Appendix I
Benthic Macroinfauna Community Assessment

MISSISSIPPI COASTAL IMPROVEMENT PROGRAM (MsCIP)

MISSISSIPPI SOUND AND THE GULF OF MEXICO

BENTHIC MACROINFAUNA COMMUNITY ASSESSMENT

Submitted to

U.S. Army Corps of Engineers, Mobile District

Mobile, AL

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INTRODUCTION

The goal of this project was to perform biological surveys required to collect surface sediment samples and identify benthic macroinfauna organisms in and around potential borrow and littoral zone areas associated with the U.S. Army Corps of Engineers Mississippi Coastal Improvements Program (MsCIP) Barrier Island Restoration Project.

Objectives:

1) Collect surface sediment samples to characterize benthic macroinfauna communities in the Mississippi Sound and the Gulf of Mexico at the coastal barrier island restoration borrow and placement sites and at appropriate reference sites outside the project area; and
2) Determine the macroinfaunal assemblages during three seasonal sampling events prior to construction activities.

The sampling events occurred in June 2010, September 2010 and April-May 2011. The Deepwater Horizon Oil Spill in the Gulf of Mexico occurred on April 20, 2010. The June sampling event occurred before significant oil incursions to the Mississippi barrier island beaches and into Mississippi Sound. The September sampling event occurred after oil had been detected on the barrier island beaches and in Mississippi Sound. The April-May 2011 survey occurred after months of oil cleanup efforts in the Gulf.

SAMPLING AND ANALYSIS PLAN

The objective of the sampling efforts was to characterize macrobenthic biological resources at potential sand borrow areas, sand placement areas (Car Island, Ship Island, Horn Island, Petit Bois Island) and appropriate reference areas. Benthic studies included the sorting, identification, and enumeration of benthic macroinvertebrate organisms collected in each area. Sediment texture and sediment total organic content (%TOC) were determined at each location

where benthic macroinfaunal samples were collected. Standard hydrographic measurements were taken at each sampling location (water depth, water temperature, salinity, dissolved oxygen, pH).

The June 2 – 10, 2010 benthic community survey was designed to provide a broad scale view of habitat characteristics and macroinfaunal assemblages in advance of a determination of where the best sand borrow areas were to be located. The June survey was also conducted prior to the arrival of oil on the barrier islands from the Deepwater Horizon Oil Spill on April 20, 2010. The September 2 - 6, 2010 survey was carried out after oil had been discovered on the barrier islands and in Mississippi Sound. When significant changes were found in the macroinfaunal assemblages between the June and September sampling events (pre- and post- oil spill), a third survey was conducted on April 29 - May 6, 2011.

An additional sand borrow site was added to the MsCIP sampling program in 2011. The DA10 borrow area was sampled in November 2011 as part of another research project. Station locations, water quality and biological data for the DA10 borrow area are given in Appendix I.

METHODS

Benthic Sample Collection Methods

Offshore Borrow Areas and Reference Sites in Gulf of Mexico

The benthic community characterization survey involved sampling an array of 12 stations in the western offshore borrow area and 4 stations in the eastern offshore borrow area (Figure 1; Table 1). The western area included a Littoral Shoal/Disposal Area and a Fluvial/Ebb-tide Delta Area. This study area is roughly 23 miles long and 3 to 8 miles wide and contains a wide range of benthic habitats. The eastern borrow study area is roughly 5 miles wide and 6 miles long. Four

(4) sample stations were placed within the offshore reference areas (Figure 1, Table 1). All borrow area and reference areas were located using GPS.

Four replicate benthic macroinfaunal samples were taken at each station with a Shipek grab in June 2010 and with a Modified Van Veen grab in September 2010 and April-May 2011; both grabs have a sampling area of 0.04 m^2 and are designed for collecting consistent samples in sand and compacted sediments. The samples were rinsed in the field through a 0.5-mm mesh screen and preserved with 10% buffered formalin.

At each station, standard hydrographic measurements were taken at near surface, middle, and near-bottom depths prior to benthic sampling. A YSI ® Model 600XLM V2 Datasonde was used to measure temperature, conductivity, salinity, pH, and dissolved oxygen (DO) concentration.

Sand Placement Sites and Placement Site References in Mississippi Sound

Sampling was conducted in each of the five placement areas: 4 stations off East Petit Bois Island (Figure 2; Table 1), 5 stations off East Horn Island (Figure 3; Table 1), 5 stations off East Ship Island (Figure 4a; Table 1), 3 stations associated with Camille Cut (Figure 4a; Table 1), one station on the Mississippi Sound side of West Ship Island (Figure 4a), and 2 stations associated with Cat Island (Figures 5; Table 1). Three placement site stations (PS11, PS13, PS14) located off the eastern end of Ship Island were moved closer to the island for the September 2010 and Apr-May 2011 surveys at the request of the US Army Corps of Engineers to better represent planned sand placement locations (see Figure 4b, Table 1). Five stations were sampled in Mississippi Sound which are in close proximity to Ship, Horn, and Petit Bois Islands and which were previously characterized by the Corps of Engineers (Figure 1, Table 1). Four replicate benthic macroinfaunal samples were taken at each station with a Shipek grab in June 2010 and

with a Modified Van Veen grab in September 2010 and April-May 2011; both grabs have a sampling area of 0.04 m^2. The samples were rinsed in the field through a 0.5-mm mesh screen and preserved with 10% buffered formalin.

At each station, standard hydrographic measurements were taken at near surface, middle, and near-bottom depth prior to benthic sampling. A YSI® Model 600XLM V2 Datasonde was used to measure temperature, conductivity, salinity, pH, and dissolved oxygen (DO) concentration.

Beach/Subtidal Areas

Four transects (oriented perpendicular to the shoreline) were established at Petit Bois Horn, Ship and Cat Islands in association with the sediment placement areas (Figures 2-5; Table 1). Two transects were located in the beach/subtidal zone on the Mississippi Sound side of each island and two transects were located on the GOM side of each island. Three transects were established in the Cat Island placement area (two east of Cat Island and one to the west of Cat Island). Four transects were established at a reference site on the western end of Horn Island, with two transects being located on the Mississippi Sound side of the island and two transects located on the GOM side of the island. There were three sampling stations arrayed at regular distance intervals (10, 20 and 50 ft) along each transect (Shallow, Mid, Deep).

Beach/subtidal samples were collected with a 3” hand core (to a depth of 6”) which samples an area approximately 0.0045 m^2. Eight (8) replicate samples were taken at each station during each survey. All cores were preserved with 10% buffered formalin.

At each station, standard hydrographic measurements were taken at mid-depth at each Mid-depth transect station prior to benthic sampling. A YSI® Model 600XLM V2 Datasonde was used to measure temperature, conductivity, salinity, pH, and dissolved oxygen (DO)

concentration. A summary of the benthic macroinfaunal and sediment texture/TOC sampling program is given in Table 2.

Laboratory Analysis Methods

Infauna

In the laboratory, benthic samples were inventoried, rinsed through a 0.5–mm mesh sieve to remove preservatives and sediment, stained with Rose Bengal, and stored in 70% isopropanol solution until processing. Sample material were sorted and all macroinvertebrates were removed and placed in labeled glass vials containing 70% isopropanol, with each vial representing a major taxonomic group (e.g. Polychaeta, Mollusca, Arthropoda). All sorted macroinvertebrates were identified to the lowest practical identification level (LPIL), which in most cases was to species level unless the specimen was a juvenile, damaged, or otherwise unidentifiable. The number of individuals of each taxon, excluding fragments, was recorded. A voucher collection was prepared, composed of representative individuals of each species not previously encountered in samples from the region.

Sediment Grain Size Analysis and Sediment Total Organic Carbon (TOC)

One sample was collected at each station for sediment grain size analysis. Each sample was washed with deionized water, dried, and weighed. The coarse and fine fractions (sand/silt) was separated by sieving through a U.S. Standard Sieve Mesh #230 (62.5 μm). Median grain size and percentages of gravel, sand, silt, and clay were calculated for each sample.

A subsample of each sediment sample was analyzed for total organic carbon (TOC). Sediment %TOC analyses were performed according to the guidelines in EPA-600/4-79-020, 1983, Method 415.1 for determination of total organic carbon in sediment and soils.

Data Analysis Methods

Assemblage Analyses

All data generated as a result of laboratory analysis of macroinfauna samples were first coded on data sheets. Enumeration data were entered for each species according to station and replicate. These data were reduced to a data summary report for each station, which included a taxonomic species list and benthic community parameters information. A copy of BVA's QAPP for this project will be included in the final project report.

Several numerical indices were chosen for analysis and interpretation of the macroinfaunal data. Infaunal abundance is reported as the total number of individuals per station and the total number of individuals per square meter (= density). Taxa richness is reported as the number of taxa represented in a given station collection.

Taxa diversity, which is often related to the ecological stability and environmental "quality" of the benthos, was estimated by Shannon's Index (Pielou, 1966). Taxa diversity within a given community is dependent upon the number of taxa present (taxa richness) and the distribution of all individuals among those taxa (equitability or evenness). In order to quantify and compare the equitability in the fauna to the taxa diversity for a given area, Pielou's Index J' (Pielou, 1966) was calculated as J' = H'/lnS, where *ln*S = H'max, or the maximum possible diversity, when all taxa are represented by the same number of individuals; thus, J' = H' /H' max.

RESULTS AND ANALYSES

Borrow Sites

Water Quality and Sediment Characteristics

Sediment texture/%TOC data for the 20 Borrow Site stations in June and September 2010 and Apr-May 2011 are given in Tables 3, 4 and 5 and Figures 6 and 7. Sediment texture was

variable between the 20 stations: in June 2010, the substrate at 8 of 20 stations was dominated by sand (> 50%); in September 2010, 13 stations had predominantly silt+clay substrates (> 50%); and in Apr-May 2011, the substrate at 13 stations was predominantly silt+clay (> 50%)(Figure 6). %TOC data in June 2010 ranged from 0.02% at Stations BS2 and BSR2 to 1.51 at Station BS10; three stations, BS10, BS13 and BS15, had %TOC values > 1.0% (Table 3, Figure 7). %TOC data in September 2010 ranged from 0.03% at Stations BS1, BS2 and BSR2 to 1.59% at BS13; six stations, BS6, BS8, BS10, BS13 and BS15, had %TOC values > 1.0% (Table 4, Figure 7). %TOC data in Apr-May 2011 ranged from 0.02% at Station BS1 to 1.47% at BS10; 9 stations, BS3, BS5, BS6, BS8, BS12, BS13, BS15 and BSR1 had %TOC values > 1.0% (Table 5, Figure 7). There were significant differences in sediment composition between those stations located in the eastern portion of the study area (East: BS1-BS4, BSR1 and BSR2 off the eastern tip of Petit Bois and the western tip of Dauphin Island) and the remaining stations located to the west off of Horn, Ship and Cat Islands (West: BS5-BS16, BSR3 and BSR4). In June 2010 the %sand in the sediments was significantly higher (ChiSq = 8.82, Prob > ChiSq = 0.0030) at the East stations (77.6%) when compared with the West stations (30.9%); the %silt+clay in the sediments was significantly higher (ChiSq = 8.23, Prob > ChiSq = 0.0030) at the West stations (70.3%) when compared withe the East stations (22.3%); and the %TOC was significantly higher (ChiSq = 6.97, Prob > ChiSq = 0.0083) at the West stations (0.82%) when compared to the East stations (0.32%). In September 2010 the %sand in the sediments was significantly higher (ChiSq = 8.82, Prob > ChiSq = 0.0030) at the East stations (75.0%) when compared with the West stations (24.5%); the %silt+clay in the sediments was significantly higher (ChiSq = 8.82, Prob > ChiSq = 0.0030) at the West stations (74.8%) when compared withe the East stations (24.5%); and the %TOC was significantly higher (ChiSq = 7.89, Prob > ChiSq = 0.0050) at the West

stations (0.92%) when compared to the East stations (0.26%). In April-May 2011 there was no significant difference between the East and West stations in %sand (East = 71.1%, West = 27.3%, ChiSq = 3.293, Prob > ChiSq = 0.0696), %silt+clay (East = 28.5%, West = 72.7%, ChiSq = 3.29, Prob > ChiSq = 0.0696), and %TOC (East = 0.52%, West = 0.92%, ChiSq = 1.742, Prob > ChiSq = 0.1869).

Water quality data for the 20 Borrow Site stations are given in Tables 3, 4 and 5. Salinity stratification was measured at every station in June 2010 with typical surface salinities of 17-20 ppt and bottom salinities of 10-13 ppt (Table 3). Salinity stratification was not measured at any of the BS stations in September 2010 (Table 4). In Apr-May 2011 slight salinity stratification was measured at Stations BS1, BS2, BS3, BS4, BS14, BS16, BSR1, BSR2 and BSR3 (Table 5).

Dissolved oxygen data at the Borrow Site stations for the three sampling periods are given in Tables 3-5 and Figure 8. In June 2010, oxygen concentrations were < 2.0 mg/l at every station except for Station BS3 (2.81 mg/l). Dissolved oxygen concentrations were < 0.5 mg/l at Stations BS11, BS12, BS13, BS14, BS15 and at BSR1 (Figure 8). Dissolved oxygen concentrations less than 2 mg/l are considered to be hazardous for non-mobile macrobenthos (e.g. polychaete worms, amphipods) - prolonged exposure of the macroinfauna to hypoxic/ anoxic conditions can result in the defaunation of the benthos. Similar low dissolved oxygen concentrations were measured by scientists at the Dauphin Island Sea lab at stations 12 and 25 miles south of Dauphin Island, Alabama (DISL FOCAL program). Dissolved oxygen levels in September 2010 were typical for the time of year at the Borrow Site stations; only one station had near-bottom DO concentrations less than 3.0 mg/l (BS8 - 2.98 mg/l)(Table 4; Figure 8). In Apr-May 2010, DO concentrations < 2 mg/l were measured at Stations BS2, BS3, BS4, BSR1, BSR2 and BSR3 (Table 5; Figure 8).

Macroinfaunal Assemblages

Biological data for the 16 Borrow Site and 4 Borrow Site Reference stations in June 2010 are given in Tables 6 and 7 and Figures 9 and 10. Taxa richness was extremely variable between the stations and ranged from 6.5 taxa/station (SD = 1.7) at Station BS11 to 38.3 taxa (SD = 8.4) at Station BS3 (Figure 9). Taxa richness was significantly different between stations (Welch's F = 46.387, df = 19, Prob > F = < 0.0001; ChiSq = 65.425, Prob > ChiSq = < 0.0001) (Table 6, Figure 9). Those stations located in the eastern portion of the study area (East: BS1-BS4, BSR1 and BSR2 off the eastern tip of Petit Bois and the western tip of Dauphin Island) had significantly higher (ChiSq = 13.373, Prob > ChiSq = 0.0003) taxa richness (23.5) than the remaining stations located to the west off of Horn, Ship and Cat Islands (West = 15.4; BS5-BS16 and BSR3 and BSR4). Taxa densities were also extremely variable between the 20 Borrow Site stations and ranged from 281.3 organisms/m^2 at Station BS15 to 5181.3 organisms/m^2 at Station BS3 (Table 6; Figure 9). Densities were significantly different at the 20 Borrow Site stations (F = 12.704, df = 19, 60, Prob > F = < 0.0001). Densities at the East stations were significantly higher than the West Stations (F = 11.493, df = 1,78, Prob > F = 0.0011).

Taxa diversity and evenness data for the 20 Borrow Site stations in June 2010 are given in Table 6 and Figure 10. Taxa diversity ranged from 1.69 at Station BS12 to 3.39 at Station BS7. Taxa evenness ranged from 0.48 at Station BS8 to 0.87 at Station BS6 (Figure 10).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage are given in Table 7. Polychaete worms dominated the benthic community at every station except for Station BS1 with three taxa (a cnidarian, a polychaete and a bivalve) comprising at least 10% of the assemblage (Table 7). The polychaete, *Paraprionospio pinnata*, was dominant at 8 of the 20 stations (Table 7).

Biological data for the 20 Borrow Site stations in September 2010 are given in Tables 8 and 9 and Figures 11 and 12. Taxa richness was variable between the stations and ranged from 1.3 taxa/station (SD = 0.5) at Station BS11 to 21.3 taxa (SD = 8.2) at Station BS3 (Figure 11). Taxa richness was significantly different between stations (Welch's F = 30.090, df = 19, Prob > F = < 0.0001; ChiSq = 65.142, Prob > ChiSq = < 0.0001) (Table 8, Figure 11). In September, hypoxia was not measured at any of the Borrow Site stations (Figure 8). Those stations located in the eastern portion of the study area (East: BS1-BS4, BSR1 and BSR2 off the eastern tip of Petit Bois and the western tip of Dauphin Island) had significantly higher (χ^2 = 12.565, Prob > ChiSq = 0.0011) taxa richness (13.4) than the remaining stations located to the west off of Horn, Ship and Cat Islands (West = 7.6; BS5-BS16 and BSR3 and BSR4). For all stations, taxa richness in September 2010 was significantly lower than in June 2010 (χ^2 = 34.57, Prob > χ^2 = < 0.001) - the mean number of taxa in June was 17.9 (SD = 9.6), while the mean number of taxa in September was 9.3 (SD = 6.7). Taxa densities were generally lower in September than in June at the 20 Borrow Site stations and ranged from 100.0 organisms/m^2 at Station BS11 to 2298.4 organisms/m^2 at Station BS1 (Table 8; Figure 11). Densities were < 1000 organisms/m^2 at every station except BS1, BS3 and BS9 (Figure 11). Densities were significantly different at the 20 Borrow Site stations (F = 13.399, df = 19, 60, Prob > F = < 0.0001). Densities at the East stations were also significantly higher than the West Stations (F = 9.323, df = 1,78, Prob > F = 0.0031). For all stations densities in September were significantly lower than in June 2010 (F = 50.80, df = 1, 158, Prob > F = < 0.0001) - the mean density in June was 2039.4 organisms/m^2 (SD = 1907.2) and the mean density in September was 665.6 organisms/m^2 (SD = 652.5).

Taxa diversity and evenness data for the 20 Borrow Site stations in September 2010 are given in Table 8 and Figure 12. Taxa diversity ranged from 0.49 at Station BS12 to 3.37 at Station BS3. Taxa evenness ranged from 0.35 at Station BS1 to 0.90 at Station BS6 (Figure 12).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage are given in Table 9. Polychaete worms dominated the benthic community at every station except for Stations BS1 and BS2 which were dominated by the chordate, *Branchiostoma* (LPIL), Station BS6 which was dominated by nemerteans, Station BS16 which was dominated by the gastropod, *Nassarius acutus*, and Station BSR2 which was dominated by *Branchiostoma* (LPIL) (Table 9). The polychaete, *Meredithia uebelackerae*, was dominant at 11 of the 20 stations (Table 9).

Biological data for the 20 Borrow Site stations in April-May 2011 are given in Tables 10 and 11 and Figures 13 and 14. Taxa richness was variable between the stations and ranged from 5.3 taxa/station (SD = 3.3) at Station BS11 to 39.3 taxa (SD = 6.4) at Station BS4 (Figure 13). Taxa richness was significantly different between stations (Welch's F = 28.822, df = 19, Prob > F = < 0.0001; χ^2 = 58.346, Prob > χ^2 = < 0.0001)(Table 10, Figure 13). In April-May 2011, hypoxia (DO < 2 mg/l) was measured at the Borrow Site Stations BS2, BS3, BS4, BSR1, BSR2 and BSR3 - 5 of the 6 stations experiencing hypoxia were East stations (Figure 8). Those stations located in the eastern portion of the study area (East: BS1-BS4, BSR1 and BSR2 off the eastern tip of Petit Bois and the western tip of Dauphin Island) had significantly higher (χ^2 = 26.154, Prob > χ^2 = < 0.0001) taxa richness (25.2) than the remaining stations located to the west off of Horn, Ship and Cat Islands (West = 10.4; BS5-BS16 and BSR3 and BSR4). Densities were variable between stations and ranged from 275 organisms/m^2 (SD = 84.2) at Station BSR3 to 10206.3 organisms/m^2 (SD = 4107.1) at Station BS16 (Figure 13). Densities were significantly

different between the 20 Borrow Site stations (F = 11.740, df = 19, 60, Prob > F = < 0.0001). Densities at the East stations (2028.1 organisms/m^2) were also significantly higher than the West Stations (1433.5 organisms/m^2) (F = 11.687, df = 1,78, Prob > F = 0.0010).

Taxa diversity and evenness data for the 20 Borrow Site stations in April-May 2011 are given in Table 10 and Figure 14. Taxa diversity ranged from 1.01 at Station BS16 to 3.49 at Station BS2. Taxa evenness ranged from 0.28 at Station BS16 to 0.89 at Station BSR3 (Figure 14).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage in April-May 2011 are given in Table 11. The Eastern Borrow Site Stations BS2, BS4 and BSR1 were dominated by the polychaetes, *Mediomastus* (LPIL) and *Meredithia uebelackerae;* the East Station BS1 was dominated by the amphipod, *Microprotopus raneyi*, Station BS3 was dominated by the bivalve, *Tellina* (LPIL) and Station BSR2 were dominated by the bivalve, *Nuculana* (Table 11). The West Stations BS5-BS10, BSR3 and BSR4 were dominated by the polychaetes, *Mediomastus* (LPIL) and *Meredithia uebelackerae*; Stations BS5, BS6 and BSR3 also had high abundances of the bivalve, *Nuculana*, and Station BS8 and BS10 had high numbers of the pinnotherid crab, *Pinnixa* (LPIL).The West Stations BS11-BS16 were all dominated by polychaetes, including *Mediomastus* (LPIL), *Meredithia uebelackerae*, and *Sigambra tentaculata*, and at Station BS16 the polychaete, *Tharys acutus* made up 77% of the assemblage (Table 11).

June and September 2010 and April-May 2011 Assemblage Comparisons

For all data, taxa richness was significantly higher at the Easternmost stations BS1-BS4, BSR1, BSR2 (mean = 20.7, SD = 10.3) when compared to the Western stations BS5-BS16, BSR3, BSR4 (mean = 11.1, SD = 7.8)(Welch's Test: F = 49.828, Prob > F < 0.0001; χ^2 = 46.279,

Prob > χ^2 = < 0.0001) - for this reason taxa richness data was aggregated into either East or West station groups for further analyses of seasonal effects. For the East stations, there was a significant effect of month on taxa richness (June 2010 mean = 23.5, SD = 8.5; September 2010 mean = 13.4, SD = 7.0; April-May 2011 mean = 25.2, SD = 10.9)(Welch's Test: F = 14.752, Prob > F < 0.0001; χ^2 = 21.332, Prob > χ^2 = < 0.0001)(Figure 15). The data shows that taxa richness was significantly lower in September 2010 than in either June 2010 or April-May 2011 - the macroinfaunal assemblage in April-May 2011 shows recovery to levels measured in June 2010 (Figure 15). For the West stations, there was a significant difference between seasons in taxa richness (June 2010 mean = 15.4, SD = 9.1; September 2010 mean = 7.6, SD = 5.7; April-May 2011 mean = 10.4, SD = 6.2)(Welch's Test: F = 14.797, Prob > F < 0.0001; χ^2 = 25.475, Prob > χ^2 = < 0.0001)(Figure 15). Taxa richness at the West stations was significantly higher in June 2010 than in either September 2010 or April-May 2011, indicating taxa richness at the West stations had not fully recovered to spring 2010 levels by the spring of 2011.

For all data, station densities were significantly higher at the Eastern most stations BS1-BS4, BSR1, BSR2 (mean = 1935.3, SD = 1649.8) when compared to the Western stations BS5-BS16, BSR3, BSR4 (mean = 1226.2, SD = 1977.1)(ln-transformed density data, F = 26.969, df = 1, 238, Prob > F < 0.0001) - density data was aggregated into either East or West station groups for further analyses of seasonal effects. For the East stations, there was a significant effect of month on station density (June 2010 mean = 2039.4, SD = 1907.2; September 2010 mean = 665.6, SD = 652.5; April-May 2011 mean = 1611.9, SD = 2442.6)(F = 14.336, df = 2, 69, Prob > F < 0.0001)(Figure 16). The data shows that station densities were significantly lower in September 2010 than in either June 2010 or April-May 2011 - the macroinfaunal assemblage in April-May 2011 shows recovery to levels measured in June 2010 (Figure 16). For the West

stations, there was a significant effect of month on station density (June 2010 mean = 1714.7, SD = 1790.0; September 2010 mean = 530.4, SD = 510.5; April-May 2011 mean = 1433.5, SD = 2761.3)(F = 14.775, df = 2, 165, Prob > F < 0.0001)(Figure 16) - for these data, densities in June 2010 were significantly higher than in September 2010 and April-May 2011 and densities in April-May 2011 were significantly higher than in September 2010 - for the West stations, densities have increased significantly from September 2010 to April-May 2011, but are still significantly below densities measured in June 2010, indicating only partial recovery of station densities (Figure 16).

Placement Sites

Water Quality and Sediment Characteristics

Sediment texture/%TOC data for the 20 Placement Site and 5 Placement Site Reference stations in June and September 2010 and Apr-May 2011 are given in Tables 12, 13 and 14 and Figures 17 and 18. Sediment texture was very similar between the 20 Placement Site stations: in June 2010, the substrate at the 20 stations was dominated by sand (> 95%); in September 2010, each station had predominantly sand substrates (> 90%); and in Apr-May 2011, the substrate at each station was predominantly sand (> 99% except for Station PS18 which had a 55% sand fraction)(Figure 17). In June 2010, sediments at 4 of the 5 Placement Site reference stations located in Mississippi Sound (PSR1, PSR2, PSR3, PSR5) were dominated by the silt+clay fraction (> 60%), while Station PSR4 was dominated by sand (66%)(Table 12, Figure 17). Sediment texture at the 5 Placement Site Reference stations in September 2010 was similar to data collected in June 2010 with Stations PSR1, PSR2, PSR3 and PSR5 dominated by silt+clay and Station PSR4 dominated by sand (Table 13, Figure 17). In April-May 2011, sediments at

Stations PSR1 and BSR3 were dominated by silt+clay, Stations PSR2 and PSR5 were silty/sand and sediments at Station PSR4 were 98% sand (Figure 17).

%TOC values measured in June 2010, September 2010 and April-May 2011 at the 20 Placement Site stations were all < 0.1% which was expected in light of the high sediment sand composition (Tables 12, 13, 14; Figure 18) - Station PS18 on the Mississippi Sound side of west Ship Island had the highest %TOC (0.89). %TOC values measured at the 5 Placement Site Reference stations in June 2010 and September 2010 were higher than those measured at the Placement Site stations and ranged from 0.47% to 1.39% in June 2010, from 0.51% to 1.49% in September 2010, and from 0.25% to 1.42% in April-May 2011 (Tables 12, 13, 14; Figure 18) - these values were not unexpected considering the high silt+clay fraction found in the sediments.

Water quality data for the 20 Placement Site and 5 Placement Site Reference stations are given in Tables 12, 13 and 14. Salinity stratification (>3 ppt difference between surface and bottom salinities) was measured at Stations PS6-9, PS15, PSR1-2 and PSR4 in June 2010 (Table 3). Salinity stratification (> 3 ppt difference between surface and bottom) was only measured at Stations PS10 and PSR5 in September 2010 (Table 13). In Apr-May 2011 salinity stratification was measured at Stations PS1-PS9, PS20, PSR2, PSR3 and PSR5 - at several stations there was a 10 ppt difference between surface and bottom salinities (Table 14).

Dissolved oxygen data at the Placement Site and Placement Site Reference stations for the three sampling periods are given in Tables 12-14. During June 2010, only three stations, PS9, PSR1 and PSR2, had measured bottom dissolved oxygen concentrations < 3.0 mg/l (Table 12). In September 2010, every station had measured bottom DO concentrations > 4.0 mg/l (Table 13). In Apr-May 2011 measured bottom dissolved oxygen concentrations were > 5.0 mg/l at every station except Station PS9 (3.25 mg/l), PS18 (4.58 mg/l) and PSR4 (4.85 mg/l)(Table 14).

Macroinfaunal Assemblages

Taxa richness and density data for the 20 Placement Sites and 5 Placement Site Reference stations in June 2010 are given in Table 15 and Figure 19. There was a significant difference in taxa richness at stations associated with the four barrier islands and the Mississippi Sound Reference stations: taxa richness at the four Petit Bois (mean = 27.6, SD = 11.9) and two Cat Island (mean = 26.4, SD = 4.9) stations was significantly higher than at the five Horn Island stations (mean = 17.9, SD = 9.8), six Ship Island stations (mean = 16.5, SD = 8.6), three Camille Cut stations (mean = 13.0, SD = 1.9) and five Mississippi Sound (mean = 15.9, SD = 4.5) stations (ln-transformed taxa richness data; $F = 6.18$, df = 5, 95, Prob > F = < 0.0001). There was also a significant difference in macroinfaunal densities between the various stations: densities at the three Camille Cut stations (mean = 6033.3 organisms/m^2, SD = 3879.3) were significantly higher and densities at the five Mississippi Sound Reference stations (mean = 1175.0 organisms/m^2, SD = 489.2) stations were significantly lower than densities at the six Ship Island (mean = 4616.7 organisms/m^2, SD = 3558.8), two Cat Island stations (mean = 3406.3 organisms/m^2, SD = 1256.8), the five Horn Island stations (mean = 4040.0 organisms/m^2, SD = 3014.0), and the four Petit Bois Island stations (mean = 3504.7 organisms/m^2, SD = 1664.2)(Welch's Test; $F = 31.55$, df = 5, Prob > F = < 0.0001; $\chi^2 = 47.03$, df = 5, Prob > χ^2 = < 0.0001).

Taxa diversity and evenness data for the 20 Placement Sites and 5 Placement Site Reference stations in June 2010 are given in Table 15 and Figure 20. Taxa diversity ranged from 0.59 at Station PS8 to 3.29 at Station PS1. Taxa evenness ranged from 0.19 at Station PS8 to 0.87 at Station PSR4 (Figure 20).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the Placement Site and Placement Site Reference stations in June 2010 are

given in Table 16. One station at Petit Bois Island was dominated by polychaetes (PS1), one station was dominated by crustaceans (PS2, *Pinnixa*), one station was dominated by a gastropod (*Caecum johnsoni*), and one station (PS4) was dominated by the bivalve, *Gemma gemma*. Three stations off Horn Island were dominated by polychaetes (PS6, PS7 and PS9), one station (PS5) was co-dominated by a polychaete and the chordate, *Branchiostoma* (LPIL), and one station (PS8) was dominated by *Gemma gemma*. Three stations associated with the eastern tip of Ship Island were dominated by polychaetes (PS10, PS13, PS14), one station (PS11) was dominated by *Gemma gemma*, and one station (PS12) was dominated by the cnidarian Order Actiniaria (LPIL). Station PS18 on the western tip of Ship Island was dominated by the crustacean, *Acanthohaustorius uncinus*. The three stations located in Camille Cut were each dominated by the bivalve, *Gemma gemma*. Station PS19 off Cat Island was dominated by a polychaete, while Station PS20 was co-dominated by a polychaete and the amphipod, *A. uncinus*. Four of the five Placement Site Reference stations in Mississippi Sound were dominated by polychaetes (PSR1, PSR3, PSR4, PSR5) and Station PSR2 was co-dominated by a polychaete and the bivalve, *Nuculana concentrica*.

Taxa richness and density data for the 20 Placement Sites and 5 Placement Site Reference stations in September 2010 are given in Table 17 and Figure 21. There was a significant difference in taxa richness at stations associated with the four barrier islands and the Mississippi Sound Reference stations: taxa richness at the five Mississippi Sound stations (mean = 7.2, SD = 4.5) was significantly lower than at the four Petit Bois stations (mean = 12.8, SD = 6.1), the five Horn Island stations (mean = 11.1, SD = 4.0), the six Ship Island stations (mean = 15.9, SD = 5.3), the three Camille Cut stations (mean = 13.3, SD = 3.9), but not significantly different from the two Cat Island stations (mean = 10.4, SD = 6.2) (Welch's Test; F = 7.219, df = 5, Prob > F =

< 0.0001; χ^2 = 28.4038, df = 5, Prob > χ^2 = < 0.0001). There was also a significant difference in macroinfaunal densities between the various stations: densities at the three Camille Cut stations (mean = 39541.7 organisms/m^2, SD = 8365.9) were significantly higher than densities at the five Mississippi Sound Reference stations (mean = 433.8 organisms/m^2, SD = 38.8) stations, the six Ship Island stations (mean = 1840.6 organisms/m^2, SD = 1799.0), the two Cat Island stations (mean = 593.8 organisms/m^2, SD = 485.1), the five Horn Island stations (mean = 9614.8 organisms/m^2, SD = 13641.8), and the four Petit Bois Island stations (mean = 5153.1 organisms/ m^2, SD = 7226.2)(Welch's Test; F = 53.773, df = 5, Prob > F = < 0.0001; χ^2 = 59.656, df = 5, Prob > χ^2 = < 0.0001).

Taxa diversity and evenness data for the 20 Placement Sites and 5 Placement Site Reference stations in September 2010 are given in Table 17 and Figure 22. Taxa diversity ranged from 0.13 at Station PS4 to 3.09 at Station PS1. Taxa diversity at the three Camille Cut stations were uniformly low and averaged 0.54. Taxa evenness ranged from 0.05 at Station PS4 to 0.86 at Station PS1 (Figure 22). Taxa evenness was also low at the three Camille Cut stations and averaged 0.17, indicating that the assemblages were dominated by a single taxa (the bivalve, *Gemma gemma*).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the Placement Site and Placement Site Reference stations are given in Table 18. One station (PS1) at Petit Bois Island was dominated by the sipunculid, *Phoscolion strombi*, two stations (PS2, PS4) were dominated by the bivalve, *Gemma gemma*, and one station (PS3) was dominated by the chordate, *Branchiostoma (LPIL)*, and the gastropod, *Caecum imbricatum*. One station (PS5) off Horn Island was dominated by the chordate, *Branchiostoma (LPIL)*, one station (PS6) was co-dominated by the gastropod, *Caecum imbricatum*, and the chordate,

Branchiostoma (LPIL), one station (PS7) was co-dominated by the polychaete, *Synelmis ewingi*, and the bivalve, *Gemma gemma*, and two stations (PS8, PS9) were dominated by *Gemma gemma*. Three stations associated with the eastern tip of Ship island were dominated by polychaetes (PS10, PS13, PS14), one station (PS11) was dominated by the chordate, *Branchiostoma*, and one station (PS12) was co-dominated by the polychaete, *Mediomastus* (LPIL) and the chordate, *Branchiostoma* (LPIL). Station PS18 on the western tip of Ship Island was dominated by the polychaete, *Leitoscoloplos* (LPIL), and nemerteans. The three stations located in Camille Cut were each dominated (> 85% of the assemblage) by the bivalve, *Gemma gemma*. Station PS19 off Cat Island was dominated by the polychaete, *Mediomastus* (LPIL), while Station PS20 was dominated by the polychaete Family Cirratulidae (LPIL). Four of the five Placement Site Reference stations in Mississippi Sound were dominated by polychaetes (PSR2, PSR3, PSR4, PSR5) and Station PSR1 was co-dominated by the polychaete, *Paramphinome* sp. B, and the gastropod, *Nassarius acutus*.

There were significant differences in both taxa richness and densities between June 2010 and September 2010 (Table 19, Figures 23 and 24). For all the taxa collected, taxa richness was significantly lower in September (mean = 11.9) than in June (mean = 18.8)($F = 39.738$, $df = 1, 198$, $Prob > F = <0.0001$) and densities were significantly higher in September (mean = 8068.5) than in June (mean = 4048.3)($\chi^2 = 11.719$, $Prob > \chi^2 = 0.0006$). There were significant differences in taxa richness and density between stations on individual islands between June and September (Table 19): for stations associated with Petit Bois Island, taxa richness was more than 50% less in September (mean = 12.8) than in June (mean = 27.6), densities were significantly higher in September (5153.1) than in June (3504.7); for the Horn Island stations, taxa richness in September was significantly lower (mean = 11.1) than in June (mean = 17.9), densities were

more than 2x higher in September (mean = 9614.8 organisms/m^2) than in June (mean = 4040.0 organisms/m^2); for the Ship Island stations taxa richness was not significantly different between June and September, densities, however, in September (mean = 1840.6 organisms/m^2) were < 50% of values in June (mean = 4616.7 organisms/m^2); for the Camille Cut stations taxa richness was not significantly different between June and September, and densities in September (mean = 39541.7 organisms/m^2) were > 4x the values in June (mean = 8866.7 organisms/m^2) due to the presence of high numbers of the bivalve, *Gemma gemma*, at each station; for the two Cat Island stations taxa richness in September (mean = 10.4) was less than 50% of values in June (mean = 26.4), and densities in September (mean = 593.8 organisms/m^2) were > 5x lower than in June (mean = 3406.3 organisms/m^2); and for the PS stations in Mississippi Sound, taxa richness in September (mean = 7.2) was < 50% of values in June (mean = 15.9), while densities in September (mean = 433.8 organisms/m^2) were lower than in June (mean = 1175.0 organisms/m^2).

Taxa richness and density data for the 20 Placement Sites and 5 Placement Site Reference stations in April-May 2011 are given in Table 20 and Figure 25. There was a significant difference in taxa richness at stations associated with the four barrier islands and the Mississippi Sound Reference stations: taxa richness at the two Cat Island stations (mean = 29.0, SD = 9.2) was significantly higher than at the three Camille Cut stations (mean = 15.1, SD = 2.5); there was no significant difference in taxa richness between the four Petit Bois stations (mean = 22.8, SD = 12.4), the five Horn Island stations (mean = 25.3, SD = 8.2), the six Ship Island stations (mean = 21.3, SD = 7.8), and the five Mississippi Sound Reference stations (mean = 19.7, SD = 10.8) (Welch's Test; F = 9.326, df = 5, Prob > F = < 0.0001; χ^2 = 14.605, df = 5, Prob > χ^2 = 0.0122) (Figure 25). There was also a significant difference in macroinfaunal densities between the

various stations: densities at the three Camille Cut stations (mean = 13233.3 organisms/m^2, SD = 8459.1) and the five Horn Island stations (mean = 11985.3 organisms/m^2, SD = 11558.1) were significantly higher than densities at the six Ship Island stations (mean = 2749.0 organisms/m^2, SD = 1546.4); densities at the five Mississippi Sound Reference stations (mean = 1452.3 organisms/m^2, SD = 1106.1) stations were significantly lower than densities at stations on each island including the two Cat Island stations (mean = 4218.8 organisms/m^2, SD = 2379.1) (Welch's Test; F = 11.117, df = 5, Prob > F = < 0.0001; χ^2 = 46.292, df = 5, Prob > χ^2 = < 0.0001)(Figure 25).

Taxa diversity and evenness data for the 20 Placement Sites and 5 Placement Site Reference stations in April-May 2011 are given in Table 20 and Figure 26. Taxa diversity ranged from 1.22 at Station PS4 to 3.44 at Station PS1. Taxa evenness ranged from 0.14 at Station PS4 to 0.82 at Stations PSR1 and PSR3 (Figure 26).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the Placement Site and Placement Site Reference stations in April-May 2011 are given in Table 21. Station PS1 at Petit Bois Island was dominated by the polychaetes, *Mediomastus* (LPIL) and *Polygordius* (LPIL), Station PS2 was dominated by *Polygordius* and the pinnotherid crab, *Pinnixa* (LPIL), Station PS3 was dominated by an assemblage of polychaetes and the amphipod, *Acanthohaustorius intermedius*, and Station PS4 was dominated by the bivalve, *Gemma gemma*. Stations PS5 and PS6 at Horn Island were dominated by the polychaete, *Polygordius* (LPIL), Station PS7 was dominated by the polychaete, *Synelmis ewingi*, and the amphipod, *A. intermedius*, Station PS8 was dominated by *G. gemma*, and Station PS9 was dominated by the polychaetes, *Mediomastus* (LPIL) and *Apoprionospio pygmaea* (Table 21). Station PS10 at East Ship Island was dominated by tubificid oligochaetes, Station PS11 was

dominated by the amphipod, *Protohaustorius wigleyi*, Station PS12 was dominated by the polychaetes, *Mediomastus* (LPIL) and *Spiophanes bombyx*, Station PS13 was dominated by the arthropods, *Acanthohaustorius* sp. C and *P. wigleyi*, while Station PS14 was dominated by *P. wigleyi* (Table 21). Station PS15 in Camille Cut was dominated by the polychaete, *Paraonis fulgens* and the bivalve, *G. gemma*, and Stations PS16 and PS17 were dominated by *G. gemma*. Station PS18 on the northwestern tip of Ship Island was dominated by tubificid oligochaetes and the polychaete, *Sigambra tentaculata*. Station PS19 at Cat Island was dominated by the polychaetes, *Mediomastus* (LPIL) and *Polygordius* (LPIL), and Station PS20 was dominated by tubificid oligochaetes and the polychaete Family, Cirratulidae (LPIL). The five Placement Site Reference stations in Mississippi Sound were dominated by an assemblage of polychaetes including *Mediomastus* (LPIL)(Table 21).

June and September 2010 and April-May 2011 Assemblage Comparisons

Taxa richness in April-May 2011 (mean = 22.8) at Placement Sites PS1-PS4 associated with Petit Bois Island was significantly higher than taxa richness in September 2010 (mean = 12.8), but not significantly different from taxa richness in June 2010 (mean = 27.6), indicating a recovery from the very low macroinfaunal richness found in September 2010 to June 2010 levels (Welch's Test; $F = 11.754$, df = 2, Prob > F = 0.0002; $\chi^2 = 14.520$, df = 2, Prob > χ^2 = 0.0007) (Figure 23). Taxa densities (June 2010 mean = 3504.7 organisms/m^2; September 2010 mean = 5153.1 organisms/m^2; April-May mean = 5094.6 organisms/m^2) for the four stations associated with Petit Bois Island were not significantly difference between seasons (Welch's Test; $F = 1.263$, df = 2, Prob > F = 0.3014; $\chi^2 = 4.677$, df = 2, Prob > χ^2 = 0.0965)(Figure 24).

Taxa richness in April-May 2011 (mean = 25.3) at Placement Sites PS5-PS9 associated with Horn Island was significantly higher than taxa richness in June 2010 (mean = 17.9) and

September 2010 (mean = 11.1); taxa richness in September 2010 was significantly lower than in June 2010 and April-May 2011 - these data again indicate a recovery in 2011 from the very low macroinfaunal richness found in September 2010 (Welch's Test; $F = 25.194$, $df = 2$, $Prob > F < 0.0001$; $\chi^2 = 22.788$, $df = 2$, $Prob > \chi^2 < 0.0001$)(Figure 23). Taxa density in April-May 2011 (mean = 11985.3 organisms/m^2) at the five Horn Island stations was significantly higher than in June 2010 (mean = 4040.0 organisms/m^2) but not September 2010 (mean = 9614.8 organisms/m^2) (Welch's Test; $F = 5.611$, $df = 2$, $Prob > F = 0.0089$; $\chi^2 = 6.742$, $df = 2$, $Prob > \chi^2 = 0.0343$) (Figure 24).

Taxa richness in April-May 2011 (mean = 21.3) at Placement Sites PS10-PS14 and PS18 associated with Ship Island was significantly higher than taxa richness in June 2010 (mean = 16.5) and September 2010 (mean = 15.9); taxa richness in September 2010 was not significantly different than in June 2010 (Welch's Test; $F = 3.951$, $df = 2$, $Prob > F = 0.0265$; $\chi^2 = 6.429$, $df = 2$, $Prob > \chi^2 = 0.0402$)(Figure 23). Taxa density in April-May 2011 (mean = 2749.0 organisms/m^2) and June 2010 (mean = 4616.7 organisms/m^2) at the six Horn Island stations was significantly higher than in September 2010 (mean = 1840.6 organisms/m^2) (Welch's Test; $F = 6.007$, $df = 2$, $Prob > F = 0.0050$; $\chi^2 = 16.135$, $df = 2$, $Prob > \chi^2 = 0.0003$)(Figure 24).

Taxa richness (June 2010 mean = 13.0; September 2010 mean = 13.3; April-May mean = 15.1) at the Camille Cut Placement Site stations PS15-17 (between East and West Ship Island) was not significantly difference between seasons (Welch's Test; $F = 2.558$, $df = 2$, $Prob > F = 0.1018$; $\chi^2 = 5.516$, $df = 2$, $Prob > \chi^2 = 0.0634$)(Figure 23). Taxa density at the three Camille Cut stations in September 2010 (mean = 39541.7 organisms/m^2) was significantly higher than in June 2010 (mean = 8866.7 organisms/m^2) and April-May 2011 (mean = 13233.3 organisms/m^2)

(Welch's Test; F = 69.593, df = 2, Prob > F < 0.0001; χ^2 = 23.502, df = 2, Prob > χ^2 < 0.0001) (Figure 24).

Taxa richness in June 2010 (mean = 26.4) and April-May 2011 (mean = 29.0) at the Cat Island Placement Sites PS19-PS20 were not significantly different, but richness in June 2010 and April-May 2011 was significantly higher than in September 2010 (mean = 10.4)(Welch's Test; F = 18.510, df = 2, Prob > F = 0.0001; χ^2 = 13.397, df = 2, Prob > χ^2 = 0.0012)(Figure 23). Taxa densities in June 2010 (mean = 3406.3 organisms/m^2) and April-May 2011 (mean = 4218.8 organisms/m^2) at the Cat Island Stations PS19-PS20 were also significantly higher than in September 2010 (mean = 593.8 organisms/m^2) (Welch's Test; F = 23.253, df = 2, Prob > F < 0.0001; χ^2 = 24.583, df = 2, Prob > χ^2 < 0.0005)(Figure 24).

Taxa richness in June 2010 (mean = 15.9) and April-May 2011 (mean = 19.7) at the Mississippi Sound Reference Placement Sites PSR1-PSR5 were not significantly different, but richness in June 2010 and April-May 2011 was significantly higher than in September 2010 (mean = 7.2)(Welch's Test; F = 23.750, df = 2, Prob > F = 0.0001; χ^2 = 24.583, df = 2, Prob > χ^2 < 0.0001)(Figure 23). Taxa densities in June 2010 (mean = 1175.0 organisms/m^2) and April-May 2011 (mean = 1452.3 organisms/m^2) at the Mississippi Sound Stations were also significantly higher than in September 2010 (mean = 433.8 organisms/m^2) (Welch's Test; F = 17.793, df = 2, Prob > F < 0.0001; χ^2 = 21.051, df = 2, Prob > χ^2 < 0.0001)(Figure 24).

Beach Transect Sites

Water Quality and Sediment Characteristics

Sediment texture data for the 15 Beach Transect and 4 Beach Transect Reference Shallow, Mid-depth and Deep stations in June and September 2010 and Apr-May 2011 are given in Tables 12, 13 and 14 and Figures 27, 28 and 29. Sediment texture at every Shallow Transect

station in June and September 2010 and April-May 2011 was > 97% sand (Figure 27). Sediment texture at every Mid-depth Transect station in June and September 2010 and April-May 2011 was > 96% sand, except for Station BT16 (47% sand) (Figure 28). Sediment texture at every Deep Transect station in June and September 2010 and April-May 2011 was > 95% sand, except for Station BT16 (57% sand) (Figure 29).

%TOC values measured in June 2010, September 2010 and April-May 2011 at the 15 Beach Transect and 4 Beach Transect Reference Shallow, Mid-depth and Deep stations were all < 0.1% except for values of 0.18% and 0.46% at mid-depth Stations BT13 and BT16 in September 2010 and a value of 0.77% at deep Station BT16 in September 2010 (Table 23). These data were expected in light of the high sediment sand composition at the 15 Beach Transect sites.

Water quality data for the 15 Beach Transect and 4 Beach Transect Reference Shallow, Mid-depth and Deep stations are given in Tables 25, 26 and 27. Salinities tended to to be higher at stations located on the Mississippi Sound side of the islands than at stations located on the Gulf of Mexico side. Salinities in June 2010 varied from 15.8 ppt at Beach Transect Reference 1 on the north side of Horn Island to 28.53 ppt at Station BT7 on the GOM side of Horn Island (Table 25). In September 2010 there were no measured salinities < 20 ppt and values ranged from 23 ppt at the Cat Island stations to 32 ppt at the north Horn Island Stations BT5 and BT6 (Table 26). In April-May 2011 salinities ranged from 16 ppt at the Cat Island Stations and the north Horn Island Station BT5 to 25 ppt at the south Petit Bois Island stations BT4 and BT2 (Table 27). Dissolved oxygen data for the three sampling periods was high - only three DO measurements were recorded between 4 and 5 mg/l and occurred at Stations BT7, BT8 and BT9 in June 2010 (Table 25). The higher DO values measured at the Beach Transect stations than at

the Borrow and Placement Site stations is not unexpected due to the high energy nature of the subtidal beach habitats.

Macroinfaunal Assemblages

Beach Transect Shallow Stations

For all Beach Transect Shallow data in June taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 140.19, P > F = <0.0001, χ^2 = 81.668, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 134.47, P > F = <0.0001, χ^2 = 92.4377, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in June 2010 are given in Tables 28-32 and Figures 33 and 34. Taxa richness at Shallow Stations on the north side of the islands ranged from 4.3 (SD = 1.0) at Station BT9 on Ship Island to 15.0 (SD = 3.8) at Station BT3 on Petit Bois Island; taxa richness on the south side of the islands ranged from 1.3 (SD = 0.7) at Station BT11 on Ship Island to 3.6 (SD = 1.4) at Station BT4 on Petit Bois Island (Tables 28-32; Figure 33). Station density data at Shallow Stations on the north side of the islands ranged from 4194 organisms/m^2 at Station BTR1 on West Horn Island to 32306 organisms/m^2 at Station BT3 on Petit Bois Island; station density data on the south side of the islands ranged from 444 organisms/m^2 at Station BT2 on Petit Bois Island to 1472 organisms/m^2 at Stations BTR3 and BTR4 on West Horn Island (Tables 28-32; Figure 34).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in June 2010 are given in Tables 28-32 and Figures 35 and 36. Diversity data at Shallow Stations on the north side of the islands ranged from 0.31 at Station BT9 on Ship Island to 2.69 at Station BTR2 on West Horn Island; diversity data on the south side

of the islands ranged from 0.94 at Station BT7 on Horn Island to 2.10 at Station BT2 on Petit Bois Island (Tables 28-32; Figure 35). Evenness data at Shallow Stations on the north side of the islands ranged from 0.13 at Station BT9 on Ship Island to 0.77 at Station BTR2 on West Horn Island; evenness data on the south side of the islands ranged from 0.65 at Station BT12 on Ship Island to 0.96 at Station BT2 on Petit Bois Island (Tables 28-32; Figure 36).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in June 2010 is given in Table 33. Three of the 4 stations on Petit Bois Island were dominated by various arthropods, while one station (BT3-S) was dominated by enchytraeid oligochaetes; two stations on Horn Island (BT5-S and BT7-S) were dominated by arthropods, one station (BT6-S) by the polychaete, *Paraonis fulgens,* and one station (BT8-S) by the bivalve, *Donax variabilis*; on Ship Island two stations (PT9-S and BT12-S) were dominated by arthropods, Station BT10-S was co-dominated by the isopod, *Exosphaeroma productatelson*, and the bivalve, *Gemma gemma*, and one station (BT11-S) was dominated by the polychaete, *P. fulgens*; on Cat Island each station was dominated by arthropods with the amphipod, *Lepidactylus triarticulatus*, making up 94.8% of the assemblage at Station BT15-S; at the Reference stations on West Horn Island, polychaetes dominated the assemblage at Stations BTR1-S and BTR2-S, one station (BTR3-S) was co-dominated by the polychaete, *Scolelepis squamata*, and the bivalve *G. gemma*, and one station (BTR4-S) was dominated by the bivalve, *D. variabilis* (Table 33).

For all Beach Transect Shallow data in September 2010 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 231.1119, P > F = <0.0001, χ^2 = 91.0424, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 125.8881, P > F = <0.0001, χ^2 =

95.3640, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in September 2010 are given in Tables 34-38 and Figures 33 and 34. Taxa richness at Shallow Stations on the north side of the islands ranged from 4.8 at Station BT1 on Petit Bois Island to 12.3 at Station BTR2 on West Horn Island; taxa richness on the south side of the islands ranged from 0.6 at Station BT11 on Ship Island to 3.3 at Station BT12 also on Ship Island (Tables 34-38; Figure 33). Station density data at Shallow Stations on the north side of the islands ranged from 6389 organisms/m^2 at Station BT5 on Horn Island to 40167 organisms/m^2 at Station BT9 on Ship Island; station density data on the south side of the islands ranged from 167 organisms/m^2 at Station BT11 on Ship Island to 2250 organisms/m^2 at Station and BT12 also on Ship Island (Tables 34-38; Figure 34).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in September 2010 are given in Tables 34-38 and Figures 35 and 36. Diversity data at Shallow Stations on the north side of the islands ranged from 0.60 at Station BT9 on Ship Island to 2.29 at Station BTR2 on West Horn Island; diversity data on the south side of the islands ranged from 0.75 at Station BTR4 on West Ship Island to 1.83 at Station BTR3 also on West Ship Island (Tables 34-38; Figure 35). Evenness data at Shallow Stations on the north side of the islands ranged from 0.23 at Station BT9 on Ship Island to 0.67 at Station BTR2 on West Horn Island; evenness data on the south side of the islands ranged from 0.54 at Station BTR4 on West Horn Island to 0.940 at Station BT11 on Ship Island (Tables 34-38; Figure 36).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in September 2010 is given in Table 39. Station BT1-S on Petit Bois Island was dominated by the

isopod, *Exosphaeroma productatelson*, one station (BT3-S) was dominated by tubificid oligochaetes, and stations BT2-S and BT4-S were dominated by the bivalves, *Gemma gemma* and *Donax variabilis*; Station BT5-S on East Horn Island was dominated by the arthropod, *Lepidactylus triarticulatus*, station BT6-S was dominated by tubificid oligochaetes, and Stations BT7-S and BT8-S were dominated by the bivalves, *D. variabilis* and *G. gemma*; Ship Island Station BT9-S was dominated by the isopod, *Exosphaeroma productatelson*, Station BT11-S was dominated by the polychaete, *Leitoscoloplos* (LPIL), and Stations BT10-S and BT12-S were dominated by the bivalves, *D. variabilis* and *G. gemma*; Cat Island Station BT13-S was dominated by the arthropod, *Lepidactylus triarticulatus*, Station BT15-S was dominated by the polychaete, *Paraonis fulgens*, and Station BT16-S was dominated by the polychaete, *Nereis succinea*; at the Reference stations on West Horn Island, polychaetes dominated the assemblage at Stations BTR1-S and BTR2-S, and Stations BTR3-S and BTR4-S were dominated by the bivalve *G. gemma* (Table 39).

There were significant differences between taxa richness and densities at some of the Shallow Beach Transect Stations between June and September 2010 (Figures 37 and 38). Due to significant differences in taxa richness and densities between the north and south sides of the islands, the statistical analyses were made on data grouped by station location on the islands - additionally, since there was no north-south designation for stations on the Cat Island, these data were analyzed separately. For the Shallow stations of the south side of the islands, only the West Horn Island Reference stations had significantly different taxa richness between June and September: mean taxa richness in June was 3.25 and 1.31 in September ($\chi^2 = 12.013$, Prob > $\chi^2 = 0.0003$). The West Horn Island Reference south stations also had significantly different densities between June and September: mean density in June was 1472 organisms/m^2 and 514

organisms/m^2 in September ($\chi^2 = 9.63$, Prob > $\chi^2 = 0.0019$). Taxa richness at the Shallow Stations on the north side of the islands was significantly different for each island: Petit Bois June mean = 11.6, September mean = 8.0, $\chi^2 = 3.58$, Prob > $\chi^2 = 0.05$; Horn Island June mean = 9.7, September mean = 7.8, $\chi^2 = 4.49$, Prob > $\chi^2 = 0.034$; Ship Island June mean = 5.4, September mean = 7.6, $\chi^2 = 4.80$, Prob > $\chi^2 = 0.028$; West Horn Island Reference mean = 8.3, September mean 11.3, $\chi^2 = 6.25$, Prob > $\chi^2 = 0.012$. Densities at the Shallow Stations on the north side of the islands was significantly different for three islands: Petit Bois June mean = 26833 organisms/m^2, September mean = 13152 organisms/m^2, $\chi^2 = 11.26$, Prob > $\chi^2 = 0.0008$; Ship Island June mean = 21181 organisms/m^2, September mean = 32944 organisms/m^2, $\chi^2 = 8.65$, Prob > $\chi^2 = 0.0033$; West Horn Island Reference June mean = 5305 organisms/m^2, September mean = 14167 organisms/m^2, $\chi^2 = 13.10$, Prob > $\chi^2 = 0.0003$. For the three Cat Island Stations, only taxa richness was significantly different between June and September: June mean = 3.1, September mean = 2.4, $\chi^2 = 4.69$, Prob > $\chi^2 = 0.0303$.

For all Beach Transect Shallow data in April-May 2011 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 129.78, P > F = <0.0001, $\chi^2 = 82.35$, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 86.29, P > F = <0.0001, $\chi^2 = 74.64$, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in September 2010 are given in Tables 40-44 and Figures 33 and 34. Taxa richness at Shallow Stations on the north side of the islands ranged from 5.1 at Station BT9 on Ship Island to 14.4 at Station BTR2 on West Horn Island; taxa richness on the south side of the islands ranged from 0.4 at Station BT11 on Ship Island to 3.3 at Station BT8 on Ship Island (Tables 40-44; Figure 33). Station density data at Shallow Stations on the north side of the

islands ranged from 11527.8 organisms/m^2 at Station BT10 on Ship Island to 25694.4 organisms/m^2 at Station BTR1 on West Horn Island; station density data on the south side of the islands ranged from 83.3 organisms/m^2 at Station BT11 on Ship Island to 7638.9 organisms/m^2 at Station BT2 on Petit Bois Island (Tables 40-44; Figure 34).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in April-May 2011 are given in Tables 40-44 and Figures 35 and 36. Diversity data at Shallow Stations on the north side of the islands ranged from 0.80 at Station BT9 on Ship Island to 2.62 at Station BTR2 on West Horn Island; diversity data on the south side of the islands ranged from 0.56 at Station BT7 on Horn Island to 2.48 at Station BT8 also on Horn Island (Tables 40-44; Figure 35). Evenness data at Shallow Stations on the north side of the islands ranged from 0.30 at Station BT9 on Ship Island to 0.73 at Station BTR2 on West Horn Island; evenness data on the south side of the islands ranged from 0.29 at Station BT7 on Horn Island to 1.0 at Station BT11 on Ship Island (Tables 40-44; Figure 36).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Shallow stations in April-May 2011 is given in Table 45. Station BT1-S on Petit Bois Island was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT2-S was dominated by the mysid, *Metamysidopsis swifti*, Station BT3-S was dominated by oligochaetes, and Station BT4-S was dominated by the bivalve, *Gemma gemma*; Stations BT5-S and BT6-S on East Horn Island were dominated by oligochaetes, and Stations BT7-S and BT8-S were dominated by nemerteans; Ship Island Station BT9-S was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT10-S was dominated by L. *triarticulatus* and *Gemma gemma*, Station BT11-S was dominated by the polychaete, *Paraonis fulgens* and turbellarians, and BT12-S was dominated by the

cumacean, *Spilocuma salomani*; Cat Island Station BT13-S was dominated by the polychaete, *Paraonis fulgens,* and Stations BT15-S and BT16-S were dominated by the arthropod, *Lepidactylus triarticulatus*; at the Reference stations on West Horn Island, polychaetes dominated the assemblage at Stations BTR1-S, BTR2-S and BTR4-S, and Station BTR3-S was dominated by the decapod, *Pinnixa* (LPIL) (Table 45).

