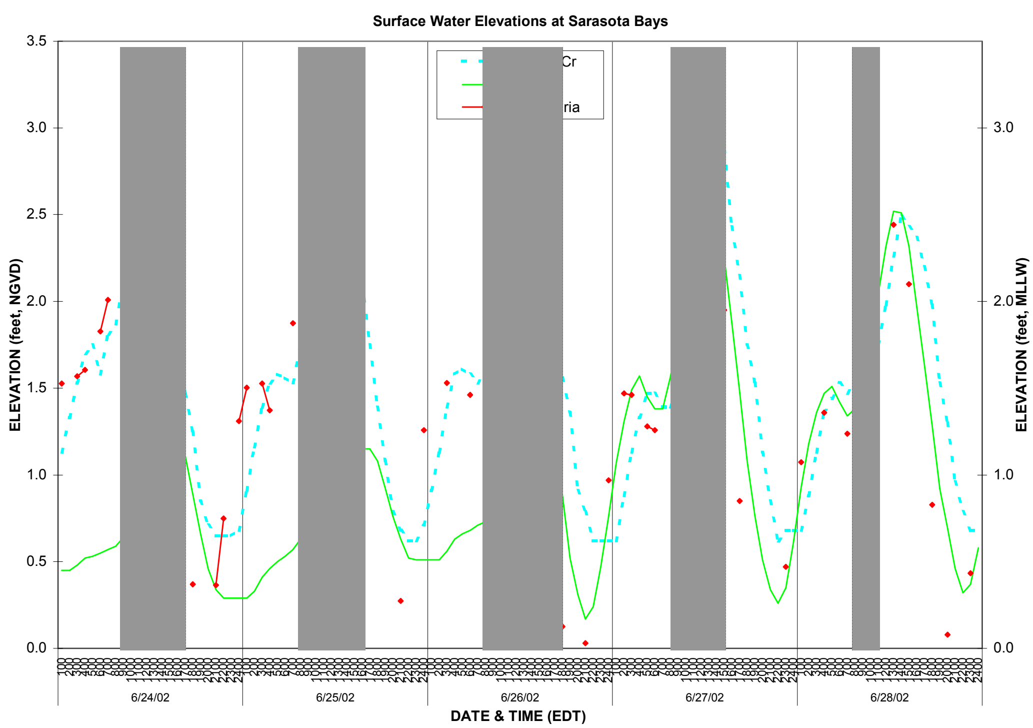


Figure 3.2-2. Plot of temperature values recorded at sampling stations during Sarasota Bay Fishery Habitat Assessment in February and June 2002. Maximum-minimum range denoted by bar graph. Individual data values denoted by symbols. NOTE: Missing data values with fewer than 4 recorded values indicated at 15 of 40 sample stations.

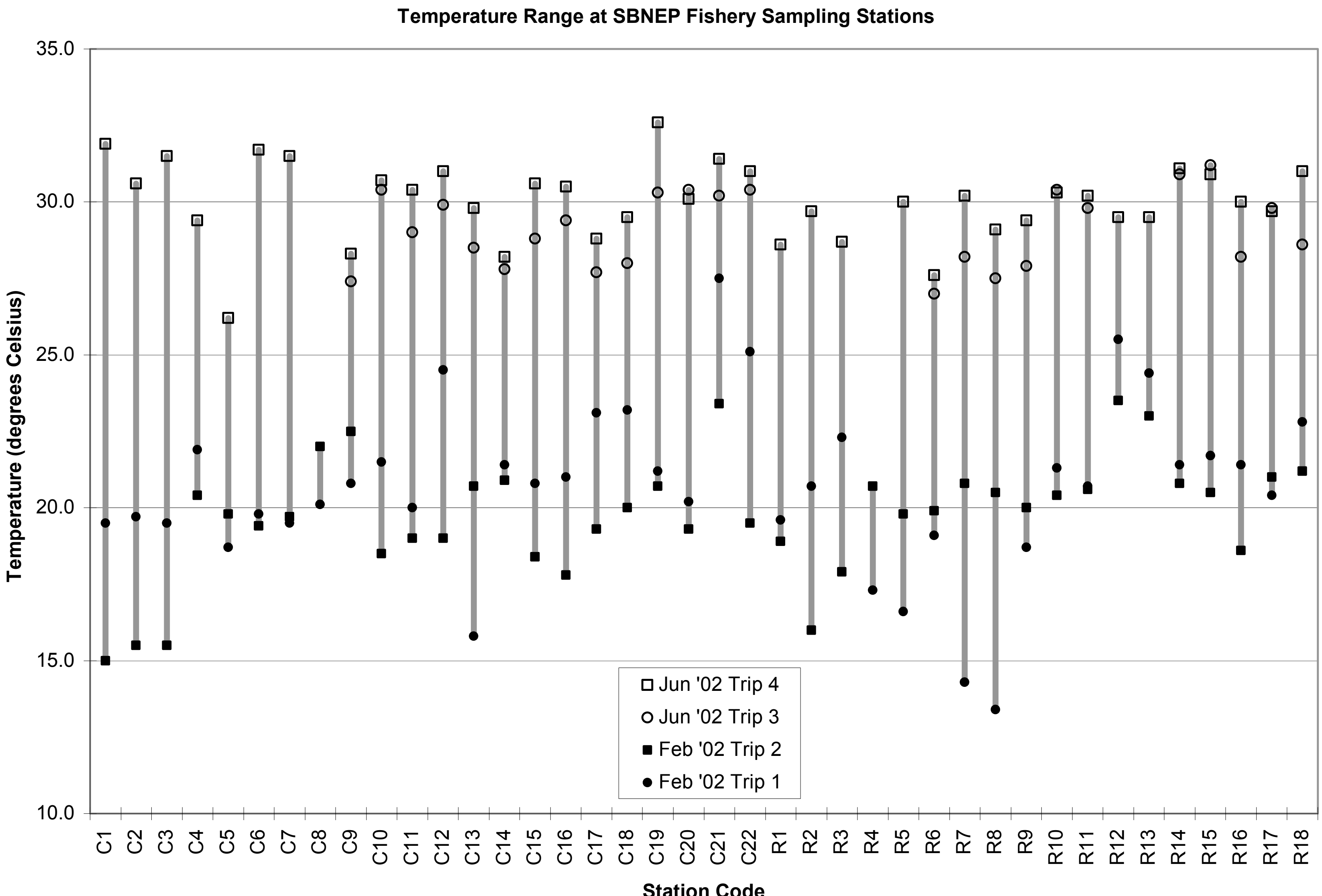
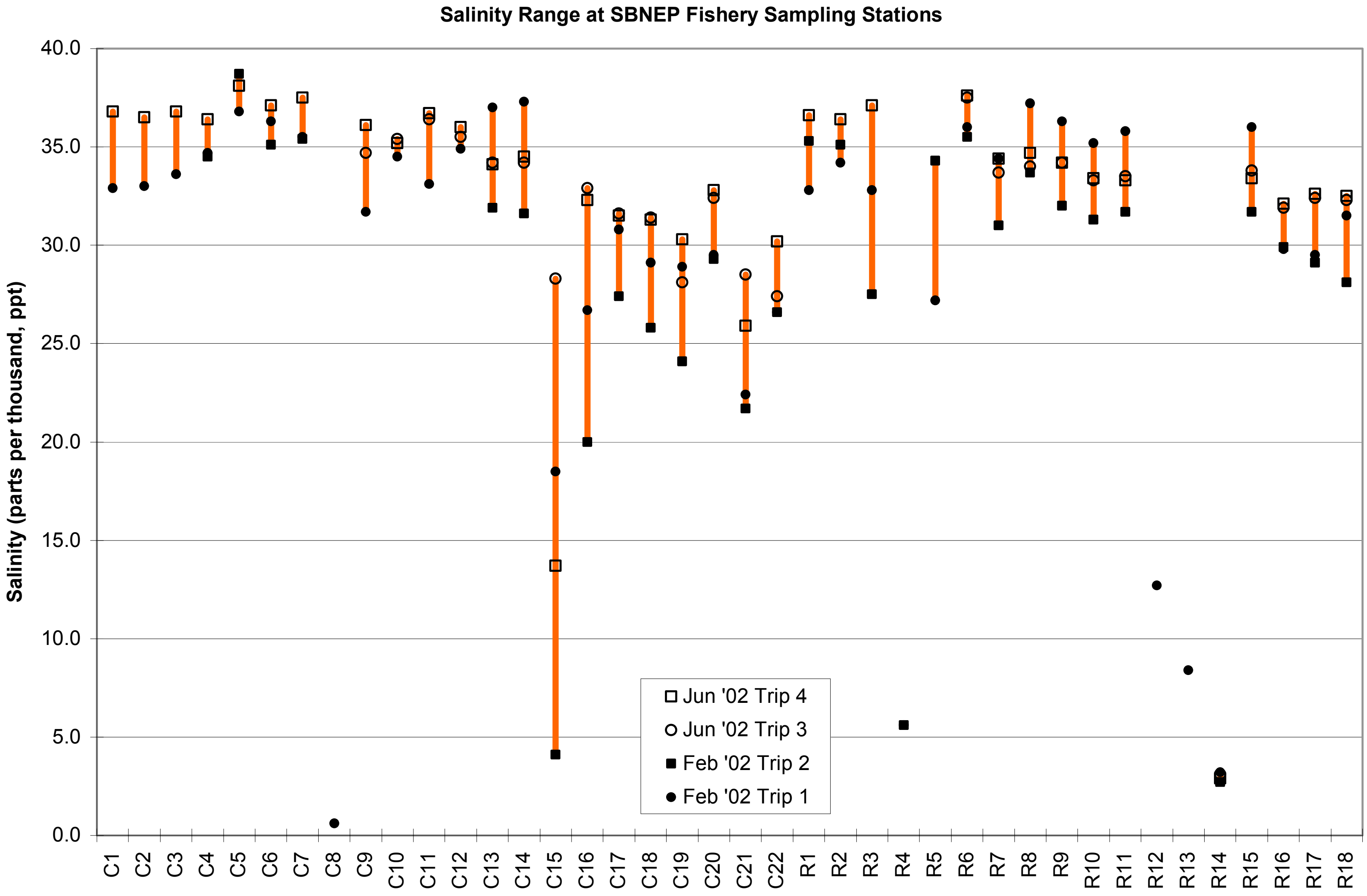


Figure 3.2-3. Plot of salinity values recorded at sample stations during Sarasota Bay Fishery Habitat Assessment in February and June 2002. Maximum-minimum range denoted by bar graph. Individual data values denoted by symbols. NOTE: Missing data values with fewer than 4 recorded values indicated at 19 of 40 sample stations.



Water temperature values were not significantly different between or within stations ($p > 0.05$) and ranged from a minimum of 13.4 ^{o}C to a maximum of 32.6 ^{o}C (Figure 3.2-2). The Kruskal-Wallis test statistic (H_C = 19.56) as compared to the critical value of the Chi-square statistic ($\chi^2_{0.05, 39}$= 54.57) indicated acceptance of the null hypothesis regarding no difference between measured water temperatures. Daytime maximum-minimum water temperatures spanned about 4 ^{o}C in June 2002 but increased to a range of about 7 ^{o}C in February 2002. Qualitatively, temperature range differences appeared related to station depths or differences in duration of tidal inundation and sun exposure, where widest temperature ranges occurred at stations with shallower depths and irregular tidal inundation/exposure cycles, while narrowest temperature ranges occurred at stations with deeper depths and more constant tidal inundation or moderation of sun exposure by canopy cover.

Salinity values were significantly different between stations ($p \leq 0.05$) and ranged from a minimum of 0.6 ppt to a maximum of 38.7 ppt (Figure 3.2-3). The Kruskal-Wallis test statistic (H_C = 101.96) as compared to the critical value of the Chi-square statistic ($\chi^2_{0.05, 39}$ = 54.57) indicated rejection of the null hypothesis regarding no difference between measured salinities. The majority of stations (32 locations) exhibited either euhaline salinity (23 ppt or greater) conditions or a narrow range of salinity variation (<10 ppt) during sampling events. Highest salinities and narrowest ranges were recorded at C5--Sister Keys (38.7 ppt) and R6--Durante Park (37.6 ppt). Another eight stations (8 locations) exhibited either polyhaline salinity (< 23.0 ppt or between 15 to 28 ppt) conditions (e.g., C15 and C16--Phillippi Creek, C21--South Creek), oligohaline salinity (< 15 ppt or between 2 to 15 ppt) conditions (e.g., C8--El Conquistador, C15--Phillippi Creek, R4--Durante Park, R12 and R13--Hog Creek), or limnetic salinity (between 0 to 4 ppt) conditions (e.g., C8--El Conquistador, R14--Selby Gardens Pond). The widest range of salinity variation was recorded at C15--Phillippi Creek which exhibited a single-season range of 14.6 ppt and a two-season range of 24.2 ppt during sampling periods.

An analysis was made of annualized average salinity conditions in both open bay waters and tributary streams throughout the SBNEP study area in order to document the range of dynamic (salinity) habitat available to the fishery community. A seven year period (1986 through 1992) was selected since this period coincides with available water quality monitoring databases for both open bay and tidal streams throughout Manatee and Sarasota County estuarine waters. Bulger *et al.* (1990) points out that efforts to subdivide estuaries on the basis of salinity have long been based on the observation that estuarine species are not evenly distributed across salinity gradients. For this reason, an estuarine classification scheme (Bulger *et al.*, 1990) was applied to the SBNEP study area which uses salinity zones to organize information on the spatial and temporal distribution of species within estuaries. The classification scheme is composed of five overlapping salinity zones, and was developed through use of multivariate statistical analysis (i.e., principal components analysis) of reported field distribution of fish and invertebrates. A rationale for this approach is that a statistically-based classification scheme may overcome subjective or qualitative assessments of how animals use estuaries.

NOAA Estuarine Classification (Bulger *et al.*, 1990)

Zone	Salinity Range (ppt)
Euhaline	23 to Marine (> 30 ppt)
Polyhaline	15 to 28
Mesohaline	11 to 19
Oligohaline	2 to 15
Limnetic	Freshwater (0.5 ppt) to 4

Figures 3.2-4 and 3.2-5 depict plots of mean, maximum and minimum salinity values computed as annualized averages over a seven year period (1986 to 1992) for the SBNEP study area. For the analysis of bay segments (Figure 3.2-4), the database was derived from that previously compiled for the SBNEP water quality trends analysis (Dixon and Heyl, 1999). This database was truncated to include observations with specific conductances greater than or equal to 5 mmhos/cm (5000 μmhos or 2.67 PSU). As a result, tidal stream environments are not represented in the 1999 water quality trends analysis for the SBNEP. In order to characterize the tidal stream environments within the SBNEP study area, a

Figure 3.2-4. Plot of mean, maximum and minimum salinity values within SBNEP bay segments during 1986 through 1992. Database derived from SBNEP Water Quality Trends Analysis (published September 1999) by Mote Marine Laboratory (MML) for which tidal stream data not reported. Annualized means computed from raw data (daily averages by station) and annual maximum-minimum values reported. Seven-year composite means of annualized means and annual maximum-minimum values then derived and charted. NOTE: Database truncated by MML to observations with specific conductances greater than or equal to 5 mmhos/cm (5000 µmhos or 2.67 PSU) to avoid spurious trends generated by short term tributary sampling programs.

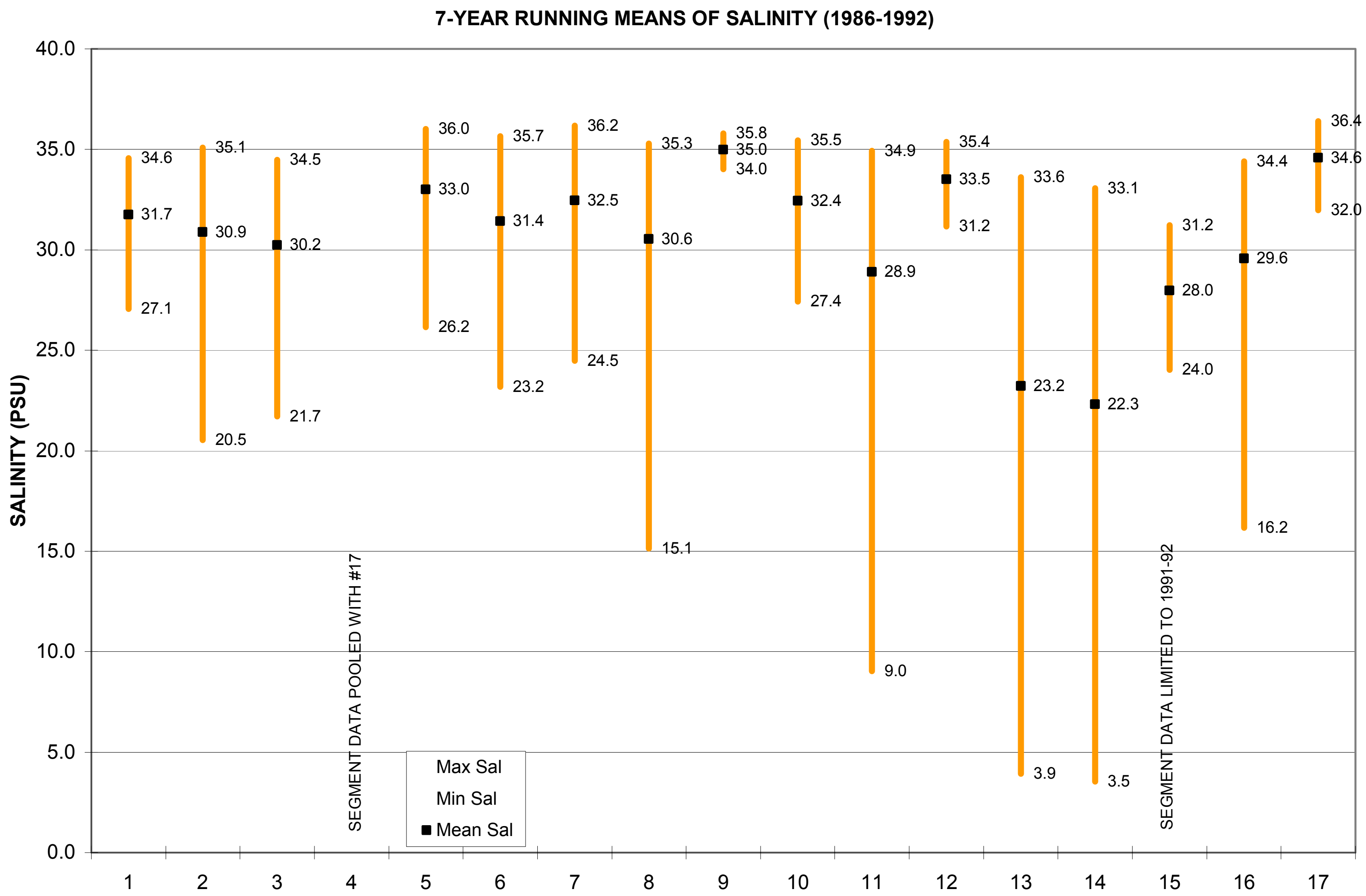
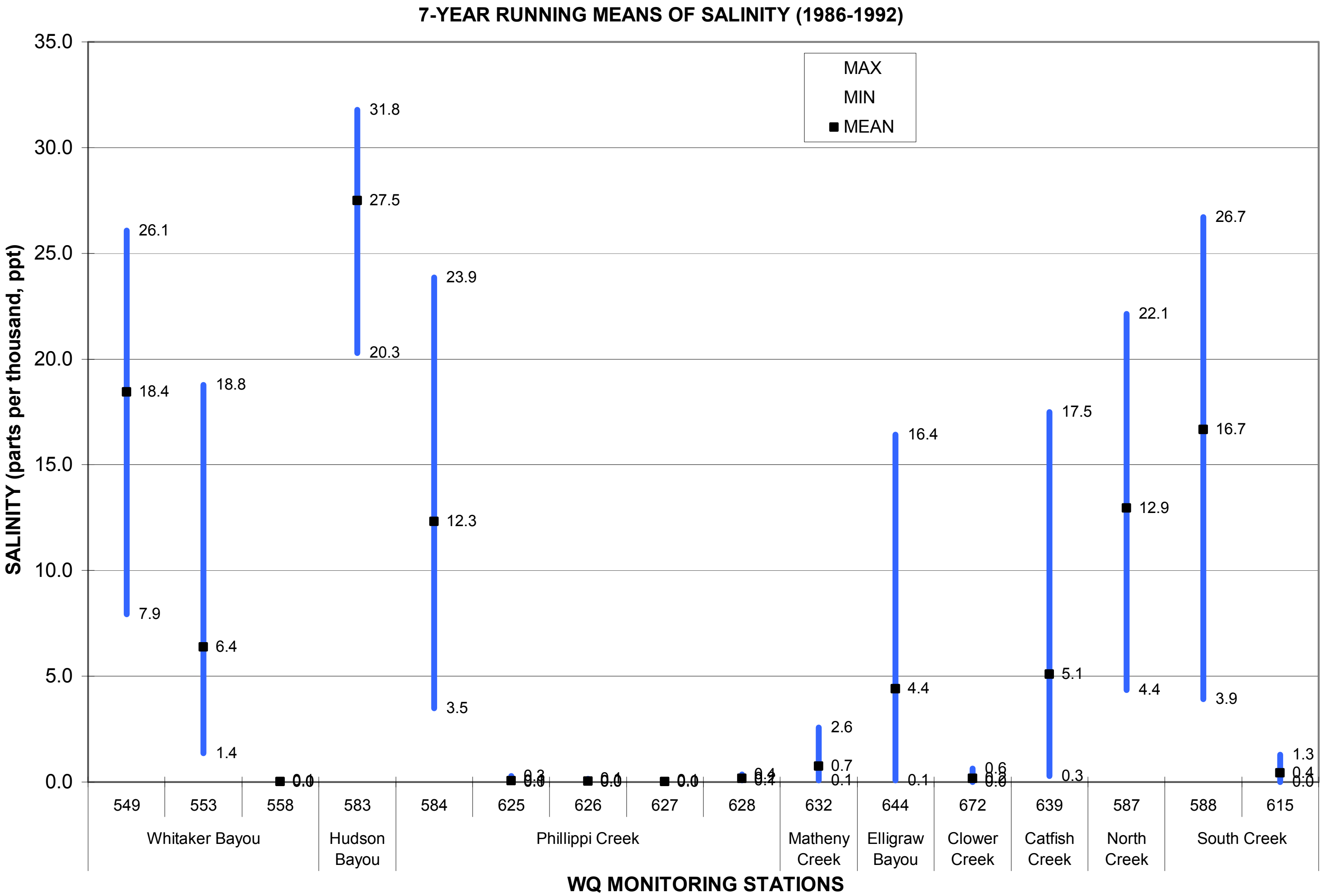


Figure 3.2-5. **Plot of mean, maximum and minimum salinity values at Sarasota County tidal stream stations during 1986 through 1992. Database derived from Sarasota County Ambient Water Quality Monitoring Program. Annualized means computed from raw station data and annual maximum-minimum values reported. Seven-year composite means of annualized means and annual maximum-minimum values then derived and charted. Time period corresponds to SBNEP water quality trends analysis for bay segments (published September 1999) by Mote Marine Laboratory (MML) for which tidal stream data not reported.**



separate database was compiled as derived from Sarasota County ambient water quality monitoring records for stream runs, such monitoring was discontinued after 1992. Together each salinity analysis supports the characterization of the dynamic (salinity) habitat conditions which are experienced by the juvenile fishery community within the SBNEP study area.

Results of salinity conditions derived from water quality trends analysis by bay segments indicate that, on average, euhaline conditions (> 23 ppt, mean salinity) predominate in the open bay waters (all 16 bay segments) of the SBNEP study area. Minimum salinities lower than euhaline conditions are represented in just seven (7) bay segments, namely Segments 2 and 3 (vicinity Palma Sola Bay)--polyhaline, 20.5 and 21.7 ppt, mean minimum, respectively; Segments 8 (vicinity Bowlee's Creek) and 16 (vicinity South Creek)--mesohaline, 15.1 and 16.2 ppt, mean minimum, respectively; Segment 11 (vicinity Whitaker-Hudson Bayous)-oligohaline, 9.0 ppt, mean minimum; and Segments 13 (vicinity Phillippi Creek) and 14 (vicinity Little Sarasota Bay)--limnetic, 3.5 and 3.9 ppt, mean minimum, respectively. While these seven bay segments experience limited periods of reduced salinity conditions, these episodes are rare enough to maintain average salinity conditions at euhaline levels.

Results of salinity conditions derived for tidal streams (Figure 3.2-5) within the Sarasota County portion of the SBNEP study area indicate that, on average, mesohaline or lower salinities (< 19 ppt, mean salinity) predominate in tidal streams (15 of 16 stream stations) of the SBNEP study area (Sarasota County portion). Only Hudson Bayou (Station 583) exhibited a polyhaline condition (27.5 ppt, mean salinity) on average. On the other hand, another seven (7) upper tidal stream stations experienced limnetic conditions wherein salinities did not rise above 4 ppt, mean maximum. The remaining eight (8) tidal stream stations are indicative of oligohaline-mesohaline conditions (2-15 ppt and 11-19 ppt zones, respectively) and represent tidally-influenced zones of tributary streams wherein many selected fishery species may aggregate during portions of their early life history.

Fishery Sampling

Fishery sampling occurred synoptically in north and south portions of the study area during five consecutive days in each of two seasonal periods (February and June 2002) at 40 stations throughout the SBNEP study area which represented both natural and restored habitat conditions. A total of 160 seine samples yielded collections of 315,208 specimens of fishes and macrocrustaceans caught using two gear types and three deployment techniques (Table 3.2-1). The collections consisted of 80 taxa (including individual species or species groups) with some seasonal differences in abundance and numbers of taxa present in each seasonal period. Collections during February 2002 yielded 53 taxa and 128,952 specimens. Collections during June 2002 yielded 70 taxa and 186,256 specimens.

Variable catch efficiencies and selectivity of gears and deployment techniques are quantified in a series of catch statistics Tables (Tables 3.2-2 through 3.2-11). Among the five gear deployment techniques used, the number of all taxa and percentage abundance of the total catch between gears were approximately related in proportion to the sample size. In 93 samples collected using a 21.3-m standard seine technique (sample area 140 m^2), 71 taxa and 196,333 (62.3%) individuals were caught over both seasons (Table 3.2-2). In 22 samples collected using a 21.3-m boat seine technique (sample area 68 m^2), 44 taxa and 104,025 (33.0%) individuals were caught over both seasons (Table 3.2-4). In 21 samples collected using a 6.1-m standard seine technique (sample area 39 m^2), 22 taxa and 13,608 (4.3%) individuals were caught over both seasons (Table 3.2-6). In 12 samples collected using a 6.1-m boat seine technique (sample area 3 m^2), 19 taxa and 777 (0.2%) individuals were caught over both seasons (Table 3.2-8). In 12 samples collected using a 6.1-m non-standard seine technique (sample areas between 23 - 36 m^2), 21 taxa and 465 (0.1%) individuals were caught over both seasons (Table 3.2-10).

Table 3.2-1. Master species list for all taxa collected by all gear deployment techniques during Sarasota Bay fishery habitat assessment in February and June 2002. Total number of individuals caught and presence or absence during each seasonal period is given.

Species	Common Name	Guild Name	Selected Taxa[1]	Number Caught	Feb 2002	Jun 2002
Achirus lineatus	Lined sole	Nursery		12	Yes	Yes
Archosargus probatocephalus	Sheepshead	Nursery	X	10	Yes	Yes
Centropomus undecimalis	Snook	Nursery	X	12	Yes	Yes
Chaetodipterus faber	Atlantic spadefish	Nursery		3	No	Yes
Cynoscion nebulosus	Spotted seatrout	Nursery	X	55	No	Yes
Farfantepenaeus duorarum	Pink shrimp	Nursery	X	336	Yes	Yes
Hyporhamphus spp.	Halfbeak (juv)	Nursery		2	No	Yes
Lagodon rhomboides	Pinfish	Nursery		15,890	Yes	Yes
Leiostomus xanthurus	Spot	Nursery	X	23,237	Yes	Yes
Lutjanus griseus	Gray snapper	Nursery	X	5	Yes	Yes
Lutjanus synagris	Lane snapper	Nursery	X	1	No	Yes
Megalops atlanticus	Tarpon	Nursery	X	7	Yes	Yes
Menticirrhus saxatilis	Northern kingfish	Nursery	X	1	Yes	No
Mugil cephalus	Striped mullet	Nursery	X	3,335	Yes	Yes
Mugil curema	White mullet	Nursery	X	26	Yes	Yes
Mugil gyrans	Fantail mullet	Nursery	X	4	Yes	Yes
Mugil spp.	Assorted mullet	Nursery	X	3,788	Yes	No
Mycteroperca microlepis	Gag	Nursery	X	10	No	Yes
Opsanus beta	Gulf toadfish	Nursery		35	No	Yes
Orthopristis chrysoptera	Pigfish	Nursery		51	No	Yes
Paralichthys albigutta	Gulf flounder	Nursery	X	1	No	Yes
Pogonias cromis	Black drum	Nursery	X	4	Yes	Yes
Sciaenops ocellatus	Red drum	Nursery	X	34	Yes	No
Scomberomorus maculatus	Spanish mackerel	Nursery	X	136	No	Yes
Sphyraena barracuda	Great barracuda	Nursery		2	No	Yes
Adinia xenica	Diamond killifish	Resident		3	Yes	No
Bathygobius soporator	Frillfin goby	Resident		12	Yes	No
Cyprinodon variegatus	Sheepshead minnow	Resident		2,973	Yes	Yes
Diapterus plumieri	Striped mojarra	Resident		5	Yes	Yes
Eucinostomus gula	Silver jenny	Resident		724	Yes	Yes
Eucinostomus harengulus	Tidewater mojarra	Resident		1,308	Yes	Yes
Eucinostomus spp.	Assorted mojarra	Resident		16,679	Yes	Yes
Floridichthys carpio	Goldspotted killifish	Resident		2,035	Yes	Yes
Fundulus confluentus	Marsh killifish	Resident		4	No	Yes
Fundulus grandis	Gulf killifish	Resident		1,348	Yes	Yes
Fundulus majalis	Striped killifish	Resident		1,148	Yes	Yes
Fundulus spp.	Assorted killifish	Resident		10	No	Yes
Gambusia holbrooki	Eastern mosquito fish	Resident		14,430	Yes	Yes
Gobiosoma bosc	Naked goby	Resident		13	Yes	Yes
Gobiosoma robustum	Code goby	Resident		21	Yes	Yes
Gobiosoma spp.	Assorted goby	Resident		52	Yes	Yes

Table 3.2-1. (Continued)

Species	Common Name	Guild Name	Selected Taxa	Number Caught	Feb 2002	Jun 2002
Heterandria formosa	Least killifish	Resident		31	No	Yes
Lophogobius cyprinoides	Crested goby	Resident		110	No	Yes
Lucania goodei	Bluefin killifish	Resident		22	No	Yes
Lucania parva	Rainwater killifish	Resident		63,313	Yes	Yes
Menidia spp.	Assorted silverside	Resident		18,962	Yes	Yes
Microgobius gulosus	Clown goby	Resident		1,014	Yes	Yes
Poecilia latipinna	Sailfin molly	Resident		7,707	Yes	Yes
Sphoeroides nephelus	Southern puffer	Resident		220	Yes	Yes
Syngnathus floridae	Dusky pipefish	Resident		18	Yes	Yes
Syngnathus louisianae	Chain pipefish	Resident		6	Yes	Yes
Syngnathus scovelli	Gulf pipefish	Resident		110	Yes	Yes
Trinectes maculatus	Hogchoker	Resident		4	Yes	Yes
Aluterus schoepfi	Orange filefish	Transient		2	No	Yes
Anchoa cubana	Cuban anchovy	Transient		1,568	No	Yes
Anchoa hepsetus	Striped anchovy	Transient		433	Yes	Yes
Anchoa mitchilli	Bay anchovy	Transient		116,208	Yes	Yes
Bairdiella chrysoura	Silver perch	Transient		100	No	Yes
Brevoortia spp.	Assorted menhaden	Transient		677	Yes	Yes
Calamus arctifrons	Grass porgy	Transient		2	Yes	No
Callinectes sapidus	Blue crab	Transient	X	86	Yes	Yes
Chilomycterus schoepfi	Striped burrfish	Transient		37	No	Yes
Clupeidae spp.	Assorted herring	Transient		1,293	No	Yes
Dasyatis say	Bluntnose stingray	Transient		1	No	Yes
Diplodus holbrooki	Spottail pinfish	Transient		16	No	Yes
Haemulon parrai	Sailors choice	Transient		1	Yes	No
Harengula jaguana	Scaled sardine	Transient		15,174	Yes	Yes
Hippocampus zosterae	Dwarf seahorse	Transient		16	Yes	No
Lepomis spp.	Bluegill	Transient		1	No	Yes
Limulus polyphemus	Horseshoe crab	Transient		4	No	Yes
Micropterus salmoides	Largemouth bass	Transient		6	No	Yes
Monacanthus hispidus	Planehead filefish	Transient		2	Yes	No
Oligoplites saurus	Leatherjacket	Transient		94	No	Yes
Selene vomer	Lookdown	Transient		1	No	Yes
Strongylura marina	Atlantic needlefish	Transient		13	Yes	Yes
Strongylura notata	Redfin needlefish	Transient		146	Yes	Yes
Strongylura spp.	Assorted needlefish	Transient		5	Yes	Yes
Strongylura timucu	Timucu	Transient		19	Yes	Yes
Synodus foetens	Inshore lizardfish	Transient		23	Yes	Yes
Urophycis floridana	Southern hake	Transient		1	Yes	No
Total Species: 80			***Total Catch:***	315,208	128,952	186,256

[1]Selected taxa represent commercially and/or recreationally important species.

Table 3.2-2. **Catch statistics for the ten dominant taxa collected in ninety-three 21.3-m standard seine samples (sample area 13,020 m²) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (196,333 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.**

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m²)				Standard Length (mm)			
				Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	74,782	38.1	29.0	574.36	263.02	441.61	15,302.86	33	0.49	21	54
Lucania parva	46,068	23.5	57.0	353.82	108.80	296.53	7,474.29	23	0.25	1	41
Leiostomus xanthurus	16,589	8.4	40.9	127.41	45.50	344.40	3,428.57	28	0.51	7	165
Eucinostomus spp.	15,979	8.1	54.8	122.73	39.53	310.63	2,445.71	30	0.83	15	330
Lagodon rhomboides	14,786	7.5	81.7	113.56	19.84	168.45	982.86	37	0.72	9	89
Menidia spp.	9,751	5.0	64.5	74.89	18.46	237.76	1,348.57	43	0.59	16	85
Mugil cephalus	2,977	1.5	12.9	22.86	16.56	698.58	1,462.86	47	3.43	17	583
Mugil spp.	2,645	1.3	9.7	20.31	10.34	490.95	600.00	26	0.29	18	63
Floridichthys carpio	1,645	0.8	39.8	12.63	3.27	249.75	175.00	29	0.85	11	62
Cyprinodon variegatus	1,587	0.8	19.4	12.19	5.65	447.38	372.86	33	0.90	11	60
Subtotal	186,809	95.1	.	.	.	.	.	.	.	1	583
Totals	**196,333**	**100.0**	**.**	**1,507.93**	**285.26**	**182.43**	**15,997.14**	**.**	**.**	**1**	**583**

Table 3.2-3. **Catch statistics for selected taxa collected in ninety-three 21.3-m standard seine samples (sample area 13,020 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (196,333 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.**

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Leiostomus xanthurus	16,589	8.4	40.9	127.41	45.50	344.40	3,428.57	28	0.51	7	165
Mugil cephalus	2,977	1.5	12.9	22.86	16.56	698.58	1,462.86	47	3.43	17	583
Mugil spp.	2,645	1.3	9.7	20.31	10.34	490.95	600.00	26	0.29	18	63
Farfantepenaeus duorarum	331	0.2	26.9	2.54	1.34	508.84	119.29	15	0.58	6	33
Scomberomorus maculatus	135	0.1	3.2	1.04	1.01	942.84	94.29	51	1.48	44	67
Cynoscion nebulosus	53	0.0	14.0	0.41	0.15	357.93	8.57	42	1.87	22	86
Callinectes sapidus	50	0.0	16.1	0.38	0.12	294.81	5.71	45	4.34	14	113
Sciaenops ocellatus	31	0.0	7.5	0.24	0.10	396.45	5.71	67	3.20	49	110
Mugil curema	18	0.0	3.2	0.14	0.10	727.72	9.29	55	12.83	21	172
Mycteroperca microlepis	10	0.0	2.2	0.08	0.06	793.20	5.71	114	12.31	83	152
Archosargus probatocephalus	9	0.0	7.5	0.07	0.03	404.95	2.14	60	15.34	22	145
Centropomus undecimalis	2	0.0	2.2	0.02	0.01	678.19	0.71	224	17.68	199	249
Lutjanus griseus	1	0.0	1.1	0.01	0.01	964.37	0.71	80	0.00	80	80
Lutjanus synagris	1	0.0	1.1	0.01	0.01	964.37	0.71	33	0.00	33	33
Menticirrhus saxatilis	1	0.0	1.1	0.01	0.01	964.37	0.71	22	0.00	22	22
Paralichthys albigutta	1	0.0	1.1	0.01	0.01	964.37	0.71	12	0.00	12	12
Pogonias cromis	1	0.0	1.1	0.01	0.01	964.37	0.71	139	0.00	139	139
Totals	**22,855**	**11.6**	**68.8**	**175.54**	**60.74**	**333.70**	**4,891.43**	**.**	**.**	**6**	**583**

Table 3.2-4. Catch statistics for ten dominant taxa collected in twenty-two 21.3-m boat seine samples (sample area 1,496 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (104,025 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m^2)				Standard Length (mm)			
				Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	41425	39.8	54.5	2,769.05	1,722.08	291.70	31,811.76	30	0.55	21	50
Lucania parva	16863	16.2	45.5	1,127.21	550.65	229.13	9,670.59	23	0.60	14	36
Harengula jaguana	13768	13.2	13.6	920.32	915.29	466.48	20,141.18	23	0.34	20	25
Menidia spp.	8847	8.5	90.9	591.38	190.32	150.95	2,729.41	34	0.82	15	99
Gambusia holbrooki	7784	7.5	18.2	520.32	393.16	354.42	8,364.71	20	0.46	16	29
Leiostomus xanthurus	6380	6.1	36.4	426.47	375.33	412.79	8,282.35	28	0.77	13	77
Poecilia latipinna	1829	1.8	36.4	122.26	85.63	328.52	1,870.59	28	1.42	15	67
Anchoa cubana	1456	1.4	9.1	97.33	67.70	326.26	1,200.00	23	0.56	19	29
Mugil spp.	1081	1.0	18.2	72.26	52.36	339.89	1,129.41	30	0.45	22	38
Lagodon rhomboides	910	0.9	54.5	60.83	35.39	272.91	752.94	36	2.08	15	69
Subtotal	100,343	96.5	.	.	.	.	.	.	.	1	350
Totals	**104,025**	**100.0**	**.**	**6,953.54**	**2,788.85**	**188.12**	**54,417.65**	**.**	**.**	**350**	**350**

Table 3.2-5. Catch statistics for selected taxa collected in twenty-two 21.3-m boat seine samples (sample area 1,496 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (104,025 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m^2)				Standard Length (mm)			
				Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	6,380	6.1	36.4	426.47	375.33	412.79	8,282.35	28	0.77	13	77
Mugil spp.	1,081	1.0	18.2	72.26	52.36	339.89	1,129.41	30	0.45	22	38
Mugil cephalus	282	0.3	18.2	18.85	16.53	411.33	364.71	42	3.41	22	83
Mugil gyrans	4	0.0	9.1	0.27	0.21	365.47	4.41	97	20.46	27	129
Lutjanus griseus	3	0.0	9.1	0.20	0.15	342.88	2.94	83	20.01	48	130
Callinectes sapidus	2	0.0	9.1	0.13	0.09	323.67	1.47	34	8.13	22	45
Archosargus probatocephalus	1	0.0	4.5	0.07	0.07	469.04	1.47	350	0.00	350	350
Cynoscion nebulosus	1	0.0	4.5	0.07	0.07	469.04	1.47	59	0.00	59	59
Centropomus undecimalis	1	0.0	4.5	0.07	0.07	469.04	1.47	270	0.00	270	270
Farfantepenaeus duorarum	1	0.0	4.5	0.07	0.07	469.04	1.47	19	0.00	19	19
Mugil curema	1	0.0	4.5	0.07	0.07	469.04	1.47	23	0.00	23	23
Sciaenops ocellatus	1	0.0	4.5	0.07	0.07	469.04	1.47	58	0.00	58	58
Totals	**7,758**	**7.5**	**63.6**	**518.58**	**426.49**	**385.75**	**9,414.71**	**.**	**.**	**13**	**350**

Table 3.2-6. Catch statistics for ten dominant taxa collected in twenty-one 6.1-m standard seine samples (sample area 819 m²) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (13,608 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m²)				Standard Length (mm)			
				Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Gambusia holbrooki	6,486	47.7	33.3	791.94	361.50	209.18	5,579.49	21	0.54	11	33
Poecilia latipinna	5,173	38.0	52.4	631.62	396.98	288.02	8,287.18	34	1.27	12	63
Cyprinodon variegatus	764	5.6	57.1	93.28	39.53	194.19	761.54	28	0.99	9	50
Lucania parva	333	2.4	28.6	40.66	28.14	317.21	574.36	23	1.18	14	34
Menidia spp.	167	1.2	52.4	20.39	7.11	159.73	92.31	44	1.26	22	65
Leiostomus xanthurus	129	0.9	9.5	15.75	15.62	454.54	328.21	26	1.15	22	29
Eucinostomus harengulus	90	0.7	19.0	10.99	9.03	376.61	189.74	56	1.98	40	70
Fundulus majalis	81	0.6	28.6	9.89	6.18	286.51	128.21	31	1.13	19	50
Eucinostomus gula	74	0.5	14.3	9.04	8.65	438.96	182.05	54	2.58	42	66
Mugil cephalus	72	0.5	19.0	8.79	5.53	288.38	97.44	37	0.40	31	48
Subtotal	13,369	98.2	.	.	.	.	.	.	.	9	330
Totals	**13,608**	**100.0**		**1,661.54**	**699.18**	**192.84**	**13,866.67**	**.**	**.**	**9**	**330**

Table 3.2-7. **Catch statistics for selected taxa collected in twenty-one 6.1-m standard seine samples (sample area 819 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (13,608 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.**

Species	Number	%	%	Density Estimate (animals/100 m^2)				Standard Length (mm)			
		Total Catch	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	129	0.9	9.5	15.75	15.62	454.54	328.21	26	1.15	22	29
Mugil cephalus	72	0.5	19.0	8.79	5.53	288.38	97.44	37	0.40	31	48
Callinectes sapidus	33	0.2	9.5	4.03	3.90	443.89	82.05	44	18.03	18	69
Centropomus undecimalis	9	0.1	9.5	1.10	0.76	317.98	12.82	64	7.75	40	111
Megalops atlanticus	7	0.1	9.5	0.85	0.60	319.37	10.26	233	31.75	69	330
Mugil curema	7	0.1	9.5	0.85	0.60	319.37	10.26	37	1.53	29	41
Pogonias cromis	3	0.0	9.5	0.37	0.27	334.66	5.13	195	33.11	151	276
Sciaenops ocellatus	1	0.0	4.8	0.12	0.12	458.26	2.56	76	0.00	76	76
Totals	**261**	**1.9**	**42.9**	**31.87**	**19.89**	**286.07**	**410.26**	**.**	**.**	**18**	**330**

Table 3.2-8. Catch statistics for ten dominant taxa collected in twelve 6.1-m boat seine samples (sample area 36 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (777 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m^2)				Standard Length (mm)			
				Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	140	18.0	16.7	388.89	270.28	240.76	2,866.67	17	1.11	11	34
Leiostomus xanthurus	139	17.9	50.0	386.11	323.92	290.61	3,933.33	24	0.52	17	35
Menidia spp.	135	17.4	25.0	375.00	198.95	183.78	1,766.67	41	0.96	35	59
Eucinostomus spp.	88	11.3	33.3	244.44	151.78	215.09	1,366.67	30	1.06	21	39
Fundulus grandis	76	9.8	33.3	211.11	127.61	209.40	1,466.67	34	2.54	15	71
Mugil spp.	62	8.0	8.3	172.22	172.22	346.41	2,066.67	30	0.45	25	40
Cyprinodon variegatus	60	7.7	25.0	166.67	119.83	249.07	1,366.67	29	1.33	19	40
Lucania parva	46	5.9	33.3	127.78	80.28	217.64	900.00	23	0.54	18	30
Poecilia latipinna	12	1.5	25.0	33.33	20.52	213.20	233.33	24	1.20	18	32
Farfantepenaeus duorarum	4	0.5	16.7	11.11	7.49	233.55	66.67	16	3.02	7	24
Subtotal	762	98.1	.	.	.	.	.	.	.	7	155
Totals	**777**	**100.0**	**.**	**2,158.33**	**399.64**	**64.14**	**4,066.67**	**.**	**.**	**7**	**155**

Table 3.2-9. Catch statistics for selected taxa collected in twelve 6.1-m boat seine samples (sample area 36 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (777 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m^2)				Standard Length (mm)			
				Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	139	17.9	50.0	386.11	323.92	290.61	3,933.33	24	0.52	17	35
Mugil spp.	62	8.0	8.3	172.22	172.22	346.41	2,066.67	30	0.45	25	40
Farfantepenaeus duorarum	4	0.5	16.7	11.11	7.49	233.55	66.67	16	3.02	7	24
Callinectes sapidus	1	0.1	8.3	2.78	2.78	346.41	33.33	132	0.00	132	132
Sciaenops ocellatus	1	0.1	8.3	2.78	2.78	346.41	33.33	52	0.00	52	52
Totals	**207**	**26.6**	**50.0**	**575.00**	**359.76**	**216.74**	**3,933.33**	**.**	**.**	**7**	**132**

Table 3.2-10. Catch statistics for ten dominant taxa collected in twelve 6.1-m non-standard seine samples (sample aera 332 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (465 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density. Note: Variable sample areas resulted from use of non-standard seine deployment techniques.