There were significant differences between taxa richness and densities at some of the Shallow Beach Transect Stations between June 2010, September 2010 and April-May 2011 (Figures 37 and 38). Due to significant differences in taxa richness and densities between the north and south sides of the islands (Welch's ANOVA: $F = 129.78$, Prob > F = <0.0001; $\chi^2 = 82.35$, Prob > χ^2 = < 0.0001), the statistical analyses were made on data grouped by station location on the islands - additionally, since there was no north-south designation for stations on the Cat Island, these data were analyzed separately. For the stations on the north side of Petit Bois Island, taxa richness was significantly higher (Welch's ANOVA: $F = 6.08$, Prob > F = 0.0063; $\chi^2 = 9.07$, Prob > χ^2 = 0.0107) in June 2010 (mean = 11.6, SD = 4.5) when compared to September 2010 (mean = 8.0, SD = 3.9) and April-May 2011 (mean = 7.0, SD = 2.7); taxa richness at the Stations on the south side of Petit Bois Island were not significantly different between sampling seasons (June 2010 mean = 2.8, September 2010 mean = 1.6, April-May 2011 mean = 1.9). Densities were also significantly higher (Welch's ANOVA: $F = 6.80$, Prob > F = 0.0039; $\chi^2 = 12.69$, Prob > χ^2 = 0.0018) at stations on the north side of Petit Bois Island in June 2010 (mean = 26833.3 organisms/m^2) than in September 2010 (mean = 13152.8 organisms/m^2) and April-May 2011 (mean = 15555.6 organisms/m^2); densities at stations on the south side of the island were not significantly different between seasons (June 2010 mean = 972 organisms/m^2, September 2010 mean = 694 organisms/m^2, April-May 2011 mean = 4056 organisms/m^2).

Taxa richness was significantly higher (Welch's ANOVA: F = 8.35, Prob > F = 0.0013; χ^2 = 11.49, Prob > χ^2 = 0.0032) in June 2010 (mean = 9.7, SD = 2.0) at the stations located on the north side of Horn Island when compared to September 2010 (mean = 7.8, SD = 2.8) and April-May 2011 (mean = 6.5, SD = 2.4); taxa richness in April-May (mean = 3.0, SD = 1.6) at stations on the south side of Horn Island were significantly higher (Welch's ANOVA: F = 5.29, Prob > F =; χ^2 = 12.45, Prob > χ^2 = 0.0020) than in June 2010 (mean = 1.6, SD = 0.9) and in September 2010 (mean = 1.4, SD = 1.2) - taxa richness, however, was extremely low during each season (< 3). Densities at stations on the north side of Horn Island were not significantly different between seasons (June 2010 mean = 17472.2 organisms/m^2, September 2010 mean = 16944.5 organisms/m^2, April-May 2011 mean = 13763.9 organisms/m^2) (Welch's ANOVA: F = 0.62, Prob > F = 0.5438; χ^2 = 1.50, Prob > χ^2 = 0.4724). Densities on the south side of Horn Island were significantly higher (Welch's ANOVA: F = 4.42, Prob > F = 0.0220; χ^2 = 16.79, Prob > χ^2 = 0.0002) in April-May 2011 (mean = 3791.7 organisms/m^2) than in June 2011 (mean = 624.9 organisms/m^2) and September 2010 (mean = 486.1 organisms/m^2) (Figures 37 and 38).

Taxa richness at stations on the north side of Ship Island were not significantly different between seasons (June 2010 mean = 5.4, September 2010 mean = 7.6, April-May 2011 mean = 6.1) (Welch's ANOVA: F = 2.69, Prob > F = 0.0852; χ^2 = 5.00, Prob > χ^2 = 0.0821). There was also no significant difference in taxa richness between seasons at stations on the south side of Ship Island (June 2010 mean = 1.7, September 2010 mean = 1.9, April-May 2011 mean = 1.6) (Welch's ANOVA: F = 0.24, Prob > F = 0.7879; χ^2 = 0.57, Prob > χ^2 = 0.7504)(Figure 37). Densities on the north side of Ship Island were significantly different (Welch's ANOVA: F = 0.24, Prob > F = 0.7879; χ^2 = 0.57, Prob > χ^2 = 0.7504): densities in April-May (mean = 13013.9 organisms/m^2) were significantly lower than in June 2010 (mean = 21180.6 organisms/m^2) and

September 2010 (mean = 32944.4 organisms/m^2); densities in June 2010 were also significantly lower than in September 2010 (Figures 38). Densities on the south side of Ship Island were not significantly different (Welch's ANOVA: F = 1.58, Prob > F = 0.2238; χ^2 = 2.43, Prob > χ^2 = 0.2973) between seasons (mean June 2010 = 833.3 organisms/m^2, mean September 2010 = 1208.3 organisms/m^2, mean April-May 2011 = 597.2 organisms/m^2).

Taxa richness at the reference stations on the north side of West Horn Island were significantly different between seasons (Welch's ANOVA: F = 2.89, Prob > F = 0.0715; χ^2 = 7.31, Prob > χ^2 = 0.0259); taxa richness in June 2010 (mean = 8.3) was significantly lower than in September 2010 (mean = 11.3) and April-May 2011 (mean = 11.4). Taxa richness at the reference stations on the south side of West Horn Island were also significantly different between seasons (Welch's ANOVA: F = 9.09, Prob > F = 0.0009; χ^2 = 12.12, Prob > χ^2 = 0.0023); taxa richness in June 2010 (mean = 3.3) was significantly higher than in September 2010 (mean = 1.3) and April-May 2011 (mean = 2.0)(Figure 38). Densities at the reference stations on the north side of West Horn Island were significantly different between seasons (Welch's ANOVA: F = 14.38, Prob > F = < 0.0001; χ^2 = 23.77, Prob > χ^2 = < 0.0001); densities in June 2010 (mean = 5305.4 organisms/m^2) were significantly lower than in September 2010 (mean = 14166.7 organisms/m^2) and April-May 2011 (mean = 20000.0 organisms/m^2). There were also significant differences in densities between the reference stations on the south side of West Horn Island (Welch's ANOVA: F = 6.76, Prob > F = 0.0047; χ^2 = 9.37, Prob > χ^2 = 0.0093); densities in September 2010 (mean = 513.9 organisms/m^2) were significantly lower than in June 2010 (mean = 1472.3 organisms/m^2) and densities in April-May 2011 (mean = 1152.8 organisms/m^2) were not significantly different than in either June 2010 or September 2010 (Figure 38).

Taxa richness at the three stations on Cat Island were significantly different between seasons (Welch's ANOVA: F = 5.01, Prob > F = 0.0109; χ^2 = 10.74, Prob > χ^2 = 0.0047); taxa richness in June 2010 (mean = 3.1) was significantly higher than in September 2010 (mean = 2.4) and April-May 2011 (mean = 2.0)(Figure 37). Densities at the stations on Cat Island were not significantly different between seasons (Welch's ANOVA: F = 0.91, Prob > F = 0.4092; χ^2 = 0.26, Prob > χ^2 = 0.8795); mean densities in June 2010, September 2010 and April-May 2011were 4777.7 organisms/m^2, 3259.3 organisms/m^2 and 4888.9 organisms/m^2, respectively (Figure 38).

Beach Transect Mid-Depth Stations

For all Beach Transect Mid-depth data in June 2010 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 111.38, P > F = <0.0001, χ^2 = 64.619, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 83.87, P > F = <0.0001, χ^2 = 88.447, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in June 2010 are given in Tables 28-32 and Figures 39 and 40. Taxa richness at Mid-depth Stations on the north side of the islands ranged from 4.4 at Station BT9 on Ship Island to 14.9 at Station BT2 on Petit Bois Island; taxa richness on the south side of the islands ranged from 2.8 at Station BT8 on Horn Island to 5.1 at Station BT4 on Petit Bois Island (Tables 28-32; Figure 39). Station density data at Mid-depth Stations on the north side of the islands ranged from 4194 organisms/m^2 at Station BTR1 on West Horn Island to 50056 organisms/m^2 at Station BT1 on Petit Bois Island; station density data on the south side of the islands ranged from 1055 organisms/m^2 at Station BT8 on Horn Island to 4083 organisms/m^2 at Stations BT7 on Horn Island (Tables 28-32; Figure 40).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in June 2010 are given in Tables 28-32 and Figures 41 and 42. Diversity data at Mid-depth Stations on the north side of the islands ranged from 0.33 at Station BT9 on Ship Island to 2.70 at Station BTR1 on West Horn Island; diversity data on the south side of the islands ranged from 1.68 at Station BT7 on Horn Island to 2.40 at Station BT12 on Ship Island (Tables 28-32; Figure 41). Evenness data at Mid-Depth Stations on the north side of the islands ranged from 0.15 at Station BT9 on Ship Island to 0.77 at Station BTR1 on West Horn Island; evenness data on the south side of the islands ranged from 0.67 at Station BTR4 on West Horn Island to 0.91 at Station BT4 on Petit Bois Island (Tables 28-32; Figure 42).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in June 2010 is given in Table 33. Station BT1-M on Petit Bois Island was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT2-M was dominated by the bivalve, *Donax variabilis*, Station BT3-M was dominated by tubificid oligochaetes and Station BT4-M was dominated by a mixed assemblage of polychaetes, arthropods and bivalves; Stations BT5-M and BT6-M on East Horn Island were dominated by the polychaete, *Paraonis fulgens*, Station BT7-M was dominated by the bivalve, *Gemma gemma*, and Station BT8-M was dominated by the mysid, *Metamysidopsis swifti* and nemerteans; Ship Island Station BT9-M was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT10-M was dominated by the bivalves, *G. gemma* and *D. variabilis*, Station BT11-M was dominated by the polychaete, *P. fulgens* and enchytraeid oligochaetes, and Station BT12-M was dominated by enchytraeid oligochaetes and the amphipod, *Bowmaniella dissimilis*; each Cat Island Station was dominated by the arthropod, *Lepidactylus triarticulatus*; at the Reference stations on West Horn Island, a mixed assemblage

of polychaetes dominated at Stations BTR1-M and BTR2-M, Stations BTR3-M was co-dominated by *P. fulgens* and *G. gemma*, while Station BTR4-M was dominated by the bivalve *D. variabilis* (Table 33).

For all Beach Transect Mid-depth data in September 2010 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 180.75, P > F = <0.0001, χ^2 = 84.691, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 136.50, P > F = <0.0001, χ^2 = 94.338, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in September 2010 are given in Tables 34-38 and Figures 39 and 40. Taxa richness at Mid-depth Stations on the north side of the islands ranged from 5.0 at Station BT9 on Ship Island to 16.8 at Station BTR2 on West Horn Island; taxa richness on the south side of the islands ranged from 1.5 at Station BTR4 on West Horn Island to 4.3 at Station BT12 on Ship Island (Tables 34-38; Figure 39). Station density data at Mid-depth Stations on the north side of the islands ranged from 9194 organisms/m^2 at Station BT5 on Horn Island to 38194 organisms/m^2 at Station BT6 on Horn Island; station density data on the south side of the islands ranged from 722 organisms/m^2 at Station BTR4 on West Horn Island to 2639 organisms/m^2 at Stations BT12 on Ship Island (Tables 34-38; Figure 40).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in September 2010 are given in Tables 34-38 and Figures 41 and 42. Diversity data at Mid-depth Stations on the north side of the islands ranged from 1.23 at Station BT6 on Horn Island to 2.47 at Station BTR2 on West Horn Island; diversity data on the south side of the islands ranged from 0.83 at Station BTR4 on West Horn Island to 1.94 at Station BTR3 on West Horn Island (Tables 34-38; Figure 41). Evenness data at Mid-Depth

Stations on the north side of the islands ranged from 0.3 at Station BT9 on Ship Island to 0.73 at Station BT5 on Horn Island and Station BTR2 on West Horn Island; evenness data on the south side of the islands ranged from 0.51 at Station BTR4 on West Horn Island to 0.77 at Station BT7 on Horn Island (Tables 34-38; Figure 42).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in September 2010 is given in Table 39. Station BT1-M on Petit Bois Island was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT2-M was dominated by nemerteans, Station BT3-M was dominated by tubificid oligochaetes and Station BT4-M was dominated by the bivalves, *Gemma gemma* and *Donax variabilis*; Stations BT5-M and BT6-M on East Horn Island were dominated by a polychaete assemblage and the amphipod, *Lepidactylus triarticulatus*, Station BT7-M was dominated by *D. variabilis*, and Station BT8-M was dominated by *G. gemma*; Ship Island Station BT9-M was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT10-M was dominated by the bivalves, *G. gemma* and *D. variabilis*, Station BT11-M was dominated by the polychaete, *Leitoscoloplos* (LPIL) and *D. variabilis*, and Station BT12-M was dominated by *D. variabilis*; Cat Island Station BT13-M was dominated by the arthropod, *Lepidactylus triarticulatus*, Station BT15-M was dominated by the polychaete, *Paraonis fulgens* and Station BT16-M was dominated by the polychaete, *Nereis succinea*; the Reference Stations BTR1-M and BTR2-M on West Horn Island were dominated by a mixed assemblage of polychaetes, Station BTR3-M was dominated by the bivalves, *D. variabilis* and *G. gemma*, and the cumacean, *Spilocuma salomani*, while Station BTR4-M was dominated by G. *gemma* (Table 39).

There were significant differences between taxa richness and densities at some of the Mid-depth Beach Transect Stations between June and September 2010 (Figures 43 and 44). Due to significant differences in taxa richness and densities between the north and south sides of the islands, the statistical analyses were made on data grouped by station location on the islands - additionally, since there was no north-south designation for stations on the Cat Island, these data were analyzed separately. For the Mid-depth stations of the south side of the islands, taxa richness was significantly lower in September for stations on Petit Bois Island (mean taxa richness in June was 4.6 and 2.4 in September ($\chi^2 = 12.647$, Prob > $\chi^2 = 0.0004$) and the Reference stations on West Horn Island (mean taxa richness in June was 5.1 and 2.5 in September ($\chi^2 = 13.75$, Prob > $\chi^2 = 0.0002$). Densities on the south side of the islands were also significantly lower in September at the Petit Bois Island stations (mean density in June was 1903 organisms/m^2 and 1389 organisms/m^2 in September; $\chi^2 = 7.396$, Prob > $\chi^2 = 0.0065$) and the West Horn Island Reference stations (mean density in June was 2472 organisms/m^2 and 1264 organisms/m^2 in September; $\chi^2 = 9.113$, Prob > $\chi^2 = 0.0025$).

Taxa richness at the Mid-depth Stations on the north side of the islands was significantly lower in September for the Petit Bois Island stations (June mean = 12.2, September mean = 8.1; $\chi^2 = 8.864$, Prob > $\chi^2 = 0.0029$) and significantly higher in September for the Reference stations on West Horn Island (June mean = 11.6, September mean = 15.1; $\chi^2 = 7.777$, Prob > $\chi^2 = 0.0053$). Densities at the Mid-depth Stations on the north side of the islands were significantly lower in September for the Ship Island stations (June mean = 43944 organisms/m^2, September mean = 19194 organisms/m^2; $\chi^2 = 19.782$, Prob > $\chi^2 < 0.0001$) and significantly higher in September for the Reference stations on West Horn Island (June mean = 8403 organisms/m^2, September mean = 23152 organisms/m^2; $\chi^2 = 13.930$, Prob > $\chi^2 = 0.0002$). For the three Cat

Island Stations, both taxa richness (June mean = 2.6, September mean = 4.6; $\chi^2 = 12.171$, Prob > $\chi^2 = 0.0005$) and densities (June mean = 4759 organisms/m^2, September mean = 7435 organisms/m^2; $\chi^2 = 6.814$, Prob > $\chi^2 = 0.0090$) were significantly higher in September than in June.

For all Beach Transect Mid-depth data in April-May 2011 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 137.86, P > F = <0.0001, χ^2 = 75.31, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 61.50, P > F = <0.0001, χ^2 = 76.48, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in April-May 2011 are given in Tables 40-44 and Figures 39 and 40. Taxa richness at Mid-depth Stations on the north side of the islands ranged from 4.8 at Station BT1 on Petit Bois Island to 13.8 at Station BTR2 on West Horn Island; taxa richness on the south side of the islands ranged from 1.1 at Station BT11 on Ship Island to 3.8 at Station BTR2 on West Horn Island (Tables 40-44; Figure 39). Station density data at Mid-depth Stations on the north side of the islands ranged from 2305.6 organisms/m^2 at Station BT9 on Ship Island to 40305.6 organisms/m^2 at Station BTR1 on West Horn Island; station density data on the south side of the islands ranged from 305.6 organisms/m^2 at Station BT11 on Ship Island to 4555.6 organisms/m^2 at Stations BT4 on Petit Bois Island (Tables 40-44; Figure 40).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in April-May 2011 are given in Tables 40-44 and Figures 41 and 42. Diversity data at Mid-depth Stations on the north side of the islands ranged from 1.14 at Station BTR1 to 2.33 at Station BTR2 on West Horn Island; diversity data on the south side of the islands ranged from 0.93 at Station BT4 on Petit Bois Island to 2.43 at Station BT8 on Horn Island (Tables 40-44; Figure 41). Evenness data at Mid-Depth Stations on the north side of the

islands ranged from 38 at Station BTR1 on West Horn Island to 0.79 at Station BT9 on Ship Island; evenness data on the south side of the islands ranged from 0.42 at Station BT4 on Petit Bois Island to 0.95 at Station BT11 on Ship Island (Tables 40-44; Figure 42).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Mid-depth stations in April-May 2011 is given in Table 45. Station BT1-M on Petit Bois Island was dominated by the amphipod, *Lepidactylus triarticulatus*, Stations BT2-M and BT3-M were dominated by the mysid, *Metamysidopsis swifti*, and Station BT3-M was dominated by tubificid oligochaetes; Stations BT5-M and BT6-M on East Horn Island were dominated by a oligochaetes and the polychaete, *Paraonis fulgens*, Stations BT7-M and BT8-M were dominated by nemerteans; Ship Island Station BT9-M was dominated by the decapod, *Pinnixia* (LPIL) and the bivalve, *Gemma gemma*, Station BT10-M was dominated by the arthropod, *Lepidactylus triarticulatus*, Station BT11-M was dominated by the arthropod, *Haustorius jayneae*, and Station BT12-M was dominated by *Gemma gemma*; Cat Island Stations BT13-M and BT15-M were dominated by the arthropod, *Lepidactylus triarticulatus*, and Station BT16-M was co-dominated by the polychaete, *Leitoscoloplos* (LPIL), and *Lepidactylus triarticulatus*; the Reference Stations BTR1-M on West Horn Island was dominated by the polychaete, *Sphaerosyllis piriferopsis*, Station BTR2-M was dominated by a tubificid oligochaetes, Station BTR3-M was dominated by the arthropod, *Pinnixia* (LPIL), and Station BTR4-M was dominated by the bivalve, G. *gemma* (Table 45).

There were significant differences between taxa richness and densities at some of the Mid-depth Beach Transect Stations between June 2010, September 2010 and April-May 2011 (Figures 43 and 44). Due to significant differences in taxa richness and densities between the north and south sides of the islands, the statistical analyses were made on data grouped by station

location on the islands - additionally, since there was no north-south designation for stations on the Cat Island, these data were analyzed separately. For the stations on the north side of Petit Bois Island, taxa richness was significantly higher (Welch's ANOVA: $F = 7.72$, Prob > $F = 0.0020$; $\chi^2 = 10.99$, Prob > $\chi^2 = 0.0041$) in June 2010 (mean = 12.2, SD = 3.7) when compared to September 2010 (mean = 8.1, SD = 2.9) and April-May 2011 (mean = 7.8, SD = 3.4); taxa richness at the Stations on the south side of Petit Bois Island were were also significantly higher (Welch's ANOVA: $F = 10.70$, Prob > $F = 0.0003$; $\chi^2 = 16.27$, Prob > $\chi^2 = 0.0003$) in June 2010 (mean = 4.6, SD = 1.5) than in September 2010 (mean = 2.4, SD = 1.6) and April-May 2011 (mean = 2.4, SD = 1.4). Densities were significantly lower (Welch's ANOVA: $F = 3.84$, Prob > $F = 0.0333$; $\chi^2 = 6.73$, Prob > $\chi^2 = 0.0346$) at stations on the north side of Petit Bois Island in April-May 2011 (mean = 16347.2 organisms/m^2) than in June 2010 (mean = 33069.5 organisms/m^2) and September 2010 (mean = 27944.5 organisms/m^2); densities at stations on the south side of the island were not significantly different between seasons (June 201 mean = 1902.8 organisms/m^2, September 2010 mean = 1388.9 organisms/m^2, April-May 2011 mean = 2487.2 organisms/m^2).

Taxa richness at the Mid-depth stations located on the north side of Horn Island were not significantly different (Welch's ANOVA: $F = 1.15$, Prob > $F = 0.3293$; $\chi^2 = 1.90$, Prob > $\chi^2 = 0.3863$) between seasons (June 2010 mean = 9.5, September 2010 mean = 10.2, April-May 2011 mean = 8.9); taxa richness at Mid-depth stations on the south side of Horn Island were also not significantly different (Welch's ANOVA: $F = 3.45$, Prob > $F = 0.0466$; $\chi^2 = 3.72$, Prob > $\chi^2 = 0.1556$) between seasons (June 2010 mean = 3.6; September 2010 mean = 2.2, April-May 2011 mean = 3.1) - taxa richness, however, was low during each season. Densities at Mid-depth stations on the north side of Horn Island were not significantly different between seasons (June

2010 mean = 14527.8 organisms/m^2, September 2010 mean = 23694.4 organisms/m^2, April-May 2011 mean = 15125.0 organisms/m^2) (Welch's ANOVA: F = 1.98, Prob > F = 0.1569; χ^2 = 1.57, Prob > χ^2 = 0.4551). Densities on the south side of Horn Island were also not significantly different between seasons (June 2010 mean = 2569.4 organisms/m^2, September 2010 mean = 972.2 organisms/m^2, April-May 2011 mean = 1250.0 organisms/m^2) (Welch's ANOVA: F = 2.62, Prob > F = 0.0924; χ^2 = 2.58, Prob > χ^2 = 0.2759)(Figures 43 and 44).

Taxa richness at the Mid-depth stations located on the north side of Ship Island were not significantly different (Welch's ANOVA: F = 2.03, Prob > F = 0.1506; χ^2 = 1.77, Prob > χ^2 = 0.4130) between seasons (June 2010 mean = 6.6, September 2010 mean = 7.3, April-May 2011 mean = 5.4); taxa richness in April-May (mean = 1.7) at Mid-depth stations on the south side of Horn Island was significantly different (Welch's ANOVA: F = 8.32, Prob > F = 0.0014; χ^2 = 12.39, Prob > χ^2 = 0.0020) than during June 2010 (mean = 3.6) and September 2010 (mean = 3.1). Densities were significantly different between each season (Welch's ANOVA: F = 24.19, Prob > F = < 0.0001; χ^2 = 31.37, Prob > χ^2 = < 0.001) at stations on the north side of Ship Island (June 2010 mean = 43944.4 organisms/m^2, September 2010 mean = 19194.1 organisms/m^2, April-May 2011 mean = 9888.9 organisms/m^2); densities at stations on the south side of the island in September 2010 (mean = 1888.9 organisms/m^2) were significantly higher than densities in April-May 2011 (mean = 680.6 organisms/m^2), there was no significant difference in density between June 2010 (mean = 1109.6 organisms/m^2) and April-May 2011 (Welch's ANOVA: F = 6.09, Prob > F = 0.0064; χ^2 = 9.09, Prob > χ^2 = 0.0106).

For Mid-depth stations on the north side of West Horn Island, taxa richness was significantly higher (Welch's ANOVA: F = 6.19, Prob > F = 0.0057; χ^2 = 9.02, Prob > χ^2 = 0.0110) in September 2010 (mean = 15.1, SD = 2.9) when compared to June 2010 (mean = 11.6,

SD = 3.4) and April-May 2011 (mean = 11.9, SD = 3.5); taxa richness at the Mid-depth stations on the south side of West Horn Island was significantly higher (Welch's ANOVA: F = 12.05, Prob > F = 0.0001; χ^2 = 15.45, Prob > χ^2 = 0.004) in June 2010 (mean = 5.1, SD = 1.6) than in September 2010 (mean = 2.5, SD = 1.4) and April-May 2011 (mean = 3.4, SD = 1.6). Densities were significantly lower (Welch's ANOVA: F = 16.74, Prob > F = < 0.0001; χ^2 = 19.35, Prob > χ^2 = < 0.0001) at Mid-depth stations on the north side of West Horn Island in June 2010 (mean = 8402.8 organisms/m^2) than in September 2010 (mean = 23152.8 organisms/m^2) and April-May 2011 (mean = 23034.4 organisms/m^2); Densities were significantly lower (Welch's ANOVA: F = 5.30, Prob > F = 0.0112; χ^2 = 11.57, Prob > χ^2 = 0.0031) at stations on the south side of the island in September (mean = 1263.9 organisms/m^2) than in June (mean = 2472.3 organisms/m^2) between seasons; there was no significant difference in density between June 2010 and April-May 2011 (mean = 1861.1 organisms/m^2) or between September and April-May.

For Mid-depth stations on Cat Island, taxa richness was significantly higher (Welch's ANOVA: F = 7.51, Prob > F = 0.0013; χ^2 = 13.92, Prob > χ^2 = 0.0009) in September 2010 (mean = 4.6, SD = 2.0) when compared to June 2010 (mean = 2.6, SD = 1.4) and April-May 2011 (mean = 3.3, SD = 1.1). Densities were significantly higher (Welch's ANOVA: F = 5.30, Prob > F = 0.0112; χ^2 = 11.57, Prob > χ^2 = 0.0031) at stations on Cat Island in April-May 2011 (mean = 11416.7 organisms/m^2) than in June (mean = 4759.2 organisms/m^2) between seasons; there was no significant difference in density between June 2010 and September 2010 (mean = 7435.2 organisms/m^2) or between September and April-May.

Beach Transect Deep Stations

For all Beach Transect Deep data in June 2010 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the

south side of the islands (Taxa Richness: Welch's Test, F = 80.973, P > F = <0.0001, χ^2 = 56.120, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 44.261, P > F = <0.0001, χ^2 = 77.559, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Deep stations in June 2010 are given in Tables 28-32 and Figures 45 and 46. Taxa richness at Deep Stations on the north side of the islands ranged from 6.0 at Station BT9 on Ship Island to 19.3 at Station BT3 on Petit Bois Island; taxa richness on the south side of the islands ranged from 1.1 at Station BT12 on Ship Island to 6.1 at Station BTR3 on West Ship Island (Tables 28-32; Figure 45). Station density data at Deep Stations on the north side of the islands ranged from 6278 organisms/m^2 at Station BTR1 on West Horn Island to 69834 organisms/m^2 at Station BT9 on Ship Island; station density data on the south side of the islands ranged from 305 organisms/m^2 at Station BT12 on Ship Island to 4861 organisms/m^2 at Station BT7 on Horn Island (Tables 28-32; Figure 46).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Deep stations in June 2010 are given in Tables 28-32 and Figures 47 and 48. Diversity data at Deep Stations on the north side of the islands ranged from 0.40 at Station BT9 on Ship Island to 3.13 at Station BT3 on Petit Bois Island; diversity data on the south side of the islands ranged from 1.2 at Station BT7 on Horn Island to 2.53 at Station BTR4 on West Horn Island (Tables 28-32; Figure 47). Evenness data at Deep Stations on the north side of the islands ranged from 0.14 at Station BT9 on Ship Island to 0.85 at Station BT3 on Petit Bois Island; evenness data on the south side of the islands ranged from 0.43 at Station BT7 on Horn Island to 0.95 at Station BT12 on Ship Island (Tables 28-32; Figure 48).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Deep stations in June

2010 is given in Table 33. Station BT1-D on Petit Bois Island was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT2-D was dominated by the bivalve, *Donax variabilis*, Station BT3-D was dominated by the polychaete, *Paraprionosyllis uebelackerae*, and the amphipod, *Acanthohaustorius intermedius*, and Station BT4-D was dominated by the polychaete, *Paraonis fulgens*, and the bivalve, *D. variabilis*; Stations BT5-D and BT6-D on East Horn Island were dominated by the polychaete, *P. fulgens*, Station BT7-D was dominated by *D. variabilis*, and Station BT8-D was dominated by the isopod, *Ancinus depressus* and D. variabilis; Ship Island Station BT9-D was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT10-D was dominated by the bivalve, *G. gemma*, Station BT11-D was dominated by the polychaete, *P. fulgens*, the amphipod, *A. depressus* and *D. variabilis*, and Station BT12-D was dominated by the cumacean, *Spilocuma watlingi*, and *G. gemma*; Cat Island Stations BT13-D and BT15-D were dominated by the arthropod, *Lepidactylus triarticulatus*, and Station BT16-D was dominated by the polychaetes, *Leitoscoloplos* (LPIL) and *Paraprionosyllis uebelackerae*, and haustorid amphipods; the Reference Stations BTR1-D, BTR2-D and BTR3-D on West Horn Island were dominated by the polychaetes, *Capitella capitata* and *P. fulgens*, and Station BTR4-D was dominated by *P. fulgens*, *D. variabilis*, and G. *gemma* (Table 39).

For all Beach Transect Deep data in September 2010 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 212.799, P > F = <0.0001, χ^2 = 85.242, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 79.530, P > F = <0.0001, χ^2 = 90.553, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Deep stations in September 2010 are given in Tables 34-38 and Figures 45 and 46. Taxa richness at Deep Stations on the north side of the islands ranged from 7.8 at Station

BT9 on Ship Island to 16.0 at Station BT3 on Petit Bois Island; taxa richness on the south side of the islands ranged from 2.3 at Station BT2 on Petit Bois Island to 5.0 at Station BTR3 on West Ship Island (Tables 28-32; Figure 45). Station density data at Deep Stations on the north side of the islands ranged from 7333 organisms/m^2 at Station BTR1 on West Horn Island to 50333 organisms/m^2 at Station BT1 on Petit Bois Island; station density data on the south side of the islands ranged from 944 organisms/m^2 at Station BT2 on Petit Bois Island to 4000 organisms/m^2 at Station BT12 on Ship Island (Tables 34-38; Figure 46).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Deep stations in June 2010 are given in Tables 34-38 and Figures 47 and 48. Diversity data at Deep Stations on the north side of the islands ranged from 1.05 at Station BT9 on Ship Island to 2.89 at Station BTR-2 on West Horn Island; diversity data on the south side of the islands ranged from 0.99 at Station BTR-4 on West Horn Island to 2.11 at Station BT7 on Horn Island (Tables 34-38; Figure 47). Evenness data at Deep Stations on the north side of the islands ranged from 0.40 at Station BT9 on Ship Island to 0.80 at Station BTR-2 on West Horn Island; evenness data on the south side of the islands ranged from 0.41 at Station BTR-4 on West Horn Island to 0.82 at Station BT12 on Ship Island (Tables 34-38; Figure 48).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Deep stations in September 2010 is given in Table 39. Station BT1-D on Petit Bois Island was dominated by the amphipod, *Lepidactylus triarticulatus*, and the bivalves, *G. gemma* and *D. variabilis*, Station BT2-D was dominated by the bivalves, *G. gemma* and *D. variabilis*, Station BT3-D was dominated by the tubificid oligochaetes and Station BT4-D was dominated by the bivalves, *D. variabilis* and *G. gemma*; Station BT5-D on East Horn Island was dominated by oligochaetes

and the polychaete, *P. fulgens*, BT6-D was dominated by the polychaetes, *P. fulgens* and *Brania wellfleetensis*, Station BT7-D was dominated by *D. variabilis*, and Station BT8-D was dominated by the polychaetes, *Leitoscoloplos* (LPIL) and *P. fulgens*, and the bivalves, *G. gemma* and *D. variabilis*; Ship Island Station BT9-D was dominated by the amphipod, *Lepidactylus triarticulatus*, Station BT10-D was dominated by the bivalve, *G. gemma*, Station BT11-D was dominated by *G. gemma*, and Station BT12-D was dominated by the polychaete, *Leitoscoloplos* (LPIL) and *D. variabilis*; Cat Island Stations BT13-D was dominated by the arthropod, *Lepidactylus triarticulatus*, Station BT15-D was dominated by *P. fulgens* and *D. variabilis*, and Station BT16-D was dominated by bivalves; the Reference Station BTR1-D on West Horn Island was dominated by a mixed assemblage of polychaetes, Station BTR2-D was dominated by the polychaete *Paraprionosyllis uebelackerae* and nemerteans, Station BTR3-D was dominated by *D. variabilis* and *G. gemma*, and Station BTR4-D was dominated by the *G. gemma* (Table 39).

There were significant differences between taxa richness and densities at some of the Deep Beach Transect Stations between June and September 2010 (Figures 49 and 50). Due to significant differences in taxa richness and densities between the north and south sides of the islands, the statistical analyses were made on data grouped by station location on the islands - additionally, since there was no north-south designation for stations on the Cat Island, these data were analyzed separately. For Deep stations of the south side of the islands, taxa richness was significantly lower in September for stations on Petit Bois Island (mean taxa richness in June was 4.3 and 2.6 in September ($\chi^2 = 4.586$, Prob > $\chi^2 = 0.0322$) and the Reference stations on West Horn Island (mean taxa richness in June was 5.9 and 4.2 in September ($\chi^2 = 5.034$, Prob > $\chi^2 = 0.0249$). Densities on the south side of the islands were significantly lower in September at the Horn Island stations (mean density in June was 3319 organisms/m^2 and 1542 organisms/m^2 in

September (χ^2 = 8.033, Prob > χ^2 = 0.0046) and significantly higher at the Ship Island stations (mean taxa density in June was 1042 organisms/m^2 and 2653 organisms/m^2 in September (χ^2 = 7.497, Prob > χ^2 = 0.0062).

Taxa richness at the Deep Stations on the north side of the islands was significantly higher in September than in June for the Horn Island (June mean = 9.8, September mean = 12.4, χ^2 = 4.095, Prob > χ^2 = 0.0430) and Ship Island stations (June mean = 16.8, September mean = 9.1, χ^2 = 8.615, Prob > χ^2 = 0.0033). Densities at the Deep Stations on the north side of the islands was significantly higher in September for the Petit Bois Island (June mean = 21445 organisms/m^2, September mean = 47889 organisms/m^2, χ^2 = 12.820, Prob > χ^2 = 0.0003) and Horn Island stations (June mean = 8458 organisms/m^2, September mean = 25833 organisms/m^2, χ^2 = 8.000, Prob > χ^2 = 0.0047) and significantly lower in September for the Ship Island stations (June mean = 46667 organisms/m^2, September mean = 24514 organisms/m^2, χ^2 = 5.639, Prob > χ^2 = 0.0176). For the three Cat Island Stations, neither taxa richness nor density were significantly different between June and September.

For all Beach Transect Deep data in April-May 2011 taxa richness and densities were significantly higher at stations on the north side of the islands when compared to stations on the south side of the islands (Taxa Richness: Welch's Test, F = 151.22, P > F = <0.0001, χ^2 = 78.05, Prob > χ^2 = < 0.0001; Density: Welch's Test, F = 83.19, P > F = <0.0001, χ^2 = 90.36, Prob > χ^2 = < 0.0001). Taxa richness and density data for the 15 Beach Transect and 4 Beach Transect Reference Deep stations in April-May 2011 are given in Tables 40-44 and Figures 45 and 46. Taxa richness at Deep Stations on the north side of the islands ranged from 5.9 at Stations BT9 and BT10 on Ship Island to 14.0 at Station BTR2 on West Horn Island; taxa richness on the south side of the islands ranged from 1.6 at Station BT2 on Petit Bois Island and at Station BT7

on Horn Island to 4.5 at Station BT12 on Ship Island (Tables 40-44; Figure 45). Station density data at Deep Stations on the north side of the islands ranged from 6166.7 organisms/m^2 at Station BT6 on Horn Island to 54027.8 organisms/m^2 at Station BT9 on Ship Island; station density data on the south side of the islands ranged from 361.1 organisms/m^2 at Station BT7 on Horn Island to 3083.3 organisms/m^2 at Station BT12 on Ship Island (Tables 40-44; Figure 46).

Taxa diversity (H') and evenness data (J') for the 15 Beach Transect and 4 Beach Transect Reference Deep stations in April-May 2011 are given in Tables 40-44 and Figures 47 and 48. Diversity data at Deep Stations on the north side of the islands ranged from 0.42 at Station BT9 on Ship Island to 2.48 at Station BT6 on Horn Island; diversity data on the south side of the islands ranged from 1.48 at Stations BT12 on Ship Island and BTR4 on West Horn Island to 2.02 at Station BT4 on Petit Bois Island (Tables 40-44; Figure 47). Evenness data at Deep Stations on the north side of the islands ranged from 0.15 at Station BT9 on Ship Island to 0.7 at Station BT6 on Horn Island; evenness data on the south side of the islands ranged from 0.56 at Station BTR4 on West Horn Island to 0.93 at Station BT7 on Horn Island (Tables 34-38; Figure 48).

The percent abundance of the benthic macroinfauna taxa that represented > 10% of the total assemblage at the 15 Beach Transect and 4 Beach Transect Reference Deep stations in April-May 2011 is given in Table 45. Stations BT1 and BT4 on Petit Bois Island were dominated by nemerteans, Station BT2 was dominated by the polychaete, *Paraonis fulgens*, and Station BT3 was dominated by polychaete, *Paraonis fulgens*; Stations BT5 and BT6 on East Horn Island were dominated by the polychaete, *P. fulgens*, Station BT7 was dominated by the polychaete, *Nephtys* (LPIL), and Station BT8 was dominated by the polychaete, *P. fulgens*, and the arthropod, *Pinnixa* (LPIL); Ship Island Stations BT9 and BT10 were dominated by the

amphipod, *Lepidactylus triarticulatus*, Station BT11 was dominated by the amphipod, *Haustorius jayneae*, and three polychaete taxa, and Station BT12 was dominated by the polychaete, *Paraonis fulgens*; Cat Island Stations BT13 and BT15 were dominated by the arthropod, *Lepidactylus triarticulatus*, and Station BT16 was dominated by the polychaete, *Paraonis fulgens*; the Reference Station BTR1 on West Horn Island was dominated by a the polychaete, *Sphaerosyllis piriferopsis*, Station BTR2 was dominated by tubificid oligochaetes and the polychaete, *Paraonis fulgens*, and Stations BTR3 and Station BTR4 were dominated by the polychaete, *P. fulgens* (Table 45).

There were significant differences between taxa richness and densities at some of the Deep Beach Transect Stations between June 2010, September 2010 and April-May 2011 (Figures 49 and 50). Due to significant differences in taxa richness and densities between the north and south sides of the islands, the statistical analyses were made on data grouped by station location on the islands - additionally, since there was no north-south designation for stations on the Cat Island, these data were analyzed separately. For the stations on the north side of Petit Bois Island, taxa richness was significantly higher (Welch's ANOVA: $F = 4.25$, Prob > $F = 0.0240$; $\chi^2 = 6.95$, Prob > $\chi^2 = 0.0309$) in June 2010 (mean = 14.5, SD = 5.6) when compared to April-May 2011 (mean = 10.1, SD = 3.5), while there was no significant difference in taxa richness between June 2010 and September 2010 (mean = 12.8, SD = 3.9) or between September 2010 and April-May 2011; taxa richness at the Stations on the south side of Petit Bois Island were significantly higher (Welch's ANOVA: $F = 3.57$, Prob > $F = 0.0419$; $\chi^2 = 6.76$, Prob > $\chi^2 = 0.0340$) in June 2010 (mean = 4.3, SD = 2.3) than in September 2010 (mean = 2.6, SD = 1.2) and April-May 2011 (mean = 2.6, SD = 2.0). Densities were significantly higher (Welch's ANOVA: $F = 7.23$, Prob > $F = 0.0030$; $\chi^2 = 16.47$, Prob > $\chi^2 = 0.0003$) at Deep stations on the north side of Petit

Bois Island in September 2010 (mean = 47888.9 organisms/m^2) than in June 2010 (mean = 21444.5 organisms/m^2) and April-May 2011 (mean = 23000.0 organisms/m^2); densities at Deep stations on the south side of the island were significantly higher in June 2010 (mean = 1902.8 organisms/m^2) than in April-May 2011 (mean = 805.5 organisms/m^2), and there was no significant difference between densities in June 2010 and September 2010 (mean = 1250.0 organisms/m^2) or between September 2010 and April-May 2011 (Figures 49 and 50).

Taxa richness at Deep stations located on the north side of Horn Island were significantly higher (Welch's ANOVA: F = 3.25, Prob > F = 0.0533; χ^2 = 6.79, Prob > χ^2 = 0..0336) in September 2010 (mean = 12.4, SD = 4.6) than in June 2010 (mean = 9.8, SD = 3.3) and April-May 2010 (mean = 8.9, SD = 2.9); taxa richness at Deep stations on the south side of Horn Island were significantly lower (Welch's ANOVA: F = 6.61, Prob > F = 0.0043; χ^2 = 9.22, Prob > χ^2 = 0.0100) in April-May 2011 (mean = 2.4, SD = 1.3) than in June 2010 (mean = 4.4, SD = 1.9) and September 2010 (mean = 3.8, SD = 1.4). Densities at Deep stations on the north side of Horn Island were significantly higher in September 2010 (mean = 25833.4 organisms/m^2) than in June 2010 (mean = 8458.4 organisms/m^2) and April-May 2011 (mean = 8541.7 organisms/m^2) (Welch's ANOVA: F = 5.33, Prob > F = 0.0111; χ^2 = 10.22, Prob > χ^2 = 0.4060). Densities on the south side of Horn Island were significantly higher in June 2010 mean = 3319.4 organisms/m^2) than in September 2010 (mean = 1541.7 organisms/m^2) and April-May 2011 (mean = 1138.9 organisms/m^2)(Welch's ANOVA: F = 5.96, Prob > F = 0.0087; χ^2 = 16.72, Prob > χ^2 = 0.0002) (Figures 49 and 50).

Taxa richness at the Deep stations located on the north side of Ship Island were significantly higher (Welch's ANOVA: F = 8.63, Prob > F = 0.0011; χ^2 = 14.73, Prob > χ^2 = 0.0006) in September 2010 (mean = 9.1, SD = 2.3) when compared to June 2010 (mean = 6.8,

SD = 2.0) and April-May 2011 (mean = 5.9, SD = 2.1); there was no significant difference (Welch's ANOVA: F = 0.73 Prob > F = 0.4886; χ^2 = 2.61, Prob > χ^2 = 0.2718) in taxa richness between seasons at Deep stations on the south side of Horn Island (June 2010 mean = 3.0, SD = 2.9; September 2010 mean = 3.9, SD = 2.2; April-May mean = 3.2, SD = 1.8). Densities were not significantly different between each season (χ^2 = 5.34, Prob > χ^2 = 0.0691) at stations on the north side of Ship Island (June 2010 mean = 46666.7 organisms/m^2, September 2010 mean = 24513.9 organisms/m^2, April-May 2011 mean = 36722.2 organisms/m^2); densities at Deep stations on the south side of the island in September 2010 (mean = 2652.8 organisms/m^2) were significantly higher than densities in June 2010 (mean = 1041.5 organisms/m^2), and there was no significant difference in density between September 2010 and April-May 2011 (mean = 1791.7 organisms/m^2) and June 2010 and April-May 2011 (Welch's ANOVA: F = 3.55, Prob > F = 0.0431; χ^2 = 7.96, Prob > χ^2 = 0.0187).

For Deep stations on the north side of West Horn Island, taxa richness was not significantly different (Welch's ANOVA: F = 0.83, Prob > F = 0.4452; χ^2 = 0.47, Prob > χ^2 = 0.4737) between seasons (June 2010 mean = 11.2, SD = 4.5; September 2010 mean = 13.1, SD = 4.4); April-May 2011 (mean = 11.7, SD = 3.2); taxa richness at the Deep stations on the south side of West Horn Island was significantly higher (Welch's ANOVA: F = 5.50, Prob > F = 0.0093; χ^2 = 8.22, Prob > χ^2 = 0.0164) in June 2010 (mean = 5.9, SD = 2.2) than in September 2010 (mean = 4.2, SD = 2.0) and April-May 2011 (mean = 3.6, SD = 1.7). Densities were significantly higher (Welch's ANOVA: F = 11.45, Prob > F = 0.0003; χ^2 = 24.84, Prob > χ^2 = < 0.0001) at Deep stations on the north side of West Horn Island in April-May 2011 (mean = 26472.2 organisms/m^2) than in June 2010 (mean = 7305.6 organisms/m^2) and September 2010 (mean = 9,833.4 organisms/m^2); densities were significantly lower (Welch's ANOVA: F = 5.30,

Prob > F = 0.0112; χ^2 = 11.57, Prob > χ^2 = 0.0031) at Deep stations on the south side of the island in April-May 2011 (mean = 1791.7 organisms/m^2) than in June (mean = 3402.8 organisms/m^2) and September (mean = 2902.8 organisms/m^2)(Figures 49 and 50).

For Deep stations on Cat Island, taxa richness was not significantly different (Welch's ANOVA: F = 1.32, Prob > F = 0.2776; χ^2 = 1.73, Prob > χ^2 = 0.4206) between seasons (June 2010 mean = 3.1, SD = 1.5; September 2010 mean = 3.8, SD = 1.8; April-May 2011 (mean = 3.7, SD = 1.7). Densities were also not significantly different (Welch's ANOVA: F = 0.05, Prob > F = 0..9497; χ^2 = 6111, Prob > χ^2 = 0.7367) at Deep stations on Cat Island between seasons (June 2010 mean = 13213.0 organisms/m^2; September 2010 mean = 12768.5 organisms/m^2; April-May 2011 mean = 12203.7 organisms/m^2)(Figures 49 and 50).

BACKGROUND

The objective of this sampling program was to establish baseline conditions in a variety of habitat types which will be used as benchmarks for post-construction benthic community and sedimentary habitat monitoring efforts. The MsCIP's Barrier Island Restoration Program comprises construction elements which will affect a variety of benthic habitats, and therefore, could affect Critical Habitat of the Gulf Sturgeon. The restoration program will involve the removal of large quantities of sand from designated sand borrow areas and the placement of this sand at sites designated for restoration, the first of which is the closure of Camille Cut associated with Ship Island. The construction activities will have potential impacts on sand borrow sites as well as on the placement sites, both in the shallow pass areas between islands and on the islands themselves. Habitats in these areas are potentially affected by the transport and/or redistribution of placed sand, sediment quality (texture), and water quality (salinity, turbidity, dissolved oxygen). The benthic macroinvertebrate assessment program was designed to collect a

comprehensive and statistically robust set of baseline data from the potentially impacted habitat types and included the proposed sand borrow areas, the proposed sand placement sites, and beach subtidal areas on each barrier island (Petit Bois, Horn, Ship and Cat Islands). Seasonal data were collected in the spring, summer and fall to assess temporal variation in benthic macroinvertebrate assemblages. The occurrence of the Deepwater Horizon oil spill in April 2010 was a potentially confounding variable in the baseline dataset collected - the initial benthic sampling event occurred in early June 2010 before oil was detected on the barrier island beaches and in Mississippi Sound. The second benthic sampling event occurred in September 2010 after oil had reached the barrier islands and Mississippi Sound, and the data collected in several of the habitat types showed statistically significant changes from data collected in June (a reduction in taxa richness and abundance) - a seasonal difference in macroinvertebrate assemblages was expected, but the magnitude of the differences led to a decision to conduct a third sampling event in April-May 2011 to have a second dataset to use to reassess (and potentially reset) spring baseline conditions.

There have been few studies in the past 20-30 years which have looked at the benthic macroinvertebrate assemblages in Mississippi Sound, habitats associated with the Mississippi barrier islands, and shallow (10 – 50 ft) water habitats in the Gulf of Mexico associated with the barrier islands. The most complete study to date of benthic habitats in Mississippi Sound and shallow water habitats in the Gulf of Mexico is the report, “Benthic Macroinfauna Community Characterizations in the Mississippi Sound and Adjacent Areas,” carried out for the U.S. Army Corps of Engineers, Mobile District, by Barry A. Vittor & Associates, Inc. and completed in 1982. The primary studies of the Mississippi barrier island beaches were carried out by Chet Rakocinski and colleagues (Rakocinski et al. 1991, Rakocinski et al. 1993, Rakocinski et al.

1998) and published in the 1990s. In 2009, the reference book, “Gulf of Mexico Origin, Waters, and Biota: Volume 1, Biodiversity” was published and compiles a listing of marine species that occur in habitats throughout the Gulf of Mexico. The ages of studies associated with the Mississippi Barrier islands preclude direct comparisons with the data collected and presented in this report simply due to the dynamic nature and spatial-temporal variability of marine benthic habitats; however, these studies do provide useful historic information on what the “typical” macroinvertebrate assemblage in the various habitat types (shallow sound, tidal pass, offshore barrier island, offshore shallow water, barrier island beach) should resemble.

The USACE Mississippi Sound and Adjacent Areas study (USACE 1982) broadly sampled both inshore (=Sound) and offshore (shallow and deep water) sites across Mississippi Sound and the Mississippi Barrier Islands in the fall of 1980 and the spring of 1981. In the fall of 1980, 56 inshore/Sound stations were sampled: taxa richness ranged from 41 to 140 taxa, with a mean of 77 taxa; densities ranged from 1097 individuals/m^2 to 26160 individuals/m^2, with a mean of 7163 individuals/m^2; and taxa diversity (H’) ranged from 0.23 to 3.62, with a mean of 2.33. Polychaetes comprised 66% of the assemblage in the Sound samples with crustaceans, echinoderms, bivalves and gastropods making up 8%, 6%, 5% and 4% of the assemblages, respectively. Three taxa were numerically dominant: the oweniid polychaetes, *Myriochele* (= *Galathowenia*) *oculata* (40.9%) and *Owenia fusiformis* (7.8%) and the bivalve, *Gemma gemma* (5.6%) - 16 taxa accounted for 80% of all individuals collected. In the spring of 1981, the 56 inshore/Sound stations were resampled: taxa richness ranged from 38 to 148 taxa, with a mean of 86 taxa; densities ranged from 1492 individuals/m^2 to 35537 individuals/m^2, with a mean of 9327 individuals/m^2; and taxa diversity (H’) ranged from 0.60 to 3.39, with a mean of 2.42. Polychaetes comprised 65% of the assemblage in the Sound samples with bivalves, gastropods,

and echinoderms making up 7%, 6% and 4% of the assemblages, respectively. The oweniid polychaete, *Myriochele* (= *Galathowenia*) *oculata*, was again the dominant taxon representing 75% of the pooled abundance with a mean abundance of 4223 individuals/m^2. A cluster analysis using the fall 1980 data indicated two major station groupings: stations with very sandy substrates (>85% sand) and stations with a mud/mixed sand substrate; a cluster analysis using the spring 1981 revealed the same two station clusters - very clean sand and mud/mixed sand substrates.

In the fall of 1980, 40 offshore stations were sampled: taxa richness ranged from 65 to 176 taxa, with a mean of 110 taxa; densities ranged from 832 individuals/m^2 to 7290 individuals/m^2, with a mean of 2871 individuals/m^2; and taxa diversity (H') ranged from 2.20 to 4.15, with a mean of 3.38. Polychaetes comprised 70% of the assemblage in the offshore samples (range = 47% to 87%) with arthropods, bivalves, echinoderms, and gastropods making up 8%, 5%, 3% and 2% of the assemblages, respectively. Three polychaete taxa were numerically dominant: *Magelona* cf *phyllisae*, *Mediomastus* spp., and *Myriochele* (= *Galathowenia*) *oculata* representing 11.6%, 9.4% and 5.1% of the pooled assemblage data, respectively. In the spring of 1981, the 40 offshore stations were resampled: taxa richness ranged from 68 to 242 taxa, with a mean of 138 taxa; densities ranged from 1025 individuals/m^2 to 17864 individuals/m^2, with a mean of 5027 individuals/m^2; and taxa diversity (H') ranged from 2.82 to 4.23, with a mean of 3.58. Polychaetes comprised 69% of the assemblage in the offshore samples with arthropods, bivalves, gastropods, and echinoderms making up 11%, 8%, 2% and 2% of the assemblages, respectively. Two polychaete taxa were numerically dominant: *Magelona* cf *phyllisae* and *Mediomastus* spp. A cluster analysis using the fall 1980 data indicated two major station

groupings: stations with clean sand substrates and stations with a mud/mixed sand substrate; a cluster analysis using the spring 1981 revealed the same two station clusters.

The authors of the USACE Mississippi Sound and Adjacent Areas study (USAE 1982) broadly characterized five types of habitats based on sediment texture and the macroinvertebrate assemblages and feeding guilds present: the shallow Sound sand habitat was characterized by sandy sediments and a macroinvertebrate assemblage dominated by the bivalve, *Gemma gemma*, the polychaete, *Paraonis fulgens*, and the arthropod, *Lepidactylus triarticulatus* - this habitat had the lowest average taxa richness, the highest station mean density and the lowest taxa diversity - the large variability in taxa richness and abundance seen between stations was due to the clumped distribution of *G. gemma* and *L. triarticulatus*; the tidal pass habitat was characterized by a > 95% sand sediment and a macroinvertebrate assemblage dominated by surface and subsurface deposit feeders including the polychaetes, *Polygordius* spp., *Mediomastus* spp. and *Spiophanes bombyx*; the chordate, *Branchiostoma* spp., the crustacean, *Acanthohaustorius* spp., and suspension/filter feeders such as the bivalve, *Crassinella lunulata*. The offshore barrier island mud habitat was characterized by a finer-grained sediment texture (< 39% sand) and an assemblage dominated by surface and subsurface deposit feeders including the polychaetes, *Magelona* cf *phyllisae*, *Mediomastus* spp., and *Paraprionospio pinnata*, and the sipunculid, *Golfingia* spp. The offshore mixed sediment/mud sediment habitat was characterized by having a sediment percent sand composition < 76% and an assemblage dominated by the polychaetes, *Magelona* cf *phyllisae*, *Prionospio* spp. and *Aricidea* spp. The offshore clean sand habitat was characterized by have a sediment texture of > 93% sand and an assemblage dominated by the polychaetes, *P. pinnata*, *Mediomastus* spp., *Polygordius* spp., *Armandia* spp. and *Spiophanes* spp., and the chordate, *Branchiostoma* spp.

Rakocinski et al. (1991) studied the macroinvertebrate assemblages associated with barrier islands bordering the mainland of Mississippi, Alabama and Florida. Their data were collected in 1986 and 1987 and included stations sampled on Horn and Ship Islands. The Mississippi and Alabama barrier islands provide a wide range of environmental conditions for macroinvertebrate assemblages, the most influential being 'protected' beaches on the north or sound sides of the islands versus 'exposed' beaches located on the south or Gulf of Mexico sides of the islands. Early studies have also shown that macroinvertebrate assemblages on barrier island beaches have lower taxa richness and abundance than mainland beach habitats. There are a variety of environmental variables that play a role in determining the macroinvertebrate assemblage in a given barrier island habitat and include wave action, sediment properties (primarily % sand), turbulence, salinity, dissolved oxygen (the occurrence of hypoxia), water depth, the occurrence and frequency of occurrence of tropical storms//hurricanes, and seasonal variability in these factors. Rakocinski et al. (1991) used a box corer to sample stations for macroinfauna and sediment properties in the intertidal swash zone, subtidal to 15 m depth and subtidal to 30 m depth on Horn and Ship Islands offshore of Mississippi and Perdido Key in Florida. The data collected were analyzed using a Principal Components Analysis (PCA) in an attempt to identify those environmental variables important in determining the macroinvertebrate assemblage present in a given habitat. PCA-ranked environmental variables in order of importance were determined to be sediment texture (% sand), shore side, water salinity, depth zone, geographic region and season. The analyses identified several habitat types with characteristic macroinvertebrate assemblages: (1) a shallow subtidal habitat with a negatively skewed grain size distribution, primarily located on Horn Island and a macroinvertebrate assemblage dominated by a group of polychaetes with the polychaete, *Streptosyllis*, and the

chordate, *Branchiostoma* being the dominant taxa present; (2) a shallow subtidal habitat found on protected beaches primarily on West Ship Island with fine sediments and a macroinvertebrate assemblage dominated by crustaceans, with the amphipod, *Lepidactylus triarticulatus,* and the polychaete, *Paraonis fulgens* being the dominant taxa present; (3) an exposed beach habitat located lower in the swash zone with fine sand sediments and high abundances in the fall with the macroinvertebrate assemblage dominated by the isopod, *Ancinus,* and the mysid, *Bowmaniella*; and (4) exposed beaches on Horn and West Ship Islands with fine sand sediments, the macroinvertebrate assemblage was dominated by the amphipod, *Haustorius,* the cumacean, *Spilocuma* - the bivalve, *Donax variabilis* was also commonly found in clumped distributions on exposed beaches. Knott et al. (1983), cited in Rakocinski et al. (1998), reported that the polychaetes, *Spiophanes, Paraonis* and *Scolelepis,* and the bivalve, *Donax,* were widespread and abundant in intertidal and subtidal habitats in South Carolina - the amphipods, *Lepidactylus* and *Haustorius* were also dominant in the intertidal habitats.

Rakocinski et al. (1993) studied benthic habitats seaward from the swash zone at Perdido Key, Florida, in an attempt to determine zonation patterns in macroinvertebrate assemblages. The authors sampled at 0 m, 25 m, 50 m, 75 m, 100 m, 150 m, 300 m, 500 m, and 800 m along a transect perpendicular to the beach. Crustaceans and polychaetes made up 75% of the total number of individuals and species, with taxa richness and abundance increasing with depth (seaward). Total densities increased an order of magnitude from the shore to the deeper seaward stations and ranged from 2000 individuals/m^2 to 20000 individuals/m^2. The authors' multivariate analysis identified four unique zones along the depth gradient and the land/sea interface: (1) the swash zone had a macroinvertebrate assemblage comprising motile, burrowing and/or tube-dwelling suspension feeders of medium body size - the dominant taxa in this zone were the

polychaete, *Scolelepis squamata*, the decapod crustacean, *Emerita*, and the bivalve, *Donax*; (2) the inner subtidal zone which ranged from the shoreline to 100 m with depths < 2 m and including nearshore troughs and sand bars - this habitat was dominated by small to large deposit and suspension feeding crustaceans and polychaetes, with the dominant taxa being the polychaetes, *Paraonis fulgens, Leitoscoloplos,* and *Dispio*, the arthropods, *Ancinus, Exosphaeroma*, and *Metamysidopsis*, and the bivalve, *Donax*; (3) the subtidal transition zone which ranged from 10 m - 300 m offshore with depths of 2 - 4 m - the macroinvertebrate assemblage was dominated by both small and large bodied polychaetes with the dominant taxa being the polychaetes, *Streptosyllis* and *Nephtys bucera,* and the cumacean, *Cyclaspis*; and (4) the outer subtidal zone which ranged from 300 - 800 m offshore with depths between 4 - 6 m and a macroinvertebrate assemblage dominated by polychaetes - the dominant taxa in this zone were the polychaetes, *Parapionosyllis, Polygordius,* and *Brania*, the gammarid amphipod, *Eudevenopus*, the gastropod, *Nassarius*, and the chordate, *Branchiostoma*.

DISCUSSION

The macroinvertebrate assemblages found at Borrow Site stations in this study were generally similar to assemblages collected at offshore borrow area stations in 1980-81 as part of the Mississippi Sound and Adjacent Waters (= MSAW) study and in three studies of benthic communities in the Pascagoula Ocean Dredged Material Disposal Site (ODMDS). In the MSAW study, polychaetes were the dominant taxa group in both the spring and fall: the polychaetes, *Magelona* cf *phyllisae*, *Mediomastus* spp. and *Galathowenia oculata* were dominant in the fall, while *M. phyllisae* and *Mediomastus* spp. were dominant in the spring. Similar assemblages were reported in the Pascagoula ODMDS baseline study: dominant taxa in sandy clay habitat included *Magelona* cf. *phyllisae, Mediomastus* spp, *Diopatra cuprea, Myriochele*

(=Galathowenia) oculata, and *Paraprionospio pinnata* (U.S. Environmental Protection Agency, 1986). Post-disposal monitoring of this site showed some differences among numerically dominant taxa, but the overall composition of the benthos was similar, including polychaetes, *Magelona* sp. H, *Owenia fusiformis Scoletoma verrilli,* the sipunculid, *Phascolion strombi,* and the gastropod, *Nassarius acutus.* In the present study, a polychaete assemblage dominated the benthos in June 2010 and September 2010, while a mixed polychaete/crustacean assemblage dominated the Eastern Borrow Site stations and a mixed polychaete/bivalve assemblage dominated the Western Borrow Site stations in April-May 2011: in June the dominant polychaetes were *Paraprionospio pinnata*, *Mediomastus* spp. and *Meredithia uebelackerae*; in September the dominants were *P. pinnata* and *M. uebelackerae* as well as the chordate, *Branchiostoma* spp.; and in April-May the dominant taxa were the polychaetes, *Meredithia uebelackerae*, *Mediomastus* spp., and *Sigambra tentaculata*. The East Borrow Site polychaete/ *Branchiostoma* dominated stations, which contained either a sandy or mixed sand/fines sediment, corresponded to the offshore mixed sediment/mud habitat category discussed in the MSAW; the polychaete dominated West Borrow Site stations, characterized by a fine grain sediment (< 50% sand), corresponded to the MSAW offshore barrier island mud classification which was dominated by surface and subsurface deposit feeding polychaetes. Pre- and post-disposal studies at Pascagoula ODMDS showed that benthic assemblages are very sensitive to changes in sediment texture: areas where silty clay sediments were discharged were dominated by opportunistic species such as *Magelona* sp. H, *Mediomastus ambiseta*, and *Paraprionospio pinnata.* Areas outside the disposal area were characterized by the bivalves, *Tellina versicolor* and *Abra aequalis* and the polychaetes, *M. ambiseta* and *P. pinnata* (U.S. Environmental Protection Agency, 1986). Rakocinski et al. (1993) also identified an inner subtidal zone that

ranged from the shore to 100 m with depths of < 2 m that was dominated by an assemblage of polychaetes (*Paraonis, Leitoscoloplos*), crustaceans (haustorid amphipods), and bivalves (*Donax*) that were the same macroinvertebrate assemblages as found in the Borrow Site stations in this study.

Data collected from the Borrow Site stations exhibited significant seasonal variation with respect to both taxa richness and density. A summary of taxa richness and densities for the East and West Borrow sites is given in Figure 51. Taxa richness at the East Borrow site stations exhibited a significant decrease from June 2010 to September 2010, but taxa richness recovered in April-May 2011 to June 2010 levels; taxa richness at the West Borrow Site stations also showed a significant decrease from June 2010 to September 2010, but only a partial recovery of taxa richness in April-May 2011 to June 2010 levels. Densities at both the East and West Borrow site stations exhibited a significant decrease from June 2010 to September 2010, but taxa richness exhibited only a partial recovery in April-May 2011 to June 2010 levels. Seasonal and inter-annual changes in numbers of species and individuals were also observed in the MSAW and Pascagoula ODMDS studies. At MSAW stations species and individual abundances were higher during spring than in fall (U.S. Army Corps of Engineers, 1982) Surveys of the Pascagoula ODMDS in fall 1986 showed lower numbers of taxa and individuals than during spring 1987. Post-disposal studies in 1999 and 2006 reported similar numbers of taxa, although sites within the disposal area contained fewer taxa and much lower densities than nearby reference areas.

Two events occurred in the spring of 2010 that may have influenced the June to September 2010 decreases in taxa richness and densities at the Borrow Site stations: (1) the Deepwater Horizon oil spill occurred in April 2010 and the Mississippi Barrier islands and adjacent waters received surface and subsurface petrochemicals and dispersant chemicals; and

(2) there was a prolonged hypoxic event experienced by all of the Borrow Site stations in May-June 2010. Hypoxia is a common occurrence in the Gulf of Mexico waters during the late spring-summer months. In fact, Lopez et. Al (2010) reported severe hypoxic conditions in the western Mississippi Sound and Chandeleur Sound in 2008 and 2010. The Lake Pontchartrain Basin Foundation documented hypoxia in June 2008 and August 2010; the latter survey area extended eastward only to Dog Keys Pass but did incorporate part of the offshore areas where benthic stations were sampled during the present study. Hypoxia was recorded at depths below 18 to 37 feet along a transect from Ship Island into Chandeleur Sound. Water quality surveys were not conducted earlier in the summer 0f 2010 so it is not known whether the hypoxic conditions observed in August were preceded by similar dissolved oxygen (DO) depletion during May_june 2010, when benthic samples were collected in Survey 1. However, the low DO levels reported by Lopez et. al (2010) are likely to have been a significant factor in the reduced infaunal abundances observed by Vittor & Associates in September 2010. A survey in July 2011 demonstrated that hypoxic conditions had become reestablished in the offshore areas from Cat Island to the mouth of Mobile Bay (the easternmost extent of the survey). It is not known if the prolonged hypoxia measured in the northern Gulf of Mexico was exacerbated by the oil spill or was an entirely natural climatic occurrence.

The macroinvertebrate assemblages at Placement Site stations in this study exhibited considerable variation between islands/locations and season (Figure 52). Significant declines in taxa richness occurred between June 2010 and September 2010 at Petit Bois Island, Horn Island and the Mississippi Sound stations - taxa richness had recovered by April-May 2011 at each of the sites. Macroinvertebrate densities exhibited significant declines between June 2010 and September 201 at stations on Horn Island, Ship Island, Cat Island and in Mississippi Sound -

densities in April-May 2011 recovered to June 2010 levels at the stations on Horn Island, Cat Island and Mississippi Sound - there was only a partial recovery at stations on Ship Island (Figure 52). The sediment at all of the stations associated with the barrier islands was comprised of clean sand while sediments at the stations in Mississippi Sound were silty, muddy sand. In June 2010, hypoxia was measured at one barrier island station and two Mississippi Sound stations - hypoxia was not measured at any station in either September 2010 or April-May 2011. The lack of hypoxia at the barrier island stations was not unexpected due to shallow water depths and highly dynamic nature of these habitats.

The macroinvertebrate assemblages at the Placement Site stations associated with the barrier islands were similar to the Shallow Sound Sand and Tidal Pass habitats characterized in the MSAW study (USACE 1982); and the Shallow Subtidal and Inner Subtidal (shoreline to 100 m, depths < 2 m) habitats recognized by Rakocinski et al. (1991, 1993); the Gulfport thin-layer disposal study by U.S. Army Corps of Engineers (1999); and the Gulf sturgeon critical habitat study at Singing River Island (Barry A. Vittor & Associates, Inc., 2005). In June 2010, the Petit Bois Island stations were dominated by the polychaete, *Spiophanes*, the arthropod, *Pinnixa*, and the bivalve, *Gemma gemma*; Horn Island stations were dominated by the polychaetes, *Polygordius* and *Magelona*, the bivalve, *G. gemma*, and the chordate, *Branchiostoma*; Ship Island stations were dominated by the polychaetes, *Magelona* and *Meredithia*, the amphipod, *Acanthohaustorius*, and the bivalve, *G. gemma*; the Camille Cut stations were dominated by *G. gemma* (> 70% of the assemblage); and the Cat Island stations were dominated by the polychaete, *Mediomastus*, and the amphipod, *Acanthohaustorius*. In September 2010, the Petit Bois and Horn Island stations were dominated by *G. gemma* and *Branchiostoma*, the Ship Island stations were dominated by a polychaete assemblage (*Mediomastus*, *Paraonis*, *Magelona*) and

Branchiostoma, the Camille Cut stations were dominated by *G. gemma* (> 85% of the assemblage), and the Cat Island Stations were dominated by cirratulid polychaetes, *Mediomastus*, and *Branchiostoma*. In April-May 2011, the Petit Bois and Horn Island stations were dominated by *Polygordius* and *G. gemma*, the Ship Island stations were dominated by a mixed polychaete (*Mediomastus, Spiophanes*) - haustorid amphipod assemblage, the Camille Cut stations were dominated by *G. gemma* and the polychaete, *Paraonis*, and the Cat Island stations were dominated by the polychaetes, *Mediomastus* and *Meredithia*. In the MSAW study, the Shallow Sound Sand habitat was dominated by the bivalve, *G. gemma*, the polychaete, *Paraonis*, and the amphipod, *Lepidactylus*. These same taxa were dominant components of the barrier island macroinvertebrate assemblages seen in this study. The Tidal Pass habitat recognized in the MSAW study corresponds closely with the Camille Cut habitat with a macroinvertebrate assemblage dominance of surface and subsurface deposit feeders (e.g. the polychaetes, *Polygordius* and *Spiophanes*, the chordate, *Branchiostoma*, haustorid amphipods, suspension feeding bivalves). The macroinvertebrate assemblages characteristic of the Inner Subtidal habitat recognized by Rakocinski et al. (1993) was also similar to assemblages associated with the barrier islands in this study with a dominance of polychaetes (*Paraonis*), haustorid amphipods and bivalves; additionally macroinvertebrate assemblages in the Shallow Subtidal habitats recognized by Rakocinski et al. (1991) were similarly dominated by polychaetes (*Paraonis*, syllids), *Branchiostoma* and amphipods (*Lepidactylus*).

The macroinvertebrate assemblages at the four stations in Mississippi Sound were associated with a habitat distinct from the barrier island stations - the Sound stations were in deeper water and had a silty, muddy sand sediment. The macroinvertebrate assemblages in June and September 2010 were dominated by a polychaete complex (*Mediomastus, Paraprionospio*)

and gastropods (*Nuculana, Nassarius*), and in April-May 2010 the assemblages were dominated by *Mediomastus*. The Inshore Sound stations in the MSAW study (USACE 1982) were also dominated by a polychaete assemblage (*Galathowenia, Owenia*) and haustorid amphipods in both the spring and fall seasons. Assessment of thin-layer disposal impacts on benthos near the Gulfport navigation channel in Mississippi Sound reflected numerical dominance by sandy silt taxa, including *Mediomastus* spp, *Balanoglossus aurantiacus, Myriochele (=Galathowenia) oculata, Prionospio perkinsi*, and *Sigambra tentaculata.* Numbers of taxa and individuals varied seasonally. Average taxa abundance ranged from 41 during late summer 1991 to 110 during mid-summer 1992 (U.S. Army Corps of Engineers, 1999). Mean infauna density ranged from 2000/ m2 in late summer 1991 to over 13000/m2 in late winter 1992. Species encountered in 2005 in Mississippi Sound in the general vicinity of Singing River Island were characterized by opportunistic species such as *Mediomastus ambiseta, Paraprionospio pinnata, Streblospio benedicti,* and *Aricidea* spp; during the MSAW study, this area had been dominated by *Myriochele (=Galathowenia) oculata, Owenia fusiformis,* and *Mediomastus* spp (Barry A. Vittor & Associates, Inc., 2005). Numbers of taxa and individuals were highly variable in 2005, and were generally lower than during the MSAW study.

Taxa richness and density data collected from Beach Transect stations at distances of 10, 20 and 50 feet (horizontal distance from the shoreline) had low taxa richness, extremely variable densities based on the patchy distribution of several habitat specific macroinvertebrate taxa, and no discernible seasonal patterns. The one factor which consistently separated the macroinvertebrate assemblages on Petit Bois, Horn and Ship Islands was whether or not the stations were located on the Mississippi Sound side of the islands or on the Gulf of Mexico. Stations located on the Mississippi Sound side of the islands had significantly higher taxa

richness and densities than stations located on the Gulf of Mexico. These data are similar to those found by Rakocinski et al. (1991) for Alabama, Mississippi and Florida barrier islands with exposed Gulf of Mexico beaches and protected Sound beaches.

The macroinvertebrate assemblage data collected at the Beach Transect stations in this study are summarized in Figures 53 - 58. The Shallow (10 ft from the shoreline), Mid-depth (20 ft from the shoreline) and Deep (50 ft from the shoreline) Sound stations typically had 2-4 times as many taxa and often an order of magnitude higher densities than stations on the Gulf of Mexico. The Shallow Beach Transect stations were dominated by oligochaetes, the patchily distributed and highly density variable bivalves, *Gemma gemma* and *Donax variabilis*, the patchy yet abundant amphipod, *Lepidactylus triarticulatus*, the cumacean, *Spilocuma*, the isopod, *Exosphaeroma*, and the abundant polychaete, *Paraonis fulgens*. The macroinvertebrate assemblages at the Mid-depth stations were dominated by oligochaetes, the amphipods, *Lepidactylus* and *Haustorius*, the mysid, *Metamysidopsis*, the cumacean, *Spilocuma*, the pinnotherid crab, *Pinnixa*, the bivalves, *G. gemma* and *D. variabilis*, and the polychaetes, *Paraonis*, *Leitoscoloplos*, *Sphaerosyllis* and *Nereis*. The Deep stations were dominated by a polychaete assemblage that included *Paraprionosyllus*, *Sphaerosyllis*, *Leitoscoloplos*, *Capitella* and *Paraonis*, the bivalves, *G. gemma* and *D. variabilis*, the amphipods, *Lepidactylus* and *Acanthohaustorius*, the isopod, *Ancinus*, and the cumacean, *Spilocuma*. The MSAW study (1982) described a shallow Sound sand habitat that was characterized by a macroinvertebrate assemblage dominated by the bivalve, *G. gemma*, the polychaete, *Paraonis fulgens*, and the amphipod, *Lepidactylus triarticulatus* - this habitat type also exhibited lower taxa richness, greater station mean densities and lower diversity when compared to more offshore and tidal pass habitats - the macroinvertebrate assemblage characteristics were attributed to the clustering

and high, but variable densities of *G. gemma* and *L. triarticulatus*. Knott et al. (1983) found that the polychaetes, *Spiophanes*, *Paraonis* and *Scolelepis*, the bivalve, *Donax*, and the amphipods, *Lepidactylus* and *Haustorius* were widespread in intertidal and subtidal beach habitats. Rakocinski et. al. (1991) found that *Lepidactylus* and *Paraonis* dominated the macroinvertebrate assemblage on protected beaches, while the isopod, *Ancinus*, a mysid, haustorid amphipods, the cumacean, *Spilocuma*, and the bivalve, *Donax variabilis*, dominated the assemblage on exposed beaches.

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Table 1. Station locations for the MsCIP Benthic Macroinfaunal Community Assessment sampling program.

Station	Latitude	Longitude
PS1	30°13'2.62"N	88°24'2.00"W
PS2	30°12'19.64"N	88°23'54.41"W
PS3	30°13'11.98"N	88°23'12.26"W
PS4	30°12'36.47"N	88°23'17.66"W
PS5	30°13'58.07"N	88°34'24.98"W
PS6	30°14'9.36"N	88°33'29.83"W
PS7	30°13'46.06"N	88°32'46.52"W
PS8	30°13'14.24"N	88°33'23.19"W
PS9	30°13'2.01"N	88°34'18.32"W
PS10	30°14'40.27"N	88°51'9.03"W
PS11N	30°14'40.50"N	88°50'6.29"W
****PS11**	30°14'11.7"N	88°52'20.6"W
PS12	30°14'10.29"N	88°51'30.51"W
PS13	30°14'17.95"N	88°50'41.88"W
****PS13**	30° 13'50.2"N	88°52'48.8"W
PS14	30°13'53.57"N	88°51'3.39"W
****PS14**	30°13'38.8"N	88° 53'17.2"W
PS15	30°13'31.21"N	88°54'31.03"W
PS16	30°13'17.02"N	88°55'14.21"W
PS17	30°13'7.56"N	88°55'42.26"W
PS18	30°13'0.51"N	88°57'37.93"W
PS19	30°14'5.12"N	89° 3'37.51"W
PS20	30°12'39.73"N	89° 4'42.90"W
PSR1	30°15'55.15"N	89° 0'10.06"W
PSR2	30°16'53.02"N	88°52'42.92"W
PSR3	30°17'3.92"N	88°43'40.29"W
PSR4	30°16'12.70"N	88°34'0.69"W
PSR5	30°15'27.58"N	88°25'26.13"W
BS1	30°12'14.05"N	88°18'51.55"W
BS2	30°10'12.57"N	88°22'21.36"W
BS3	30°10'12.55"N	88°19'5.64"W
BS4	30° 8'15.68"N	88°19'8.91"W
BSR1	30° 9'40.73"N	88°26'17.03"W
BSR2	30° 7'52.36"N	88°23'17.51"W
BS5	30°12'13.03"N	88°44'46.83"W
BS6	30°11'24.70"N	88°48'15.43"W
BS7	30°11'48.29"N	88°51'13.61"W
BS8	30° 9'14.71"N	88°52'51.59"W
BS9	30°11'7.05"N	88°55'54.91"W
BS10	30° 8'15.84"N	88°56'36.07"W
BS11	30° 7'31.04"N	88°59'52.54"W
BS12	30° 9'1.09"N	89° 1'57.41"W
BS13	30° 9'0.94"N	88°59'16.37"W
BS14	30°11'3.01"N	89° 3'36.63"W
BS15	30°10'58.18"N	89° 1'3.06"W
BS16	30°13'3.27"N	89° 1'32.01"W
BSR3	30°10'7.45"N	88°41'2.26"W
BSR4	30° 8'37.71"N	88°46'36.06"W

Station	Latitude	Longitude
BT1	30°12'31.69"N	88°25'3.65"W
BT2	30°12'3.65"N	88°25'25.26"W
BT3	30°12'27.94"N	88°25'38.25"W
BT4	30°12'20.48"N	88°24'57.16"W
BT5	30°13'39.25"N	88°35'49.42"W
BT6	30°13'58.63"N	88°38'0.42"W
BT7	30°13'19.58"N	88°36'14.25"W
BT8	30°13'28.67"N	88°38'27.41"W
BT9	30°14'36.26"N	88°52'53.29"W
BT10	30°13'9.38"N	88°56'33.47"W
BT11	30°14'11.00"N	88°53'0.72"W
BT12	30°12'38.48"N	88°56'48.42"W
BT13	30°14'49.03"N	89° 4'12.93"W
BT15	30°14'17.36"N	89° 3'53.22"W
BT16	30°12'55.77"N	89° 4'47.80"W
BTR1	30°15'4.55"N	88°42'31.87"W
BTR2	30°14'52.04"N	88°44'47.06"W
BTR3	30°14'28.93"N	88°43'16.08"W
BTR4	30°14'18.31"N	88°45'20.47"W

PS = Placment Site; PSR = Placement Site Reference; BS = Borrow Site; BSR = Borrow Site Reference
BT = Beach Transect; BTR = Beach Transect Reference
******Stations PS11, PS13 and PS14 were relocated for the September 2010 and June 2011 surveys

Table 2. Benthic samples collected during each survey (June 2010, September 2010, April-May 2011) for the MsCIP Benthic Macroinfaunal Community Assessment project.

Location	Number of Stations	Depths	Replicates	Total Benthic Samples	Total Sediment Texture + TOC
Beach Transects BT	15	3	8	360	45
Beach Transect Reference BTR	4	3	8	96	12
Placement Sites PS	20	–	4	80	20
Placement Site Reference PSR	5	–	4	20	5
Borrow Sites BS	16	–	4	64	16
Borrow Site Reference BSR	4	–	4	16	4
		Total Samples Collected:		**636**	**102**

Table 3. Water quality and sediment data for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Location	Station	Depth	DateTime M/D/Y	Depth ft	Temp C	SpCond mS/cm	Salinity ppt	pH	ODO% %	ODO Conc mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Eastern Borrow	BS1	Bottom	6/10/10 8:14	29.76	23.73	30.55	18.96	7.40	15.9	1.21	0	99.26	0.4	0.71		0.31
SE Petit Bois		Mid-Depth	6/10/10 8:16	15.05	30.06	20.59	12.23	8.44	104.5	7.38						
		Surface	6/10/10 8:16	0.70	30.06	20.45	12.14	8.46	109.6	7.74						
	BS2	Bottom	6/10/10 10:48	44.76	21.88	31.52	19.65	7.36	7.1	0.55	0	98.39	–	–	1.61	0.02
		Mid-Depth	6/10/10 10:49	22.78	26.34	29.00	17.87	7.99	55.1	4.02						
		Surface	6/10/10 10:50	0.87	30.29	21.05	12.52	8.53	115.4	8.10						
	BS3	Bottom	6/10/10 8:44	50.82	21.83	31.49	19.64	7.46	35.9	2.81	0.43	79.01	12.8	7.75		0.32
		Mid-Depth	6/10/10 8:44	25.92	25.27	30.59	18.97	7.71	55.2	4.01						
		Surface	6/10/10 8:44	2.38	29.55	21.07	12.55	8.29	104.5	7.38						
	BS4	Bottom	6/10/10 9:08	59.62	27.27	31.47	19.61	8.01	7.0	0.54	0	34.12	49.7	16.18		0.51
		Mid-Depth	6/10/10 9:08	28.72	29.62	29.20	19.08	8.48	80.1	5.75						
		Surface	6/10/10 9:08	1.35	29.65	20.92	12.45	8.50	124.8	8.99						
Western Borrow	BS5	Bottom	6/9/10 12:46	35.97	22.55	31.69	19.76	7.47	12.3	0.95	0	46.61	36.07	17.32		0.61
SW Horn Island		Mid-Depth	6/9/10 12:47	17.97	27.62	25.17	15.27	8.06	35.7	2.59						
		Surface	6/9/10 12:48	1.29	31.08	18.79	11.05	8.70	144.0	10.06						
	BS6	Bottom	6/9/10 12:18	37.85	23.04	31.47	19.61	7.67	17.7	1.36	0	13.17	63.24	23.59		0.68
		Mid-Depth	6/9/10 12:20	13.88	29.19	19.08	11.27	8.60	124.8	8.99						
		Surface	6/9/10 12:21	0.79	31.11	18.83	11.07	8.73	141.4	9.87						
	BS7	Bottom	6/9/10 11:51	33.57	23.83	30.82	19.15	7.63	18.0	1.36	0.21	33.48	58.86	7.65		0.74
		Mid-Depth	6/9/10 11:52	16.78	29.39	19.13	11.29	8.51	107.8	7.74						
		Surface	6/9/10 11:53	0.61	31.20	18.71	11.00	8.74	158.1	11.03						
	BS8	Bottom	6/9/10 11:22	36.33	23.28	31.12	19.36	7.62	13.5	1.03	2.15	27.22	49.22	41.41		0.71
		Mid-Depth	6/9/10 11:23	13.65	29.25	19.33	11.43	8.56	109.2	7.85						
		Surface	6/9/10 11:24	0.49	30.51	18.16	10.65	8.79	153.1	10.82						
Western Borrow	BS9	Bottom	6/9/10 10:54	26.15	24.34	29.92	18.53	7.54	6.6	0.50	0.35	50.26	39.83	9.57		0.42
S Ship Island		Mid-Depth	6/9/10 10:56	12.92	29.38	18.60	10.95	8.55	125.2	9.00						
		Surface	6/9/10 10:56	1.14	29.96	18.05	10.59	8.75	166.3	11.87						
	BS10	Bottom	6/9/10 10:26	33.31	23.41	30.74	19.10	7.69	7.9	0.60	0	6.74	71.87	21.39		1.51
		Mid-Depth	6/9/10 10:28	16.25	29.02	20.03	11.88	8.53	74.8	5.38						
		Surface	6/9/10 10:29	1.04	30.70	17.64	10.32	8.82	161.3	11.39						
	BS11	Bottom	6/9/10 9:31	27.75	22.56	30.45	18.92	7.55	4.7	0.36	0	15.6	70.3	14.1		0.76
		Mid-Depth	6/9/10 9:31	14.05	29.10	19.12	11.29	8.47	52.0	3.75						
		Surface	6/9/10 9:33	0.92	30.12	17.63	10.32	8.73	146.8	10.47						
	BS12	Bottom	6/9/10 9:06	25.07	22.87	29.91	18.54	7.58	4.3	0.33	0	78.78	9.5	11.72		0.85
		Mid-Depth	6/9/10 9:08	12.07	29.38	18.28	10.75	8.61	98.9	7.12						
		Surface	6/9/10 9:09	0.74	29.92	17.46	10.22	8.59	122.7	8.78						
	BS13	Bottom	6/9/10 9:56	27.89	23.13	30.28	18.79	7.59	3.4	0.26	0.04	18.96	63.74	17.27		1.41
		Mid-Depth	6/9/10 9:58	14.27	28.85	19.46	11.52	8.37	58.3	4.22						
		Surface	6/9/10 9:59	0.78	30.39	17.60	10.30	8.79	163.7	11.62						
	BS14	Bottom	6/9/10 8:09	23.94	23.50	29.14	18.01	7.42	4.3	0.33	0	15.21	52.76	32.03		0.83
		Mid-Depth	6/9/10 8:10	11.79	29.13	19.48	11.53	8.40	98.2	7.07						
		Surface	6/9/10 8:11	0.70	29.65	17.74	10.40	8.48	116.6	8.37						
Western Borrow	BS15	Bottom	6/9/10 8:37	26.38	22.98	29.85	18.50	7.62	4.5	0.35	0	4.54	53.98	41.48		1.33
S Cat Island		Mid-Depth	6/9/10 8:39	12.45	29.35	18.76	11.06	8.56	96.4	6.94						
		Surface	6/9/10 8:40	0.85	29.99	17.97	10.54	8.77	148.9	10.62						
	BS16	Bottom	6/9/10 7:42	18.37	28.89	19.52	11.56	8.30	97.4	7.04	0	78.38	17.37	4.24		0.24
		Mid-Depth	6/9/10 7:43	9.57	29.31	18.59	10.95	8.41	117.5	8.46						
		Surface	6/9/10 7:44	0.76	29.61	17.96	10.54	8.49	133.7	9.60						

Table 3 continued:

Location	Station	Depth	DateTime M/D/Y	Depth ft	Temp C	SpCond mS/cm	Salinity ppt	pH	ODO% %	ODO Conc mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Reference Sites	BSR1	Bottom	6/10/10 10:16	43.84	21.44	31.67	19.76	7.07	5.3	0.42	0.29	56.47	31.59	11.66		0.72
SE Petit Bois		Mid-Depth	6/10/10 10:17	21.85	25.21	30.17	18.68	7.36	18.6	1.38						
		Surface	6/10/10 10:17	1.56	29.90	20.91	12.44	8.23	124.8	8.99						
	BSR2	Bottom	6/10/10 9:41	44.40	21.10	31.95	19.96	7.13	11.3	0.90	0.35	98.5	–	–	1.15	0.02
		Mid-Depth	6/10/10 9:41	20.07	26.03	30.14	18.65	7.64	45.9	3.35						
		Surface	6/10/10 9:42	1.97	29.75	21.06	12.54	8.26	82.3	5.38						
South Horn	BSR3	Bottom	6/9/10 13:18	44.69	22.17	32.02	19.99	7.46	24.4	1.89	0	30.58	52.43	16.99		0.86
Island		Mid-Depth	6/9/10 13:20	22.28	26.90	30.63	18.97	8.05	80.1	5.75						
		Surface	6/9/10 13:21	1.22	31.63	18.56	10.90	8.80	145.5	10.08						
	BSR4	Bottom	6/9/10 13:53	41.90	21.96	31.92	19.93	7.56	16.4	1.28	0	13.17	70.54	16.29		0.60
		Mid-Depth	6/9/10 13:55	21.66	25.77	28.30	17.41	7.96	17.4	1.28						
		Surface	6/9/10 13:56	0.62	31.40	18.13	10.62	8.83	148.9	10.37						

BS = Borrow Site; BSR = Borrow Site Reference

Table 4. Water quality and sediment data for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
SE Petit Bois	BS1	Bottom	28.33	28.31	28.04	17.18	7.44	104.3	7.38	0.15	99.78			0.07	0.03
		Mid-Depth	17.84	28.23	27.73	16.98	7.62	105.0	7.45						
		Surface	0.62	28.34	27.60	16.89	7.69	106.8	7.56						
	BS2	Bottom	45.58	27.96	28.81	17.71	7.77	65.7	4.66	0.2	99.59			0.2	0.03
		Mid-Depth	22.68	28.15	28.44	17.46	7.82	69.3	4.91						
		Surface	0.63	28.28	27.98	17.15	7.92	98.7	6.99						
	BS3	Bottom	50.59	28.00	28.86	17.74	7.73	71.8	5.09	0.17	62.07	30.98	6.78	37.76	0.06
		Mid-Depth	25.86	28.24	28.52	17.51	7.79	80.4	5.69						
		Surface	0.48	28.32	28.01	17.16	7.85	101.6	7.19						
	BS4	Bottom	62.45	25.46	32.05	19.97	6.93	46.8	3.43	0.58	57.01	23.91	18.5	42.41	0.63
		Mid-Depth	32.23	28.06	28.72	17.65	7.25	52.1	3.69						
		Surface	0.65	28.25	28.07	17.20	7.49	95.9	6.79						
SW Horn Island	BS5	Bottom	36.21	28.27	28.16	17.27	8.11	86.3	6.11	0	32.08	42.1	25.82	67.92	0.10
		Mid-Depth	18.18	28.56	27.73	16.97	8.11	109.7	7.74						
		Surface	0.53	28.77	27.71	16.95	8.11	113.3	7.97						
	BS6	Bottom	34.19	28.27	28.00	17.15	7.97	82.9	5.87	0	8.62	57.74	33.64	91.38	1.17
		Mid-Depth	17.91	28.30	27.63	16.91	7.97	86.8	6.15						
		Surface	0.34	28.44	18.07	10.63	8.04	112.7	8.25						
	BS7	Bottom	33.56	28.14	27.59	16.88	7.89	75.0	5.33	0.59	32.6	46.1	20.71	66.81	0.64
		Mid-Depth	17.25	28.14	27.57	16.87	7.88	74.0	5.26						
		Surface	0.92	28.69	25.12	15.22	8.01	112.7	8.01						
	BS8	Bottom	35.04	28.15	27.56	16.86	7.77	41.9	2.98	0	7.95	55.33	36.72	92.05	1.26
		Mid-Depth	17.45	28.24	26.14	15.91	7.96	106.0	7.57						
		Surface	0.80	29.12	26.03	15.82	8.04	115.4	8.12						
S Ship Island	BS9	Bottom	25.50	28.17	27.25	16.65	7.89	73.8	5.25	0.64	70.91	16.28	12.17	28.45	0.31
		Mid-Depth	13.98	28.50	25.78	15.67	7.93	79.6	5.66						
		Surface	0.50	28.51	24.95	15.11	7.98	117.2	8.36						
	BS10	Bottom	31.72	28.50	27.24	16.64	8.06	85.1	6.02	0	2.91	58.74	38.35	97.09	1.46
		Mid-Depth	15.82	28.50	26.24	15.97	8.06	106.0	7.53						
		Surface	0.41	29.08	25.93	15.75	8.12	127.0	8.94						
	BS11	Bottom	23.54	28.55	25.68	15.60	7.70	99.0	7.04	2.1	1.83	64.5	31.57	96.07	1.07
		Mid-Depth	11.57	28.74	25.70	15.61	7.72	118.4	8.39						
		Surface	1.46	29.15	25.65	15.57	7.77	125.1	8.81						
	BS12	Bottom	18.26	28.25	24.93	15.10	7.11	96.2	6.89	0.83	13.04	60.87	25.25	86.12	0.77
		Mid-Depth	9.64	28.29	24.92	15.10	7.08	100.2	7.17						
		Surface	1.27	28.95	25.04	15.17	7.27	112.6	7.97						
	BS13	Bottom	26.52	28.23	26.81	16.36	7.02	57.8	4.11	0	7.01	54.84	38.15	92.99	1.59
		Mid-Depth	13.89	28.42	25.51	15.49	7.37	103.8	7.40						
		Surface	0.75	29.09	25.46	15.44	7.58	122.2	8.62						
	BS14	Bottom	21.07	27.98	25.94	15.78	7.11	45.1	3.23	0.97	21.92	41.09	36.02	77.11	1.00
		Mid-Depth	10.01	28.21	24.93	15.11	7.18	80.4	5.77						
		Surface	1.24	28.27	24.93	15.11	7.21	89.1	6.38						
E Cat Island	BS15	Bottom	23.36	28.00	26.49	16.15	6.78	45.5	3.25	0.74	5.71	58.62	34.93	93.55	1.51
		Mid-Depth	11.61	28.33	24.98	15.14	6.92	99.7	7.14						
		Surface	1.04	28.65	24.66	14.92	7.07	106.9	7.61						
	BS16	Bottom	16.50	28.01	26.58	16.21	7.23	53.6	3.83	1.86	96.51			1.63	0.15
		Mid-Depth	7.71	28.12	25.06	15.19	7.23	96.7	6.94						
		Surface	1.77	28.14	25.03	15.18	7.28	99.4	7.14						

Table 4 continued:

Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
SE Petit Bois	BSR1	Bottom	49.58	27.90	28.83	17.72	8.02	55.3	3.93	0.98	33.04	39	26.98	65.98	0.79
		Mid-Depth	24.96	28.24	28.39	17.42	8.12	62.2	4.40						
		Surface	0.44	28.27	27.68	16.94	8.23	94.7	6.71						
	BSR2	Bottom	53.28	27.65	29.29	18.04	8.03	62.3	4.44	0.83	98.44			0.73	0.03
		Mid-Depth	27.44	27.86	29.02	17.86	8.06	64.8	4.60						
		Surface	0.66	28.27	27.86	17.06	8.16	94.4	6.69						
S Horn Island	BSR3	Bottom	42.32	28.28	28.25	17.33	8.02	91.1	6.45	1.09	32.11	44.72	22.07	66.79	0.93
		Mid-Depth	21.12	28.52	28.17	17.27	8.04	94.7	6.67						
		Surface	1.01	29.27	28.08	17.20	8.11	112.3	7.82						
	BSR4	Bottom	42.25	28.36	28.32	17.37	7.88	71.7	5.06	0.29	10.43	64.9	24.38	89.28	0.95
		Mid-Depth	21.79	28.34	27.96	17.13	7.87	85.2	6.03						
		Surface	0.81	28.87	26.58	16.20	7.96	114.3	8.06						

BS = Borrow Site; BSR = Borrow Site Reference

Table 5. Water quality data for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, Apr-May 2011.

Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
SE Petit Bois	BS1	Bottom	22.40	22.81	45.68	29.63	8.06	44.8	3.25	0.06	99.65			0.29	0.018
		Mid-Depth	12.31	23.53	40.94	26.22	8.39	102.5	7.49						
		Surface	0.50	23.75	39.21	24.98	8.41	109.0	7.99						
	BS2	Bottom	43.82	20.98	51.61	33.98	7.88	26.1	1.91		99.73			0.27	0.08
		Mid-Depth	22.26	23.48	42.37	27.24	8.38	99.4	7.23						
		Surface	0.59	23.79	38.32	24.36	8.40	106.5	7.82						
	BS3	Bottom	48.38	20.78	52.01	34.28	7.84	17.3	1.27		10.02	59.05	30.93		1.228
		Mid-Depth	24.09	23.24	43.38	27.96	8.27	69.9	5.08						
		Surface	0.62	23.44	39.84	25.44	8.39	101.1	7.43						
	BS4	Bottom	56.78	19.82	52.46	34.61	7.76	10.4	0.78	1.04	94.48	0.69		3.8	0.352
		Mid-Depth	29.76	23.20	45.87	29.76	8.29	93.8	6.75						
		Surface	0.68	23.55	40.54	25.93	8.39	102.2	7.48						
SW Horn Island	BS5	Bottom	35.62	23.65	41.92	26.91	8.27	67.8	4.93		32.28	49.16	18.56		1.117
		Mid-Depth	18.47	23.27	40.04	25.58	8.41	96.7	7.12						
		Surface	1.04	23.32	40.00	25.55	8.41	99.9	7.35						
	BS6	Bottom	37.89	23.71	42.16	27.08	8.29	74.8	5.42		12.94	63.91	23.14		1.207
		Mid-Depth	18.73	23.35	40.68	26.04	8.4	97.9	7.18						
		Surface	1.16	23.39	40.50	25.91	8.41	102.9	7.55						
	BS7	Bottom	32.88	23.29	40.51	25.91	8.37	93.7	6.89	0.63	38.33	44.01	17.03		0.661
		Mid-Depth	18.38	23.37	40.47	25.88	8.38	97.9	7.19						
		Surface	1.17	23.48	40.40	25.84	8.39	100.4	7.36						
	BS8	Bottom	36.30	23.55	41.14	26.36	8.37	88.8	6.48		10.11	65.16	24.73		1.153
		Mid-Depth	17.84	23.63	41.07	26.3	8.39	95.2	6.94						
		Surface	0.73	23.63	41.07	26.31	8.39	96.7	7.05						
S Ship Island	BS9	Bottom	25.30	23.5	39.73	25.36	8.33	87.1	6.4		55.51	35.04	9.45		0.594
		Mid-Depth	12.44	23.69	38.87	24.75	8.40	100	7.35						
		Surface	0.64	24.02	38.77	24.67	8.39	104.3	7.62						
	BS10	Bottom	32.25	23.56	40.66	26.01	8.35	89.0	6.51		7.76	64.35	27.89		1.474
		Mid-Depth	16.13	23.66	40.48	25.89	8.38	92.1	6.73						
		Surface	0.58	24.23	40.43	25.84	8.41	102.6	7.42						
	BS11	Bottom	26.22	23.37	38.32	24.36	8.33	88.8	6.57		1.15	29.54	69.31		0.784
		Mid-Depth	13.45	23.81	38.2	24.27	8.39	100.5	7.39						
		Surface	0.32	23.75	38.21	24.28	8.39	102.3	7.52						
	BS12	Bottom	22.98	23.23	37.61	23.87	8.29	82.4	6.13		31.3	42.66	26.04		1.01
		Mid-Depth	11.20	23.64	36.14	22.83	8.35	96.8	7.19						
		Surface	0.87	23.70	36.11	22.81	8.36	101.3	7.52						
	BS13	Bottom	22.31	23.56	39.24	25.01	8.36	95.2	7.00		7.57	62.78	29.65		1.279
		Mid-Depth	11.02	23.40	38.41	24.43	8.34	90.1	6.66						
		Surface	0.78	24.09	38.34	24.37	8.42	102.8	7.52						
	BS14	Bottom	21.38	23.09	37.00	23.44	8.25	77.5	5.80		14.67	56.75	28.57		0.979
		Mid-Depth	10.42	23.87	34.30	21.55	8.36	102.7	7.66						
		Surface	0.83	23.54	31.23	19.44	8.38	114	8.66						
E Cat Island	BS15	Bottom	24.07	23.24	37.93	24.09	8.31	89.7	6.67		11.93	62.94	25.13		1.246
		Mid-Depth	11.29	23.94	36.57	23.12	8.41	105.4	7.78						
		Surface	0.57	23.62	34.98	22.03	8.39	110.9	8.28						
	BS16	Bottom	17.00	22.88	36.92	23.39	8.52	100.5	7.55		50.71	28.02	21.27		0.449
		Mid-Depth	8.53	23.56	33.61	21.07	8.11	107.5	8.08						
		Surface	0.52	23.49	29.45	18.22	8.09	116.1	8.89						

Table 5 continued:

Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
SE Petit Bois	BSR1	Bottom	47.89	21.04	51.02	33.54	7.83	12.4	0.90		23.67	50.89	25.44		1.409
		Mid-Depth	23.54	23.43	43.19	27.82	8.35	93.4	6.77						
		Surface	0.62	23.31	41.41	26.55	8.38	101.9	7.46						
	BSR2	Bottom	51.22	20.19	52.22	34.44	7.79	9.6	0.71	0.51	99.24			0.25	0.025
		Mid-Depth	25.31	23.21	43.78	28.25	8.31	86.0	6.24						
		Surface	0.71	23.01	39.98	25.54	8.39	99.1	7.34						
S Horn Island	BSR3	Bottom	44.54	22.72	47.04	30.61	7.93	26.1	1.89		99.76	0.07		0.17	0.049
		Mid-Depth	25.05	23.34	41.20	26.40	8.37	89.0	6.52						
		Surface	0.73	23.33	41.17	26.38	8.37	94.3	6.90						
	BSR4	Bottom	43.48	23.74	43.04	27.71	8.28	69.4	5.01		7.51	73.51	18.99		0.871
		Mid-Depth	21.39	23.50	42.14	27.07	8.40	93.4	6.80						
		Surface	0.23	23.61	41.93	26.92	8.39	99.7	7.25						

BS = Borrow Site; BSR = Borrow Site Reference

Table 6. Summary of the benthic macroinfaunal data for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Location	Station	Rep	No of Taxa	No of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Eastern Borrow SE Petit Bois Island	**BS1**	A	27	167	4175	26	0.8	3931.3	1100.6	52	629	2.57	0.65
		B	26	136	3400								
		C	25	214	5350								
		D	26	112	2800								
	BS2	A	16	100	2500	19	3.6	2043.8	315.8	42	327	2.35	0.63
		B	19	79	1975								
		C	17	71	1775								
		D	24	77	1925								
	BS3	A	48	383	9575	38.3	8.4	5181.3	3368.8	90	829	2.89	0.64
		B	29	68	1700								
		C	42	231	5775								
		D	34	147	3675								
	BS4	A	23	131	3275	21.8	1.0	3125.0	974.0	49	500	2.19	0.56
		B	21	71	1775								
		C	22	164	4100								
		D	21	134	3350								
Western Borrow SW Horn Island	**BS5**	A	16	33	825	18.8	2.1	1181.3	245.3	41	189	3.04	0.82
		B	19	52	1300								
		C	19	49	1225								
		D	21	55	1375								
	BS6	A	15	37	925	18	7.0	1062.5	461.2	38	170	3.17	0.87
		B	17	60	1500								
		C	28	54	1350								
		D	12	19	475								
	BS7	A	34	120	3000	33.3	10.4	3318.8	1394.2	74	531	3.39	0.79
		B	30	114	2850								
		C	47	213	5325								
		D	22	84	2100								
	BS8	A	23	192	4800	23.3	3.4	5056.3	1367.2	49	809	1.88	0.48
		B	20	185	4625								
		C	22	152	3800								
		D	28	280	7000								
Western Borrow S Ship Island	**BS9**	A	19	112	2800	18.5	9.2	3037.5	1516.9	42	486	2.21	0.59
		B	6	45	1125								
		C	21	191	4775								
		D	28	138	3450								
	BS10	A	9	34	850	7.3	3.9	625.0	397.4	15	100	1.80	0.66
		B	11	37	925								
		C	2	2	50								
		D	7	27	675								
	BS11	A	6	10	250	6.5	1.7	387.5	236.7	12	62	1.83	0.74
		B	9	15	375								
		C	6	29	725								
		D	5	8	200								
	BS12	A	10	28	700	7.8	2.6	737.5	126.7	14	118	1.69	0.64
		B	5	33	825								
		C	10	34	850								
		D	6	23	575								
	BS13	A	11	33	825	9.5	1.7	700.0	340.3	21	112	2.28	0.75
		B	8	17	425								
		C	11	45	1125								
		D	8	17	425								
	BS14	A	8	33	825	7.3	2.2	506.3	306.4	17	81	2.20	0.78
		B	10	28	700								
		C	5	13	325								
		D	6	7	175								
Western Borrow S Cat Island	**BS15**	A	6	11	275	5.5	1.3	281.3	77.4	12	45	1.94	0.78
		B	5	7	175								
		C	4	13	325								
		D	7	14	350								
	BS16	A	29	314	7850	21.3	5.3	4812.5	2267.0	41	770	2.08	0.56
		B	17	95	2375								
		C	19	173	4325								
		D	20	188	4700								
Referendce Sites SE Petit Bois Island	**BSR1**	A	13	37	925	13.8	1.7	987.5	261.8	26	158	2.56	0.79
		B	12	26	650								
		C	14	45	1125								
		D	16	50	1250								
	BSR2	A	24	74	1850	22.5	2.4	1512.5	228.7	49	242	3.01	0.77
		B	20	58	1450								
		C	25	56	1400								
		D	21	54	1350								
South Horn Island	**BSR3**	A	20	44	1100	18	2.8	981.3	285.3	38	157	3.07	0.84
		B	14	28	700								
		C	18	53	1325								
		D	20	32	800								
	BSR4	A	25	70	1750	21	3.6	1318.8	321.0	44	211	3.05	0.80
		B	23	50	1250								
		C	18	39	975								
		D	18	52	1300								

Table 7. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

	Eastern Borrow Area								Western Borrow Area								Reference Stations			
Taxa	**BS1**	**BS2**	**BS3**	**BS4**	**BS5**	**BS6**	**BS7**	**BS8**	**BS9**	**BS10**	**BS11**	**BS12**	**BS13**	**BS14**	**BS15**	**BS16**	**BSR1**	**BSR2**	**BSR3**	**BSR4**
Annelida																				
Polychaeta																				
Diopatra cuprea						10.0								12.3	22.2					
Magelona papillicornis	20.0																			
Meredithia uebelackerae									19.3		41.9	50.8	13.4	25.9	35.6					
Mediomastus (LPIL)			16.2	29.6	19.0		11.1	18.0	28.0		14.5	16.9	16.1	25.9	13.3	47.7	12.7		12.7	11.4
Paramphinome sp. B										17.0			33.9							
Paraprionospio pinnata		41.6	32.7	38.0	13.2		13.9	54.1	22.6	47.0						12.6	29.7	11.2	10.8	21.3
Spiophanes bombyx		16.2																26.0		
Cnidaria																				
Anthozoa																				
Actiniaria (LPIL)	25.8																			
Mollusca																				
Bivalvia																				
Nuculana concentrica										11.0										
Semele proficua	13.2																			
Gastropods																				
Nassarius acutus																				
Nemertea																				
Nemertea (LPIL)											17.7	10.2								
Sipuncula																				
Phascolion strombi									10.5											

Table 8. Summary of the benthic macroinfaunal data for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Location	Station	Rep	No of Taxa	No of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Eastern Borrow SE Petit Bois Island	**BS1**	A	9	54	1350	13.8	3.2	2298.4	635.5	34	367	1.24	0.35
		B	15	101	2525								
		C	15	106	2669								
		D	16	106	2650								
	BS2	A	7	12	300	12.5	5.4	562.5	183.1	32	90	3.01	0.87
		B	12	27	675								
		C	11	23	575								
		D	20	28	700								
	BS3	A	20	23	575	21.3	8.2	1325.0	939.6	58	212	3.37	0.83
		B	18	73	1825								
		C	14	20	500								
		D	33	96	2400								
	BS4	A	10	18	450	9.3	3.8	512.5	269.6	20	82	2.52	0.84
		B	14	36	900								
		C	8	17	425								
		D	5	11	275								
Western Borrow SW Horn Island	**BS5**	A	11	28	700	10.5	0.6	831.3	328.7	23	133	2.35	0.68
		B	10	50	1250								
		C	11	36	900								
		D	10	19	475								
	BS6	A	6	11	275	9.8	2.6	450.0	167.1	22	72	2.79	0.90
		B	12	18	450								
		C	10	16	400								
		D	11	27	675								
	BS7	A	3	22	550	9.5	4.9	781.3	162.5	21	125	2.22	0.73
		B	10	32	800								
		C	15	34	850								
		D	10	37	925								
	BS8	A	8	13	325	7.5	1.3	406.3	71.8	15	65	2.22	0.82
		B	6	20	500								
		C	7	16	400								
		D	9	16	400								
Western Borrow S Ship Island	**BS9**	A	13	56	1400	20.3	5.3	1968.8	541.4	37	315	2.53	0.70
		B	20	78	1950								
		C	23	73	1825								
		D	25	108	2700								
	BS10	A	6	11	275	4.0	2.4	175.0	106.1	9	28	1.80	0.82
		B	3	5	125								
		C	1	2	50								
		D	6	10	250								
	BS11	A	1	4	100	1.3	0.5	100.0	54.0	2	16	–	–
		B	2	5	125								
		C	1	6	150								
		D	1	1	25								
	BS12	A	7	22	550	3	2.7	318.8	172.5	8	51	1.02	0.49
		B	2	14	350								
		C	2	7	175								
		D	1	8	200								
	BS13	A	3	5	125	3.8	1.7	356.3	205.5	6	57	1.42	0.80
		B	6	19	475								
		C	2	10	250								
		D	4	23	575								
	BS14	A	4	6	150	2.5	1.7	118.8	37.5	6	19	1.23	0.69
		B	1	3	75								
		C	1	4	100								
		D	4	6	150								
Western Borrow S Cat Island	**BS15**	A	2	5	125	2.5	0.6	143.8	55.4	5	23	1.29	0.80
		B	2	3	75								
		C	3	7	175								
		D	3	8	200								
	BS16	A	17	28	700	14.8	2.9	850.0	108.0	33	136	2.91	0.83
		B	14	36	900								
		C	11	34	850								
		D	17	38	950								
Reference Sites SE Petit Bois Island	**BSR1**	A	5	11	275	5.8	0.5	250.0	35.4	13	40	1.97	0.77
		B	6	10	250								
		C	6	8	200								
		D	6	11	275								
	BSR2	A	9	13	325	17.8	6.9	937.5	432.8	51	150	3.08	0.78
		B	25	53	1325								
		C	16	39	975								
		D	21	45	1125								
South Horn Island	**BSR3**	A	8	20	500	10.0	3.4	568.8	292.5	25	91	2.49	0.77
		B	9	16	400								
		C	8	15	375								
		D	15	40	1000								
	BSR4	A	6	12	300	7.3	1.5	356.3	132.9	19	57	2.42	0.82
		B	8	17	425								
		C	6	8	200								
		D	9	20	500								

Table 9. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

	Eastern Borrow Area							Western Borrow Area									Reference Stations			
Taxa	**BS1**	**BS2**	**BS3**	**BS4**	**BS5**	**BS6**	**BS7**	**BS8**	**BS9**	**BS10**	**BS11**	**BS12**	**BS13**	**BS14**	**BS15**	**BS16**	**BSR1**	**BSR2**	**BSR3**	**BSR4**
Annelida																				
Polychaeta																				
Glycinde solitaria								10.8												
Meredithia uebelackerae			13.7	19.5	24.1		37.6	13.8	37.8	17.9	87.5	74.5	12.3	63.2	52.2		37.5		11.0	28.1
Mediomastus (LPIL)					21.8														36.3	
Nereis micromma															13.0	10.3				
Paramphinome sp. B													35.1		21.7					
Paraprionospio pinnata		13.3		11.0	16.5		17.6	27.7		32.1			15.8				10.0			14.0
Scoletoma verrilli																				10.5
Sigambra tentaculata								16.9		25.0	12.5		33.3				22.5			
Arthropoda																				
Malacostraca																				
Pinnixa (LPIL)														10.5						
Mollusca																				
Gastropoda																				
Nassarius acutus														10.5		22.1				
Nemertea																				
Nemertea (LPIL)				15.9		15.3														
Sipuncula																				
Phascolion strombi			10.4																	
Chordata																				
Leptocardii																				
Branchiostoma (LPIL)	77.5	21.1																33.3		

Table 10. Summary of the benthic macroinfaunal data for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, Apr-May 2011.