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Gambusia holbrooki	139	29.9	50.0	41.87	23.57	188.59	278.26	26	1.60	7	65
Poecilia latipinna	125	26.9	41.7	37.65	23.69	185.48	221.74	37	3.04	11	83
Menidia spp.	62	13.3	33.3	18.67	18.29	295.62	220.83	44	2.11	14	54
Heterandria formosa	31	6.7	16.7	9.34	9.43	290.83	113.04	18	0.86	12	24
Eucinostomus harengulus	25	5.4	33.3	7.53	3.58	181.81	38.89	56	2.04	40	79
Lucania goodei	22	4.7	16.7	6.63	5.48	238.14	56.52	26	1.44	12	35
Lagodon rhomboides	22	4.7	33.3	6.63	4.90	219.93	58.33	48	3.95	18	70
Oligoplites saurus	12	2.6	16.7	3.61	3.80	316.23	45.83	62	2.71	42	78
Micropterus salmoides	6	1.3	16.7	1.81	1.47	233.55	13.04	48	4.66	25	62
Mugil cephalus	4	0.9	16.7	1.20	1.07	266.29	12.50	62	3.77	55	73
Subtotal	448	96.3	.	.	.	.	.	.	.	7	100
Totals	**465**	**100.0**	**.**	**140.06**	**59.70**	**132.68**	**682.61**	**.**	**.**	**7**	**100**

Table 3.2-11. Catch statistics for selected taxa collected in twelve 6.1-m non-standard seine samples (sample area 332 m^2) during Sarasota Bay fishery habitat assessment in February and June 2002. Percent total catch (% total catch) is the percent of the total catch (465 individuals) represented by that taxon. Percent occurrence (% occur) is the percentage of samples in which that taxon was collected. CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density. Note: Variable sample areas resulted from use of non-standard seine deployment techniques.

Species	Number	% Total Catch	% Occur	Density Estimate (animals/100 m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Mugil cephalus	4	0.9	16.7	1.20	1.07	266.29	12.50	62	3.77	55	73
Cynoscion nebulosus	1	0.2	8.3	0.30	0.36	346.41	4.35	48	0.00	48	48
Lutjanus griseus	1	0.2	8.3	0.30	0.35	346.41	4.17	100	0.00	100	100
Scomberomorus maculatus	1	0.2	8.3	0.30	0.35	346.41	4.17	50	0.00	50	50
Totals	**7**	**1.5**	**25.0**	**2.11**	**1.74**	**246.11**	**20.83**	**.**	**.**	**48**	**100**

On a catch-per-unit-area (CPUA) basis (*i.e.*, abundance values were converted to density and expressed as the number of animals per 100 m^2), for 93 samples collected using a 21.3-m standard seine, mean density over all taxa was approximately 1,508 animals per 100 m^2 (Table 3.2-2). In 22 samples collected using a 21.3-m boat seine technique, mean density over all taxa was approximately 6,954 animals per 100 m^2 (Table 3.2-4). In 21 samples collected using a 6.1-m standard seine technique, mean density over all taxa was approximately 1,662 animals per 100 m^2 (Table 3.2-6). In 12 samples collected using a 6.1-m boat seine technique, mean density over all taxa was approximately 2,158 animals per 100 m^2 (Table 3.2-8). In 12 samples collected using a 6.1-m non-standard seine technique, mean density over all taxa was approximately 156 animals per 100 m^2 (Table 3.2-10).

Among the five gear deployment techniques used, the number of selected taxa and the percentage abundance of the total catch between gears were not related in direct proportion to the sample size. In ninety-three 21.3-m standard seine samples, 17 selected taxa accounted for 11.6% of the total catch, and selected taxa occurred in approximately 69% of samples taken with this gear (Table 3.2-3). In twenty-two 21.3-m boat seine samples, 12 selected taxa accounted for 7.5% of the total catch, and selected taxa occurred in approximately 64% of samples taken with this gear (Table 3.2-5). In twenty-one 6.1-m standard seine samples, 8 selected taxa accounted for 1.9% of the total catch, and selected taxa occurred in approximately 43% of samples taken with this gear (Table 3.2-7). In twelve 6.1-m boat seine samples, 5 selected taxa accounted for 26.6% of the total catch, and selected taxa occurred in approximately 50% of samples taken with this gear (Table 3.2-9). In twelve 6.1-m non-standard seine samples, 4 selected taxa accounted for 1.5% of the total catch, and selected taxa occurred in approximately 25% of samples taken with this gear (Table 3.2-11).

An analysis of faunal density on a CPUA basis for selected taxa was made to compare the abundance of selected taxa across different gear deployment techniques. In 93 samples collected using a 21.3-m standard seine, mean density of selected taxa was approximately 176 animals per 100 m^2 (Table 3.2-3). In 22 samples collected using a 21.3-m boat seine technique, mean density of selected taxa was approximately 519 animals per 100 m^2 (Table 3.2-5). In 21 samples collected using a 6.1-m standard seine technique, mean density of selected taxa was approximately 32 animals per 100 m^2 (Table 3.2-7). In 12 samples collected using a 6.1-m boat seine technique, mean density of selected taxa was approximately 575 animals per 100 m^2 (Table 3.2-9). In 12 samples collected using a 6.1-m non-standard seine technique, mean density of selected taxa was approximately two animals per 100 m^2 (Table 3.2-11).

Four of the five gear deployment techniques yielded taxa that were only collected by that single gear and deployment technique. Use of the 21.3-m boat seine technique did not result in any species unique to that technique. The 21.3-m standard seine captured 24 taxa not collected by any other technique. These taxa included *Aluterus schoepfi, Bairdiella chrysoura, Bathygobius soporator, Chaetodipterus faber, Chilomycterus schoepfi, Diplodus holbrooki, Dasyatis say, Fundulus confluentus, Gobiosoma bosc, Gobiosoma* spp., *Haemulon parrai, Hippocampus zosterae, Hyporhamphus* spp., *Limulus polyphemus, Lutjanus synagris, Monacanthus hispidus, Menticirrhus saxatilis, Orthopristis chrysoptera, Paralichthys albigutta, Sphyraena barracuda, Syngnathus floridae, Syngnathus louisianae, Selene vomer* and *Trinectes maculatus*. The 6.1-m standard seine captured 1 taxon (*i.e.*, *Megalops atlanticus*) not collected by any other technique. The 6.1-m boat seine captured 2 taxa (*i.e.*, *Adinia xenica* and *Urophycis floridana*) not collected by any other technique. The 6.1-m non-standard seine captured 4 taxa (*i.e.*, *Heterandria formosa, Lucania goodei, Lepomis* spp., and *Micropterus salmoides*) not collected by any other technique.

Dominant taxa (top ten) collected over all gear deployment techniques (Table 3.2-12), in order of greatest mean density (animals per 100 m^2) and percent total catch (%), were *Anchoa mitchilli* (32.1%), *Lucania parva* (16.9%), *Gambusia holbrooki* (8.0%), *Leiostomus xanthurus* (7.4%), *Menidia* spp. (7.1%), *Harengula jaguana* (6.0%), *Poecilia latipinna* (4.9%), *Lagodon rhomboides* (4.7%), *Eucinostomus* spp. (4.3%), and *Cyprinodon variegatus* (1.7%). Two taxa, *Menidia* spp. and *Mugil* spp., ranked in the top ten dominant taxa in all collections regardless of gear type used.

Table 3.2-12. Summary catch statistics for the ten dominant taxa and selected taxa collected by gear type and sampling procedure.

	Method																	
	21.3-m Standard Seine			21.3-m Boat Seine			6.1-m Standard Seine			6.1-m Boat Seine			6.1-m Non-Standard Seine			Overall		
	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur
All Taxa	**1,507.93**	**100.0**		**6,953.54**	**100.0**		**1,661.54**	**100.0**		**2158.33**	**100.0**		**155.86**	**100.0**		**2223.3**	**100.0**	
Dominant Taxa																		
Anchoa mitchilli	574.36	38.1	29.0	2,769.05	39.8	54.5										714.6	36.9	25
Lucania parva	353.82	23.5	57.0	1,127.21	16.2	45.5	40.66	2.4	28.6	127.78	5.9	33.3				375.7	20.1	46.9
Gambusia holbrooki				520.32	7.5	18.2	791.94	47.7	33.3				41.87	29.9	50.0	178.8	4.6	12.5
Leiostomus xanthurus	127.41	8.4	40.9	426.47	6.1	36.4	15.75	0.9	9.5	386.11	17.9	50.0				163.7	7.4	33.8
Menidia spp.	74.89	5.0	64.5	591.38	8.5	90.9	20.39	1.2	52.4	375.00	17.4	25.0	18.67	13.3	33.3	157.3	6.0	61.3
Harengula jaguana				920.32	13.2	13.6										132.8	4.8	6.3
Poecilia latipinna				122.26	1.8	36.4	631.62	38.0	52.4	33.33	1.5	25.0	37.65	26.9	41.7	108.1	2.4	21.9
Lagodon rhomboides	113.56	7.5	81.7	60.83	0.9	54.5				388.89	18.0	16.7	6.63	4.7	33.3	104.6	5.0	59.4
Eucinostomus spp.	122.73	8.1	54.8							244.44	11.3	33.3				95.6	5.3	45.0
Cyprinodon variegatus	12.19	0.8	19.4				93.28	5.6	57.1	166.67	7.7	25.0				37.0	0.9	25.6
Mugil spp.	20.31	1.3	9.7	72.26	1.0	18.2				172.22	8.0	8.3				34.7	1.2	8.8
Fundulus grandis										211.11	9.8	33.3				23.4	0.4	25.0
Mugil cephalus	22.86	1.5	12.9				8.79	0.5	19.0				1.20	0.9	16.7	17.1	1.1	13.1
Anchoa cubana				97.33	1.4	9.1										13.9	0.5	1.9
Floridichthys carpio	12.63	0.8	39.8													11.7	0.6	31.3
Eucinostomus harengulus							10.99	0.7	19.0				7.53	5.4	33.3	10.4	0.4	24.4
Fundulus majalis							9.89	0.6	28.6							6.4	0.4	15.0
Eucinostomus gula							9.04	0.5	14.3							4.1	0.2	22.5
Farfantepenaeus duorarum										11.11	0.5	16.7				2.3	0.1	17.5
Heterandria formosa													9.34	6.7	16.7	0.8	0.0	1.3
Oligoplites saurus													3.61	2.6	16.7	0.7	0.0	16.9
Lucania goodei													6.63	4.7	16.7	0.6	0.0	1.3
Micropterus salmoides													1.81	1.3	16.7	0.2	0.0	1.3
Subtotal	**1,434.76**	**95.0**		**6,707.43**	**96.4**		**1,632.35**	**98.2**		**2,116.66**	**98.1**		**134.94**	**96.3**		**2194.5**	**98.3**	

Table 3.1-12 (Continued)

	Method																	
	21.3-m Standard Seine			21.3-m Boat Seine			6.1-m Standard Seine			6.1-m Boat Seine			6.1-m Non-Standard Seine			Overall		
	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur	Mean Density	% Total Catch	% Occur
Selected Taxa																		
Leiostomus xanthurus	127.41	8.4	40.9	426.47	6.1	36.4	15.75	0.9	9.5	386.11	17.9	50.0				163.7	7.4	33.8
Mugil spp.	20.31	1.3	9.7	72.26	1.0	18.2				172.22	8.0	8.3				34.7	1.2	8.8
Mugil cephalus	22.86	1.5	12.9	18.85	0.3	18.2	8.79	0.5	19.0				1.20	0.9	16.7	17.1	1.1	13.1
Farfantepenaeus duorarum	2.54	0.2	26.9	0.07	0.0	4.5				11.11	0.5	16.7				2.3	0.1	17.5
Callinectes sapidus	0.38	0.0	16.1	0.13	0.0	9.1	4.03	0.2	9.5	2.78	0.1	8.3				1.0	0.0	12.5
Scomberomorus maculatus	1.04	0.1	3.2										0.30	0.2	8.3	0.6	0.0	2.5
Sciaenops ocellatus	0.24	0.0	7.5	0.07	0.0	4.5	0.12	0.0	4.8	2.78	0.1	8.3				0.4	0.0	6.3
Cynoscion nebulosus	0.41	0.0	14.0	0.07	0.0	4.5							0.30	0.2	8.3	0.3	0.0	9.4
Mugil curema	0.14	0.0	3.2	0.07	0.0	4.5	0.85	0.1	9.5							0.2	0.0	4.4
Centropomus undecimalis	0.02	0.0	2.2	0.07	0.0	4.5	1.10	0.1	9.5							0.2	0.0	3.1
Lutjanus griseus	0.01	0.0	1.1	0.20	0.0	9.1							0.30	0.2	8.3	0.1	0.0	2.5
Pogonias cromis	0.01	0.0	1.1				0.37	0.0	9.5							0.1	0.0	1.9
Megalops atlanticus							0.85	0.1	9.5							0.1	0.0	1.3
Mycteroperca microlepis	0.08	0.0	2.2													0.0	0.0	1.3
Archosargus probatocephalus	0.07	0.0	7.5	0.07	0.0	4.5										0.0	0.0	5.0
Lutjanus synagris	0.01	0.0	1.1													0.0	0.0	0.6
Menticirrhus saxatilis	0.01	0.0	1.1													0.0	0.0	0.6
Paralichthys albigutta	0.01	0.0	1.1													0.0	0.0	0.6
Mugil gyrans				0.27	0.0	9.1										0.0	0.0	1.3
Subtotal	**175.55**	**11.5**	**68.8**	**518.60**	**7.5**	**63.6**	**31.86**	**1.9**	**42.9**	**575.00**	**26.6**	**50.0**	**2.10**	**1.5**	**25.0**	**220.8**	**9.8**	

The two most abundant taxa in the 21.3-m standard and boat seine collections were *Anchoa mitchilli* (38.1% and 39.8%, respectively) and *Lucania parva* (23.5% and 16.2%, respectively). *Gambusia holbrooki* (47.7%) and *Poecilia latipinna* (38.8%) were the two most abundant taxa in 6.1-m standard seine collections. *Lagodon rhomboides* (18.0%) and *Leiostomus xanthurus* (17.9%) were the two most abundant taxa in 6.1-m boat seine collections. *Gambusia holbrooki* (29.9%) and *Poecilia latipinna* (26.9%) were the two most abundant taxa in 6.1-m non-standard seine collections.

The rank order of all taxa in terms of percent occurrence in samples exhibited a different pattern than for percentage abundance. *Lagodon rhomboides* (81.7%) and *Menidia* spp. (64.5%) were the two most commonly encountered taxa on a percentage occurrence basis in 21.3-m standard seine collections. *Menidia* spp. (90.0%) and *Anchoa mitchilli* (54.3%) were the two most commonly encountered taxa on a percentage occurrence basis in 21.3-m boat seine collections. *Cyprinodon variegatus* (57.1%) and *Menidia* spp. (52.4%) were the two most commonly encountered taxa on a percentage occurrence basis in 6.1-m standard seine collections. *Leiostomus xanthurus* (50.0%) and *Eucinostomus* spp. (33.3%) were the two most commonly encountered taxa on a percentage occurrence basis in 6.1-m boat seine collections. *Gambusia holbrooki* (50.0%) and *Poecilia latipinna* (41.7%) were the two most commonly encountered taxa on a percentage occurrence basis in 6.1-m non-standard seine collections.

Dominant selected taxa (top ten) over all gear deployment techniques (Table 3.2-12), in order of greatest mean density (animals per 100 m^2) and percent total catch (%), were *Leiostomus xanthurus* (163.7/100 m^2, 7.4%), *Mugil* spp. (34.77/100 m^2, 1.2%), *Mugil cephalus* (17.1/100 m^2, 1.1%), *Farfantepenaeus duorarum*(2.3/100 m^2, 0.1%), *Callinectes sapidus* (1.0/100 m^2, <0.1%), *Scomberomorus maculates* (0.6/100 m^2, <0.1%), *Sciaenops oscellatus* (0.4/100 m^2, <0.1%), *Cynoscion nebulosus* (0.3/100 m^2, <0.1%), *Mugil curema* (0.2/100 m^2, <0.1%), and *Centropomus undecimalis* (0.2/100 m^2, <0.1%). Other selected taxa, in order of decreasing mean density over all gear deployment techniques, were less common in collections and included *Megalops atlanticus, Lutjanus griseus, Pogonias romis,* *Archosargus probatocephalus, Mycteroperca microlepis, Mugil gyrans, Lutjanus synagris, Menticirrhus saxatilis, Paralichthys albigutta*.

Four of the five gear deployment techniques, yielded *Leiostomus xanthurus* and *Mugil* spp. (likely *Mugil cephalus*) as the two most abundant selected taxa. In 21.3-m standard seine collections, *Leiostomus xanthurus* (8.4%) and *Mugil* spp. (1.5%) were the two most abundant selected taxa. In 21.3-m boat seine collections, *Leiostomus xanthurus* (6.1%) and *Mugil* spp. (likely *Mugil cephalus*, 1.0%) were the two most abundant selected taxa. In 6.1-m standard seine collections, *Leiostomus xanthurus*, (0.9%) and *Mugil cephalus*, (0.5%) were the two most abundant selected taxa. In 6.1-m boat seine collections, *Leiostomus xanthurus* (17.9%) and *Mugil* spp. (likely *Mugil cephalus*, 8.0%) were the two most abundant selected taxa. In 6.1-m non-standard seine collections, *Mugil cephalus* (0.9%) and *Cynoscion nebulosus* (0.2%) were the two most abundant selected taxa.

Among selected taxa, the rank order of percentage occurrence in samples exhibited a different pattern than that for percentage abundance. *Leiostomus xanthurus* (40.9%) and *Farfantepenaeus duorarum* (26.9%) were the two most commonly encountered selected taxa on a percentage occurrence basis in 21.3-m standard collections. *Leiostomus xanthurus* (36.4%) and *Mugil* spp. (likely *Mugil cephalus*, 18.2%) were the two most commonly encountered taxa on a percentage occurrence basis in 21.3-m boat seine collections. *Mugil cephalus* (19.0%) and *Leiostomus xanthurus* (9.5%) were the two most commonly encountered taxa on a percentage occurrence basis in 6.1-m standard seine collections. However, several other selected taxa (*e.g.*, *Callinectes sapidus, Centropomus undecimalis, Megalops atlanticus, Mugil curema* and *Pogonias cromis*) were equally common in 6.1-m standard seine collections. *Leiostomus xanthurus* (50.0%) and *Farfantepenaeus duorarum* (16.7%) were the two most commonly encountered taxa on a percentage occurrence basis in 6.1-m boat seine collections. *Mugil cephalus* (16.7%) and *Cynoscion nebulosus* (8.3%) were the two most commonly encountered taxa on a percentage occurrence basis in 6.1-m non-standard seine collections. However, *Lutjanus griseus* and *Scomberomorus maculatus* were equally common in 6.1-m non-standard seine collections.

Data for selected taxa (i.e., commercially or recreationally important species) were pooled among all sites and seasons to calculate mean sizes (i.e., standard length for fishes, post-orbital head length for shrimp, and carapace width for crabs), relative abundance and density. Several selected taxa were relatively abundant in Sarasota Bay collections during 2002, occurring in 12 to 50% of samples and with 50 or more individuals collected. These taxa included *Leiostomus xanthurus, Mugil* spp. (likely *Mugil cephalus*), *Farfantepenaeus duorarum, Scomberomorus maculatus, Callinectes sapidus,* and *Cynoscion nebulosus*. Other selected taxa were rare in Sarasota Bay collections during 2002, occurring in less than 10% of the samples and with 34 or fewer (no less than 4) individuals collected. These rare selected taxa included *Sciaenops ocellatus, Mugil curema, Centropomus undecimalis, Archosargus probatocephalus, Mycteroperca microlepis, Megalops atlanticus, Lutjanus griseus, Mugil gyrans* and *Pogonias cromis*. A few selected taxa were extremely rare in Sarasota Bay collections during 2002 wherein only 1 individual was collected. These extremely rare selected taxa included *Lutjanus synagris, Menticirrhus saxatilis* and *Paralichthys albigutta*.

Among frequently occurring selected taxa, a total of 23,237 *Leiostomus xanthurus* were collected in 54 seine samples. Standard length of *Leiostomus xanthurus* ranged from 7 to 165 mm with a mean over all gear deployment techniques between 23 to 28 mm. A total of 7,153 Mullet (*Mugil* spp.) were collected in 44 seine samples. Standard length of *Mugil* spp ranged from 17 to 583 mm with a mean over all gear deployment techniques between 23 to 62 mm. A total of 336 *Farfantepenaeus duorarum* were collected in 28 seine samples. Post-orbital head length of *Farfantepenaeus duorarum* ranged from 6 to 33 mm with a mean over all gear deployment techniques between 15 to 19 mm. A total of 136 *Scomberomorus maculatus* were collected in 4 seine samples. Standard length of *Scomberomorus maculatus* ranged from 44 to 67 mm with a mean over all gear deployment techniques between 50 to 51 mm. A total of 86 *Callinectes sapidus* were collected in 20 seine samples. Carapace width of *Callinectes sapidus* ranged from 14 to 132 mm with a mean over all gear deployment techniques between 34 to 45 mm. A total of 55 *Cynoscion nebulosus* were collected in 15 seine samples. Standard length of *Cynoscion nebulosus* ranged from 22 to 86 mm with a mean over all gear deployment techniques between 42 to 59 mm.

Among rarely occurring selected taxa, a total of 34 *Sciaenops ocellatus* were collected in 10 seine samples. Standard length of *Sciaenops ocellatus* ranged from 49 to 110 mm with a mean of approximately 67 mm collected by four of five gear deployment techniques at nine stations. A total of 26 *Mugil curema* were collected in 6 seine samples. Standard length of *Mugil curema* ranged from 21 to 172 mm with a mean between 23 to 55 mm collected by three of five gear deployment techniques at five stations. A total of 12 *Centropomus undecimalis* were collected in 5 seine samples. Standard length of *Centropomus undecimalis* ranged from 40 to 270 mm with a mean of approximately 64 mm collected by three of five gear deployment techniques at four stations (C15, C21, C22 and R18). A total of 10 *Archosargus probatocephalus* were collected in 8 seine samples. Standard length of *Archosargus probatocephalus* ranged from 22 to 350 mm with a mean of approximately 60 mm collected by the 21.3-m standard or boat seines at six stations. A total of 10 *Mycteroperca microlepis* were collected in 2 seine samples. Standard length of *Mycteroperca microlepis* ranged from 83 to 152 mm with a mean of 114 mm collected by the 21.3-m standard seine at only one station (C4--Leffis Key). A total of 7 *Megalops atlanticus* were collected in 2 seine samples. Standard length of *Megalops atlanticus* ranged from 69 to 330 mm with a mean of 233 mm collected by the 6.1-m standard seine at only one station (R4--Durante Park). A total of 5 *Lutjanus griseus* were collected in 4 seine samples. Standard length of *Lutjanus griseus* ranged from 48 to 130 mm with a mean of approximately 83 mm collected by three of five gear deployment techniques at four stations (C11, R13, R15 and R16). A total of four *Mugil gyrans* were collected in two samples. Standard length of *Mugil gyrans* ranged from 27 to 129 mm with a mean of 97 mm collected by the 21.3-m boat seine at only one station (R16--Palmer Point Park). A total of four *Pogonias cromis* were collected in three samples. Standard length of *Pogonias cromis* ranged from 139 to 276 mm with a mean of 195 mm collected by the 6.1-m or 21.3-m standard seines at only one station (R7--Sarasota Baywalk).

Extremely rare selected taxa (only 1 individual collected) were represented by *Lutjanus synagris* collected in one 21.3-m standard seine sample at a station (C4--Leffis Key); *Menticirrhus saxatilis* collected in one 21.3-m standard seine sample at a station (R9--Sarasota Baywalk); and *Paralichthys albigutta* collected in one 21.3-m standard seine sample at a station (C2--Tidy Island).

Species ranked in the top 10 by numerical abundance by gear deployment technique were not consistent across gear techniques (Table 3.2-13). Similarly, species ranks by numerical abundance were not similar between 21.3 m seine deployment techniques (i.e., 71 and 44 species in 21.3 m standard or boat seines, respectively). However, species ranks were similar between all 6.1 m seine deployment techniques (i.e., 22, 19 and 21 species in 6.1 m standard or boat or non-standard seines, respectively). These results suggest that generally different habitat conditions were sampled by the five gear deployment techniques. By design, each of the five gear deployment techniques was used across two habitat sites (i.e., natural v. restored) and several microhabitat types (i.e., channel, marsh edge, subtidal pool, or seagrass).

Relative abundance plots (Figure 3.2-6) for the total collection (all gears combined) and each gear deployment technique are not similar indicating that the Sarasota Bay fish community was not equally accessible to all gear deployment techniques used in this study. Differences in species rank order and numerical abundance between gear techniques are paralleled by sample size differences between gear type (Table 3.2-13). For example, the 21.3 m standard seine captured nearly 89% (71 of 80 species) of the total fauna in 93 samples. The 21.3 m boat seine captured 55% (44 of 80 species) of the total fauna in 22 samples. The 6.1m standard seine captured 27%, the 6.1m boat seine captured 24%, and the 6.1m non-standard seine captured 26% of the total fauna in 21, 12 and 12 samples, respectively. This result suggests that limitations due to differences in sample size or gear sample area are important in interpreting community structure. It is apparent that the number of rare species represented by less than 100 individuals are proportionately fewer and similar for collections made with any of the 6.1 m seine deployment techniques (i.e.,

Table 3.2-13. List of rank order in relative abundance of all taxa collected by each gear deployment technique during Sarasota Bay fishery habitat assessment in February and June 2002. Separate lists provided for each gear deployment technique and total over all gear types.

ALL GEAR TOTAL

Rank	Number	*Species*
1	116,208	*Anchoa mitchilli*
2	63,313	*Lucania parva*
3	23,237	*Leiostomus xanthurus*
4	18,962	*Menidia* spp.
5	16,679	*Eucinostomus* spp.
6	15,890	*Lagodon rhomboides*
7	15,174	*Harengula jaguana*
8	14,430	*Gambusia holbrooki*
9	7,707	*Poecilia latipinna*
10	3,788	*Mugil* spp.
11	3,335	*Mugil cephalus*
12	2,973	*Cyprinodon variegatus*
13	2,035	*Floridichthys carpio*
14	1,568	*Anchoa cubana*
15	1,348	*Fundulus grandis*
16	1,308	*Eucinostomus harengulus*
17	1,293	Clupeidae spp.
18	1,148	*Fundulus majalis*
19	1,014	*Microgobius gulosus*
20	724	*Eucinostomus gula*
21	677	*Brevoortia* spp.
22	433	*Anchoa hepsetus*
23	336	*Farfantepenaeus duorarum*
24	220	*Sphoeroides nephelus*
25	146	*Strongylura notata*
26	136	*Scomberomorus maculatus*
27	110	*Lophogobius cyprinoides*
28	110	*Syngnathus scovelli*
29	100	*Bairdiella chrysoura*
30	94	*Oligoplites saurus*
31	86	*Callinectes sapidus*
32	55	*Cynoscion nebulosus*
33	52	*Gobiosoma* spp.
34	51	*Orthopristis chrysoptera*
35	37	*Chilomycterus schoepfi*
36	35	*Opsanus beta*
37	34	*Sciaenops ocellatus*
38	31	*Heterandria formosa*
39	26	*Mugil curema*
40	23	*Synodus foetens*
41	22	*Lucania goodei*
42	21	*Gobiosoma robustum*
43	19	*Strongylura timucu*
44	18	*Syngnathus floridae*
45	16	*Diplodus holbrooki*
46	16	*Hippocampus zosterae*
47	13	*Gobiosoma bosc*
48	13	*Strongylura marina*
49	12	*Achirus lineatus*
50	12	*Bathygobius soporator*
51	12	*Centropomus undecimalis*
52	10	*Archosargus probatocephalus*
53	10	*Fundulus* spp.
54	10	*Mycteroperca microlepis*
55	7	*Megalops atlanticus*
56	6	*Micropterus salmoides*
57	6	*Syngnathus louisianae*
58	5	*Diapterus plumieri*
59	5	*Lutjanus griseus*
60	5	*Strongylura* spp.
61	4	*Fundulus confluentus*
62	4	*Limulus polyphemus*
63	4	*Mugil gyrans*
64	4	*Pogonias cromis*
65	4	*Trinectes maculatus*
66	3	*Adinia xenica*
67	3	*Chaetodipterus faber*
68	2	*Aluterus schoepfi*
69	2	*Calamus arctifrons*
70	2	*Hyporhamphus* spp.
71	2	*Monacanthus hispidus*
72	2	*Sphyraena barracuda*
73	1	*Dasyatis say*
74	1	*Haemulon parrai*
75	1	*Lutjanus synagris*
76	1	*Lepomis* spp.
77	1	*Menticirrhus saxatilis*
78	1	*Paralichthys albigutta*
79	1	*Selene vomer*
80	1	*Urophycis floridana*

21.3 m STANDARD SEINE

Rank	Number	Species
1	74,782	*Anchoa mitchilli*
2	46,068	*Lucania parva*
3	16,589	*Leiostomus xanthurus*
4	15,979	*Eucinostomus* spp.
5	14,786	*Lagodon rhomboides*
6	9,751	*Menidia* spp.
7	2,977	*Mugil cephalus*
8	2,645	*Mugil* spp.
9	1,645	*Floridichthys carpio*
10	1,587	*Cyprinodon variegatus*
11	1,406	*Harengula jaguana*
12	1,285	Clupeidae spp.
13	1,046	*Fundulus majalis*
14	947	*Fundulus grandis*
15	676	*Brevoortia* spp.
16	661	*Eucinostomus harengulus*
17	647	*Eucinostomus gula*
18	568	*Poecilia latipinna*
19	561	*Microgobius gulosus*
20	331	*Farfantepenaeus duorarum*
21	219	*Sphoeroides nephelus*
22	135	*Scomberomorus maculatus*
23	112	*Anchoa cubana*
24	100	*Bairdiella chrysoura*
25	84	*Syngnathus scovelli*
26	76	*Oligoplites saurus*
27	65	*Anchoa hepsetus*
28	57	*Strongylura notata*
29	53	*Cynoscion nebulosus*
30	52	*Gobiosoma* spp.
31	51	*Orthopristis chrysoptera*
32	50	*Callinectes sapidus*
33	37	*Chilomycterus schoepfi*
34	32	*Lophogobius cyprinoides*
35	31	*Sciaenops ocellatus*
36	21	*Gambusia holbrooki*
37	21	*Synodus foetens*
38	19	*Gobiosoma robustum*
39	18	*Mugil curema*
40	18	*Syngnathus floridae*
41	16	*Diplodus holbrooki*
42	16	*Hippocampus zosterae*
43	13	*Gobiosoma bosc*
44	12	*Bathygobius soporator*
45	11	*Achirus lineatus*
46	10	*Mycteroperca microlepis*
47	9	*Archosargus probatocephalus*
48	9	*Strongylura marina*
49	6	*Syngnathus louisianae*
50	4	*Fundulus confluentus*
51	4	*Limulus polyphemus*
52	4	*Trinectes maculatus*
53	3	*Chaetodipterus faber*
54	3	*Diapterus plumieri*
55	2	*Aluterus schoepfi*
56	2	*Centropomus undecimalis*
57	2	*Hyporhamphus* spp.
58	2	*Monacanthus hispidus*
59	2	*Opsanus beta*
60	2	*Sphyraena barracuda*
61	2	*Strongylura timucu*
62	2	*Strongylura* spp.
63	1	*Calamus arctifrons*
64	1	*Dasyatis say*
65	1	*Haemulon parrai*
66	1	*Lutjanus griseus*
67	1	*Lutjanus synagris*
68	1	*Menticirrhus saxatilis*
69	1	*Paralichthys albigutta*
70	1	*Pogonias cromis*
71	1	*Selene vomer*

21.3 m BOAT SEINE

Rank	Number	Species
1	41,425	*Anchoa mitchilli*
2	16,863	*Lucania parva*
3	13,768	*Harengula jaguana*
4	8,847	*Menidia* spp.
5	7,784	*Gambusia holbrooki*
6	6,380	*Leiostomus xanthurus*
7	1,829	*Poecilia latipinna*
8	1,456	*Anchoa cubana*
9	1,081	*Mugil* spp.
10	910	*Lagodon rhomboides*
11	561	*Cyprinodon variegatus*
12	561	*Eucinostomus* spp.
13	529	*Eucinostomus harengulus*
14	452	*Microgobius gulosus*
15	368	*Anchoa hepsetus*
16	334	*Floridichthys carpio*
17	282	*Fundulus grandis*
18	282	*Mugil cephalus*
19	87	*Strongylura notata*
20	78	*Lophogobius cyprinoides*
21	33	*Opsanus beta*
22	24	*Syngnathus scovelli*
23	20	*Fundulus majalis*
24	17	*Strongylura timucu*
25	10	*Fundulus* spp.
26	8	Clupeidae spp.
27	6	*Oligoplites saurus*
28	4	*Mugil gyrans*
29	4	*Strongylura marina*
30	3	*Lutjanus griseus*
31	3	*Strongylura* spp.
32	2	*Callinectes sapidus*
33	2	*Diapterus plumieri*
34	2	*Gobiosoma robustum*
35	1	*Achirus lineatus*
36	1	*Archosargus probatocephalus*
37	1	*Brevoortia* spp.
38	1	*Cynoscion nebulosus*
39	1	*Centropomus undecimalis*
40	1	*Farfantepenaeus duorarum*
41	1	*Mugil curema*
42	1	*Synodus foetens*
43	1	*Sphoeroides nephelus*
44	1	*Sciaenops ocellatus*

Table 3.2-13 (Continued)

6.1 m STANDARD SEINE

Rank	Number	*Species*
1	6,486	*Gambusia holbrooki*
2	5,173	*Poecilia latipinna*
3	764	*Cyprinodon variegatus*
4	333	*Lucania parva*
5	167	*Menidia* spp.
6	129	*Leiostomus xanthurus*
7	90	*Eucinostomus harengulus*
8	81	*Fundulus majalis*
9	74	*Eucinostomus gula*
10	72	*Mugil cephalus*
11	53	*Floridichthys carpio*
12	49	*Eucinostomus* spp.
13	43	*Fundulus grandis*
14	33	*Callinectes sapidus*
15	32	*Lagodon rhomboides*
16	9	*Centropomus undecimalis*
17	7	*Megalops atlanticus*
18	7	*Mugil curema*
19	3	*Pogonias cromis*
20	1	*Anchoa mitchilli*
21	1	*Microgobius gulosus*
22	1	*Sciaenops ocellatus*

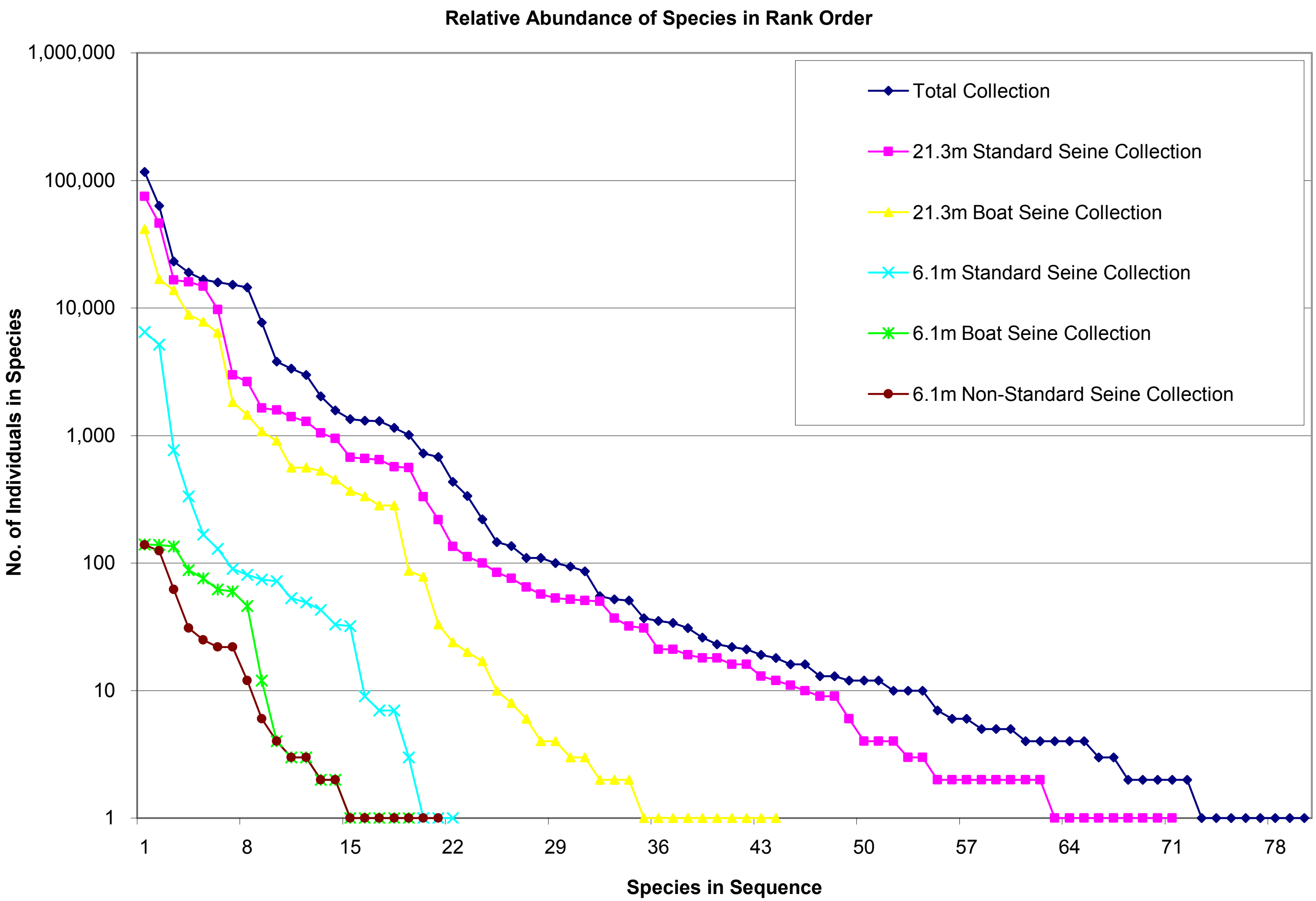
6.1 m BOAT SEINE

Rank	Number	Species
1	140	*Lagodon rhomboides*
2	139	*Leiostomus xanthurus*
3	135	*Menidia* spp.
4	88	*Eucinostomus* spp.
5	76	*Fundulus grandis*
6	62	*Mugil* spp.
7	60	*Cyprinodon variegatus*
8	46	*Lucania parva*
9	12	*Poecilia latipinna*
10	4	*Farfantepenaeus duorarum*
11	3	*Adinia xenica*
12	3	*Eucinostomus harengulus*
13	2	*Floridichthys carpio*
14	2	*Syngnathus scovelli*
15	1	*Callinectes sapidus*
16	1	*Fundulus majalis*
17	1	*Synodus foetens*
18	1	*Sciaenops ocellatus*
19	1	*Urophycis floridana*

6.1 m NON-STANDARD SEINE

Rank	Number	Species
1	139	*Gambusia holbrooki*
2	125	*Poecilia latipinna*
3	62	*Menidia* spp.
4	31	*Heterandria formosa*
5	25	*Eucinostomus harengulus*
6	22	*Lucania goodei*
7	22	*Lagodon rhomboides*
8	12	*Oligoplites saurus*
9	6	*Micropterus salmoides*
10	4	*Mugil cephalus*
11	3	*Eucinostomus gula*
12	3	*Lucania parva*
13	2	*Eucinostomus* spp.
14	2	*Strongylura notata*
15	1	*Cynoscion nebulosus*
16	1	*Cyprinodon variegatus*
17	1	*Calamus arctifrons*
18	1	*Floridichthys carpio*
19	1	*Lutjanus griseus*
20	1	*Lepomis* spp.
21	1	*Scomberomorus maculatus*

Figure 3.2-6. **Relative abundance curves for all taxa in total collection and each gear deployment technique during Sarasota Bay Fishery Habitat Assessment in February and June 2002. The number of individuals collected for each species are plotted in sequence based on rank abundance values shown in Table 1.**

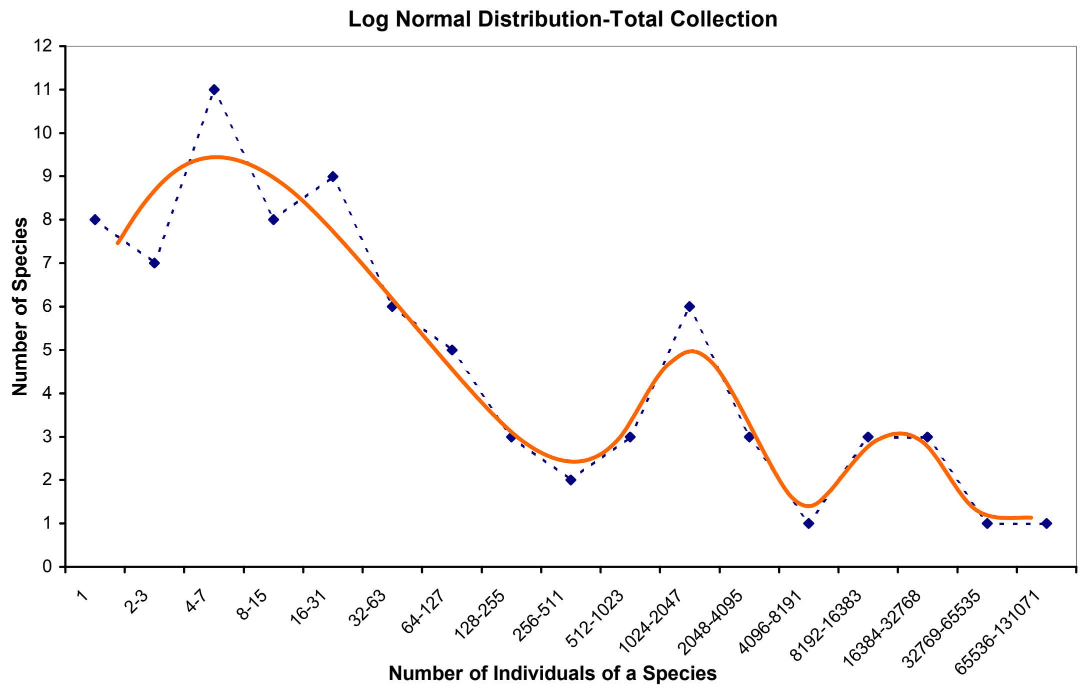


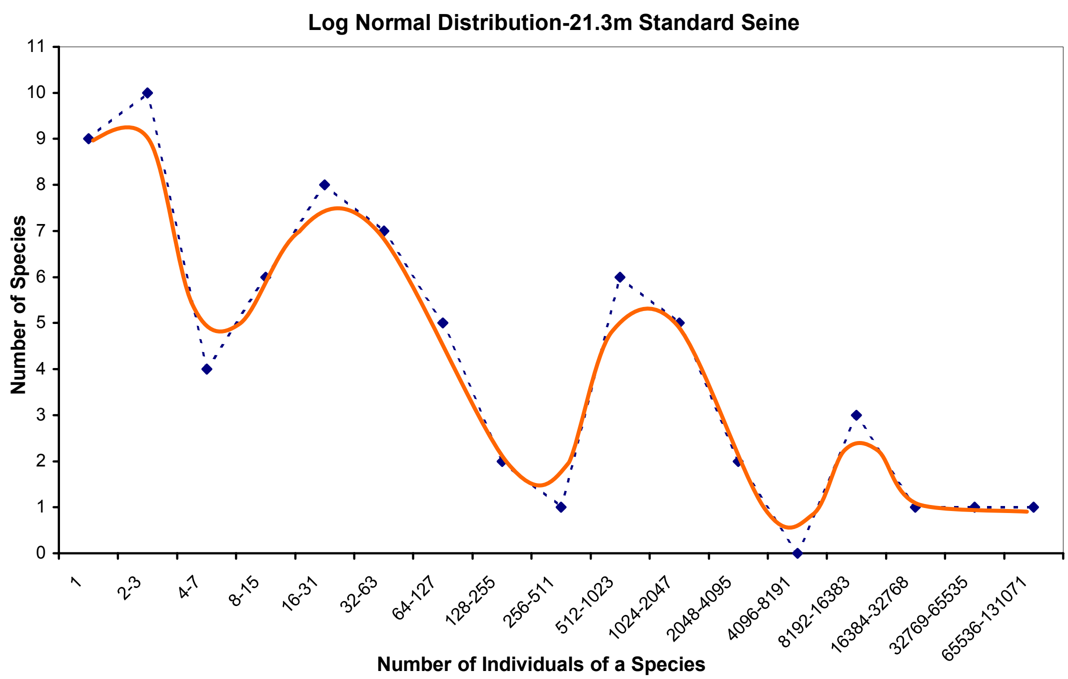
steeply-sloped relative abundance plot) than for collections made with the 21.3 m seine deployment techniques. However, all gear deployment techniques yielded collections with high dominance wherein the most numerically dominant species (i.e., typically the top 10 taxa) comprised over 95% of the total catch.