Location	Station	Rep	No of Taxa	No of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Eastern Borrow SE Petit Bois Island	**BS1**	A	25	83	2075	25	1.6	1743.8	271.9	53	279	3.20	0.81
		B	25	74	1850								
		C	23	63	1575								
		D	27	59	1475								
	BS2	A	29	67	1675	26	4.1	1706.3	224.9	64	273	3.49	0.84
		B	20	65	1625								
		C	27	81	2025								
		D	28	60	1500								
	BS3	A	34	79	1975	29	6.3	1931.3	734.4	62	309	3.32	0.80
		B	27	65	1625								
		C	34	117	2925								
		D	21	48	1200								
	BS4	A	42	174	4350	39.3	6.4	4518.8	1027.4	79	723	3.14	0.72
		B	31	185	4625								
		C	38	132	3300								
		D	46	232	5800								
Western Borrow SW Horn Island	**BS5**	A	7	22	550	7.5	4.8	412.5	242.8	20	66	2.47	0.82
		B	1	2	50								
		C	12	22	550								
		D	10	20	500								
	BS6	A	4	7	175	6.3	3.3	281.3	82.6	16	45	2.26	0.82
		B	11	15	375								
		C	4	12	300								
		D	6	11	275								
	BS7	A	11	26	650	9.5	2.6	750.0	196.9	22	120	2.21	0.71
		B	6	23	575								
		C	12	41	1025								
		D	9	30	750								
	BS8	A	11	33	825	6.8	3.1	406.3	324.9	16	65	2.35	0.85
		B	7	20	500								
		C	4	5	125								
		D	5	7	175								
Western Borrow S Ship Island	**BS9**	A	34	217	5425	20.3	11.9	2918.8	1735.7	50	467	2.24	0.57
		B	26	103	2575								
		C	8	89	2225								
		D	13	58	1450								
	BS10	A	8	25	625	10.8	2.2	975.0	671.8	20	156	2.41	0.80
		B	13	79	1975								
		C	10	30	750								
		D	12	22	550								
	BS11	A	2	3	75	5.3	3.3	281.3	238.4	12	45	2.15	0.86
		B	9	13	325								
		C	3	5	125								
		D	7	24	600								
	BS12	A	13	24	600	10.8	3.3	712.5	356.8	23	114	2.58	0.82
		B	6	12	300								
		C	13	46	1150								
		D	11	32	800								
	BS13	A	14	48	1200	9.8	3.1	850.0	404.7	20	136	2.36	0.79
		B	7	19	475								
		C	10	48	1200								
		D	8	21	525								
	BS14	A	6	15	375	8.8	4.1	600.0	433.5	19	96	2.22	0.75
		B	14	50	1250								
		C	10	15	375								
		D	5	16	400								
Western Borrow S Cat Island	**BS15**	A	4	5	125	11	6.7	656.3	652.7	27	105	2.65	0.80
		B	9	22	550								
		C	20	64	1600								
		D	11	14	350								
	BS16	A	20	209	5225	21	1.8	10206.3	4107.1	38	1633	1.01	0.28
		B	22	344	8625								
		C	19	577	14425								
		D	23	502	12550								
Reference Sites SE Petit Bois Island	**BSR1**	A	6	13	325	7.3	2.1	350.0	124.2	19	56	2.26	0.77
		B	9	20	500								
		C	9	15	375								
		D	5	8	200								
	BSR2	A	39	140	3500	24.8	10.1	1918.8	1142.3	62	307	3.23	0.78
		B	15	35	875								
		C	22	54	1350								
		D	23	78	1950								
South Horn Island	**BSR3**	A	7	12	300	6.5	0.6	275.0	84.2	15	44	2.40	0.89
		B	6	10	250								
		C	6	7	175								
		D	7	15	375								
	BSR4	A	8	13	325	11.8	4.5	743.8	419.0	29	119	2.75	0.82
		B	8	18	450								
		C	14	41	1025								
		D	17	47	1175								

Table 11. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Borrow Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

	Eastern (E Petit Bois, West Dauphin Island)						S West Horn Island				S Ship Island				West Ship and East Cat Island					
Taxa	**BS1**	**BS2**	**BS3**	**BS4**	**BSR1**	**BSR2**	**BSR3**	**BSR4**	**BS5**	**BS6**	**BS7**	**BS8**	**BS9**	**BS10**	**BS11**	**BS12**	**BS13**	**BS14**	**BS15**	**BS16**
Annelida																				
Polychaeta																				
Diopatra cuprea							11.4													
Glycinde solitaria												12.3		10.5						
Mediomastus (LPIL)		10.3		22.8	25.0		18.2	22.7	16.7	11.1	22.5	12.3	41.5				20.6	15.6	12.4	
Meredithia uebelackerae					30.4			13.4	25.8	31.1	35.0	21.5	22.7		24.4	21.1	12.5	35.4	24.8	
Paramphinome sp. B														12.8			11.0			
Paraprionospio pinnata															13.3	12.3				
Sigambra tentaculata														10.3	17.8	14.9	19.9	12.5		
Spionidae (LPIL)		12.1																		
Tharys acutus																				76.5
Arthropoda																				
Malacostraca																				
Microprotopus raneyi	17.9																		12.4	
Pinnixa (LPIL)												18.5		25.0	13.3					
Echinodermata																				
Ophiuroidea																				
Amphiuridae (LPIL)							13.6													
Mollusca																				
Bivalvia																				
Bivalvia (LPIL)						22.1														
Nuculana (LPIL)							18.2													
Nuculana acuta				12.0																
Nuculana carpenteri										17.8										
Nuculana concentrica									13.6											
Tellina (LPIL)			17.8																	
Chordata																				
Leptocardii																				
Branchiostoma (LPIL)	10.0																			

Table 12. Water quality and sediment data for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Island	Location	Station	Depth	DateTime M/D/Y	Depth ft	Temp C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO Conc mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Petit Bois	**East**	PS1	Bottom	6/2/10 10:32	16.71	27.99	20.87	12.44	8.34	94.3	6.89	0.1	99.7	–	–	0.20	0.07
			Mid-Depth	6/2/10 10:34	9.15	27.97	20.25	12.04	8.37	105.6	7.73						
			Surface	6/2/10 10:35	0.94	28.20	19.78	11.73	8.40	111.0	8.11						
		PS2	Bottom	6/2/10 13:10	12.64	26.68	25.39	15.44	7.92	90.4	6.65	0	99.8	–	–	0.20	0.05
			Mid-Depth	6/2/10 13:11	5.40	28.45	20.34	12.09	8.18	120.0	8.71						
			Surface	6/2/10 13:12	1.76	28.81	19.73	11.69	8.17	118.5	8.57						
		PS3	Bottom	6/2/10 11:32	14.15	28.03	20.98	12.51	8.00	110.9	8.09	0	99.34	–	–	0.66	0.07
			Mid-Depth	6/2/10 11:33	7.08	28.15	19.58	11.60	8.09	113.4	8.30						
			Surface	6/2/10 11:34	1.79	28.72	18.56	10.94	8.11	115.3	8.39						
		PS4	Bottom	6/2/10 12:20	9.14	28.27	21.01	12.53	8.08	115.7	8.41	0.08	99.64	–	–	0.28	0.10
			Mid-Depth	6/2/10 12:21	5.12	28.72	19.40	11.48	8.15	116.5	8.45						
			Surface	6/2/10 12:21	1.99	29.04	19.31	11.42	8.17	116.9	8.44						
Horn	**Eastern Tip**	PS5	Bottom	6/7/10 8:59	14.78	28.33	19.64	11.64	7.74	89.2	6.51	0.29	95.29	–	–	4.42	0.06
			Mid-Depth	6/7/10 9:00	8.52	28.48	17.68	10.38	7.65	95.5	7.00						
			Surface	6/7/10 9:01	2.44	28.74	17.38	10.19	7.74	100.7	7.36						
		PS6	Bottom	6/7/10 9:43	15.68	28.42	19.19	11.34	8.07	90.0	6.57	0.5	98.93	–	–	0.57	0.06
			Mid-Depth	6/7/10 9:44	7.58	28.73	17.96	10.55	8.06	100.8	7.34						
			Surface	6/7/10 9:45	1.98	28.83	14.12	8.13	8.10	109.6	8.09						
		PS7	Bottom	6/7/10 10:18	10.73	28.52	19.13	11.31	8.31	95.6	6.97	0	98.00	–	–	2.00	0.08
			Mid-Depth	6/7/10 10:19	5.35	28.63	18.34	10.80	8.18	101.4	7.40						
			Surface	6/7/10 10:20	1.86	29.36	12.53	7.13	8.24	115.4	8.48						
		PS8	Bottom	6/7/10 11:04	6.84	28.45	19.06	11.26	8.12	85.3	6.22	0	98.34	–	–	0.66	0.08
			Mid-Depth	6/7/10 11:04	3.50	28.94	16.99	9.93	8.18	95.2	6.94						
			Surface	6/7/10 11:05	1.58	29.67	14.40	8.29	8.25	109.5	7.95						
		PS9	Bottom	6/7/10 11:39	18.15	23.42	30.30	18.80	7.48	17.1	1.30	0	99.01	–	–	0.99	0.03
			Mid-Depth	6/7/10 11:40	9.43	24.40	29.16	18.01	7.62	27.0	2.04						
			Surface	6/7/10 11:41	1.86	29.33	16.47	9.60	8.33	110.4	8.01						
Ship	**East**	PS10	Bottom	6/8/10 8:28	7.22	29.43	19.15	11.31	8.68	129.3	9.28	0	98.82	–	–	0.18	0.057
			Mid-Depth	6/8/10 8:29	3.51	29.51	19.14	11.30	8.59	131.8	9.44						
			Surface	6/8/10 8:29	2.02	29.52	19.14	11.30	8.58	131.9	9.45						
		PS11	Bottom	6/8/10 9:09	7.09	29.31	19.86	11.76	8.57	107.0	7.67	0	98.81	–	–	0.19	0.069
			Mid-Depth	6/8/10 9:10	3.61	29.27	19.63	11.62	8.48	115.8	8.32						
			Surface	6/8/10 9:10	1.78	29.40	19.70	11.66	8.50	119.1	8.53						
		PS12	Bottom	6/8/10 9:39	16.48	28.42	20.39	12.12	8.26	71.3	5.18	0	98.39	–	–	1.61	0.078
			Mid-Depth	6/8/10 9:40	7.59	29.46	18.70	11.01	8.36	138.8	9.96						
			Surface	6/8/10 9:41	1.90	29.50	18.70	11.02	8.37	139.7	10.02						
		PS13	Bottom	6/8/10 10:13	7.06	28.32	21.76	13.02	8.48	111.1	8.04	0	98.45	–	–	0.55	0.064
			Mid-Depth	6/8/10 10:14	3.02	29.85	19.47	11.50	8.59	130.3	9.27						
			Surface	6/8/10 10:15	1.55	29.85	19.46	11.50	8.58	131.0	9.32						
		PS14	Bottom	6/8/10 10:39	19.75	28.67	20.73	12.34	8.25	68.6	4.95	0.07	99.04	–	–	0.89	0.083
			Mid-Depth	6/8/10 10:41	9.42	29.76	19.18	11.32	8.44	128.8	9.19						
			Surface	6/8/10 10:41	2.48	30.05	19.06	11.24	8.47	134.0	9.51						
	Camille Cut	PS15	Bottom	6/8/10 12:03	6.78	25.82	26.14	15.95	7.83	31.7	2.36	0	99.86	–	–	0.14	0.043
			Mid-Depth	6/8/10 12:04	2.78	29.13	19.67	11.65	8.33	88.4	6.36						
			Surface	6/8/10 12:04	1.11	29.32	19.57	11.58	8.36	101.5	7.28						
		PS16	Bottom	6/8/10 12:32	5.29	28.38	20.58	12.25	7.94	90.7	6.59	0	99.89	–	–	0.11	0.046
			Mid-Depth	6/8/10 12:32	2.47	29.54	19.06	11.25	8.11	117.1	8.39						
			Surface	6/8/10 12:33	0.90	29.57	19.04	11.23	8.12	120.1	8.60						
		PS17	Bottom	6/8/10 12:52	5.24	27.85	21.77	13.03	7.83	93.5	6.83	0	99.33	–	–	0.67	0.043
			Mid-Depth	6/8/10 12:52	2.16	29.53	19.10	11.28	8.11	116.2	8.32						
			Surface	6/8/10 12:53	0.94	29.58	19.05	11.24	8.15	125.5	8.99						

Table 12 continued:

Island	Location	Station	Depth	DateTime M/D/Y	Depth ft	Temp C	SpCond mS/cm	Salinity ppt	pH	ODO% %	ODO Conc mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
	West Sound Side	PS18	Bottom	6/8/10 13:23	3.66	29.84	19.61	11.60	8.48	145.4	10.34	0	99.28	–	–	0.72	0.053
			Mid-Depth	6/8/10 13:24	1.75	30.20	19.54	11.55	8.47	149.2	10.55						
			Surface	6/8/10 13:24	0.41	30.20	19.55	11.55	8.46	149.8	10.59						
Cat	**Eastern Side**	PS19	Bottom	6/3/10 12:19	8.74	27.62	20.14	11.97	8.60	89.7	6.61	0	98.51	–	–	1.49	0.10
			Mid-Depth	6/3/10 12:20	4.31	27.61	20.13	11.97	8.55	112.2	8.27						
			Surface	6/3/10 12:21	1.57	27.62	20.13	11.97	8.54	112.8	8.31						
		PS20	Bottom	6/3/10 10:19	10.06	28.21	21.31	12.73	8.40	90.9	6.61	0	98.27	–	–	1.73	0.04
			Mid-Depth	6/3/10 10:20	5.19	28.23	21.17	12.63	8.39	111.4	8.10						
			Surface	6/3/10 10:20	0.54	28.21	21.15	12.62	8.39	112.8	8.20						
Reference Sites	**Sound Btwn East Cat and West Ship**	PSR1	Bottom	6/8/10 13:58	15.75	24.49	28.05	17.26	7.13	5.5	0.41	0	5.15	57.47	37.38	–	1.392
			Mid-Depth	6/8/10 13:59	8.50	29.40	19.18	11.33	8.25	133.0	9.55						
			Surface	6/8/10 14:00	1.37	30.64	17.75	10.39	8.34	142.0	10.03						
	North in MS Sound	PSR2	Bottom	6/8/10 7:54	18.04	25.23	29.09	17.95	7.65	5.9	0.44	0	28.39	41.48	30.13	–	0.707
			Mid-Depth	6/8/10 7:55	9.17	29.20	19.14	11.30	8.41	106.5	7.67						
			Surface	6/8/10 7:56	1.36	29.24	19.09	11.27	8.43	110.1	7.92						
	Western Tip North in MS Sound	PSR3	Bottom	6/7/10 13:35	14.28	28.38	19.14	11.31	8.31	92.9	6.78	0	4.00	46.42	49.57	–	1.36
			Mid-Depth	6/7/10 13:36	7.15	28.50	18.94	11.19	8.24	87.5	6.38						
			Surface	6/7/10 13:37	1.94	30.24	15.81	9.17	8.31	124.8	8.93						
	Eastern Tip North in MS Sound	PSR4	Bottom	6/7/10 12:25	13.24	28.35	19.75	11.71	7.97	53.3	3.89	0.44	65.68	18.08	15.8	–	0.47
			Mid-Depth	6/7/10 12:27	6.17	28.72	14.87	8.60	8.11	106.2	7.83						
			Surface	6/7/10 12:28	1.72	29.89	11.28	6.36	8.26	120.7	8.83						
	North in MS Sound	PSR5	Bottom	6/7/10 7:54	16.93	28.05	21.60	12.91	8.11	50.3	3.66	0	21.19	38.64	40.16	–	0.95
			Mid-Depth	6/7/10 7:55	8.46	28.70	18.29	10.77	8.28	98.8	7.20						
			Surface	6/7/10 7:56	1.08	28.68	17.38	10.18	8.27	100.6	7.36						

PS = Placment Site; PSR = Placement Site Reference

Table 13. Water quality data for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Island	Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Petit Bois	**East**	PS1	Bottom	16.44	28.080	27.250	16.660	7.890	71.2	5.08	0	90.3			9.70	0.088
			Mid-Depth	8.24	28.110	26.810	16.360	7.960	85.7	6.11						
			Surface	1.34	28.360	26.780	16.340	8.010	108.0	7.67						
		PS2	Bottom	11.14	28.800	26.910	16.420	8.120	107.4	7.57	0	99.93			0.07	0.019
			Mid-Depth	5.79	28.910	26.920	16.420	8.030	100.2	7.05						
			Surface	1.09	29.060	26.920	16.420	8.030	103.5	7.26						
		PS3	Bottom	11.25	28.320	27.200	16.620	8.050	103.3	7.33	0	99.93			0.07	0.05
			Mid-Depth	5.36	28.660	26.360	16.050	7.990	110.3	7.81						
			Surface	1.37	28.850	26.040	15.840	7.990	113.8	8.04						
		PS4	Bottom	8.60	28.760	26.890	16.410	8.030	114.1	8.05	0.07	99.1			0.82	0.05
			Mid-Depth	4.79	28.960	26.620	16.220	7.940	117.9	8.30						
			Surface	1.27	29.140	26.600	16.200	7.940	121.0	8.49						
Horn	**Eastern Tip**	PS5	Bottom	14.54	28.110	25.670	15.600	8.490	101.7	7.28	0.33	99.38			0.3	0.035
			Mid-Depth	5.56	27.900	24.510	14.840	8.460	103.5	7.47						
			Surface	1.11	27.890	24.500	14.830	8.440	103.4	7.47						
		PS6	Bottom	15.42	27.990	24.840	15.050	8.290	106.7	7.68	0.19	99.78			0.04	0.047
			Mid-Depth	7.60	28.000	24.300	14.690	8.170	104.1	7.51						
			Surface	1.60	28.020	24.130	14.580	8.150	104.4	7.54						
		PS7	Bottom	10.42	28.080	26.290	16.010	8.280	105.7	7.56	0.07	99.68	0.04		0.26	0.047
			Mid-Depth	5.55	28.080	24.260	14.660	8.230	100.1	7.21						
			Surface	1.74	28.200	23.630	14.240	8.210	105.4	7.60						
		PS8	Bottom	7.23	28.390	24.530	14.840	5.820	106.5	7.62	0.07	99.89			0.04	0.063
			Mid-Depth	3.72	28.390	24.510	14.830	5.950	107.0	7.66						
			Surface	1.16	28.420	24.490	14.810	6.120	107.8	7.72						
		PS9	Bottom	17.20	28.260	28.330	17.380	7.110	90.0	6.37	0.03	99.74			0.23	0.031
			Mid-Depth	8.56	28.250	26.140	15.910	7.010	83.9	5.99						
			Surface	1.15	28.320	25.720	15.630	7.050	99.2	7.08						
Ship	**East**	PS10	Bottom	10.23	28.040	51.290	33.610	6.850	88.2	5.72	0.06	99.6			0.34	0.038
			Mid-Depth	5.08	28.130	47.460	30.800	6.850	79.3	5.22						
			Surface	0.45	28.220	47.010	30.470	6.840	87.3	5.75						
		PS11N	Bottom	16.28	27.930	50.160	32.780	6.950	79.6	5.20	0.04	99.31			0.65	0.04
			Mid-Depth	8.42	27.900	49.500	32.290	7.000	75.1	4.92						
			Surface	0.67	27.870	49.090	32.000	7.040	78.4	5.15						
		PS12	Bottom	17.99	27.940	51.220	33.560	6.900	82.4	5.36	2.36	95.19			2.45	0.091
			Mid-Depth	8.69	27.900	50.630	33.130	6.930	73.7	4.80						
			Surface	0.58	27.910	48.780	31.770	6.920	76.8	5.05						
		PS13N	Bottom	17.02	27.960	49.670	32.410	6.900	79.7	5.21	0.14	99.58			0.28	0.016
			Mid-Depth	9.02	27.960	49.640	32.390	6.910	75.5	4.94						
			Surface	0.43	27.960	49.590	32.360	6.950	74.2	4.85						
		PS14N	Bottom	16.75	27.970	49.690	32.430	6.870	81.2	5.31	0	99.43			0.58	0.028
			Mid-Depth	8.55	27.970	49.630	32.390	6.950	77.4	5.06						
			Surface	0.72	27.980	49.560	32.340	7.000	75.2	4.92						
	Camille Cut	PS15	Bottom	8.14	28.390	45.190	29.150	6.860	102.9	6.81	0	98.55			1.45	0.037
			Mid-Depth	4.12	28.390	44.590	28.720	6.850	89.7	5.95						
			Surface	0.56	28.410	42.880	27.490	6.830	88.2	5.88						
		PS16	Bottom	4..998	28.540	41.580	26.560	6.930	112.8	7.55	0	99.89			0.11	0.037
			Mid-Depth	2.47	28.530	41.530	26.520	6.920	99.0	6.63						
			Surface	0.40	28.610	41.180	26.280	6.920	95.7	6.41						
		PS17	Bottom	4.60	28.720	40.960	26.110	6.950	108.9	7.28	0.03	99.63			0.34	0.043
			Mid-Depth	2.19	28.720	40.930	26.100	6.950	102.2	6.84						
			Surface	0.58	28.730	40.890	26.060	6.930	99.5	6.65						

Table 13 continued:

Island	Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
	West Sound Side	PS18	Bottom	3.98	29.600	38.370	24.260	6.880	129.7	8.63	0	99.86			0.14	0.039
			Mid-Depth	2.01	29.610	38.360	24.260	6.870	114.4	7.62						
			Surface	0.38	29.620	38.360	24.250	6.860	109.7	7.30						
Cat	**Eastern Side**	PS19	Bottom	10.28	27.480	25.310	15.370	8.350	85.4	6.19	0	99.81			0.19	0.06
			Mid-Depth	5.36	27.480	25.310	15.370	8.300	84.7	6.14						
			Surface	0.75	27.480	25.300	15.370	8.290	84.7	6.14						
		PS20	Bottom	10.73	27.610	24.960	15.140	8.100	90.6	6.56	0	99.68			0.32	0.053
			Mid-Depth	5.59	27.600	24.550	14.860	8.050	90.0	6.53						
			Surface	1.19	27.610	24.530	14.850	8.040	91.9	6.67						
Reference Sites	**Mississippi Sound**	PSR1	Bottom	16.30	28.160	25.980	15.800	7.990	89.1	6.37	0	5.22	54.49	40.3		1.37
			Mid-Depth	8.37	28.070	25.510	15.490	7.740	80.4	5.77						
			Surface	1.83	27.990	24.550	14.860	7.770	99.1	7.15						
		PSR2	Bottom	17.51	28.450	24.810	15.020	8.120	86.7	6.19	0	23.75	44.62	31.63		0.995
			Mid-Depth	9.37	28.340	23.810	14.360	8.090	96.8	6.95						
			Surface	0.75	28.230	23.420	14.110	8.090	103.7	7.48						
		PSR3	Bottom	12.78	28.000	23.930	14.450	7.530	104.5	7.55	0	5.37	51.97	42.66		1.486
			Mid-Depth	6.30	28.500	23.720	14.300	7.540	112.6	8.07						
			Surface	1.45	28.620	23.660	14.260	7.560	115.2	8.24						
		PSR4	Bottom	12.76	28.280	24.620	14.900	8.070	95.3	6.83	0.14	63.57	18.15	18.14		0.507
			Mid-Depth	6.30	29.090	22.970	13.790	8.160	121.7	8.66						
			Surface	0.21	29.080	22.960	13.790	8.160	125.2	8.91						
		PSR5	Bottom	16.65	28.290	27.860	17.060	5.990	88.3	6.26	0.1	34.8	36.84	28.26		0.841
			Mid-Depth	7.74	28.010	24.930	15.110	6.270	100.3	7.22						
			Surface	0.73	28.510	22.760	13.670	6.520	111.0	7.99						

PS = Placment Site; PSR = Placement Site Reference

Table 14. Water quality data for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, Apr-May 2011.

Island	Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Petit Bois	**East**	PS1	Bottom	16.40	24.17	39.46	25.18	7.91	72.8	5.78	0.08	99.61			0.32	0.055
			Mid-Depth	7.79	24.44	38.53	24.53	8.0	105.0	8.41						
			Surface	0.59	25.54	32.72	20.47	8.15	112.4	8.88						
		PS2	Bottom	5.95	23.20	40.80	26.13	8.31	98.8	7.26	0.07	99.62			0.31	0.03
			Mid-Depth	2.70	23.22	37.67	23.91	7.99	99.6	7.41						
			Surface	1.37	22.94	27.00	16.57	7.92	103.6	8.08						
		PS3	Bottom	10.66	24.44	39.29	25.06	8.12	98.9	7.86	0.11	99.82			0.07	0.072
			Mid-Depth	5.76	25.52	34.89	21.98	8.15	107.4	8.47						
			Surface	0.73	26.08	33.80	21.23	8.20	115.3	9.04						
		PS4	Bottom	8.75	23.23	39.86	25.46	7.49	95.0	7.01	0.1	99.67			0.23	0.04
			Mid-Depth	4.65	22.14	33.98	21.35	7.18	94.9	7.32						
			Surface	0.99	21.81	25.39	15.50	7.11	96.8	7.77						
Horn	**Eastern Tip**	PS5	Bottom	14.96	23.73	29.85	18.52	8.43	97.6	7.85	0.43	99.46	0.04		0.07	0.054
			Mid-Depth	7.59	24.06	26.43	16.18	8.48	108.9	8.79						
			Surface	0.94	24.37	25.37	15.48	8.51	115.8	9.31						
		PS6	Bottom	15.38	24.00	32.16	20.09	8.50	72.9	5.84	0.56	99.20			0.25	0.034
			Mid-Depth	7.71	23.82	28.27	17.43	8.48	109.1	8.86						
			Surface	0.64	24.30	26.47	16.22	8.50	116.6	9.39						
		PS7	Bottom	12.35	24.09	40.25	25.70	8.73	79.0	6.20	0.04	99.78			0.18	0.056
			Mid-Depth	6.20	23.09	38.54	24.54	8.80	99.4	8.09						
			Surface	0.92	22.99	38.31	34.37	8.81	104.3	8.58						
		PS8	Bottom	10.33	24.07	40.82	26.15	8.62	67.7	5.31		99.81			0.19	0.055
			Mid-Depth	4.76	23.35	39.86	25.46	8.69	105.8	8.58						
			Surface	0.65	23.06	25.40	15.51	8.67	107.1	8.81						
		PS9	Bottom	18.66	23.34	40.9	26.23	8.53	41.1	3.25		99.81	0.06	0.13		0.048
			Mid-Depth	9.32	24.00	40.31	25.77	8.64	84.8	6.68						
			Surface	0.90	23.29	26.39	16.17	8.65	103.3	8.46						
Ship	**East**	PS10	Bottom	5.62	22.97	38.83	24.73	9.14	91.7	6.82		99.76	0.09		0.15	0.051
			Mid-Depth	4.91	22.98	38.93	24.8	9.16	87.4	6.50						
			Surface	1.28	22.96	38.94	24.81	9.15	87.5	6.51						
		PS11N	Bottom	12.08	22.80	38.92	24.79	9.26	102.9	7.68		99.81			0.19	0.045
			Mid-Depth	7.07	22.77	38.85	24.75	9.16	92.0	6.87						
			Surface	1.35	22.58	38.36	24.41	9.14	92.9	6.97						
		PS12	Bottom	15.77	22.91	39.75	25.38	9.39	101.7	7.55		99.89	0.04		0.08	0.063
			Mid-Depth	7.70	22.91	39.73	25.37	9.31	92.3	6.85						
			Surface	0.89	22.88	39.73	25.37	9.27	92.6	6.87						
		PS13N	Bottom	14.99	22.89	39.32	25.08	9.0	91.4	6.80	0.08	99.72	0.08		0.12	0.048
			Mid-Depth	6.37	22.89	39.30	25.06	8.97	91.4	6.80						
			Surface	2.23	22.89	39.29	25.06	8.95	91.5	6.80						
		PS14N	Bottom	15.72	22.80	39.46	25.18	9.06	94.1	7.00	0.07	99.79			0.14	0.044
			Mid-Depth	6.85	22.75	39.06	24.89	8.97	93.5	6.98						
			Surface	2.05	22.61	38.30	24.36	8.95	94.8	7.12						
	Camille Cut	PS15	Bottom	8.18	22.33	34.89	21.98	9.38	104.2	7.97		99.77			0.23	0.037
			Mid-Depth	3.90	21.85	33.80	21.23	9.19	99.1	7.68						
			Surface	0.63	21.85	33.78	21.22	9.13	98.4	7.62						
		PS16	Bottom	5.30	22.87	37.17	23.56	9.27	107.4	8.06		99.76			0.24	0.037
			Mid-Depth	2.17	22.87	37.04	23.48	9.15	103.3	7.76						
			Surface	1.14	22.87	37.01	23.45	9.11	103.3	7.76						
		PS17	Bottom	4.28	22.21	35.57	22.45	8.99	104.9	8.02		99.79			0.21	0.039
			Mid-Depth	2.15	22.14	35.40	22.34	8.81	103.9	7.96						
			Surface	0.43	22.02	35.49	22.40	8.75	103.9	7.97						

Table 14 continued:

Island	Location	Station	Depth	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Sat	DO mg/L	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
		PS18	Bottom	19.92	24.81	35.41	22.35	7.81	58.6	4.58		55.32	28.74	15.94		0.888
			Mid-Depth	9.76	24.37	33.39	20.94	7.81	79.0	6.25						
			Surface	0.79	24.17	33.09	20.73	7.88	96.9	7.70						
Cat	**Eastern Side**	PS19	Bottom	9.01	22.46	32.15	20.08	8.99	98.8	7.63		99.92			0.08	0.04
			Mid-Depth	4.62	22.54	29.81	18.48	8.76	95.5	7.43						
			Surface	0.46	22.90	28.26	17.42	8.73	106.8	8.30						
		PS20	Bottom	7.95	22.65	33.54	21.04	8.47	97.6	7.46		99.49	0.04		0.47	0.048
			Mid-Depth	3.26	22.52	32.80	20.53	7.77	98.4	7.56						
			Surface	0.62	22.72	27.58	16.96	7.76	101.4	7.93						
Reference Sites	**Mississippi Sound**	PSR1	Bottom	17.65	22.27	34.62	21.79	9.14	100.9	7.73		5.88	52.16	41.96		1.392
			Mid-Depth	9.77	22.13	33.38	20.93	8.80	95.7	7.39						
			Surface	1.93	22.40	33.08	20.72	8.69	100.3	7.71						
		PSR2	Bottom	16.57	24.52	32.71	20.46	8.51	40.0	3.17		56.07	27.72	16.21		0.657
			Mid-Depth	9.43	24.44	29.46	18.23	8.56	113.0	9.06						
			Surface	0.73	24.44	27.55	16.95	8.54	115.8	9.28						
		PSR3	Bottom	14.26	24.45	33.52	21.01	8.37	47.1	3.71		4.78	62.58	32.63		1.417
			Mid-Depth	6.88	24.53	28.29	17.48	8.43	117.2	9.32						
			Surface	0.45	24.76	27.64	16.99	8.43	123.3	9.79						
		PSR4	Bottom	13.80	24.23	35.57	22.45	8.47	60.7	4.85	0.31	97.69	0.59		1.41	0.253
			Mid-Depth	7.10	23.26	33.39	20.94	8.42	97.2	7.98						
			Surface	0.62	23.26	33.07	20.70	8.38	98.9	8.10						
		PSR5	Bottom	18.43	23.57	39.10	24.90	8.21	71.1	5.23		40.73	41.89	17.38		0.732
			Mid-Depth	9.62	22.54	32.74	20.49	8.33	81.2	6.24						
			Surface	0.75	22.05	29.53	18.30	8.36	89.9	7.06						

PS = Placment Site; PSR = Placement Site Reference

Table 15. Summary of the benthic macroinfaunal data for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Island	Location	Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Petit Bois	**East**	**PS1**	A	44	163	4075	43.3	7.0	4706.3	1751.5	99	753	3.29	0.72
			B	42	160	4000								
			C	52	292	7300								
			D	35	138	3450								
		PS2	A	21	53	1325	19.3	5.6	1975.0	548.9	45	316	2.50	0.66
			B	26	74	1850								
			C	17	106	2650								
			D	13	83	2075								
		PS3	A	32	143	3575	31.5	4.2	3750.0	1355.5	66	600	2.77	0.66
			B	27	89	2225								
			C	37	147	3675								
			D	30	221	5525								
		PS4	A	18	178	4450	16.5	3.1	3587.5	1872.7	37	574	1.00	0.28
			B	19	99	2475								
			C	12	66	1650								
			D	17	231	5775								
Horn	**Eastern Tip**	**PS5**	A	21	122	3050	26.5	5.2	3631.3	782.2	60	581	2.32	0.57
			B	24	115	2875								
			C	33	177	4425								
			D	28	167	4175								
		PS6	A	40	276	6900	28.5	10.1	5568.8	1967.4	61	891	2.34	0.57
			B	34	290	7250								
			C	20	207	5175								
			D	20	118	2950								
		PS7	A	11	57	1425	11.8	2.9	1556.3	354.4	26	249	2.02	0.62
			B	14	70	1750								
			C	14	45	1125								
			D	8	77	1925								
		PS8	A	12	356	8900	10.3	2.4	8343.8	2145.4	21	1335	0.59	0.19
			B	12	207	5175								
			C	10	392	9800								
			D	7	380	9500								
		PS9	A	9	22	550	12.3	6.6	1100.0	733.7	31	176	2.12	0.62
			B	15	48	1200								
			C	5	22	550								
			D	20	84	2100								
Ship	**East**	**PS10**	A	8	69	1725	8.5	3.3	1425.0	410.8	19	228	1.34	0.45
			B	13	60	1500								
			C	5	33	825								
			D	8	66	1650								
		PS11	A	12	298	7450	11.8	2.9	8175.0	1963.3	23	1308	0.73	0.23
			B	12	269	6725								
			C	15	443	11075								
			D	8	298	7450								
		PS12	A	20	153	3825	25.0	5.0	5612.5	1335.2	54	898	1.87	0.47
			B	22	282	7050								
			C	31	236	5900								

Table 15 continued:

Island	Location	Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
			D	27	227	5675								
		PS13	A	8	53	1325	8.3	2.5	2225.0	770.0	15	356	1.21	0.45
			B	11	126	3150								
			C	9	79	1975								
			D	5	98	2450								
		PS14	A	25	379	9475	25.8	9.0	8693.8	4080.1	54	1391	2.42	0.61
			B	15	180	4500								
			C	37	560	14000								
			D	26	272	6800								
	Camille Cut	**PS15**	A	13	462	11550	13.0	2.8	9550.0	3280.1	27	1528	0.96	0.29
			B	15	447	11175								
			C	15	433	10825								
			D	9	186	4650								
		PS16	A	11	338	8450	12.3	1.5	10562.5	2199.7	18	1690	1.14	0.39
			B	11	357	8925								
			C	13	481	12025								
			D	14	514	12850								
		PS17	A	14	281	7025	13.8	1.3	6487.5	1645.5	27	1038	0.75	0.23
			B	15	166	4150								
			C	12	271	6775								
			D	14	320	8000								
	West Sound Side	**PS18**	A	22	78	1950	20.0	2.9	1568.8	298.2	40	251	2.74	0.74
			B	18	66	1650								
			C	17	56	1400								
			D	23	51	1275								
Cat	**Eastern Side**	**PS19**	A	31	152	3800	30.3	3.6	4331.3	850.8	66	693	2.67	0.64
			B	27	146	3650								
			C	35	221	5525								
			D	28	174	4350								
		PS20	A	25	87	2175	22.5	1.7	2481.3	824.7	45	397	2.87	0.75
			B	21	87	2175								
			C	22	148	3700								
			D	22	75	1875								
Reference	**Sound Btwn East Ship and West Cat**	**PSR1**	A	20	43	1075	17.5	3.5	1131.3	278.7	35	181	2.83	0.80
			B	15	47	1175								
			C	14	32	800								
			D	21	59	1475								
	North in MS Sound	**PSR2**	A	13	55	1375	13.3	3.7	1181.3	234.9	29	189	2.39	0.71
			B	18	55	1375								
			C	13	43	1075								
			D	9	36	900								
	Western Tip North in MS Sound	**PSR3**	A	13	49	1225	13.8	4.3	1362.5	859.4	29	218	2.55	0.76
			B	17	50	1250								
			C	17	101	2525								
			D	8	18	450								
	Eastern Tip North in MS Sound	**PSR4**	A	17	31	775	17.5	5.3	1012.5	371.1	43	162	3.28	0.87
			B	15	50	1250								
			C	25	56	1400								
			D	13	25	625								
	North in MS Sound	**PSR5**	A	10	19	475	17.5	5.4	1187.5	649.5	39	190	3.08	0.84
			B	17	43	1075								
			C	21	46	1150								
			D	22	82	2050								

Table 16. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

	Petit Bois				Horn					East Ship					Camille Cut			West Ship	Cat		Placement Site Reference				
Taxa	**PS1**	**PS2**	**PS3**	**PS4**	**PS5**	**PS6**	**PS7**	**PS8**	**PS9**	**PS10**	**PS11**	**PS12**	**PS13**	**PS14**	**PS15**	**PS16**	**PS17**	**PS18**	**PS19**	**PS20**	**PSR1**	**PSR2**	**PSR3**	**PSR4**	**PSR5**
Annelida																									
Polychaeta																									
Cirratulidae (LPIL)																				19.9					
Magelona papillicornis									47.2	67.5			69.7												
Meredithia uebelackerae																								11.7	12.6
Mediomastus (LPIL)														29.5								23.8			
Mediomastus californiensis																			33.9						
Notomastus latericeus																							27.1		
Owenia fusiformis	14.7																								
Paramphinome sp. B																							12.8		
Paraprionospio pinnata																					23.2				
Polygordius (LPIL)		14.2			32.2	39.6																			
Sabaco elongatus																									13.2
Sigambra tentaculata																							10.1		
Spiophanes bombyx	22.6		11.3															17.5							
Synelmis ewingi							46.6																		
Arthropoda																									
Malacostraca																									
Acanthohaustorius intermedius							11.6																		
Acanthohaustorius uncinus																		29.9	13.1	20.7					
Pinnixa (LPIL)		35.4																							
Pinnixa chacei		15.5																							
Protohaustorius wigleyi													11.0												
Chordata																									
Leptocardia																									
Branchiostoma (LPIL)			11.7		34.4	18.5																			
Cnidaria																									
Anthozoa																									
Actiniaria (LPIL)												60.4		20.8											
Echinodermata																									
Ophiuroidea																									
Amphiuridae (LPIL)																									10.0
Mollusca																									
Bivalvia																									
Gemma gemma				82.4				88.0			85.9				78.8	72.5	86.1								
Nuculana concentrica																						27.0			
Gastropoda																									
Caecum johnsoni			31.8			10.1																			
Nassarius acutus									16.5																

Table 17. Summary of the benthic macroinfaunal data for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Island	Location	Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Petit Bois	**East**	**PS1**	A	15	28	700	19.5	4.2	1000.0	224.5	36	160	3.09	0.86
			B	25	49	1225								
			C	20	39	975								
			D	18	44	1100								
		PS2	A	11	93	2325	8.0	2.2	1187.5	807.6	18	190	1.44	0.50
			B	8	17	425								
			C	6	43	1075								
			D	7	37	925								
		PS3	A	12	44	1100	16.3	3.0	1637.5	398.2	34	262	2.46	0.70
			B	17	79	1975								
			C	17	63	1575								
			D	19	76	1900								
		PS4	A	8	890	22250	7.3	2.2	16862.5	4407.7	17	2698	0.13	0.05
			B	8	524	13100								
			C	9	747	18375								
			D	4	537	13425								
Horn	**Eastern Tip**	**PS5**	A	13	280	7000	14.8	3.9	5825.0	1286.1	34	932	0.88	0.25
			B	18	272	6800								
			C	10	206	5150								
			D	18	174	4350								
		PS6	A	18	386	9650	14.3	3.3	7562.5	1647.0	31	1210	1.49	0.43
			B	14	225	5625								
			C	15	296	7400								
			D	10	303	7575								
		PS7	A	7	27	675	8.0	0.8	593.8	124.8	17	95	2.09	0.74
			B	8	23	575								
			C	9	28	700								
			D	8	17	425								
		PS8	A	9	950	23750	9.0	1.4	33574.2	12852.8	16	3493	0.27	0.10
			B	8	992	43130								
			C	8	490	21304								
			D	11	1061	46112								
		PS9	A	7	32	800	9.5	4.4	518.8	247.8	24	83	2.56	0.81
			B	7	11	275								
			C	16	26	650								
			D	8	14	350								
Ship	**East**	**PS10**	A	9	66	1650	11.3	5.9	4068.8	3792.0	23	651	1.50	0.48
			B	4	42	1050								
			C	16	168	4200								
			D	16	375	9375								
		PS11	A	12	27	675	16.0	4.9	1593.8	1211.0	41	255	2.61	0.70
			B	22	133	3325								
			C	12	34	850								
			D	18	61	1525								
		PS12	A	15	43	1075	17.8	3.4	1387.5	332.6	43	222	2.72	0.72
			B	19	67	1675								
			C	15	45	1125								
			D	22	67	1675								

Table 17 continued:

Island	Location	Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Ship		**PS13**	A	19	81	2025	13.5	5.8	1431.3	624.0	29	229	2.04	0.61
			B	6	31	775								
			C	17	76	1900								
			D	12	41	1025								
		PS14	A	20	71	1775	18.3	6.9	1268.8	604.3	42	203	2.79	0.75
			B	15	38	950								
			C	11	23	575								
			D	27	71	1775								
	Camille Cut	**PS15**	A	14	1764	44100	17.8	3.3	44606.3	5068.5	32	7137	0.69	0.20
			B	20	1978	49450								
			C	21	1510	37750								
			D	16	1885	47125								
		PS16	A	11	2014	50350	11.3	1.7	40218.8	7624.7	18	6435	0.43	0.15
			B	12	1552	38800								
			C	13	1594	39850								
			D	9	1275	31875								
		PS17	A	14	1270	31750	13.0	1.4	33800.0	9696.9	19	5408	0.50	0.17
			B	9	950	23750								
			C	11	1882	47050								
			D	10	1306	32650								
		PS18	A	20	54	1350	18.8	2.1	1293.8	263.3	39	207	3.01	0.82
			B	21	40	1000								
			C	17	65	1625								
			D	17	48	1200								
Cat	**Eastern Side**	**PS19**	A	12	23	575	13.8	6.4	775.0	589.1	34	124	2.85	0.81
			B	8	15	375								
			C	23	66	1650								
			D	12	20	500								
		PS20	A	5	8	200	7.0	4.2	412.5	338.2	17	66	2.25	0.79
			B	11	18	450								
			C	10	35	875								
			D	2	5	125								
Reference	**Sound Btwn East Ship and West Cat**	**PSR1**	A	3	3	75	4.5	2.6	187.5	136.2	12	30	2.14	0.86
			B	5	10	250								
			C	8	14	350								
			D	2	3	75								
	North in MS Sound	**PSR2**	A	5	6	150	4.8	1.0	175.0	45.6	11	28	1.86	0.77
			B	4	8	200								
			C	4	5	125								
			D	6	9	225								
	Western Tip North in MS Sound	**PSR3**	A	4	7	175	4.3	1.9	275.0	151.4	13	44	1.68	0.65
			B	3	8	200								
			C	7	20	500								
			D	3	9	225								
	Eastern Tip North in MS Sound	**PSR4**	A	18	66	1625	14.0	3.7	987.5	496.0	29	158	2.79	0.83
			B	12	30	750								
			C	16	44	1100								
			D	10	19	475								
	North in MS Sound	**PSR5**	A	12	30	750	8.5	2.9	543.8	198.3	20	87	2.35	0.79
			B	8	16	400								
			C	9	27	675								
			D	5	14	350								

Table 18. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

	Petit Bois				Horn					East Ship					Camille Cut			West Ship	Cat		Placement Site Reference				
Taxa	**PS1**	**PS2**	**PS3**	**PS4**	**PS5**	**PS6**	**PS7**	**PS8**	**PS9**	**PS10**	**PS11**	**PS12**	**PS13**	**PS14**	**PS15**	**PS16**	**PS17**	**PS18**	**PS19**	**PS20**	**PSR1**	**PSR2**	**PSR3**	**PSR4**	**PSR5**
Annelida																									
Polychaeta																									
Cirratulidae (LPIL)												10.4							36.4						
Leitoscoloplos (LPIL)																		14.0							
Magelona papillicornis									10.8																
Meredithia uebelackerae																						46.4		17.7	24.1
Mediomastus (LPIL)												23.9	48.9	33.0					26.6					13.9	
Nephtys bucera							13.7																		
Paramphinome sp. B																					20.0				
Paraonis fulgens										53.9															
Paraprionospio pinnata																							56.8	10.1	
Polygordius (LPIL)		15.3																							
Synelmis ewingi							24.2																		
Arthropoda																									
Malacostraca																									
Acanthohaustorius intermedius							11.6																		
Acanthohaustorius sp. C																			12.1						
Chordata																									
Leptocardia																									
Branchiostoma (LPIL)	10.6		26.0		83.7	37.5	10.5				22.4	22.5	17.5							10.6					
Cnidaria																									
Anthozoa																									
Actiniaria (LPIL)																									
Mollusca																									
Bivalvia																									
Gemma gemma		62.1		98.0			25.3	95.4	32.5	22.7					85.9	90.6	89.9								
Nuculana concentrica																					10.0	10.7			
Tellina (LPIL)											10.6														
Gastropoda																									
Caecum johnsoni						40.3																			
Caecum imbricatum			25.2																						
Nassarius acutus																					30.0	10.7			14.9
Sipuncula																									
Sipunculidea																									
Phascolion strombi	15.6																								19.5
Nemertea (LPIL)																		15.0					11.4		

Table 19. Seasonal (June vs. September) comparison of taxa richness and density data for the Placement Site stations.

		June Mean (SD)	September Mean (SD)	F	df	Prob>F	ChiSquare	Prob>ChiSquare	Significance
Density	All Data	4048.25 (3289.8)	8068.47 (14135.5)				11.719	0.0006	***
Taxa	All Data	18.81 (9.36)	11.95 (5.70)	39.738	1,198	<0.0001			****
Density	Petit Bois	3504.69 (1664.19)	5153.13 (7223.20)				3.8419	0.05	*
Taxa	Petit Bois	27.63 (11.93)	12.75 (6.06)	22.298	1, 30	<0.0001			****
Density	Horn	4040.00 (3014.0)	9614.84 (13641.8)				0.1434	0.7049	ns
Taxa	Horn	17.85 (9.78)	11.10 (4.00)	7.099	1, 38	0.0113			*
Density	Ship	4616.67 (3558.79)	1840.63 (1799.0)				11.8621	0.0006	***
Taxa	Ship	16.54 (8.64)	15.92 (5.29)	0.038	1, 46	0.8463			ns
Density	Camille Cut	8866.7 (2875.10)	39541.7 (8365.90)				17.28	<0.0001	****
Taxa	Camille Cut	13.00 (1.91)	13.33 (3.96)	0	1, 22	0.9967			ns
Density	Cat	3406.25 (1256.82)	593.75 (485.09)				11.3108	0.0008	***
Taxa	Cat	26.38 (4.90)	10.38 (6.21)	19.8985	1, 14	0.0005			***
Density	Reference	1175.00 (489.23)	433.75 (388.85)				18.8702	<0.0001	****
Taxa	Reference	15.90 (4.48)	7.20 (4.47)	38.6374	1, 38	<0.0001			****

Table 20. Summary of the benthic macroinfaunal data for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Island	Location	Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Petit Bois	**East**	**PS1**	A	40	169	4335.9	42.8	3.6	4850.8	351.8	81	768	3.44	0.78
			B	48	204	5100								
			C	42	193	4917.4								
			D	41	202	5050								
		PS2	A	16	66	1668.5	17.8	2.4	2946.2	975.7	43	464	2.03	0.54
			B	21	111	2848.9								
			C	18	127	3267.4								
			D	16	160	4000								
		PS3	A	23	79	1975	17.3	4.0	1487.5	445.6	36	238	2.86	0.80
			B	14	47	1175								
			C	15	42	1050								
			D	17	70	1750								
		PS4	A	12	369	9225	13.5	3.0	11093.8	3821.4	27	1775	0.47	0.14
			B	18	622	15550								
			C	12	275	6875								
			D	12	509	12725								
Horn	**Eastern Tip**	**PS5**	A	27	377	9425	30.3	4.6	12474.7	3107.5	62	1993	1.22	0.3
			B	29	412	10337								
			C	28	639	15975								
			D	37	565	14162								
		PS6	A	31	728	18200	32.3	5.1	14287.5	3396.7	65	2286	1.27	0.30
			B	38	640	16000								
			C	34	438	10950								
			D	26	480	12000								
		PS7	A	15	116	2900	13.8	2.6	2312.5	972.6	30	370	2.06	0.61
			B	16	58	1450								
			C	10	61	1525								
			D	14	135	3375								
		PS8	A	20	677	16925	19.8	3.8	28470.4	14367.5	42	2907	0.67	0.18
			B	25	1067	46391								
			C	17	777	33783								
			D	17	386	16782.6								
		PS9	A	28	87	2175	30.5	2.5	2381.3	210.5	60	381	3.22	0.79
			B	30	102	2550								
			C	34	103	2575								
			D	30	89	2225								
Ship	**East**	**PS10**	A	9	34	850	11	4.4	1337.5	753.2	20	214	2.26	0.75
			B	13	84	2100								
			C	6	22	550								
			D	16	74	1850								
		PS11	A	25	84	2100	20.5	4.4	1793.8	421.0	45	287	2.26	0.59
			B	19	85	2125								
			C	15	49	1225								
			D	23	69	1725								
		PS12	A	31	195	4875	29.8	1.0	5493.8	730.1	49	879	2.60	0.67
			B	30	213	5325								
			C	29	262	6550								
			D	29	209	5225								

Table 20 continued:

Island	Location	Station	Rep	No. of Taxa	No. of Indvs	Density (no/m2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
Ship		**PS13**	A	14	50	1125	18.8	4.6	2412.5	955.8	35	391	2.32	0.65
			B	24	137	3425								
			C	16	98	2450								
			D	21	106	2650								
		PS14	A	18	83	2075	17.3	2.2	2187.5	105.1	37	350	1.96	0.54
			B	18	85	2125								
			C	19	90	2250								
			D	14	92	2300								
	Camille Cut	**PS15**	A	17	211	5275	16.8	1.0	4500.0	1431.3	27	720	1.95	0.59
			B	16	121	3025								
			C	18	244	6100								
			D	16	144	3600								
		PS16	A	14	538	13450	14.3	2.1	12887.5	1405.7	28	1966	0.88	0.26
			B	12	497	12425								
			C	14	411	10275								
			D	17	520	13000								
		PS17	A	15	934	23350	14.3	3.6	22912.5	5526.3	23	3666	0.59	0.19
			B	9	599	14975								
			C	17	1051	26275								
			D	16	1082	27050								
	West Tip North Shore	**PS18**	A	32	128	3200	30.5	5.1	3268.8	1132.4	59	523	3.03	0.74
			B	33	195	4875								
			C	23	92	2300								
			D	34	108	2700								
Cat	**Eastern Side**	**PS19**	A	29	96	2400	32.8	5.2	4862.5	2417.0	63	778	2.84	0.68
			B	40	279	6975								
			C	29	127	3175								
			D	33	276	6900								
		PS20	A	41	282	7050	25.3	11.6	3575.0	2501.9	50	572	2.74	0.70
			B	27	73	1825								
			C	17	67	1675								
			D	16	150	3750								
Reference	**Sound Btwn East Ship and West Cat**	**PSR1**	A	16	38	950	13	6.7	943.8	674.0	29	151	2.77	0.82
			B	17	39	975								
			C	16	70	1750								
			D	3	4	100								
	North in MS Sound	**PSR2**	A	31	56	1400	20.8	2.5	1512.5	192.0	41	242	2.99	0.80
			B	18	57	1425								
			C	24	57	1425								
			D	20	72	1800								
	Western Tip North in MS Sound	**PSR3**	A	14	45	1125	15.8	3.3	1031.3	243.6	27	165	2.69	0.82
			B	18	41	1025								
			C	12	28	70								
			D	19	51	1275								
	Eastern Tip North in MS Sound	**PSR4**	A	31	95	2375	36.8	3.9	3287.5	876.2	72	526	3.37	0.79
			B	38	177	4425								
			C	40	138	3450								
			D	38	116	2900								
	North in MS Sound	**PSR5**	A	6	16	400	9.8	3.5	643.8	185.3	23	103	2.38	0.76
			B	11	27	675								
			C	8	34	850								
			D	14	26	650								

Table 21. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Placement Site stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

	Petit Bois				Horn					East Ship					Camille Cut			West Ship	Cat		Placement Site Reference				
Taxa	**PS1**	**PS2**	**PS3**	**PS4**	**PS5**	**PS6**	**PS7**	**PS8**	**PS9**	**PS10**	**PS11**	**PS12**	**PS13**	**PS14**	**PS15**	**PS16**	**PS17**	**PS18**	**PS19**	**PS20**	**PSR1**	**PSR2**	**PSR3**	**PSR4**	**PSR5**
Annelida																									
Oligochaeta																									
Enchytraeidae (LPIL)																				26.0					
Tubificidae (LPIL)										32.2								24.1							
Polychaeta																									
Paramphinome sp. B																					11.3				
Mediomastus (LPIL)	15.1								13.4			27.4							26.1		18.5	18.2	23.0	14.4	19.4
Notomastus latericeus																							14.5	16.2	
Cirratulidae (LPIL)																				20.5					
Meredithia uebelackerae																						11.6			32.0
Nephtyidae (LPIL)			10.1																						
Nephtys bucera										10.3															
Leitoscoloplos (LPIL)																					11.9				
Paraonis fulgens															44.0										
Sigambra tentaculata																		11.3							
Synelmis ewingi							41.1																		
Polygordius (LPIL)	10.6	43.7	10.1		78.6	72.7													15.3						
Apoprionospio pygmaea									16.0																
Spiophanes bombyx			10.5									22.5													
Arthropoda																									
Malacostraca																									
Acanthohaustorius intermedius			19.7				22.4																		
Acanthohaustorius sp. C													34.0												
Protohaustorius wigleyi										10.3	53.3		24.9	56.9											
Pinnixa (LPIL)		21.4								12.6											11.3				
Mollusca																									
Bivalvia																									
Gemma gemma		10.4		92.5		12.1		88.7							21.1	79.0	86.9								

Table 22. Sediment texture and sediment TOC data for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Island		Station	DateTime M/D/Y	Depth	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Petit Bois	North	BT1	6/2/10 12:38	S	0	98.44	–	–	1.56	0.02
				M	0	99.2	–	–	0.8	0.02
				D	0.03	97.61	–	–	2.35	0.03
	North	BT3	6/2/10 13:19	S	0	99.93	–	–	0.07	0.02
				M	0	99.12	–	–	0.88	0.05
				D	0	99.08	–	–	0.92	0.05
	South	BT2	6/2/10 11:02	S	0.52	98.6	–	–	0.88	0.01
				M	0.16	99.39	–	–	0.45	0.01
				D	0.32	98.21	–	–	1.47	0.02
	South	BT4	6/2/10 11:53	S	0.06	98.58	–	–	1.35	0.02
				M	0.13	96.61	–	–	3.26	0.02
				D	0.07	99.55	–	–	0.38	0.02
Horn	North	BT5	6/7/10 10:49	S	0	99.51	–	–	0.49	0.03
				M	0	99.34	–	–	0.66	0.03
				D	0.18	99.47	–	–	0.35	0.04
	North	BT6	6/7/10 11:21	S	0	99.67	–	–	0.33	0.04
				M	0	98.93	–	–	1.07	0.04
				D	0	99.45	–	–	0.55	0.07
	South	BT7	6/7/10 10:03	S	0	98.85	–	–	1.15	0.03
				M	0.07	98.76	–	–	1.17	0.02
				D	0	99.04	–	–	0.96	0.03
	South	BT8	6/7/10 9:19	S	0.22	99.21	–	–	0.57	0.03
				M	0.97	97.81	–	–	1.22	0.02
				D	0.07	98.67	–	–	1.26	0.02
Ship	North	BT9	6/8/10 9:48	S	0	99.13	–	–	0.87	0.016
				M	0	99.45	–	–	0.55	0.043
				D	0	99.11	–	–	0.89	0.015
	North	BT10	6/8/10 10:45	S	0	99.59	–	–	0.41	0.018
				M	0	99.19	–	–	0.81	0.023
				D	0	99.58	–	–	0.42	0.027
	South	BT11	6/8/10 8:41	S	0	99.58	–	–	0.42	0.019
				M	0	98.41	–	–	1.59	0.02
				D	0	99.71	–	–	0.29	0.022
	South	BT12	6/8/10 10:11	S	0	99.05	–	–	0.94	0.016
				M	0	99.17	–	–	0.83	0.019
				D	0	99.93	–	–	0.07	0.02
Cat Island	West	BT13	6/3/10 13:35	S	0	99.09	–	–	0.91	0.04
				M	0.04	99.14	–	–	0.82	0.04
				D	0	99.05	–	–	0.95	0.03
	North East	BT15	6/3/10 12:41	S	0	99.4	0.04	0.56	–	0.02
				M	0	99.78	0.18	0.04	–	0.03
				D	0	96.05	0.14	3.81	–	0.05
	South East	BT16	6/3/10 12:03	S	0.04	99.17	–	–	0.75	0.03
				M	0	99.37	–	–	0.63	0.04
				D	0.46	98.47	0.68	0.39	–	0.04
Reference	North	BTR1	6/7/10 12:08	S	0	99.69	–	–	0.31	0.05
				M	0.49	98.7	–	–	0.81	0.07
				D	0	99.96	–	–	0.04	0.09
	South	BTR3	6/7/10 13:27	S	0.13	98.68	–	–	1.19	0.03
				M	0	99.24	–	–	0.76	0.03
				D	0.03	95.55	–	–	4.42	0.03
	North	BTR2	6/7/10 12:41	S	0	98.51	–	–	1.49	0.09
				M	0.19	99.59	–	–	0.22	0.06
				D	0	98.69	–	–	1.31	0.06
	South	BTR4	6/7/10 14:01	S	0.84	97.99	–	–	1.17	0.02
				M	0.95	98.46	–	–	0.59	0.02
				D	0.41	98.54	–	–	1.05	0.02

BT = Beach Transect; BTR = Beach Transect Reference

Table 23. Sediment texture and sediment TOC data for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Island		Station	Depth	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Petit Bois	North	BT1	S	0.51	99.23			0.26	0.006
			M	0.82	98.8			0.38	0.017
			D	0	99.84			0.16	0.026
	South	BT4	S	0.07	99.35	0.58			0.016
			M	0.04	99.67	0.3			0.024
			D	0.03	99.66			0.31	0.019
	North	BT3	S	0.11	99.89				0.020
			M	0	99.86			0.14	0.042
			D	0	99.84			0.16	0.034
	South	BT2	S	0.54	99.29			0.15	0.014
			M	0.38	99.26			0.35	0.015
			D	0.04	99.85			0.12	0.004
Horn	North	BT5	S	0	99.68			0.32	<0.001
			M	0	99.82			0.18	0.031
			D	0	99.97			0.03	0.029
	South	BT7	S	0.34	99.09			0.57	0.019
			M	0	98.32			1.68	0.030
			D	0.03	99.72			0.24	0.019
	North	BT6	S	0	99.55			0.45	0.035
			M	0	99.82			0.18	0.042
			D	0	99.02			0.98	0.052
	South	BT8	S	0	97.43			2.57	0.019
			M	0.04	99.55			0.41	0.035
			D	0	99.97			0.03	0.029
Ship	North	BT9	S	0	99.81			0.19	0.025
			M	0.07	99.4			0.53	0.036
			D	0	99.93			0.07	0.029
	South	BT11	S	0	99.45			0.55	0.006
			M	0	99.43			0.57	0.014
			D	0.26	99.67			0.08	0.010
	North	BT10	S	0	99.81			0.19	0.027
			M	0.14	99.62	0.1		0.24	0.044
			D	0	99.79			0.22	0.051
	South	BT12	S	0	99.57			0.44	0.016
			M	0.11	99.89				0.041
			D	0.30	99.7				0.033
Cat Island	North East	BT15	S	0	99.96			0.04	0.018
			M	0	99.9			0.10	0.013
			D	0	99.76			0.24	0.014
	West	BT13	S	0	99.87			0.13	<0.001
			M	0	99.7			0.30	0.176
			D	0	99.79			0.22	0.025
	South East	BT16	S	0	99.93			0.07	0.007
			M	0	47.36	27.94	24.69		0.464
			D	0.18	56.84	14.08	28.9		0.772
Reference	North	BTR1	S	0	99.83			0.17	0.029
			M	0	99.76			0.24	0.032
			D	0	99.81			0.19	0.051
	South	BTR3	S	0.38	99.5			0.13	<.001
			M	0.13	99.54			0.33	0.008
			D	0	99.97			0.03	0.014
	North	BTR2	S	0	99.64			0.36	0.026
			M	0	99.89			0.11	0.034
			D	0	99.64			0.36	0.032
	South	BTR4	S	0.38	99.53			0.08	0.003
			M	0.29	99.41			0.28	0.006
			D	0.10	99.72			0.17	0.005

BT = Beach Transect; BTR = Beach Transect Reference

Table 24. Sediment texture and sediment %TOC data for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Island		Station	Depth	%Gravel	%Sand	%Silt	%Clay	%Silt+%Clay	%TOC
Petit Bois	North	BT1	S		99.86			0.14	0.009
			M		99.84			0.13	0.013
			D		99.93			0.07	0.017
	South	BT4	S		99.82			0.18	0.008
			M	0.18	99.54			0.27	ND
			D		99.97			0.03	ND
	North	BT3	S		99.97			0.03	0.012
			M		99.85			0.15	0.015
			D		100.00				0.021
	South	BT2	S		99.86			0.14	ND
			M		99.44			0.56	0.014
			D		99.80			0.20	0.015
Horn	North	BT5	S		99.86			0.14	0.014
			M		99.96			0.04	0.028
			D	0.04	99.71			0.25	0.054
	South	BT7	S		100.0				ND
			M	0.06	99.84			0.10	ND
			D	0.12	99.6			0.28	0.005
	North	BT6	S		99.68			0.32	0.016
			M	0.03	99.84			0.13	0.014
			D	0.08	99.73			0.19	0.029
	South	BT8	S	0.35	99.46			0.19	ND
			M	0.10	99.84			0.06	ND
			D	0.15	99.74			0.11	ND
Ship	North	BT9	S	0.09	99.68			0.23	0.006
			M	0.07	99.55	0.11		0.26	0.011
			D		99.94			0.06	0.009
	South	BT11	S		99.80			0.20	0.006
			M		99.68			0.32	ND
			D	0.03	99.73			0.24	ND
	North	BT10	S		99.79			0.21	ND
			M	0.07	99.72			0.21	ND
			D		99.79			0.21	ND
	South	BT12	S		99.85			0.15	ND
			M	0.15	99.52			0.33	ND
			D	0.16	99.56			0.28	ND
Cat Island	North East	BT15	S	0.03	99.97				0.018
			M		99.91			0.09	0.015
			D		99.69			0.31	0.021
	West	BT13	S		99.71	0.03		0.26	ND
			M		99.77			0.23	0.006
			D		99.74			0.26	0.011
	South East	BT16	S		99.65			0.35	0.027
			M		99.96			0.04	0.028
			D		99.96			0.04	0.033
Reference	North	BTR1	S		99.53			0.47	0.056
			M		99.78			0.22	ND
			D		99.54			0.46	0.025
	South	BTR3	S		99.36			0.64	0.032
			M		99.86			0.14	0.022
			D		99.88			0.12	0.020
	North	BTR2	S		99.64			0.36	0.033
			M		99.70	0.04		0.26	0.052
			D		99.82			0.18	0.047
	South	BTR4	S	0.20	99.60			0.20	0.032
			M	0.20	99.60			0.20	ND
			D		99.58			0.42	ND

BT = Beach Transect; BTR = Beach Transect Reference

Table 25. Water quality data for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Island		Station	DateTime M/D/Y	Temp C	SpCond mS/cm	Salinity ppt	ODO% %	ODO Conc mg/L
Petit Bois	North	BT1	6/2/10 12:38	29.48	34.73	21.73	114.1	7.72
	North	BT3	6/2/10 13:19	29.19	33.99	21.23	138.7	9.46
	South	BT2	6/2/10 11:02	28.85	35.01	21.94	101.0	6.90
	South	BT4	6/2/10 11:53	29.24	35.52	22.28	100.1	6.78
Horn	North	BT5	6/7/10 10:49	30.79	27.13	16.52	102.8	7.01
	North	BT6	6/7/10 11:21	31.27	26.56	16.13	126.4	8.56
	South	BT7	6/7/10 10:03	26.49	44.26	28.53	61.9	4.24
	South	BT8	6/7/10 9:19	26.95	41.61	26.62	59.6	4.09
Ship	North	BT9	6/8/10 9:48	29.50	31.03	19.18	69.6	4.78
	North	BT10	6/8/10 10:45	29.80	32.82	20.40	124.4	8.43
	South	BT11	6/8/10 8:41	29.61	30.75	19.00	112.7	7.72
	South	BT12	6/8/10 10:11	30.17	30.97	19.13	120.8	8.20
Cat	West	BT13	6/3/10 13:35	27.35	31.77	19.74	78.2	5.54
	Northeast	BT15	6/3/10 12:41	27.00	30.94	19.18	95.4	6.83
	Southeast	BT16	6/3/10 12:03	27.10	32.07	19.95	100.4	7.14
Reference	North	BTR1	6/7/10 12:08	31.98	26.08	15.80	139.4	9.35
	North	BTR2	6/7/10 12:41	31.57	31.84	19.69	144.8	9.57
	South	BTR3	6/7/10 13:27	31.09	39.10	24.73	98.5	6.38
	South	BTR4	6/7/10 14:01	31.00	37.82	23.84	87.7	5.72

BT = Beach Transect; BTR = Beach Transect Reference

Table 26. Water quality data for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Island		Station	Temp °C	SpCond mS/cm	Salinity ppt	DO % Saturation	DO mg/L
Petit Bois	North	BT1	31.42	47.98	31.07	143.1	8.91
	South	BT4	28.84	45.87	29.62	139.2	9.11
	North	BT3	30.95	47.71	30.90	174.4	10.96
	South	BT2	28.86	46.51	30.09	125.1	8.17
Horn	North	BT5	28.44	50.31	32.87	90.3	5.84
	South	BT7	28.10	47.50	30.83	107.9	7.10
	North	BT6	28.18	49.86	32.55	94.2	6.13
	South	BT8	28.39	46.65	30.20	88.5	5.82
Ship	North	BT9	28.55	41.82	26.73	96.8	6.47
	South	BT11	28.05	46.81	30.33	98.9	6.53
	North	BT10	29.42	39.93	25.37	81.8	5.43
	South	BT12	29.73	41.10	26.19	103.8	6.83
Cat	North East	BT15	26.60	37.52	23.74	82.2	5.77
	West	BT13	26.39	37.87	23.99	81.7	5.75
	South East	BT16	25.96	37.19	23.52	88.3	6.28
Reference	North	BTR1	29.05	43.75	28.13	98.9	6.54
	South	BTR3	29.50	47.70	30.90	90.5	5.85
	North	BTR2	29.20	46.65	30.18	99.1	6.43
	South	BTR4	29.08	43.67	28.04	100.4	6.61

BT = Beach Transect; BTR = Beach Transect Reference

Table 27. Water quality data for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, Apr-May 2011.

Island		Station	Depth ft	Temp °C	SpCond mS/cm	Salinity ppt	pH	DO % Saturation	DO mg/L
Petit Bois	North	BT1	1.30	25.89	33.89	21.98	7.53	121.5	9.50
	South	BT4	1.47	23.31	40.28	25.75	8.68	90.7	6.67
	North	BT3	2.68	25.96	32.15	20.08	8.03	127.2	9.97
	South	BT2	1.27	23.54	40.03	25.57	8.08	86.4	6.34
Horn	North	BT5	0.89	25.32	27.01	16.58	6.22	151.1	11.91
	South	BT7	3.69	23.84	34.65	21.81	7.34	108.4	8.61
	North	BT6	1.15	24.57	29.47	18.24	7.00	126.8	10.12
	South	BT8	1.84	23.62	37.02	23.46	6.32	105.9	8.44
Ship	North	BT9	0.79	21.30	28.01	17.32	8.08	98.0	8.26
	South	BT11	1.76	22.72	36.35	22.99	9.21	110.5	8.34
	North	BT10	0.95	23.35	32.70	20.45	8.06	108.2	8.75
	South	BT12	0.84	23.11	32.72	20.47	9.57	107.6	8.19
Cat	North East	BT15	0.72	23.45	26.46	16.21	9.24	109.7	8.50
	West	BT13	0.72	22.25	26.39	16.17	9.12	113.3	8.98
	South East	BT16	0.75	23.27	27.63	16.99	8.97	107.9	8.35
Reference	North	BTR1	1.18	23.78	32.14	20.07	7.92	132.8	10.68
	South	BTR3	1.35	22.50	38.53	24.53	9.14	97.9	7.36
	North	BTR2	0.80	24.88	33.52	21.02	6.38	109.6	8.63
	South	BTR4	1.19	21.22	36.34	23.00	8.98	100.0	7.76

BT = Beach Transect; BTR = Beach Transect Reference

Table 28. Summary of the benthic macroinfaunal data for the Petit Bois Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT1-S	**North**	A	9	108	24000	8.3	1.7	21361.0	5420.4	20	769	1.36	0.45
		B	10	96	21333								
		C	7	83	18444								
		D	8	110	24444								
		E	8	70	15556								
		F	11	144	32000								
		G	7	72	16000								
		H	6	86	19111								
BT1-M		A	10	194	43111	9.5	1.6	50055.6	15754.1	24	1802	0.78	0.25
		B	11	253	56222								
		C	7	214	47556								
		D	10	234	52000								
		E	10	294	65333								
		F	11	210	46667								
		G	10	318	70667								
		H	7	85	18889								
BT1-D		A	8	196	43556	9.8	2.1	29222.3	10514.2	26	1052	0.93	0.29
		B	7	199	44222								
		C	13	121	26889								
		D	9	86	19111								
		E	10	157	34889								
		F	11	96	21333								
		G	12	117	26000								
		H	8	80	17778								
BT3-S	**North**	A	15	153	34000	15.0	3.8	32305.5	16245.7	36	1163	2.02	0.57
		B	19	187	41556								
		C	15	122	27111								
		D	21	203	45111								
		E	13	51	11333								
		F	9	47	10444								
		G	12	140	31111								
		H	16	260	57778								
BT3-M		A	16	112	24889	14.9	3.1	16083.4	7695.9	39	579	2.55	0.70
		B	13	34	7556								
		C	19	76	16889								
		D	19	128	28444								
		E	14	72	16000								
		F	13	32	7111								
		G	15	77	17111								
		H	10	48	10667								
BT3-D		A	15	26	5778	19.3	3.3	13666.8	4554.2	40	492	3.13	0.85
		B	20	57	12667								
		C	17	68	15111								
		D	22	70	15556								
		E	19	66	14667								
		F	25	85	18889								
		G	20	82	18222								
		H	16	38	8444								
BT2-S	**South**	A	0	0	0	1.6	1.7	444.4	411.5	9	16	2.10	0.96
		B	1	1	222								
		C	0	0	0								
		D	1	2	444								
		E	2	3	667								
		F	5	5	1111								
		G	1	1	222								
		H	3	4	889								

Table 28 continued:

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT2-M		A	4	5	1111	4.1	0.8	1777.8	788.0	14	64	1.94	0.73
		B	5	6	1333								
		C	4	13	2889								
		D	3	7	1556								
		E	5	13	2889								
		F	3	4	889								
		G	4	6	1333								
		H	5	10	2222								
BT2-D		A	6	10	2222	3.4	1.9	1388.9	739.4	14	50	1.92	0.73
		B	5	9	2000								
		C	5	9	2000								
		D	3	3	667								
		E	2	5	1111								
		F	1	3	667								
		G	1	2	444								
		H	4	9	2000								
BT4-S	**South**	A	3	5	1111	3.9	1.4	1500.0	591.0	11	54	1.80	0.75
		B	5	9	2000								
		C	6	10	2222								
		D	4	7	1556								
		E	3	5	1111								
		F	3	7	1556								
		G	2	2	444								
		H	5	9	2000								
BT4-M		A	3	5	1111	5.1	2.0	2027.8	773.9	12	73	2.25	0.91
		B	7	11	2444								
		C	3	6	1333								
		D	5	11	2444								
		E	3	4	889								
		F	6	12	2667								
		G	8	12	2667								
		H	6	12	2667								
BT4-D		A	7	14	3111	5.3	2.3	2416.6	1504.6	15	87	2.18	0.81
		B	7	15	3333								
		C	3	3	667								
		D	5	12	2667								
		E	8	22	4889								
		F	3	6	1333								
		G	7	13	2889								
		H	2	2	444								

Table 29. Summary of the benthic macroinfaunal data for the Horn Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Station	Ialand Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT5-S	**North**	A	8	35	7778	9.6	1.3	12861.0	4220.4	24	463	1.87	0.59
		B	10	38	8444								
		C	9	69	15333								
		D	12	58	12889								
		E	10	42	9333								
		F	10	91	20222								
		G	8	61	13556								
		H	10	69	15333								
BT5-M		A	4	11	2444	11.1	3.4	15166.5	7229.0	26	546	2.21	0.68
		B	12	56	12444								
		C	14	96	21333								
		D	13	71	15778								
		E	13	119	26444								
		F	13	55	12222								
		G	12	84	18667								
		H	8	54	12000								
BT5-D		A	12	30	6667	10.0	3.3	9305.6	6145.2	30	335	2.16	0.63
		B	10	23	5111								
		C	12	59	13111								
		D	3	17	3778								
		E	14	41	9111								
		F	8	24	5333								
		G	10	102	22667								
		H	11	39	8667								
BT6-S	**North**	A	15	114	25333	9.8	2.6	22083.4	9559.5	31	795	1.20	0.35
		B	12	80	17778								
		C	8	43	9556								
		D	7	167	37111								
		E	10	57	12667								
		F	9	109	24222								
		G	9	78	17333								
		H	8	147	32667								
BT6-M		A	11	23	5111	7.9	2.0	13889.0	8083.3	31	500	1.03	0.30
		B	9	117	26000								
		C	7	75	16667								
		D	9	95	21111								
		E	6	27	6000								
		F	7	57	12667								
		G	9	85	18889								
		H	5	21	4667								
BT6-D		A	4	9	2000	9.4	3.5	7611.1	3219.8	30	274	2.07	0.61
		B	10	32	7111								
		C	8	19	4222								
		D	12	47	10444								
		E	13	35	7778								
		F	14	53	11778								
		G	8	43	9556								
		H	7	36	8000								
BT7-S	**South**	A	2	5	1111	1.5	0.8	694.3	782.8	4	25	0.94	0.68
		B	2	11	2444								
		C	2	2	444								
		D	0	0	0								
		E	2	3	667								
		F	1	1	222								
		G	1	1	222								
		H	2	2	444								

Table 29 continued:

Station	Ialand Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT7-M		A	6	22	4889	4.5	2.8	4083.3	3386.8	12	147	1.68	0.68
		B	9	28	6222								
		C	7	49	10889								
		D	4	18	4000								
		E	3	4	889								
		F	5	14	3111								
		G	1	11	2444								
		H	1	1	222								
BT7-D		A	3	14	3111	4.9	1.8	4861.0	1626.3	16	175	1.20	0.43
		B	7	20	4444								
		C	7	28	6222								
		D	4	13	2889								
		E	7	24	5333								
		F	4	18	4000								
		G	3	23	5111								
		H	4	35	7778								
BT8-S	**South**	A	1	1	222	1.8	1.0	555.5	490.0	8	20	1.64	0.79
		B	2	7	1556								
		C	1	1	222								
		D	2	2	444								
		E	3	3	667								
		F	2	2	444								
		G	3	4	889								
		H	0	0	0								
BT8-M		A	2	4	889	2.8	1.7	1055.5	925.9	10	38	1.96	0.85
		B	2	2	444								
		C	2	2	444								
		D	1	1	222								
		E	1	4	889								
		F	4	4	889								
		G	5	7	1556								
		H	5	14	3111								
BT8-D		A	7	13	2889	3.9	2.0	1777.8	1151.8	14	64	2.02	0.77
		B	3	11	2444								
		C	5	16	3556								
		D	2	2	444								
		E	3	7	1556								
		F	1	1	222								
		G	4	6	1333								
		H	6	8	1778								

Table 30. Summary of the benthic macroinfaunal data for the Ship Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT9-S	**North**	A	6	167	37111	4.3	1.0	24416.8	6525.9	10	879	0.31	0.13
		B	3	100	22222								
		C	5	89	19778								
		D	3	125	27778								
		E	5	66	14667								
		F	4	117	26000								
		G	4	111	24667								
		H	4	104	23111								
BT9-M		A	2	177	39333	4.4	1.5	46139.0	18856.0	9	1661	0.33	0.15
		B	3	151	33556								
		C	4	134	29778								
		D	5	277	61556								
		E	5	325	72222								
		F	5	144	32000								
		G	7	133	29556								
		H	4	320	71111								
BT9-D		A	5	306	68000	6.0	0.8	69833.5	18525.3	16	2514	0.40	0.14
		B	6	367	81556								
		C	6	162	36000								
		D	6	421	93556								
		E	6	349	77556								
		F	7	363	80667								
		G	7	227	50444								
		H	5	319	70889								
BT10-S	**North**	A	6	96	21333	6.6	1.7	17944.5	4165.4	13	646	1.56	0.61
		B	5	79	17556								
		C	6	104	23111								
		D	8	99	22000								
		E	7	62	13778								
		F	5	88	19556								
		G	6	59	13111								
		H	10	59	13111								
BT10-M		A	10	135	30000	8.8	2.5	41749.9	15296.0	18	1503	1.70	0.59
		B	6	189	42000								
		C	14	191	42444								
		D	9	334	74222								
		E	6	117	26000								
		F	8	228	50667								
		G	8	163	36222								
		H	9	146	32444								
BT10-D		A	8	114	25333	7.6	2.6	23499.9	15387.6	17	846	1.05	0.37
		B	4	6	1333								
		C	6	81	18000								
		D	6	105	23333								
		E	9	209	46444								
		F	10	92	20444								
		G	12	196	43556								
		H	6	43	9556								
BT11-S	**South**	A	1	1	222	1.3	0.7	555.4	639.7	4	20	1.21	0.87
		B	2	2	444								
		C	0	0	0								
		D	2	9	2000								
		E	1	1	222								
		F	2	4	889								
		G	1	1	222								
		H	1	2	444								

Table 30 continued:

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT11-M		A	4	22	4889	3.6	1.2	1722.3	1468.2	12	62	1.85	0.74
		B	5	7	1556								
		C	4	12	2667								
		D	2	2	444								
		E	3	4	889								
		F	2	2	444								
		G	4	7	1556								
		H	5	6	1333								
BT11-D		A	6	10	2222	4.9	2.9	1777.6	1069.1	14	64	2.29	0.87
		B	1	2	444								
		C	2	2	444								
		D	9	14	3111								
		E	2	4	889								
		F	8	13	2889								
		G	6	8	1778								
		H	5	11	2444								
BT12-S	**South**	A	3	8	1778	2.1	1.8	1111.3	1535.1	11	40	1.55	0.65
		B	6	21	4667								
		C	1	1	222								
		D	2	3	667								
		E	2	3	667								
		F	1	1	222								
		G	2	3	667								
		H	0	0	0								
BT12-M		A	3	5	1111	3.6	1.2	1194.4	568.6	16	43	2.40	0.87
		B	3	3	667								
		C	3	4	889								
		D	4	11	2444								
		E	4	5	1111								
		F	4	6	1333								
		G	2	3	667								
		H	6	6	1333								
BT12-D		A	1	1	222	1.1	1.0	305.4	289.4	7	11	1.85	0.95
		B	1	2	444								
		C	0	0	0								
		D	1	1	222								
		E	3	4	889								
		F	1	1	222								
		G	0	0	0								
		H	2	2	444								

Table 31. Summary of the benthic macroinfaunal data for the Cat Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT13-S	**West**	A	5	18	4000	4.1	1.4	1777.6	1075.7	12	64	2.05	0.83
		B	2	2	444								
		C	3	5	1111								
		D	6	11	2444								
		E	5	9	2000								
		F	3	6	1333								
		G	5	6	1333								
		H	4	7	1556								
BT13-M		A	4	39	8667	3.8	1.2	6500.0	2234.0	13	234	0.74	0.29
		B	2	17	3778								
		C	4	19	4222								
		D	4	30	6667								
		E	5	18	4000								
		F	4	42	9333								
		G	5	32	7111								
		H	2	37	8222								
BT13-D		A	4	64	14222	2.9	1.4	14111.0	3847.2	11	508	0.28	0.12
		B	2	31	6889								
		C	2	51	11333								
		D	1	78	17333								
		E	2	68	15111								
		F	3	82	18222								
		G	5	55	12222								
		H	4	79	17556								
BT15-S	**Northeast**	A	1	5	1111	2.8	1.0	11777.6	7441.8	7	424	0.29	0.15
		B	4	6	1333								
		C	4	51	11333								
		D	3	86	19111								
		E	3	48	10667								
		F	2	56	12444								
		G	3	82	18222								
		H	2	90	20000								
BT15-M		A	4	9	2000	2.6	1.4	7333.5	11174.5	8	264	0.32	0.15
		B	1	8	1778								
		C	3	8	1778								
		D	2	151	33556								
		E	5	55	12222								
		F	3	13	2889								
		G	1	8	1778								
		H	2	12	2667								
BT15-D		A	3	147	32667	4.0	1.1	24694.5	8642.9	11	889	0.25	0.10
		B	4	87	19333								
		C	3	70	15556								
		D	5	140	31111								
		E	3	164	36444								
		F	4	124	27556								
		G	6	55	12222								
		H	4	102	22667								
BT16-S	**Southeast**	A	3	6	1333	2.4	1.2	777.8	428.2	12	28	2.07	0.83
		B	0	0	0								
		C	3	3	667								
		D	4	4	889								
		E	2	5	1111								
		F	2	3	667								
		G	2	2	444								
		H	3	5	1111								
BT16-M		A	2	4	889	1.4	0.5	444.1	205.8	7	16	1.56	0.80
		B	1	2	444								
		C	1	2	444								
		D	2	2	444								
		E	1	2	444								
		F	1	1	222								
		G	1	1	222								
		H	2	2	444								
BT16-D		A	1	3	667	2.4	1.7	833.4	658.8	9	30	1.73	0.79
		B	0	0	0								
		C	1	1	222								
		D	4	8	1778								
		E	2	2	444								
		F	3	4	889								
		G	3	4	889								
		H	5	8	1778								

Table 32. Summary of the benthic macroinfaunal data for the Horn Island Beach Transect Reference stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BTR1-S	**North**	A	5	23	5111	5.3	2.4	4194.4	1351.5	20	151	1.76	0.59
		B	2	5	1111								
		C	4	19	4222								
		D	8	19	4222								
		E	6	25	5556								
		F	3	20	4444								
		G	9	18	4000								
		H	5	22	4889								
BTR1-M		A	13	61	13556	10.9	4.0	7750.1	5236.5	33	279	2.70	0.77
		B	11	25	5556								
		C	12	24	5333								
		D	8	13	2889								
		E	10	52	11556								
		F	8	18	4000								
		G	7	13	2889								
		H	19	73	16222								
BTR1-D		A	10	30	6667	8.9	4.7	6277.9	4375.0	36	226	2.71	0.76
		B	11	26	5778								
		C	19	74	16444								
		D	6	31	6889								
		E	9	16	3556								
		F	5	19	4222								
		G	6	12	2667								
		H	5	18	4000								
BTR2-S	**North**	A	13	28	6222	11.3	3.9	6416.5	3476.0	34	231	2.69	0.76
		B	18	33	7333								
		C	8	18	4000								
		D	12	20	4444								
		E	7	27	6000								
		F	15	65	14444								
		G	9	24	5333								
		H	8	16	3556								
BTR2-M		A	11	29	6444	12.3	3.1	9055.4	2681.8	34	326	2.66	0.75
		B	8	24	5333								
		C	13	35	7778								
		D	14	32	7111								
		E	9	49	10889								
		F	15	56	12444								
		G	17	50	11111								
		H	11	51	11333								
BTR2-D		A	10	23	5111	13.5	3.1	8333.4	2558.8	39	300	2.73	0.75
		B	9	26	5778								
		C	13	52	11556								
		D	14	32	7111								
		E	16	50	11111								
		F	12	29	6444								
		G	16	40	8889								
		H	18	48	10667								
BTR3-S	**South**	A	2	4	889	3.6	1.8	1472.4	796.3	10	53	1.77	0.77
		B	4	7	1556								
		C	6	7	1556								
		D	4	9	2000								
		E	1	3	667								
		F	6	13	2889								
		G	4	8	1778								
		H	2	2	444								

Table 32 continued:

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BTR3-M		A	3	7	1556	4.6	1.8	2333.6	1234.5	16	84	2.30	0.83
		B	4	8	1778								
		C	4	8	1778								
		D	3	8	1778								
		E	3	4	889								
		F	6	12	2667								
		G	7	16	3556								
		H	7	21	4667								
BTR3-D		A	8	20	4444	6.1	2.5	4472.3	1451.9	21	161	1.64	0.54
		B	2	29	6444								
		C	9	16	3556								
		D	4	16	3556								
		E	8	25	5556								
		F	5	16	3556								
		G	5	11	2444								
		H	8	28	6222								
BTR4-S	**South**	A	3	7	1556	2.9	0.8	1472.3	1228.4	12	53	1.73	0.70
		B	2	2	444								
		C	2	3	667								
		D	3	7	1556								
		E	2	2	444								
		F	3	19	4222								
		G	4	5	1111								
		H	4	8	1778								
BTR4-M		A	5	17	3778	5.6	1.3	2611.0	1027.0	17	94	1.88	0.67
		B	7	11	2444								
		C	7	14	3111								
		D	5	6	1333								
		E	4	7	1556								
		F	6	11	2444								
		G	7	19	4222								
		H	4	9	2000								
BTR4-D		A	9	18	4000	5.8	2.1	2333.4	1257.0	19	84	2.53	0.86
		B	4	4	889								
		C	5	9	2000								
		D	7	18	4000								
		E	8	14	3111								
		F	5	10	2222								
		G	3	4	889								
		H	5	7	1556								

Table 33. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Taxa	BT1-S	BT1-M	BT1-D	BT2-S	BT2-M	BT2-D	BT3-S	BT3-M	BT3-D	BT4-S	BT4-M	BT4-D
Annelida												
Oligochaeta												
Enchytraeidae (LPIL)							35.7	11.6				
Tubificidae (LPIL)							28.5	34.2				
Polychaeta												
Capitella capitata												
Capitellidae (LPIL)												
Dispio uncinata												
Laeonereis culveri												
Leitoscoloplos (LPIL)												
Nephtys bucera												
Nereididae (LPIL)												
Paraonis fulgens											12.3	20.7
Parapionosyllis uebelackerae									10.6			
Polygordius (LPIL)												
Scolelepis squamata				12.5						11.1		
Sphaerosyllis taylori												
Streptosyllis arenae												
Syllidae (LPIL)												
Arthropoda												
Malacostraca												
Acanthohaustorius intermedius									10.4			
Ancinus depressus											15.1	12.6
Bowmaniella dissimilis												
Exosphaeroma productatelson	19.6											
Haustoriidae (LPIL)				18.8	12.5							
Haustorius jayneae					15.6					46.3	16.4	10.3
Lepidactylus triarticulatus	61.0	84.5	81.7									
Metamysidopsis swifti				12.5								
Pinnixa chacei												
Spilocuma watlingi					15.6							
Mollusca												
Bivalvia												
Donax variabilis					37.5	50.0					16.4	25.3
Gemma gemma										11.1		
Nemertea												
Nemertea (LPIL)				18.8								

Table 33 continued:

Taxa	BT9-S	BT9-M	BT9-D	BT10-S	BT10-M	BT10-D	BT11-S	BT11-M	BT11-D	BT12-S	BT12-M	BT12-D
Annelida												
Oligochaeta												
Enchytraeidae (LPIL)								22.6			23.3	
Tubificidae (LPIL)												
Polychaeta												
Capitella capitata												
Capitellidae (LPIL)												
Dispio uncinata												
Laeonereis culveri												
Leitoscoloplos (LPIL)												
Nephtys bucera							15.0					
Nereididae (LPIL)												
Paraonis fulgens							50.0	40.3	25.0			
Parapionosyllis uebelackerae												
Polygordius (LPIL)												
Scolelepis squamata							25.0					
Sphaerosyllis taylori												
Streptosyllis arenae												
Syllidae (LPIL)												
Arthropoda												
Malacostraca												
Acanthohaustorius intermedius												
Ancinus depressus							10.0		12.5			
Bowmaniella dissimilis											20.9	
Exosphaeroma productatelson				36.7	21.6	19.6						
Haustoriidae (LPIL)									12.5			18.2
Haustorius jayneae												
Lepidactylus triarticulatus	94.3	92.8	91.9									
Metamysidopsis swifti												
Pinnixa chacei												
Spilocuma watlingi										60.0		27.3
Mollusca												
Bivalvia												
Donax variabilis					33.7			11.3	12.5			
Gemma gemma				36.1	24.5	70.0						18.2
Nemertea												
Nemertea (LPIL)												

Table 33 continued:

Taxa	BTR1-S	BTR1-M	BTR1-D	BTR2-S	BTR2-M	BTR2-D	BTR3-S	BTR3-M	BTR3-D	BTR4-S	BTR4-M	BTR4-D
Annelida												
Oligochaeta												
Enchytraeidae (LPIL)				13.9								
Tubificidae (LPIL)												
Polychaeta												
Capitella capitata			14.6		23.3	15.7						
Capitellidae (LPIL)			21.2									
Dispio uncinata												
Laeonereis culveri	13.2											
Leitoscoloplos (LPIL)												
Nephtys bucera												
Nereididae (LPIL)	53.6	16.8		23.4	14.7	14.3						
Paraonis fulgens			17.3	14.7	15.6	24.3		25.0	60.9			17.9
Parapionosyllis uebelackerae												
Polygordius (LPIL)												
Scolelepis squamata							30.2			13.2		
Sphaerosyllis taylori		13.3										
Streptosyllis arenae												
Syllidae (LPIL)		20.1										
Arthropoda												
Malacostraca												
Acanthohaustorius intermedius												
Ancinus depressus										15.1		
Bowmaniella dissimilis									12.4			
Exosphaeroma productatelson												
Haustoriidae (LPIL)												
Haustorius jayneae												
Lepidactylus triarticulatus												
Metamysidopsis swifti												
Pinnixa chacei												
Spilocuma watlingi								10.7				
Mollusca												
Bivalvia												
Donax variabilis							11.3			47.2	52.1	15.5
Gemma gemma							34.0	20.2				14.3
Nemertea												
Nemertea (LPIL)												

Table 33 continued:

Taxa	BT5-S	BT5-M	BT5-D	BT6-S	BT6-M	BT6-D	BT7-S	BT7-M	BT7-D	BT8-S	BT8-M	BT8-D
Annelida												
Oligochaeta												
Enchytraeidae (LPIL)	16.0											
Tubificidae (LPIL)												
Polychaeta												
Capitella capitata												
Capitellidae (LPIL)												
Dispio uncinata												
Laeonereis culveri												
Leitoscoloplos (LPIL)												
Nephtys bucera												
Nereididae (LPIL)												
Paraonis fulgens		30.2	45.1	70.1	81.2	49.6				10.0		14.1
Parapionosyllis uebelackerae												
Polygordius (LPIL)				16.2								
Scolelepis squamata							16.0			10.0		
Sphaerosyllis taylori												
Streptosyllis arenae						10.6						
Syllidae (LPIL)												
Arthropoda												
Malacostraca												
Acanthohaustorius intermedius												
Ancinus depressus								17.0			13.2	25.0
Bowmaniella dissimilis												
Exosphaeroma productatelson	14.0	16.5										
Haustoriidae (LPIL)												
Haustorius jayneae												
Lepidactylus triarticulatus	45.4	12.5										
Metamysidopsis swifti							68.0	21.8			23.7	
Pinnixa chacei		12.5	11.0									
Spilocuma watlingi												
Mollusca												
Bivalvia												
Donax variabilis							12.0	41.5	73.1	50.0		28.1
Gemma gemma										10.0	13.2	10.9
Nemertea												
Nemertea (LPIL)											26.3	

Table 33 continued:

Taxa	BT13-S	BT13-M	BT13-D	BT15-S	BT15-M	BT15-D	BT16-S	BT16-M	BT16-D
Annelida									
Oligochaeta									
Enchytraeidae (LPIL)									
Tubificidae (LPIL)									
Polychaeta									
Capitella capitata									
Capitellidae (LPIL)									
Dispio uncinata									
Laeonereis culveri									
Leitoscoloplos (LPIL)									20.0
Nephtys bucera								12.5	
Nereididae (LPIL)	10.9								
Paraonis fulgens									16.7
Parapionosyllis uebelackerae									
Polygordius (LPIL)									
Scolelepis squamata									
Sphaerosyllis taylori									
Streptosyllis arenae									
Syllidae (LPIL)									
Arthropoda									
Malacostraca									
Acanthohaustorius intermedius									
Ancinus depressus									
Bowmaniella dissimilis									
Exosphaeroma productatelson	25.0								
Haustoriidae (LPIL)	10.9								40.0
Haustorius jayneae									
Lepidactylus triarticulatus	26.6	84.2	94.9	94.8	94.3	96.1	35.7	50.0	
Metamysidopsis swifti									
Pinnixa chacei									
Spilocuma watlingi							17.9	12.5	
Mollusca									
Bivalvia									
Donax variabilis									
Gemma gemma									
Nemertea									
Nemertea (LPIL)									

Table 34. Summary of the benthic macroinfaunal data for the Petit Bois Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT1-S	**North**	A	4	37	8222.2	4.75	1.9	9333.3	2098.1	11	336	1.15	0.48
		B	7	55	12222.2								
		C	3	48	10666.7								
		D	3	34	7555.6								
		E	8	54	12000								
		F	5	31	6888.9								
		G	3	43	9555.6								
		H	3	34	7555.6								
BT1-M		A	5	50	11111.1	5.8	1.3	12555.6	3106.6	13	452	1.53	0.6
		B	7	88	19555.6								
		C	6	63	14000								
		D	7	44	9777.8								
		E	6	53	11777.8								
		F	4	54	12000								
		G	7	54	12000								
		H	4	46	10222.2								
BT1-D		A	11	246	54666.7	9.5	1.6	50333.3	32048.5	19	1812	1.38	0.47
		B	11	160	35555.6								
		C	8	162	36000								
		D	8	574	127555.6								
		E	9	151	33555.6								
		F	12	194	43111.1								
		G	8	141	31333.3								
		H	9	184	40888.9								
BT3-S	**North**	A	13	148	32888.9	11.5	1.1	16972.2	7888.1	25	611	2.05	0.64
		B	12	53	11777.8								
		C	10	28	6222.2								
		D	11	72	16000.0								
		E	11	62	13777.8								
		F	13	72	16000.0								
		G	11	76	16888.9								
		H	11	100	22222.2								
BT3-M		A	9	127	29777.8	10.5	1.8	13333.3	19549.1	29	1443	1.74	0.52
		B	11	115	29333.3								
		C	12	360	82888.9								
		D	12	151	36666.7								
		E	10	198	46888.9								
		F	9	101	24666.7								
		G	13	242	60000.0								
		H	8	149	36444.4								
BT3-D		A	16	121	26888.9	16.0	2.4	45444.4	18608.8	29	1636	2.12	0.63
		B	19	330	73333.3								
		C	15	242	53777.8								
		D	19	220	48888.9								
		E	14	258	57333.3								
		F	16	211	46888.9								
		G	12	57	12666.7								
		H	17	197	43777.8								
BT2-S	**South**	A	0	0	0.0	1.3	1.0	416.7	418.9	5	15	1.36	0.85
		B	2	5	1111.1								
		C	1	1	222.2								
		D	3	3	666.7								
		E	1	1	222.2								
		F	1	1	222.2								
		G	0	0	0.0								
		H	2	4	888.9								
BT2-M		A	7	39	8666.7	2.3	2.1	1472.2	2914.3	9	53	1.33	0.61
		B	1	1	222.2								
		C	2	2	444.4								
		D	3	4	888.9								
		E	2	2	444.4								
		F	1	2	444.4								
		G	1	2	444.2								
		H	1	1	222.2								
BT2-D		A	3	5	1111.1	2.3	1.0	944.4	471.4	6	34	1.39	0.78
		B	2	3	666.7								
		C	2	6	1333.3								
		D	2	4	888.9								
		E	3	6	1333.3								
		F	1	2	444.4								
		G	4	7	1555.6								
		H	1	1	222.2								
BT4-S	**South**	A	1	2	444.4	2.0	0.9	972.2	741.2	5	35	1.03	0.64
		B	1	1	222.2								
		C	1	1	222.2								
		D	2	3	666.7								
		E	3	4	888.9								
		F	2	10	2222.2								
		G	3	8	1777.8								
		H	3	6	1333.3								
BT4-M		A	2	7	1555.6	2.6	1.1	1305.6	791.8	8	47	1.36	0.66
		B	2	3	666.7								
		C	3	5	1111.1								
		D	3	6	1333.3								
		E	1	2	444.4								
		F	4	13	2888.9								
		G	2	3	666.7								
		H	4	8	1777.8								
BT4-D		A	3	8	1777.8	3.0	1.3	1555.6	993.8	11	56	1.50	0.63
		B	1	1	222.2								
		C	4	9	2000.0								
		D	2	5	1111.1								
		E	2	4	888.9								
		F	3	16	3555.6								
		G	5	8	1777.8								
		H	4	5	1111.1								

Table 35. Summary of the benthic macroinfaunal data for the Horn Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Station	Ialand Location	Rep	No. of Taxa	No. of Indvs	Density (no/m²)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT5-S	**North**	A	5	17	3778	5.6	1.4	6388.9	3124.1	10	230	1.40	0.61
		B	5	24	5333								
		C	6	53	11778								
		D	4	12	2667								
		E	6	39	8667								
		F	7	20	4444								
		G	8	41	9111								
		H	4	24	5333								
BT5-M		A	8	24	5333	9.8	2.2	9194.4	6543.8	21	331	2.23	0.73
		B	9	33	7333								
		C	9	35	7778								
		D	12	33	7333								
		E	8	14	3111								
		F	8	33	7333								
		G	10	49	10889								
		H	14	110	24444								
BT5-D		A	15	121	26889	14.8	2.4	39500.0	19598.7	27	1422	1.88	0.57
		B	15	69	15333								
		C	15	161	35778								
		D	16	205	45556								
		E	17	325	72222								
		F	15	237	52667								
		G	16	229	50889								
		H	9	75	16667								
BT6-S	**North**	A	10	155	34444	10.0	2.1	27500.0	10550.1	10	990	0.69	0.30
		B	12	111	24667								
		C	8	79	17556								
		D	12	129	28667								
		E	8	64	14222								
		F	13	211	46889								
		G	9	147	32667								
		H	8	94	20889								
BT6-M		A	6	189	42000	10.6	3.2	38194.4	9640.0	28	1375	1.28	0.38
		B	6	133	29556								
		C	15	217	48222								
		D	11	154	34222								
		E	13	112	24889								
		F	11	141	31333								
		G	12	194	43111								
		H	11	235	52222								
BT6-D		A	13	46	10222	10.1	5.2	12166.7	10259.2	31	438	2.30	0.67
		B	5	24	5333								
		C	12	54	12000								
		D	4	17	3778								
		E	10	39	8667								
		F	6	24	5333								
		G	20	159	35333								
		H	11	75	16667								
BT7-S	**South**	A	1	1	222	1.8	1.0	555.6	475.1	9	20	1.68	0.76
		B	3	3	667								
		C	2	3	667								
		D	2	2	444								
		E	3	7	1556								
		F	2	3	667								
		G	0	0	0								
		H	1	1	222								
BT7-M		A	3	5	1111	2.3	1.2	833.3	370.9	10	30	1.77	0.77
		B	2	4	889								
		C	3	5	1111								
		D	4	6	1333								
		E	3	3	667								
		F	1	4	889								
		G	1	2	444								
		H	1	1	222								
BT7-D		A	3	5	1111	3.6	1.2	1416.7	443.5	15	51	2.11	0.78
		B	2	6	1333								
		C	5	10	2222								
		D	3	5	1111								
		E	3	5	1111								
		F	5	9	2000								
		G	3	5	1111								
		H	5	6	1333								
BT8-S	**South**	A	2	2	444	1.1	1.2	416.7	610.8	6	15	1.59	0.89
		B	0	0	0								
		C	0	0	0								
		D	0	0	0								
		E	2	2	444								
		F	3	8	1778								
		G	2	3	667								
		H	0	0	0								
BT8-M		A	3	6	1333	2.1	0.8	1111.1	760.6	7	40	1.31	0.67
		B	2	5	1111								
		C	3	10	2222								
		D	2	2	444								
		E	1	2	444								
		F	1	3	667								
		G	3	10	2222								
		H	2	2	444								
BT8-D		A	6	7	1556	3.9	1.6	1666.7	237.6	11	60	1.84	0.77
		B	2	7	1556								
		C	3	9	2000								
		D	4	7	1556								
		E	6	9	2000								
		F	2	6	1333								
		G	5	8	1778								
		H	3	7	1556								

Table 36. Summary of the benthic macroinfaunal data for the Ship Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m²)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT9-S	**North**	A	6	169	37556	5.5	1.6	40166.7	11559.1	14	1446	0.60	0.23
		B	5	234	52000								
		C	3	225	50000								
		D	7	104	23111								
		E	4	111	24667								
		F	8	206	45778								
		G	5	167	37111								
		H	6	230	51111								
BT9-M		A	4	48	10667	5.0	2.0	19638.9	7999.9	14	707	0.78	0.30
		B	7	119	26444								
		C	3	129	28667								
		D	8	129	28667								
		E	3	42	9333								
		F	4	59	13111								
		G	4	100	22222								
		H	7	81	18000								
BT9-D		A	8	157	34889	7.8	1.8	34083.3	12395.6	14	1226	1.05	0.40
		B	8	125	27778								
		C	10	250	55333								
		D	8	195	43333								
		E	7	159	35333								
		F	4	83	18444								
		G	8	83	18889								
		H	9	174	38667								
BT10-S	**North**	A	12	109	24222	9.6	3.0	25722.2	8534.0	23	926	1.77	0.57
		B	8	92	20444								
		C	10	122	27111								
		D	6	123	27333								
		E	15	187	41556								
		F	8	68	15111								
		G	11	146	32444								
		H	7	79	17556								
BT10-M		A	12	76	16889	9.5	3.5	18750.0	8046.5	25	675	1.75	0.54
		B	15	161	35778								
		C	8	82	18222								
		D	9	71	15778								
		E	4	58	12889								
		F	11	95	21111								
		G	11	94	20889								
		H	6	38	8444								
BT10-D		A	8	86	19111	10.5	2.1	14944.4	4310.3	28	538	1.72	0.52
		B	11	87	19333								
		C	9	59	13111								
		D	15	85	18889								
		E	10	38	8444								
		F	10	65	14444								
		G	11	75	16667								
		H	10	43	9556								
BT11-S	**South**	A	1	1	222	0.6	0.7	166.7	197.0	4	6	1.24	0.90
		B	0	0	0								
		C	0	0	0								
		D	1	2	444								
		E	0	0	0								
		F	0	0	0								
		G	1	1	222								
		H	2	2	444								
BT11-M		A	0	0	0	1.9	1.6	1138.9	1309.0	6	45	1.28	0.71
		B	4	8	1333								
		C	3	8	1333								
		D	0	0	0								
		E	3	11	2444								
		F	2	2	444								
		G	0	0	0								
		H	3	16	3556								
BT11-D		A	1	1	222	2.6	1.2	1305.6	764.6	7	47	1.32	0.68
		B	3	4	889								
		C	2	3	667								
		D	2	5	1111								
		E	2	9	2000								
		F	3	9	2000								
		G	3	5	1111								
		H	5	11	2444								
BT12-S	**South**	A	2	5	1111	3.3	0.9	2250.0	697.1	7	81	1.17	0.60
		B	3	10	2222								
		C	3	14	3111								
		D	3	10	2222								
		E	4	9	2000								
		F	3	9	2000								
		G	3	9	2000								
		H	5	15	3333								
BT12-M		A	6	12	2667	4.3	1.6	2638.9	1058.7	11	95	1.74	0.72
		B	4	10	2222								
		C	4	16	3556								
		D	3	6	1333								
		E	3	19	4222								
		F	6	14	3111								
		G	2	5	1111								
		H	6	13	2889								
BT12-D		A	6	40	8889	5.3	2.2	4000.0	2474.6	11	144	1.96	0.82
		B	10	27	6000								
		C	3	5	1111								
		D	4	14	3111								
		E	4	14	3111								
		F	6	19	4222								
		G	5	17	3778								
		H	4	8	1778								

Table 37. Summary of the benthic macroinfaunal data for the Cat Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT13-S	**West**	A	2	5	1111.1	1.8	0.5	1027.8	459.1	3	37	0.75	0.68
		B	1	4	888.9								
		C	2	9	2000.0								
		D	2	3	666.7								
		E	2	6	1333.3								
		F	1	3	666.7								
		G	2	3	666.7								
		H	2	4	888.9								
BT13-M		A	6	18	4666.7	4.3	1.5	3138.9	2776.7	11	112	1.74	0.73
		B	5	21	4000.0								
		C	6	10	2444.4								
		D	5	41	9111.1								
		E	2	6	1333.3								
		F	3	5	1111.1								
		G	4	5	1111.1								
		H	3	6	1333.3								
BT13-D		A	8	26	5777.8	5.3	1.8	3055.6	1453.6	19	110	2.25	0.77
		B	5	17	3777.8								
		C	8	19	4222.2								
		D	4	9	2000.0								
		E	5	13	2888.9								
		F	4	6	1333.3								
		G	4	10	2222.2								
		H	4	10	2222.2								
BT15-S	**Northeast**	A	3	5	1111.1	2.0	0.8	2111.1	1228.7	5	76	0.54	0.34
		B	2	12	2666.7								
		C	2	14	3111.1								
		D	3	18	4000.0								
		E	2	13	2888.9								
		F	1	2	444.4								
		G	1	5	1111.1								
		H	2	7	1555.6								
BT15-M		A	3	61	13555.6	3.0	0.8	7527.8	3983.1	5	271	0.42	0.26
		B	4	15	3333.3								
		C	3	7	1555.6								
		D	2	29	6444.4								
		E	4	42	9333.3								
		F	3	50	11111.1								
		G	3	40	8888.9								
		H	2	27	6000.0								
BT15-D		A	2	21	9111.1	2.8	0.9	32388.9	28394.0	7	596	0.78	0.40
		B	3	63	27333.3								
		C	4	128	56000.0								
		D	2	22	9555.6								
		E	2	22	8444.4								
		F	4	206	90444.4								
		G	3	58	25111.1								
		H	2	76	33111.1								
BT16-S	**Southeast**	A	3	27	6000.0	3.4	1.2	6638.9	3572.3	7	239	1.02	0.52
		B	3	24	5333.3								
		C	5	66	14666.7								
		D	2	27	6000.0								
		E	2	15	3333.3								
		F	3	38	8444.4								
		G	5	23	5111.1								
		H	4	19	4222.2								
BT16-M		A	5	30	6666.7	6.5	1.8	11638.9	3189.4	19	419	1.33	0.45
		B	6	48	10666.7								
		C	6	57	12666.7								
		D	4	38	8444.4								
		E	7	77	17111.1								
		F	10	52	11555.6								
		G	7	56	12444.4								
		H	7	61	13555.6								
BT16-D		A	2	9	2000.0	3.3	1.5	2861.1	3013.1	11	103	1.23	0.51
		B	3	4	888.9								
		C	3	7	1555.6								
		D	6	40	8888.9								
		E	4	4	888.9								
		F	4	11	2444.4								
		G	3	27	6000.0								
		H	1	1	222.2								

Table 38. Summary of the benthic macroinfaunal data for the Horn Island Beach Transect Reference stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m²)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BTR1-S	**North**	A	10	29	6444.4	10.3	1.7	9388.9	3115.1	29	338	2.02	0.60
		B	9	23	5111.1								
		C	14	52	11555.6								
		D	9	28	6222.2								
		E	10	48	10666.7								
		F	9	63	14000.0								
		G	11	50	11111.1								
		H	10	45	10000.0								
BTR1-M		A	12	44	9777.8	13.5	3.1	17027.8	8582.8	35	613	2.47	0.70
		B	13	85	18888.9								
		C	12	49	10888.9								
		D	12	141	31333.3								
		E	21	129	28666.7								
		F	12	48	10666.7								
		G	14	68	15111.1								
		H	12	49	10888.9								
BTR1-D		A	11	54	12000	11.8	3.7	7333.3	3131.5	35	264	2.82	0.79
		B	9	16	3556								
		C	9	30	6667								
		D	20	53	11778								
		E	11	32	7111								
		F	14	33	7333								
		G	11	18	4000								
		H	9	28	6222								
BTR2-S	**North**	A	16	166	36888.9	12.3	3.8	18944.4	11188.1	30	682	2.26	0.67
		B	7	19	4222.2								
		C	10	23	5111.1								
		D	11	52	11555.6								
		E	12	111	24666.7								
		F	9	108	24000.0								
		G	15	110	24444.4								
		H	18	93	20666.7								
BTR2-M		A	17	177	39333.3	16.8	1.6	29277.8	11017.2	34	1054	2.57	0.73
		B	17	134	29777.8								
		C	19	133	29555.6								
		D	18	103	22888.9								
		E	17	226	50222.2								
		F	15	119	26444.4								
		G	17	73	16222.2								
		H	14	89	19777.8								
BTR2-D		A	18	59	13111.1	14.5	4.8	12333.3	9239.9	34	444	2.89	0.82
		B	17	146	32444.4								
		C	16	35	7777.8								
		D	5	11	2444.4								
		E	17	44	9777.8								
		F	9	21	4666.7								
		G	18	60	13333.3								
		H	16	68	15111.1								
BTR3-S	**South**	A	2	3	666.7	1.8	1.2	638.9	451.3	9	23	1.83	0.83
		B	2	5	1111.1								
		C	1	1	222.2								
		D	2	3	666.7								
		E	0	0	0.0								
		F	2	5	1111.1								
		G	1	1	222.2								
		H	4	5	1111.1								
BTR3-M		A	4	10	2222.2	3.5	1.1	1805.6	989.8	13	65	1.94	0.75
		B	2	3	666.7								
		C	5	14	3111.1								
		D	2	2	444.4								
		E	4	5	1111.1								
		F	3	10	2222.2								
		G	4	8	1777.8								
		H	4	13	2888.9								
BTR3-D		A	5	14	3111	5.0	2.3	2750.0	949.8	14	99	2.01	0.76
		B	6	19	4222								
		C	10	17	3778								
		D	4	12	2667								
		E	3	8	1778								
		F	5	13	2889								
		G	4	7	1556								
		H	3	9	2000								
BTR4-S	**South**	A	0	0	0.0	0.9	0.8	388.9	389.5	4	14	0.75	0.54
		B	1	2	444.4								
		C	0	0	0.0								
		D	2	2	444.4								
		E	0	0	0.0								
		F	2	2	444.4								
		G	1	5	1111.1								
		H	1	3	666.7								
BTR4-M		A	2	4	888.9	1.5	0.9	722.2	590.9	5	26	0.83	0.51
		B	1	3	666.7								
		C	1	1	222.2								
		D	2	7	1555.6								
		E	3	7	1555.6								
		F	2	3	666.7								
		G	1	1	222.2								
		H	0	0	0.0								
BTR4-D		A	5	18	4000	3.4	1.4	3055.6	948.4	11	110	0.99	0.41
		B	4	22	4889								
		C	5	14	3111								
		D	3	11	2444								
		E	1	11	2444								
		F	2	12	2667								
		G	4	13	2889								
		H	3	9	2000								

Table 39. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, September 2010.

Taxa	BT1-S	BT1-M	BT1-D	BT2-S	BT2-M	BT2-D	BT3-S	BT3-M	BT3-D	BT4-S	BT4-M	BT4-D
Annelida												
Oligochaeta												
Enchytraeidae (LPIL)								18.5				
Tubificidae (LPIL)							41.1	51.0	41.7			
Polychaeta												
Brania wellfleetensis												
Leitoscoloplos (LPIL)												
Paraonis fulgens							16.0					
Parapionosyllis uebelackerae												
Arthropoda												
Malacostraca												
Ancinus depressus												
Emerita talpoida												
Exosphaeroma productatelson	67.7	19.7										
Haplocytheridea setipunctata									10.6			
Lepidactylus triarticulatus	15.5	49.6	50.2									
Spilocuma salomani												
Mollusca												
Bivalvia												
Donax variabilis		13.3	13.0	46.7	13.2	44.1				28.6	31.9	32.1
Gemma gemma			27.2	20.0		29.4				60.0	48.9	46.4
Nemertea												
Nemertea (LPIL)				20.0	62.3	11.8						

Table 39 continued:

Taxa	BT9-S	BT9-M	BT9-D	BT10-S	BT10-M	BT10-D	BT11-S	BT11-M	BT11-D	BT12-S	BT12-M	BT12-D
Annelida												
Polychaeta												
Leitoscoloplos (LPIL)				10.5			50.0	31.7			14.7	22.9
Nereis succinea												
Nereididae (LPIL)												
Paraonis fulgens												
Arthropoda												
Malacostraca												
Americamysis bahia												14.6
Ancinus depressus									14.9			
Exosphaeroma productatelson	11.1	14.6	11.2									
Haustoriidae (LPIL)							16.7					
Lepidactylus triarticulatus	84.5	78.4	72.8									
Spilocuma salomani										11.1	18.9	
Mollusca												
Bivalvia												
Bivalvia (LPIL)							16.7			12.3		
Donax variabilis				24.2	18.2		16.7	48.8	59.6	65.4	43.2	29.2
Gemma gemma				42.0	49.5	59.1						
Petricola pholadiformis												

Table 39 continued:

Taxa	BTR1-S	BTR1-M	BTR1-D	BTR2-S	BTR2-M	BTR2-D	BTR3-S	BTR3-M	BTR3-D	BTR4-S	BTR4-M	BTR4-D
Annelida												
Oligochaeta												
Tubificidae (LPIL)				28.7	25.5							
Polychaeta												
Capitella capitata	47.0	20.1	16.7									
Laeonereis culveri			12.9									
Microphthalmus (LPIL)		10.0										
Nereididae (LPIL)	11.2	12.4										
Paraonis fulgens			11.4	10.4								
Parapionosyllis uebelackerae						11.5						
Sphaerosyllis piriferopsis	14.2	21.5										
Sphaerosyllis taylori					10.1							
Streptosyllis pettiboneae				16.0	13.5							
Arthropoda												
Malacostraca												
Lepidactylus triarticulatus				17.4								
Pinnixa (LPIL)							17.4					
Pinnotheridae (LPIL)									12.1			
Spilocuma salomani								27.7			11.5	
Mollusca												
Bivalvia												
Donax variabilis							13.0	21.5	32.3			
Gemma gemma							39.1	24.6	24.2	78.6	76.9	76.4
Nemertea												
Nemertea (LPIL)						17.6						

Table 39 continued:

Taxa	BT5-S	BT5-M	BT5-D	BT6-S	BT6-M	BT6-D	BT7-S	BT7-M	BT7-D	BT8-S	BT8-M	BT8-D
Annelida												
Oligochaeta												
Enchytraeidae (LPIL)			18.3	19.3	22.3							
Tubificidae (LPIL)		16.6	38.2	48.9		10.0						
Polychaeta												
Brania wellfleetensis						19.6						
Leitoscoloplos (LPIL)												26.7
Paraonis fulgens		27.2	22.1		63.0	32.4					15.0	18.3
Parapionosyllis uebelackerae												
Arthropoda												
Malacostraca												
Ancinus depressus								15.6		20.0		
Emerita talpoida										13.3		
Exosphaeroma productatelson	17.4											
Haplocytheridea setipunctata												
Lepidactylus triarticulatus	58.7	17.2					15.0				10.0	
Spilocuma salomani								15.6				
Mollusca												
Bivalvia												
Donax variabilis							50.0	37.5	43.1	13.3		13.3
Gemma gemma										40.0	60.0	26.7
Nemertea												
Nemertea (LPIL)												

Table 39 continued:

Taxa	BT13-S	BT13-M	BT13-D	BT15-S	BT15-M	BT15-D	BT16-S	BT16-M	BT16-D
Annelida									
Polychaeta									
Leitoscoloplos (LPIL)									
Nereis succinea							64.0	58.0	
Nereididae (LPIL)			10.0						
Paraonis fulgens		14.2	13.6	86.8	90.0	49.2			
Arthropoda									
Malacostraca									
Americamysis bahia									
Ancinus depressus									
Exosphaeroma productatelson	24.3								
Haustoriidae (LPIL)									
Lepidactylus triarticulatus	70.3	36.3	37.3						
Spilocuma salomani									
Mollusca									
Bivalvia									
Bivalvia (LPIL)		27.4					25.1	22.4	68.0
Donax variabilis						49.2			
Gemma gemma									
Petricola pholadiformis								10.5	

Table 40. Summary of the benthic macroinfaunal data for the Petit Bois Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT1-S	**North**	A	4	36	8000.0	5.5	1.4	13944.4	11441.3	13	502	1.14	0.45
		B	5	49	10888.9								
		C	5	40	8888.9								
		D	5	37	8222.2								
		E	6	183	40666.7								
		F	7	46	10222.2								
		G	8	84	18666.7								
		H	4	27	6000.0								
BT1-M		A	7	54	12000.0	4.8	1.6	12138.9	3804.6	15	437	1.49	0.55
		B	3	66	14666.7								
		C	4	54	12000.0								
		D	5	42	9333.3								
		E	3	85	18888.9								
		F	5	65	14444.4								
		G	7	35	7777.8								
		H	4	36	8000.0								
BT1-D		A	6	57	12666.7	7.1	1.1	16500.0	2928.3	12	594	1.49	0.6
		B	8	83	18444.4								
		C	8	78	17333.3								
		D	8	92	20444.4								
		E	5	74	16444.4								
		F	7	53	11777.8								
		G	8	75	16666.7								
		H	7	82	18222.2								
BT3-S	**North**	A	6	35	7777.8	8.5	2.9	17166.7	10074.7	20	618	1.62	0.54
		B	12	106	23555.6								
		C	8	88	19555.6								
		D	4	23	5111.1								
		E	11	148	32888.9								
		F	11	120	26666.7								
		G	6	37	8222.2								
		H	10	61	13555.6								
BT3-M		A	13	281	65555.6	10.8	1.3	20555.6	19914.8	26	708	2.02	0.62
		B	9	49	12222.2								
		C	11	31	7777.8								
		D	11	24	5333.3								
		E	11	46	10222.2								
		F	11	94	21777.8								
		G	11	50	11333.3								
		H	9	133	30222.2								
BT3-D		A	8	23	5111.1	13.0	2.2	29500.0	20940.7	28	1062	1.49	0.45
		B	13	224	49777.8								
		C	13	103	22888.9								
		D	14	311	69111.1								
		E	13	126	28000.0								
		F	13	44	9777.8								
		G	15	98	21777.8								
		H	15	133	29555.6								
BT2-S	**South**	A	1	1	222.2	2.4	1.1	7638.9	10093.7	7	275	0.80	0.41
		B	1	2	444.4								
		C	3	13	2888.9								
		D	2	23	5111.1								
		E	4	132	29333.3								
		F	3	72	16000.0								
		G	3	22	4888.9								
		H	2	10	2222.2								
BT2-M		A	3	5	1111.1	2.3	1.5	1138.9	1038.5	9	41	1.63	0.74
		B	0	0	0.0								
		C	4	10	2222.2								
		D	1	1	222.2								
		E	3	3	666.7								
		F	2	4	888.9								
		G	1	4	888.9								
		H	4	14	3111.1								
BT2-D		A	1	1	222.2	1.6	0.7	388.9	230.0	7	14	1.57	0.81
		B	1	1	222.2								
		C	1	1	222.2								
		D	2	2	444.4								
		E	2	2	444.4								
		F	3	4	888.9								
		G	2	2	444.4								
		H	1	1	222.2								
BT4-S	**South**	A	1	1	222.2	1.5	0.9	472.2	364.9	5	17	1.43	0.89
		B	3	5	1111.1								
		C	1	1	222.2								
		D	0	0	0.0								
		E	2	2	444.4								
		F	1	2	444.4								
		G	2	4	888.9								
		H	2	2	444.4								
BT4-M		A	1	3	666.7	2.6	1.4	4555.6	4078.6	9	164	0.93	0.42
		B	0	0	0.0								
		C	3	57	12666.7								
		D	3	23	5111.1								
		E	4	34	7555.6								
		F	3	11	2444.4								
		G	3	20	4444.4								
		H	4	16	3555.6								
BT4-D		A	2	6	1333.3	3.6	2.4	1222.2	965.0	13	44	2.02	0.79
		B	2	4	888.9								
		C	7	10	2222.2								
		D	2	2	444.4								
		E	3	3	666.7								
		F	8	14	3111.1								
		G	3	3	666.7								
		H	2	2	444.4								