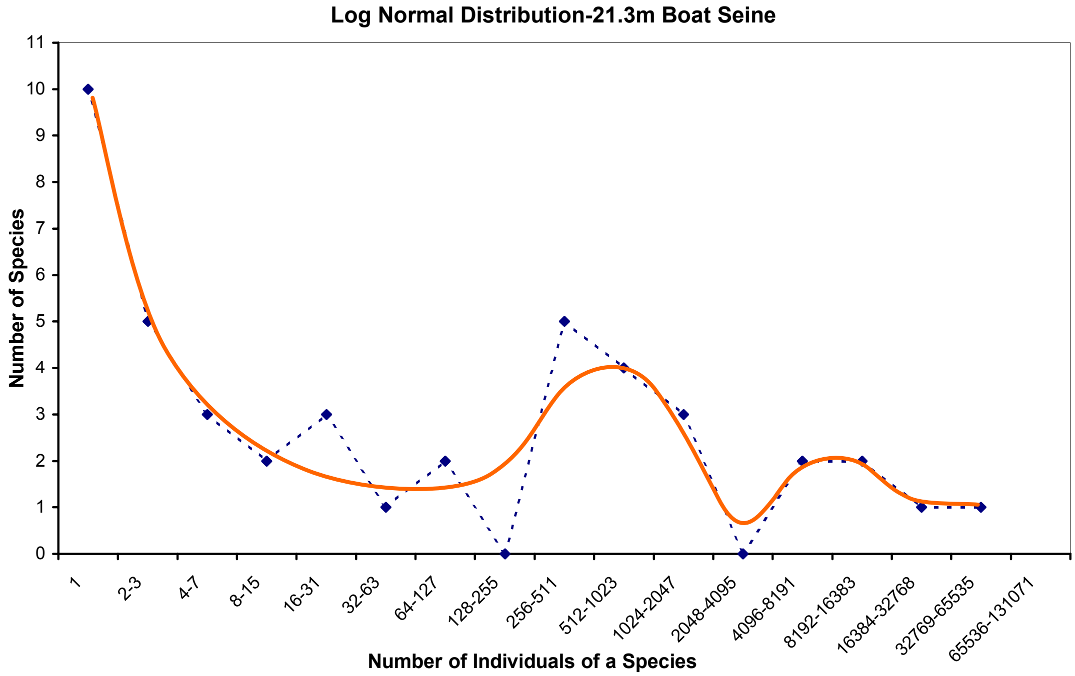
In order to measure heterogeneity and assess community organization related to how relative abundances vary among different species in the community, an effort was made to fit the logarithmic series by applying a log-normal curve to the data. The logarithmic series implies that the largest number of species are rare in abundance, and the number of species represented by a single specimen are maximal. The dominance-diversity relationship (i.e., relative abundance plots) as previously derived indicates that this model of species abundance may be applicable to the dataset.

A comparison of faunal representation by each gear deployment technique was made using log-normal plots of the number of individuals of a species in geometric classes as a function of the number of species (Figures 3.2-7 and 3.2-8). An approximate log-normal curve was then fit to the plots. The log-normal plots reveal a trimodal curve for the total collection, 21.3 m boat seine and 6.1 m standard seine, and a quadmodal curve for the 21.3 m standard seine collection. Too few individuals were collected in 6.1m boat or non-standard seines to reveal similar faunal groupings. For three gear techniques with adequate data, the most species rich group is the least abundant in which nursery and transient species predominate over resident species. A middle group consists of separate clusters of predominantly nursery/transient species (lesser occurrence) and resident species (greater occurrence). The least species rich group with the greatest abundance consists of a mix of nursery/transient and resident species in equal proportion. These results consistently show the numerical and spatial dominance of fauna consisting of approximately 11 resident species in the Sarasota Bay system.

Figure 3.2.7. **Log normal distribution of taxa collected by all gear deployment techniques (top) and 21.3 m standard seine (bottom) during Sarasota Bay Fishery Habitat Assessment in February and June 2002. Arithmetic classes of number of individuals of a species are derived from abundance.**







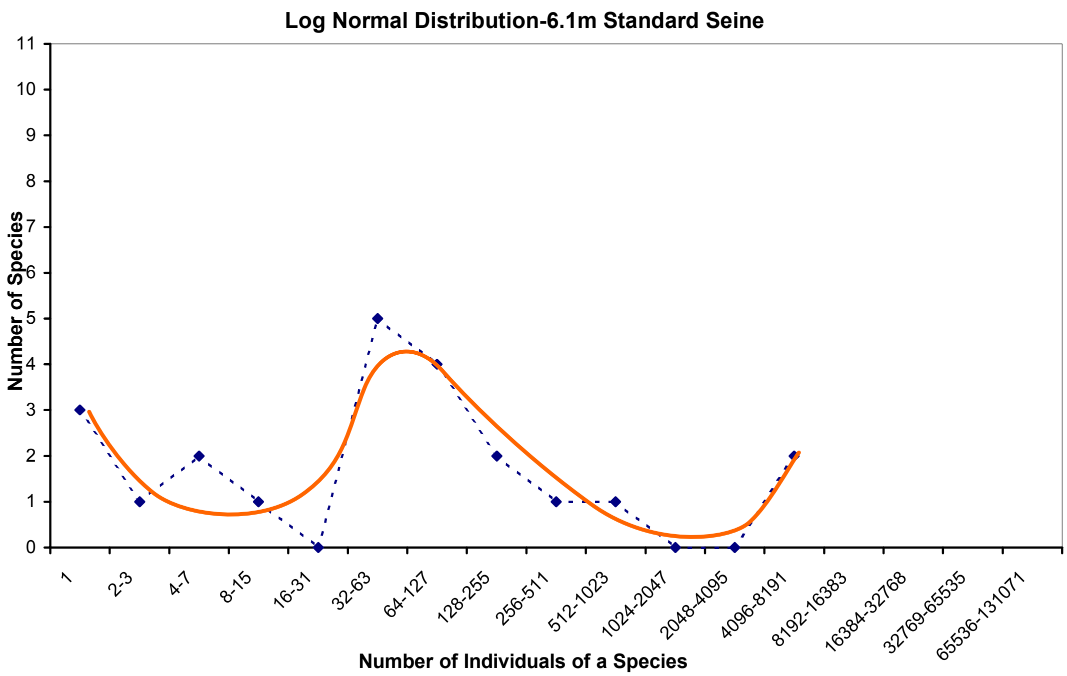


Figure 3.2.8. **Log normal distribution of taxa collected by 21.3 m boat seine (top) and 6.1m standard seine (bottom) during Sarasota Bay Fishery Habitat Assessment in February and June 2002. Arithmetic classes of number of individuals of a species are derived from abundance values.**

Frequently encountered and abundant species comprise the shore fringe resident complex or guild (Table 3.2-1). These species include: *Lucania parva, Menidia* spp., a *Eucinostomus* complex consisting of *Eucinostomus harengulus* and *Eucinostomus gula*, *Gambusia holbrooki, Poecilia latipinna, Floridichthys carpio, Cyprinodon variegatus,* a *Fundulus* complex consisting of *Fundulus grandis and Fundulus majalis,* and *Microgobius gulosus*. Numerous species encountered less frequently and less abundantly are classified as either nursery or transient species (Table 3.2-1). Nursery species include most of the selected taxa (i.e., commercially or recreationally important) which utilize the Bay system during portions of their early life history.

The mean density and standard error of selected taxa at each sampling station is provided (Table 3.2-14). For the selected taxa, the highest density was observed at the Bowlees Creek Station C11 (2,433.1/100 m^2). The highest mean density for a restored station (1,225.1/100 m^2) occurred at Station R9, Sarasota Baywalk. The lowest average density (no selected species observed) for selected taxa was observed at the Hog Creek Station R12 and the Selby Shoreline Station R14. The lowest density observed at a natural station was Philippi Creek Station C16 with 0.2/100 m^2. Overall species richness was highest for selected taxa at Palmer Point Station R16 with eight species, followed by Tidy Island Station C2, Leffis Key Station C4, Leffis Key Station R1 and the Sarasota Baywalk Station R7 all with seven species. The lowest observed number of species was again at restored Stations R12, Hog Creek, and R14, Selby Shoreline, where no species were observed. An additional six stations were observed to have only one species.

Table B-2 in Appendix B contains a summary of the mean density and standard error of taxa pooled for each sampling location for all sampling events (*e.g.*, all the stations in the Bowlees Creek area). The highest observed density was found at the Bowlees Creek Site (8,324.9/100 m^2), with the lowest observed mean density occurred at the Hidden Bay Site (76.9/100 m^2). The highest average species richness occurred at the Palmer Point Site (11.5 species) and the lowest average species richness occurred at the Hog Creek Site (3.0

Table 3.2-14. Mean density (#/100m²) and standard error (± SE) by selected taxa at each sampling station for all sampling events.

Species name	Common name	Tidy Island Site C 1 Mean ± SE	Tidy Island Site C 2 Mean ± SE	Tidy Island Site C 3 Mean ± SE	Leffis Key Site C 4 Mean ± SE	Sister Keys Site C 5 Mean ± SE	Sister Keys Site C 6 Mean ± SE
Leiostomus xanthurus	Spot	140.0 ± 86.3	41.4 ± 27.1	211.6 ± 126.3	528.6 ± 421.9	141.7 ± 82.7	104.4 ± 73.7
Mugil spp.	Assorted mullet	21.4 ± 21.4	150.0 ± 150.0	31.4 ± 27.8	0.7 ± 0.7	516.7 ± 516.7	47.4 ± 44.5
Mugil cephalus	Striped mullet	0.0 ± 0.0	0.0 ± 0.0	7.7 ± 7.7	0.0 ± 0.0	0.0 ± 0.0	5.5 ± 5.5
Farfantepenaeus duorarum	Pink shrimp	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.5 ± 0.3	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	1.4 ± 1.4	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.4 ± 0.4
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	1.4 ± 1.4	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	1.1 ± 0.9	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.8 ± 1.4	0.0 ± 0.0	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 3.2-14. (Continued)

Species name	Common name	Sister Keys Site C 7 Mean ± SE	El Conquistador Site C 8 Mean ± SE	El Conquistador Site C 9 Mean ± SE	Bowlees Creek Site C 10 Mean ± SE	Bowlees Creek Site C 11 Mean ± SE	Bowlees Creek Site C 12 Mean ± SE
Leiostomus xanthurus	Spot	1.4 ± 1.4	0.0 ± 0.0	82.1 ± 82.1	2.0 ± 1.1	2082.4 ± 2066.7	74.8 ± 74.2
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	350.0 ± 267.5	0.0 ± 0.0
Mugil cephalus	Striped mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	2.0 ± 1.3	0.0 ± 0.0	1.1 ± 1.1	1.1 ± 0.7	0.0 ± 0.0	0.2 ± 0.2
Callinectes sapidus	Blue crab	0.2 ± 0.2	0.0 ± 0.0	20.5 ± 20.5	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	1.1 ± 1.1	0.2 ± 0.2	2.0 ± 1.3	0.0 ± 0.0	0.2 ± 0.2
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 3.2-14. (Continued)

Species name	Common name	S Lido Beach Site C 13 Mean ± SE	S Lido Lagoon Site C 14 Mean ± SE	Phillippi Creek Site C 15 Mean ± SE	Phillippi Creek Site C 16 Mean ± SE	Heron Lagoon Site C 17 Mean ± SE	Heron Lagoon Site C 18 Mean ± SE
Leiostomus xanthurus	Spot	70.9 ± 52.6	4.3 ± 4.3	1.1 ± 1.1	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil cephalus	Striped mullet	1.4 ± 1.4	6.8 ± 6.8	1.1 ± 1.1	0.2 ± 0.2	0.0 ± 0.0	5.9 ± 5.9
Farfantepenaeus duorarum	Pink shrimp	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.2 ± 0.2	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 3.2-14. Continued)

Species name	Common name	N Catfish Site C 19 Mean ± SE	Bird Key Site C 20 Mean ± SE	South Creek Site C 21 Mean ± SE	South Creek Site C 22 Mean ± SE	Leffis Key Site R 1 Mean ± SE	Leffis Key Site R 2 Mean ± SE
Leiostomus xanthurus	Spot	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	289.8 ± 238	25 ± 16
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	267.3 ± 154.7	0.0 ± 0.0
Mugil cephalus	Striped mullet	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.0 ± 0.0	1.4 ± 1.4	0.0 ± 0.0	0.2 ± 0.2	13.2 ± 7.3	33.3 ± 19.2
Callinectes sapidus	Blue crab	0.0 ± 0.0	0.2 ± 0.2	1.4 ± 1.4	0.0 ± 0.0	1.1 ± 1.1	8.3 ± 8.3
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	23.6 ± 23.6	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.4 ± 0.8	8.3 ± 8.3
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.7 ± 2.0	0.0 ± 0.0
Mugil curema	White mullet	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 3.2-14. (Continued)

		Leffis Key	Durante Park	Durante Park	Durante Park	Sarasota Baywalk	Sarasota
Baywalk							
		Site R 3	Site R 4	Site R 5	Site R 6	Site R 7	Site R 8
Species name	Common name	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Leiostomus xanthurus	Spot	38.7 ± 21.8	0.0 ± 0.0	991.7 ± 98.6	256.4 ± 253.6	0.2 ± 0.2	0.0 ± 0.0
Mugil spp.	Assorted mullet	1.3 ± 1.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil cephalus	Striped mullet	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	23.7 ± 15.5	25.6 ± 24
Farfantepenaeus duorarum	Pink shrimp	4.5 ± 2.7	0.0 ± 0.0	0.0 ± 0.0	30.2 ± 29.7	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	1.3 ± 0.6	0.0 ± 0.0	0.0 ± 0.0	1.1 ± 1.1	0.4 ± 0.4	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.6 ± 0.6	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.7 ± 2.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.1 ± 1.9	2.6 ± 2.6
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	4.5 ± 2.6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.1 ± 1.1	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 3.2-14. (Continued)

Species name	Common name	Sarasota Baywalk Site R 9 Mean ± SE	Sixth St Canal Site R 10 Mean ± SE	Sixth St Canal Site R 11 Mean ± SE	Hog Creek Site R 12 Mean ± SE	Hog Creek Site R 13 Mean ± SE	Selby Shoreline Site R 14 Mean ± SE
Leiostomus xanthurus	Spot	857.1 ± 857.1	0.0 ± 0.0	415.7 ± 251.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil cephalus	Striped mullet	366.1 ± 365.6	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	4.2 ± 2.9	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.9 ± 0.7	0.2 ± 0.2	3.0 ± 3.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.0 ± 1.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1 ± 1	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.4 ± 0.2	0.4 ± 0.3	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 3.2-14. (Continued)

Species name	Common name	Selby Shoreline Site R 15 Mean ± SE	Palmer Point Site R 16 Mean ± SE	Bird Key Site R 17 Mean ± SE	Hidden Bay Site R 18 Mean ± SE	Total by species Mean ± SE
Leiostomus xanthurus	Spot	0.5 ± 0.5	158.1 ± 151.3	27.7 ± 16.2	0.6 ± 0.6	163.7 ± 60.6
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	34.7 ± 16.8
Mugil cephalus	Striped mullet	0.0 ± 0.0	91.2 ± 91.2	145.0 ± 119.0	0.0 ± 0.0	17.1 ± 9.9
Farfantepenaeus duorarum	Pink shrimp	0.2 ± 0.2	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	2.3 ± 1.1
Callinectes sapidus	Blue crab	0.0 ± 0.0	0.4 ± 0.4	0.7 ± 0.7	0.6 ± 0.6	1.0 ± 0.5
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.6 ± 0.6
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.4 ± 0.4	1.3 ± 1.3	0.0 ± 0.0	0.4 ± 0.2
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.3 ± 0.1
Mugil curema	White mullet	0.0 ± 0.0	0.4 ± 0.4	2.3 ± 2.3	0.0 ± 0.0	0.2 ± 0.1
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.8 ± 3.4	0.2 ± 0.1
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Lutjanus griseus	Gray snapper	0.2 ± 0.2	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	1.5 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

species). Mean species diversity was also highest at the Palmer Point Site (1.3), whereas the Selby Shoreline Site (0.5) had the lowest average species diversity.

The mean density and standard error for selected taxa were pooled and analyzed for natural and restored sampling locations for all sampling event (Table 3.2-15). Spot (*Leiostomus xanthurus*) was the most abundant selected taxa at both natural (158.5/100 m^2) and restored (170.1/100 m^2) stations, followed by *Mugil* spp. (50.8/100 m^2 at natural and 14.9 /100 m^2 at restored sites) both stations being the second most common species found. The overall density for selected taxa was slightly higher for the restored stations (230.7/100 m^2 compared to 212.2/100 m^2). The overall selected taxa species richness was also greater at the restored stations, 16 species being observed, whereas 10 selected taxa were observed at natural stations.

The mean density and standard error were also evaluated by guild pooled for both natural and restored location for all sampling events. Table 3.2-16 presents the results of the analysis by guild for natural and restored stations. Overall, natural stations had the greatest mean densities for the resident (1,190.5/100 m^2) and transient (1,196.3/100 m^2) guilds, with the exception of the nursery (368.5/100 m^2 at restored sites) guild. The most apparent difference between natural and restored stations was the observed density of the transient species (1,196.3/100 m^2 at natural sites and 493.0/100 m^2 at restored sites). The overall mean density was 2,678/100 m^2 for the natural stations and 1669/100 m^2 for the restored habitats.

Five extreme density values above 9,670/100 m^2 were observed for natural stations and five extreme values above 5,579/100 m^2 were observed for the restored habitat stations. These extreme high values contributed to a non-normal distribution of the mean density data for both habitat types. The data was subsequently log transformed, however both sets of stations were still non-normally distributed.

Table 3.2-15. **Mean density (#/100 m^2) and standard error (± SE) for selected taxa pooled by natural (n=88) and restored (n=72) location for all sampling events.**

Site Type Species name	Common name	Natural Mean ± SE	Restored Mean ± SE
Leiostomus xanthurus	Spot	158.5 ± 96.1	170.1 ± 75.4
Mugil spp.	Assorted mullet	50.8 ± 27.5	14.9 ± 10.4
Mugil cephalus	Striped mullet	1.1 ± 0.5	36.5 ± 21.9
Farfantepenaeus duorarum	Pink shrimp	0.3 ± 0.1	4.8 ± 2.1
Callinectes sapidus	Blue crab	1.1 ± 0.9	0.8 ± 0.5
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	1.4 ± 1.3
Sciaenops ocellatus	Red drum	0.1 ± 0.1	0.7 ± 0.5
Cynoscion nebulosus	Spotted seatrout	0.2 ± 0.2	0.3 ± 0.3
Mugil curema	White mullet	0.0 ± 0.0	0.3 ± 0.3
Centropomus undecimalis	Snook	0.0 ± 0.0	0.3 ± 0.2
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.2 ± 0.2
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.1 ± 0.1
Pogonias cromis	Black drum	0.0 ± 0.0	0.1 ± 0.1
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.1 ± 0.0
Mycteroperca microlepis	Gag	0.1 ± 0.1	0.0 ± 0.0
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.1 ± 0.1
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		212.2± 111.6	230.7± 90.5

Table 3.2-16. **Mean density (#/100 m^2) and standard error (± SE) by guild pooled for natural and restored sampling locations for all sampling events.**

Site type	Natural	Restored
Number of Samples	88	72
Guild Name	Mean ± SE	Mean ± SE
Nursery	291.2 ± 121.7	368.5 ± 106.0
Resident	1190.5 ± 275.5	807.6 ± 222.4
Transient	1196.3 ± 629.9	493.0 ± 268.6

For the selected taxa, the mean overall density was 212.1/100 m^2 for the natural habitats and 231.2/100 m^2 for the restored habitats. Within the established guilds, the overall mean densities were 291.2/100 m^2, 1,190.7/100 m^2 and 1,196.3/100 m^2 for the nursery, resident and transient guilds, respectively, within the natural habitats and 368.5/100 m^2, 807.6/100 m^2, and 493.0/100 m^2 for the nursery, resident and transient guilds, respectively, within the restored habitats.

The fishery sampling stations were further categorized into four microhabitat types: channel, marsh edge, subtidal pool and seagrass. These microhabitat types more closely resembled the habitat types actually sampled using the FMRI FIM methodology and represent, in many cases, the microhabitat type adjacent to the shoreline targeted. Tables 3.2-17 and 3.2-18 present the results for all taxa and selected taxa, respectively, for the four-microhabitat types divided amongst natural and restored sites. The breakdown of stations included within each microhabitat type is provided in Table 2.3-1.

For the natural monitoring sites, the greatest mean density (6,363.0/100 m^2) was found for the channel microhabitat, followed by seagrass (2996.9/100 m^2), marsh edge (925.9/100 m^2) and subtidal pool 466.6/100 m^2), respectively. The higher mean densities observed for the natural channel and seagrass microhabitats reflect the presence of a large number of schooling species, such as the bay anchovy. For the restored monitoring sites, the seagrass exhibited the greatest overall mean density (2,617.7/100 m^2) followed by the subtidal pool (1,780.0/100 m^2), marsh edge (1,427.5/100 m^2) and channel (1,320.6/100 m^2) microhabitats, respectively. The mean density of taxa for the natural seagrass (2,996.9/100 m^2) site is only slightly higher than the mean density for the restored site (2617.7/100 m^2), whereas the natural channel sites (6,363.0/100 m^2) have a significantly higher density than the restored channel sites (1,320.6/100 m^2). Conversely, the restored site subtidal pool (1,780.0/100 m^2) and marsh edge (1,427.5/100 m^2) microhabitats have a greater mean density than the natural sites (466.6/100 m^2 and 925.9/100 m^2 for subtidal pool and marsh edge, respectively).

Table 3.2-17. Summary of mean density (#/100 m^2) by taxa within four microhabitat types at natural and restored sites.

	Microhabitat Type	Channel				Marsh Edge			
		Natural		Restored		Natural		Restored	
Species Name	Common Name	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error
Anchoa mitchilli	Bay anchovy	3747.9	3675.8	0.0	0.0	109.5	60.3	800.3	770.1
Lucania parva	Rainwater killifish	72.0	67.4	94.0	61.2	113.4	94.1	9.5	9.2
Gambusia holbrooki	Eastern mosquito fish	23.1	23.1	0.0	0.0	0.6	0.6	140.6	131.4
Leiostomus xanthurus	Spot	546.7	512.5	254.3	245.8	51.0	40.9	114.8	81.2
Menidia spp.	Assorted silverside	128.1	83.4	303.4	166.7	302.6	263.4	85.7	76.5
Harengula jaguana	Scaled sardine	1264.7	1264.7	0.0	0.0	1.0	1.0	0.9	0.6
Poecilia latipinna	Sailfin molly	35.7	30.7	20.8	13.8	1.1	1.0	90.6	58.0
Lagodon rhomboides	Pinfish	79.5	48.3	296.1	290.2	23.2	13.5	32.7	30.3
Eucinostomus spp.	Assorted mojarra	39.0	28.1	191.0	164.4	209.2	139.0	14.0	9.7
Cyprinodon variegatus	Sheepshead minnow	50.2	29.6	87.5	84.7	4.3	4.3	69.8	50.1
Mugil spp.	Assorted mullet	99.4	84.3	0.0	0.0	36.3	29.1	0.0	0.0
Fundulus grandis	Gulf killifish	25.4	23.0	42.5	41.4	0.7	0.3	4.5	3.3
Mugil cephalus	Striped mullet	1.4	1.4	1.0	1.0	1.8	1.5	23.4	17.7
Anchoa cubana	Cuban anchovy	133.8	133.8	0.0	0.0	0.0	0.0	0.0	0.0
Floridichthys carpio	Goldspotted killifish	22.1	12.7	0.0	0.0	10.9	6.7	1.2	1.2
Eucinostomus harengulus	Tidewater mojarra	24.7	24.4	10.5	5.2	23.6	15.2	15.2	11.4
Microgobius gulosus	Clown goby	6.3	6.3	0.0	0.0	10.7	5.0	2.4	2.4
Fundulus majalis	Striped killifish	2.7	1.6	0.0	0.0	7.4	6.7	8.7	8.6
Clupeidae spp.	Assorted herring	0.7	0.7	0.0	0.0	0.1	0.1	0.0	0.0
Eucinostomus gula	Silver jenny	0.0	0.0	0.5	0.5	4.6	3.3	4.7	4.2
Anchoa hepsetus	Striped anchovy	33.8	33.8	0.0	0.0	0.0	0.0	0.0	0.0
Brevoortia spp.	Assorted menhaden	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Farfantepenaeus duorarum	Pink shrimp	0.0	0.0	8.3	8.3	0.1	0.0	0.7	0.6
Strongylura notata	Redfin needlefish	2.6	1.7	0.5	0.5	1.4	0.9	3.9	3.5
Syngnathus scovelli	Gulf pipefish	0.0	0.0	4.2	4.2	0.9	0.8	0.2	0.2
Sphoeroides nephelus	Southern puffer	0.0	0.0	0.0	0.0	1.0	0.9	0.4	0.3
Callinectes sapidus	Blue crab	0.4	0.3	2.2	2.0	0.0	0.0	0.1	0.1
Fundulus spp.	Assorted killifish	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Lophogobius cyprinoides	Crested goby	1.4	1.4	0.0	0.0	5.0	5.0	0.0	0.0
Heterandria formosa	Least killifish	8.4	8.4	0.0	0.0	0.0	0.0	0.0	0.0
Oligoplites saurus	Leatherjacket	0.3	0.3	3.1	3.1	0.2	0.1	0.2	0.1
Scomberomorus maculatus	Spanish mackerel	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
Adinia xenica	Diamond killifish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lucania goodei	Bluefin killifish	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Sciaenops ocellatus	Red drum	0.0	0.0	2.1	2.1	0.0	0.0	0.1	0.1
Opsanus beta	Gulf toadfish	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Synodus foetens	Inshore lizardfish	0.0	0.0	2.1	2.1	0.0	0.0	0.1	0.1
Cynoscion nebulosus	Spotted seatrout	0.3	0.3	0.0	0.0	0.3	0.2	0.0	0.0
Gobiosoma spp.	Assorted goby	0.7	0.7	0.0	0.0	0.4	0.4	0.0	0.0
Orthopristis chrysoptera	Pigfish	0.0	0.0	0.0	0.0	1.1	0.7	0.4	0.4
Urophycis floridana	Southern hake	0.0	0.0	2.1	2.1	0.0	0.0	0.0	0.0
Mugil curema	White mullet	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
Bairdiella chrysoura	Silver perch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

STD Error: Standard Error of Means

Table 3.2-17. (Continued)

	Microhabitat Type	Channel				Marsh Edge			
		Natural		Restored		Natural		Restored	
Species Name	Common name	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error
Strongylura timucu	Timucu	1.6	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Chilomycterus schoepfi	Striped burrfish	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0
Micropterus salmoides	Largemouth bass	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Centropomus undecimalis	Snook	0.0	0.0	1.4	1.4	0.1	0.1	0.0	0.0
Megalops atlanticus	Tarpon	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
Gobiosoma robustum	Code goby	0.0	0.0	0.0	0.0	0.6	0.6	0.1	0.1
Syngnathus floridae	Dusky pipefish	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0
Strongylura marina	Atlantic needlefish	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Diplodus holbrooki	Spottail pinfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hippocampus zosterae	Dwarf seahorse	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0
Achirus lineatus	Lined sole	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.1
Lutjanus griseus	Gray snapper	0.2	0.2	0.3	0.3	0.0	0.0	0.1	0.1
Gobiosoma bosc	Naked goby	0.1	0.1	0.0	0.0	0.2	0.2	0.0	0.0
Bathygobius soporator	Frillfin goby	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Pogonias cromis	Black drum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Archosargus probatocephalus	Sheepshead	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0
Mycteroperca microlepis	Gag	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mugil gyrans	Fantail mullet	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Strongylura spp.	Assorted needlefish	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Diapterus plumieri	Striped mojarra	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0
Calamus arctifrons	Grass porgy	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
Lepomis spp.	Bluegill	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Syngnathus louisianae	Chain pipefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinectes maculatus	Hogchoker	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fundulus confluentus	Marsh killifish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Limulus polyphemus	Horseshoe crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chaetodipterus faber	Atlantic spadefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aluterus schoepfi	Orange filefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monacanthus hispidus	Planehead filefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sphyraena barracuda	Great barracuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dasyatis say	Bluntnose stingray	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haemulon parrai	Sailors choice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lutjanus synagris	Lane snapper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Menticirrhus saxatilis	Northern kingfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paralichthys albigutta	Gulf flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Selene vomer	Lookdown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Mean Density	6363.0		1328.6		925.9		1427.5	
	Standard Error of Means	49.5		6.6		5.0		10.3	
	Total Species Richness	40		23		42		38	

STD Error: Standard Error of Means

Table 3.2-17. (Continued)

	Microhabitat Type	Subtidal Pool				Seagrass			
		Natural		Restored		Natural		Restored	
Species Name	Common name	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error
Anchoa mitchilli	Bay anchovy	1.8	1.8	15.4	10.2	488.8	424.6	1143.8	576.5
Lucania parva	Rainwater killifish	11.4	6.0	11.7	9.8	1410.6	668.8	240.0	100.7
Gambusia holbrooki	Eastern mosquito fish	0.1	0.1	873.1	873.1	318.0	318.0	0.0	0.0
Leiostomus xanthurus	Spot	35.9	35.3	9.7	9.7	100.2	56.0	357.9	154.2
Menidia spp.	Assorted silverside	11.4	10.8	51.8	35.8	200.3	106.4	141.6	40.1
Harengula jaguana	Scaled sardine	55.7	55.7	0.0	0.0	1.6	1.6	1.8	1.4
Poecilia latipinna	Sailfin molly	4.3	4.1	719.4	715.8	73.2	72.8	21.1	16.8
Lagodon rhomboides	Pinfish	10.9	9.5	5.7	4.8	136.7	42.1	276.7	68.9
Eucinostomus spp.	Assorted mojarra	28.6	24.2	16.2	12.4	142.1	90.9	82.8	28.4
Cyprinodon variegatus	Sheepshead minnow	37.8	37.4	17.0	9.8	17.3	11.5	46.1	36.8
Mugil spp.	Assorted mullet	129.2	129.2	0.3	0.3	2.5	2.4	66.8	53.5
Fundulus grandis	Gulf killifish	116.8	116.6	2.0	1.2	9.7	5.8	18.7	6.6
Mugil cephalus	Striped mullet	0.2	0.1	6.1	5.9	1.6	0.9	127.8	71.7
Anchoa cubana	Cuban anchovy	0.0	0.0	0.0	0.0	2.2	2.2	0.0	0.0
Floridichthys carpio	Goldspotted killifish	4.7	4.0	2.0	1.2	27.9	7.7	10.6	5.3
Eucinostomus harengulus	Tidewater mojarra	0.4	0.3	19.1	12.3	0.1	0.1	0.5	0.3
Microgobius gulosus	Clown goby	2.3	1.5	3.5	3.5	14.3	14.0	6.0	4.8
Fundulus majalis	Striped killifish	2.1	2.1	5.6	3.3	11.3	9.1	8.5	5.5
Clupeidae spp.	Assorted herring	0.0	0.0	0.5	0.5	23.1	19.5	4.6	3.5
Eucinostomus gula	Silver jenny	0.6	0.6	16.8	10.8	3.8	2.2	3.1	1.2
Anchoa hepsetus	Striped anchovy	2.1	2.1	0.2	0.2	0.3	0.3	0.0	0.0
Brevoortia spp.	Assorted menhaden	0.1	0.1	0.0	0.0	0.0	0.0	30.0	24.0
Farfantepenaeus duorarum	Pink shrimp	0.3	0.3	1.2	1.1	0.6	0.2	11.1	5.9
Strongylura notata	Redfin needlefish	0.1	0.1	0.1	0.1	0.3	0.2	0.5	0.1
Syngnathus scovelli	Gulf pipefish	0.2	0.2	0.0	0.0	1.4	0.9	1.2	0.6
Sphoeroides nephelus	Southern puffer	1.2	1.1	0.1	0.1	1.6	1.2	3.1	1.4
Callinectes sapidus	Blue crab	0.1	0.1	0.4	0.3	2.6	2.2	0.7	0.2
Fundulus spp.	Assorted killifish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lophogobius cyprinoides	Crested goby	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0
Heterandria formosa	Least killifish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oligoplites saurus	Leatherjacket	0.3	0.2	0.5	0.5	0.6	0.3	1.0	0.3
Scomberomorus maculatus	Spanish mackerel	0.0	0.0	0.0	0.0	0.0	0.0	5.9	4.7
Adinia xenica	Diamond killifish	6.3	6.3	0.0	0.0	0.0	0.0	0.0	0.0
Lucania goodei	Bluefin killifish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sciaenops ocellatus	Red drum	0.0	0.0	0.3	0.2	0.2	0.2	0.8	0.3
Opsanus beta	Gulf toadfish	0.0	0.0	0.0	0.0	1.3	1.3	0.0	0.0
Synodus foetens	Inshore lizardfish	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.1
Cynoscion nebulosus	Spotted seatrout	0.5	0.5	0.0	0.0	0.1	0.0	1.4	0.6
Gobiosoma spp.	Assorted goby	0.1	0.1	0.0	0.0	0.0	0.0	1.0	0.8
Orthopristis chrysoptera	Pigfish	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0
Urophycis floridana	Southern hake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mugil curema	White mullet	0.2	0.2	0.5	0.5	0.0	0.0	0.6	0.5
Bairdiella chrysoura	Silver perch	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0

STD Error: Standard Error of Means

Table 3.2-17. (Continued)

Species Name	Common name	Subtidal Pool – Natural – Mean Density	Subtidal Pool – Natural – STD Error	Subtidal Pool – Restored – Mean Density	Subtidal Pool – Restored – STD Error	Seagrass – Natural – Mean Density	Seagrass – Natural – STD Error	Seagrass – Restored – Mean Density	Seagrass – Restored – STD Error
Strongylura timucu	Timucu	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Chilomycterus schoepfi	Striped burrfish	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.3
Micropterus salmoides	Largemouth bass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Centropomus undecimalis	Snook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Megalops atlanticus	Tarpon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gobiosoma robustum	Code goby	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Syngnathus floridae	Dusky pipefish	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Strongylura marina	Atlantic needlefish	0.2	0.2	0.0	0.0	0.2	0.1	0.0	0.0
Diplodus holbrooki	Spottail pinfish	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0
Hippocampus zosterae	Dwarf seahorse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Achirus lineatus	Lined sole	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Lutjanus griseus	Gray snapper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gobiosoma bosc	Naked goby	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Bathygobius soporator	Frillfin goby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pogonias cromis	Black drum	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
Archosargus probatocephalus	Sheepshead	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Mycteroperca microlepis	Gag	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0
Mugil gyrans	Fantail mullet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strongylura spp.	Assorted needlefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diapterus plumieri	Striped mojarra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calamus arctifrons	Grass porgy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lepomis spp.	Bluegill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Syngnathus louisianae	Chain pipefish	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Trinectes maculatus	Hogchoker	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Fundulus confluentus	Marsh killifish	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Limulus polyphemus	Horseshoe crab	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Chaetodipterus faber	Atlantic spadefish	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Aluterus schoepfi	Orange filefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monacanthus hispidus	Planehead filefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sphyraena barracuda	Great barracuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dasyatis say	Bluntnose stingray	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haemulon parrai	Sailors choice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lutjanus synagris	Lane snapper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Menticirrhus saxatilis	Northern kingfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paralichthys albigutta	Gulf flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Selene vomer	Lookdown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Mean Density	466.6		1780.0		2996.9		2617.7	
	Standard Error of Means	2.3		14		19.1		15.6	
	Total Species Richness	40		33		48		46	

STD Error: Standard Error of Means

Table 3.2-18 Mean dnsity (#100 m^2) of slected txa within fur microhabitat types at natural and restored sites.

	Microhabitat Type	Channel				Marsh Edge			
		Natural		Restored		Natural		Restored	
Species Name	Common name	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error
Leiostomus xanthurus	Spot	546.7	512.5	254.3	245.8	51.0	40.9	114.8	81.2
Mugil spp.	Assorted mullet	99.4	84.3	0.0	0.0	36.3	29.1	0.0	0.0
Mugil cephalus	Striped mullet	1.4	1.4	1.0	1.0	1.8	1.5	23.4	17.7
Farfantepenaeus duorarum	Pink shrimp	0.0	0.0	8.3	8.3	0.1	0.0	0.7	0.6
Callinectes sapidus	Blue crab	0.4	0.3	2.2	2.0	0.0	0.0	0.1	0.1
Scomberomorus maculatus	Spanish mackerel	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
Sciaenops ocellatus	Red drum	0.0	0.0	2.1	2.1	0.0	0.0	0.1	0.1
Cynoscion nebulosus	Spotted seatrout	0.3	0.3	0.0	0.0	0.3	0.2	0.0	0.0
Mugil curema	White mullet	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
Centropomus undecimalis	Snook	0.0	0.0	1.4	1.4	0.1	0.1	0.0	0.0
Megalops atlanticus	Tarpon	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
Lutjanus griseus	Gray snapper	0.2	0.2	0.3	0.3	0.0	0.0	0.1	0.1
Pogonias cromis	Black drum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Archosargus probatocephalus	Sheepshead	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0
Mycteroperca microlepis	Gag	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mugil gyrans	Fantail mullet	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Lutjanus synagris	Lane snapper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Menticirrhus saxatilis	Northern kingfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paralichthys albigutta	Gulf flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Mean Density		648.5		270.0		89.7		140.9	
Standard Error of Means		27.1		12.9		2.6		4.3	
Total Species Richness		8		8		10		10	

STD Error: Standard Error of Means

Table 3.2-18. (Continued)

	Microhabitat Type	Subtidal Pool				Seagrass			
		Natural		Restored		Natural		Restored	
Species Name	Common name	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error	Mean Density	STD Error
Leiostomus xanthurus	Spot	35.9	35.3	9.7	9.7	100.2	56.0	357.9	154.2
Mugil spp.	Assorted mullet	129.2	129.2	0.3	0.3	2.5	2.4	66.8	53.5
Mugil cephalus	Striped mullet	0.2	0.1	6.1	5.9	1.6	0.9	127.8	71.7
Farfantepenaeus duorarum	Pink shrimp	0.3	0.3	1.2	1.1	0.6	0.2	11.1	5.9
Callinectes sapidus	Blue crab	0.1	0.1	0.4	0.3	2.6	2.2	0.7	0.2
Scomberomorus maculatus	Spanish mackerel	0.0	0.0	0.0	0.0	0.0	0.0	5.9	4.7
Sciaenops ocellatus	Red drum	0.0	0.0	0.3	0.2	0.2	0.2	0.8	0.3
Cynoscion nebulosus	Spotted seatrout	0.5	0.5	0.0	0.0	0.1	0.0	1.4	0.6
Mugil curema	White mullet	0.2	0.2	0.5	0.5	0.0	0.0	0.6	0.5
Centropomus undecimalis	Snook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Megalops atlanticus	Tarpon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lutjanus griseus	Gray snapper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pogonias cromis	Black drum	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
Archosargus probatocephalus	Sheepshead	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Mycteroperca microlepis	Gag	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0
Mugil gyrans	Fantail mullet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lutjanus synagris	Lane snapper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Menticirrhus saxatilis	Northern kingfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paralichthys albigutta	Gulf flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Mean Density		166.3		19.2		107.9		573.3	
Standard Error of Means		6.9		0.6		2.9		8.9	
Total Species Richness		7		9		10		12	

STD Error: Standard Error of Means

When the microhabitat analysis is refined to just the selected taxa, a different set of results is found. The natural channel sites mean density (648.5/100 m^2) is still the greatest for all sites and is more than two times that for the restored sites (270.0/100 m^2). The natural subtidal pool sites (166.3/100 m^2) also have substantially greater abundance than the restored sites (19.2/100 m^2). Conversely, the restored marsh edge (140.9/100 m^2) and seagrass (573.3/100 m^2) sites had a higher total mean density than that of the natural sites (89.7/100 m^2 and 107.9/100 m^2 for marsh edge and seagrass sites, respectively). When evaluating total species richness, both the channel (8 species) and the marsh edge (10 species) microhabitat types have the same total species richness for both natural and restored sites. For the seagrass and subtidal pool microhabitat types, the restored sites actually recorded two more total species than their natural counterpart.