Table 41. Summary of the benthic macroinfaunal data for the Horn Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Station	Ialand Location	Rep	No. of Taxa	No. of Indvs	Density (no/m²)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT5-S	**North**	A	3	5	1111.1	6.3	3.1	11805.6	11949.0	14	425	1.74	0.66
		B	3	3	666.7								
		C	10	64	14222.2								
		D	5	25	5555.6								
		E	11	116	25777.8								
		F	6	149	33111.1								
		G	8	46	10222.2								
		H	4	17	3777.8								
BT5-M		A	7	33	7333.3	9.6	2.2	17166.7	8131.0	23	618	1.79	0.57
		B	8	44	9777.8								
		C	11	146	32444.4								
		D	12	86	19111.1								
		E	8	65	14444.4								
		F	13	83	18444.4								
		G	10	106	23555.6								
		H	8	55	12222.2								
BT5-D		A	13	39	8666.7	9.5	1.8	10916.7	5130.3	27	393	1.97	0.60
		B	12	86	19111.1								
		C	12	49	10888.9								
		D	9	78	17333.3								
		E	9	49	10888.9								
		F	7	20	4444.4								
		G	9	47	10444.4								
		H	8	25	5555.6								
BT6-S	**North**	A	8	24	5333.3	6.8	1.7	15722.2	9062.4	16	566	0.86	0.62
		B	7	40	8888.9								
		C	5	46	10222.2								
		D	6	39	8666.7								
		E	7	105	23333.3								
		F	6	144	32000.0								
		G	5	84	18666.7								
		H	10	84	18666.7								
BT6-M		A	11	78	17333.3	8.1	2.0	13083.3	4711.7	21	471	1.95	0.64
		B	9	49	10888.9								
		C	5	44	9777.8								
		D	8	45	10000.0								
		E	10	39	8666.7								
		F	6	47	10444.4								
		G	8	99	22000.0								
		H	8	70	15555.6								
BT6-D		A	5	5	1111.1	8.0	3.4	6166.7	4185.7	35	222	2.48	0.70
		B	6	14	3111.1								
		C	8	55	12222.2								
		D	7	22	4888.9								
		E	7	15	3333.3								
		F	7	18	4000.0								
		G	16	51	11333.3								
		H	8	42	9333.3								
BT7-S	**South**	A	3	73	16222.2	2.8	0.9	6388.9	5029.4	7	230	0.56	0.29
		B	1	3	666.7								
		C	3	42	9333.3								
		D	4	22	4888.9								
		E	3	13	2888.9								
		F	2	9	2000.0								
		G	3	39	8666.7								
		H	3	29	6444.4								
BT7-M		A	3	3	666.7	3.3	1.7	1027.8	604.9	17	37	2.42	0.85
		B	3	10	2222.2								
		C	2	3	666.7								
		D	4	4	888.9								
		E	1	1	222.2								
		F	2	4	888.9								
		G	6	6	1333.3								
		H	5	6	1333.3								
BT7-D		A	3	3	666.7	1.6	1.2	361.1	263.9	4	13	1.82	0.93
		B	1	1	222.2								
		C	2	2	444.4								
		D	3	3	666.7								
		E	2	2	444.4								
		F	0	0	0.0								
		G	0	0	0.0								
		H	2	2	444.4								
BT8-S	**South**	A	3	7	1555.6	3.3	2.2	1194.4	957.2	14	42	2.48	0.94
		B	1	1	222.2								
		C	3	4	888.9								
		D	3	6	1333.3								
		E	8	14	3333.3								
		F	1	3	666.7								
		G	4	4	888.9								
		H	3	3	666.7								
BT8-M		A	6	10	2666.7	3.0	1.9	1472.2	1169.5	16	49	2.43	0.88
		B	4	9	2666.7								
		C	0	0	0.0								
		D	1	1	444.4								
		E	4	15	2888.9								
		F	4	8	1777.8								
		G	2	2	444.4								
		H	3	4	888.9								
BT8-D		A	4	5	1111.1	3.3	0.9	1916.7	2151.0	13	69	1.68	0.66
		B	4	32	7111.1								
		C	2	7	1555.6								
		D	3	4	888.9								
		E	2	2	444.4								
		F	3	4	888.9								
		G	4	9	2000.0								
		H	4	6	1333.3								

Table 36. Summary of the benthic macroinfaunal data for the Ship Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m²)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT9-S	**North**	A	3	40	8888.9	5.1	1.6	14500.0	4150.2	14	522	0.80	0.30
		B	7	70	15555.6								
		C	6	60	13333.3								
		D	6	75	16666.7								
		E	7	96	21333.3								
		F	4	80	17777.8								
		G	3	45	10000.0								
		H	3	56	12444.4								
BT9-M		A	5	125	4000.0	4.9	1.6	2305.6	1828.4	16	927	2.20	0.79
		B	2	117	222.2								
		C	3	44	888.9								
		D	5	84	888.9								
		E	6	174	5777.8								
		F	5	116	2222.2								
		G	6	127	2000.0								
		H	7	140	2444.4								
BT9-D		A	5	305	67777.8	5.9	2.2	54027.8	24106.6	17	1945	0.42	0.15
		B	2	109	24222.2								
		C	8	316	70222.2								
		D	9	423	94000.0								
		E	6	235	52222.2								
		F	5	113	25111.1								
		G	7	172	38222.2								
		H	5	272	60444.4								
BT10-S	**North**	A	7	45	10000.0	7.3	1.8	11527.8	2365.1	22	415	1.68	0.54
		B	5	57	12666.7								
		C	7	57	12666.7								
		D	7	45	10000.0								
		E	9	53	11777.8								
		F	8	32	7111.1								
		G	10	62	13777.8								
		H	5	64	14222.2								
BT10-M		A	6	80	17777.8	6.0	1.7	17472.2	8283.3	16	629	1.18	0.43
		B	5	25	5555.6								
		C	6	74	16444.4								
		D	4	49	10888.9								
		E	7	111	24666.7								
		F	7	145	32222.2								
		G	4	58	12888.9								
		H	9	87	19333.3								
BT10-D		A	7	76	16888.9	5.9	2.2	19416.7	10054.5	17	699	1.30	0.46
		B	8	147	32666.7								
		C	9	53	11777.8								
		D	7	45	10000.0								
		E	3	64	14222.2								
		F	5	145	32222.2								
		G	5	41	9111.1								
		H	3	128	28444.4								
BT11-S	**South**	A	0	0	0.0	0.4	0.7	83.3	165.3	3	3	1.10	1.00
		B	2	2	444.4								
		C	0	0	0.0								
		D	0	0	0.0								
		E	1	1	222.2								
		F	0	0	0.0								
		G	0	0	0.0								
		H	0	0	0.0								
BT11-M		A	3	5	1111.1	1.1	1.0	305.6	355.1	7	11	1.85	0.95
		B	1	1	222.2								
		C	1	1	222.2								
		D	1	1	222.2								
		E	0	0	0.0								
		F	1	1	222.2								
		G	2	2	444.4								
		H	0	0	0.0								
BT11-D		A	3	3	666.7	1.9	1.1	500.0	370.9	8	18	1.92	0.92
		B	2	2	444.4								
		C	3	4	888.9								
		D	0	0	0.0								
		E	2	2	444.4								
		F	1	1	222.2								
		G	3	5	1111.1								
		H	1	1	222.2								
BT12-S	**South**	A	2	8	1777.8	2.8	1.0	1111.1	628.5	8	40	1.44	0.69
		B	2	2	444.4								
		C	3	7	1555.6								
		D	4	4	888.9								
		E	4	7	1555.6								
		F	1	1	222.2								
		G	3	3	666.7								
		H	3	8	1777.8								
BT12-M		A	6	7	1555.6	2.3	1.8	1055.6	776.6	10	38	1.55	0.67
		B	3	12	2666.7								
		C	1	5	1111.1								
		D	3	3	666.7								
		E	1	2	444.4								
		F	1	3	666.7								
		G	2	5	1111.1								
		H	1	1	222.2								
BT12-D		A	4	7	1555.6	4.5	1.4	3083.3	2415.2	9	111	1.48	0.67
		B	4	28	6222.2								
		C	5	8	1777.8								
		D	5	12	2666.7								
		E	2	5	1111.1								
		F	5	9	2000.0								
		G	4	8	1777.8								
		H	7	34	7555.6								

Table 43. Summary of the benthic macroinfaunal data for the Cat Island Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m^2)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BT13-S	**West**	A	1	1	222.2	1.3	0.5	666.7	394.0	3	24	0.46	0.42
		B	1	1	222.2								
		C	1	2	444.4								
		D	1	5	1111.1								
		E	2	2	444.4								
		F	2	3	666.7								
		G	1	5	1111.1								
		H	1	5	1111.1								
BT13-M		A	5	13	2888.9	4.4	0.7	5888.9	5848.2	10	212	1.05	0.46
		B	4	11	2444.4								
		C	5	15	3333.3								
		D	5	18	4000.0								
		E	4	80	17777.8								
		F	4	9	2000.0								
		G	5	55	12222.2								
		H	3	11	2444.4								
BT13-D		A	4	83	18444.4	4.9	1.1	14916.7	8235.0	14	537	0.80	0.30
		B	5	119	26444.4								
		C	6	47	10444.4								
		D	3	68	15111.1								
		E	5	36	8000.0								
		F	6	120	26666.7								
		G	6	28	6222.2								
		H	4	36	8000.0								
BT15-S	**Northeast**	A	1	60	13333.3	2.5	1.3	12777.8	5832.5	7	460	0.20	0.10
		B	1	44	9777.8								
		C	4	81	18000.0								
		D	4	32	7111.1								
		E	2	53	11777.8								
		F	4	109	24222.2								
		G	2	31	6888.9								
		H	2	50	11111.1								
BT15-M		A	3	130	28888.9	2.9	0.6	27194.4	8719.0	6	979	0.34	0.19
		B	3	150	33333.3								
		C	3	35	7777.8								
		D	2	123	27333.3								
		E	4	107	23777.8								
		F	2	164	36444.4								
		G	3	131	29111.1								
		H	3	139	30888.9								
BT15-D		A	3	50	11111.1	4.3	1.7	21000.0	6073.0	10	756	0.52	0.23
		B	4	74	16444.4								
		C	5	96	21333.3								
		D	4	80	17777.8								
		E	6	129	28666.7								
		F	5	98	21777.8								
		G	1	97	21555.6								
		H	6	132	29333.3								
BT16-S	**Southeast**	A	1	2	444.4	2.1	0.8	1222.2	671.9	5	44	0.89	0.55
		B	3	7	1555.6								
		C	2	6	1333.3								
		D	3	4	888.9								
		E	2	10	2222.2								
		F	2	6	1333.3								
		G	1	1	222.2								
		H	3	8	1777.8								
BT16-M		A	3	5	1111.1	2.8	1.0	1166.7	440.5	7	42	1.61	0.83
		B	4	9	2000.0								
		C	3	6	1333.3								
		D	2	5	1111.1								
		E	3	5	1111.1								
		F	4	6	1333.3								
		G	2	2	444.4								
		H	1	4	888.9								
BT16-D		A	2	2	444.4	2.0	0.5	694.4	364.9	7	25	1.56	0.80
		B	2	3	666.7								
		C	2	5	1111.1								
		D	3	6	1333.3								
		E	2	3	666.7								
		F	2	3	666.7								
		G	1	1	222.2								
		H	2	2	444.4								

Table 44. Summary of the benthic macroinfaunal data for the Horn Island Beach Transect Reference stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Station	Island Location	Rep	No. of Taxa	No. of Indvs	Density (no/m²)	Mean No. Taxa	Taxa (SD)	Mean Density	Density (SD)	Total No Taxa	Total No Individuals	H' Diversity	J' Evenness
BTR1-S	**North**	A	6	125	27777.8	8.5	1.7	25694.4	14716.1	19	925	1.36	0.46
		B	8	81	18000.0								
		C	8	79	17555.6								
		D	9	235	52222.2								
		E	9	53	11777.8								
		F	12	198	44000.0								
		G	8	85	18888.9								
		H	8	69	15333.3								
BTR1-M		A	8	42	9333.3	10.0	3.0	40305.6	28677.6	20	1451	1.14	0.38
		B	9	58	12888.9								
		C	7	49	10888.9								
		D	13	340	75555.6								
		E	16	352	78222.2								
		F	9	150	33333.3								
		G	10	183	40666.7								
		H	8	277	61555.6								
BTR1-D		A	7	88	19555.6	9.4	2.1	34111.1	18952.8	20	1228	1.03	0.34
		B	10	67	14888.9								
		C	8	153	34000.0								
		D	6	233	51777.8								
		E	10	262	58222.2								
		F	11	241	53555.6								
		G	11	38	8444.4								
		H	12	146	32444.4								
BTR2-S	**North**	A	19	129	28666.7	14.4	4.1	14305.6	10072.7	36	515	2.62	0.73
		B	8	30	6666.7								
		C	16	57	12666.7								
		D	12	30	6666.7								
		E	10	56	12444.4								
		F	18	39	8666.7								
		G	14	32	7111.1								
		H	18	142	31555.6								
BTR2-M		A	9	89	19777.8	13.8	3.0	18333.3	6220.0	31	660	2.33	0.68
		B	11	66	14666.7								
		C	14	80	17777.8								
		D	17	120	26666.7								
		E	18	124	27555.6								
		F	13	70	15555.6								
		G	13	41	9111.1								
		H	15	70	15555.6								
BTR2-D		A	14	78	17333.3	14.0	2.3	18833.3	5388.3	29	678	2.28	0.68
		B	14	92	20444.4								
		C	11	61	13555.6								
		D	14	128	28444.4								
		E	11	67	14888.9								
		F	16	97	21555.6								
		G	14	55	12222.2								
		H	18	100	22222.2								
BTR3-S	**South**	A	0	0	0.0	2.4	1.8	1916.7	1969.6	9	69	1.52	0.69
		B	4	24	5333.3								
		C	1	2	444.4								
		D	4	18	4000.0								
		E	4	6	1333.3								
		F	0	0	0.0								
		G	3	13	2888.9								
		H	3	6	1333.3								
BTR3-M		A	5	7	1555.6	3.8	2.0	2388.9	3101.5	10	86	1.71	0.74
		B	4	5	1111.1								
		C	5	6	1333.3								
		D	2	6	1333.3								
		E	1	1	222.2								
		F	7	44	9777.8								
		G	4	14	3111.1								
		H	2	3	666.7								
BTR3-D		A	3	4	888.9	3.4	1.5	1305.6	1104.3	13	47	1.96	0.76
		B	2	2	444.4								
		C	2	2	444.4								
		D	6	12	2666.7								
		E	4	4	888.9								
		F	2	2	444.4								
		G	3	6	1333.3								
		H	5	15	3333.3								
BTR4-S	**South**	A	4	4	888.9	1.6	1.4	388.9	330.7	5	14	1.40	0.87
		B	0	0	0.0								
		C	2	3	666.7								
		D	3	3	666.7								
		E	0	0	0.0								
		F	1	1	222.2								
		G	2	2	444.4								
		H	1	1	222.2								
BTR4-M		A	2	8	1777.8	3.1	1.1	1333.3	605.7	9	48	1.64	0.75
		B	5	10	2222.2								
		C	4	5	1111.1								
		D	3	8	1777.8								
		E	2	2	444.4								
		F	3	3	666.7								
		G	2	5	1111.1								
		H	4	7	1555.6								
BTR4-D		A	6	12	2666.7	3.9	2.0	2277.8	1732.6	14	62	1.48	0.56
		B	1	3	666.7								
		C	5	7	1555.6								
		D	5	11	2444.4								
		E	5	17	3777.8								
		F	1	2	444.4								
		G	5	5	1111.1								
		H	3	25	5555.6								

Table 45. Percentage abundance of dominant benthic macroinfaunal taxa (>10% of the total) for the Beach Transect stations, Benthic Macroinfaunal Community Assessment, MsCIP, April-May 2011.

Taxa	BT1S	BT1M	BT1D	BT2S	BT2M	BT2D	BT3S	BT3M	BT3D	BT4S	BT4M	BT4D
Annelida												
Oligochaeta												
Enchytraidae (LPIL)							54.7					
Tubificidae (LPIL)							16.8	45.3	66.5			
Polychaeta												
Nephtys (LPIL)												
Paraonis fulgens						50.0		14.7				
Scolelepis squamata										11.8		
Sphaerosyllis piriferopsis												
Streptosyllis pettiboneae												
Arthropoda												
Malacostraca												
Callianassidae (LPIL)												
Haustoriidae (LPIL)												
Acanthohaustorius intermedius												
Lepidactylus triarticulatus	66.1	42.6	21.4									
Bowmaniella dissimilis												
Metamysidopsis swifti				64.4	43.9						72.0	25.0
Mysidae (LPIL)				32.7	24.4						18.9	
Pinnixa (LPIL)						14.3						
Ancinus depressus										23.5		
Exosphaeroma productatelson												
Mollusca												
Bivalvia												
Gemma gemma	17.1	18.1								41.2		11.4
Nemertea (LPIL)		27.5	50.3							17.6		31.8

Table 45 continued:

Taxa	BT9S	BT9M	BT9D	BT10S	BT10M	BT10D	BT11S	BT11M	BT11D	BT12S	BT12M	BT12D
Annelida												
Polychaeta												
Nephtys bucera									16.7			
Leitoscoloplos (LPIL)								18.2				
Paraonis fulgens							33.3		16.7			55.0
Terebellidae (LPIL)							33.3		11.1			
Arthropoda												
Malacostraca												
Spilocuma salomani										57.5	21.1	
Haustoriidae (LPIL)												
Acanthohaustorius intermedius												
Haustorius jayneae								27.3	27.8			
Lepidactylus triarticulatus	82.2		92.7	39.0	62.2	58.9						
Pinnixa (LPIL)		19.3										
Mollusca												
Bivalvia												
Gemma gemma		32.5		35.4	22.3	23.5				15.0	52.6	16.2
Turbellaria (LPIL)							33.3	18.2	11.1			

Table 45 continued:

Taxa	BTR1S	BTR1M	BTR1D	BTR2S	BTR2M	BTR2D	BTR3S	BTR3M	BTR3D	BTR4S	BTR4M	BTR4D
Annelida												
Oligochaeta												
Enchytraidae (LPIL)				14.4			20.3					
Tubificidae (LPIL)				11.8	30.6	23.2						
Polychaeta												
Paraonis fulgens				17.7	10.6	27.4		17.4	42.6	21.4	39.6	64.6
Scolelepis squamata										42.9		
Sphaerosyllis taylori	35.1	21.2	19.2									
Sphaerosyllis piriferopsis	49.9	67.2	71.0		16.1							
Arthropoda												
Malacostraca												
Spilocuma salomani											16.7	
Metamysidopsis swifti									10.6			
Pinnixa (LPIL)							50.7	45.3				
Ancinus depressus										21.4	25.0	
Mollusca												
Bivalvia												
Gemma gemma									14.9			
Nemertea (LPIL)				15.3	10.2	10.3		11.6				

Table 45 continued:

Taxa	BT5S	BT5M	BT5D	BT6S	BT6M	BT6D	BT7S	BT7M	BT7D	BT8S	BT8M	BT8D
Annelida												
Oligochaeta												
Enchytraidae (LPIL)	40.5	25.2		82.5	17.8							
Tubificidae (LPIL)	20.0	16.2	18.6						15.4			
Polychaeta												
Nephtys (LPIL)									30.8			
Paraonis fulgens		38.3	39.2		34.6	34.2						33.3
Scolelepis squamata							10.9	10.8				
Sphaerosyllis piriferopsis			13.7									
Streptosyllis pettiboneae						12.6						
Arthropoda												
Malacostraca												
Callianassidae (LPIL)											17.0	
Haustoriidae (LPIL)								10.8				
Acanthohaustorius intermedius												
Lepidactylus triarticulatus												
Bowmaniella dissimilis									15.4	11.6		
Metamysidopsis swifti												
Mysidae (LPIL)												
Pinnixa (LPIL)												40.6
Ancinus depressus												
Exosphaeroma productatelson												
Mollusca												
Bivalvia												
Gemma gemma												
Nemertea (LPIL)	16.5				19.3	11.7	85.2	29.7	15.4	16.3	20.8	

Table 45 continued:

	BT13S	BT13M	BT13D	BT15S	BT15M	BT15D	BT16S	BT16M	BT16D
Annelida									
Polychaeta									
Nephtys bucera									16.0
Leitoscoloplos (LPIL)								33.3	
Paraonis fulgens	87.5							11.9	48.0
Terebellidae (LPIL)									
Arthropoda									
Malacostraca									
Spilocuma salomani									
Haustoriidae (LPIL)		22.6							12.0
Acanthohaustorius intermedius									
Haustorius jayneae									
Lepidactylus triarticulatus		65.6	82.7	96.5	91.4	87.6	75.0	33.3	
Pinnixa (LPIL)									
Mollusca									
Bivalvia									
Gemma gemma									
Turbellaria (LPIL)									

Figure 1. Station locations for the Benthic Macroinfaunal Community Assessment, MsCIP, 2010 - 2011.

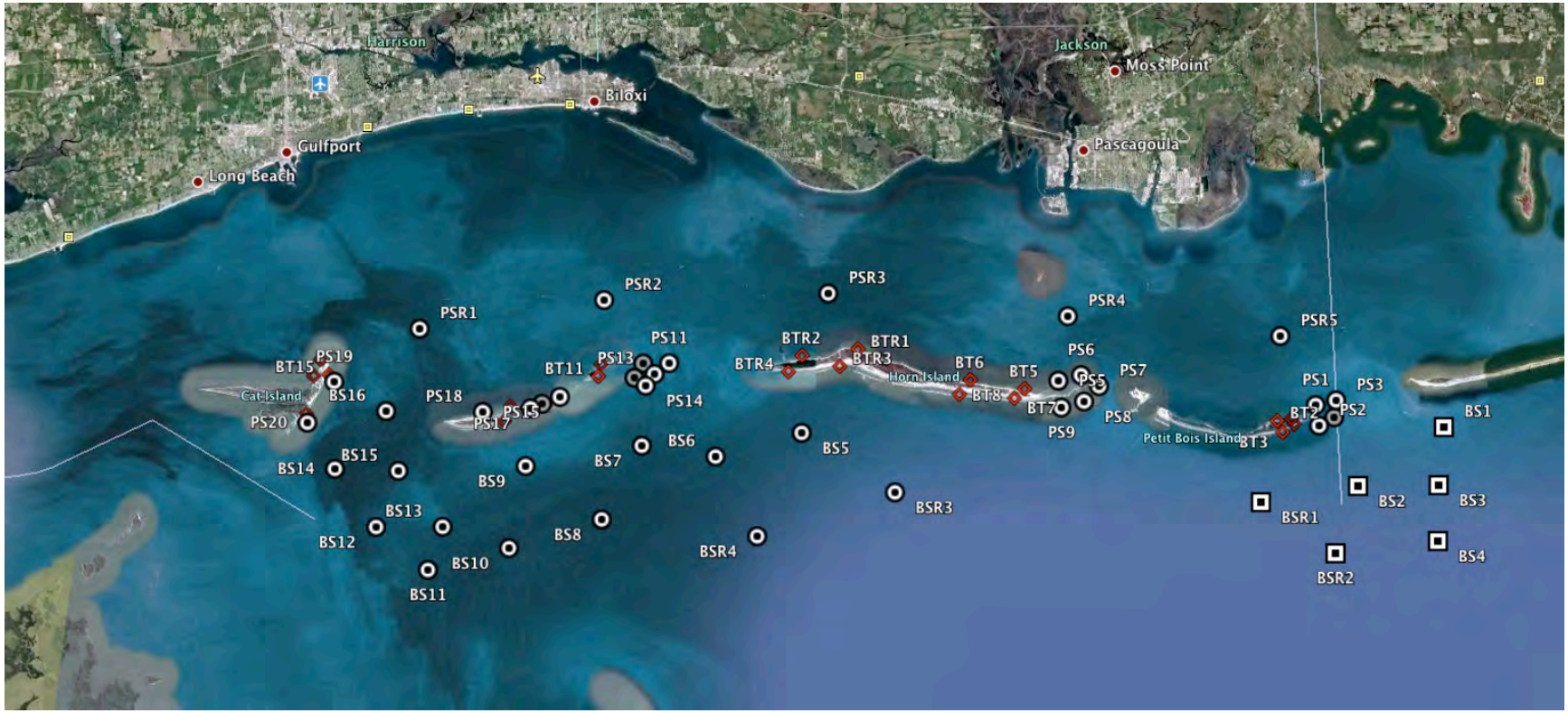


Figure 2. Petit Bois Island station locations for the Benthic Macroinfaunal Community Assessment, MsCIP, 2010 - 2011.

Figure 3. Horn Island station locations for the Benthic Macroinfaunal Community Assessment, MsCIP, 2010 - 2011.

Figure 4a. Ship Island station locations for the Benthic Macroinfaunal Community Assessment, MsCIP, June 2010.

Figure 4b. Station locations on Ship Island for the Benthic Macroinfaunal Community Assessment, MsCIP, September 2010 and April-May 2011.

Figure 5. Cat Island station locations for the Benthic Macroinfaunal Community Assessment, MsCIP, 2010 - 2011.

Figure 6. Sediment texture data for the MsCIP Borrow Site stations, June and September 2010, and April-May 2011.

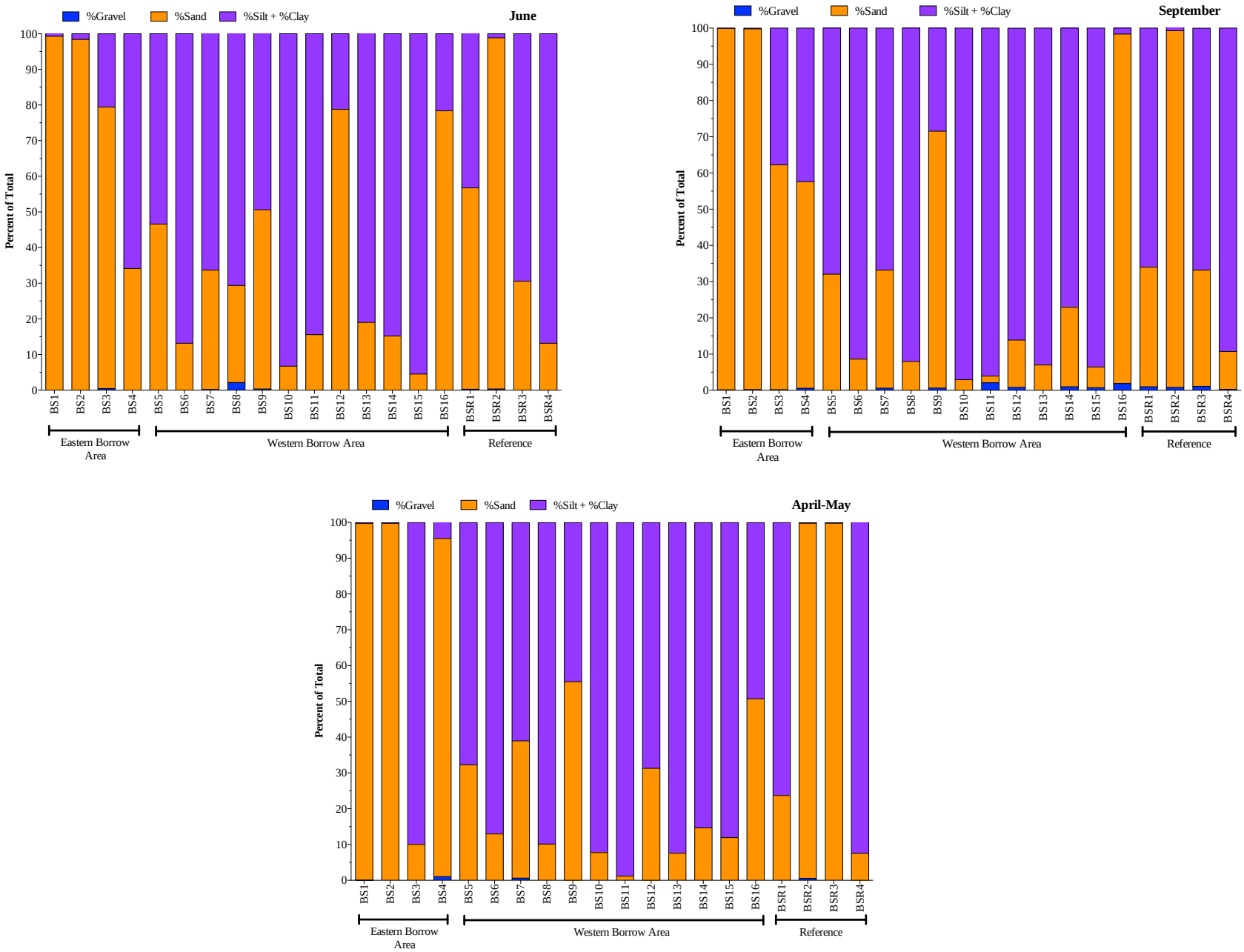


Figure 7. Sediment %TOC data for the MsCIP Borrow Site stations, June and September 2010, and April-May 2011.

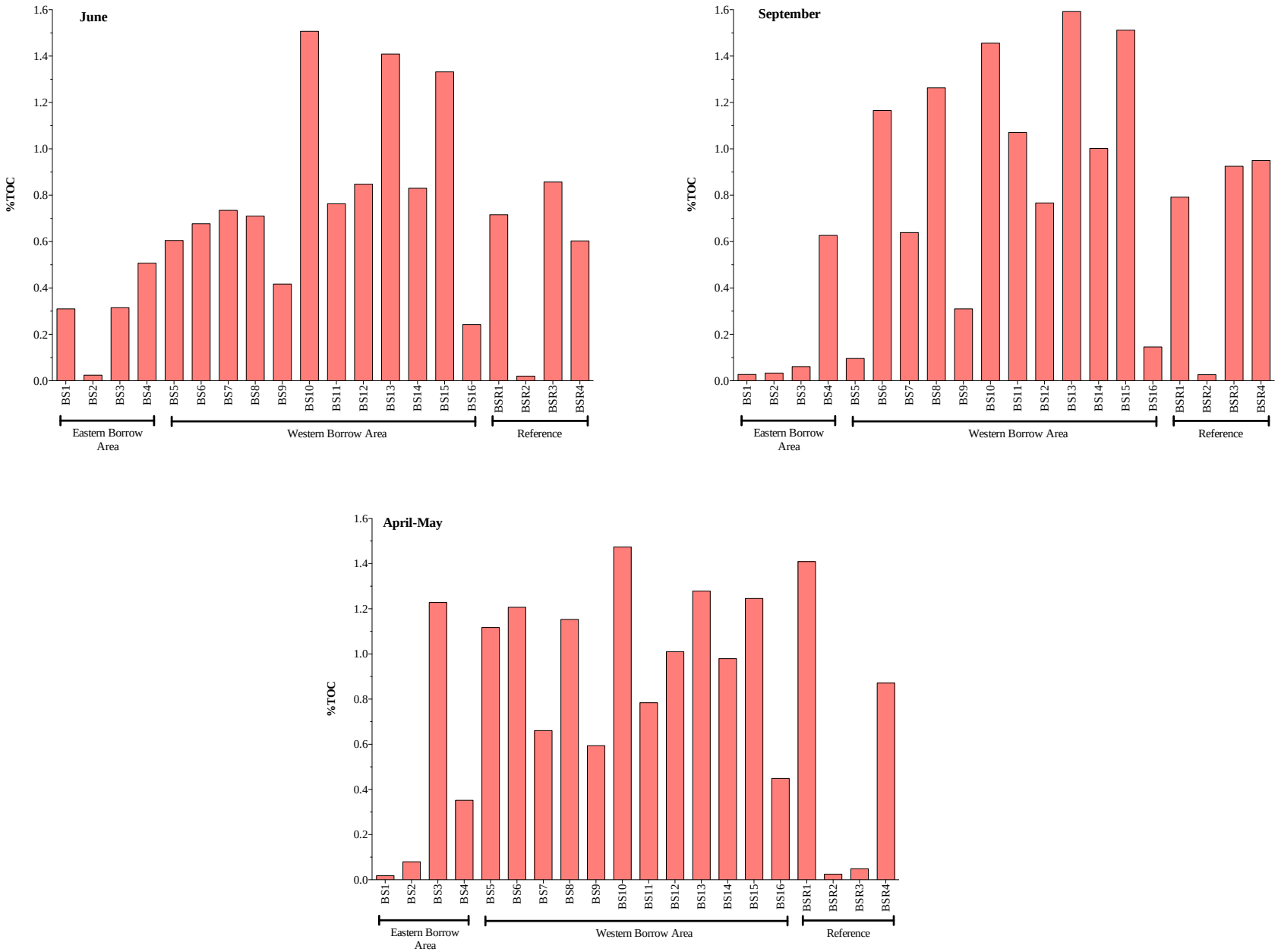


Figure 8. Bottom dissolved oxygen concentrations for the Borrow Site stations, June and September 2010 and April-May 2011.

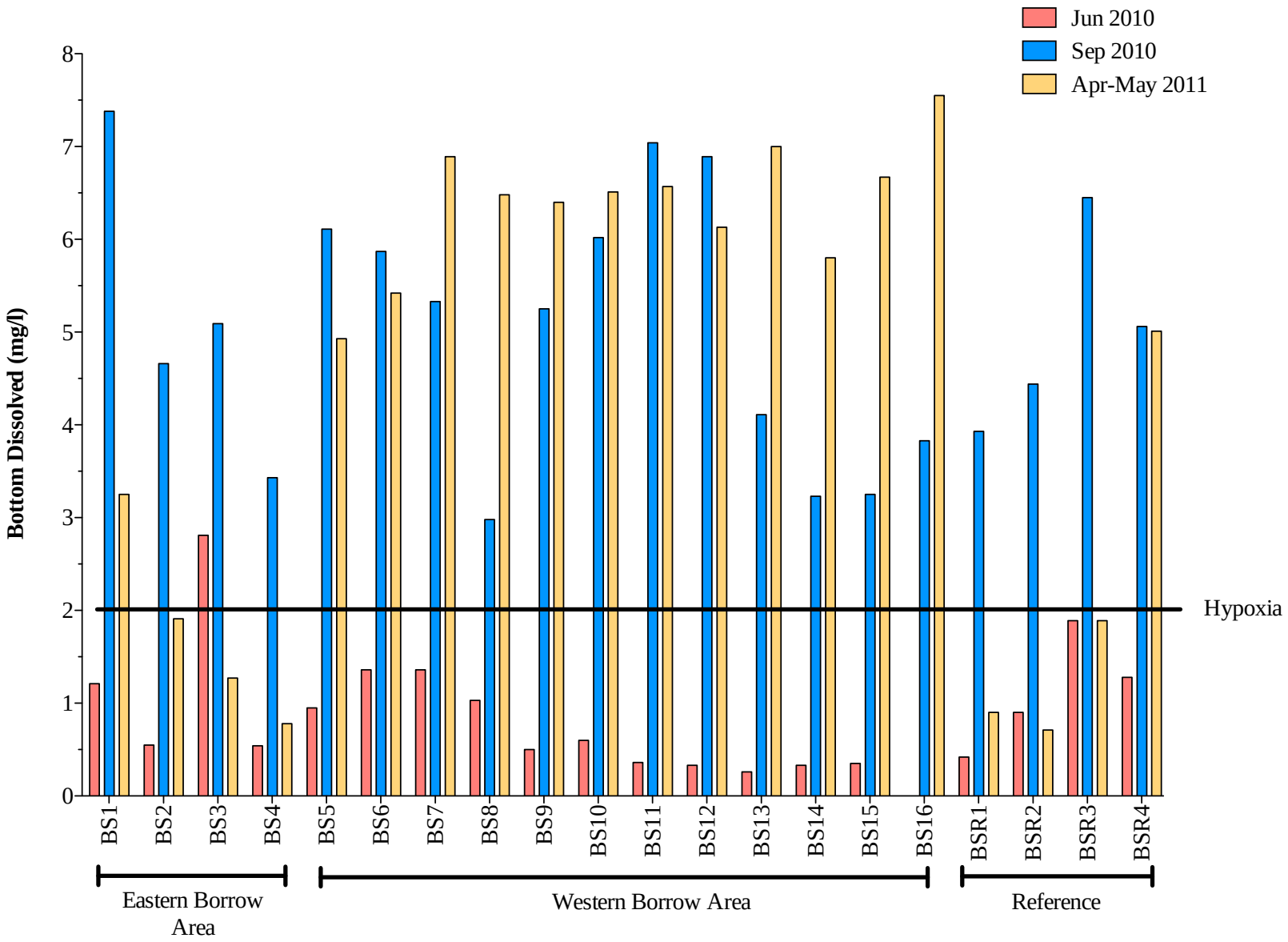
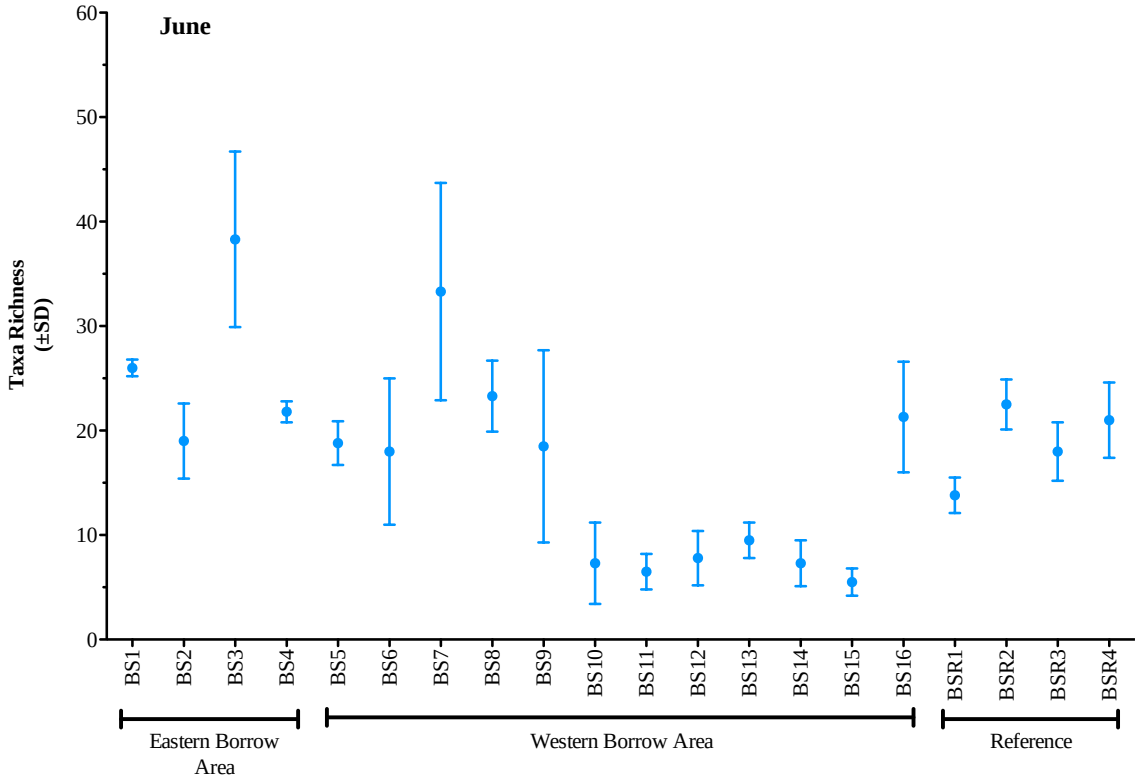


Figure 9. Taxa richness and density data for the MsCIP Borrow Site stations, June 2010.



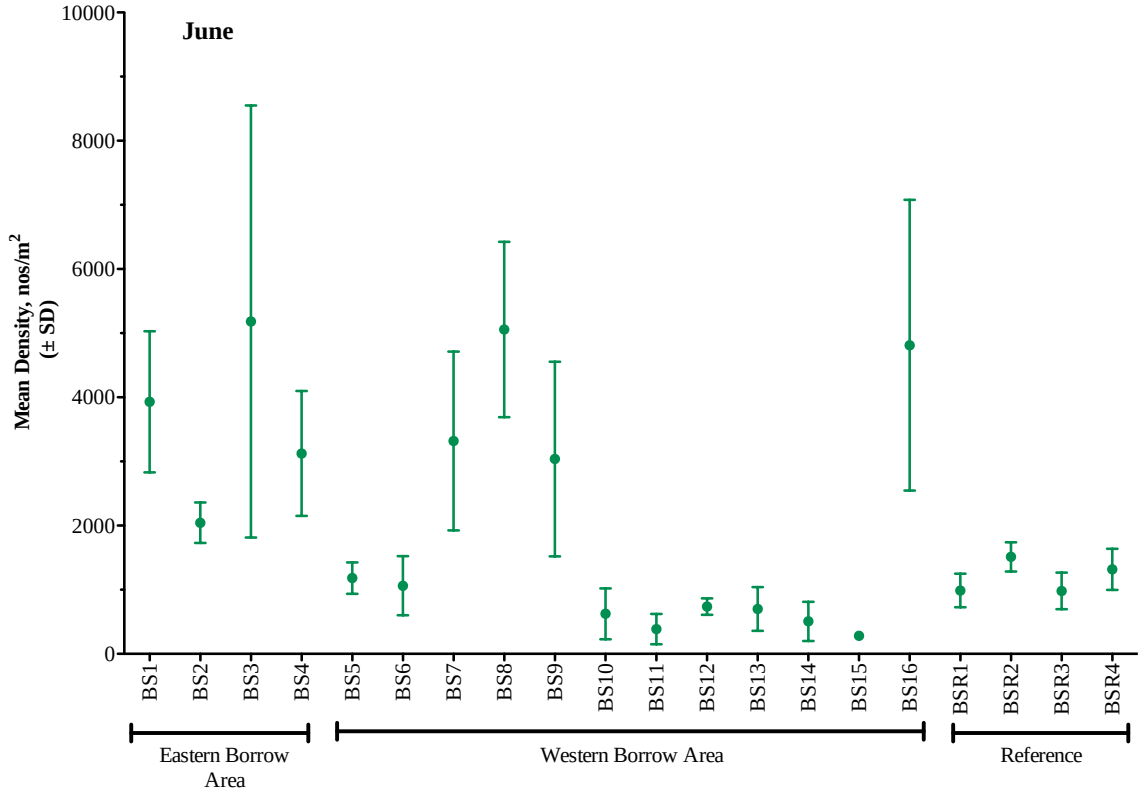
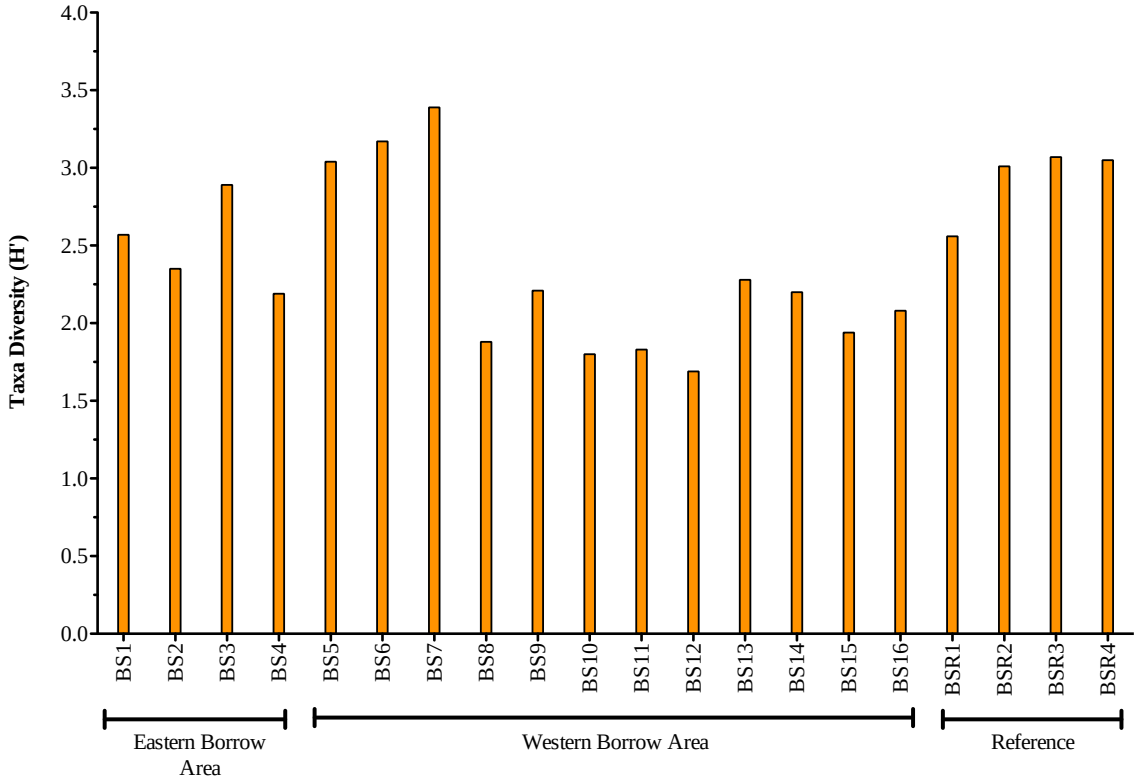


Figure 10. Taxa diversity (H') and evenness (J') data for the MsCIP Borrow Site stations, June 2010.



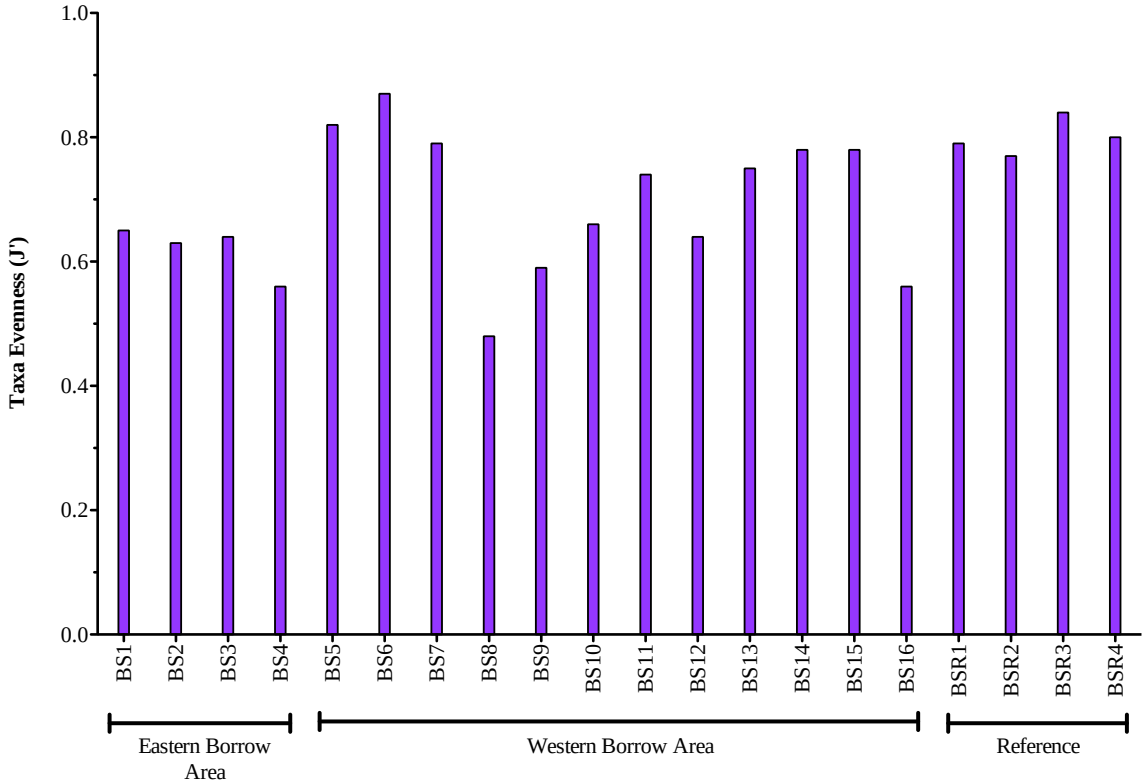
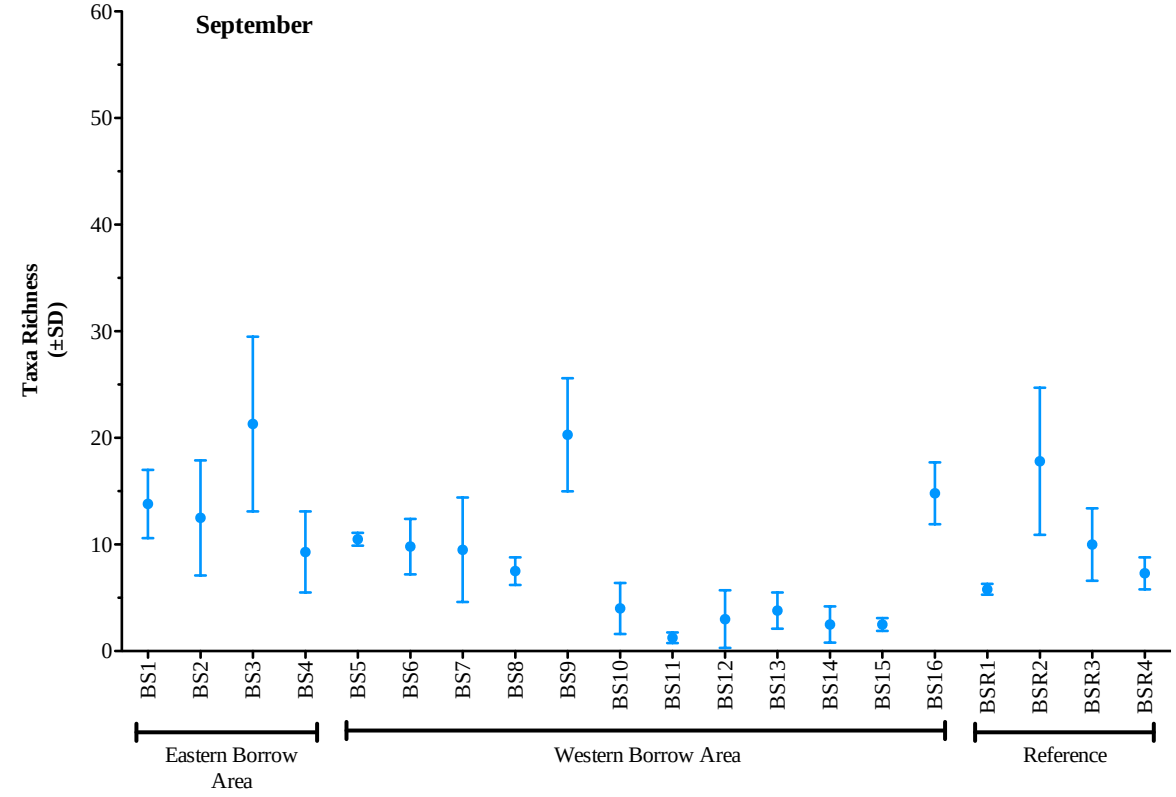


Figure 11. Taxa richness and density data for the MsCIP Borrow Site stations, September 2010.



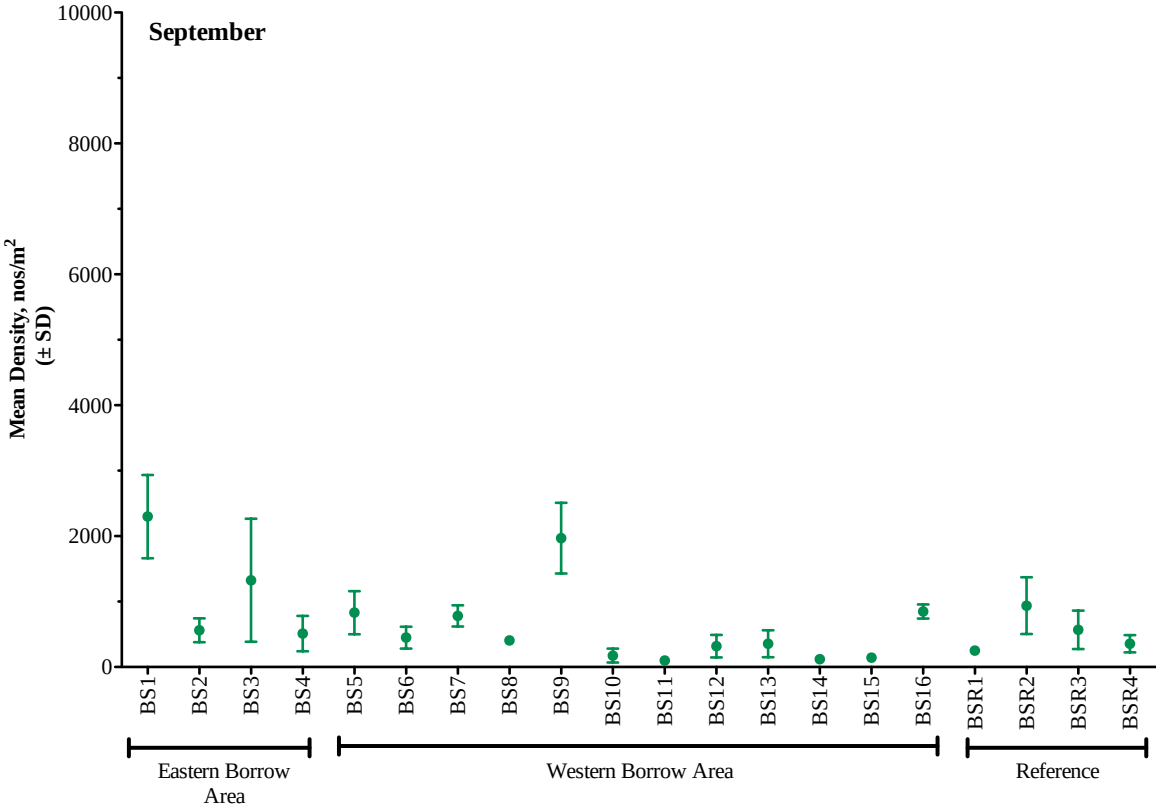
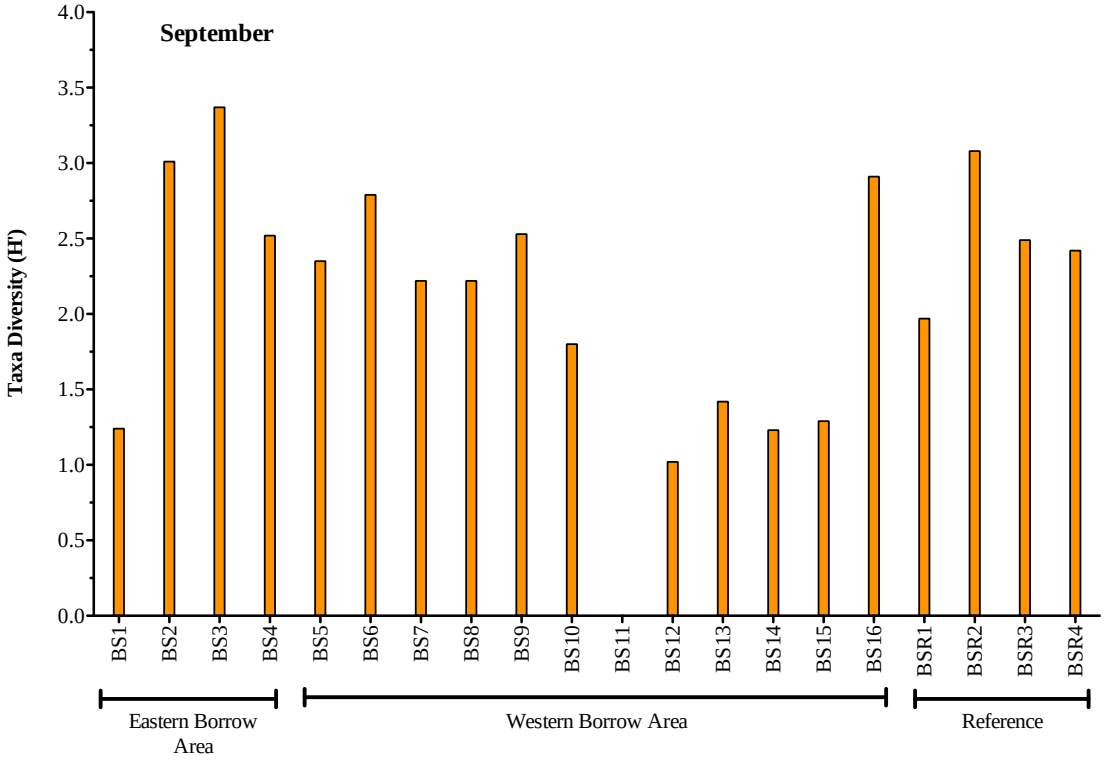


Figure 12. Taxa diversity (H') and evenness (J') data for the MsCIP Borrow Site stations, September 2010.