Evaluating the individual selected taxa, different results are found between natural and restored sites (Table 3.2-18). For *Leiostomus xanthurus*, the channel (546.7/100 m^2), and subtidal pool (35.9/100 m^2) sites had a greater density than their restored site counterparts (254.3/100 m^2 for channel and 9.7/100 m^2 for subtidal pools), whereas the opposite is true for both the marsh edge and the seagrass sites, where the restored sites (114.8/100 m^2 for marsh edge and 357.9/100 m^2 for seagrass) have a greater mean density than that of the natural sites (51.0/100 m^2 for marsh edge and 100.2/100 m^2 for seagrass). *Leiostomus xanthurus* reached its greatest mean density within the natural channel (546.7/100 m^2) and was lowest within the restored subtidal pool sites (9.7/100 m^2). The differences were even more dramatic for the *Mugil* spp. (combined total of all *Mugil* spp.) where higher numbers were found in natural channel (100.8/100 m^2) and subtidal pool sites (129.6/100 m^2) and observed densities for the marsh edge were similar between natural (38.1/100 m^2) and restored sites (24.3/100 m^2). *Mugil* spp. densities within the restored seagrass habitats (296.3/100 m^2) were substantially higher than that of the natural seagrass (4.1/100 m^2) microhabitats. Looking at the selected taxa that are game fish, spotted seatrout (*Cynoscion nebulosus*) was observed at every natural microhabitat type but was only found in one restored microhabitat type (seagrass). Conversely, the red drum (*Sciaenops ocellatus*) was observed at every restored habitat type but was only observed within the natural seagrass microhabitat type.

Table 3.2-19 provides the mean density of taxa within three guilds for natural and restored sites within the four-microhabitat types. Within the channel microhabitat type, the natural nursery (727.5/100 m^2) and transient (5,210.9/100 m^2) guilds have higher mean density of that of their restored counterpart (563.8/100 m^2 for nursery and 10.3/100 m^2 for transient), whereas the restored resident species were greater in mean density (754.4/100 m^2) than the natural channel (424.5/100 m^2) sites. The opposite of this held true for the marsh edge sites where the observed densities for nursery (174.2/100 m^2) and transient (946.5/100 m^2) guilds for restored marsh edge were greater than the mean densities for natural sites (115.0/100 m^2 for nursery and 114.3/100 m^2 for transient guilds) and the resident natural marsh edge species (696.6/100 m^2) had a greater mean density of that of the restored sites (306.8/100 m^2). The seagrass microhabitat type also followed this pattern with a greater mean density for the nursery (852.6/100 m^2) and transient (1,183.3/100 m^2) guilds within the restored sites (compared to 245.2/100 m^2 for nursery and 839.2/100 m^2 for transients at natural sites) and a lower mean density for the resident (581.8/100 m^2 compared to 1,912.4/100 m^2 for natural) guild. For subtidal pool, the nursery guild mean density was greater for the natural sites (170.5/100 m^2) than the restored sites (24.5/100 m^2), whereas the resident (865.0/100 m^2) and transient (890.4/100 m^2) species were in greater mean density in the restored sites than at the natural sites (227.3/100 m^2 for the resident species and 60.8/100 m^2 for transient species) subtidal pools.

The total species richness observed within the various microhabitat types and guilds presents some contrast. For the nursery guild, the number of species (between natural and restored sites) is closely tied between all four microhabitat types, not varying by more than three species. The resident species guild is dramatically different between the natural and restored sites, especially for the channel sites where 19 species were observed for natural channel sites compared to 9 for restored channel sites. The total number of resident species observed

Table 3.2-19. Mean density (#100 m^2) of taxa within three guilds within four microhabitat types at natural and restored sites.

Natural

Guild		Microhabitat Channel	Marsh Edge	Subtidal Pool	Seagrass
Nursery	Total Mean Density	727.5	115.0	178.5	245.2
	Standard Error of Means	22.1	2.6	5.3	6.6
	Total Species Richness	8	14	9	15
Resident	Total Mean Density	424.5	696.6	227.3	1912.4
	Standard Error of Means	5.6	13.7	4.5	52.3
	Total Species Richness	19	19	19	15
Transient	Total Mean Density	5210.9	114.3	60.8	839.2
	Standard Error of Means	139.4	3.9	2.0	20.4
	Total Species Richness	13	9	12	18

Restored

Guild		Microhabitat Channel	Marsh Edge	Subtidal Pool	Seagrass
Nursery	Total Mean Density	563.8	174.2	24.5	852.6
	Standard Error of Means	15.3	4.8	0.5	18.1
	Total Species Richness	8	12	10	17
Resident	Total Mean Density	754.4	306.8	865.0	581.8
	Standard Error of Means	13.4	5.0	26.5	10.3
	Total Species Richness	9	14	12	17
Transient	Total Mean Density	10.3	946.5	890.4	1183.3
	Standard Error of Means	0.2	28.8	31.2	40.8
	Total Species Richness	6	12	10	12

for the natural marsh edge (19 species) and subtidal pool (19 species) sites were also above that of the resident species within the restored site counterpart (14 species for marsh edge and 12 species for subtidal pool), whereas the restored seagrass sites actually had two more species (17 species) observed than the natural seagrass sites (15 species). The total species richness for transient species was also higher at three of the four natural microhabitats, the exception being the marsh edge where three more species were observed within restored habitat types (12 species compared to 9 species).

3.3 Artificial Reef Assessment Results

The artificial reef assessment surveys occurred during late winter (February 21, 22 and 26, 2002) and early summer (June 17, 20, 27 and 28, 2002) at the 14 artificial reef stations and 3 reef sites. Table 3.3-1 presents a master species list with scientific name, common name, family name and selected taxa status for all observed species. The number of each species, by size class, is also provided for both sampling seasons.

During the February surveys, there was an extensive amount of drift algae present at all sites. The drift algae were 0.3 to 0.5 m in depth around the reef material. Since all individuals within one-meter of the reef structure were counted, some individuals counted may have been related to the drift algae more so than the reef material. However, the species that were found over the drift algae were also found over the reef material. However, the ubiquitous *Lagodon rhomboides*, primarily the early juvenile stage, was most prevalent over the drift algae. The drift algae disappeared before the June surveys. Reduced visibility during the June surveys may have reduced the number of observations, especially at the Hart and Gerkin sites.

A total of approximately 59,027 individuals within 27 species or species groups were observed. Eighteen species were observed during the February surveys and 23 species were observed during the June surveys. Clupeidae spp., *Haemulon aurolineatum*, larval fish and *Lagodon rhomboides* were the dominant species observed (see Table 3.3-1). These four

Table 3.3-1. Master species list for the artificial reef assessment surveys and total number of individuals observed at each station by sampling season.

Scientific name	Common Name	Family Name	Selected Taxa	February				June			
				EJ	JUV	SA	A	EJ	JUV	SA	A
Acanthostracion quadricornis	Cowfish	Ostraciidae		0	0	0	0	0	0	0	1
Archosargus probatocephalus	Sheepshead	Sparidae	X	1	8	11	101	0	34	48	51
Balistidae spp.	Filefish	Balistidae		0	0	0	0	0	15	2	2
Blenniidae spp.	Blenny	Blenniidae		0	0	0	6	0	0	0	1
Calamus sp.	Porgy	Sparidae		0	0	0	0	0	0	1	0
Callinectes sapidus	Blue Crab	Portunidae	X	0	0	0	7	0	2	0	5
Chaetodipterus faber	Atlantic Spadefish	Ephippidae		0	0	155	27	0	25	17	19
Chilomycterus schoepfi	Striped Burrfish	Diodontidae		0	0	0	0	0	0	0	1
Clupeidae spp.	Sardine	Clupeidae spp.		0	0	0	0	15,000	25,100	0	0
Diplectrum formosum	Sand Perch	Serranidae		0	0	0	2	0	0	0	0
Diplodus holbrooki	Spottail Pinfish	Sparidae		118	151	0	11	0	11	16	6
Eucinostomus spp.	Mojarra	Gerridae		0	0	0	0	8	0	0	0
Gobiidae sp.	Goby	Gobiidae sp.		0	0	0	6	0	1	0	0
Haemulon aurolineatum	Tomtate	Pomadasyidae		6,318	5	1	0	0	4	5	0
Haemulon plumieri	White Grunt	Pomadasyidae		0	6	4	0	0	1	7	5
Lagodon rhomboides	Pinfish	Sparidae		3,054	331	16	1	1	85	524	15
Larval fish	Larval Fish	---		5,641	0	0	0	600	0	0	0
Leiostomus xanthurus	Spot	Sciaenidae	X	0	1	0	0	0	143	3	0
Lutjanus griseus	Gray Snapper	Lutjanidae	X	11	60	57	49	0	257	378	77
Lutjanus synagris	Lane Snapper	Lutjanidae	X	0	0	0	0	0	0	1	0
Menippe mercenaria	Stone Crab	Xanthidae	X	1	21	23	66	0	15	47	62
Mycteroperca microlepsis	Gag	Serranidae	X	0	1	9	7	0	39	15	4
Mycteroperca phenax	Scamp	Serranidae	X	0	0	4	0	0	0	0	0
Opsanus beta	Oyster toadfish	Batrachoididae		0	0	0	0	0	0	0	4
Orthopristis chrysoptera	Pigfish	Pomadasyidae		0	0	0	0	0	46	27	2
Prionotus sp.	Searobin	Trigilidae		0	0	0	2	0	0	0	0
Scorpaenidae sp.	Scorpion fish	Scorpaenidae sp.		0	0	0	1	0	0	0	0
		Total		15,144	584	280	286	15,609	25,778	1,091	255

[1]Selected taxa- Commercially and/or Recreationally important species.
EJ – Early-Juvenile, JUV – Juvenile, SA – Subadult, A - Adult

species groups comprised 96% of all individuals. The early-juvenile (30,753) and juvenile (26,362) size classes were most often observed. These two size classes combined for roughly 97% of the total fish count, with a little over 2% for subadults and less than 1% for adults. Over 72% of the individuals observed were recorded for the June season, however, the percentage drops to 14% when Clupeidae spp. are excluded.

Table 3.3-2 provides summary statistic for the non-selected taxa pool for both sampling season and all reef sites. A total of 57,408 individuals were estimated comprising over 97% of the total number of individuals counted.

As seen in Table 3.3-2, Clupeidae spp was the dominant non-selected taxa for both the early juvenile (15,000 individuals) and juvenile (25,100 individuals) life classes. Although comprising a large percentage (69.9%) of the number of individuals, this species occurred with relative infrequency at the stations. *Lagodon rhomboides* was the most frequently encountered species within all four size classes (16 to 64%). *Haemulon aurolineatum* was the second most abundant (6,333 individuals) and the second frequently encountered species for both the early juvenile (23%) and juvenile classes (11%), while the *Chaetodipterus faber* was the second most frequently encountered species within the juvenile (11%), subadult (14%) and adult (14%) categories. The number of non-selected taxa individuals decreased as the size class increased (30,740 early-juvenile to 112 adults). Conversely, the number of species encountered actually increased as the size class increased (from six at the early juvenile stage to 14 at the adult stage).

The summary statistics for the selected taxa observed in the artificial reef assessment are presented in Table 3.3-3. Select taxa accounted for less than 3% of the total number of individuals observed during the survey. *Lutjanus griseus* was the dominant selected taxa observed (889 individuals), followed by *Archosargus probatocephalus* at 254 individuals and *Menippe mercenaria at* 235 individuals. Contrary to that which was observed for the non-selected taxa, the early juvenile category had the lowest number of observations with

Table 3.3-2 Summary statistics for non-selected[1] taxa observed during the artificial reef assessment.

Species name	Early Juvenile			Juvenile			Subadult			Adult		
	Number	Percent	Frequency	Number	Percent	Frequency	Number	Percent	Frequency	Number	Percent	Frequency
Acanthostracion quadricornis	0	0	0	0	0	0	0	0	0	1	100	2
Balistidae spp.	0	0	0	15	79	7	2	11	4	2	11	4
Blenniidae spp.	0	0	0	0	0	0	0	0	0	7	100	5
Calamus sp.	0	0	0	0	0	0	1	100	2	0	0	0
Chaetodipterus faber	0	0	0	25	10	11	172	71	14	46	19	14
Chilomycterus schoepfi	0	0	0	0	0	0	0	0	0	1	100	2
Clupeidae spp.	15,000	37	3	25,100	63	6	0	0	0	0	0	0
Diplectrum formosum	0	0	0	0	0	0	0	0	0	2	100	4
Diplodus holbrooki	118	38	13	162	52	7	16	5	5	17	5	13
Eucinostomus spp.	8	100	5	0	0	0	0	0	0	0	0	0
Gobiidae sp.	0	0	0	1	14	2	0	0	0	6	86	5
Haemulon aurolineatum	6,318	100	23	9	0	11	6	0	7	0	0	0
Haemulon plumieri	0	0	0	7	30	5	11	48	14	5	22	9
Lagodon rhomboides	3,055	76	45	416	10	64	540	13	29	16	0	16
Larval fish	6,241	100	18	0	0	0	0	0	0	0	0	0
Opsanus beta	0	0	0	0	0	0	0	0	0	4	100	5
Orthopristis chrysoptera	0	0	0	46	61	5	27	36	7	2	3	4
Prionotus sp.	0	0	0	0	0	0	0	0	0	2	100	4
Scorpaenidae sp.	0	0	0	0	0	0	0	0	0	1	100	2
Total	30,740			25,781			775			112		

[1]Species not listed as Commercially or Recreationally important.

Table 3.3-3 Summary statistics for selected taxa[1] observed during the artificial reef assessment.

Species name	Early Juvenile			Juvenile			Subadult			Adult		
	Number	Percent	Frequency	Number	Percent	Frequency	Number	Percent	Frequency	Number	Percent	Frequency
Archosargus probatocephalus	1	0	2	42	17	29	59	23	38	152	60	54
Callinectes sapidus	0	0	0	2	14	0	0	0	0	12	86	4
Leiostomus xanthurus	0	0	0	144	98	7	3	2	2	0	0	0
Lutjanus griseus	11	1	9	317	36	73	435	49	64	126	14	38
Lutjanus synagris	0	0	0	0	0	0	1	100	2	0	0	0
Menippe mercenaria	1	0	4	36	15	30	70	30	38	128	54	59
Mycteroperca microlepsis	0	0	0	40	53	25	24	32	16	11	15	14
Mycteroperca phenax	0	0	0	0	0	0	4	100	4	0	0	0
Total	13			581			596			429		

[1]Sp ecies listed as Commercially or Recreationally important.

only 13 individuals being noted within three species. The number of selected taxa observed was actually higher in the subadult category (596 individuals), followed closely by the juvenile category (581 individuals) and then the adult category (429 individuals). Of the eight selected taxa observed, three species were observed at the early juvenile stage, six at the juvenile stage, seven at the subadult stage and five at the adult stage.

In addition to being the most abundant species of selected taxa observed, *Lutjanus griseus* was the most frequently encountered species during the sampling for both the early juvenile (9%), juvenile (73%) and sub adult (64%) categories. *Menippe mercenaria* was the most frequently observed species in the adult category (59%) and was the second most commonly frequency encountered species for the early-juvenile (4%), juvenile (30%) and subadult (38%) categories. *Archosargus probatocephalus* was also the second most frequently observed subadult (38%) and adult (54%). Most selected taxa were observed at multiple life stages, with the only exceptions being *Lutjanus synagris* and *Mycteroperca phenax*, which were only observed as subadults. Of the eight selected taxa, six were finfish and two were shellfish (*Callinectes sapidus* and *Menippe mercenaria*).

Table 3.3-4 provides a comparison of the mean density of selected and non-selected taxa between the three different reef sites. For the early-juvenile size class, the highest overall density (6,343.9/100 m^2) and the greatest occurrence (6.3%) were at the Hart site, while species richness (7 species) was highest at the Walker site. The selected taxa density (21.4/100 m^2) and percent occurrence (2.5%) were highest at the Gerkin site, while the non-selected species were at their highest density (6,342.3/100 m^2) and percent occurrence (8.7%) at the Hart site.

The density of early-juvenile *Lutjanus griseus* was substantially higher at the Gerkin site (20.5/100 m^2). The only other early-juvenile observed at this site was *Archosargus probatocephalus*. One early-juvenile *Menippe mercenaria* was observed at the Hart site. *Haemulon aurolineatum* density was highest at the Gerkin site (3,758.5/100 m^2), but this

Table 3.3-4. Comparison of mean density (#/100 m^2) of selected and non-selected taxa between the Gerkin, Hart and Walker reef sites.

	Gerkin											
	Early-Juvenile			**Juvenile**			**Subadult**			**Adult**		
Species Name	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**
Selected Taxa												
Lutjanus griseus	20.5	14.5	15	379.4	108.1	85	296.0	82.2	85	58.1	18.2	55
Archosargus probatocephalus	0.9	0.9	5	116.9	41.4	65	83.1	35.0	60	46.3	16.7	60
Menippe mercenaria	0.0	0.0	0	4.7	2.6	30	15.2	10.4	10	48.8	23.2	50
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	24.5	13.6	20	0.2	0.2	5	0.9	0.9	5
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	21.4	2.6	2.5	525.5	47.0	25.0	394.4	36.7	20.0	154.1	9.4	21.3
Non-selected Taxa												
Haemulon aurolineatum	3758.5	2366.0	15	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	106.7	106.7	5	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	1847.8	998.3	45	138.1	58.0	50	28.4	16.1	30	9.5	7.6	20
Diplodus holbrooki	0.0	0.0	0	0.2	0.2	5	0.4	0.4	5	22.4	10.4	35
Chaetodipterus faber	0.0	0.0	0	18.9	10.1	25	122.8	61.6	25	2.6	2.3	10
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	3.8	3.8	5
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	7.6	7.6	5	3.8	3.8	5
Balistidae spp.	0.0	0.0	0	0.2	0.2	5	1.8	1.8	5	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	1.5	0.9	15
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	3.8	3.8	5
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	11.4	8.3	10
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	15.2	10.4	10
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	5713.0	226.8	3.6	157.4	7.7	4.7	161.0	6.9	3.9	73.9	1.5	6.4
Total All Taxa	5734.4	158.3	3.3	683.0	15.7	11.0	555.5	12.3	8.8	228.0	3.3	11.0
Percent Dominant's Density	97.8			92.9			95.5			83.7		
Percent Non-dominant's Density	2.2			7.1			4.5			16.3		
Species Richness	5			8			9			13		

Table 3.3-4. (Continued)

	Hart											
	Early-Juvenile			Juvenile			Subadult			Adult		
Species Name	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa												
Lutjanus griseus	1.6	1.6	6	42.2	20.5	50	91.4	36.2	56	46.9	21.4	44
Archosargus probatocephalus	0.0	0.0	0	3.2	3.2	6	39.0	20.3	44	273.2	81.4	88
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	28.4	20.6	13
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	10.2	9.2	25	9.8	9.4	19
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	1.6	0.2	0.8	45.4	5.2	7.0	140.6	11.6	15.6	358.3	33.2	20.3
Non-selected Taxa												
Haemulon aurolineatum	1993.1	1132.9	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	2385.8	1696.1	19	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	1881.4	706.8	50	235.2	104.6	50	9.5	42.9	6	0.0	0.0	0
Diplodus holbrooki	53.5	32.8	25	0.0	0.0	0	0.3	0.3	6	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	6.9	5.0	13	52.4	26.3	38
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	1.0	0.9	13	1.0	0.6	25	28.6	15.2	25
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.3	0.2	13
Eucinostomus spp.	28.4	20.6	13	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.2	0.2	6	0.0	0.0	0	1.6	1.6	6
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	9.5	9.5	6
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.2	0.2	6
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	6342.3	189.4	8.7	236.4	13.1	3.8	17.8	0.6	2.8	92.6	3.2	5.2
Total All Taxa	6343.9	133.9	6.3	281.8	9.1	4.8	158.4	3.8	6.7	450.9	10.6	9.9
Percent Dominant's Density	0.0			98.4			94.8			95.3		
Percent Non-dominant's Density	100.0			1.6			5.2			4.7		
Species Richness	0			5			7			10		

Table 3.3-4. (Continued)

	Walker											
	Early-Juvenile			Juvenile			Subadult			Adult		
Species Name	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa												
Lutjanus griseus	0.3	0.3	5	325.6	111.1	80	573.6	256.7	50	11.4	6.9	15
Archosargus probatocephalus	0.0	0.0	0	2.9	2.8	10	1.8	1.5	10	7.5	3.6	20
Menippe mercenaria	0.5	0.5	5	53.4	14.2	50	113.6	21.2	90	167.6	23.9	100
Leiostomus xanthurus	0.0	0.0	0	46.9	24.8	20	1.4	1.4	5	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	65.4	23.4	50	4.5	2.4	20	1.8	0.9	20
Callinectes sapidus	0.0	0.0	0	1.0	0.8	5	0.0	0.0	0	26.6	15.5	30
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	1.0	0.8	10	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	3.8	3.8	5	0.0	0.0	0
Subtotal Selected Taxa	0.7	0.1	1.3	495.2	38.9	26.9	699.7	70.8	23.8	214.9	20.4	23.1
Non-selected Taxa												
Haemulon aurolineatum	38.4	37.9	10	17.6	9.2	30	2.4	1.5	20	0.0	0.0	0
Larval fish	801.9	755.7	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	981.7	582.8	40	746.2	161.7	90	598.9	216.4	45	14.1	8.3	25
Diplodus holbrooki	26.0	25.0	15	40.3	32.9	15	3.0	3.0	5	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	0.5	0.4	5	0.5	0.5	5	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	12.0	8.8	15	25.7	19.2	20	0.5	0.5	5
Haemulon plumieri	0.0	0.0	0	3.8	3.3	5	1.2	0.7	15	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	10.0	5.6	15	0.5	0.5	5	0.0	0.0	0
Eucinostomus spp.	1.3	1.3	5	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	1.3	0.9	10
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.5	0.5	5
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.5	0.5	5	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.5	0.5	5
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.3	0.3	5
Subtotal Non-selected Taxa	1849.2	68.1	5.3	830.3	41.3	9.7	632.7	33.2	6.7	17.1	0.8	3.1
Total All Taxa	1850.0	47.7	4.0	1325.5	30.6	15.0	1332.4	31.2	11.9	231.9	6.5	9.2
Percent Dominant's Density	96.4			80.9			96.5			89.8		
Percent Non-dominant's Density	3.6			19.1			3.5			10.2		
Species Richness	7			13			15			11		

% OCC – Percent Occurrence (percent of samples in which the species was observed).
STD Error – Standard Error of the Means

species was more frequently observed at the Hart site (50% occurrence). All other early-juvenile non-selected taxa reached their highest density at the Hart site and the species were generally observed here more frequently.

The Walker site displayed the highest overall density (1,325.5/100 m^2), species richness (13) and percent occurrence (15.0%) for juveniles. The selected taxa density of juveniles was highest at the Gerkin site (525.5/100 m^2), while selected taxa juveniles were more frequently observed at the Walker site (26.9% occurrence). For non-selected taxa, mean density (830.3/100 m^2) and percent occurrence (9.7%) were highest at the Walker reef site. *Lutjanus griseus* mean density (379.4/100 m^2) and percent occurrence (85%) were highest at the Gerkin site followed closely by the Walker site (325.6/100 m^2 and 80%). *Archosargus probatocephalus* mean density (116.9/100 m^2) and percent occurrence (65%) were substantially higher at the Gerkin site than on the other reef sites. The mean density and percent occurrence of the other four select taxa observed had greater mean density and percent occurrence at the Walker reef site. With the exception of the *Chaetodipterus faber*, the majority of the non-selected taxa reached their highest densities and highest percent occurrence in the juvenile size class at the Walker reef site.

As observed with the juvenile size class, the Walker reef site also had the highest overall mean density (1,332.4/100 m^2), percent occurrence (11.9%) and species richness (15), for the subadult size class. The Walker reef site also had the highest mean density and percentage occurrence for both the selected (699.7/100 m^2 and 23.8%, respectively) and non-selected taxa (632.7/100 m^2 and 6.7%, respectively). *Lutjanus griseus* was the most frequently encountered (50%) and dominant selected (573.6/100 m^2) taxa at the Walker site while its percent occurrence was actually higher for the Gerkin site (85%). *Archosargus probatocephalus* mean density (83.1/100 m^2) and percent occurrence (60%) were both highest at the Gerkin site, while *Mycteroperca microlepsis* mean density (10.2/100 m^2) and percent occurrence (25%) were highest at the Hart site. All other subadult's mean density and percent occurrence were highest at the Walker site.

For the adult size class, the mean density (450.9/100 m^2) was highest at the Hart reef site, while the percent occurrence (11.0%) and the species richness (13) were highest at the Gerkin site.

Mean density of the adult size class was highest for the selected taxa at the Hart reef (358.3/100 m^2), while the percent occurrence (23.1%) was highest at the Walker site. Adult non-selected taxa mean density was highest at the Hart site (92.6/100 m^2), while percent occurrence (11.8%) was highest at the Gerkin site. Adult *Lutjanus griseus* mean density (58.1/100 m^2) and percent occurrence (55%) were highest at the Gerkin site, *Archosargus probatocephalus* mean density (273.2/100 m^2) and percent occurrence (88%) were highest at the Hart site, while *Menippe mercenaria* (167.6/100 m^2) and *Callinectes sapidus* (26.6/100 m^2) density and percent occurrence were highest at the Walker site (100% and 30%, respectively). Adult *Mycteroperca microlepsis* had their highest mean density at the Hart site (9.8/100 m^2), while the highest percent occurrence (20%) was at the Walker site. For the non-select taxa, six adults species had their highest mean density and percent occurrence at the Hart site, while five species had the highest mean density and percent occurrence at the Gerkin site, followed by three species at the Walker site.

Tables 3.3-5 through 3.3-7 provide a comparison of the mean density of selected and non-selected taxa between stations at the Gerkin, Hart and Walker reef sites, respectively.

GERKIN

For the Gerkin reef site (Table 3.3-5), early-juvenile species were generally at their greatest density (20,503.4/100 m^2) and percent occurrence (5.6%) at station GP3, yet the greatest richness (4 species) was at station GL1. Only two selected species of early-juveniles, *Lutjanus griseus* and *Archosargus probatocephalus*, were observed at any of the five stations. An additional three species of early-juveniles from non-selected taxa were observed among these same five sites with *Lagodon rhomboides* being present in fair numbers at all sites. *Haemulon aurolineatum* reached very high density (16,659.6/100 m^2) at station GP3, but otherwise was only present at station GL1 (2,133.1/100 m^2).

Table 3.3-5. Comparison of mean density (#/100 m^2) of selected and non-selected taxa between stations at the Gerkin reef site.

	Early-Juvenile														
	GL1			GP1			GP2			GP3			GP4		
Species Name	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**
Selected Taxa															
Lutjanus griseus	1.1	1.1	25	0.0	0.0	0	37.9	37.9	25	0.0	0.0	0	63.6	63.6	25
Archosargus probatocephalus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	4.3	4.3	25	0.0	0.0	0
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	1.1	0.1	3.1	0.0	0.0	0.0	37.9	4.7	3.1	4.3	0.5	3.1	63.6	8.0	3.1
Non-selected Taxa															
Haemulon aurolineatum	2133.1	2133.1	25	0.0	0.0	0	0.0	0.0	0	16659.6	10111.0	50	0.0	0.0	0
Larval fish	533.3	533.3	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	1205.2	1162.9	50	38.2	38.2	25	4128.8	3735.7	50	3839.6	3295.4	50	27.3	17.4	50
Diplodus holbrooki	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	3871.6	133.5	5.6	38.2	2.1	1.4	4128.8	229.4	2.8	20499.1	937.5	5.6	27.3	1.5	2.8
Total All Taxa	3872.7	93.7	4.8	38.2	1.5	1.0	4166.7	158.7	2.9	20503.4	651.8	4.8	90.9	2.6	2.9
Percent Dominant's Density	100.0			100.0			99.1			100.0			100.0		
Percent Non-dominant's Density	0.0			0.0			0.9			0.0			0.0		
Species Richness	4			1			2			3			2		

Table 3.3-5. (Continued)

Species Name	GL1 Mean Density	GL1 STD Error	GL1 % OCC	GP1 Mean Density	GP1 STD Error	GP1 % OCC	GP2 Mean Density	GP2 STD Error	GP2 % OCC	GP3 Mean Density	GP3 STD Error	GP3 % OCC	GP4 Mean Density	GP4 STD Error	GP4 % OCC
	Juvenile														
Selected Taxa															
Lutjanus griseus	65.1	21.1	100	706.1	252.0	100	719.7	393.0	75	251.7	140.6	75	154.5	52.2	75
Archosargus probatocephalus	4.3	3.0	50	248.1	122.2	75	265.2	129.4	75	21.3	16.2	50	45.5	17.4	75
Menippe mercenaria	6.4	1.2	100	0.0	0.0	0	0.0	0.0	0	17.1	12.1	50	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	95.4	57.3	50	0.0	0.0	0	0.0	0.0	0	27.3	17.4	50
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	75.7	8.0	31.3	1049.6	87.8	28.1	984.8	91.3	18.8	290.1	30.9	21.9	227.3	19.0	25.0
Non-selected Taxa															
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	56.5	41.3	50	114.5	73.1	50	189.4	143.4	50	302.9	249.3	50	27.3	17.4	50
Diplodus holbrooki	1.1	1.1	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	7.5	4.4	50	0.0	0.0	0	0.0	0.0	0	59.7	40.3	50	27.3	27.3	25
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	1.1	1.1	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	66.1	3.1	8.3	114.5	6.4	2.8	189.4	10.5	2.8	362.6	17.0	5.6	54.5	2.1	4.2
Total All Taxa	141.9	3.2	15.4	1164.1	28.6	10.6	1174.2	29.6	7.7	652.7	14.8	10.6	281.8	6.2	10.6
Percent Dominant's Density	91.0			100.0			100.0			94.1			100.0		
Percent Non-dominant's Density	9.0			0.0			0.0			5.9			0.0		
Species Richness	7			4			3			5			5		

Table 3.3-5. (Continued)

Species Name	Subadult														
	GL1			GP1			GP2			GP3			GP4		
	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa															
Lutjanus griseus	65.1	32.7	100	572.5	257.9	75	454.5	269.6	50	115.2	51.4	100	272.7	90.9	100
Archosargus probatocephalus	8.5	5.2	50	209.9	129.9	50	113.6	113.6	25	46.9	12.8	100	36.4	14.8	75
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	75.8	43.7	50	0.0	0.0	0	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	1.1	1.1	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	74.7	8.0	21.9	782.4	72.6	15.6	643.9	55.7	15.6	162.1	14.8	25.0	309.1	33.7	21.9
Non-selected Taxa															
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	3.2	3.2	25	95.4	72.3	50	0.0	0.0	0	34.1	28.7	50	9.1	9.1	25
Diplodus holbrooki	2.1	2.1	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	48.0	28.0	50	0.0	0.0	0	0.0	0.0	0	384.0	224.4	50	181.8	181.8	25
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	38.2	38.2	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	9.1	9.1	25
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	53.3	2.7	5.6	133.6	5.6	4.2	0.0	0.0	0.0	418.1	21.3	5.6	200.0	10.1	4.2
Total All Taxa	128.0	3.0	10.6	916.0	23.2	7.7	643.9	17.9	4.8	580.2	15.2	11.5	509.1	12.3	9.6
Percent Dominant's Density	95.0			95.8			100.0			100.0			96.4		
Percent Non-dominant's Density	5.0			4.2			0.0			0.0			3.6		
Species Richness	6			4			3			4			5		

Table 3.3-5. (Continued)

	Adult														
	GL1			GP1			GP2			GP3			GP4		
Species Name	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**
Selected Taxa															
Lutjanus griseus	19.2	2.8	100	57.3	57.3	25	37.9	37.9	25	85.3	42.4	75	90.9	52.5	50
Archosargus probatocephalus	13.9	4.0	100	38.2	22.0	50	75.8	75.8	25	85.3	28.7	100	18.2	18.2	25
Menippe mercenaria	1.1	1.1	25	38.2	22.0	50	151.5	107.1	50	17.1	12.1	50	36.4	14.8	75
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	4.3	4.3	25	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	34.1	2.7	28.1	133.6	8.4	15.6	265.2	19.5	12.5	192.0	13.5	31.3	145.5	11.4	18.8
Non-selected Taxa															
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	1.1	1.1	25	0.0	0.0	0	37.9	37.9	25	8.5	4.9	50	0.0	0.0	0
Diplodus holbrooki	9.6	6.1	50	38.2	38.2	25	37.9	37.9	25	17.1	12.1	50	9.1	9.1	25
Chaetodipterus faber	12.8	11.4	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	19.1	19.1	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	19.1	19.1	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	7.5	3.2	75	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	19.1	19.1	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	19.1	19.1	25	37.9	37.9	25	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	75.8	43.7	50	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	30.9	0.9	11.1	114.5	2.7	6.9	189.4	5.1	6.9	25.6	1.0	5.6	9.1	0.5	1.4
Total All Taxa	65.1	1.0	16.3	248.1	3.2	9.6	454.5	7.0	8.7	217.6	4.5	13.5	154.5	3.7	6.7
Percent Dominant's Density	96.7			100.0			100.0			94.1			100.0		
Percent Non-dominant's Density	3.3			0.0			0.0			5.9			0.0		
Species Richness	7			8			7			6			4		

% OCC – Percent Occurrence (percent of samples in which the species was observed).
STD Error – Standard Error

Table 3.3-6. Comparison of mean density (#/100 m^2) of selected and non-selected taxa between stations at the Hart reef site.

	Early Juvenile											
	HL1			HP1			HP2			HP3		
Species Name	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**
Selected Taxa												
Lutjanus griseus	0.0	0.0	0	0.0	0.0	0	6.4	6.4	25	0.0	0.0	0
Archosargus probatocephalus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.8	3.1	0.0	0.0	0.0
Non-selected Taxa												
Haemulon aurolineatum	28.0	16.2	50	530.3	330.2	50	1202.0	1054.2	50	6212.1	4038.2	50
Larval fish	3149.5	2703.1	50	0.0	0.0	0	6393.9	6393.9	25	0.0	0.0	0
Lagodon rhomboides	272.3	204.5	50	2083.3	1203.2	50	1457.8	935.0	50	3712.1	2360.7	50
Diplodus holbrooki	5.6	5.6	25	113.6	113.6	25	19.2	19.2	25	75.8	75.8	25
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	75.8	75.8	25	0.0	0.0	0	37.9	37.9	25
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	3455.3	174.6	9.7	2803.0	117.2	8.3	9072.9	361.0	8.3	10037.9	391.0	8.3
Total All Taxa	3455.3	121.1	6.7	2803.0	81.7	5.8	9079.3	252.0	6.7	10037.9	273.2	5.8
Percent Dominant's Density	99.0			93.2			99.7			98.9		
Percent Non-dominant's Density	1.0			6.8			0.3			1.1		
Species Richness	4			4			5			4		

Table 3.3-6. (Continued)

Species Name	Juvenile											
	HL1			HP1			HP2			HP3		
	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa												
Lutjanus griseus	10.5	5.4	75	37.9	37.9	25	44.8	21.8	75	75.8	75.8	25
Archosargus probatocephalus	0.0	0.0	0	0.0	0.0	0	12.8	12.8	25	0.0	0.0	0
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	10.5	1.3	9.4	37.9	4.7	3.1	57.5	5.6	12.5	75.8	9.5	3.1
Non-selected Taxa												
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	5.6	4.7	50	416.7	242.5	50	63.9	48.4	50	454.5	321.4	50
Diplodus holbrooki	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	4.2	3.3	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.7	0.7	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	10.5	0.4	6.9	416.7	23.1	2.8	63.9	3.6	2.8	454.5	25.3	2.8
Total All Taxa	21.0	0.5	7.7	454.5	16.0	2.9	121.5	3.0	5.8	530.3	17.6	2.9
Percent Dominant's Density	96.7			100.0			100.0			100.0		
Percent Non-dominant's Density	3.3			0.0			0.0			0.0		
Species Richness	4			2			3			2		

Table 3.3-6. (Continued)

Species Name	Subadult											
	HL1			HP1			HP2			HP3		
	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa												
Lutjanus griseus	30.1	10.0	100	151.5	87.5	50	70.3	62.1	50	113.6	113.6	25
Archosargus probatocephalus	4.2	1.8	75	0.0	0.0	0	38.4	24.5	50	113.6	72.5	50
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	2.8	1.1	75	37.9	37.9	25	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	37.1	3.7	31.3	189.4	18.9	9.4	108.7	9.4	12.5	227.3	18.6	9.4
Non-selected Taxa												
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	37.9	37.9	25
Diplodus holbrooki	1.4	1.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	8.4	8.4	25	0.0	0.0	0	19.2	19.2	25	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	4.2	1.4	100	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	14.0	0.5	8.3	0.0	0.0	0.0	19.2	1.1	1.4	37.9	2.1	1.4
Total All Taxa	51.1	1.2	15.4	189.4	6.0	2.9	127.9	3.1	4.8	265.2	6.1	3.8
Percent Dominant's Density	97.3			100.0			100.0			100.0		
Percent Non-dominant's Density	2.7			0.0			0.0			0.0		
Species Richness	6			2			3			3		

Table 3.3-6. (Continued)

Species Name	Adult											
	HL1			HP1			HP2			HP3		
	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa												
Lutjanus griseus	16.8	8.2	75	37.9	37.9	25	19.2	19.2	25	113.6	72.5	50
Archosargus probatocephalus	23.8	8.9	100	492.4	272.3	75	159.8	95.3	75	416.7	37.9	100
Menippe mercenaria	0.0	0.0	0	113.6	72.5	50	0.0	0.0	0	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	1.4	0.8	50	37.9	37.9	25	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	42.0	3.4	28.1	681.8	59.8	21.9	179.0	19.8	12.5	530.3	52.0	18.8
Non-selected Taxa												
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplodus holbrooki	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	20.3	9.9	75	189.4	72.5	75	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.7	0.7	25	75.8	43.7	50	0.0	0.0	0	37.9	37.9	25
Balistidae spp.	1.4	0.8	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	6.4	6.4	25	0.0	0.0	0
Opsanus beta	0.0	0.0	0	37.9	37.9	25	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.7	0.7	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	23.1	1.1	9.7	303.0	11.1	8.3	6.4	0.4	1.4	37.9	2.1	1.4
Total All Taxa	65.1	1.3	15.4	984.8	20.2	12.5	185.4	6.2	4.8	568.2	16.4	6.7
Percent Dominant's Density	93.5			88.5			96.6			100.0		
Percent Non-dominant's Density	6.5			11.5			3.4			0.0		
Species Richness	7			7			3			3		

% OCC - Percent Occurrence (percent of samples in which the species was observed).
STD Error – Standard error of the observed density.

Table 3.3-7. Comparison of mean density (#/100 m^2) of selected and non-selected taxa between stations at the Walker reef site.

	Early-Juvenile														
	WL1			WL2			WP1			WP2			WP3		
Species Name	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa															
Lutjanus griseus	1.3	1.3	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Archosargus probatocephalus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Menippe mercenaria	0.0	0.0	0	2.4	2.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	1.3	0.2	3.1	2.4	0.3	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-selected Taxa															
Haemulon aurolineatum	2.5	2.5	25	0.0	0.0	0	189.4	189.4	25	0.0	0.0	0	0.0	0.0	0
Larval fish	126.3	124.6	50	95.4	55.1	50	0.0	0.0	0	3787.9	3787.9	25	0.0	0.0	0
Lagodon rhomboides	0.0	0.0	0	21.5	13.7	50	4166.7	2505.4	75	606.1	396.1	50	114.5	114.5	25
Diplodus holbrooki	125.0	125.0	25	4.8	2.8	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	6.3	6.3	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	260.0	9.5	6.9	121.7	5.4	8.3	4356.1	231.1	5.6	4393.9	211.1	4.2	114.5	6.4	1.4
Total All Taxa	261.3	6.7	5.8	124.0	3.7	6.7	4356.1	160.1	3.8	4393.9	146.6	2.9	114.5	4.4	1.0
Percent Dominant's Density	96.2			94.2			95.7			100.0			100.0		
Percent Non-dominant's Density	3.8			5.8			4.3			0.0			0.0		
Species Richness	5			4			2			2			1		

Table 3.3-7. (Continued)

	Juvenile														
	WL1			WL2			WP1			WP2			WP3		
Species Name	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa															
Lutjanus griseus	35.0	16.5	75	57.3	23.7	100	340.9	217.6	50	947.0	488.5	75	248.1	100.4	100
Archosargus probatocephalus	0.0	0.0	0	14.3	8.3	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Menippe mercenaria	8.8	8.8	25	31.0	11.9	75	113.6	37.9	75	113.6	37.9	75	0.0	0.0	0
Leiostomus xanthurus	175.0	118.1	50	2.4	2.4	25	0.0	0.0	0	0.0	0.0	0	57.3	57.3	25
Mycteroperca microlepsis	13.8	7.7	75	28.6	22.7	50	75.8	43.7	50	151.5	107.1	50	57.3	57.3	25
Callinectes sapidus	0.0	0.0	0	4.8	4.8	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	232.5	21.3	28.1	138.4	7.2	40.6	530.3	42.2	21.9	1212.1	115.6	25.0	362.6	30.4	18.8
Non-selected Taxa															
Haemulon aurolineatum	5.0	3.5	50	7.2	4.6	50	75.8	43.7	50	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	15.0	9.6	50	240.9	108.8	100	1060.6	269.6	100	1174.2	378.2	100	1240.5	469.9	100
Diplodus holbrooki	201.3	183.3	75	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	2.4	2.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	55.0	48.6	50	4.8	4.8	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	19.1	19.1	25
Balistidae spp.	0.0	0.0	0	31.0	25.1	50	0.0	0.0	0	0.0	0.0	0	19.1	19.1	25
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	276.3	11.4	12.5	286.3	13.4	13.9	1136.4	58.8	8.3	1174.2	65.2	5.6	1278.6	68.8	8.3
Total All Taxa	508.8	10.1	17.3	424.6	9.4	22.1	1666.7	42.2	12.5	2386.4	56.7	11.5	1641.2	48.1	11.5
Percent Dominant's Density	91.6			91.6			90.9			95.2			90.7		
Percent Non-dominant's Density	8.4			8.4			9.1			4.8			9.3		
Species Richness	8			11			5			4			6		

Table 3.3-7. (Continued)

Species Name	Subadult														
	WL1			WL2			WP1			WP2			WP3		
	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa															
Lutjanus griseus	68.8	41.9	50	202.8	158.7	50	1250.0	892.9	50	1136.4	901.7	50	209.9	129.9	50
Archosargus probatocephalus	8.8	7.2	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Menippe mercenaria	15.0	5.8	100	97.8	27.4	100	189.4	37.9	100	151.5	61.9	75	114.5	49.3	75
Leiostomus xanthurus	0.0	0.0	0	7.2	7.2	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	22.5	6.6	100	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	5.0	3.5	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	19.1	19.1	25
Subtotal Selected Taxa	120.0	8.2	43.8	307.7	26.4	21.9	1439.4	154.7	18.8	1287.9	140.6	15.6	343.5	27.6	18.8
Non-selected Taxa															
Haemulon aurolineatum	2.5	1.4	50	9.5	6.7	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	400.0	234.5	50	276.7	191.3	50	681.8	412.6	50	681.8	464.9	50	954.2	954.2	25
Diplodus holbrooki	15.0	15.0	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	2.5	2.5	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	21.3	18.1	50	11.9	11.9	25	0.0	0.0	0	0.0	0.0	0	95.4	95.4	25
Haemulon plumieri	1.3	1.3	25	4.8	2.8	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	2.4	2.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	2.4	2.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	442.5	22.1	12.5	307.7	15.3	12.5	681.8	37.9	2.8	681.8	37.9	2.8	1049.6	53.0	2.8
Total All Taxa	562.5	15.4	22.1	615.5	13.2	15.4	2121.2	53.9	7.7	1969.7	50.1	6.7	1393.1	37.3	7.7
Percent Dominant's Density	83.3			93.8			100.0			100.0			98.6		
Percent Non-dominant's Density	16.7			6.2			0.0			0.0			1.4		
Species Richness	11			9			3			3			5		

Table 3.3-7. (Continued)

Species Name	Adult														
	WL1			WL2			WP1			WP2			WP3		
	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa															
Lutjanus griseus	50.0	28.9	50	7.2	7.2	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Archosargus probatocephalus	37.5	5.2	100	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Menippe mercenaria	37.5	4.8	100	136.0	11.9	100	303.0	61.9	100	151.5	0.0	100	209.9	36.5	100
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	8.8	2.4	100	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	19.1	7.8	75	75.8	75.8	25	0.0	0.0	0	38.2	22.0	50
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	133.8	7.5	43.8	162.2	16.7	25.0	378.8	37.7	15.6	151.5	18.9	12.5	248.1	26.0	18.8
Non-selected Taxa															
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	11.3	6.6	50	2.4	2.4	25	0.0	0.0	0	37.9	37.9	25	19.1	19.1	25
Diplodus holbrooki	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	2.4	2.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	6.3	3.8	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	2.5	2.5	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	2.4	2.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	1.3	1.3	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	21.3	0.7	8.3	7.2	0.2	4.2	0.0	0.0	0.0	37.9	2.1	1.4	19.1	1.1	1.4
Total All Taxa	155.0	2.7	19.2	169.4	5.2	10.6	378.8	11.9	4.8	189.4	6.0	4.8	267.2	8.1	6.7
Percent Dominant's Density	93.5			91.5			100.0			100.0			100.0		
Percent Non-dominant's Density	6.5			8.5			0.0			0.0			0.0		
Species Richness	8			6			2			2			3		

% OCC - Percent Occurrence (percent of samples in which the species was observed).
STD Error – Standard error of the observed densities.