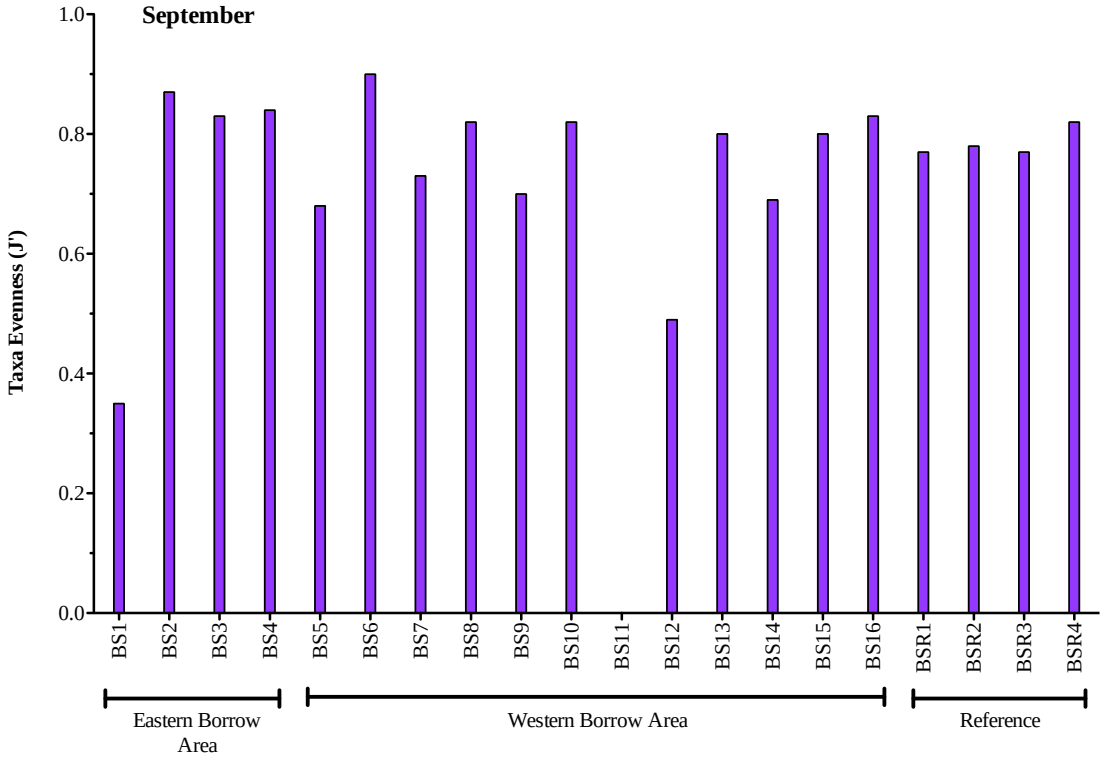
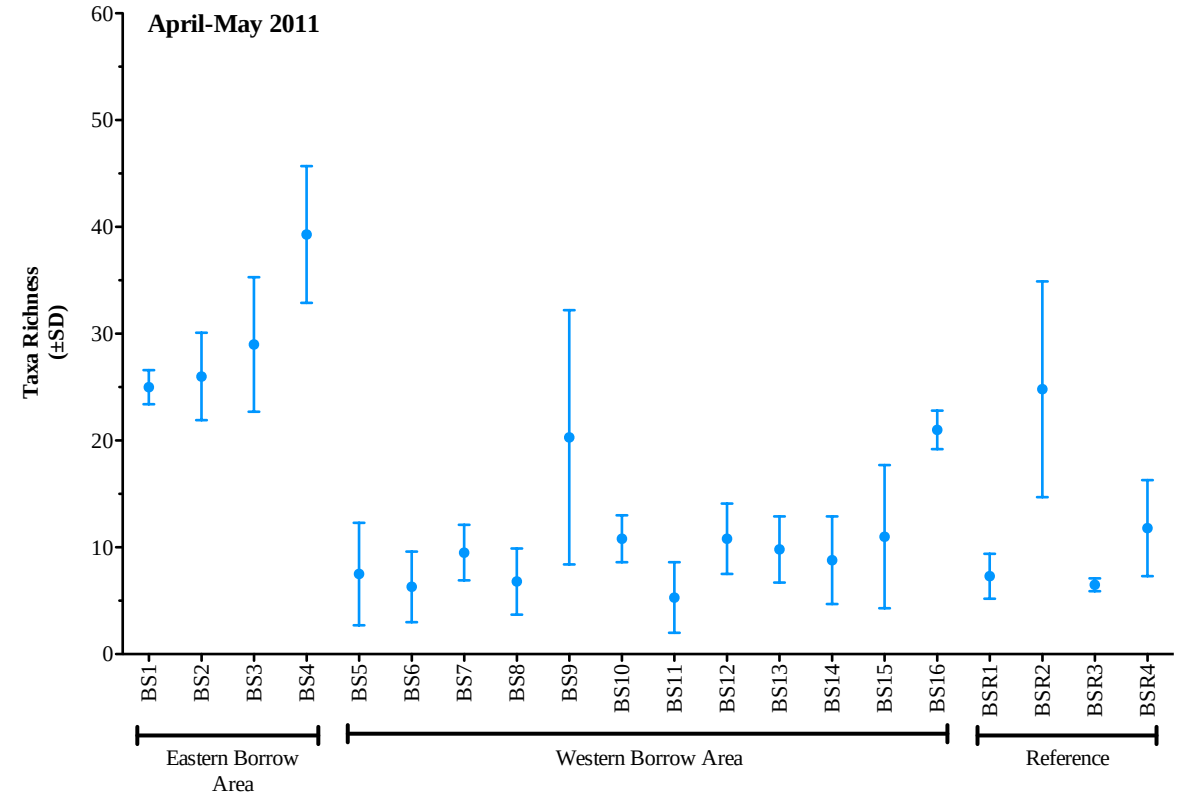


Figure 13. Taxa richness and density data for the MsCIP Borrow Site stations, April-May 2011.



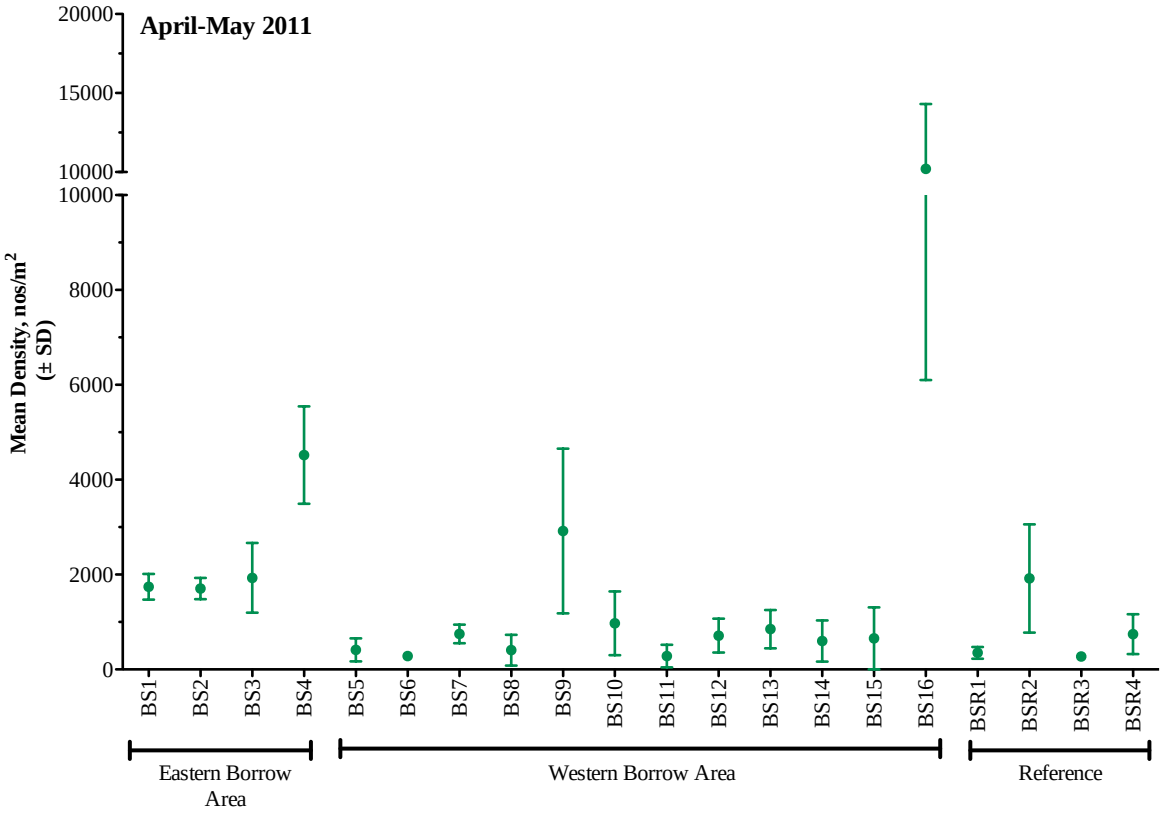
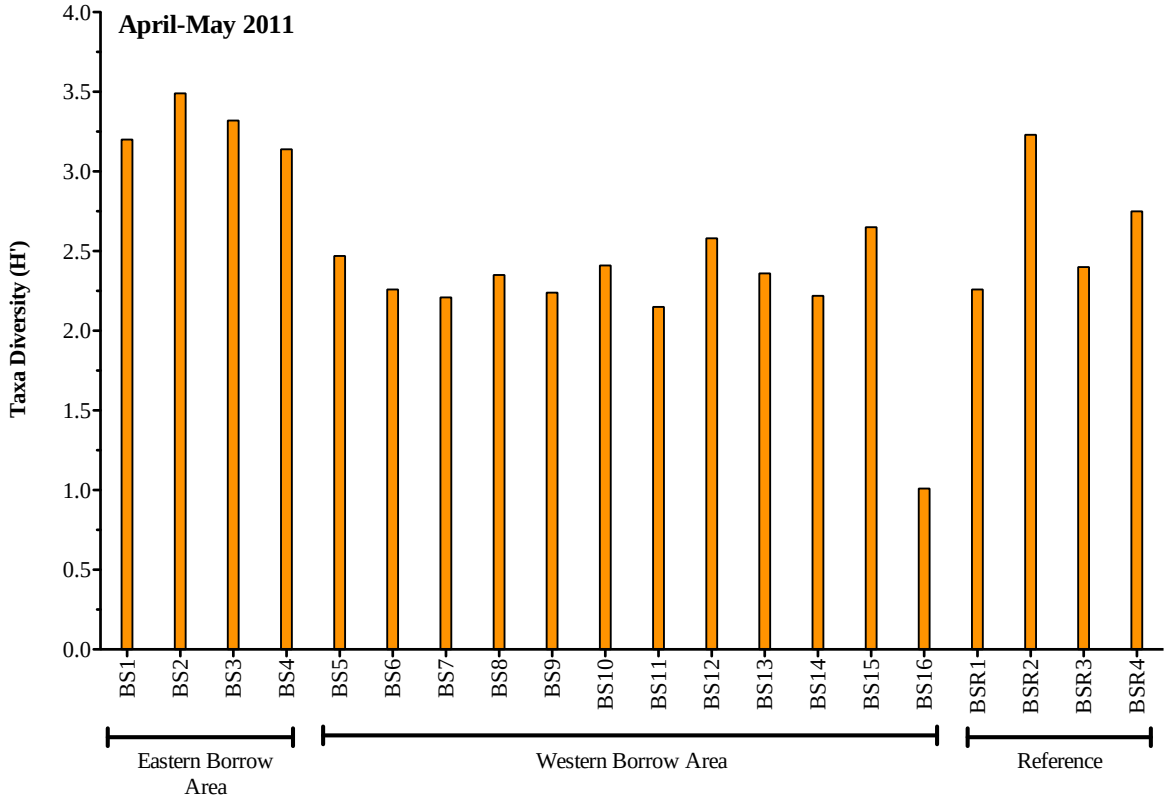


Figure 14. Taxa diversity (H') and evenness (J') data for the MsCIP Borrow Site stations, April-May 2011.



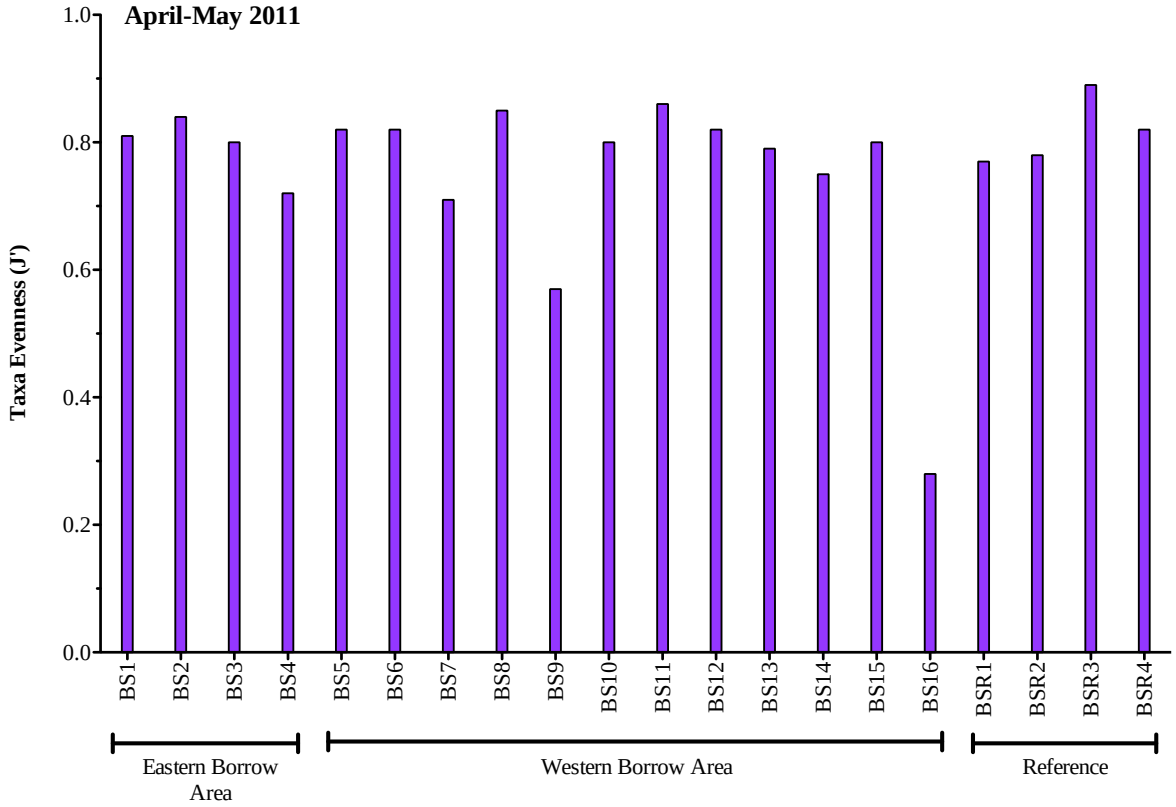


Figure 15. Taxa richness data for the Borrow Site stations June 2010, September 2010 and April-May 2011.

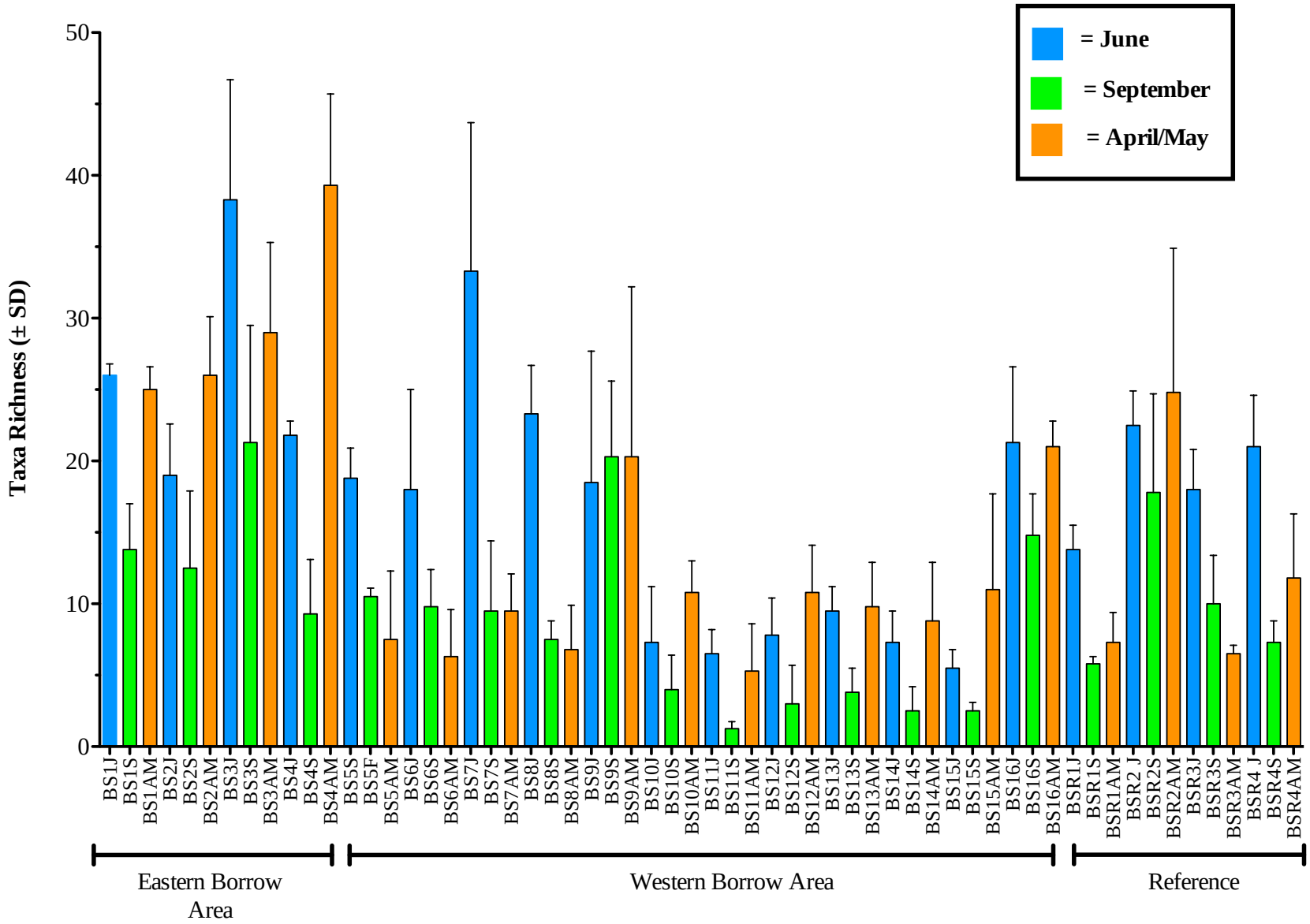


Figure 16. Density data for the Borrow Site stations June 2010, September 2010 and April-May 2011.

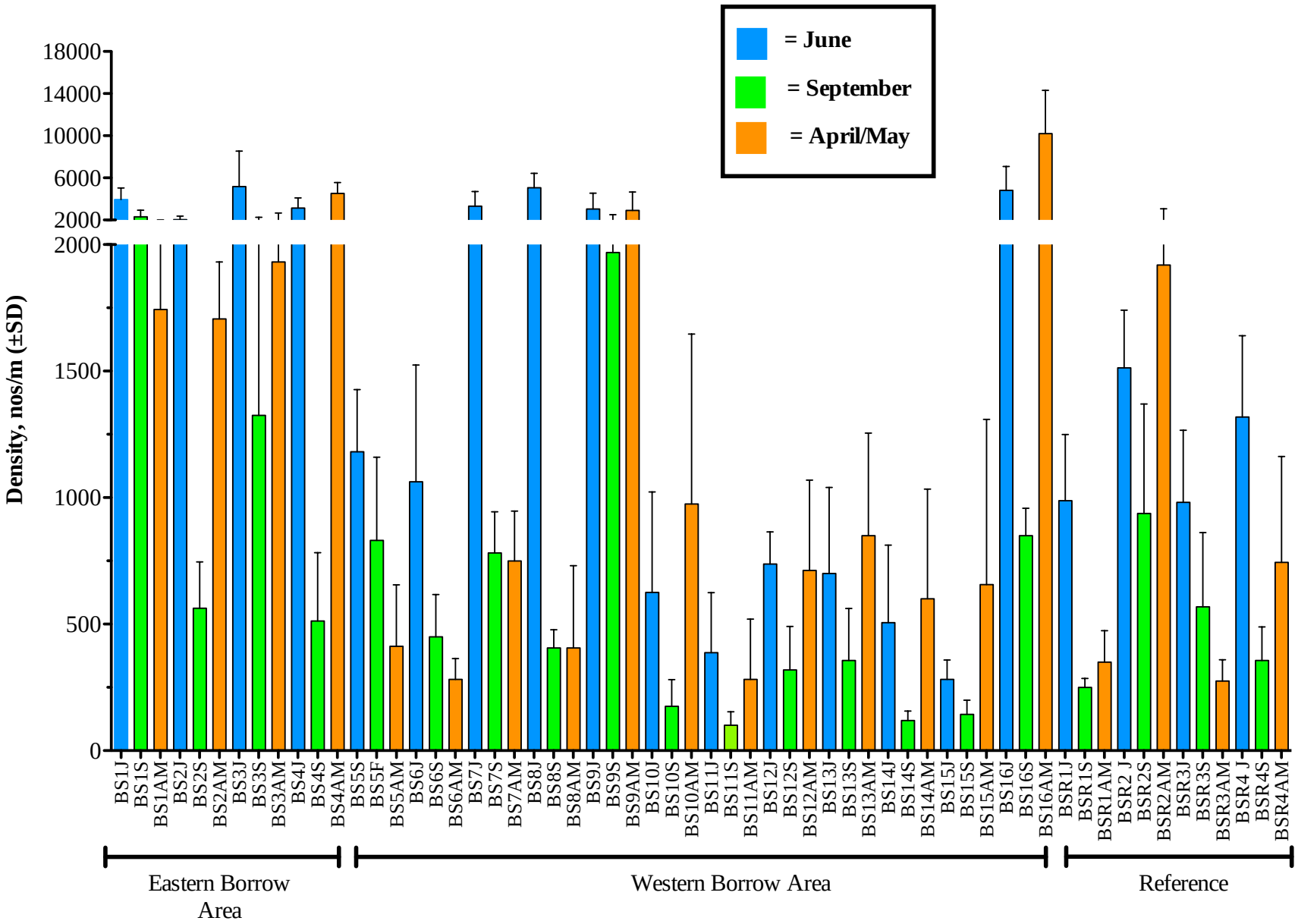


Figure 17. Sediment texture data for the MsCIP Placement Site stations, June 2010, September 2010, and April-May 2011.

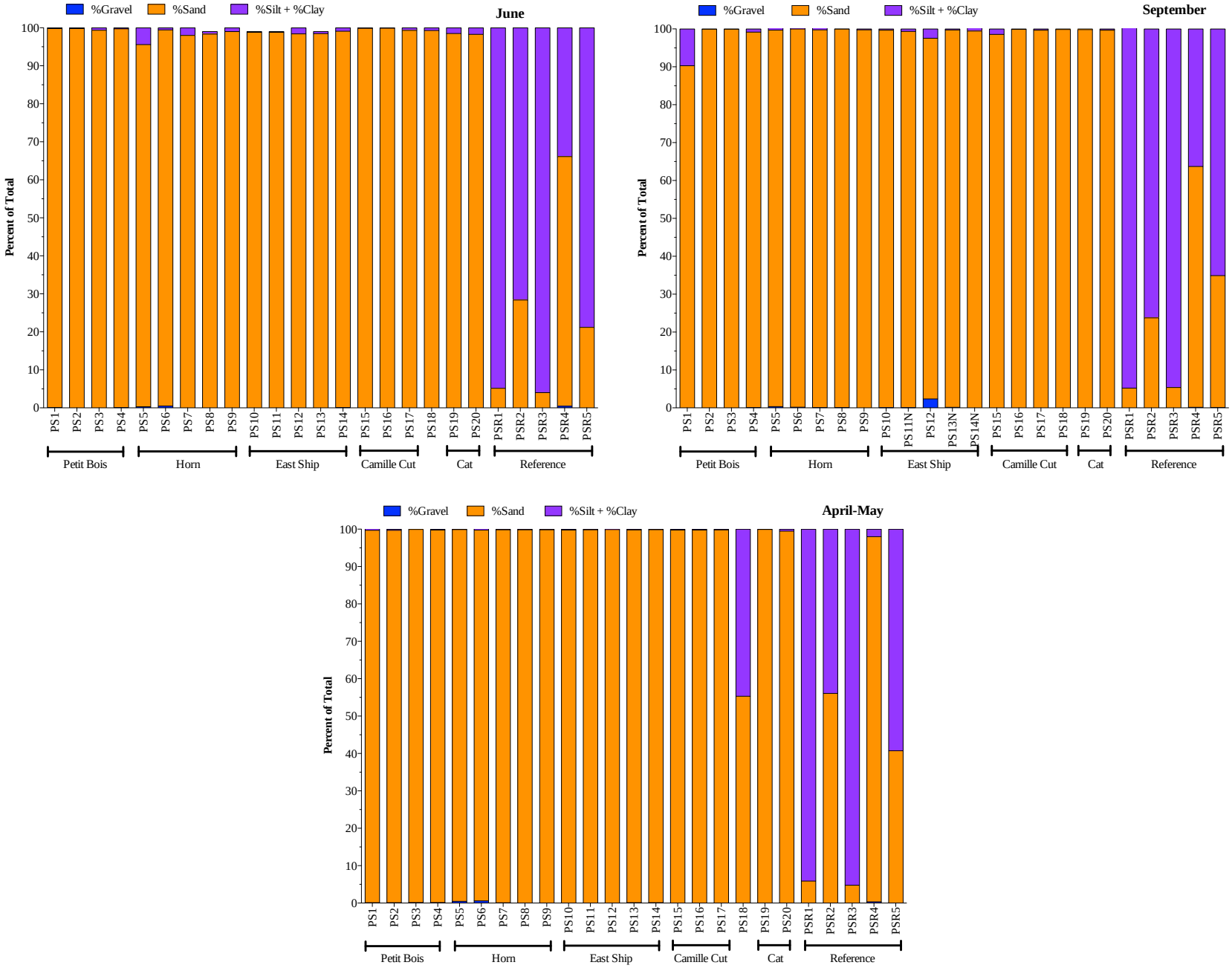


Figure 18. Sediment %TOC data for the MsCIP Placement Site stations, June 2010, September 2010, and April-May 2011.

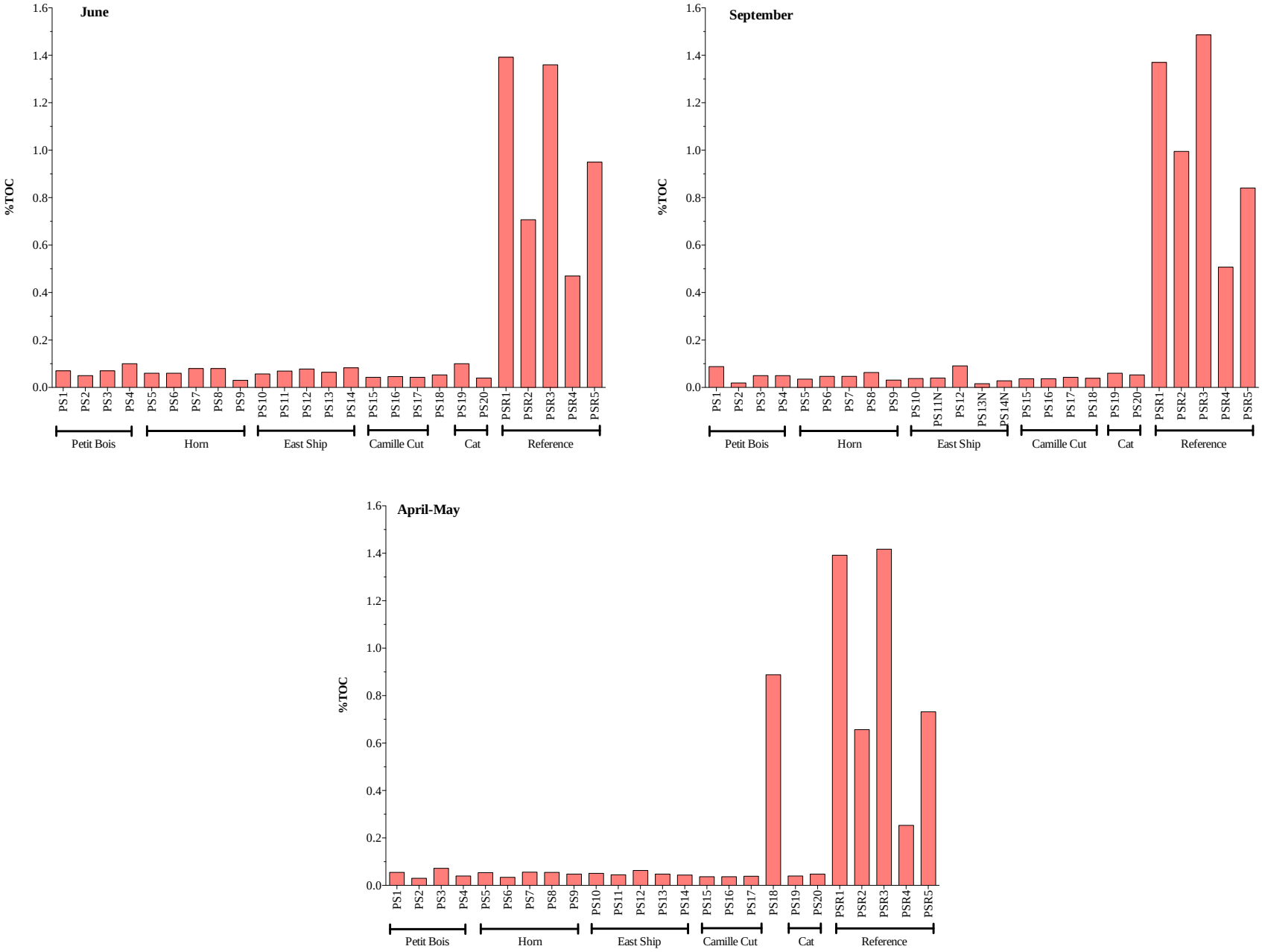
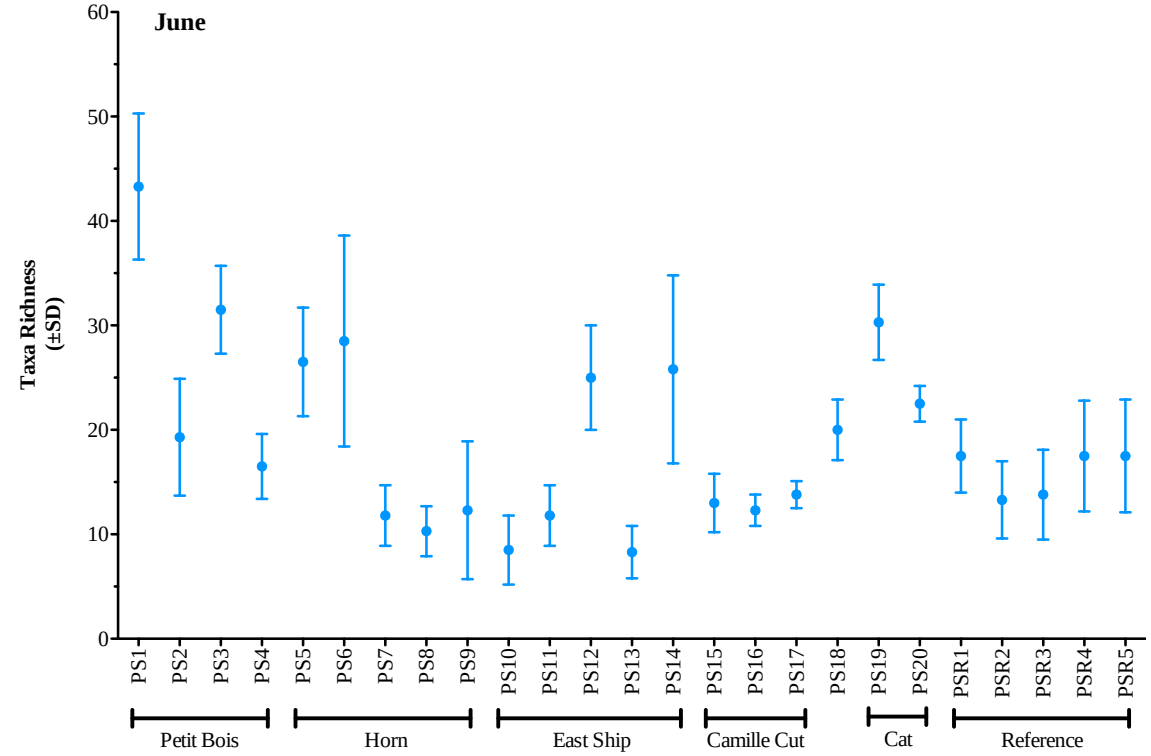


Figure 19. Taxa richness and density data for the MsCIP Placement Site stations, June 2010.



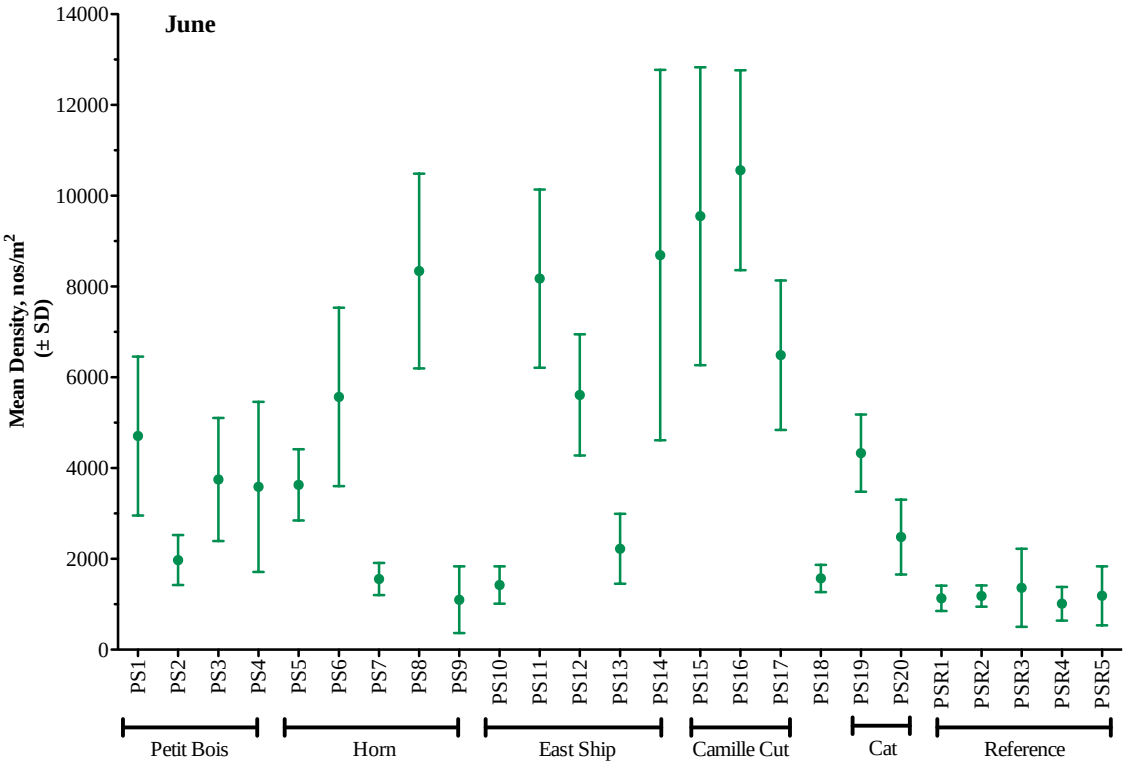
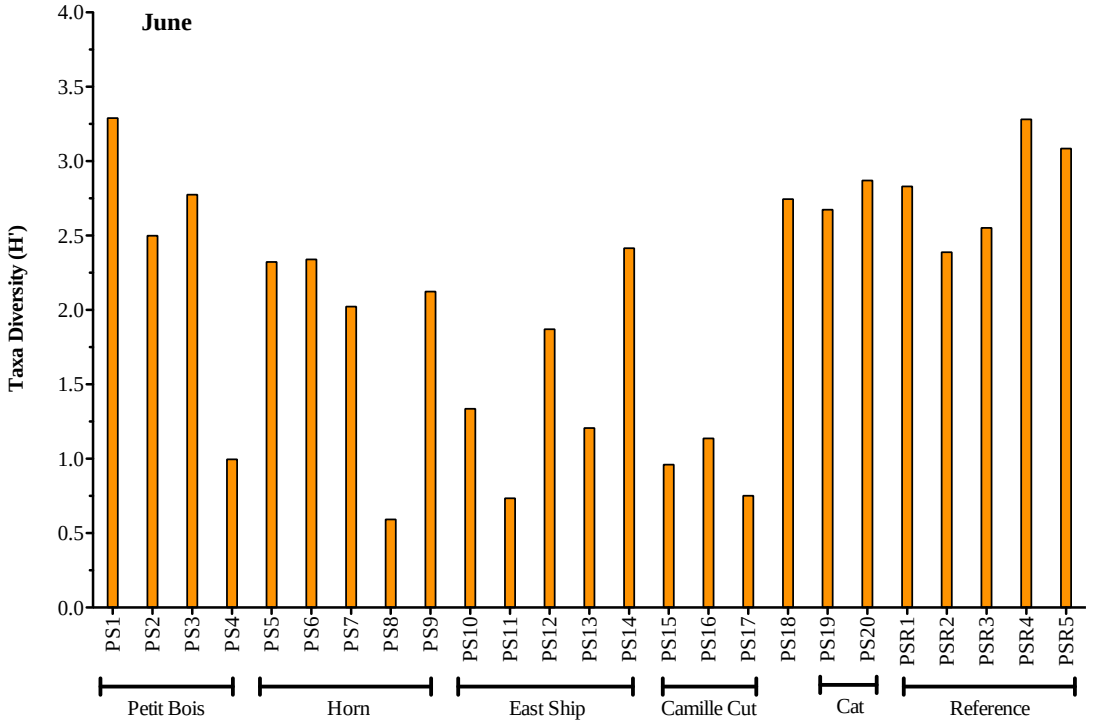


Figure 20. Taxa diversity (H') and evenness (J') data for the MsCIP Placement Site stations, June 2010.



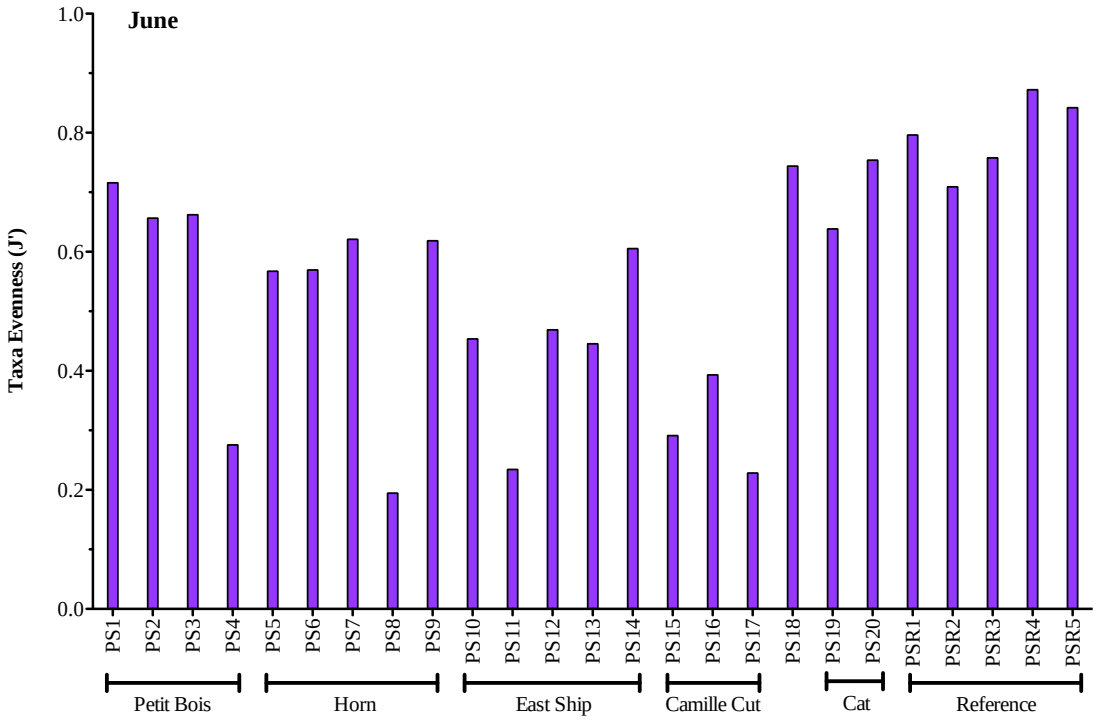
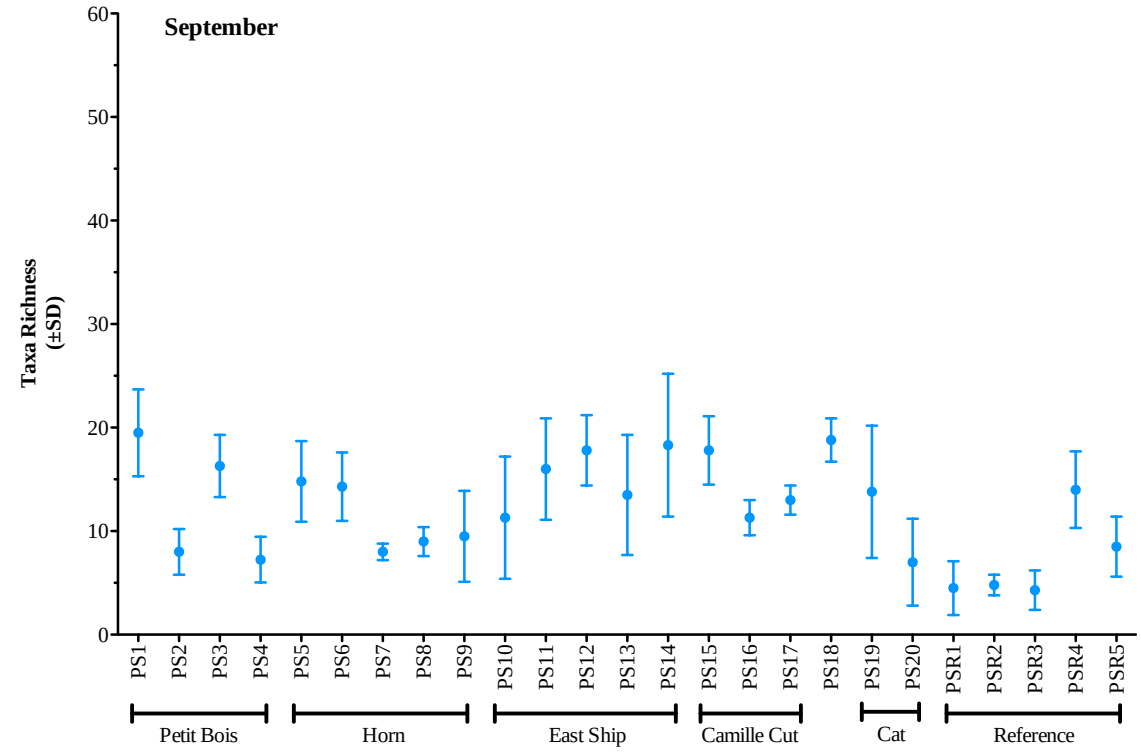


Figure 21. Taxa richness and density data for the MsCIP Placement Site stations, September 2010.



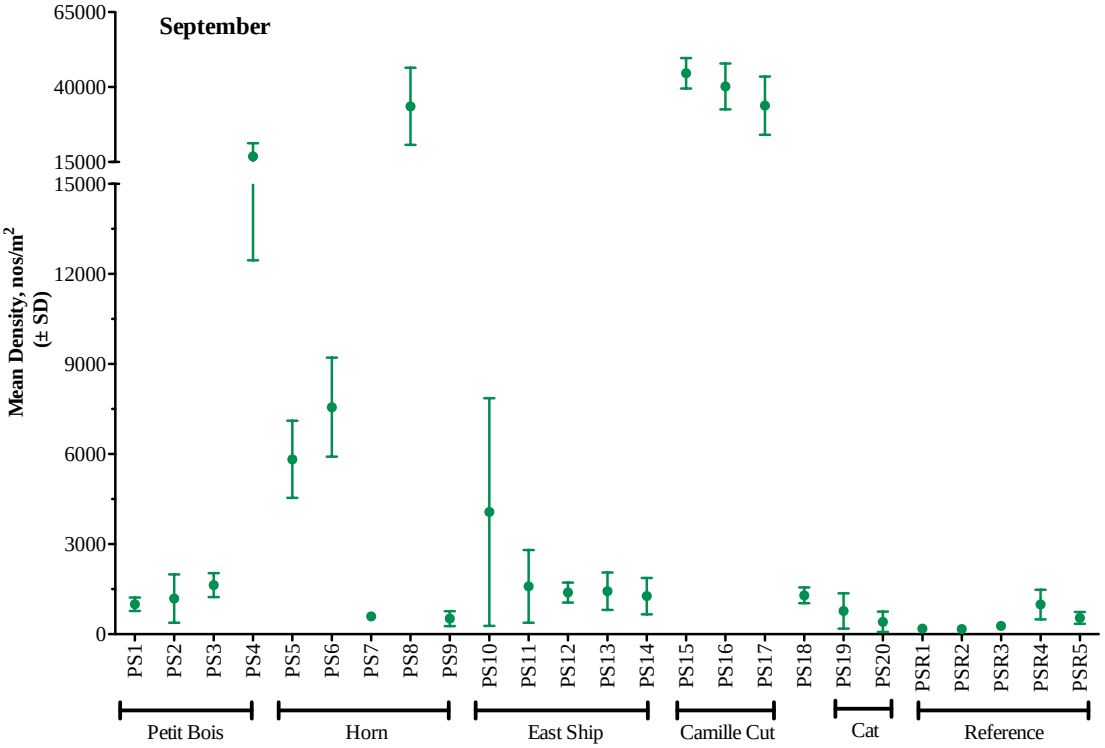
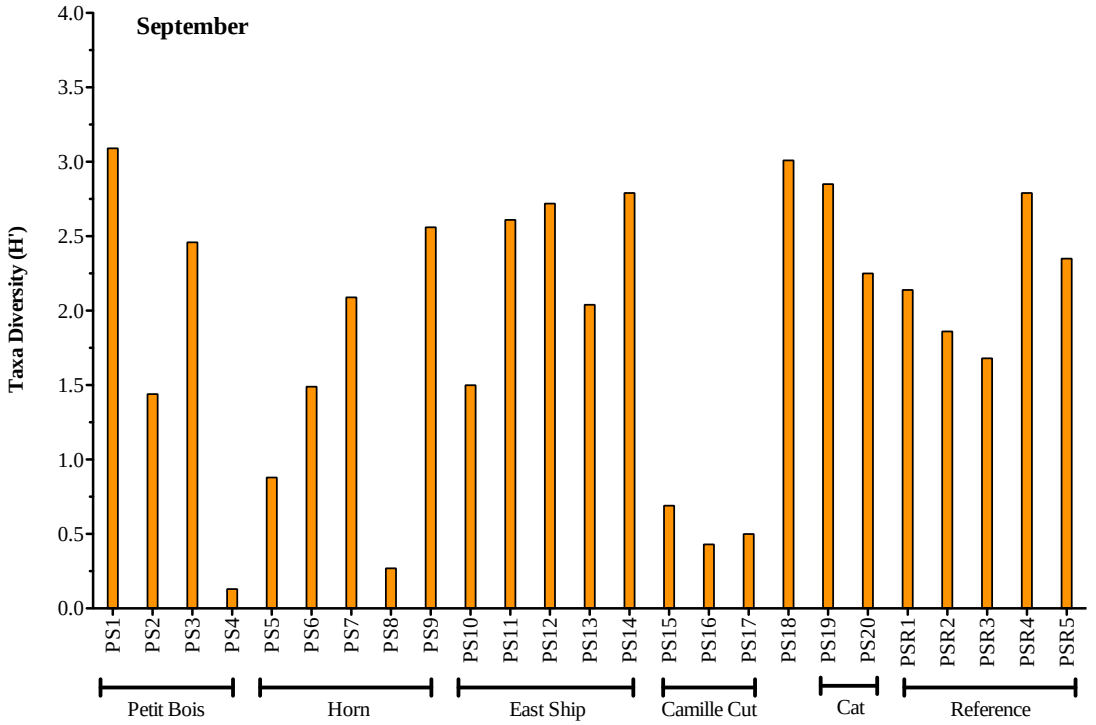


Figure 22. Taxa diversity (H') and evenness (J') data for the MsCIP Placement Site stations, September 2010.



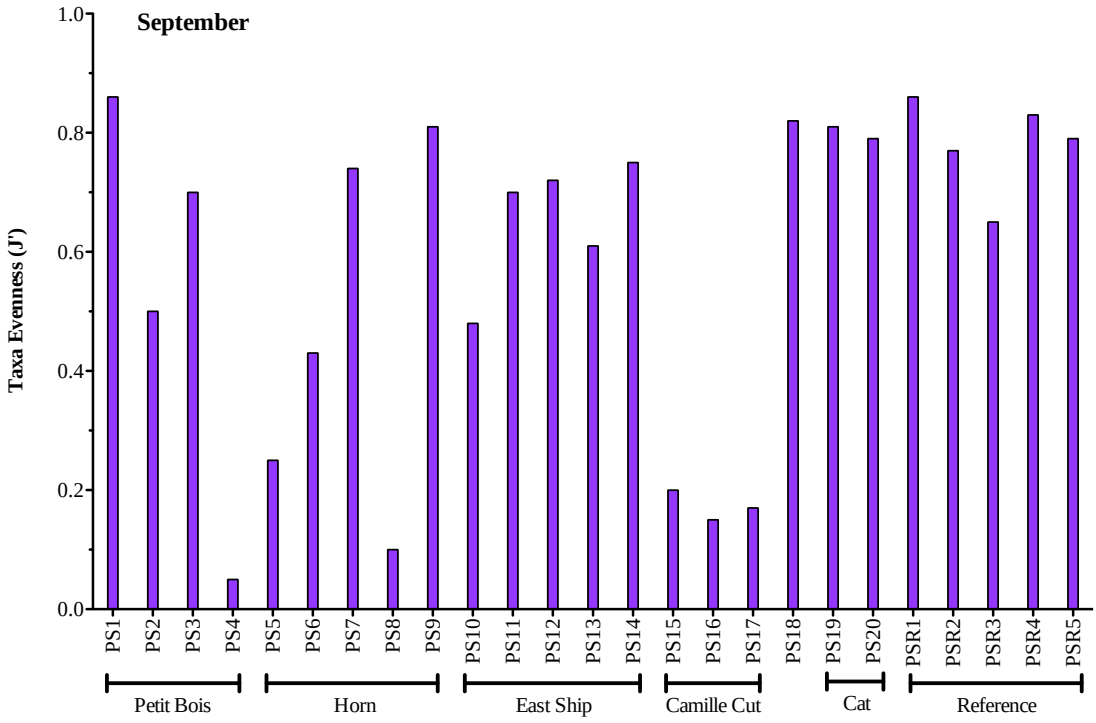
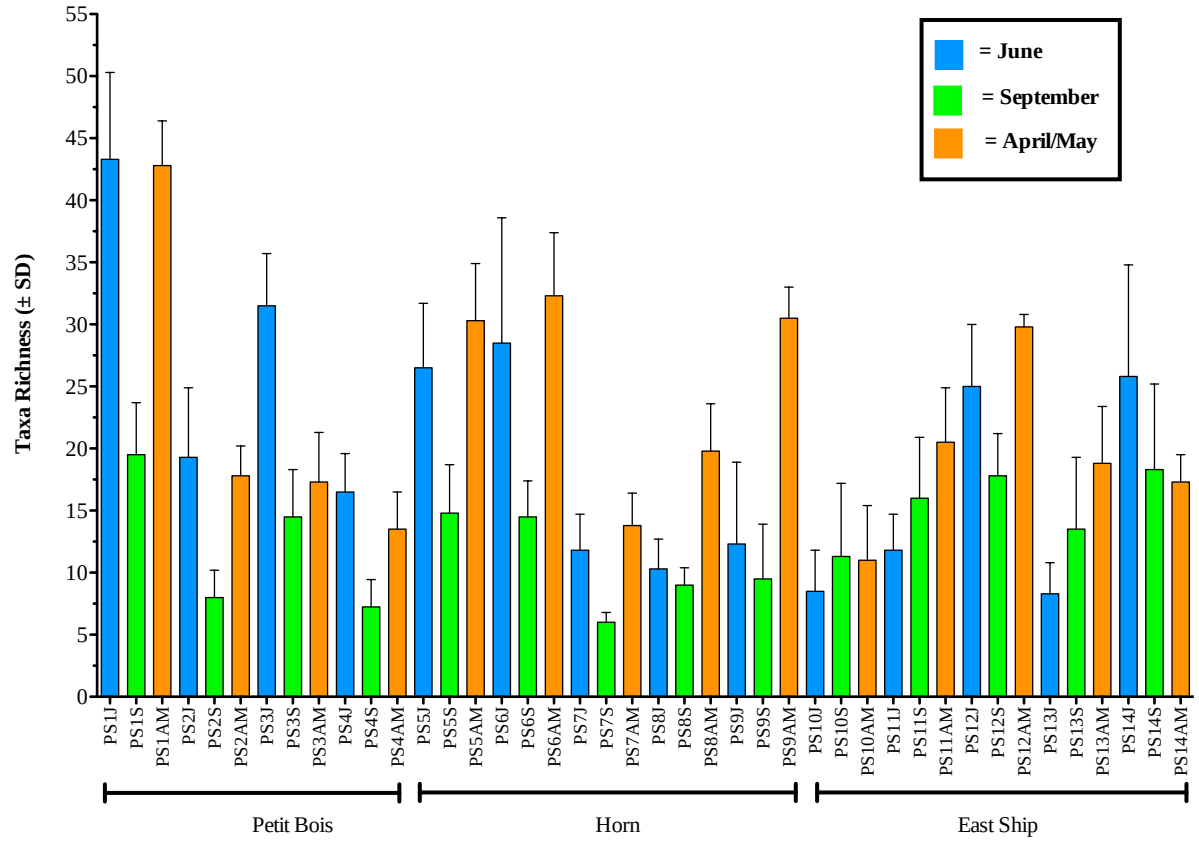


Figure 23. Taxa richness data for the Placement Site stations June 2010, September 2010 and April-May 2011.



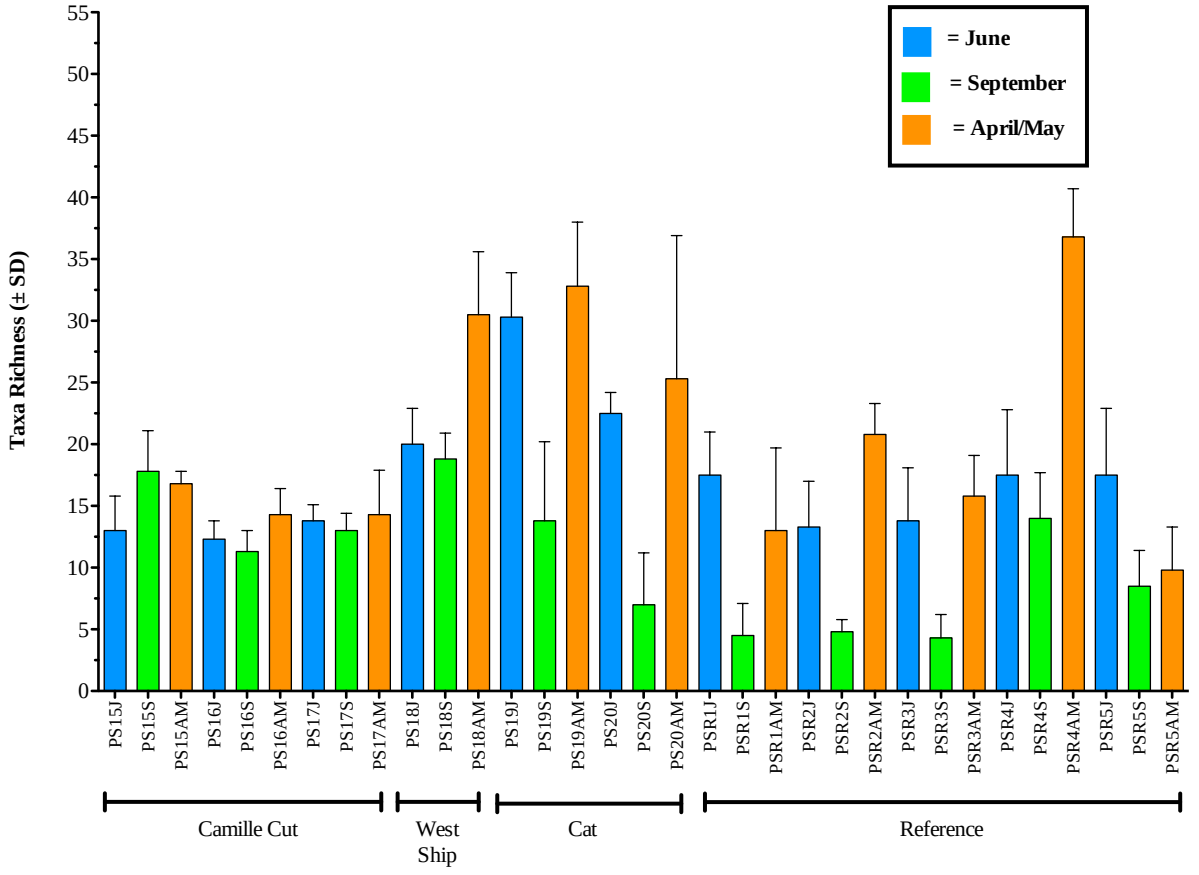


Figure 24. Density data for the Placement Site stations June 2010, September 2010 and April-May 2011.