Juvenile species density was greatest at station GP2 (1,174.2/100 m^2) while percent occurrence (15.4%) and richness (7 species) were greatest at station GL1. Juveniles of *Lutjanus griseus* were consistently observed across all stations but reached their highest density at station GP2 (719.7/100 m^2). *Archosargus probatocephalus* also reached its highest density at station GP2 (265.2/100 m^2), but were fairly well represented among all stations. While *Menippe mercenaria* juveniles reached their greatest density at station GP3 (17.1/100 m^2), they were more frequently observed at station GL1 (100%). Juvenile *Mycteroperca microlepsis* were only observed at stations GP1 and GP4. Juvenile *Lagodon rhomboides* were observed consistently across all five stations and reached their greatest density at station GP3 (302.9/100 m^2). *Chaetodipeterus faber* was the only other species to occur at more than one station (occurring at three stations), reaching its highest density (59.7/100 m^2) and percent occurrence (50%) at station GP3.

The density of subadults was greatest at station GP1 (916.0/100 m^2), while the percent occurrence (11.5%) was greatest at station GP3 and species richness (6 species) was greatest at station GL1. Subadult *Lutjanus griseus* and *Archosargus probatocephalus* were consistently observed across all five stations, yet reached their greatest density at station GP1 (572.5/100 m^2 and 209.9/100 m^2, respectively). Subadult *Menippe mercenaria* were only observed at GP2 (75.8/100 m^2) and subadult *Mycteroperca microlepsis* were only observed on rare occasion at station GL1 (1.1/100 m^2). Subadult *Lagodon rhomboides* were observed at most stations and reached their highest density at station GP1 (95.4/100 m^2). Subadult *Chaetodipeterus faber* reached high density at stations GP3 (384.0/100 m^2) and GP4 (181.8/100 m^2) and were also present at station GL1 (48.0/100 m^2). Other subadult individuals of the non-select taxa were only rarely observed.

Although adult *Lutjanus griseus* reached their highest density at station GP4 (90.9/100 m^2), they were observed every event (100%) at station GL1. Adult *Archosargus probatocephalus* were observed at all sites and reached their greatest density at station GP3 (85.3/100 m^2). Adult *Menippe mercenaria* were also observed at all stations, but reached their greatest density at station GP2 (151.5/100 m^2). Adult *Mycteroperca microlepsis* were only observed during one event at one station (GP3). Adult *Diplodus holbrooki* were present at all five stations, reaching their greatest density at stations GP1 (38.2/100 m^2) and GP2 (37.9/100 m^2). Adult *Lagodon rhomboides* were present at three of the stations and reached their greatest density at station GP2 (37.9/100 m^2). All other adult specimens occurred on rare occasion at individual stations.

HART

For the Hart reef site (Table 3.3-6), the early-juvenile species richness was greatest at station HP2 (5 species), while density was greatest at site HP3 (10,037.9/100 m^2) and percent occurrence (6.7%) was highest at stations HP1 and HP2. Early-juveniles of selected taxa were extremely rare at the Hart site, being observed during only one event at station HP2. *Haemulon aurolineatum* and *Lagodon rhomboides* early-juveniles were observed at all stations, reaching their greatest density at station HP3 (6,212.1/100 m^2 and 3,712.1/100 m^2, respectively), while larval fish were observed at only two stations (HL1 and HP2) and reached their greatest density at station HP2 (6,393.9/100 m^2). Early-juveniles of *Diplodus holbrooki* were present at all four stations and reached their highest density at station HP1 (113.6/100 m^2).

Juveniles were relatively rare at the Hart reef site, with two species of selected taxa and three species of non-selected taxa being observed. The overall mean density of juveniles was greatest at station HP3 (530.3/100 m^2) while the percent occurrence (7.7%) and species richness (4 species) were greatest at station HL1. Juveniles of *Lutjanus griseus* were observed at all four stations, reached their greatest density at station HP3 (75.8/100 m^2), but were most frequently observed at stations HL1 (75%) and HP2 (75%). *Archosargus probatocephalus* was only observed at one station during one event, that being station HP2. Juveniles of *Lagodon rhomboides* were consistently observed at all four stations, reaching their highest density at stations HP1 (416.7/100 m^2) and HP3 (454.5/100 m^2).

For subadults, the species richness (6 species) and percent occurrence (15.4%) were substantially greater for station HL1, while the mean density (265.2/100 m^2) was greatest at station HP3. For most species, the percent occurrence was always greatest at station HL1 while the mean density could be greater at other sites. For selected taxa, subadults of *Lutjanus griseus* (151.5/100 m^2) and *Mycteroperca microlepsis* (37.9/100 m^2) were most dense at station HP1, while for *Archosargus probatocephalus* the mean density was greatest at station HP3 (113.6/100 m^2). Non-select taxa in the subadult size class were relatively rare, generally being observed during only one of the surveys and in low numbers.

For the adult size class, mean density was greatest at station HP1 (984.8 100 m^2), the percent occurrence (15.4%) was greatest at station HL1, and species richness (7 species) was highest at stations HL1 and HP1. With the exception of *Lutjanus griseus*, which had its greatest mean density at station HP3 (113.6/100 m^2), the mean density of all other selected taxa was greatest at station HP1. *Chaetodipeterus faber* was the non-selected species which occurred at the greatest density (189.4/100 m^2) as an adult, being observed at stations HL1 and HP1 during three of the sampling events (75%). The remaining non-selected taxa occurred very rarely at any of the stations.

WALKER

The data for the stations at the Walker site are presented in Table 3.3-7. Species richness for early-juveniles was greatest at station WL1 (5 species), percent occurrence was greatest at station WL2 (6.7%) and the mean density was greatest at station WP2 (4,393.9/100 m^2). Early-juveniles of selected taxa were rarely observed at the Walker reef site stations, with two species being observed during one event. For the non-selected taxa, *Lagodon rhomboides* had the greatest early-juvenile mean density at station WP1 (4,116.7/100 m^2) and was found at all stations except station WL1. The mean density for *Haemulon aurolineatum* was also greatest at station WP1 (189.4/100 m^2), while larval fish density was greatest at station WP2 (3,787.9/100 m^2). *Diplodus holbrooki* was only observed at stations WL1 and WL2, having its greatest mean density at station WL1 (125.0/100 m^2).

For the juvenile size class, mean density was greatest at station WP2 (2,386.4/100 m^2), while species richness (11 species) and a percent occurrence (22.1%) were greatest at station

WL2. Juveniles of *Lutjanus griseus* were observed consistently at all stations, reaching their greatest mean density at station WP1 (340.9/100 m^2). *Menippe mercenaria* were observed at four of the five stations, while *Archosargus probatocephalus* was only observed at one of the stations (WL2). Juvenile *Mycteroperca microlepsis* were also observed at all stations, reaching their greatest density at station WP2 (151.5/100 m^2). *Lagodon rhomboides* were observed consistently at all five stations and reached their greatest density at station WP3 (1,240.5/100 m^2). *Haemulon aurolineatum* were observed in low numbers at three of the five stations.

In the subadult size class, mean density was greatest at station WP1 (2,121.2/100 m^2), with species richness (11 species) and percent occurrence (22.1%) greatest at station WL1. Subadults *Lutjanus griseus* were consistently observed at all five stations, reaching the greatest density at station WP2 (1,136.4/100 m^2). *Menippe mercenaria* were also observed consistently at all stations but reached their greatest density at station WP1 (189.4/100 m^2). Three species (*Archosargus probatocephalus*, *Mycteroperca microlepsis* and *Mycteroperca phenax*) were only observed as subadults at station WL1. Subadults of *Lagodon rhomboides* were also observed consistently at all five stations, reaching their greatest density at station WP3 (954.2/100 m^2). Subadults at all other non-selected taxa occurred rarely at only a few stations.

Results for the adult size class at the Walker reef class were consistent with that for the subadults (*i.e.*; density was greatest for station WP1 (378.8/100 m^2), while percent occurrence (19%) and species richness (8 species) were greatest at Station WL1). Adult *Lutjanus griseus* were only observed at the two linear transects (WL1 and WL2). *Menippe mercenaria* were observed consistently during every event at every station and reached their greatest density at Station WP1 (303.0/100 m^2). *Archosargus probatocephalus* and *Mycteroperca microlepsis* adults were only observed at one station, WL1, but were observed during every event (100%) at that station. Adults of all other selected and non-selected taxa occurred only rarely at a few stations and in low numbers.

Table 3.3-8 provides a comparison of the mean density of selected and non-selected taxa by reef material type between all three reef sites. For the early-juvenile size class, the PVC ribcage has the overall highest mean density (12,188.0/100 m^2), with species richness being highest for reef balls (7 species) and the percent occurrence (6.7%) being highest with both the concrete block and the concrete block with reef ball material types. Early-juveniles of *Lutjanus griseus* were observed on all reef material types, except the concrete block with reef balls material type, reaching their greatest density on the PVC web design (63.6/100 m^2). Early-juveniles of *Archosargus probatocephalus* and *Menippe mercenaria* were only rarely observed, being found on a single reef material type. Early-juveniles of *Haemulon aurolineatum* reached their greatest densities on the PVC ribcage material type (9,396.3/100 m^2), were consistently found on most material types, but were noticeably absent on the PVC web. Larval fish were also noticeably absent on the PVC web material, reaching their greatest density on the concrete block design (6,393.9/100 m^2). Except for their absence on the reef ball in concrete material type, *Lagodon rhomboides* was consistently observed in high numbers on the other material types, reaching its greatest density on the PVC ribcage design (2,522.4/100 m^2). *Diplodus holbrooki* was generally in low numbers, reached its greatest density on the reef ball in concrete material type (125.0/100 m^2), and was absent from the PVC ribcage and PVC web material type.

The juvenile size class greatest mean density (1,180.3/100 m^2) and largest species richness (12 species) occurred on the reef ball material type, and the reef ball in concrete material type had the greatest percent occurrence (17.3%). For selected taxa, juveniles of all species reached their greatest mean density (175.0/100 m^2) on the reef ball design with the exception of *Leiostomus xanthurus,* which reached its greatest density on the reef ball and concrete design. Juvenile *Lutjanus griseus* were present across all of the material types, while *Archosargus probatocephalus* was present across all but the concrete block/reef ball and reef ball in concrete designs. Juvenile *Menippe mercenaria* reached their greatest percent occurrence (75%) on the PVC ribcage design and greatest density on reef balls (32.3/100 m^2), but were absent from the concrete block, concrete block and reef ball and PVC web designs. Juvenile *Mycteroperca microlepsis* had their greatest percent occurrence (75%) in

Table 3.3-8. Comparison of mean density (#/100 m^2) of selected and non-selected taxa between reef material types.

	Early-Juvenile																	
	CB			CB,RB(3)			PVC RB			PVC WEB			RB			RB IN C		
Species Name	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**	**Mean Density**	**STD Error**	**% OCC**
Selected Taxa																		
Lutjanus griseus	6.4	6.4	25	0.0	0.0	0	0.5	0.5	12.5	63.6	63.6	25	4.7	4.7	3	1.3	1.3	25
Archosargus probatocephalus	0.0	0.0	0	0.0	0.0	0	2.1	2.1	12.5	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.3	0.3	3	0.0	0.0	0
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	6.4	0.8	3.1	0.0	0.0	0.0	2.7	0.3	3.1	63.6	8.0	3.1	5.0	0.6	0.8	1.3	0.2	3.1
Non-selected Taxa																		
Haemulon aurolineatum	1202.0	1054.2	50	28.0	16.2	50	9396.3	5515.3	37.5	0.0	0.0	0	866.5	575.9	16	2.5	2.5	25
Larval fish	6393.9	6393.9	25	3149.5	2703.1	50	266.6	266.6	12.5	0.0	0.0	0	485.4	473.2	9	126.3	124.6	50
Lagodon rhomboides	1457.8	935.0	50	272.3	204.5	50	2522.4	1692.6	50	27.3	17.4	50	1858.9	658.5	47	0.0	0.0	0
Diplodus holbrooki	19.2	19.2	25	5.6	5.6	25	0.0	0.0	0	0.0	0.0	0	24.3	16.8	13	125.0	125.0	25
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	14.2	10.4	6	6.3	6.3	25
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	9072.9	361.0	8.3	3455.3	174.6	9.7	12185.4	531.6	5.6	27.3	1.5	2.8	3249.3	112.3	5.0	260.0	9.5	6.9
Total All Taxa	9079.3	252.0	6.7	3455.3	121.1	6.7	12188.0	370.1	4.8	90.9	2.6	2.9	3254.3	78.8	3.7	261.3	6.7	5.8
Percent Dominant's Density	99.7			99.0			97.8			100.0			98.7			96.2		
Percent Non-dominant's Density	0.3			1.0			2.2			0.0			1.3			3.8		
Species Richness	5			4			5			2			7			5		

Table 3.3-8. (Continued)

	Juvenile																	
	CB			CB,RB(3)			PVC RB			PVC WEB			RB			RB IN C		
Species Name	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa																		
Lutjanus griseus	44.8	21.8	75	10.5	5.4	75	158.4	74.7	87.5	154.5	52.2	75	391.6	99.2	69	35.0	16.5	75
Archosargus probatocephalus	12.8	12.8	25	0.0	0.0	0	12.8	8.3	50	45.5	17.4	75	65.9	27.9	25	0.0	0.0	0
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	11.7	6.0	75	0.0	0.0	0	32.3	10.5	28	8.8	8.8	25
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	7.5	7.2	6	175.0	118.1	50
Mycteroperca microlepsis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	27.3	17.4	50	51.1	18.2	28	13.8	7.7	75
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.6	0.6	3	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	57.5	5.6	12.5	10.5	1.3	9.4	182.9	19.5	26.6	227.3	19.0	25.0	548.9	47.0	19.9	232.5	21.3	28.1
Non-selected Taxa																		
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	10.4	6.6	13	5.0	3.5	50
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	63.9	48.4	50	5.6	4.7	50	179.7	125.9	50	27.3	17.4	50	611.4	117.9	75	15.0	9.6	50
Diplodus holbrooki	0.0	0.0	0	0.0	0.0	0	0.5	0.5	12.5	0.0	0.0	0	0.0	0.0	0	201.3	183.3	75
Chaetodipterus faber	0.0	0.0	0	0.0	0.0	0	33.6	21.2	50	27.3	27.3	25	0.3	0.3	3	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.6	0.6	3	55.0	48.6	50
Haemulon plumieri	0.0	0.0	0	4.2	3.3	50	0.0	0.0	0	0.0	0.0	0	2.4	2.4	3	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.5	0.5	12.5	0.0	0.0	0	6.3	4.0	9	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.7	0.7	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	63.9	3.6	2.8	10.5	0.4	6.9	214.4	10.0	6.9	54.5	2.1	4.2	631.3	33.9	5.9	276.3	11.4	12.5
Total All Taxa	121.5	3.0	5.8	21.0	0.5	7.7	397.3	9.0	13.0	281.8	6.2	10.6	1180.3	27.2	10.2	508.8	10.1	17.3
Percent Dominant's Density	100.0			96.7			93.6			100.0			90.6			91.6		
Percent Non-dominant's Density	0.0			3.3			6.4			0.0			9.4			8.4		
Species Richness	3			4			7			5			12			8		

Table 3.3-8. (Continued)

Species Name	Subadult																	
	CB			CB,RB(3)			PVC RB			PVC WEB			RB			RB IN C		
	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC	Mean Density	STD Error	% OCC
Selected Taxa																		
Lutjanus griseus	70.3	62.1	50	30.1	10.0	100	90.1	29.7	100	272.7	90.9	100	511.4	166.2	50	68.8	41.9	50
Archosargus probatocephalus	38.4	24.5	50	4.2	1.8	75	27.7	9.7	75	36.4	14.8	75	54.6	24.7	16	8.8	7.2	50
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	78.6	16.7	50	15.0	5.8	100
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.9	0.9	3	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	2.8	1.1	75	0.5	0.5	12.5	0.0	0.0	0	4.7	4.7	3	22.5	6.6	100
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	5.0	3.5	50
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	2.4	2.4	3	0.0	0.0	0
Subtotal Selected Taxa	108.7	9.4	12.5	37.1	3.7	31.3	118.4	11.3	23.4	309.1	33.7	21.9	652.7	62.3	15.6	120.0	8.2	43.8
Non-selected Taxa																		
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	1.2	0.9	6	2.5	1.4	50
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	0.0	0.0	0	0.0	0.0	0	18.7	14.6	37.5	9.1	9.1	25	341.0	142.2	31	400.0	234.5	50
Diplodus holbrooki	0.0	0.0	0	1.4	1.4	25	1.1	1.1	12.5	0.0	0.0	0	0.0	0.0	0	15.0	15.0	25
Chaetodipterus faber	19.2	19.2	25	8.4	8.4	25	216.0	122.4	50	181.8	181.8	25	0.0	0.0	0	2.5	2.5	25
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	13.4	12.0	6	21.3	18.1	50
Haemulon plumieri	0.0	0.0	0	4.2	1.4	100	0.0	0.0	0	0.0	0.0	0	5.4	4.8	9	1.3	1.3	25
Balistidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	9.1	9.1	25	0.3	0.3	3	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.3	0.3	3	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Non-selected Taxa	19.2	1.1	1.4	14.0	0.5	8.3	235.7	12.0	5.6	200.0	10.1	4.2	361.6	18.9	3.3	442.5	22.1	12.5
Total All Taxa	127.9	3.1	4.8	51.1	1.2	15.4	354.1	8.9	11.1	509.1	12.3	9.6	1014.3	23.1	7.1	562.5	15.4	22.1
Percent Dominant's Density	100.0			97.3			99.5			96.4			97.2			83.3		
Percent Non-dominant's Density	0.0			2.7			0.5			3.6			2.8			16.7		
Species Richness	3			6			6			5			12			11		

Table 3.3-8. (Continued)

Species Name	Adult CB Mean Density	CB STD Error	CB % OCC	CB,RB(3) Mean Density	CB,RB(3) STD Error	CB,RB(3) % OCC	PVC RB Mean Density	PVC RB STD Error	PVC RB % OCC	PVC WEB Mean Density	PVC WEB STD Error	PVC WEB % OCC	RB Mean Density	RB STD Error	RB % OCC	RB IN C Mean Density	RB IN C STD Error	RB IN C % OCC
Selected Taxa																		
Lutjanus griseus	19.2	19.2	25	16.8	8.2	75	52.3	23.3	87.5	90.9	52.5	50	31.7	13.5	19	50.0	28.9	50
Archosargus probatocephalus	159.8	95.3	75	23.8	8.9	100	49.6	19.0	100	18.2	18.2	25	127.9	46.6	31	37.5	5.2	100
Menippe mercenaria	0.0	0.0	0	0.0	0.0	0	9.1	6.4	37.5	36.4	14.8	75	138.0	22.9	69	37.5	4.8	100
Leiostomus xanthurus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Mycteroperca microlepsis	0.0	0.0	0	1.4	0.8	50	2.1	2.1	12.5	0.0	0.0	0	4.7	4.7	3	8.8	2.4	100
Callinectes sapidus	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	16.6	9.9	19	0.0	0.0	0
Mycteroperca phenax	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lutjanus synagris	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Subtotal Selected Taxa	179.0	19.8	12.5	42.0	3.4	28.1	113.1	8.1	29.7	145.5	11.4	18.8	318.9	20.7	17.6	133.8	7.5	43.8
Non-selected Taxa																		
Haemulon aurolineatum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Larval fish	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Lagodon rhomboides	0.0	0.0	0	0.0	0.0	0	4.8	2.7	37.5	0.0	0.0	0	12.2	6.9	13	11.3	6.6	50
Diplodus holbrooki	0.0	0.0	0	0.0	0.0	0	13.3	6.4	50	9.1	9.1	25	9.5	6.6	6	0.0	0.0	0
Chaetodipterus faber	0.0	0.0	0	20.3	9.9	75	6.4	5.8	25	0.0	0.0	0	23.7	13.8	9	0.0	0.0	0
Orthopristis chrysoptera	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	2.7	2.4	6	0.0	0.0	0
Haemulon plumieri	0.0	0.0	0	0.7	0.7	25	0.0	0.0	0	0.0	0.0	0	16.6	8.1	13	0.0	0.0	0
Balistidae spp.	0.0	0.0	0	1.4	0.8	50	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Eucinostomus spp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Blenniidae spp.	0.0	0.0	0	0.0	0.0	0	3.7	2.0	37.5	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Gobiidae sp.	6.4	6.4	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	6.3	3.8	50
Opsanus beta	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	7.1	5.2	6	2.5	2.5	25
Diplectrum formosum	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	7.1	5.2	6	0.0	0.0	0
Prionotus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	9.5	6.6	6	0.0	0.0	0
Acanthostracion quadricornis	0.0	0.0	0	0.7	0.7	25	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Calamus sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0
Chilomycterus schoepfi	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.3	0.3	3	0.0	0.0	0
Scorpaenidae sp.	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	1.3	1.3	25
Subtotal Non-selected Taxa	6.4	0.4	1.4	23.1	1.1	9.7	28.3	0.8	8.3	9.1	0.5	1.4	88.6	1.7	3.8	21.3	0.7	8.3
Total All Taxa	185.4	6.2	4.8	65.1	1.3	15.4	141.3	2.7	14.9	154.5	3.7	6.7	407.5	7.0	8.1	155.0	2.7	19.2
Percent Dominant's Density	96.6			93.5			87.9			100.0			78.8			93.5		
Percent Non-dominant's Density	3.4			6.5			12.1			0.0			21.2			6.5		
Species Richness	3			7			8			4			14			8		

% OCC - Percent Occurrence (percent of samples in which the species was observed).
STD Error – Standard error of the observed density.
CB – Concrete Block, CB, RB (3) – Concrete Block/Reef Balls, PVC RB – PVC Ribcage, PVC – PVC WEB – Web Design, RB – Reef Balls, RB IN C – Reef Balls in Concrete

the reef ball in concrete design and were absent from the PVC ribcage, concrete block and concrete block and reef ball design types. Juveniles of *Lagodon rhomboides* were consistently observed across all material types, reaching their greatest density (611.4/100 m^2) and percent occurrence (75%) on the reef ball designs. Juvenile *Diplodus holbrooki* were at a substantially higher density (201.3/100 m^2) on the reef ball in concrete design and only occurred on one other reef material type (PVC ribcage) in low numbers. Juveniles of all other non-selected and select taxa generally were in low numbers and sporadically spread through material types.

The subadult size class reached its greatest density (1,014.3/100 m^2) as well as its greatest richness (12 species) on reef balls, while the highest percent occurrence (22.1%) occurred in the reef ball and concrete material type. Subadult *Lutjanus griseus* were commonly found on all material types (50-75%), were most dense on the reef ball habitat type (511.4/100 m^2). *Archosargus probatocephalus* also had their greatest density on the reef ball material type (54.6/100 m^2), but had a lower percent occurrence on this material type (16%) than on other material types. Subadults of *Menippe mercenaria* were only found on the reef ball and reef ball in concrete material types, being found most frequently on the reef ball in concrete material (100%) but having a greater density on the reef ball material (78.6/100 m^2). *Mycteroperca microlepsis* reached its greatest density (22.5/100 m^2) and percent occurrence (100%) on the reef ball in concrete material type and was not observed in association with the concrete block and PVC web materials. Subadults of *Lagodon rhomboides* reached their greatest density (400.0/100 m^2) and percent occurrence (50%) on the reef ball in concrete material type and were noticeably absent from the concrete block and concrete block/reef ball material type. Subadults of *Chaetodipeterus faber* reached their greatest mean density (216.0/100 m^2) and percent occurrence (50%) at the PVC ribcage design, and were noticeably absent from the reef ball material type.

The mean density (407.5/100 m^2) and species richness (14 species) of adults were greatest on the reef ball habitat type, while species occurrence (19.2%) was greatest on the reef ball in concrete material type. Adults of *Lutjanus griseus* were present at all sites, reaching their greatest density on the PVC web material type (90.9/100 m^2) and the greatest percent occurrence (87.5%) on the PVC ribcage design. *Archosargus probatocephalus* adults were consistently found at almost all material types and reached their greatest density (159.8/100 m^2) on the concrete block material type, with low numbers being found at the PVC web material type. Adult *Menippe mercenaria* reached their greatest mean density (138.0/100 m^2) on the reef ball material type and reach their greatest occurrence (100%) on the reef ball in concrete material types, but were noticeably absent from the concrete block and concrete block/reef ball material types. *Mycteroperca microlepsis* adults were noticeably missing from the concrete block and PVC web designs and occurred in low numbers on the other four material types. However, this species occurred during every survey (100%) of the reef ball in concrete material type. Adult non-selected taxa were generally in low numbers and infrequently encountered on all material types, most obvious being the concrete block (1.4%) where only one non-selected taxa was observed during one event.

ANOVA testing indicated that the selected taxa mean density was not significantly different for early juvenile, subadult or adult size classes between reef sites. The mean density of the selected taxa juvenile size class was significantly different (p=0.000) among three reef sites. Among juvenile selected taxa at the three reefs, mean density was significantly different among the Gerkin – Hart (p=0.001) and Hart – Walker (p=0.000) reefs.

The mean density of selected taxa was not significantly different among early juvenile, juvenile, subadult and adult selected taxa size classes among stations within each reef site. The mean density was not also significantly different among early juvenile, juvenile, subadult and adult selected taxa size classes among reef material types.

The mean density was not significantly different for the early juvenile size class of selected taxa among reef sites for reef balls. However, the mean density of juvenile, subadult and adult selected taxa was significantly different (p=0.020, 0.019, 0.000, respectively) on reef balls located at the three reef sites.

The log transformation of the density data appeared to decrease the likelihood of observing statistically significant differences among the data sets. This resulted in order of magnitude differences in untransformed data not being significantly different.

4.0 DISCUSSION

GIS Habitat Mapping Effort

The habitat mapping and GIS database effort characterized the Sarasota Bay National Estuary Program shoreline in terms of geomorphology, shoreline morphology and intertidal vegetation tiers, and also refined the habitat map of the SBNEP study area. A total length of nearly 410 miles of shoreline was determined for the study area. The dominant shoreline type for the geomorphology tier was altered, which is consistent with the shore morphology tier, which showed bulkheads as the dominant shore morphology type, and the vegetative tier that indicated 51% of the shoreline was deemed to have no vegetation. Twenty-five percent (25%) of the shoreline length was characterized as having a deep wetland fringe and this vegetative fringe was dominated by mangrove vegetation at 42%.

Refinement of the habitat map for the SBNEP study area revealed that open water features, (*i.e.*, bays and estuaries, were the dominant feature class at over 91% coverage. Of the tidal wetland features mapped, mangrove swamps at 6.7% was the next most common feature observed. The tidal features class and shoreline tier class followed the trends of development within the SBNEP study area.

During February and June 2002, the SBNEP fishery sampling effort in Sarasota Bay constituted 160 fixed-station seine samples in which 315,208 animals were collected. These samples ranged between 12 to 93 samples collected using one of five gear deployment techniques at 40 stations located in natural or restored habitats. The total number of animals collected for each gear deployment technique ranged from 465 to 196,333 animals.

Interpreting the community structure of the fauna collected in Sarasota Bay during 2002 is complicated by the finding that species composition and numerical abundance varied in relation to the type of gear deployment technique used at fishery sampling stations. Differences in sample size (number of samples) or sample area (area swept by net) between various gear deployment techniques yielded non-uniform results for characterizing species occurrence and relative abundance. Simply stated, the Sarasota Bay fishery community was not equally accessible to all gear deployment techniques used in this study. The study design required assessment of a variety of habitat types over a large spatial area; consequently, limitations due to selected gear types were hard to overcome. In anticipation of this result, the study design incorporated additional measures or analyses of community structure, beyond merely characterizing relative abundance and species occurrence, which could help to overcome the bias generated by selected gear types. Equally challenging was the effort to detect significant differences in a fishery community exhibiting high dominance.

Comparison with Nearby Systems

The fishery sampling methodology employed in Sarasota Bay in 2002 was based on the protocols established by the Florida Marine Research Institute (FMRI) in several estuaries throughout Florida. Therefore, it is instructive to compare historical catch statistics for the estuarine regions adjacent to Sarasota Bay wherein FIM-FMRI monitoring has been conducted. Through 2001, FMRI has completed thirteen years of fishery independent monitoring (FIM) in several of Florida's estuarine systems using a variety of different gears and deployment techniques. For the present study, a review of FIM-FMRI catch statistics was made for the most recent three-year period with published data (*i.e.*, 1999, 2000 & 2001). Catch and effort data for 21.3-m seine collections in Tampa Bay and Charlotte Harbor are reported in FIM-FMRI annual data summary reports (FMRI, 1999; FMRI, 2000; FMRI, 2001).

During the three year period 1999 through 2001 of FIM-FMRI monitoring, Tampa Bay annual catch and effort varied from 404,637 to 429,891 animals collected in 564 seine hauls each year using a 21.3-m seine in shore-fringing habitats. In Charlotte Harbor, annual catch and effort varied from 106,974 to 393,924 animals collected in 384 seine hauls each year using a 21.3-m seine in shore-fringing habitats. For Sarasota Bay during 2002, a total catch of 315,208 animals was collected with less than half the effort (*i.e.*, just 160 samples) than in adjacent estuaries and using equal or smaller sample areas over all gear deployment techniques in shore-fringing habitats. By comparison, during a 1990 SBNEP study, Mote Marine Laboratory collected 32,180 animals in 120 15.2-m seine samples but used a net mesh of 6.4-mm (Edwards and Heuter, 1992)--twice the size of the 3.2-mm net mesh used in FIM-FMRI monitoring and the present study.

The species richness (*i.e.*, total number of taxa collected) for all 21.3-m seine hauls during 1999 through 2001 FIM-FMRI monitoring varied from 110 to 119 taxa in Tampa Bay, and from 100 to 121 taxa in Charlotte Harbor. For Sarasota Bay during 2002, the total catch over all gear deployment techniques included 80 taxa in two sample seasons, winter and summer. By comparison, during a 1990 SBNEP study, Mote Marine Laboratory collected 74 taxa in bimonthly seine samples at 20 stations. Bird (1980) collected 119 taxa in bimonthly samples during 1979 at 10 stations in Sarasota Bay using a variety of gears and sampling techniques. The fewer taxa reported for Sarasota Bay than adjacent Tampa Bay and Charlotte Harbor in recent SBNEP-sponsored studies may be attributed to gear type limitations (*e.g.*, different net mesh size in 1990 SBNEP study, or smaller sample areas) and seasonality limitations (*e.g.*, only two seasons sampled in 2002 SBNEP study).

The seine samples collected in Sarasota Bay during 2002 were dominated by bait and forage fishes such as *Anchoa mitchilli, Lucania parva, Gambusia holbrooki, Menidia* spp., *Harengula jaguana, Poecilia latipinna, Lagodon rhomboides, Eucinostomus* spp., and *Cyprinodon variegatus*. This same pattern of dominance by a few taxa is exhibited for Tampa Bay and Charlotte Harbor during prior years. Edwards and Heuter (1992) indicated that this species abundance pattern appears "normal" for Sarasota Bay and adjacent estuaries.

Selected taxa were common in Sarasota Bay samples during 2002 when compared to dominant taxa and were typically among the top ten most abundant taxa in samples taken with various gear deployment techniques. A total of 31,088 animals (19 taxa) designated as selected taxa were collected in Sarasota Bay during 2002. Over all gear deployment techniques, selected taxa comprised from 1.5 to 26.6% of the total catch from Sarasota Bay during 2002. *Leiostomus xanthurus* and *Mugil* spp. (likely *Mugil cephalus*) typically comprised from 7 to 25% of the total catch from Sarasota Bay during 2002. In addition, *Farfantepenaeus duorarum* and *Callinectes sapidus* exhibited lesser abundance but were frequently collected.

A similar pattern of dominance among selected taxa collected with various gear deployment techniques was exhibited for Tampa Bay and Charlotte Harbor during prior years. For example, species richness varied from 13 to 22 taxa designated as Selected Taxa for Tampa Bay and Charlotte Harbor during 1999, 2000 and 2001 in collections with a 21.3-m seine. However, annual variations occurred in the rank of specific taxa comprising the numerically dominant selected taxa over all gear deployment techniques. For example, either *Farfantepenaeus duorarum* or *Leiostomus xanthurus* were numerically dominant among selected taxa in Tampa Bay in 1999 and 2000; but this pattern shifted to *Leiostomus xanthurus* and *Mugil cephalus* as numerically dominant during 2001. Similarly, *Farfantepenaeus duorarum* and *Cynoscion arenarius* were numerically dominant among selected taxa in Charlotte Harbor in 1999 and 2000; but this pattern shifted to *Leiostomus xanthurus* and *Farfantepenaeus duorarum* as numerically dominant during 2001. A noTable difference in dominance by selected taxa between Sarasota Bay and adjacent estuaries is the lack of occurrence of *Elops saurus* or *Cynoscion arenarius* in Sarasota Bay samples during 2002. Edwards and Heuter (1992) reported a similar result of few or none *Elops saurus* and *Cynoscion arenarius* in seine samples from Sarasota Bay in 1990. These taxa typically occurred in the top five most abundant selected taxa in Tampa Bay and Charlotte Harbor during prior years; although the greatest frequencies of occurrence were related to collections made with larger gears (*e.g.*, 183-m haul or purse seines). This picture of differences in selected taxa dominance between Sarasota Bay and adjacent estuaries may be attributed to limitations due to gear deployment techniques that reflect differences in microhabitats sampled between estuaries.

A comparison reported by Edwards and Heuter (1992) related to differences in abundance of juvenile groupers between 1979 and 1990 in Sarasota Bay appears to hold for the present study. Bird (1980) collected 171 juvenile gag (*Mycteroperca microlepis*) and 37 juvenile red grouper (*Epinephelus morio*) from Sarasota Bay in 1979. Edwards and Heuter (1992) collected only 5 juvenile gag and no juvenile red grouper from Sarasota Bay in 1990. During the present study in Sarasota Bay, just 10 juvenile gag and no juvenile red grouper were collected in 2002. Compared to Sarasota Bay, FIM-FMRI findings suggest that juvenile gag exhibits similar abundance in Tampa Bay but is 2 to 5 times more abundant in Charlotte Harbor than in Sarasota Bay. Similarly, juvenile red grouper is rarely, if ever, collected by FIM-FMRI monitoring in Tampa Bay or Charlotte Harbor.

The catch per unit area (mean density) was also compared between nearby bay systems for 2001 with this study's results. The overall mean density of taxa collected from the bay seine in Tampa Bay and Charlotte Harbor was much lower than that observed for Sarasota Bay. The overall mean density for all species was 2,223.3/100 m^2 for the Sarasota Bay area, compared to 239.6/100 m^2 for Tampa Bay and 318.1/100 m^2 for Charlotte Harbor. The 10 dominant species for Sarasota Bay all were observed at a greater mean density than the top 10 dominant species within Tampa Bay, while the top 4 dominant species within Sarasota Bay exceeded the mean density of the dominant species in Charlotte Harbor. The greater densities of species within Sarasota Bay were most noticeable for baitfish species (*Anchoa mitchilli*, *Menidia* spp. and *Harengula jaguana*) and for several of the killifish species. *Lagodon rhomboides* was the only Sarasota Bay dominant species observed within the range between Tampa Bay and Charlotte Harbor (54.9/100 m^2 for Tampa Bay, 94.6/100 m^2 for Sarasota Bay and 160.6/100 m^2 for Charlotte Harbor).

Similar trends of mean density also held true for the selected taxa. The overall density of selected taxa within Sarasota Bay (220.8/100 m^2) was nearly five times that of Tampa Bay

(48.3/100 m^2) and eight times that of Charlotte Harbor (29.5/100 m^2). This difference in density was primarily due to the high mean density observed for *Leiostomus xanthurus* (163.7/100 m^2) within the Sarasota Bay, as compared to 42.2/ 100 m^2 for Tampa Bay and 15.3/100 m^2 for Charlotte Harbor. The combined mean density for all species of mullet (*Mugil* spp.) is also substantially higher in Sarasota Bay (52.0/100 m^2) when compared to Tampa Bay (0.2/100 m^2) and Charlotte Harbor (1.8/100 m^2). The mean density of the pink shrimp (*Farfantepenaeus duorarum*) in Sarasota Bay (3.3/100 m^2) however, was below that of Tampa Bay (3.4/100 m^2) and Charlotte Harbor (8.8/100 m^2).

When interpreting the results of the mean density data it is important to remember that the mean density calculated for Tampa Bay and Charlotte Harbor represents the density across all 12 months of sampling, whereas the Sarasota Bay data represents sampling conducted in February and June only. February was the month with the highest overall abundance for taxa collected in Tampa Bay and the second highest month of total abundance for Charlotte Harbor, whereas June for both locations falls at the lower end of the abundance range.

Comparison with Northern Indian River Lagoon

The mean density of taxa for the 21.3-meter bay seine for the northern Indian River for 2001 was also compared with the data collected for Sarasota Bay. The total mean density of all species collected for Sarasota Bay (2,223.3/100 m2) was about three times higher than the mean density for the northern Indian River (714.7/100 m2). *Anchoa mitchilli* was the dominant taxa within both bay systems, but the species mean density in Sarasota Bay (714.6/100 m2) was greater than the mean density within northern Indian River (449.2/100 m2). Similar large differences in mean density were observed for the other dominant species within the Sarasota Bay system as compared to the northern Indian River. Interestingly, the species assemblage of the top 10 dominant taxa for the northern Indian River varies substantially from that of Sarasota Bay, with only five species being dominant in both bay systems.

The selected taxa also reflected greater mean density within the Sarasota Bay system (220.8/100 m2) when compared to the northern Indian River (48.9/100 m2). The mean density of *Leiostomus xanthurus* is significantly different between the two bay systems, with a mean density of 163.7/100 m2 observed in Sarasota Bay compared to a density of 1.7/100 m2 observed within the northern Indian River. Conversely, the overall mean density of mullet was relatively similar, with 37.6/100 m2 in the northern Indian River and 52.0/100 m2 observed within Sarasota Bay. The mean densities of *Farfantepenaeus duorarum* were similar between the two bay systems. It appears that the northern Indian River, located on the east coast of Florida, is a different system than Sarasota Bay, Tampa Bay and Charlotte Harbor.

Comparison within Sarasota Bay

The observed mean density of the taxa collected varied widely between the various sampling stations. The highest overall density was observed for a deep water Bowlees Creek station (23,801/100 m^2). The stations with the lowest observed density generally appear to occur in the small shallow creek systems with a strong freshwater influence, such as Philippi Creek and Hog Creek. In general, the highest species diversity was observed at the restored stations. This may be due to the presence several microhabitats and adjacent habitat types that occur in close proximity at these sampling stations, whereas the natural site sampled are generally more uniformed in nature with fewer habitat types adjacent. Average species diversity does not appear to follow a consistent trend, with an equal number of restored and natural habitats scoring high and low.

Selected taxa represented a small amount of the catch. A total of 19 species of selected taxa were observed out of the 80 species collected. The number of selected taxa observed at each site varied widely (from zero to eight species) with no consistent trend being observed between restored and natural sites. Although *Leiostomus xanthurus* and *Mugil* spp. were the most frequently encountered selected taxa, they were not equally represented at all stations. Their density also varied widely and likely reflects the various microhabitats present at those locations as well as physiographic conditions.

Pooling the selected taxa for both natural and restored sites reveals that the two types of sites are very similar in terms of selected taxa composition. The mean density of *Leiostomus xanthurus* was slightly higher for the restored sites (170.1/100 m^2) when compared to the natural sites (158.5/100 m^2). The overall mean density for the restored sites is slightly higher, at 230.7/100 m^2, than the natural sites (212.2/100 m^2).

Comparing the mean density of taxa by guild reveals that the natural sites have substantially higher mean density than that of the restored sites. Natural sites had higher mean density for both resident and transient species, however the restored sites had a slightly higher mean density of nursery species. The primary difference among guilds results from the high numbers of transient species found at a few of the natural sites swaying the overall density numbers toward that of the natural sites.

Not unexpectedly, the transient species guild shows the widest range in mean density between all sites varying widely between each microhabitat type and alternating back and forth between restored and natural habitat types. This reflects the transient nature and schooling behavior of these species, which often occur in high numbers over small areas. The natural sites did, however, have higher total species richness than that of the restored sites. Although the total mean densities fluctuated back and forth by microhabitat type for the resident species, the natural microhabitat types were generally higher in total species richness. Again, this could reflect the age and/or maturity of the restored system.

To summarize, it appears that the restored microhabitat types are faring fairly well compared to that of the natural habitat types. Other than the density of transient species, the species composition and density of the restored sites is comparable to and in some cases better than that of the natural sites. However, the natural sites do appear to generally be more diverse and there may be a lag affect related to species richness.

The ability to capture some taxa may have been limited by the use of the FMRI FIM methodology with it standard depth of deployment. The depth requirement, as well as the inability to get underneath overhanging vegetation, may have limited the ability to catch some species. Refinement of this methodology or adoption of an alternate methodology to sample in these habitat areas could provide information on the use of other microhabitat types by the selected taxa.

Assessment surveys of the three artificial reef sites also occurred during February and June 2002. A total of 59,027 individuals were observed within 27 species or species groups during the 56 sampling events. Early-juveniles of Clupeidae spp., *Haemulon aurolineatum*, larval fish and *Lagodon rhomboides* had noticeable seasonal variance between the February and June events. The *Haemulon aurolineatum* and *Lagodon rhomboides* early-juveniles were dominant during the February sampling event whereas the Clupeidae spp. was present only in the June event. The observed density for *Lagodon rhomboides* during the February event for early-juveniles may have been enhanced by the presence of large accumulations of macroalgae adjacent to the reef structures. This species was also observed in high numbers at many of the fishery sampling stations as noted earlier, whereas *Haemulon aurolineatum* was not observed in any of the fishery sampling stations. These early-juvenile stages were the dominant taxa, representing over 97% of the total individuals observed.

Overall, the monitoring of the reef sites reveals a distinct species assemblage from that of other habitat types within the Bay system. The diversity of species tended to increase with the variety of material types and with the increasing number of replicate samples collected. Many reef-dependent species such as *Haemulon aurolineatum*, *Lutjanus griseus* and *Mycteroperca microlepsis* were observed on the artificial reef material in relatively high numbers. Some species that are present in other habitat types within the Bay system were also found in generally higher numbers on the artificial reef material, including the commercially important stone crab (*Menippe mercenaria*).

Juveniles of *Mycteroperca microlepsis* were only observed during the June surveys and had a very high affinity for positioning themselves within the center of reef ball units. Subadult and adult *Mycteroperca microlepsis* preferred the large open spaces provided by the reef balls for hiding and were only found on structures with this type of material. In contrast, free ranging species, such as *Chaetodipterus faber* and *Archosargus probatocephalus,* were observed swimming over most of the material types. The selected taxa *Lutjanus griseus* was present in many life stages across almost all of the reef material types, but the subadults and juveniles of this species tended to prefer the interior of the reef ball structures whereas the larger adults would swim more openly away from and above the material. *Menippe mercenaria* were observed across many of the reef types, being noticeably absent from the concrete block type reefs, and appeared to prefer the interface between the hard reef structure and the soft substrate where they could burrow.

When comparing the reef balls at different sites, it appears that the time since deployment may be a factor in determining species composition. The newly deployed reef balls at the Walker reef site generally had low diversity and were heavily utilized by juvenile and subadult size classes. The new reef balls at the Walker sites were also heavily colonized by *Menippe mercenaria* of all size classes. In contrast, the older reef ball units on the Walker and Hart reef sites generally contained adult *Mycteroperca microlepsis* and adult *Lutjanus griseus*, but fewer of the juvenile and subadult size classes. It was also noted that the presence of an adult *Mycteroperca microlepsis* tended to limit the number and type of smaller fish present on the reef. This may reflect the predation rate of smaller individuals by adults of this species.

The complexity of the reef site influenced the type and number of species present. The lower complexity sites, such as concrete block, generally did not provide the number of protected spaces needed for some of the species to successfully habitate. This material type generally had low numbers and low species diversity. However, increasing the complexity of a concrete block pile with the presence of reef balls greatly improved the diversity and numbers of fish species present. The reef ball and concrete block pile habitat type supported adults of many species including *Mycteroperca microlepsis*, but again had a noticeable lower abundance of early-juvenile and juvenile species. This may reflect predation influences or an adaptation of the early-juveniles and juveniles to avoid these large predatory species.

The reef ball units provided a habitat for a wide variety of different species, having the highest species richness for all material types. This material type was observed to have all four-size classes, from the early-juvenile stage of some up to the largest adult stage, of the *Mycteroperca microlepsis*. Again, *Menippe mercenaria* heavily utilized the reef balls both along the substrate and internally. Although this material type has the complexity of two, does provide good cover and structure for a variety of species.

The PVC reefs had different results depending on the type of unit constructed. The PVC web material generally had lower diversity and limited suitability for a variety of species. *Mycteroperca microlepsis* subadults and adults were noticeably absent from both of the PVC material types. *Lutjanus griseus*, on the other hand, were very abundant on this material type, especially the PVC ribcage design with several adults being observed. The free-swimming species, *Archosargus probatocephalus* and *Chaetodipterus faber,* also showed high utilization of the PVC ribcage design. This PVC material type is ideal for sites such as the Gerkin site where there is a soft muck layer in which typical, heavy concrete material would rapidly sink.

5.0 RECOMMENDATIONS

Development of detailed recommendations on restoration of juvenile fisheries habitat is difficult due to inherent limitations of the sampling gear and methodology. The observed species composition and abundance varied by gear deployment technique and gear type. The gear type and deployment technique were dictated by the conditions associated with the habitat areas to be sampled and so the fisheries community was not equally accessible to all gear deployment techniques. Deployment techniques also limited the ability to sample "close-in" to specific habitat types and overhanging vegetation. The effort to detect differences was further exacerbated by a fish community that exhibited high dominance.

Despite these limitations, useful recommendations to guide juvenile fisheries habitat restoration can be made. The GIS shoreline mapping and tidal wetland features mapping are instructive in developing recommendations. Bulkheads (185.8 miles) and riprap (38.5 miles) represent 45.3% and 9.4%, respectively, of the total shoreline length within the SBNEP study area. Most of the 207.3 miles (50.5%) of the unvegetated shoreline occurs along these altered shorelines.

Shoreline Enhancement

While these distances of altered shoreline are sobering as to the changes wrought to the estuary, they also represent a vast area in which restoration may occur. Due to its sloping nature and ability to provide some structural habitat, the riprap areas are of less concern/opportunity. However, tremendous opportunity exists to enhance the bulkhead shorelines through a seawall enhancement program. Seawall enhancement can be done with a variety of structures and materials, with no one type being necessarily preferred or recommended for all situations. Development of different enhancement units and techniques should continue.

Critical to large-scale enhancement of seawalls will be the streamlining of the permitting process. Neither the state nor federal government permitting agencies presently have either exemptions or general permits for the deployment of seawall enhancement materials. The expertise, time, and expense currently needed to obtain the required permits discourage the widespread use of seawall enhancements in this region. A combined effort of the local governments, NEP's and other agencies is needed to encourage the permitting agencies to streamline their processes.

Exotics Removal

The GIS shoreline mapping also reveals that 7.6 miles (1.8%) of the shoreline is dominated by nuisance or exotic vegetation (Australian pine, Brazilian pepper, and cattail). These vegetation types represent only a small proportion of the total shoreline, but provide relatively easy enhancement opportunities. These shoreline types occur in many bay segments, but are concentrated in the southern portion (Sections 13, 14, and 16) of the study area, including Philippi Creek.

Habitat Diversity

The shoreline mapping also reveals very low amounts of *Juncus* (0.6 miles, 0.1%), leatherfern (1.5 miles, 0.4%) and *Spartina* (2.3 miles, 0.5%) along the shorelines of the SBNEP study area. Although sparsely spread through many of the bay segments, these three shoreline types are concentrated in Sections 13, 14, and 16 in the southern portion of the study area. Philippi Creek, located in segment 13, contains a large proportion of these habitat types, as well as the nuisance and exotic habitat types mentioned earlier. The low proportion of these habitat types would indicate that these habitat types should be targeted for creation. However, one potential reason for the low percentage of the shoreline represented by these habitat types is that they represent an early successional habitat stage. These habitat types often proceed in development to a mangrove community, which is the climax community in our area.

Due to the limitations in the sampling program, as noted above, definitive direction as to the types of habitats to be restored cannot be provided. However, because on the apparent success of the restored habitats for several juvenile species, it is recommended that habitat restoration continue. Based on the variable nature of where the selected species were captured, it appears prudent to continue to create restoration sites with a mosaic of the various microhabitat types sampled.

As noted, the water quality data reveal limited areas of oligohaline and mesohaline water quality conditions. Within these areas, native habitats are poorly represented. These areas are well documented to support many selected fisheries species that aggregate during portions of their life history within these salinity regimes. As such, it is recommended that these salinity regimes be targeted for habitat restoration and creation in the future.

Submerged Habitats

The tidal wetlands shoreline mapping reveals 91.1% of the SBNEP acreage is contained within the bays and estuaries classification. Although this classification contains seagrass habitat, large areas of unvegetated bottom and open water occur within the study area. As for the altered shorelines noted above, these open areas of bay represent large areas in which enhancement could potentially occur. One opportunity for enhancement would be the spread of seagrass into deeper areas through water quality improvement. Another enhancement opportunity involves the permitting and placement of additional artificial reefs within the deeper portions of the bays and estuaries.

Of the emergent habitat types, salt marshes with 68.2 acres (0.2%) and oyster bars with 83.5 acres (0.2%) are only marginally represented within SBNEP study area. In addition, 552.3 acres (1.6%) of the study area is unvegetated bottom. Although the unvegetated bottom areas are likely unvegetated for reasons of wave action or unsuitable depths (too shallow), slight increases in the depth of these areas could transform them into seagrass meadows, while a decrease in the depth could allow salt marsh development. Placement of oyster shell in some of these locations could also lead to oyster bar development.

Artificial reef materials in the SBNEP study area provide a unique habitat type for a variety of reef-dependent fish species, as well as the commercially important *Menippe mercenaria*. The ability of artificial reef material to enhance the species composition and abundance on otherwise poorly inhabited bottoms, such as dredge holes and open sand areas, greatly increases the ability to improve the fishery of some of these species. In general, the more complex the reef design and the more material types that can be used, the better the reef will be for a variety of species types. Enhancement of existing artificial reefs is possible and recommended through the placement of additional material, and stacking or placing of new material types around existing material (*i.e.*, placement of concrete blocks around existing reef balls).

The use of prefabricated PVC reef unit designs is recommended within those dredge hole areas where typical artificial reef material would rapidly settle. Again, a variety of design and shapes should be used to increase and improve the overall efficiency of these sites. However, due to the light weight of this material type, it is recommended that the PVC reefs be limited to large dredge type holes where the water current are low and physical disturbances would be limited.

The reef ball units continue to make an excellent artificial reef material type. Future deployment should consider enhancement to existing reef ball units to improve complexity, however. It may be advantageous to create reef ball designs that reduce or eliminate the large open spaces in the interior of the reef ball that could be utilized by adult *Mycteroperca microlepsis*. This would allow the smaller juvenile and early-juvenile species to successfully hide within the reef ball units without fear of predation.

Future Work

The Habitat Restoration Working Group (HRWG) of the SBNEP determined that a five-year restoration plan document should be prepared. It was felt that this document could be used to develop and improve restoration targets and may assist local agencies and organizations in obtaining additional funds for restoration projects. A similar guiding document has been prepared for other areas such as Tampa and Chesapeake Bays. As a precursor to the development of this plan, further research is recommended to fully evaluate habitat availability in Sarasota Bay. Members of the Sarasota Bay technical community should review existing research in specific areas (including essential fish habitat, wetland restoration, artificial reefs, and seawall enhancement) and provide written habitat restoration recommendations. These recommendations should be summarized in a report and presented at a workshop to the full SBNEP TAC for comment.

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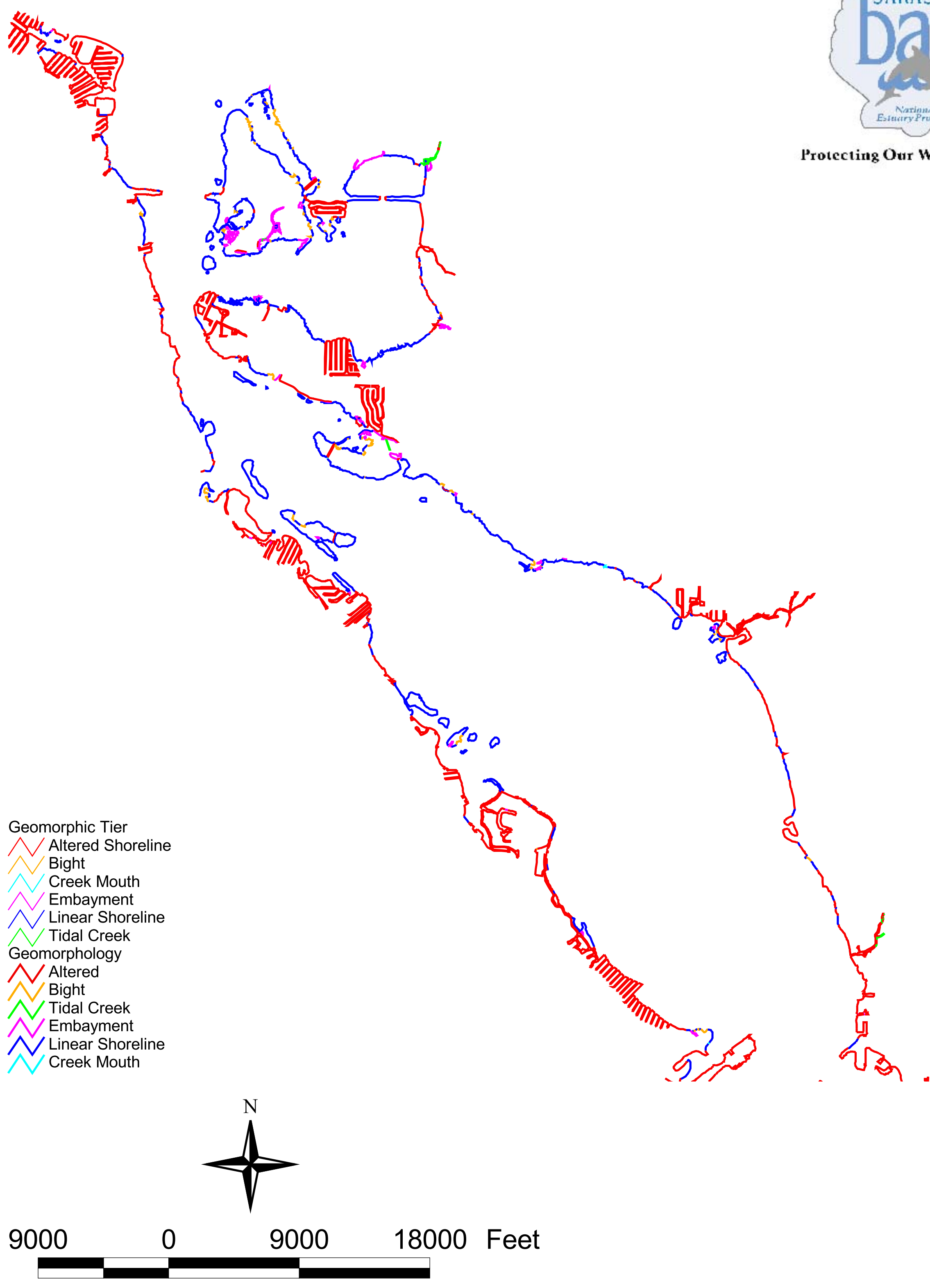
Appendix A

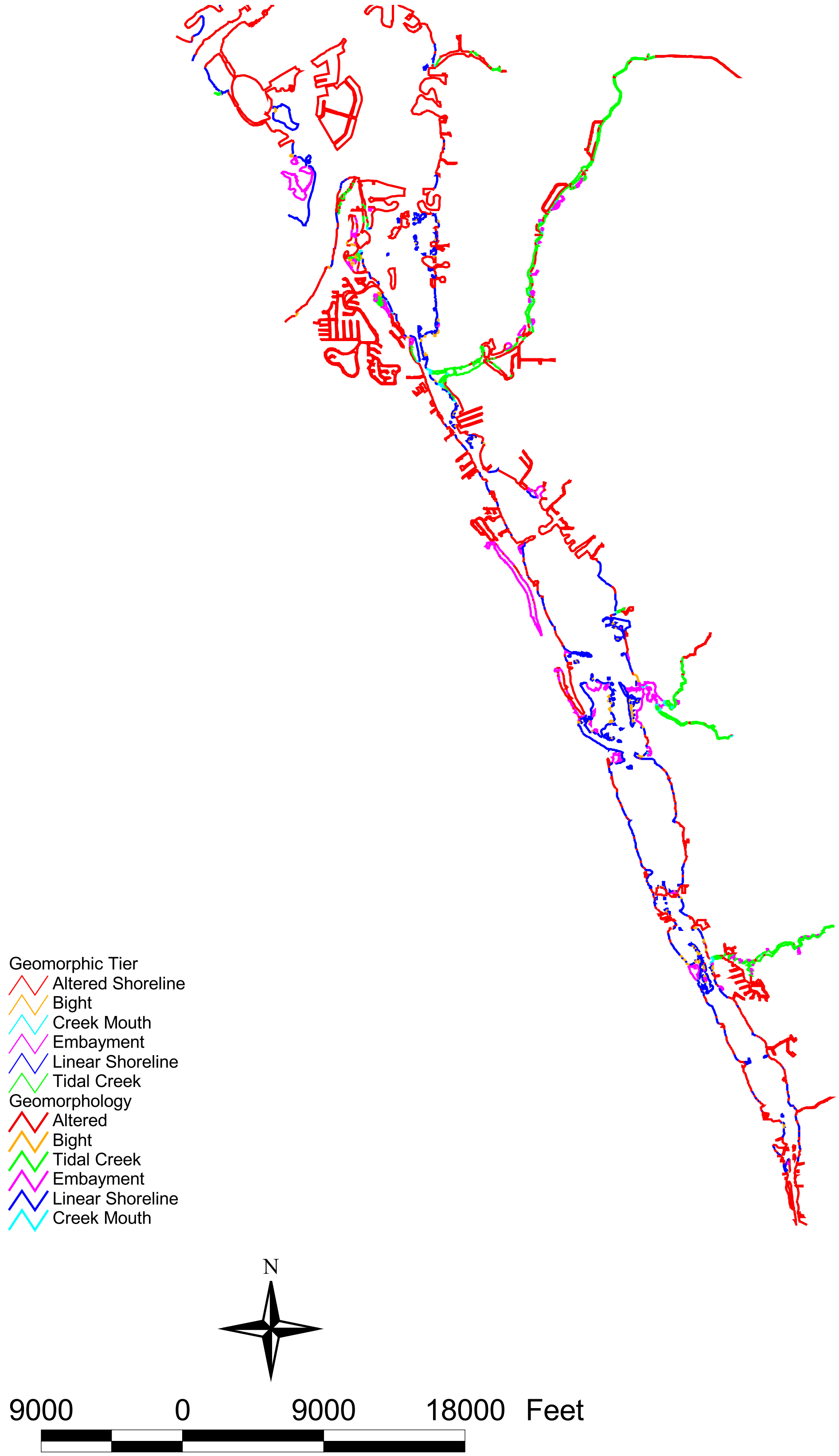
Protecting Our Water Heritage



STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure A-1
Geomorphic Tier
Northern Portion of the Study Area

Vanasse Hangen Brustlin, Inc.
Environmental Services Division
P.O. Box 35
5010 U.S. 19 North
Palmetto, Florida



SARASOTA bay National Estuary Program

Protecting Our Water Heritage

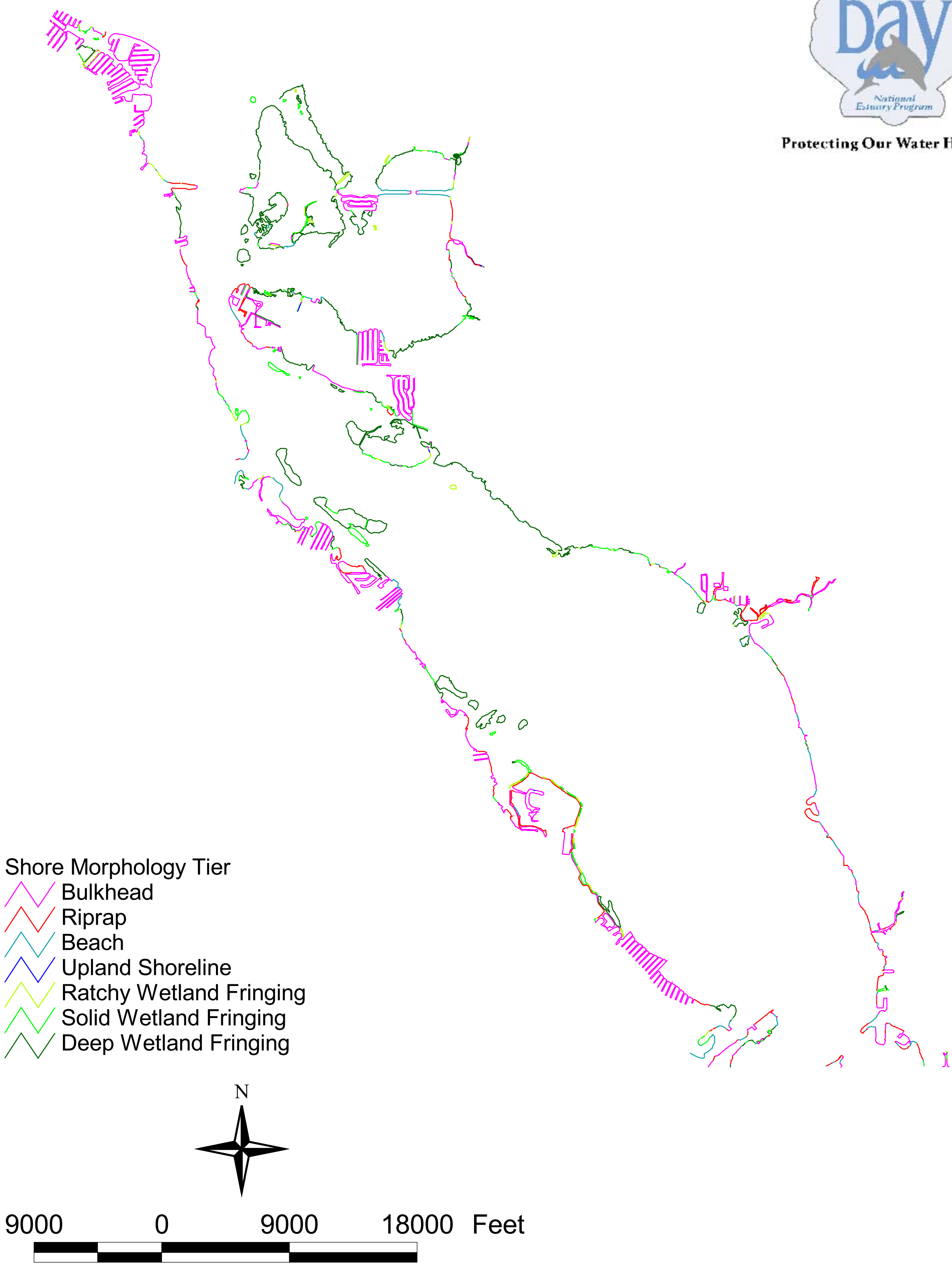
STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure A-2
Geomorphic Tier
Southern Portion of the Study Area

Vanasse Hangen Brustlin, Inc.
Environmental Services Division
P.O. Box 35
5010 U.S. 19 North
Palmetto, Florida

SARASOTA bay National Estuary Program

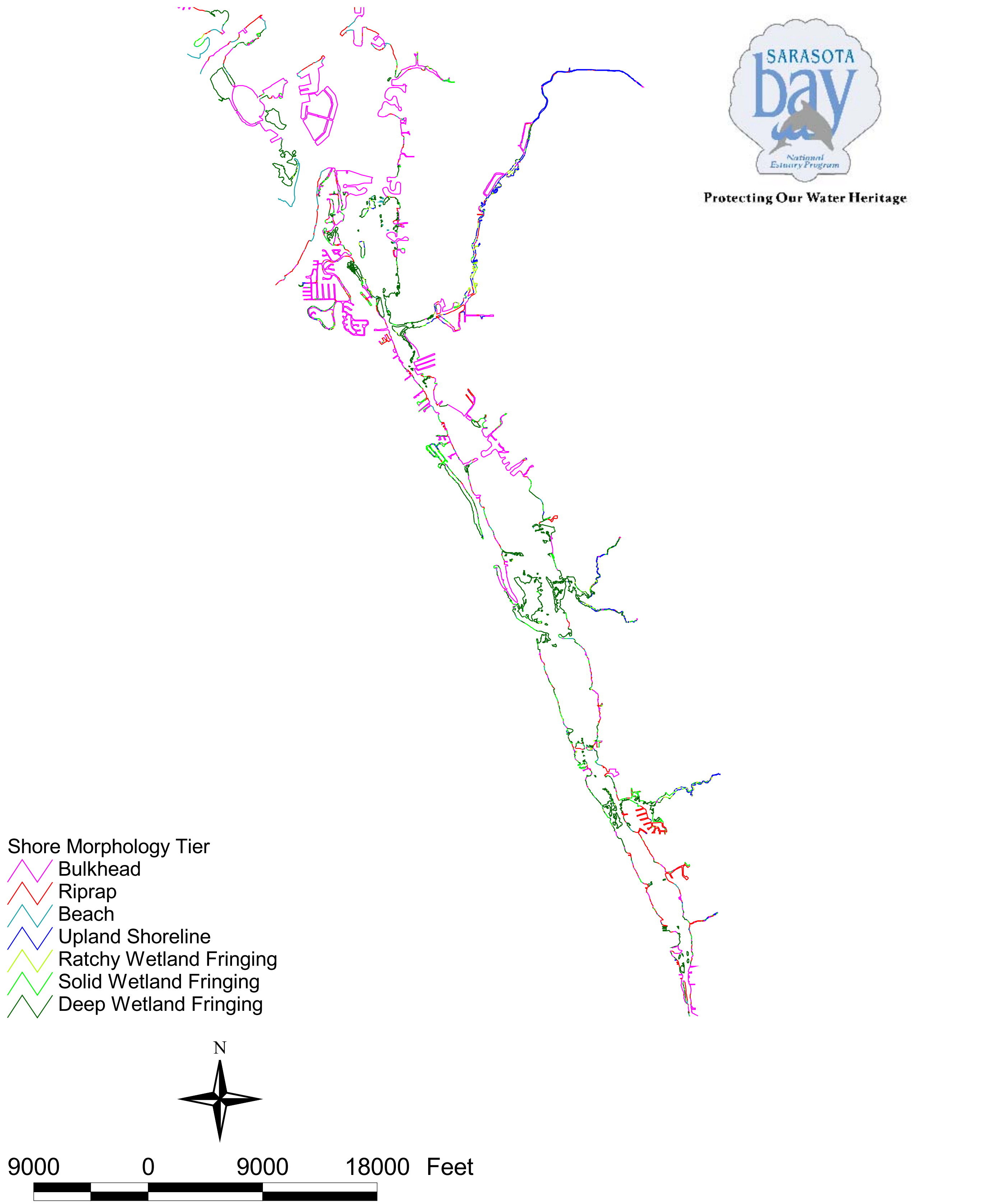
Protecting Our Water Heritage



STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure A-3
Shore Morphology Tier
Northern Portion of the Study Area

Vanasse Hangen Brustlin, Inc.
Environmental Services Division
P.O. Box 35
5010 U.S. 19 North
Palmetto, Florida

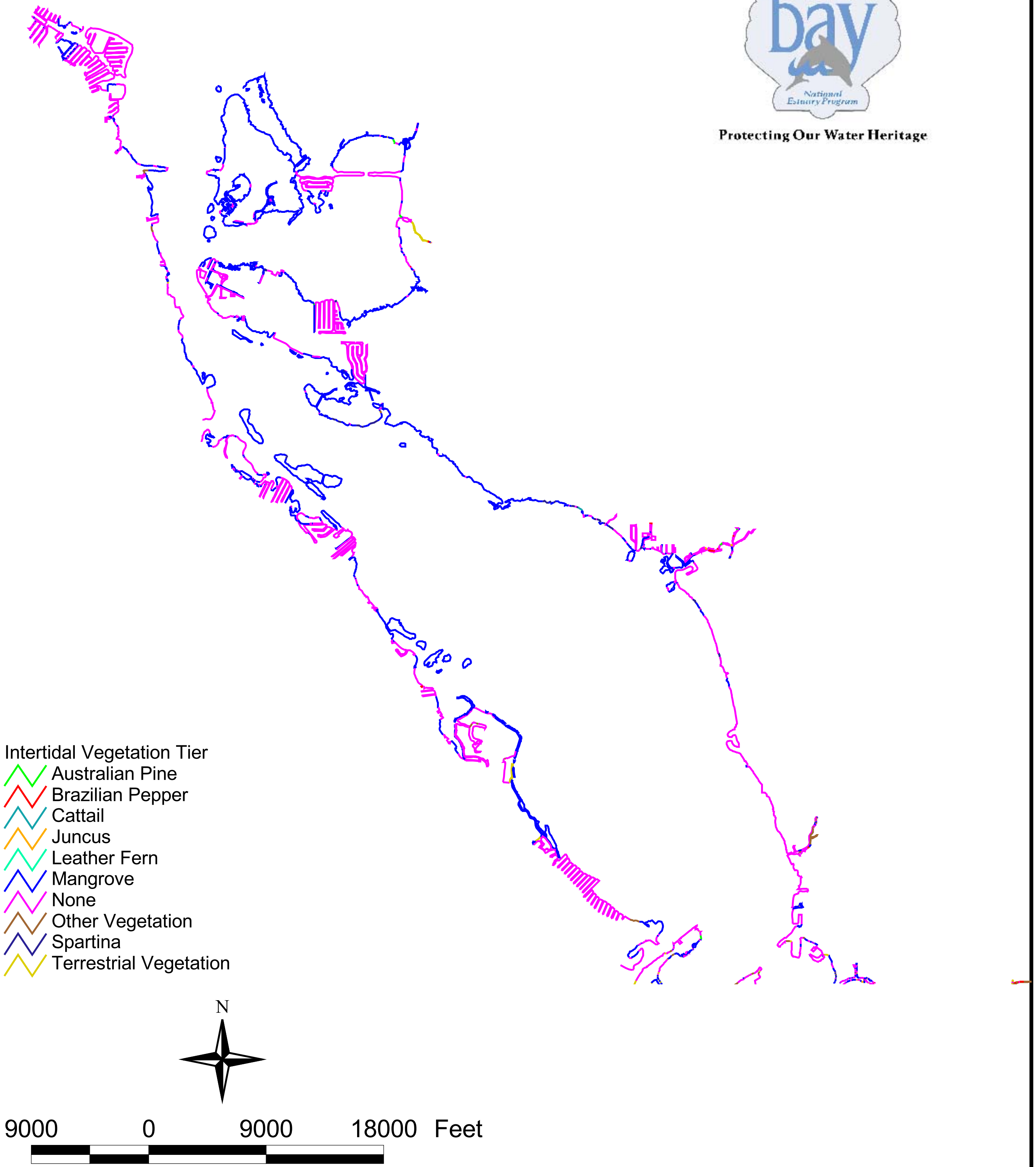


STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure A-4
Shore Morphology Tier
Southern Portion of the Study Area

Vanasse Hangen Brustlin, Inc.
Environmental Services Division
P.O. Box 35
5010 U.S. 19 North
Palmetto, Florida

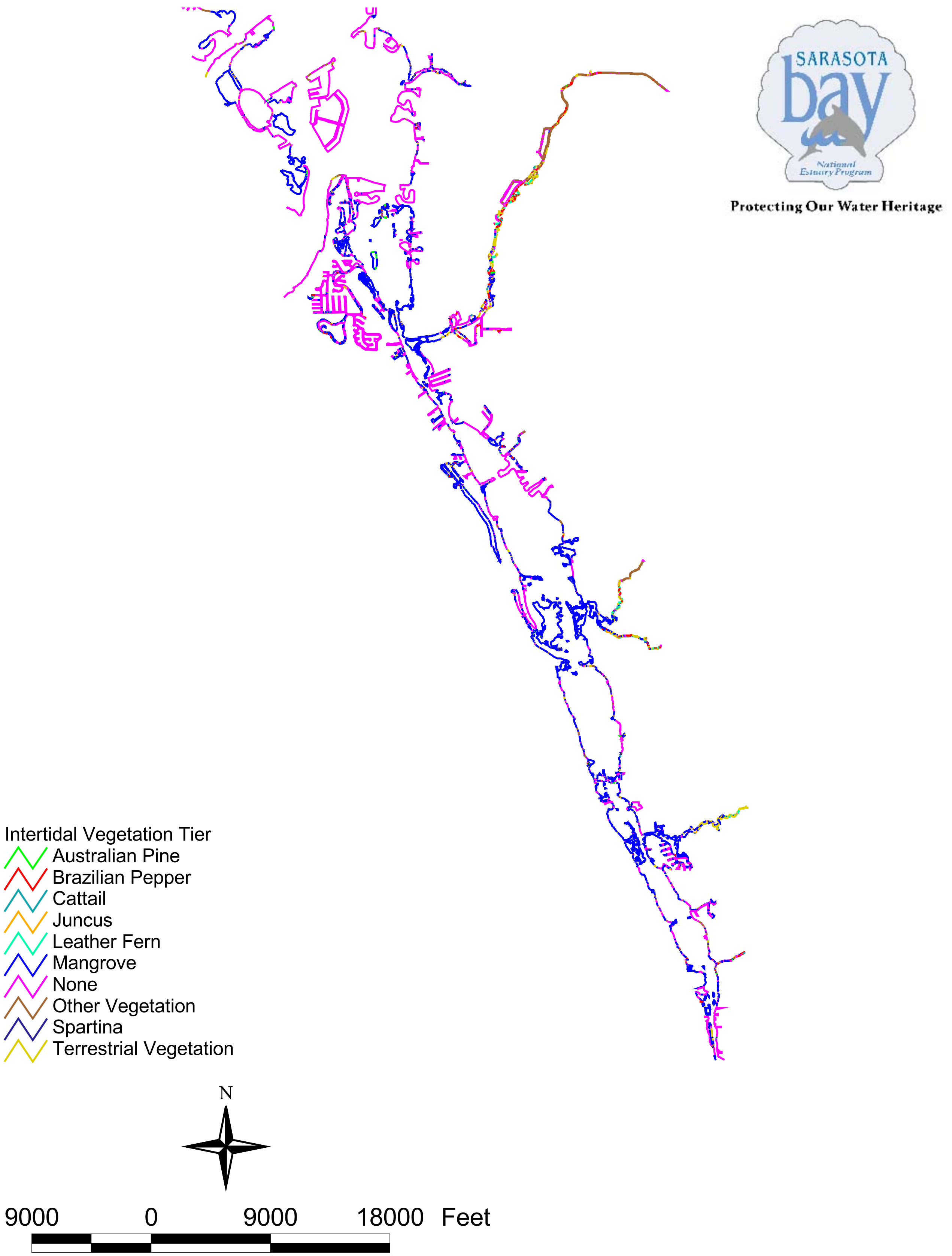
Protecting Our Water Heritage



STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure A-5
Vegetation Tier
Northern Portion of the Study Area

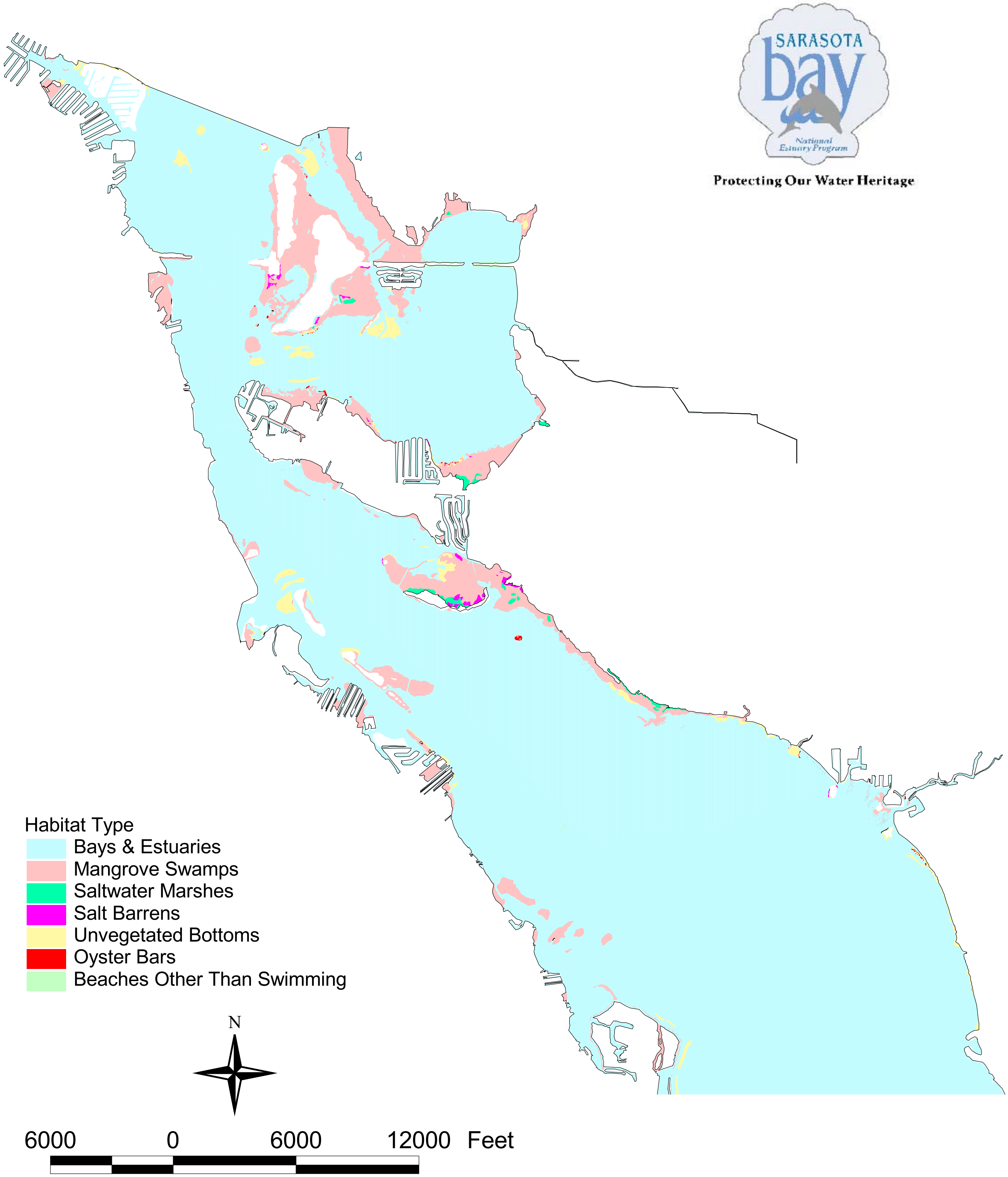
Vanasse Hangen Brustlin, Inc.
Environmental Services Division
P.O. Box 35
5010 U.S. 19 North
Palmetto, Florida



STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure A-6
VegetationTier
Southern Portion of the Study Area

Vanasse Hangen Brustlin, Inc.
Environmental Services Division
P.O. Box 35
5010 U.S. 19 North
Palmetto, Florida



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ENVIRONMENTAL MANAGEMENT

Figure A-7
Habitat Information
Northern Portion of the Study Area

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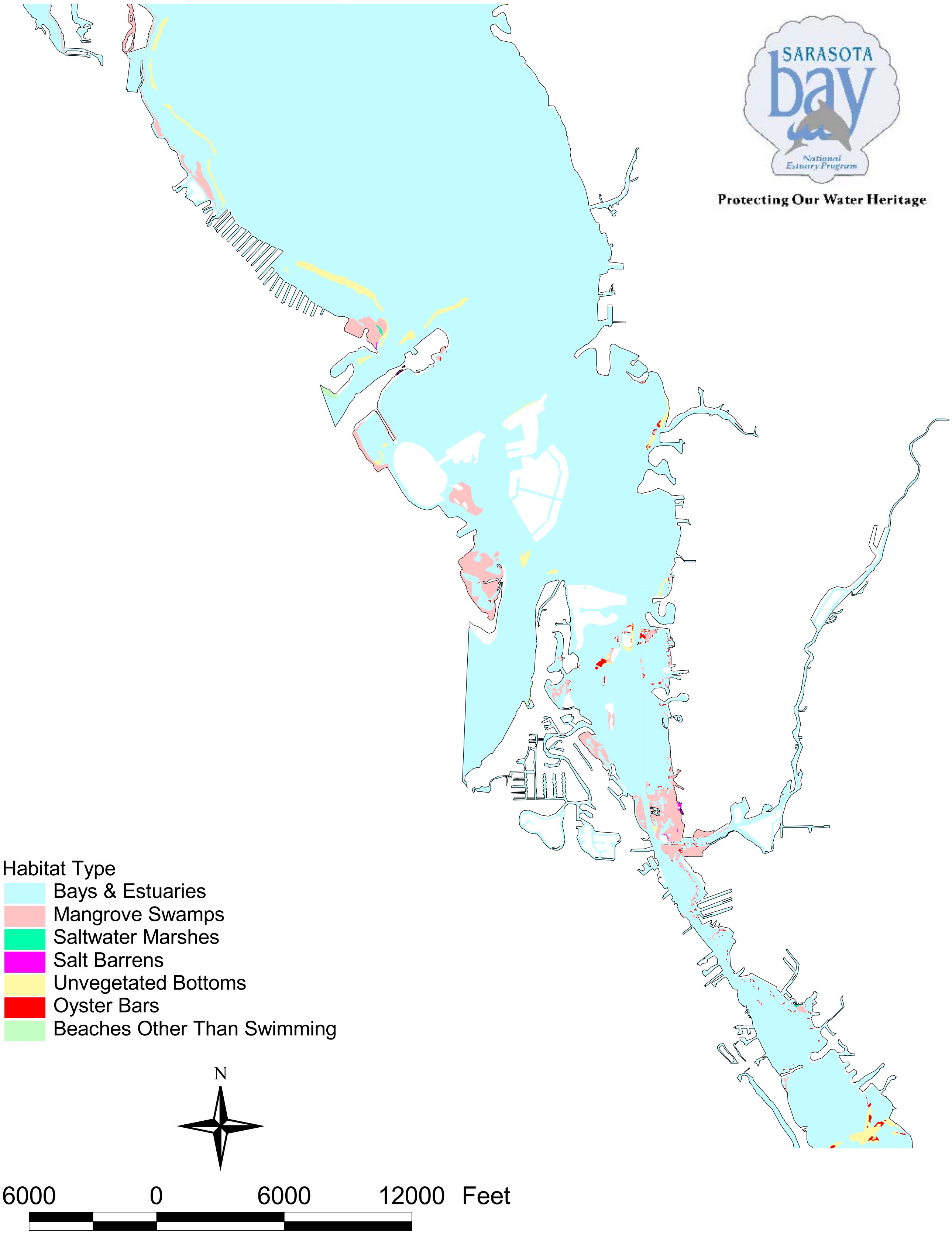
Palmetto, Florida

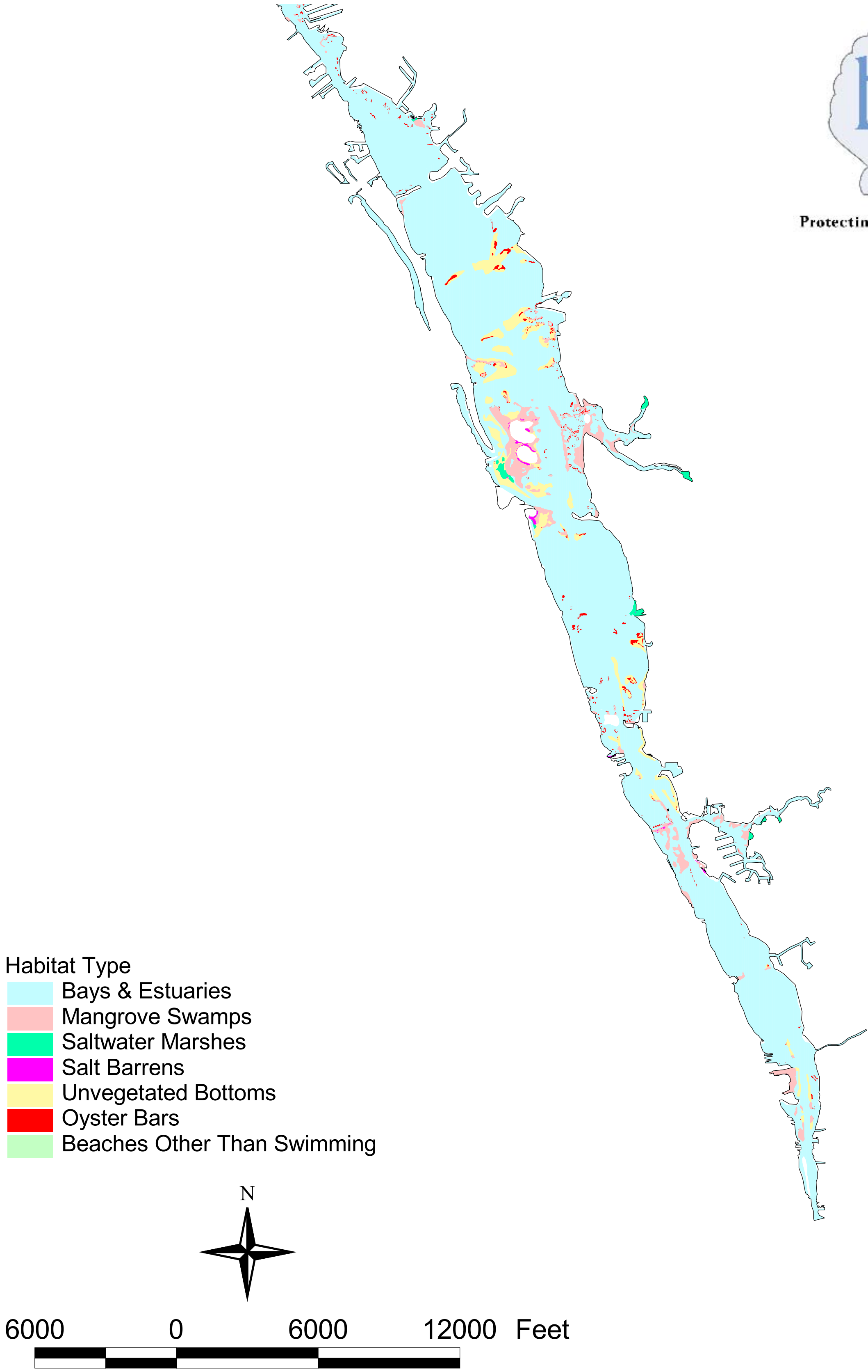


STEVEN SAUERS
ENVIRONMENTAL MANAGEMENT

Figure A-8
Habitat Information
Central Portion of the Study Area

Vanasse Hangen Brustlin, Inc.
Environmental Services Division
P.O. Box 35
5010 U.S. 19 North
Palmetto, Florida

SARASOTA bay
National Estuary Program
Protecting Our Water Heritage



STEVEN SAUERS ENVIRONMENTAL MANAGEMENT

Figure A-9
Habitat Information
Southern Portion of the Study Area

Vanasse Hangen Brustlin, Inc.
Environmental Services Division
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5010 U.S. 19 North
Palmetto, Florida

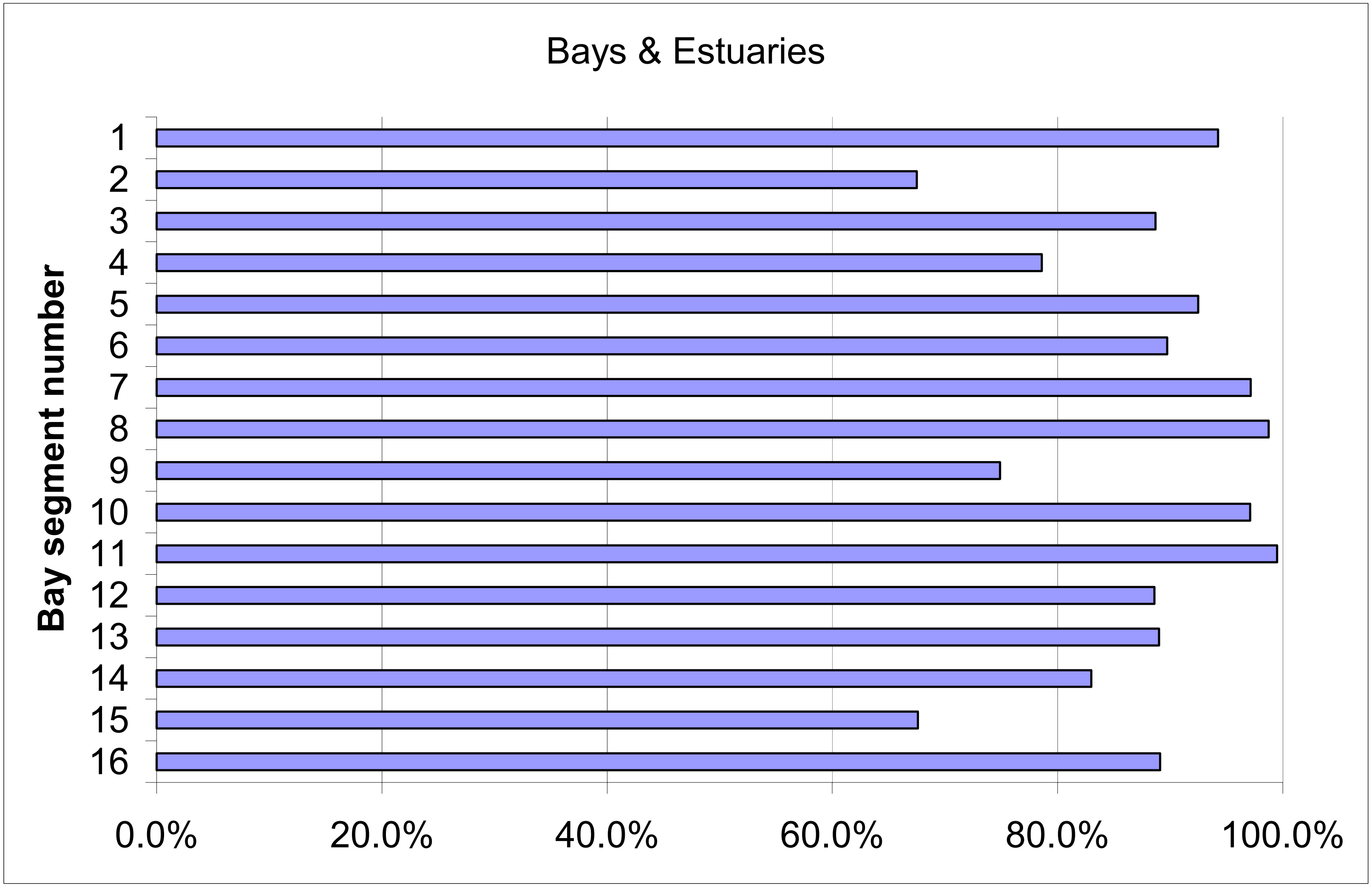

Figure A-10. Percentage of bays and estuaries within the Sarasota Bay study area by bay segment.

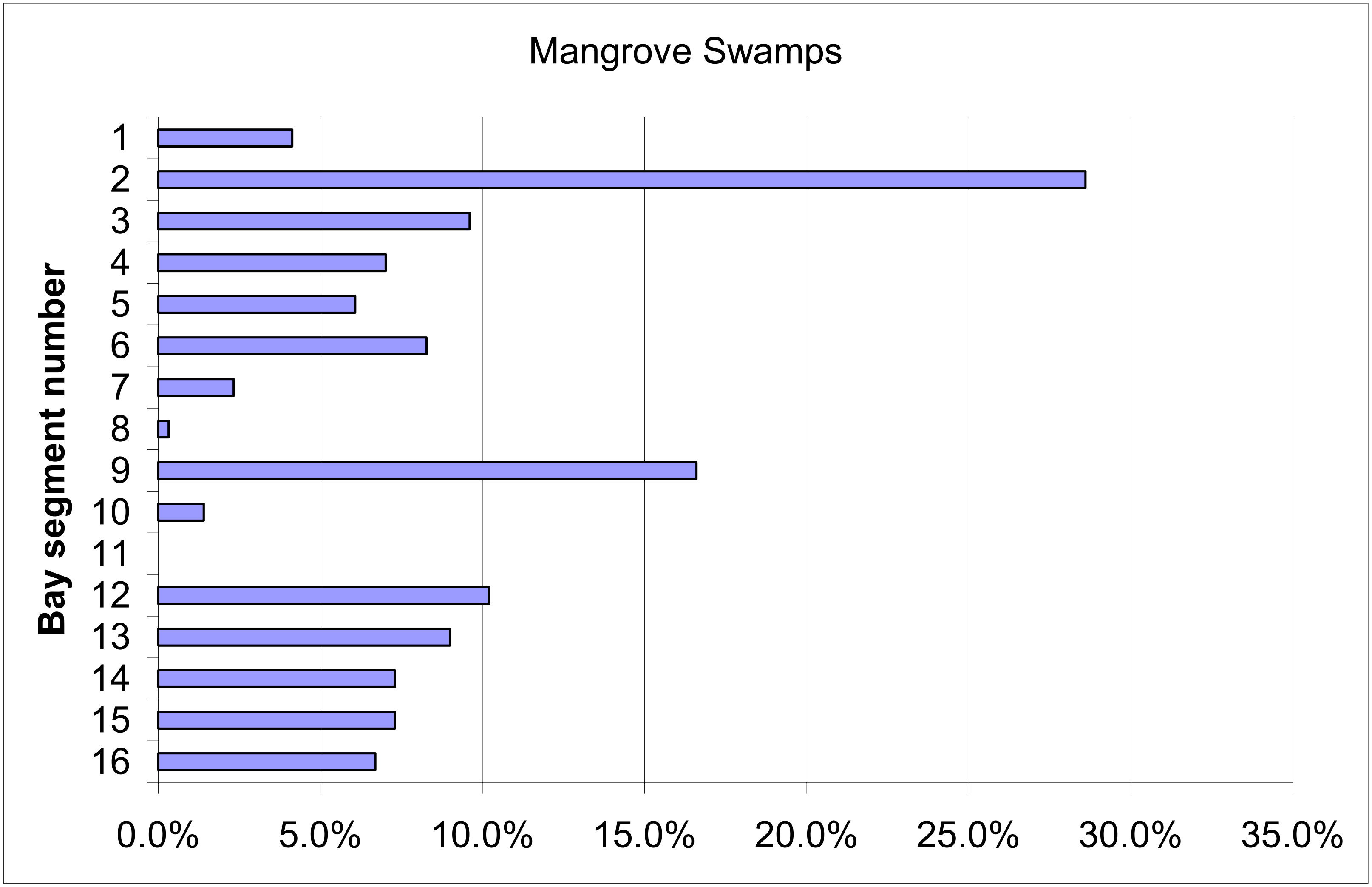

Figure A-11. Percentage of mangrove swamps within the Sarasota Bay study area by bay segment.

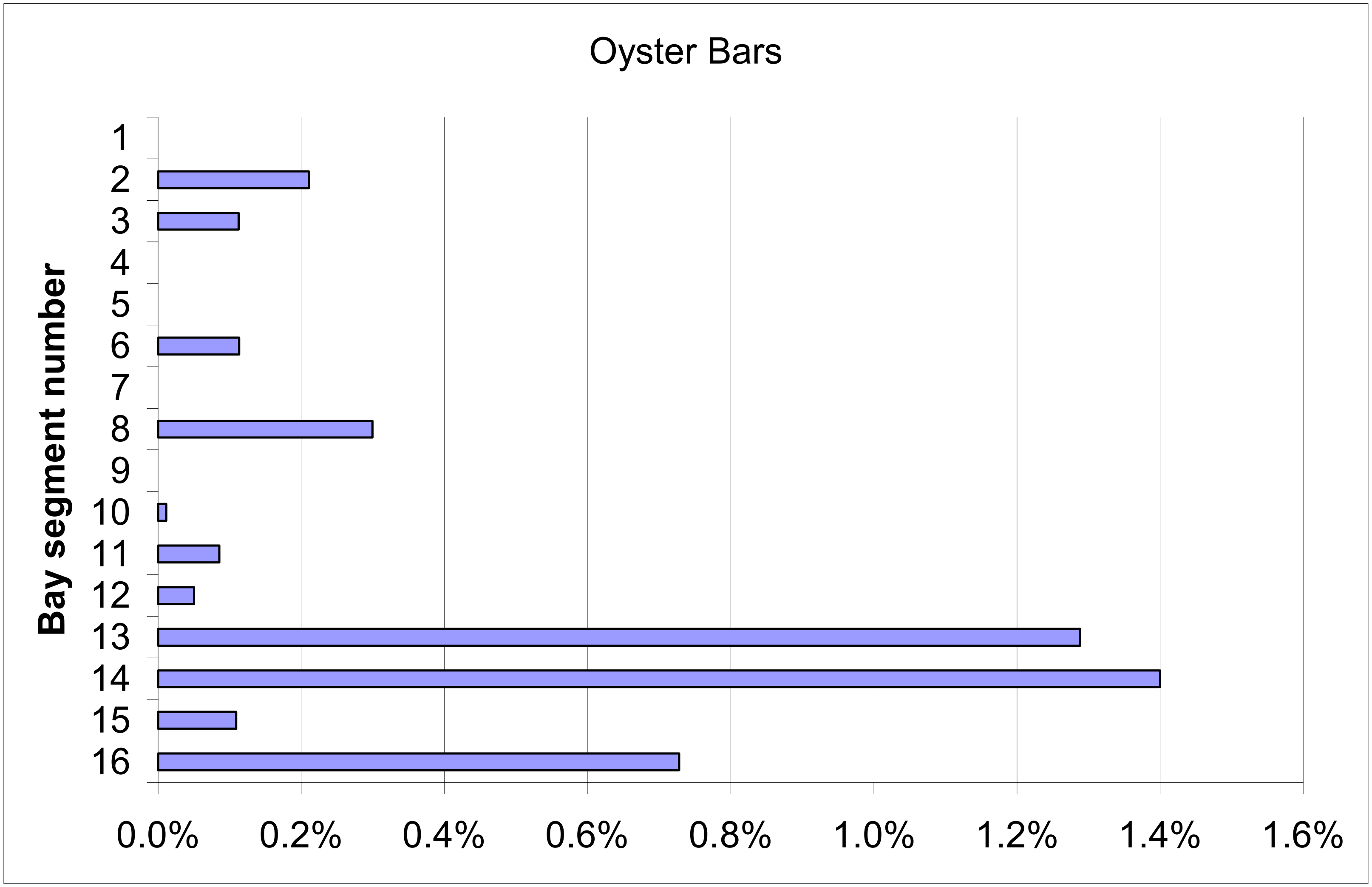

Figure A-12. Percentage of oyster bars within the Sarasota Bay study area by bay segment.

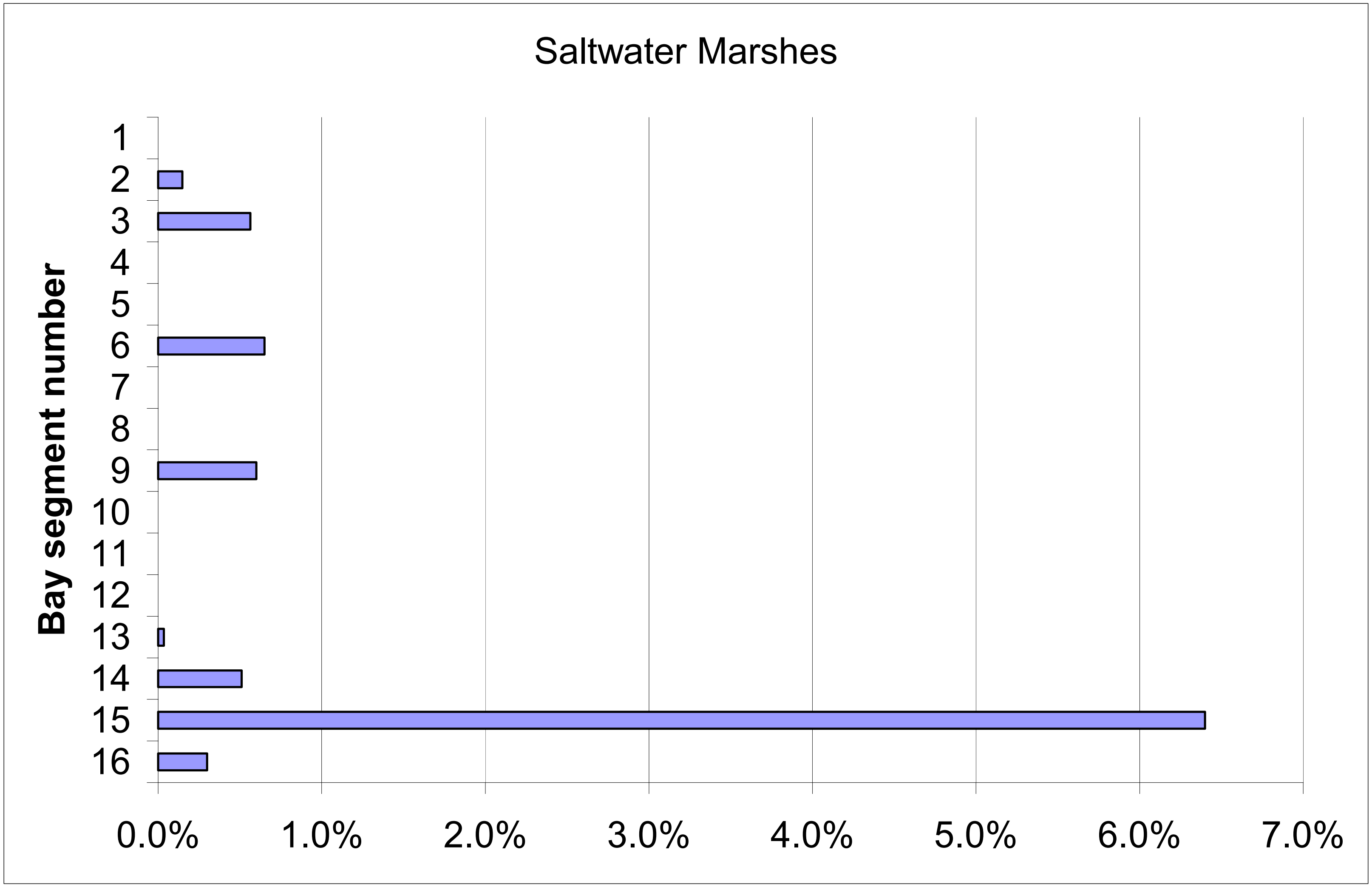

Figure A-13. Percentage of saltwater marshes within the Sarasota Bay study area by bay segment.

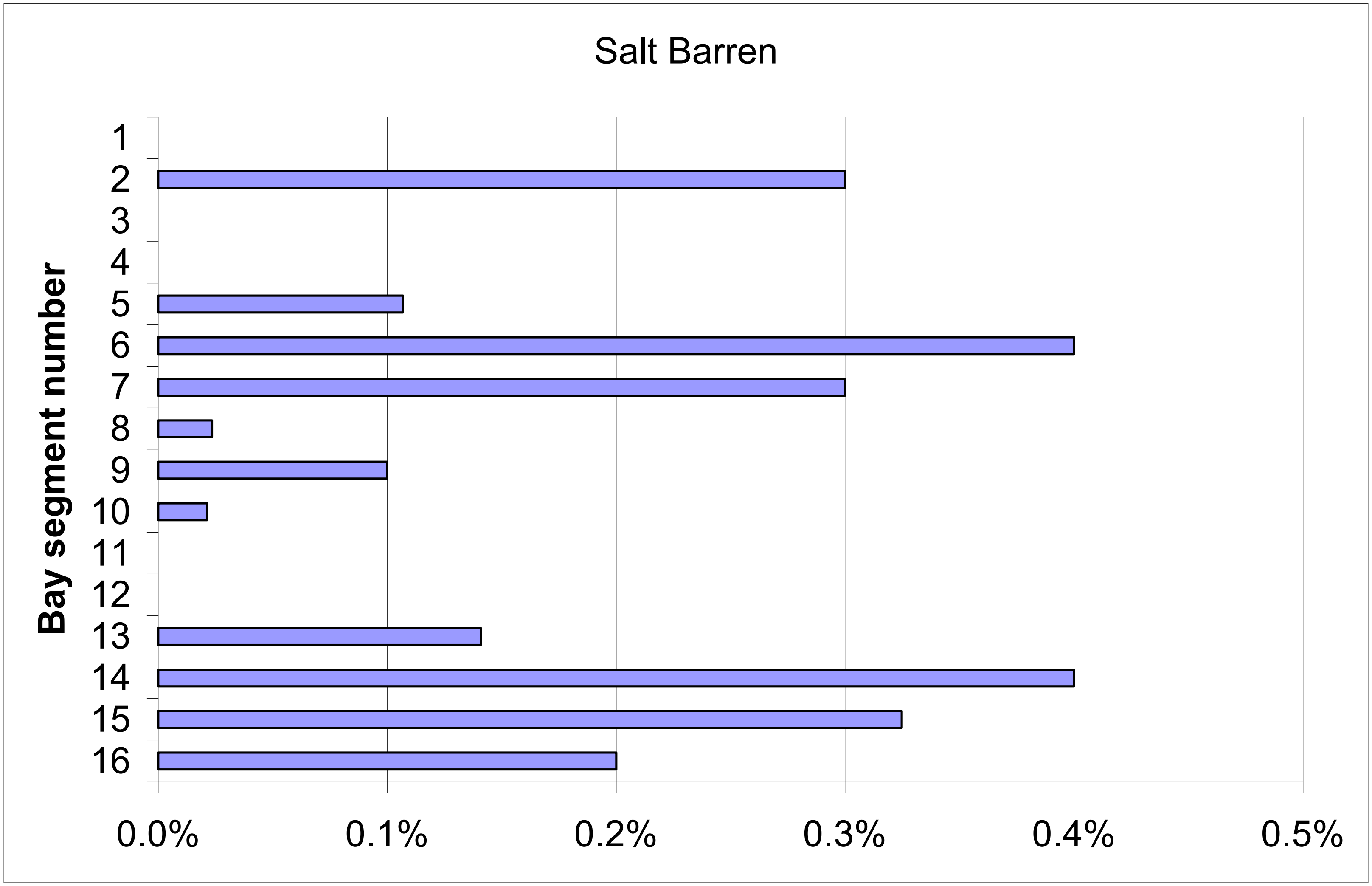

Figure A-14. Percentage of salt barren within the Sarasota Bay study area by bay segment.

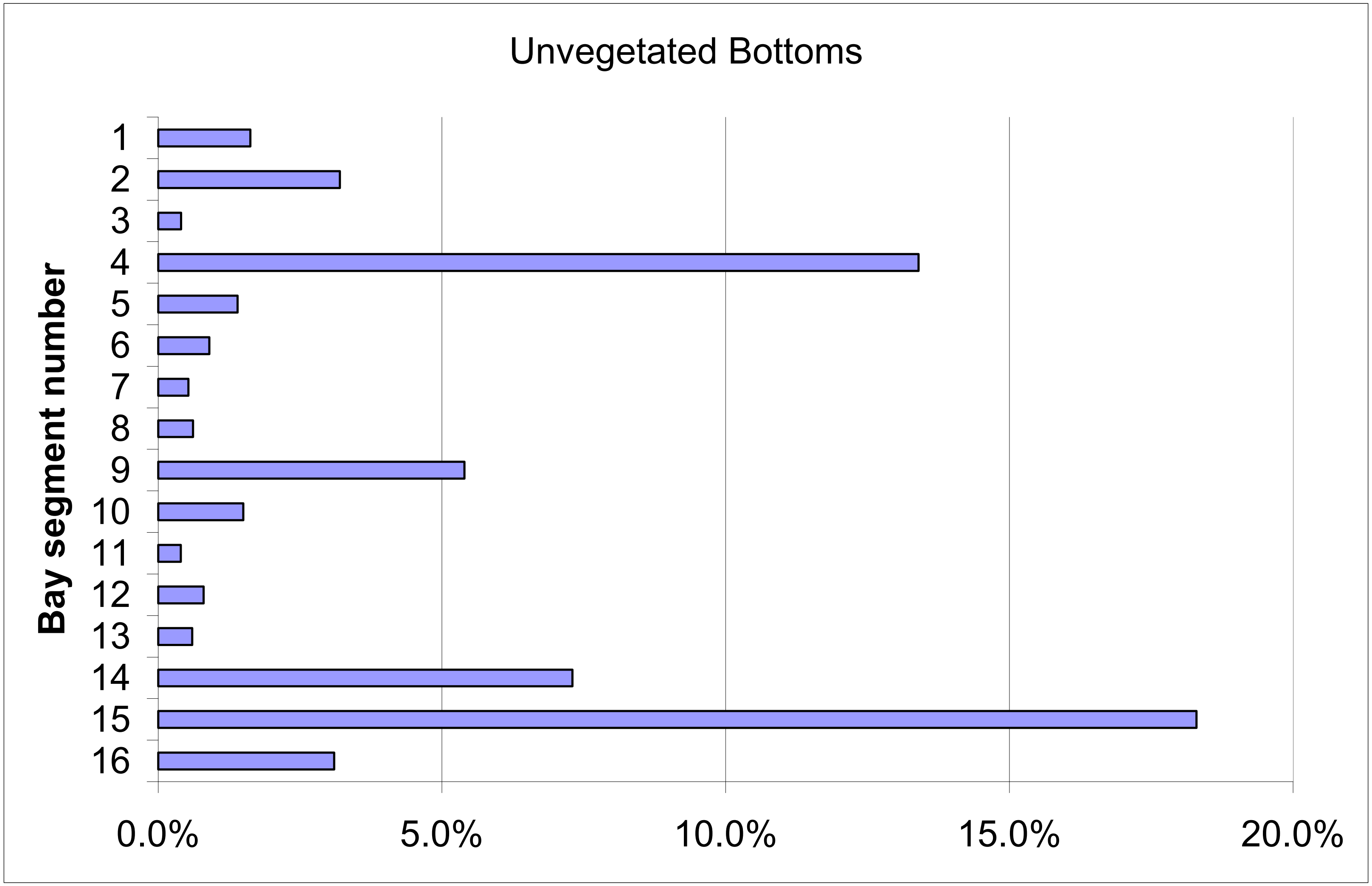

Figure A-15. Percentage of unvegetated bottoms within the Sarasota Bay study area by bay segment.

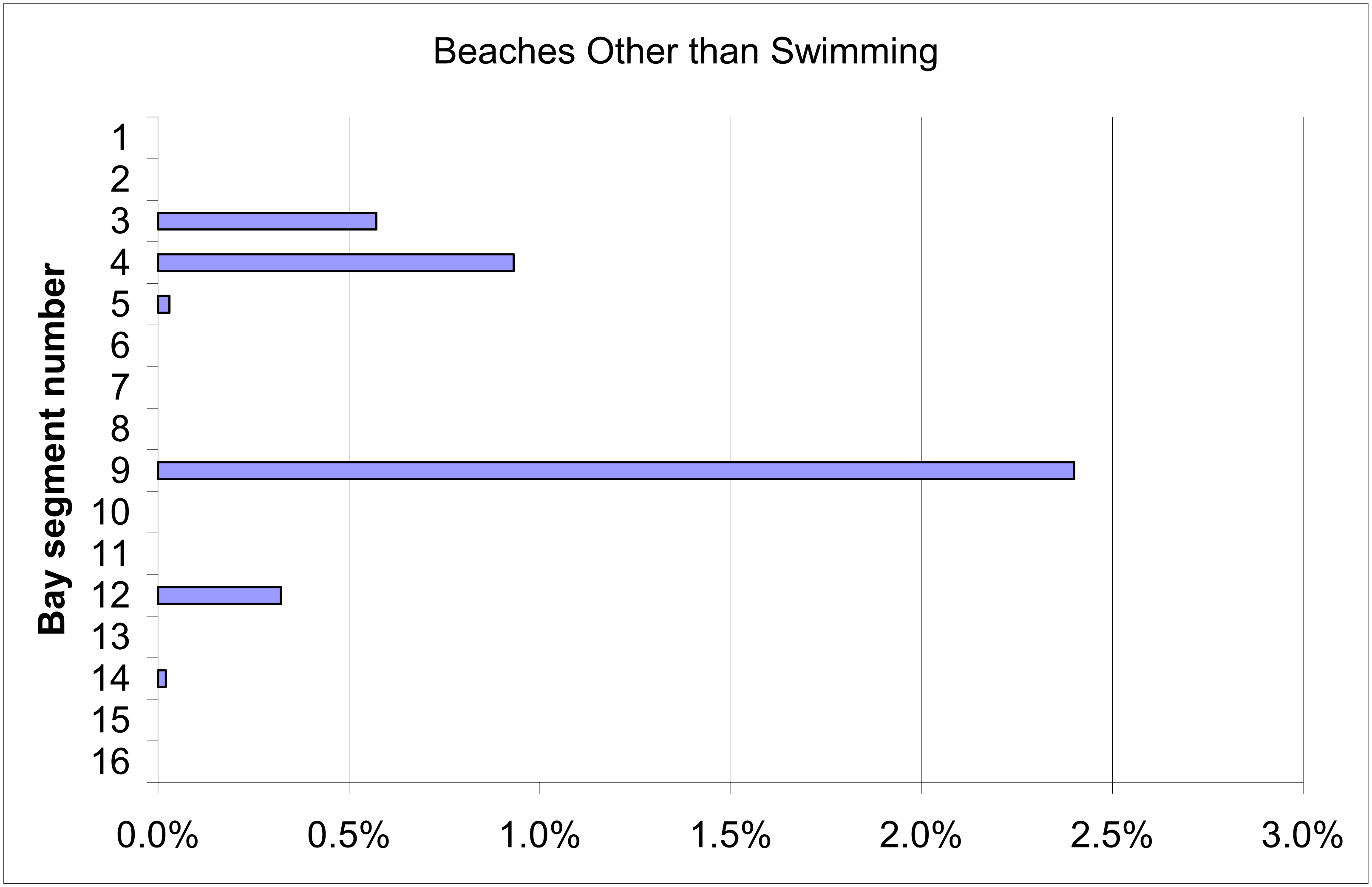

Figure A-16. Percentage of beaches other than swimming within the Sarasota Bay study area by bay segment.

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Appendix B

Table B-1. Mean density (#/100 m^2) and standard error (± SE) by taxa at each sampling station for all sampling events.

Species name	Common name	Tidy Island Site C 1 Mean ± SE	Tidy Island Site C 2 Mean ± SE	Tidy Island Site C 3 Mean ± SE	Leffis Key Site C 4 Mean ± SE	Sister Keys Site C 5 Mean ± SE	Sister Keys Site C 6 Mean ± SE
Anchoa mitchilli	Bay anchovy	82.9 ± 82.9	240.0 ± 240.0	1.4 ± 1.4	3867.9 ± 3811.8	0.0 ± 0.0	0.4 ± 0.4
Lucania parva	Rainwater killifish	251.4 ± 146.4	485.0 ± 446.4	78.6 ± 72.9	0.7 ± 0.7	8.3 ± 8.3	273.9 ± 103.3
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Leiostomus xanthurus	Spot	140 ± 86.3	41.4 ± 27.1	211.6 ± 126.3	528.6 ± 421.9	141.7 ± 82.7	104.4 ± 73.7
Menidia spp.	Assorted silverside	7.1 ± 5.5	7.1 ± 7.1	136.1 ± 77.9	178.4 ± 77.9	0.0 ± 0.0	355.9 ± 271.6
Harengula jaguana	Scaled sardine	0.2 ± 0.2	0.0 ± 0.0	5.0 ± 5.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.9 ± 2.9	16.7 ± 16.7	15.8 ± 15.3
Lagodon rhomboides	Pinfish	69.8 ± 19.8	72.0 ± 30.9	31.4 ± 26	389.8 ± 203.8	0.0 ± 0.0	109.6 ± 56.9
Eucinostomus spp.	Assorted mojarra	487.9 ± 335	698.6 ± 405.2	342.9 ± 342.9	32.5 ± 16.3	0.0 ± 0.0	30.1 ± 21.6
Cyprinodon variegatus	Sheepshead minnow	18.6 ± 18.6	0.0 ± 0.0	21.4 ± 21.4	10.0 ± 5.9	150.0 ± 150.0	82 ± 78.6
Mugil spp.	Assorted mullet	21.4 ± 21.4	150.0 ± 150.0	31.4 ± 27.8	0.7 ± 0.7	516.7 ± 516.7	47.4 ± 44.5
Fundulus grandis	Gulf killifish	2.9 ± 2.9	1.4 ± 1.4	1.6 ± 1.4	29.3 ± 29.3	466.7 ± 337.7	7.4 ± 4.2
Mugil cephalus	Striped mullet	0.0 ± 0.0	0.0 ± 0.0	7.7 ± 7.7	0.0 ± 0.0	0.0 ± 0.0	5.5 ± 5.5
Anchoa cubana	Cuban anchovy	20.0 ± 20.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	76.6 ± 36.9	18.2 ± 12.7	33.7 ± 23.5	22.0 ± 22.0	16.7 ± 16.7	37.5 ± 24.5
Eucinostomus harengulus	Tidewater mojarra	0.0 ± 0.0	0.0 ± 0.0	79.6 ± 79.6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Microgobius gulosus	Clown goby	2.3 ± 1.7	3.6 ± 2.9	5.5 ± 5.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus majalis	Striped killifish	82.9 ± 82.9	2.9 ± 2.9	34.3 ± 34.3	14.5 ± 14.5	8.3 ± 8.3	4.8 ± 3.1
Clupeidae spp.	Assorted herring	29.1 ± 29.1	0.5 ± 0.5	0.0 ± 0.0	177.3 ± 139.4	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus gula	Silver jenny	12.5 ± 8.2	6.3 ± 4.5	17.0 ± 13.6	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Anchoa hepsetus	Striped anchovy	2.3 ± 2.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.5 ± 0.3	0.0 ± 0.0	0.0 ± 0.0
Strongylura notata	Redfin needlefish	0.0 ± 0.0	0.0 ± 0.0	3.4 ± 2.9	1.6 ± 1.4	0.0 ± 0.0	7.4 ± 6.9
Syngnathus scovelli	Gulf pipefish	1.4 ± 1.4	4.3 ± 4.3	0.0 ± 0.0	1.1 ± 0.7	0.0 ± 0.0	0.0 ± 0.0
Sphoeroides nephelus	Southern puffer	3.2 ± 2.8	4.5 ± 4.2	0.4 ± 0.4	10.9 ± 7.9	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	1.4 ± 1.4	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.4 ± 0.4
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Tidy Island Site C 1 Mean ± SE	Tidy Island Site C 2 Mean ± SE	Tidy Island Site C 3 Mean ± SE	Leffis Key Site C 4 Mean ± SE	Sister Keys Site C 5 Mean ± SE	Sister Keys Site C 6 Mean ± SE
Oligoplites saurus	Leatherjacket	2.0 ± 1.7	0.2 ± 0.2	0.4 ± 0.3	2.5 ± 2.1	0.0 ± 0.0	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	25 ± 25	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	1.4 ± 1.4	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Synodus foetens	Inshore lizardfish	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	1.1 ± 0.9	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	1.3 ± 0.7	3.2 ± 3.2	2.1 ± 2.1	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	7.1 ± 7.1	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	4.1 ± 4.1	0.0 ± 0.0	0.9 ± 0.7	0.0 ± 0.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	0.0 ± 0.0	2.9 ± 2.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	2.9 ± 2.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0
Diplodus holbrooki	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.9 ± 2.9	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	3.7 ± 3.7
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	2.9 ± 2.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.5 ± 0.5	0.5 ± 0.5	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.8 ± 1.4	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Tidy Island Site C 1 Mean ± SE	Tidy Island Site C 2 Mean ± SE	Tidy Island Site C 3 Mean ± SE	Leffis Key Site C 4 Mean ± SE	Sister Keys Site C 5 Mean ± SE	Sister Keys Site C 6 Mean ± SE
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		1319.3 ± 379.1	1754.6 ± 731.7	1046.4 ± 372.3	5286.6 ± 3608.9	1350 ± 739.7	1086.8 ± 314.8
Richness		11.0 ± 1.3	10.3 ± 1.7	9.8 ± 2.6	13.8 ± 1.4	3 ± 1.3	9.3 ± 1
Diversity		1.4 ± 0.2	1.1 ± 0.2	1.1 ± 0.2	1.0 ± 0.3	0.5 ± 0.2	1.4 ± 0.1

Table B-1. (Continued).

Species name	Common name	Sister Keys Site C 7 Mean ± SE	El Conquistador Site C 8 Mean ± SE	El Conquistador Site C 9 Mean ± SE	Bowlees Creek Site C 10 Mean ± SE	Bowlees Creek Site C 11 Mean ± SE	Bowlees Creek Site C 12 Mean ± SE
Anchoa mitchilli	Bay anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	14774.3 ± 7441.3	400 ± 400
Lucania parva	Rainwater killifish	2935.2 ± 1659.6	2.2 ± 2.2	323.0 ± 147.4	28.6 ± 26.9	11.8 ± 11.8	16.1 ± 6.8
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	92.4 ± 63.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Leiostomus xanthurus	Spot	1.4 ± 1.4	0.0 ± 0.0	82.1 ± 82.1	2.0 ± 1.1	2082.4 ± 2066.7	74.8 ± 74.2
Menidia spp.	Assorted silverside	13.0 ± 12.6	1.1 ± 1.1	102.5 ± 40.4	43.7 ± 29.5	150 ± 93.8	351.6 ± 332.4
Harengula jaguana	Scaled sardine	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5058.8 ± 5027.5	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	0.0 ± 0.0	127.2 ± 51.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lagodon rhomboides	Pinfish	209.3 ± 109.1	5.4 ± 4.1	47.1 ± 27.7	39.3 ± 36.7	202.9 ± 183.9	69.1 ± 13.3
Eucinostomus spp.	Assorted mojarra	1.1 ± 1.1	0.0 ± 0.0	732.9 ± 582.3	100.9 ± 63.1	121 ± 88.7	11.1 ± 6.9
Cyprinodon variegatus	Sheepshead minnow	3 ± 3	1.1 ± 1.1	108.3 ± 100.8	1.3 ± 1.3	117.6 ± 89.1	0.0 ± 0.0
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	350 ± 267.5	0.0 ± 0.0
Fundulus grandis	Gulf killifish	48.9 ± 43.8	0.0 ± 0.0	0.0 ± 0.0	0.5 ± 0.5	94.1 ± 94.1	0.0 ± 0.0
Mugil cephalus	Striped mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	535.3 ± 313.5	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	17.1 ± 13.6	1.1 ± 1.1	23.9 ± 19.5	2.0 ± 1.7	50 ± 46.2	4.1 ± 2.5
Eucinostomus harengulus	Tidewater mojarra	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	1.3 ± 0.6	97.8 ± 56.5	0.5 ± 0.5
Microgobius gulosus	Clown goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus majalis	Striped killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.9 ± 5.9	0.0 ± 0.0
Clupeidae spp.	Assorted herring	0.0 ± 0.0	0.0 ± 0.0	1.6 ± 1.6	0.2 ± 0.2	2.9 ± 2.9	0.0 ± 0.0
Eucinostomus gula	Silver jenny	0.0 ± 0.0	0.0 ± 0.0	17.3 ± 17.8	2.5 ± 2.3	0.0 ± 0.0	2.9 ± 2.9
Anchoa hepsetus	Striped anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	8.4 ± 8.4	135.3 ± 135.3	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	2.0 ± 1.3	0.0 ± 0.0	1.1 ± 1.1	1.1 ± 0.7	0.0 ± 0.0	0.2 ± 0.2
Strongylura notata	Redfin needlefish	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.2 ± 0.2	2.9 ± 2.9	0.4 ± 0.4
Syngnathus scovelli	Gulf pipefish	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.9 ± 0.7	0.0 ± 0.0	0.0 ± 0.0
Sphoeroides nephelus	Southern puffer	0.5 ± 0.3	0.0 ± 0.0	0.0 ± 0.0	4.5 ± 3.8	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.2 ± 0.2	0.0 ± 0.0	20.5 ± 20.5	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	33.7 ± 26.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Sister Keys Site C 7 Mean ± SE	El Conquistador Site C 8 Mean ± SE	El Conquistador Site C 9 Mean ± SE	Bowlees Creek Site C 10 Mean ± SE	Bowlees Creek Site C 11 Mean ± SE	Bowlees Creek Site C 12 Mean ± SE
Oligoplites saurus	Leatherjacket	0.0 ± 0.0	0.0 ± 0.0	1.3 ± 0.8	0.7 ± 0.5	1.1 ± 1.1	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	23.9 ± 14.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Synodus foetens	Inshore lizardfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	1.1 ± 1.1	0.2 ± 0.2	2.0 ± 1.3	0.0 ± 0.0	0.2 ± 0.2
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	5.9 ± 5.9	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	6.5 ± 3.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diplodus holbrooki	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Sister Keys Site C 7 Mean ± SE	El Conquistador Site C 8 Mean ± SE	El Conquistador Site C 9 Mean ± SE	Bowlees Creek Site C 10 Mean ± SE	Bowlees Creek Site C 11 Mean ± SE	Bowlees Creek Site C 12 Mean ± SE
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	1.1 ± 1.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		3232.3 ± 1608.7	296.7 ± 150.3	1462.2 ± 540.2	242.3 ± 44.6	23800.7 ± 12321	931.6 ± 462.5
Richness		5.8 ± 0.3	5.3 ± 1.7	6.8 ± 1.8	11.5 ± 2.5	8.8 ± 2	6.8 ± 1.4
Diversity		0.6 ± 0.2	1 ± 0.3	1.0 ± 0.3	0.9 ± 0.2	0.7 ± 0.3	0.9 ± 0.3

Table B-1. (Continued).

Species name	Common name	S Lido Beach Site C 13 Mean ± SE	S Lido Lagoon Site C 14 Mean ± SE	Phillippi Creek Site C 15 Mean ± SE	Phillippi Creek Site C 16 Mean ± SE	Heron Lagoon Site C 17 Mean ± SE	Heron Lagoon Site C 18 Mean ± SE
Anchoa mitchilli	Bay anchovy	0.0 ± 0.0	0.0 ± 0.0	13.4 ± 13.2	0.0 ± 0.0	273.2 ± 252.5	47.1 ± 47.1
Lucania parva	Rainwater killifish	216.8 ± 137	2566.1 ± 831.8	3.2 ± 3.2	8.2 ± 4.3	0.0 ± 0.0	5867.6 ± 1577.5
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	0.0 ± 0.0	3.2 ± 3	0.5 ± 0.5	0.0 ± 0.0	2861.8 ± 1928.1
Leiostomus xanthurus	Spot	70.9 ± 52.6	4.3 ± 4.3	1.1 ± 1.1	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0
Menidia spp.	Assorted silverside	17.1 ± 17.1	40.9 ± 34.3	1351.6 ± 771.9	0.5 ± 0.5	11 ± 5.6	1000 ± 540.9
Harengula jaguana	Scaled sardine	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	0.0 ± 0.0	0.0 ± 0.0	5.2 ± 3.2	0.4 ± 0.2	0.4 ± 0.4	655.9 ± 407.4
Lagodon rhomboides	Pinfish	269.1 ± 129.6	97.5 ± 62.5	12.3 ± 11.6	3.9 ± 0.9	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus spp.	Assorted mojarra	4.5 ± 2.9	5.7 ± 3.3	4.4 ± 4.4	4.6 ± 4.2	0.4 ± 0.4	0.0 ± 0.0
Cyprinodon variegatus	Sheepshead minnow	5.0 ± 4.1	7.7 ± 5.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.9 ± 2.9
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus grandis	Gulf killifish	1.4 ± 1.4	4.3 ± 4.3	0.4 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil cephalus	Striped mullet	1.4 ± 1.4	6.8 ± 6.8	1.1 ± 1.1	0.2 ± 0.2	0.0 ± 0.0	5.9 ± 5.9
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	1.4 ± 1.4	23.0 ± 8.4	2.3 ± 2.3	0.0 ± 0.0	0.0 ± 0.0	35.3 ± 28
Eucinostomus harengulus	Tidewater mojarra	0.0 ± 0.0	0.0 ± 0.0	32.7 ± 21.4	0.4 ± 0.2	5.9 ± 3.8	0.0 ± 0.0
Microgobius gulosus	Clown goby	0.0 ± 0.0	0.0 ± 0.0	27.4 ± 26.2	6.1 ± 2.8	0.4 ± 0.4	126.5 ± 79.4
Fundulus majalis	Striped killifish	0.0 ± 0.0	4.3 ± 4.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Clupeidae spp.	Assorted herring	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus gula	Silver jenny	1.1 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Anchoa hepsetus	Striped anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura notata	Redfin needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	3.7 ± 3.7	0.0 ± 0.0
Syngnathus scovelli	Gulf pipefish	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	8.5 ± 8.5
Sphoeroides nephelus	Southern puffer	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	25.0 ± 19.6	0.0 ± 0.0	0.0 ± 0.0	3.7 ± 2.8
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	S Lido Beach Site C 13 Mean ± SE	S Lido Lagoon Site C 14 Mean ± SE	Phillippi Creek Site C 15 Mean ± SE	Phillippi Creek Site C 16 Mean ± SE	Heron Lagoon Site C 17 Mean ± SE	Heron Lagoon Site C 18 Mean ± SE
Oligoplites saurus	Leatherjacket	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.5 ± 0.3	0.4 ± 0.4	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	11.8 ± 6.8
Synodus foetens	Inshore lizardfish	1.4 ± 1.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.2 ± 0.2	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	0.2 ± 0.2	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.1 ± 1.1
Diplodus holbrooki	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	S Lido Beach Site C 13 Mean ± SE	S Lido Lagoon Site C 14 Mean ± SE	Phillippi Creek Site C 15 Mean ± SE	Phillippi Creek Site C 16 Mean ± SE	Heron Lagoon Site C 17 Mean ± SE	Heron Lagoon Site C 18 Mean ± SE
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		591.8 ± 299.6	2760.7 ± 863.1	1484.7 ± 828.9	25.9 ± 8.2	296.3 ± 25.6	10628.3 ± 2720.9
Richness		6.5 ± 1.8	5.5 ± 0.5	8.3 ± 0.6	6.3 ± 0.5	3.5 ± 0.6	7.5 ± 1.5
Diversity		0.8 ± 0.2	0.4 ± 0.8	0.9 ± 0.3	1.4 ± 0.1	0.5 ± 0.2	0.9 ± 0.1

Table B-1. (Continued).

Species name	Common name	N Catfish Site C 19 Mean ± SE	Bird Key Site C 20 Mean ± SE	South Creek Site C 21 Mean ± SE	South Creek Site C 22 Mean ± SE	Leffis Key Site R 1 Mean ± SE	Leffis Key Site R 2 Mean ± SE
Anchoa mitchilli	Bay anchovy	7.3 ± 7.1	1.4 ± 1.4	217.1 ± 217.1	19.5 ± 19.5	2822.9 ± 2822.9	0.0 ± 0.0
Lucania parva	Rainwater killifish	0.4 ± 0.2	518.6 ± 346.2	0.0 ± 0.0	0.0 ± 0.0	107.7 ± 79.1	116.7 ± 116.7
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Leiostomus xanthurus	Spot	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	289.8 ± 238	25 ± 16
Menidia spp.	Assorted silverside	1.3 ± 1.3	92.3 ± 83.3	5.5 ± 4.0	7.3 ± 4.6	81.8 ± 39	383.3 ± 383.3
Harengula jaguana	Scaled sardine	222.9 ± 222.9	14.3 ± 14.3	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	84.3 ± 84.3	58.3 ± 58.3
Lagodon rhomboides	Pinfish	0.5 ± 0.3	78.2 ± 47.4	0.0 ± 0.0	0.2 ± 0.2	380.9 ± 172.7	1166.7 ± 77.9
Eucinostomus spp.	Assorted mojarra	8.9 ± 8.9	3.6 ± 2.1	5.0 ± 5.0	0.0 ± 0.0	120 ± 35.5	50 ± 31.9
Cyprinodon variegatus	Sheepshead minnow	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	184.1 ± 103.7	8.3 ± 8.3
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	267.3 ± 154.7	0.0 ± 0.0
Fundulus grandis	Gulf killifish	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	17 ± 12.8	0.0 ± 0.0
Mugil cephalus	Striped mullet	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	0.0 ± 0.0	47.3 ± 39.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus harengulus	Tidewater mojarra	0.2 ± 0.2	0.0 ± 0.0	1.1 ± 1.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Microgobius gulosus	Clown goby	3.0 ± 1.2	0.0 ± 0.0	25.4 ± 7.1	16.8 ± 12.8	0.2 ± 0.2	0.0 ± 0.0
Fundulus majalis	Striped killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.4 ± 2.9	0.0 ± 0.0
Clupeidae spp.	Assorted herring	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	17.9 ± 17.9	0.0 ± 0.0
Eucinostomus gula	Silver jenny	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	6.4 ± 3.8	0.0 ± 0.0
Anchoa hepsetus	Striped anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.0 ± 0.0	1.4 ± 1.4	0.0 ± 0.0	0.2 ± 0.2	13.2 ± 7.3	33.3 ± 19.2
Strongylura notata	Redfin needlefish	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0
Syngnathus scovelli	Gulf pipefish	0.0 ± 0.0	1.1 ± 0.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	16.7 ± 9.6
Sphoeroides nephelus	Southern puffer	0.2 ± 0.2	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	3.6 ± 2.7	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.0 ± 0.0	0.2 ± 0.2	1.4 ± 1.4	0.0 ± 0.0	1.1 ± 1.1	8.3 ± 8.3
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	5.7 ± 3.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	N Catfish Site C 19 Mean ± SE	Bird Key Site C 20 Mean ± SE	South Creek Site C 21 Mean ± SE	South Creek Site C 22 Mean ± SE	Leffis Key Site R 1 Mean ± SE	Leffis Key Site R 2 Mean ± SE
Oligoplites saurus	Leatherjacket	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.8 ± 1.4	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	23.6 ± 23.6	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.4 ± 0.8	8.3 ± 8.3
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Synodus foetens	Inshore lizardfish	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	8.3 ± 8.3
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.7 ± 2.0	0.0 ± 0.0
Gobiosoma spp.	Assorted goby	0.4 ± 0.2	0.0 ± 0.0	2.9 ± 1.3	2.1 ± 2.1	3.9 ± 2.7	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	8.3 ± 8.3
Mugil curema	White mullet	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.4 ± 1.4	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.9 ± 0.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diplodus holbrooki	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.2 ± 0.2	0.0 ± 0.0	0.4 ± 0.2	0.9 ± 0.9	0.2 ± 0.2	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	2.1 ± 1.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	N Catfish Site C 19 Mean ± SE	Bird Key Site C 20 Mean ± SE	South Creek Site C 21 Mean ± SE	South Creek Site C 22 Mean ± SE	Leffis Key Site R 1 Mean ± SE	Leffis Key Site R 2 Mean ± SE
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.5 ± 0.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.9 ± 0.9	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		248 ± 226	759.1 ± 408.4	267.7 ± 230.4	47.5 ± 18.7	4441.2 ± 2543.5	1891.7 ± 703.7
Richness		6 ± 1.9	5.0 ± 1.2	6.3 ± 0.9	3.3 ± 0.9	14.8 ± 0.8	4.5 ± 1.3
Diversity		1 ± 0.5	0.4 ± 0.2	0.8 ± 0.2	0.4 ± 0.1	1.3 ± 0.4	0.5 ± 0.1

Table B-1. (Continued).

Species name	Common name	Leffis Key Site R 3 Mean ± SE	Durante Park Site R 4 Mean ± SE	Durante Park Site R 5 Mean ± SE	Durante Park Site R 6 Mean ± SE	Sarasota Baywalk Site R 7 Mean ± SE	Sarasota Baywalk Site R 8 Mean ± SE
Anchoa mitchilli	Bay anchovy	18.6 ± 18.6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.6 ± 0.6
Lucania parva	Rainwater killifish	3.7 ± 3.1	0.6 ± 0.6	258.3 ± 216.2	511.2 ± 359.6	1.9 ± 1.9	0.6 ± 0.6
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	665.4 ± 68.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Leiostomus xanthurus	Spot	38.7 ± 21.8	0.0 ± 0.0	991.7 ± 98.6	256.4 ± 253.6	0.2 ± 0.2	0.0 ± 0.0
Menidia spp.	Assorted silverside	155.0 ± 96.7	13.5 ± 9.4	741.7 ± 443.5	30.0 ± 17.6	45.5 ± 20.9	7.1 ± 6.2
Harengula jaguana	Scaled sardine	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	8.9 ± 8.9	287.8 ± 280.2	25.0 ± 25.0	0.0 ± 0.0	1.9 ± 1.2	159.6 ± 58.2
Lagodon rhomboides	Pinfish	19.8 ± 11.7	0.0 ± 0.0	0.0 ± 0.0	377.9 ± 173.1	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus spp.	Assorted mojarra	53.0 ± 25.8	0.0 ± 0.0	683.3 ± 394.5	144.3 ± 109.4	5.3 ± 4.5	0.0 ± 0.0
Cyprinodon variegatus	Sheepshead minnow	32.0 ± 18.1	86.5 ± 35.6	341.7 ± 341.7	0.0 ± 0.0	35.9 ± 22.4	259 ± 169.7
Mugil spp.	Assorted mullet	1.3 ± 1.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus grandis	Gulf killifish	3.2 ± 1.7	2.6 ± 2.6	166.7 ± 166.7	0.5 ± 0.5	4.7 ± 2.9	17.3 ± 12.5
Mugil cephalus	Striped mullet	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	23.7 ± 15.5	25.6 ± 24
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.1 ± 4.3	5.8 ± 5.8
Eucinostomus harengulus	Tidewater mojarra	0.0 ± 0.0	0.0 ± 0.0	25.0 ± 25.0	0.0 ± 0.0	51.6 ± 46.1	0.0 ± 0.0
Microgobius gulosus	Clown goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	13.9 ± 13.0	0.0 ± 0.0
Fundulus majalis	Striped killifish	10.2 ± 6.1	0.6 ± 0.6	0.0 ± 0.0	0.0 ± 0.0	12.3 ± 4.1	42.9 ± 29.1
Clupeidae spp.	Assorted herring	2.1 ± 2.1	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus gula	Silver jenny	1.1 ± 0.6	0.0 ± 0.0	0.0 ± 0.0	1.6 ± 1	46.2 ± 45.3	0.0 ± 0.0
Anchoa hepsetus	Striped anchovy	0.9 ± 0.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	4.5 ± 2.7	0.0 ± 0.0	0.0 ± 0.0	30.2 ± 29.7	0.0 ± 0.0	0.0 ± 0.0
Strongylura notata	Redfin needlefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Syngnathus scovelli	Gulf pipefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	3.4 ± 2	0.0 ± 0.0	0.0 ± 0.0
Sphoeroides nephelus	Southern puffer	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	1.3 ± 0.5	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	1.3 ± 0.6	0.0 ± 0.0	0.0 ± 0.0	1.1 ± 1.1	0.4 ± 0.4	0.0 ± 0.0
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Leffis Key Site R 3 Mean ± SE	Durante Park Site R 4 Mean ± SE	Durante Park Site R 5 Mean ± SE	Durante Park Site R 6 Mean ± SE	Sarasota Baywalk Site R 7 Mean ± SE	Sarasota Baywalk Site R 8 Mean ± SE
Oligoplites saurus	Leatherjacket	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.6 ± 0.6	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Synodus foetens	Inshore lizardfish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.7 ± 2.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.1 ± 1.9	2.6 ± 2.6
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	4.5 ± 2.6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diplodus holbrooki	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.1 ± 1.1	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Leffis Key Site R 3 Mean ± SE	Durante Park Site R 4 Mean ± SE	Durante Park Site R 5 Mean ± SE	Durante Park Site R 6 Mean ± SE	Sarasota Baywalk Site R 7 Mean ± SE	Sarasota Baywalk Site R 8 Mean ± SE
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		356.4 ± 77.1	1061.5 ± 576.7	3233.3 ± 939.6	1362.7 ± 270.5	253.7 ± 133.8	521.2 ± 253.3
Richness		12.3 ± 0.9	4.3 ± 0.3	3.0 ± 0.8	9.0 ± 1.8	9.5 ± 2.9	5.3 ± 1.4
Diversity		1.5 ± 0.2	0.6 ± 0.2	0.7 ± 0.3	0.8 ± 0.3	1.4 ± 0.5	1.1 ± 0.2

Table B-1. (Continued).

Species name	Common name	Sarasota Baywalk Site R 9 Mean ± SE	Sixth St Canal Site R 10 Mean ± SE	Sixth St Canal Site R 11 Mean ± SE	Hog Creek Site R 12 Mean ± SE	Hog Creek Site R 13 Mean ± SE	Selby Shoreline Site R 14 Mean ± SE
Anchoa mitchilli	Bay anchovy	0.4 ± 0.4	43.0 ± 27.9	3879.3 ± 3669.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania parva	Rainwater killifish	1.3 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.0 ± 1.0	41 ± 41
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	37.5 ± 24.2	0.0 ± 0.0	3492.3 ± 1043.1
Leiostomus xanthurus	Spot	857.1 ± 857.1	0.0 ± 0.0	415.7 ± 251.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menidia spp.	Assorted silverside	246.4 ± 141.8	6.8 ± 6.3	15.7 ± 12.2	0.7 ± 0.7	62.5 ± 53.2	0.0 ± 0.0
Harengula jaguana	Scaled sardine	0.0 ± 0.0	0.0 ± 0.0	1.4 ± 1.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.6 ± 5.6	0.0 ± 0.0	2866.7 ± 1832.1
Lagodon rhomboides	Pinfish	77.7 ± 18.3	3.0 ± 1.6	153.6 ± 64.9	0.0 ± 0.0	17.7 ± 13.9	0.0 ± 0.0
Eucinostomus spp.	Assorted mojarra	1.8 ± 1.1	6.4 ± 4.3	18.2 ± 9.2	1.4 ± 1.4	0.0 ± 0.0	0.0 ± 0.0
Cyprinodon variegatus	Sheepshead minnow	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus grandis	Gulf killifish	22.9 ± 22.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil cephalus	Striped mullet	366.1 ± 365.6	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	4.2 ± 2.9	0.0 ± 0.0
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	18.2 ± 16.8	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.6 ± 2.6
Eucinostomus harengulus	Tidewater mojarra	0.7 ± 0.7	24.6 ± 23.9	4.8 ± 3.4	11.1 ± 9.4	9.4 ± 5.5	0.0 ± 0.0
Microgobius gulosus	Clown goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus majalis	Striped killifish	28.6 ± 28.6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Clupeidae spp.	Assorted herring	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus gula	Silver jenny	0.7 ± 0.7	20.0 ± 11.0	21.6 ± 14.1	2.1 ± 2.1	0.0 ± 0.0	0.0 ± 0.0
Anchoa hepsetus	Striped anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	120.0 ± 120.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.9 ± 0.7	0.2 ± 0.2	3.0 ± 3.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura notata	Redfin needlefish	0.5 ± 0.3	0.2 ± 0.2	1.6 ± 1.6	0.0 ± 0.0	2.1 ± 2.1	0.0 ± 0.0
Syngnathus scovelli	Gulf pipefish	0.0 ± 0.0	0.0 ± 0.0	1.1 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphoeroides nephelus	Southern puffer	0.4 ± 0.2	0.4 ± 0.4	1.6 ± 1.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Sarasota Baywalk Site R 9 Mean ± SE	Sixth St Canal Site R 10 Mean ± SE	Sixth St Canal Site R 11 Mean ± SE	Hog Creek Site R 12 Mean ± SE	Hog Creek Site R 13 Mean ± SE	Selby Shoreline Site R 14 Mean ± SE
Oligoplites saurus	Leatherjacket	0.9 ± 0.9	2.0 ± 1.1	0.2 ± 0.2	0.0 ± 0.0	12.5 ± 11.2	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.0 ± 1.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Synodus foetens	Inshore lizardfish	0.7 ± 0.4	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	0.0 ± 0.0	0.0 ± 0.0	1.8 ± 1.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diplodus holbrooki	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1 ± 1	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.4 ± 0.2	0.4 ± 0.3	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Sarasota Baywalk Site R 9 Mean ± SE	Sixth St Canal Site R 10 Mean ± SE	Sixth St Canal Site R 11 Mean ± SE	Hog Creek Site R 12 Mean ± SE	Hog Creek Site R 13 Mean ± SE	Selby Shoreline Site R 14 Mean ± SE
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.0 ± 1.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		1747.1 ± 1457.4	107.3 ± 25.7	4520.5 ± 3465.9	58.3 ± 20.6	112.5 ± 75.9	6402.6 ± 2673.5
Richness		9.8 ± 0.9	6.8 ± 0.3	8.5 ± 3.1	2.3 ± 0.6	3.8 ± 1.4	2.5 ± 0.3
Diversity		0.8 ± 0.2	0.9 ± 0.0	0.7 ± 0.2	0.5 ± 0.2	0.8 ± 0.4	0.6 ± 0.1

Table B-1. (Continued).

Species name	Common name	Selby Shoreline Site R 15 Mean ± SE	Palmer Point Site R 16 Mean ± SE	Bird Key Site R 17 Mean ± SE	Hidden Bay Site R 18 Mean ± SE	Total by species Mean ± SE
Anchoa mitchilli	Bay anchovy	1691.4 ± 1390.0	121.7 ± 51.0	60.7 ± 57.9	0.0 ± 0.0	714.6 ± 391.5
Lucania parva	Rainwater killifish	2.1 ± 2.1	46.3 ± 42.5	337.9 ± 177.7	0.0 ± 0.0	375.7 ± 170.3
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	178.8 ± 112.0
Leiostomus xanthurus	Spot	0.5 ± 0.5	158.1 ± 151.3	27.7 ± 16.2	0.6 ± 0.6	163.7 ± 60.6
Menidia spp.	Assorted silverside	160.5 ± 123.0	391.5 ± 147.2	47.7 ± 24.2	26.3 ± 20.5	157.3 ± 45.0
Harengula jaguana	Scaled sardine	0.0 ± 0.0	2.9 ± 2.9	7.1 ± 7.1	0.0 ± 0.0	132.8 ± 126.4
Poecilia latipinna	Sailfin molly	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	108.1 ± 73.0
Lagodon rhomboides	Pinfish	204.5 ± 108.0	9.9 ± 5.1	66.1 ± 42.4	0.0 ± 0.0	104.6 ± 32.5
Eucinostomus spp.	Assorted mojarra	14.3 ± 10.8	50.4 ± 32.8	50.7 ± 39.3	30.8 ± 18.3	95.6 ± 31.6
Cyprinodon variegatus	Sheepshead minnow	0.0 ± 0.0	3.7 ± 2.8	0.4 ± 0.4	0.0 ± 0.0	37.0 ± 12.1
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	34.7 ± 16.8
Fundulus grandis	Gulf killifish	0.0 ± 0.0	2.6 ± 2.6	34.5 ± 26	3.2 ± 2.4	23.4 ± 12.4
Mugil cephalus	Striped mullet	0.0 ± 0.0	91.2 ± 91.2	145.0 ± 119.0	0.0 ± 0.0	17.1 ± 9.9
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	13.9 ± 13.4
Floridichthys carpio	Goldspotted killifish	0.0 ± 0.0	0.0 ± 0.0	24.1 ± 14.7	0.0 ± 0.0	11.7 ± 2.8
Eucinostomus harengulus	Tidewater mojarra	0.0 ± 0.0	59.9 ± 34.2	1.3 ± 0.7	7.7 ± 6.1	10.4 ± 3.6
Microgobius gulosus	Clown goby	0.0 ± 0.0	12.1 ± 11.6	23.9 ± 22.5	0.0 ± 0.0	6.7 ± 3.3
Fundulus majalis	Striped killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	6.4 ± 2.5
Clupeidae spp.	Assorted herring	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.8 ± 4.5
Eucinostomus gula	Silver jenny	0.0 ± 0.0	0.0 ± 0.0	3.6 ± 2.7	1.9 ± 1.2	4.1 ± 1.4
Anchoa hepsetus	Striped anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	3.7 ± 3.4
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	3.0 ± 3.0
Farfantepenaeus duorarum	Pink shrimp	0.2 ± 0.2	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	2.3 ± 1.1
Strongylura notata	Redfin needlefish	0.5 ± 0.5	18.0 ± 11.3	0.0 ± 0.0	0.0 ± 0.0	1.1 ± 0.5
Syngnathus scovelli	Gulf pipefish	0.5 ± 0.3	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0	1.0 ± 0.5
Sphoeroides nephelus	Southern puffer	7.3 ± 7.1	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	1.0 ± 0.4
Callinectes sapidus	Blue crab	0.0 ± 0.0	0.4 ± 0.4	0.7 ± 0.7	0.6 ± 0.6	1.0 ± 0.5
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.9 ± 0.6
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.8 ± 0.8

Table B-1. (Continued).

Species name	Common name	Selby Shoreline Site R 15 Mean ± SE	Palmer Point Site R 16 Mean ± SE	Bird Key Site R 17 Mean ± SE	Hidden Bay Site R 18 Mean ± SE	Total by species Mean ± SE
Oligoplites saurus	Leatherjacket	0.7 ± 0.7	0.7 ± 0.7	0.2 ± 0.2	0.0 ± 0.0	0.7 ± 0.3
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.6 ± 0.6
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.6 ± 0.6
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.6 ± 0.6
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.4 ± 0.4	1.3 ± 1.3	0.0 ± 0.0	0.4 ± 0.2
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.3 ± 0.3
Synodus foetens	Inshore lizardfish	0.4 ± 0.2	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.3 ± 0.2
Cynoscion nebulosus	Spotted seatrout	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.3 ± 0.1
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.1
Orthopristis chrysoptera	Pigfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.1
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2
Mugil curema	White mullet	0.0 ± 0.0	0.4 ± 0.4	2.3 ± 2.3	0.0 ± 0.0	0.2 ± 0.1
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.1
Chilomycterus schoepfi	Striped burrfish	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.1
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.8 ± 3.4	0.2 ± 0.1
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Gobiosoma robustum	Code goby	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0
Diplodus holbrooki	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.9 ± 0.9
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Achirus lineatus	Lined sole	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0
Lutjanus griseus	Gray snapper	0.2 ± 0.2	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0
Gobiosoma bosc	Naked goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-1. (Continued).

Species name	Common name	Selby Shoreline Site R 15 Mean ± SE	Palmer Point Site R 16 Mean ± SE	Bird Key Site R 17 Mean ± SE	Hidden Bay Site R 18 Mean ± SE	Total by species Mean ± SE
Mugil gyrans	Fantail mullet	0.0 ± 0.0	1.5 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.0 ± 0.0	1.1 ± 1.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		2083.7 ± 1268.5	976.1 ± 279.3	836.1 ± 291.5	76.9 ± 31.7	2224.1 ± 645.9
Richness		6.8 ± 1.3	11.5 ± 2.5	10.8 ± 0.9	3.8 ± 0.3	7.2 ± 0.5
Diversity		0.5 ± 0.2	1.3 ± 0.3	1.4 ± 0.2	1.0 ± 0.1	0.9 ± 0.1

Table B-2. Mean density (#/100 m^2) and standard error (± SE) by taxa pooled for each sampling location for all sampling events.

Sampling Location		Tidy Island	Leffis Key	Sister Keys	El Conquistador	Bowlees Creek	South Lido
Number of Samples		12	16	12	8	12	8
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Anchoa mitchilli	Bay anchovy	108.1 ± 82.2	1677.3 ± 1148.7	0.1 ± 0.1	0.0 ± 0.0	5058.1 ± 3056.5	0.0 ± 0.0
Lucania parva	Rainwater killifish	271.7 ± 151.9	57.2 ± 34.6	1072.5 ± 640.4	162.6 ± 91.3	18.8 ± 9.3	1391.4 ± 591.1
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	46.2 ± 34.4	0.0 ± 0.0	0.0 ± 0.0
Leiostomus xanthurus	Spot	131 ± 51.3	220.5 ± 120.9	82.5 ± 37.8	41 ± 41	719.7 ± 687.9	37.6 ± 27.5
Menidia spp.	Assorted silverside	50.1 ± 29.9	199.6 ± 95.0	123.0 ± 95.9	51.8 ± 26.8	181.8 ± 111.4	29 ± 18.3
Harengula jaguana	Scaled sardine	1.7 ± 1.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1686.3 ± 1677.7	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	0.0 ± 0.0	38.6 ± 24.6	10.8 ± 7.2	63.6 ± 34	0.0 ± 0.0	0.0 ± 0.0
Lagodon rhomboides	Pinfish	57.7 ± 14.7	489.3 ± 20.00.8	106.3 ± 45.2	26.3 ± 15.2	103.8 ± 60.6	183.3 ± 74.1
Eucinostomus spp.	Assorted mojarra	509.8 ± 194.3	63.9 ± 15.3	10.4 ± 7.8	366.4 ± 303.1	77.6 ± 35.9	5.1 ± 2
Cyprinodon variegatus	Sheepshead minnow	13.3 ± 9.0	58.6 ± 30.3	78.3 ± 54.2	54.7 ± 50.9	39.6 ± 31.6	6.3 ± 3.2
Mugil spp.	Assorted mullet	67.6 ± 49.7	67.3 ± 45.7	188 ± 171.4	0.0 ± 0.0	116.7 ± 94.8	0.0 ± 0.0
Fundulus grandis	Gulf killifish	2.0 ± 1.1	12.4 ± 7.8	174.3 ± 120.2	0.0 ± 0.0	31.6 ± 31.4	2.9 ± 2.2
Mugil cephalus	Striped mullet	2.6 ± 2.6	0.1 ± 0.1	1.8 ± 1.8	0.0 ± 0.0	0.0 ± 0.0	4.1 ± 3.4
Anchoa cubana	Cuban anchovy	6.7 ± 6.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	178.4 ± 121.3	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	42.9 ± 15.6	5.5 ± 5.5	23.8 ± 10.3	12.5 ± 10.0	18.7 ± 15.5	12.2 ± 5.7
Eucinostomus harengulus	Tidewater mojarra	26.5 ± 26.5	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	33.2 ± 21.9	0.0 ± 0.0
Microgobius gulosus	Clown goby	3.8 ± 2.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus majalis	Striped killifish	40.0 ± 28.8	7.5 ± 3.8	4.4 ± 2.9	0.0 ± 0.0	2.0 ± 2.0	2.1 ± 2.1
Clupeidae spp.	Assorted herring	9.9 ± 9.7	49.3 ± 36.8	0.0 ± 0.0	0.8 ± 0.8	1.0 ± 1.0	0.0 ± 0.0
Eucinostomus gula	Silver jenny	11.9 ± 5.2	2.0 ± 1.1	0.0 ± 0.0	8.7 ± 8.6	1.8 ± 1.2	0.5 ± 0.4
Anchoa hepsetus	Striped anchovy	0.8 ± 0.8	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	47.9 ± 44.9	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.1 ± 0.1	12.9 ± 5.7	0.7 ± 0.5	0.5 ± 0.5	0.4 ± 0.3	0.2 ± 0.2
Strongylura notata	Redfin needlefish	1.1 ± 1.0	0.6 ± 0.4	2.5 ± 2.3	0.2 ± 0.2	1.2 ± 1.0	0.0 ± 0.0
Syngnathus scovelli	Gulf pipefish	1.9 ± 1.5	4.5 ± 2.8	0.1 ± 0.1	0.0 ± 0.0	0.3 ± 0.2	0.0 ± 0.0
Sphoeroides nephelus	Southern puffer	2.7 ± 1.6	3.7 ± 2.2	0.2 ± 0.1	0.0 ± 0.0	1.5 ± 1.3	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.5 ± 0.5	2.7 ± 2.1	0.2 ± 0.1	10.3 ± 10.3	0.1 ± 0.1	0.3 ± 0.3
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	16.8 ± 14	0.0 ± 0.0	0.0 ± 0.0

Table B-2. (Continued).

Sampling Location		Tidy Island	Leffis Key	Sister Keys	El Conquistador	Bowlees Creek	South Lido
Number of Samples		12	16	12	8	12	8
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Oligoplites saurus	Leatherjacket	0.8 ± 0.6	1.1 ± 0.6	0.0 ± 0.0	0.6 ± 0.5	0.6 ± 0.4	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.1 ± 0.1	6.0 ± 5.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	8.3 ± 8.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	12.0 ± 8.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.5 ± 0.5	2.6 ± 2.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mugil curema	White mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Synodus foetens	Inshore lizardfish	0.1 ± 0.1	2.2 ± 2.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7
Cynoscion nebulosus	Spotted seatrout	0.4 ± 0.3	0.7 ± 0.5	0.0 ± 0.0	0.6 ± 0.5	0.7 ± 0.5	0.1 ± 0.1
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	1.0 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	2.2 ± 1.2	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.1
Urophycis floridana	Southern hake	0.0 ± 0.0	2.1 ± 2.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	1.8 ± 1.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	1.4 ± 1.4	0.6 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	2.0 ± 2.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	3.3 ± 2.1	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	1.0 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	1.0 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diplodus holbrooki	Bluntnose stingray	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	1.2 ± 1.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	1.0 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.4 ± 0.2	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.2 ± 0.2	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-2. (Continued).

Sampling Location		Tidy Island	Leffis Key	Sister Keys	El Conquistador	Bowlees Creek	South Lido
Number of Samples		12	16	12	8	12	8
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Hyporhamphus spp.	Halfbeak (juv)	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		1373.5 ± 286.5	2994 ± 1121.8	1889.7 ± 614.2	879.5 ± 340.4	8324.9 ± 4971.3	1676.2 ± 589
Richness		10.3 ± 1	11.3 ± 1.2	6 ± 0.9	6 ± 1.2	9.0 ± 1.2	6.0 ± 0.9
Diversity		1.2 ± 0.1	1.1 ± 0.1	0.9 ± 0.2	1.0 ± 0.2	0.8 ± 0.1	0.6 ± 0.1

Table B-2. (Continued).

Sampling Location		Phillippi Creek	Heron Lagoon	North Catfish	Bird Keys	South Creek	Durante Park
Number of Samples		8	8	4	8	8	12
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Anchoa mitchilli	Bay anchovy	6.7 ± 6.6	160.1 ± 126.4	7.3 ± 7.1	31.1 ± 29	118.3 ± 107.6	0.0 ± 0.0
Lucania parva	Rainwater killifish	5.7 ± 2.7	2933.8 ± 1327.7	0.4 ± 0.2	428.2 ± 183.3	0.0 ± 0.0	256.7 ± 141.3
Gambusia holbrooki	Eastern mosquito fish	1.9 ± 1.5	1430.9 ± 1043.6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	221.8 ± 206.4
Leiostomus xanthurus	Spot	0.5 ± 0.5	0.4 ± 0.4	0.0 ± 0.0	13.8 ± 9.1	0.0 ± 0.0	416 ± 330.6
Menidia spp.	Assorted silverside	676.1 ± 439.2	505.5 ± 312.5	1.3 ± 1.3	70.0 ± 41	6.4 ± 2.9	261.7 ± 168.5
Harengula jaguana	Scaled sardine	0.0 ± 0.0	0.0 ± 0.0	222.9 ± 222.9	10.7 ± 7.5	0.1 ± 0.1	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	2.8 ± 1.7	328.1 ± 225.7	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	104.3 ± 93.5
Lagodon rhomboides	Pinfish	8.1 ± 5.6	0.0 ± 0.0	0.5 ± 0.3	72.1 ± 29.5	0.1 ± 0.1	126 ± 74.9
Eucinostomus spp.	Assorted mojarra	4.5 ± 2.8	0.2 ± 0.2	8.9 ± 8.9	27.1 ± 20.3	2.5 ± 2.5	275.9 ± 152
Cyprinodon variegatus	Sheepshead minnow	0.0 ± 0.0	1.5 ± 1.5	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	142.7 ± 112.4
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus grandis	Gulf killifish	0.2 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	17.3 ± 13.7	0.0 ± 0.0	56.6 ± 55.5
Mugil cephalus	Striped mullet	0.6 ± 0.5	0.0 ± 0.0	0.5 ± 0.5	72.5 ± 61.5	0.0 ± 0.0	0.0 ± 0.0
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	1.2 ± 1.2	17.6 ± 14.6	0.0 ± 0.0	35.7 ± 20.1	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus harengulus	Tidewater mojarra	16.5 ± 11.6	2.9 ± 2.1	0.2 ± 0.2	0.6 ± 0.4	0.5 ± 0.5	8.3 ± 8.3
Microgobius gulosus	Clown goby	16.7 ± 12.8	63.4 ± 43.8	3.0 ± 1.2	12 ± 11.4	21.1 ± 6.9	0.0 ± 0.0
Fundulus majalis	Striped killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2
Clupeidae spp.	Assorted herring	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2
Eucinostomus gula	Silver jenny	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.8 ± 1.4	0.0 ± 0.0	0.5 ± 0.4
Anchoa hepsetus	Striped anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.1 ± 0.1	10.1 ± 9.9
Strongylura notata	Redfin needlefish	0.0 ± 0.0	1.8 ± 1.8	0.4 ± 0.4	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Syngnathus scovelli	Gulf pipefish	0.2 ± 0.2	4.2 ± 4.2	0.0 ± 0.0	0.9 ± 0.5	0.0 ± 0.0	1.1 ± 0.8
Sphoeroides nephelus	Southern puffer	0.1 ± 0.1	0.0 ± 0.0	0.2 ± 0.2	0.1 ± 0.1	0.0 ± 0.0	0.4 ± 0.2
Callinectes sapidus	Blue crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.7 ± 0.7	0.4 ± 0.4
Lophogobius cyprinoides	Crested goby	12.5 ± 10.2	1.8 ± 1.5	0.0 ± 0.0	0.0 ± 0.0	2.9 ± 1.9	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-2. (Continued).

Sampling Location		Phillippi Creek	Heron Lagoon	North Catfish	Bird Keys	South Creek	Durante Park
Number of Samples		8	8	4	8	8	12
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Oligoplites saurus	Leatherjacket	0.3 ± 0.2	0.2 ± 0.2	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.1 ± 0.1
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.6 ± 0.6	0.0 ± 0.0	0.2 ± 0.2
Mugil curema	White mullet	0.0 ± 0.0	2.9 ± 2.9	0.7 ± 0.7	1.2 ± 1.2	0.0 ± 0.0	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.0 ± 0.0	6.1 ± 3.8	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1
Synodus foetens	Inshore lizardfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.9 ± 0.7
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.2	0.0 ± 0.0	2.5 ± 1.2	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.1	0.0 ± 0.0
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.5 ± 1.0
Gobiosoma robustum	Code goby	0.1 ± 0.1	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.6 ± 0.6	0.9 ± 0.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diplodus holbrooki	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.2	0.0 ± 0.0	0.6 ± 0.4	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.1 ± 0.8	0.0 ± 0.0
Pogonias cromis	Black drum	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-2. (Continued).

Sampling Location		Phillippi Creek	Heron Lagoon	North Catfish	Bird Keys	South Creek	Durante Park
Number of Samples		8	8	4	8	8	12
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Diapterus plumieri	Spottail pinfish	0.2 ± 0.2	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.3 ± 0.2	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		755.3 ± 472.5	5462.3 ± 2326.4	248 ± 226	797.6 ± 232.7	157.6 ± 114.8	1885.9 ± 358.9
Richness		7.3 ± 0.5	5.5 ± 0.9	6.0 ± 1.9	7.9 ± 1.3	4.8 ± 0.8	5.4 ± 1
Diversity		1.1 ± 0.2	0.7 ± 0.1	1.0 ± 0.5	0.9 ± 0.2	0.6 ± 0.1	0.7 ± 0.1

Table B-2. (Continued).

Sampling Location		Sarasota Baywalk	Sixth Street	Hog Creek	Selby Shoreline	Palmer Point	Hidden Bay
Number of Samples		12	8	8	8	4	4
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Anchoa mitchilli	Bay anchovy	0.3 ± 0.2	1961.2 ± 1847.1	0.0 ± 0.0	845.7 ± 718.5	121.7 ± 51.0	0.0 ± 0.0
Lucania parva	Rainwater killifish	1.3 ± 0.7	0.0 ± 0.0	0.5 ± 0.5	21.6 ± 20.4	46.3 ± 42.5	0.0 ± 0.0
Gambusia holbrooki	Eastern mosquito fish	0.0 ± 0.0	0.0 ± 0.0	18.7 ± 13.2	1746.2 ± 817.8	0.0 ± 0.0	0.0 ± 0.0
Leiostomus xanthurus	Spot	285.8 ± 285.7	207.9 ± 140.5	0.0 ± 0.0	0.3 ± 0.3	158.1 ± 151.3	0.6 ± 0.6
Menidia spp.	Assorted silverside	99.6 ± 53.6	11.3 ± 6.6	31.6 ± 27.3	80.3 ± 64.5	391.5 ± 147.2	26.3 ± 20.5
Harengula jaguana	Scaled sardine	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	2.9 ± 2.9	0.0 ± 0.0
Poecilia latipinna	Sailfin molly	53.8 ± 28.6	0.0 ± 0.0	2.8 ± 2.8	1433.3 ± 1006.4	0.0 ± 0.0	0.0 ± 0.0
Lagodon rhomboides	Pinfish	25.9 ± 12.3	78.3 ± 41.4	8.9 ± 7.2	102.2 ± 63.2	9.9 ± 5.1	0.0 ± 0.0
Eucinostomus spp.	Assorted mojarra	2.4 ± 1.5	12.3 ± 5.2	0.7 ± 0.7	7.1 ± 5.7	50.4 ± 32.8	30.8 ± 18.3
Cyprinodon variegatus	Sheepshead minnow	98.3 ± 62.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	3.7 ± 2.8	0.0 ± 0.0
Mugil spp.	Assorted mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus grandis	Gulf killifish	14.9 ± 8.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	2.6 ± 2.6	3.2 ± 2.4
Mugil cephalus	Striped mullet	138.5 ± 120.7	0.1 ± 0.1	2.1 ± 1.6	0.0 ± 0.0	91.2 ± 91.2	0.0 ± 0.0
Anchoa cubana	Cuban anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Floridichthys carpio	Goldspotted killifish	9.7 ± 5.8	0.1 ± 0.1	0.0 ± 0.0	1.3 ± 1.3	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus harengulus	Tidewater mojarra	17.4 ± 15.7	14.7 ± 11.8	10.2 ± 5	0.0 ± 0.0	59.9 ± 34.2	7.7 ± 6.1
Microgobius gulosus	Clown goby	4.6 ± 4.4	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	12.1 ± 11.6	0.0 ± 0.0
Fundulus majalis	Striped killifish	27.9 ± 12.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Clupeidae spp.	Assorted herring	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Eucinostomus gula	Silver jenny	15.6 ± 15.1	20.8 ± 8.3	1.0 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	1.9 ± 1.2
Anchoa hepsetus	Striped anchovy	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Brevoortia spp.	Assorted menhaden	40.1 ± 40.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0
Farfantepenaeus duorarum	Pink shrimp	0.3 ± 0.2	1.6 ± 1.5	0.0 ± 0.0	0.1 ± 0.1	0.4 ± 0.4	0.0 ± 0.0
Strongylura notata	Redfin needlefish	0.2 ± 0.1	0.9 ± 0.8	1.0 ± 1.0	0.3 ± 0.3	18.0 ± 11.3	0.0 ± 0.0
Syngnathus scovelli	Gulf pipefish	0.0 ± 0.0	0.5 ± 0.4	0.0 ± 0.0	0.3 ± 0.2	0.0 ± 0.0	0.0 ± 0.0
Sphoeroides nephelus	Southern puffer	0.1 ± 0.1	1.0 ± 0.7	0.0 ± 0.0	3.7 ± 3.6	0.4 ± 0.4	0.0 ± 0.0
Callinectes sapidus	Blue crab	0.1 ± 0.1	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.6 ± 0.6
Lophogobius cyprinoides	Crested goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Heterandria formosa	Least killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-2. (Continued).

Sampling Location		Sarasota Baywalk	Sixth Street	Hog Creek	Selby Shoreline	Palmer Point	Hidden Bay
Number of Samples		12	8	8	8	4	4
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Oligoplites saurus	Leatherjacket	0.3 ± 0.3	1.1 ± 0.6	6.2 ± 5.7	0.4 ± 0.4	0.7 ± 0.7	0.0 ± 0.0
Scomberomorus maculatus	Spanish mackerel	0.0 ± 0.0	0.0 ± 0.0	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Adinia xenica	Diamond killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lucania goodei	Bluefin killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sciaenops ocellatus	Red drum	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0
Mugil curema	White mullet	1.6 ± 1.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0
Opsanus beta	Gulf toadfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Synodus foetens	Inshore lizardfish	0.2 ± 0.2	0.1 ± 0.1	0.0 ± 0.0	0.2 ± 0.1	0.4 ± 0.4	0.0 ± 0.0
Cynoscion nebulosus	Spotted seatrout	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma spp.	Assorted goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Orthopristis chrysoptera	Pigfish	0.0 ± 0.0	0.9 ± 0.9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Urophycis floridana	Southern hake	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bairdiella chrysoura	Silver perch	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chilomycterus schoepfi	Striped burrfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0
Strongylura timucu	Timucu	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Micropterus salmoides	Largemouth bass	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Centropomus undecimalis	Snook	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	5.8 ± 3.4
Megalops atlanticus	Tarpon	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Gobiosoma robustum	Code goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.7 ± 0.7	0.0 ± 0.0
Syngnathus floridae	Dusky pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Strongylura marina	Atlantic needlefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0
Diplodus holbrooki	Bluntnose stingray	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus spp.	Assorted killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hippocampus zosterae	Dwarf seahorse	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Achirus lineatus	Lined sole	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.4 ± 0.4	0.0 ± 0.0
Lutjanus griseus	Gray snapper	0.0 ± 0.0	0.0 ± 0.0	0.5 ± 0.5	0.1 ± 0.1	0.4 ± 0.4	0.0 ± 0.0
Gobiosoma bosc	Naked goby	0.2 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Bathygobius soporator	Frillfin goby	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Pogonias cromis	Black drum	0.7 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Archosargus probatocephalus	Sheepshead	0.2 ± 0.1	0.3 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Mycteroperca microlepis	Gag	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table B-2. (Continued).

Sampling Location		Sarasota Baywalk	Sixth Street	Hog Creek	Selby Shoreline	Palmer Point	Hidden Bay
Number of Samples		12	8	8	8	4	4
		Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Species name	Common name						
Mugil gyrans	Fantail mullet	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.5 ± 1.0	0.0 ± 0.0
Strongylura spp.	Assorted needlefish	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	1.1 ± 1.1	0.0 ± 0.0
Diapterus plumieri	Spottail pinfish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Calamus arctifrons	Grass porgy	0.1 ± 0.1	0.0 ± 0.0	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lepomis spp.	Bluegill	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Syngnathus louisianae	Chain pipefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Trinectes maculatus	Hogchoker	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Fundulus confluentus	Marsh killifish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Limulus polyphemus	Horseshoe crab	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Chaetodipterus faber	Atlantic spadefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Aluterus schoepfi	Orange filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Hyporhamphus spp.	Halfbeak (juv)	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0
Monacanthus hispidus	Planehead filefish	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Sphyraena barracuda	Great barracuda	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0
Dasyatis say	Striped mojarra	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Haemulon parrai	Sailors choice	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Lutjanus synagris	Lane snapper	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Menticirrhus saxatilis	Northern kingfish	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Paralichthys albigutta	Gulf flounder	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Selene vomer	Lookdown	0.0 ± 0.0	0.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Total Mean Density		840.7 ± 488.9	2313.9 ± 180.08.2	85.4 ± 37.8	4243.2 ± 1594.6	976.1 ± 279.3	76.9 ± 31.7
Richness		8.2 ± 1.1	7.6 ± 1.5	3.0 ± 0.8	4.6 ± 1	11.5 ± 2.5	3.8 ± 0.3
Diversity		1.1 ± 0.2	0.8 ± 0.1	0.6 ± 0.2	0.5 ± 0.1	1.3 ± 0.3	1.0 ± 0.1