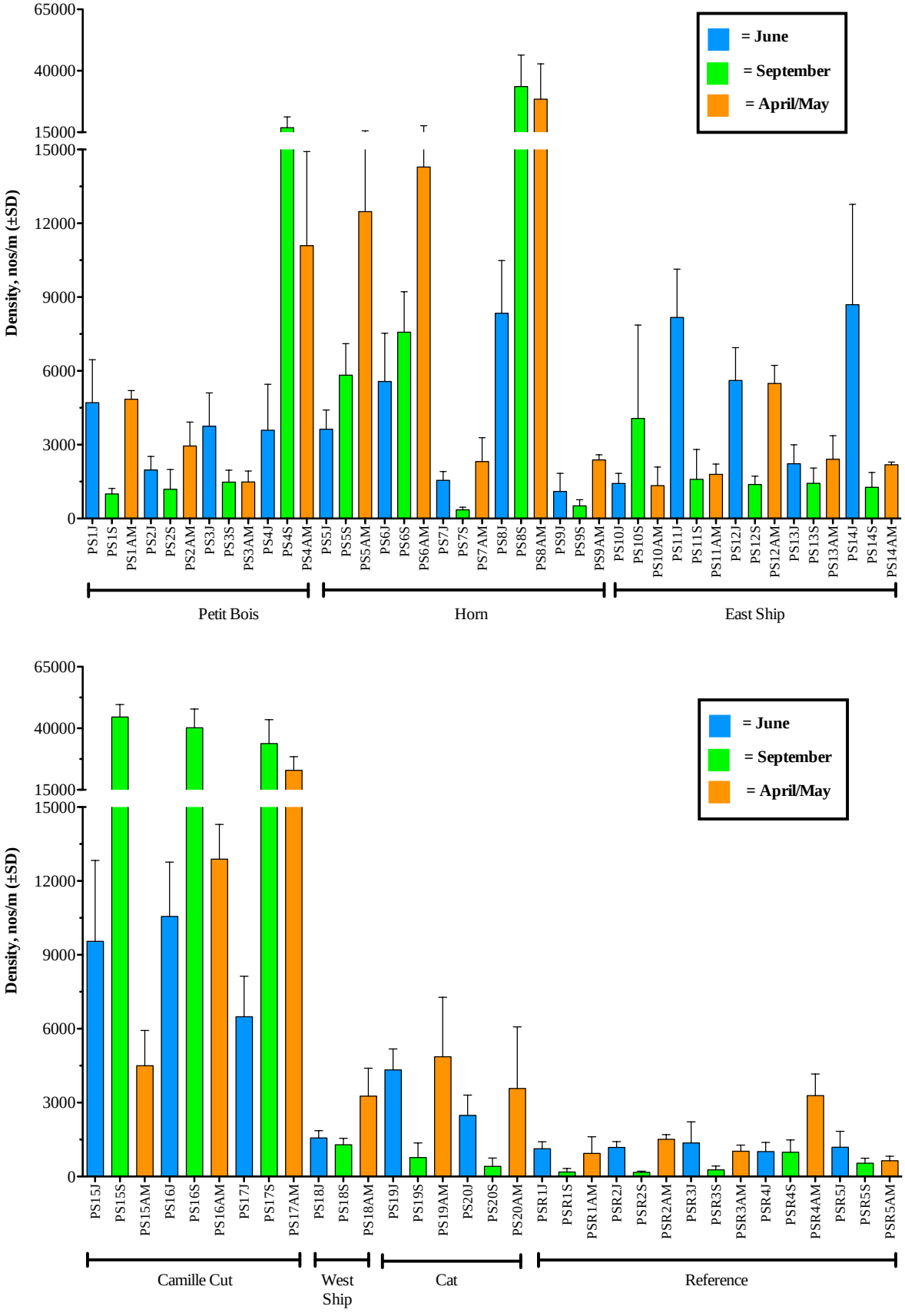
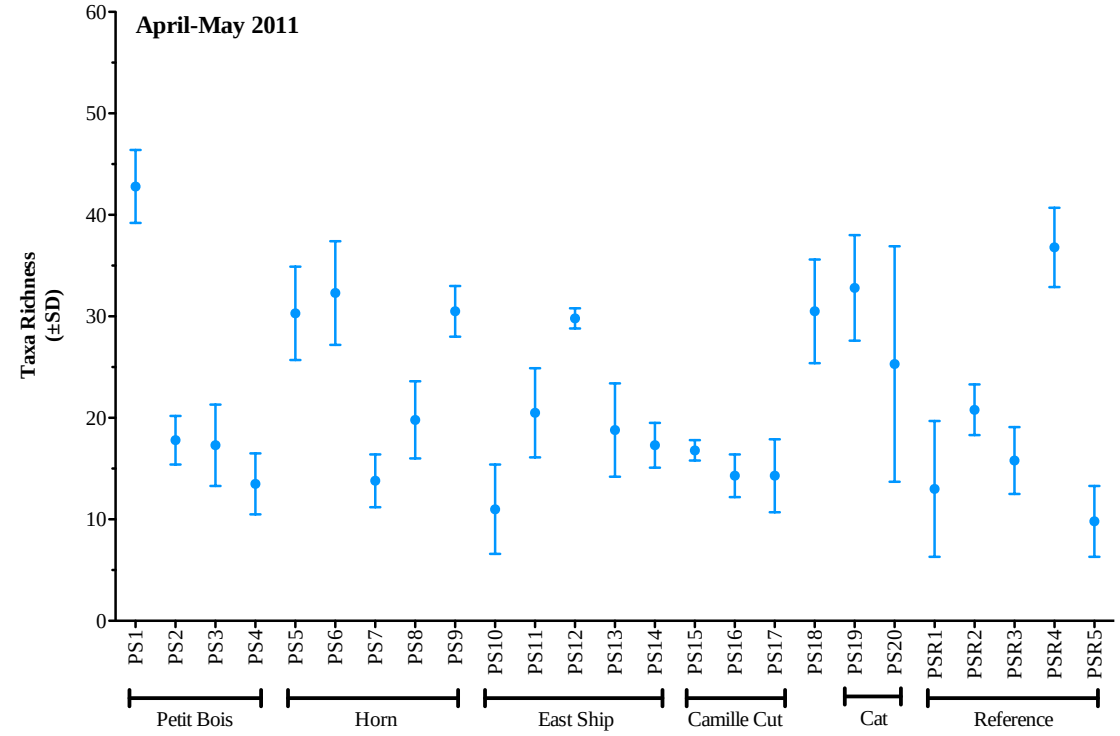


Figure 25. Taxa richness and density data for the MsCIP Placement Site stations, April-May 2011.



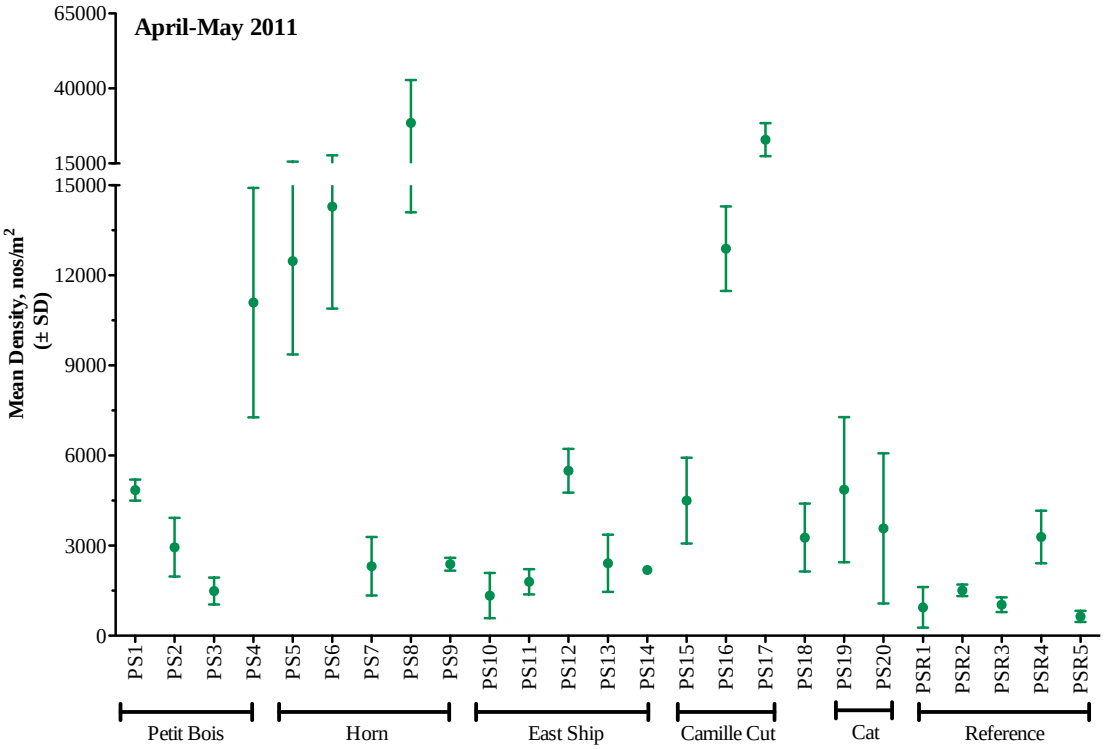
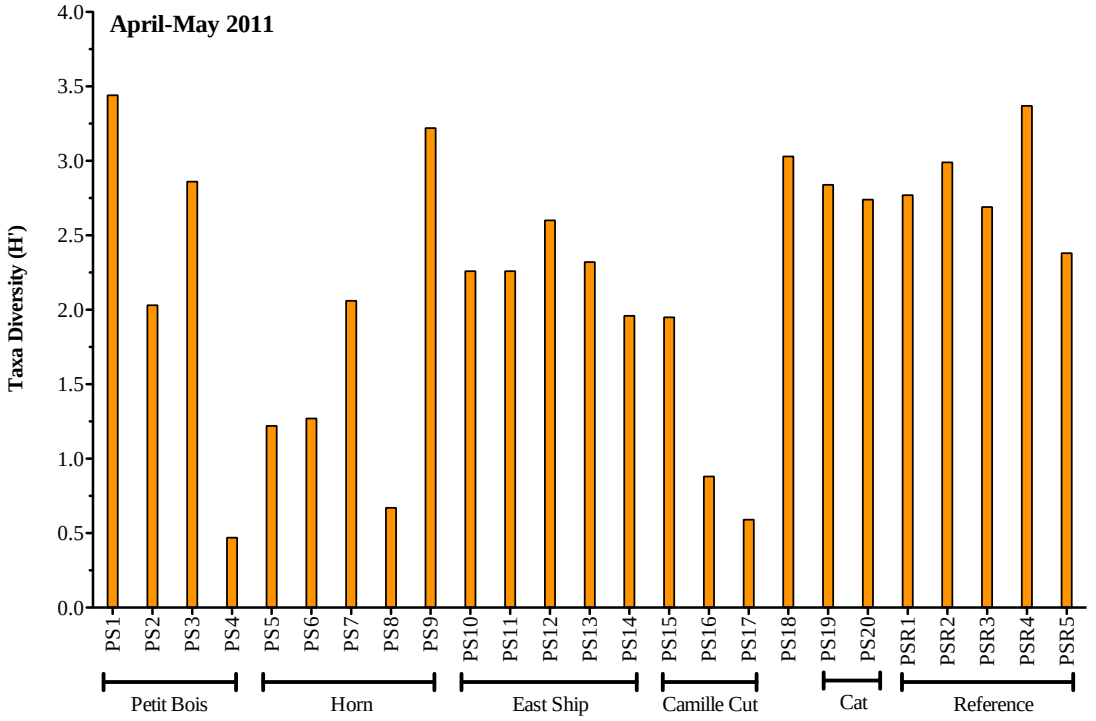


Figure 26. Taxa diversity (H') and evenness (J') data for the MsCIP Placement Site stations, April-May 2011.



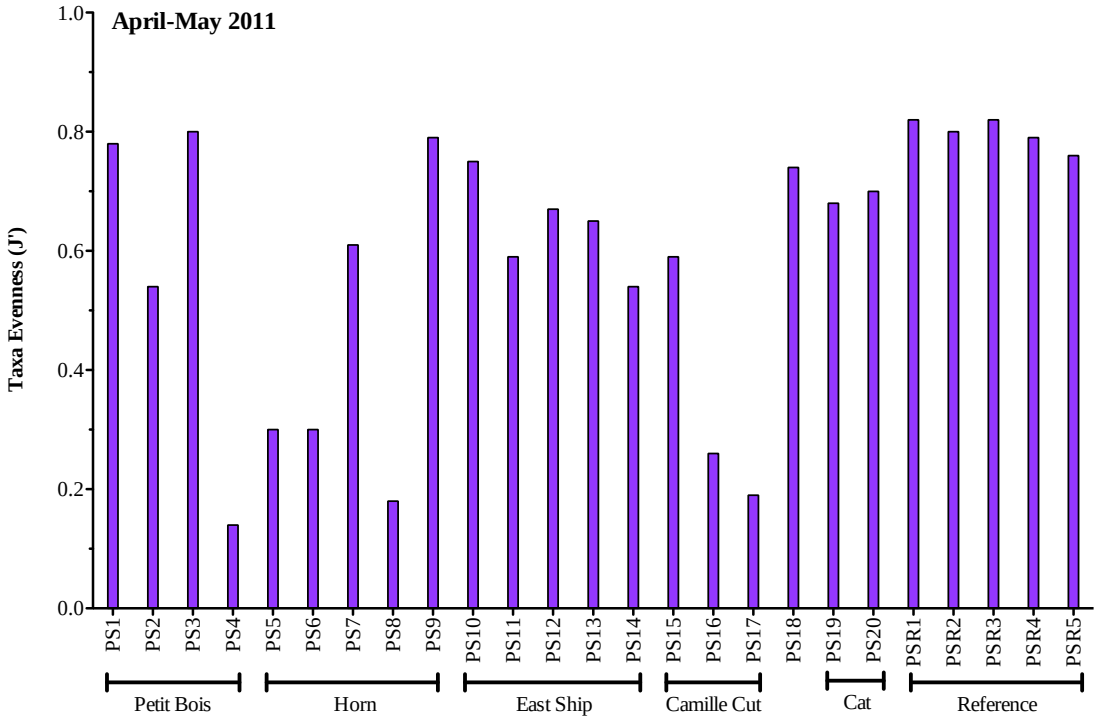


Figure 27. Sediment texture data for the MsCIP Beach Transect Shallow stations, June 2010, September 2010 and April-May 2011.

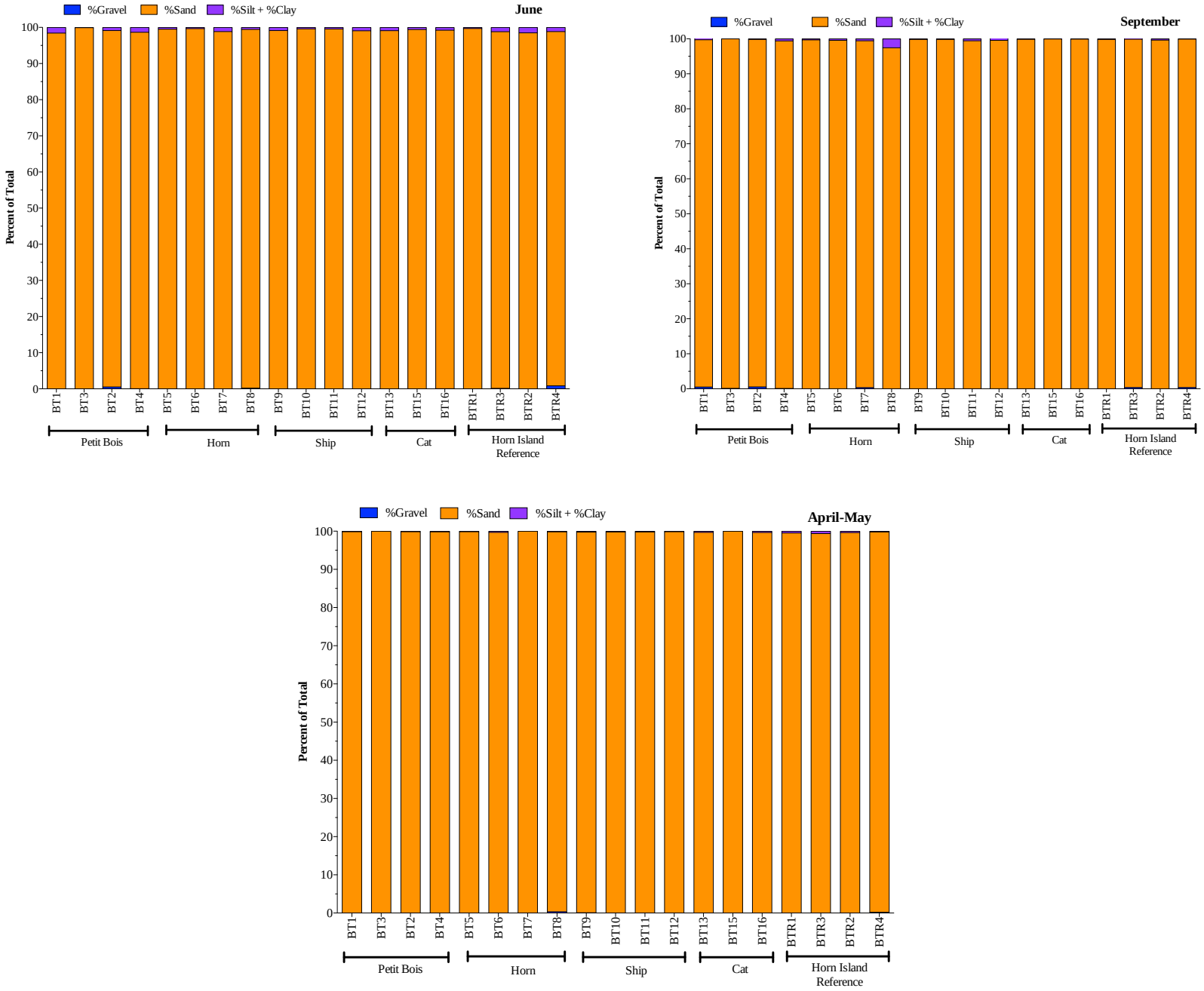


Figure 28. Sediment texture data for the MsCIP Beach Transect Mid-Depth stations, June 2010, September 2010 and April-May 2011.

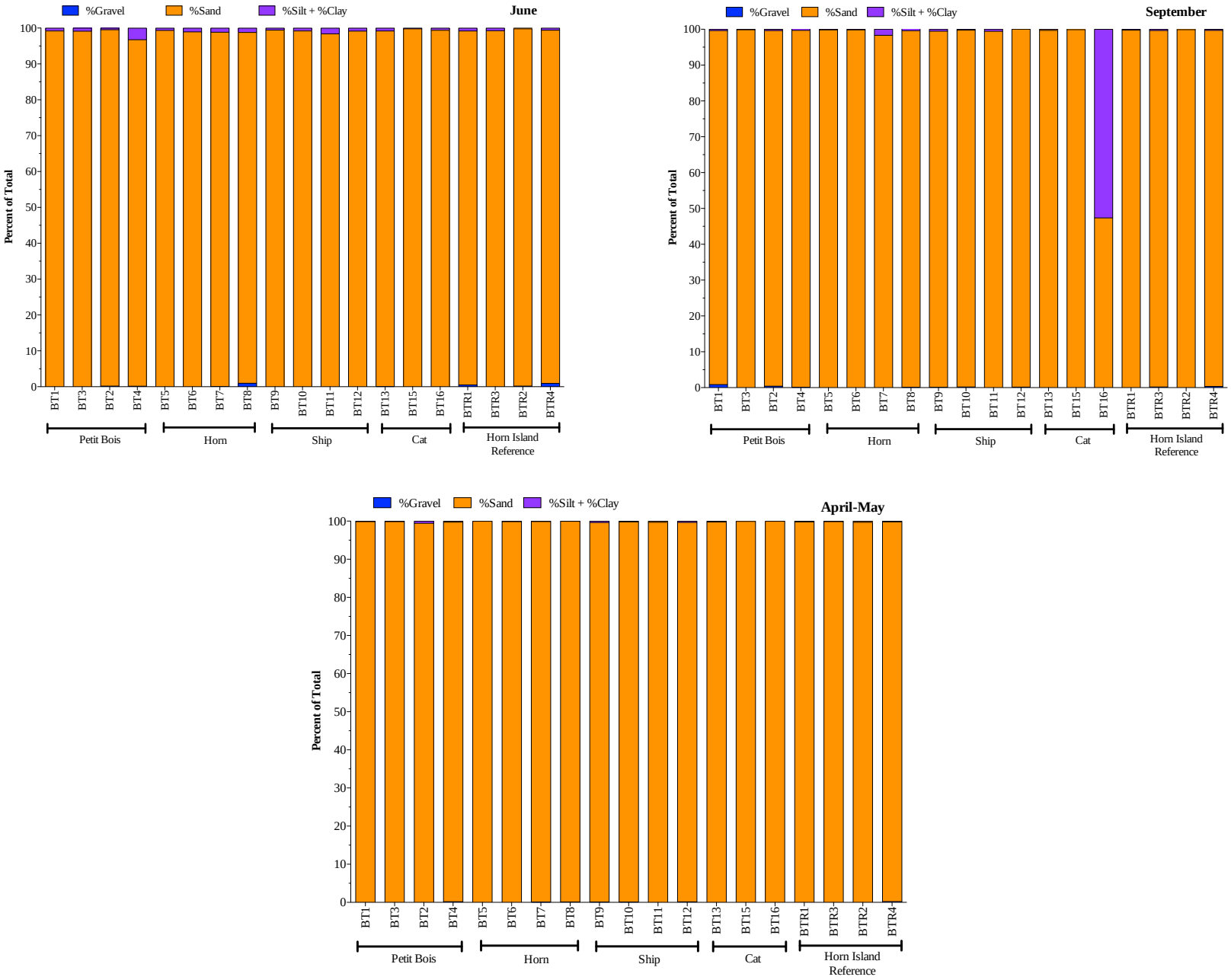


Figure 29. Sediment texture data for the MsCIP Beach Transect Deep stations, June 2010, September 2010 and April-May 2011.

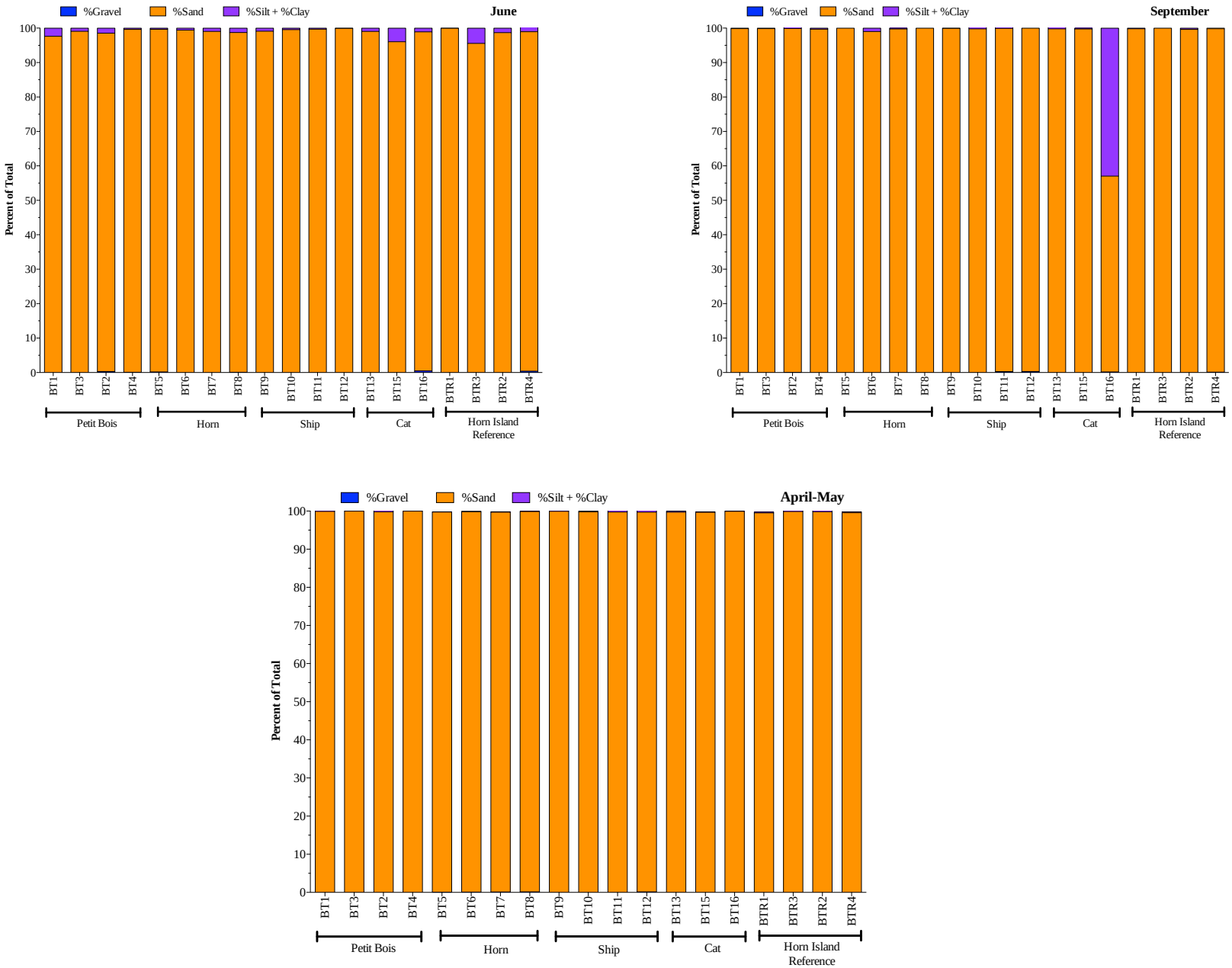


Figure 30. Sediment %TOC data for the MsCIP Beach Transect Shallow stations, June 2010, September 2010 and April-May 2011.

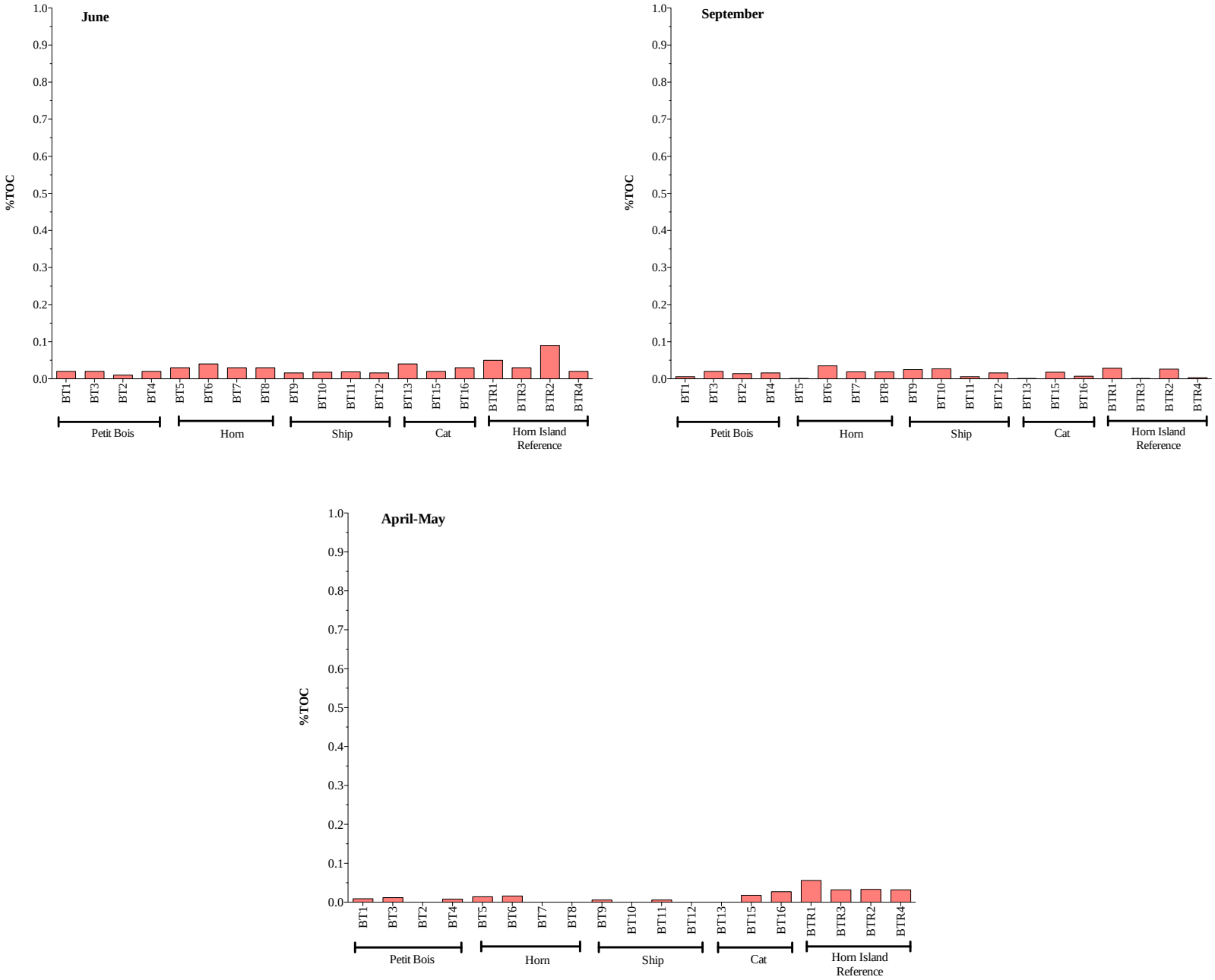


Figure 31. Sediment %TOC data for the MsCIP Beach Transect Mid-Depth stations, June 2010, September 2010 and April-May 2011.

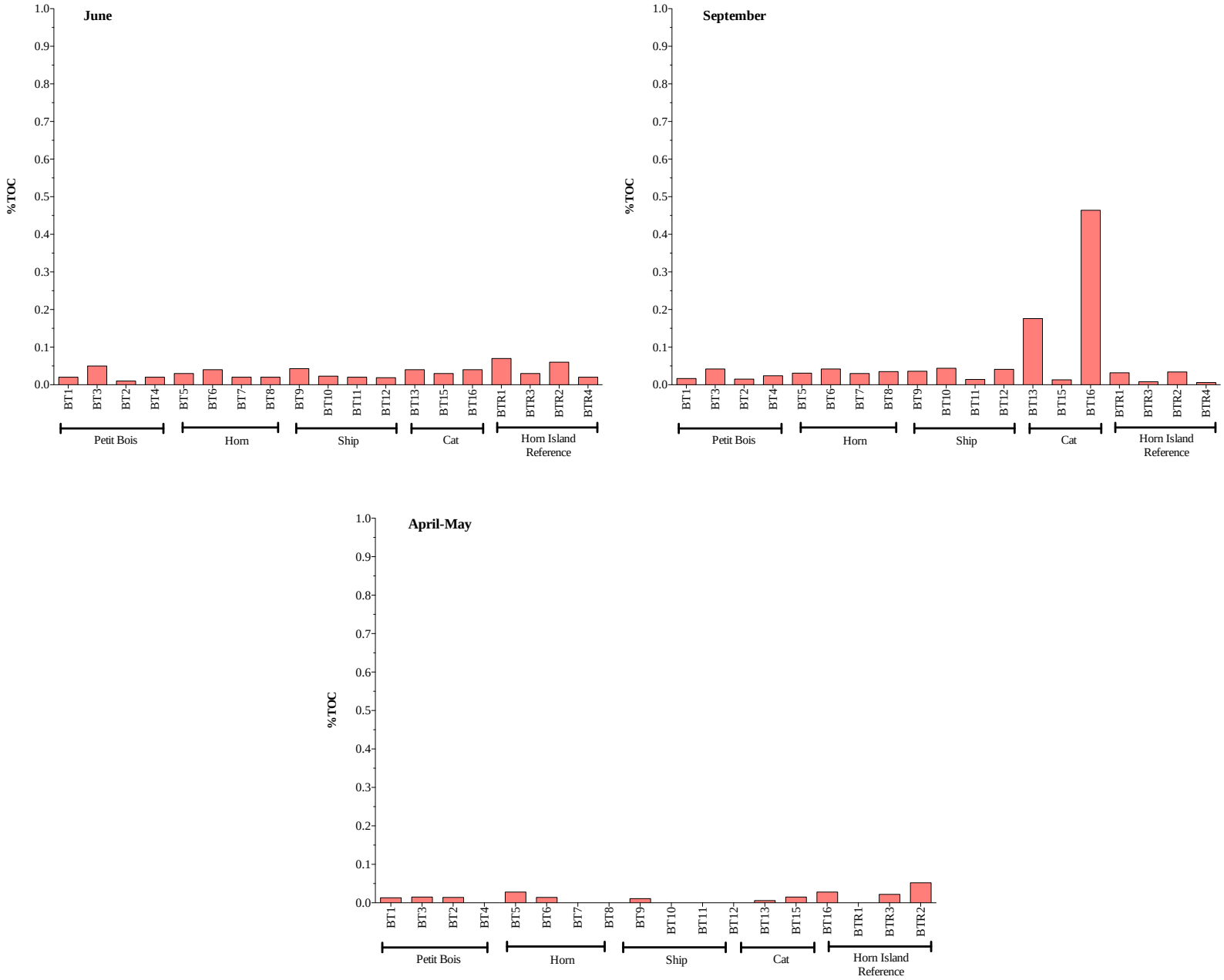
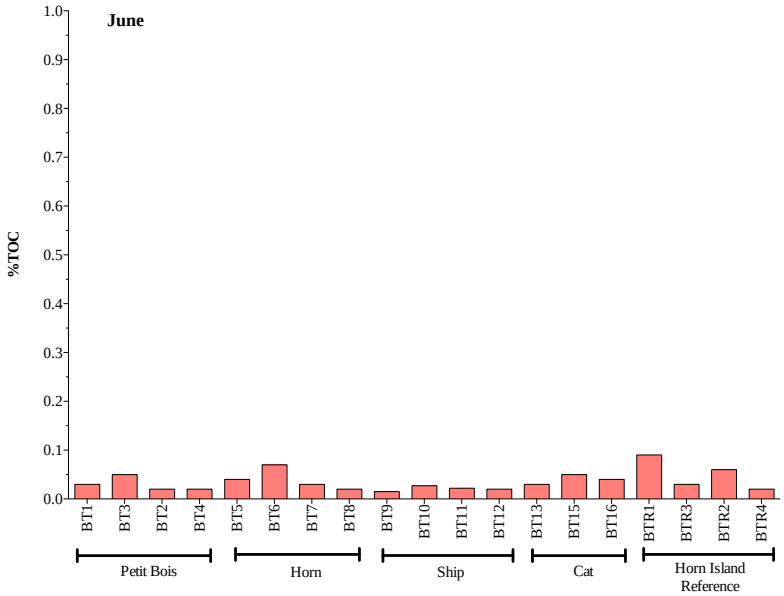
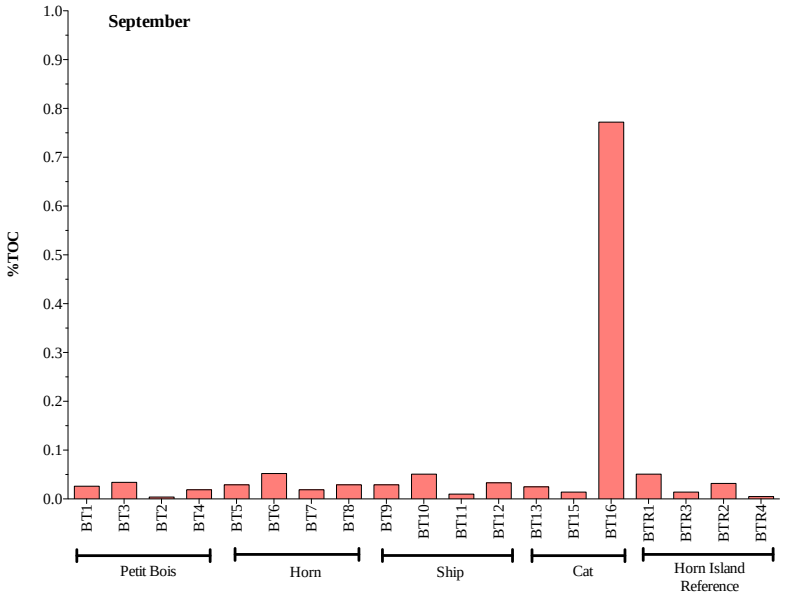


Figure 32. Sediment %TOC data for the MsCIP Beach Transect Deep stations, June 2010, September 2010 and April-May 2011.





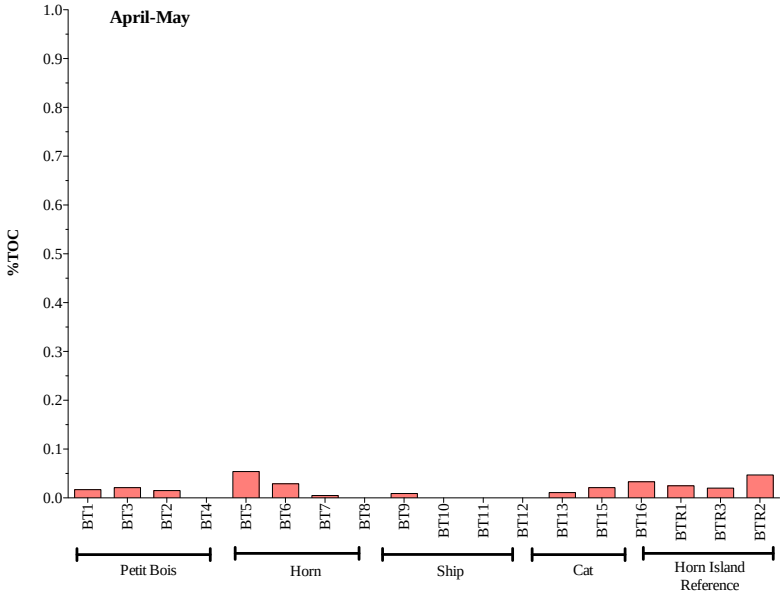


Figure 33. Taxa richness data for the MsCIP Beach Transect Shallow stations, June and September 2010 and April-May 2011.

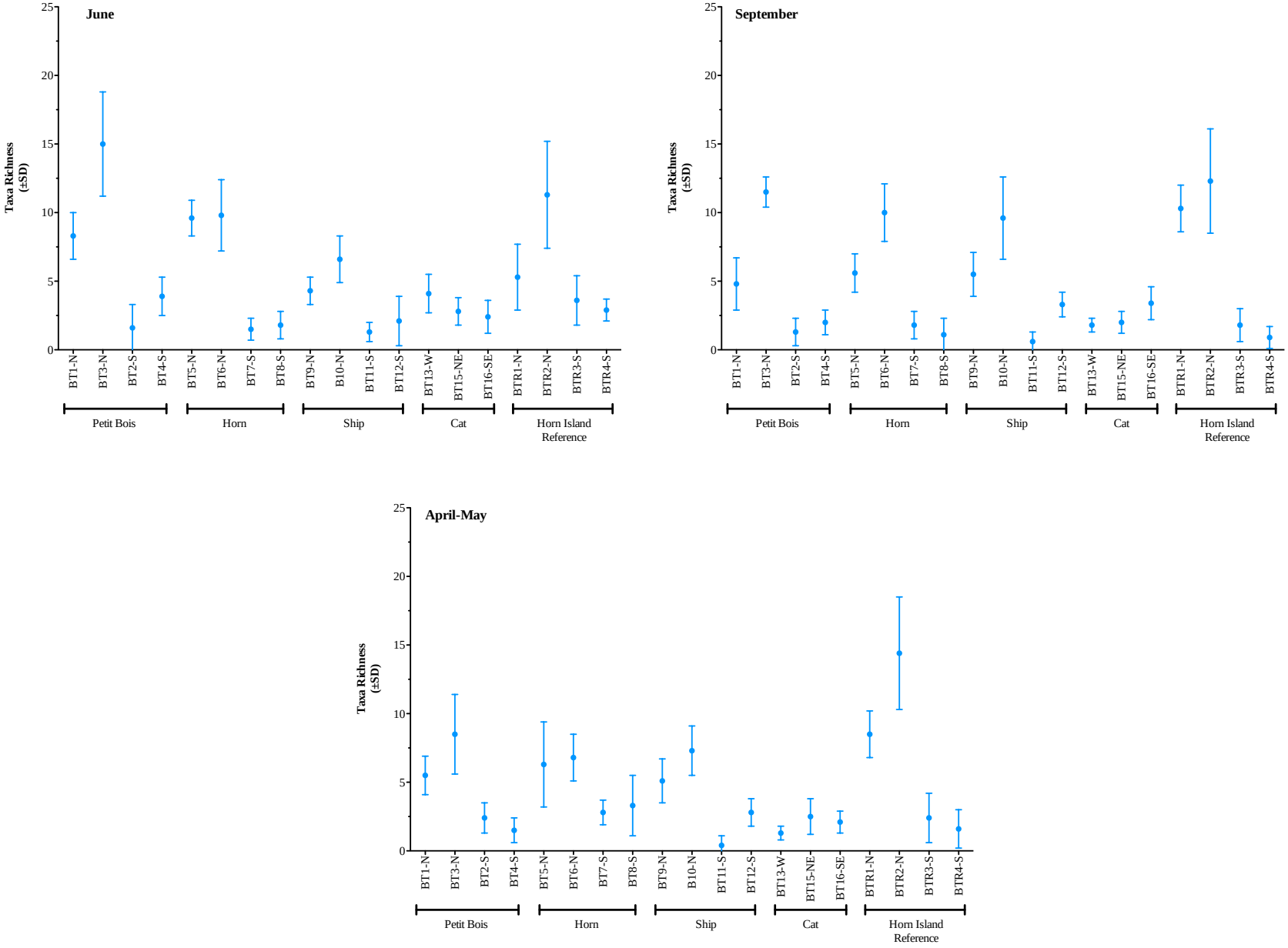


Figure 34. Macroinvertebrate density data for the MsCIP Beach Transect Shallow stations, June and September 2010 and April-May 2011.

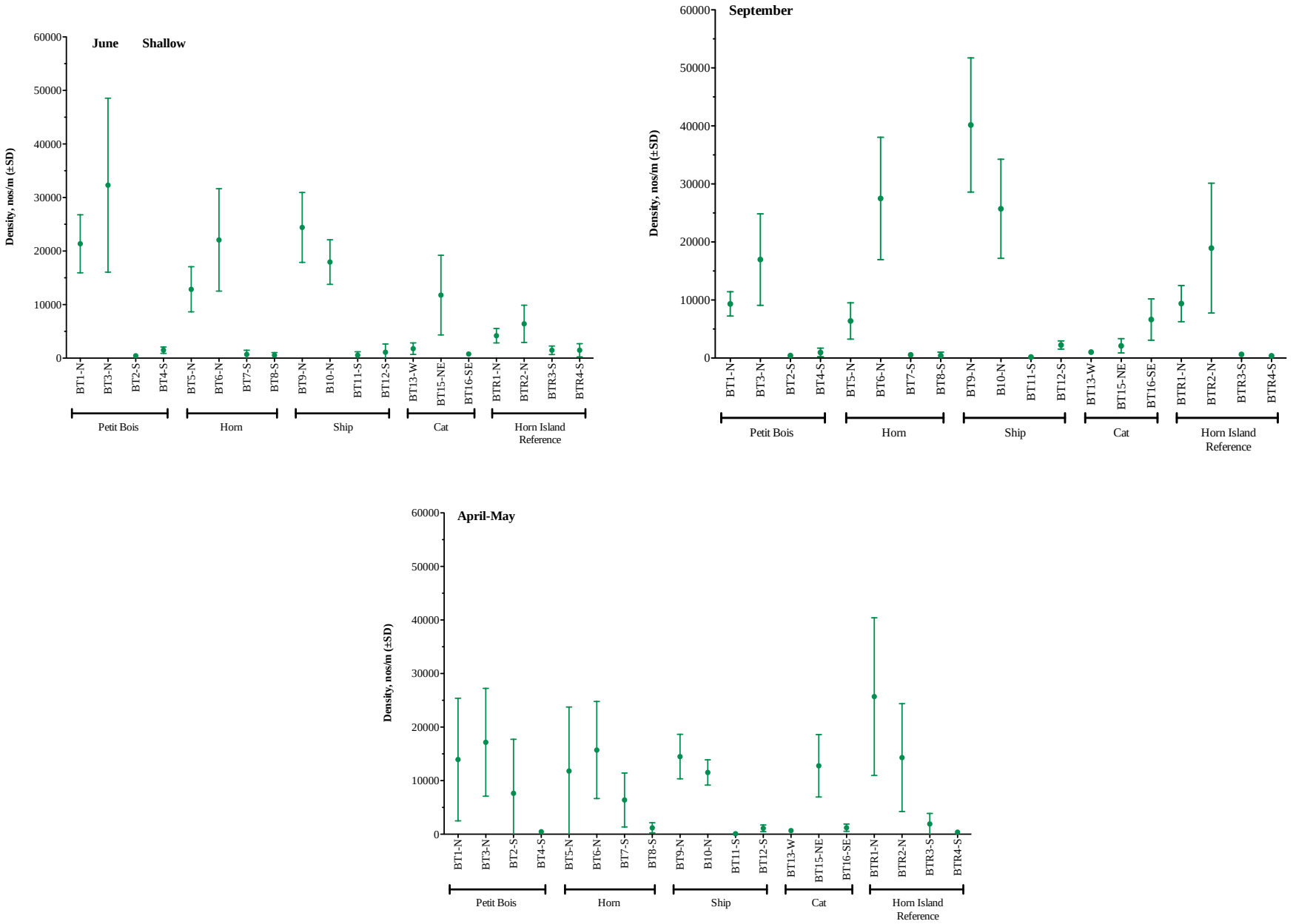


Figure 35. Macroinvertebrate diversity data for the MsCIP Beach Transect Shallow stations, June and September 2010 and April-May 2011.

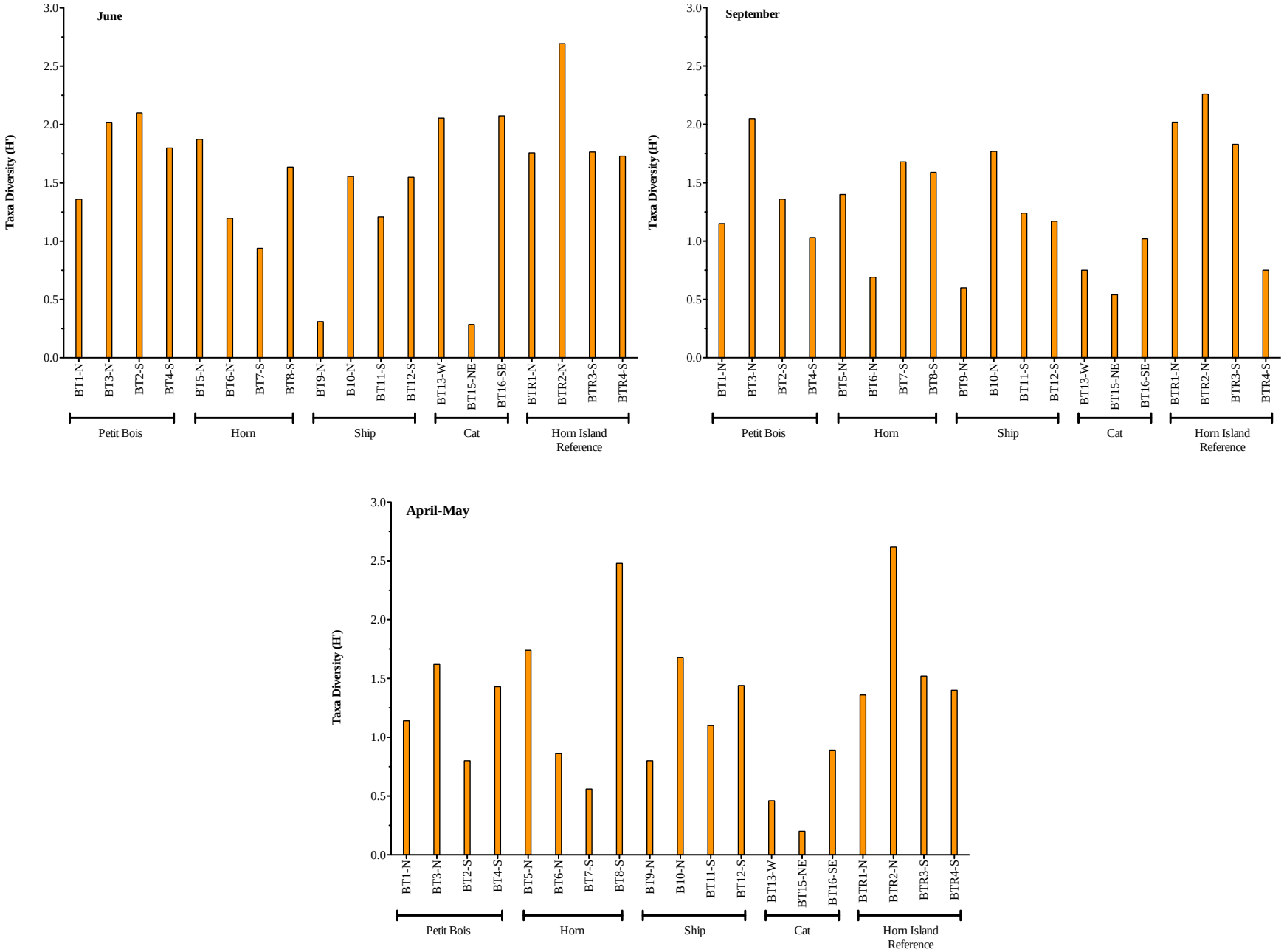


Figure 36. Macroinvertebrate evenness data for the MsCIP Beach Transect Shallow stations, June and September 2010 and April-May 2011.

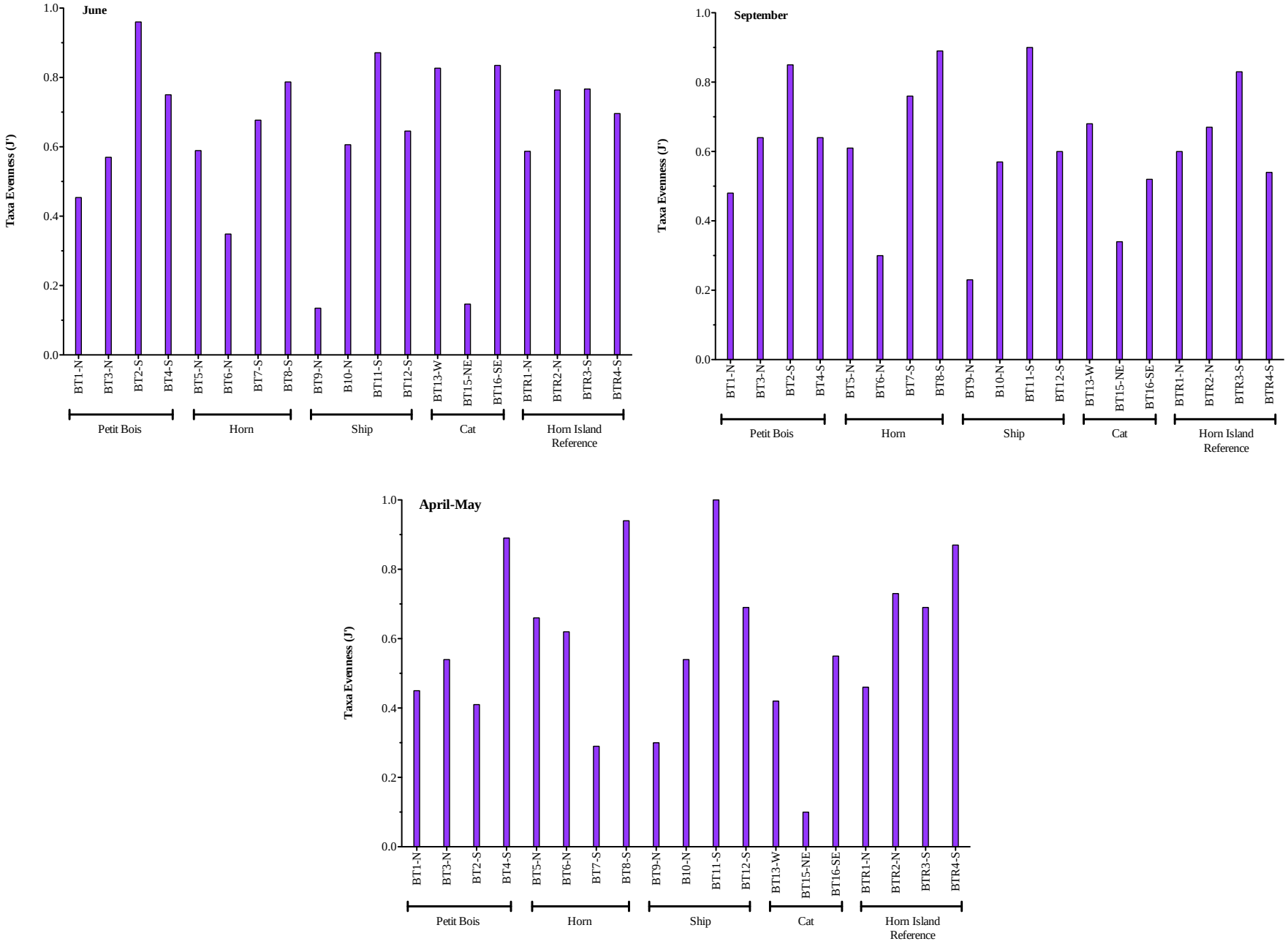


Figure 37. Comparison of taxa richness data for the MsCIP Beach Transect Shallow stations, June and September 2010 and April-May 2011.

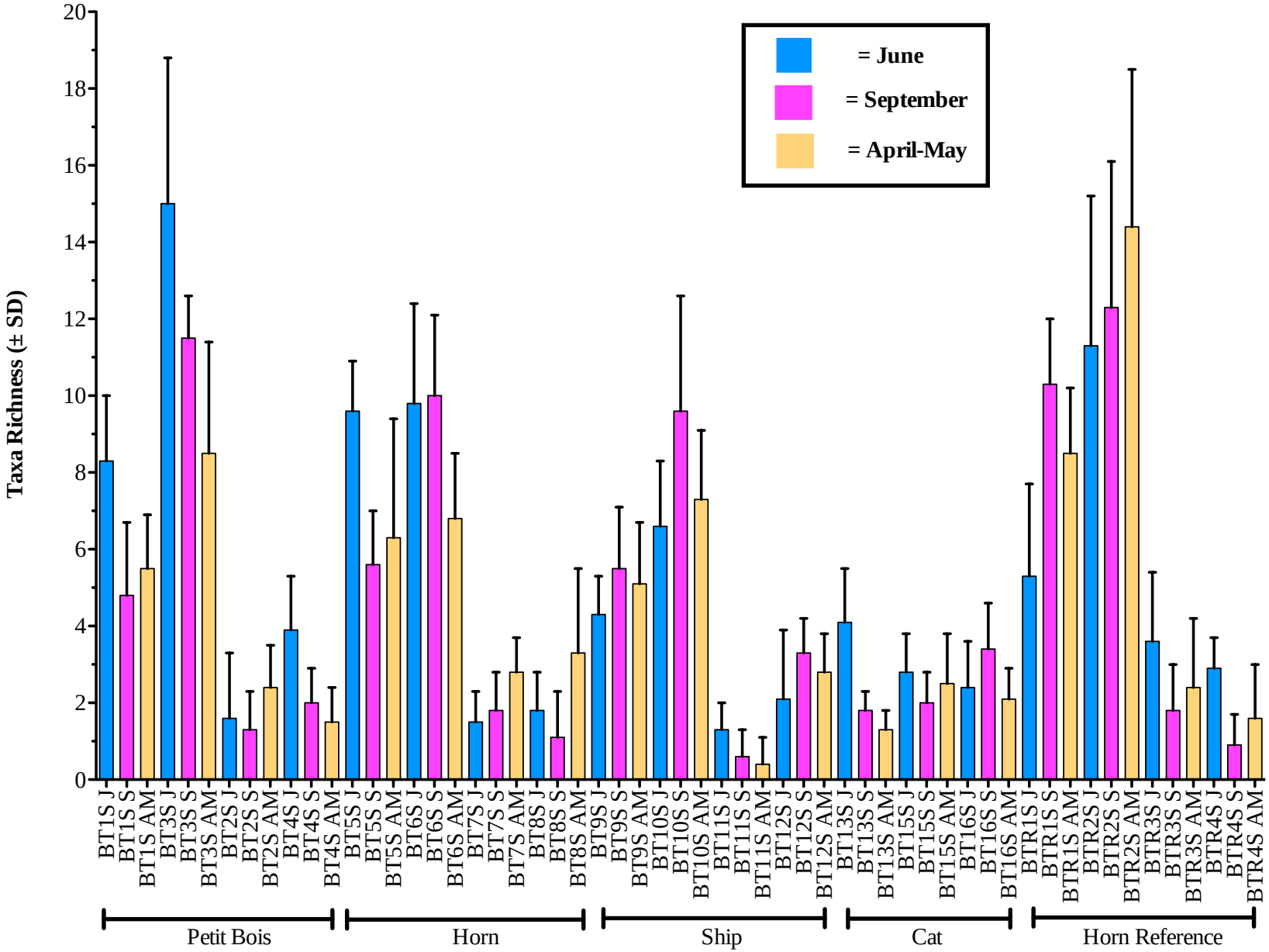


Figure 38. Comparison of density data for the MsCIP Beach Transect Shallow stations, June and September 2010 and April-May 2011.

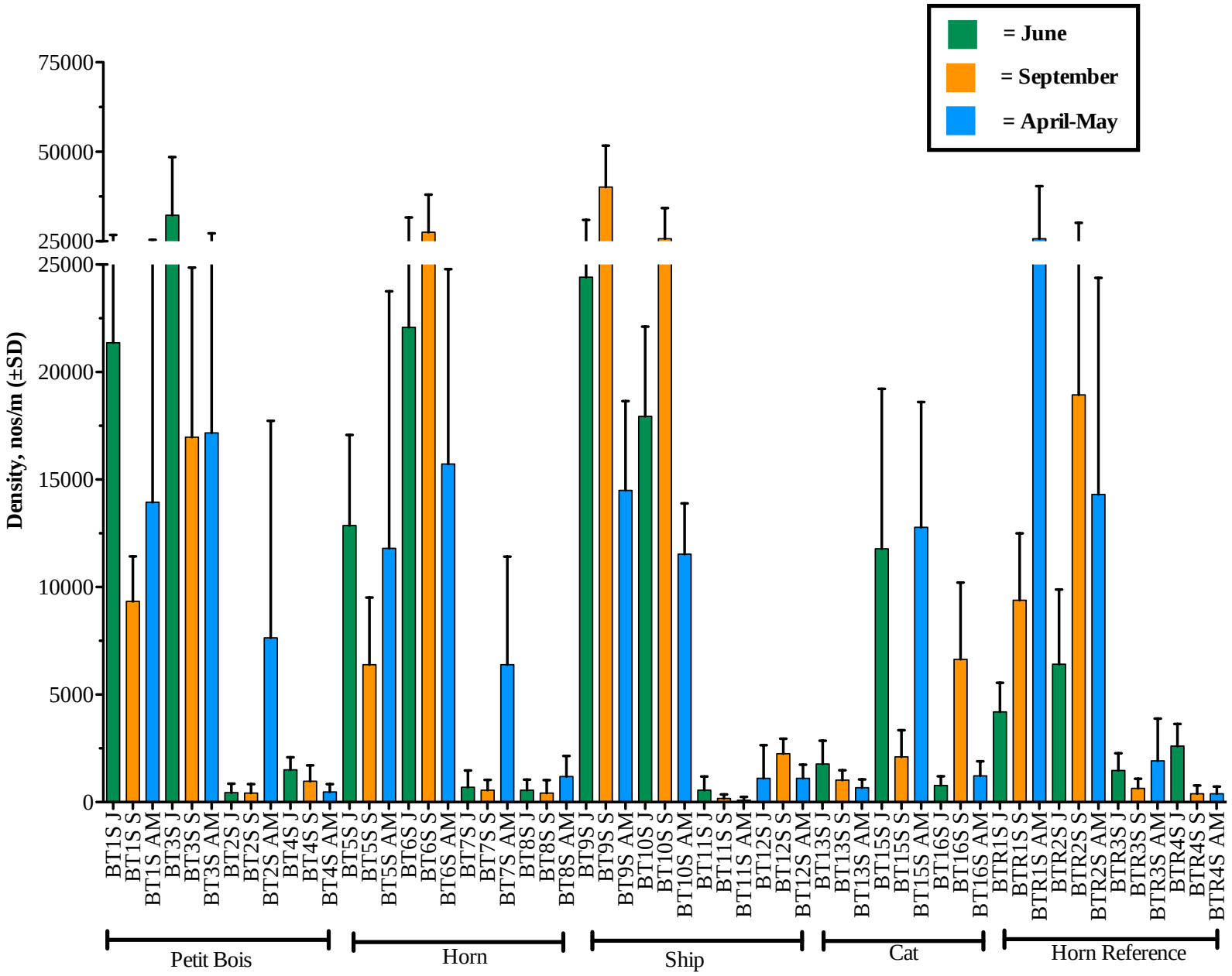


Figure 39. Taxa richness data for the MsCIP Beach Transect Mid-depth stations, June and September 2010 and April-May 2011.

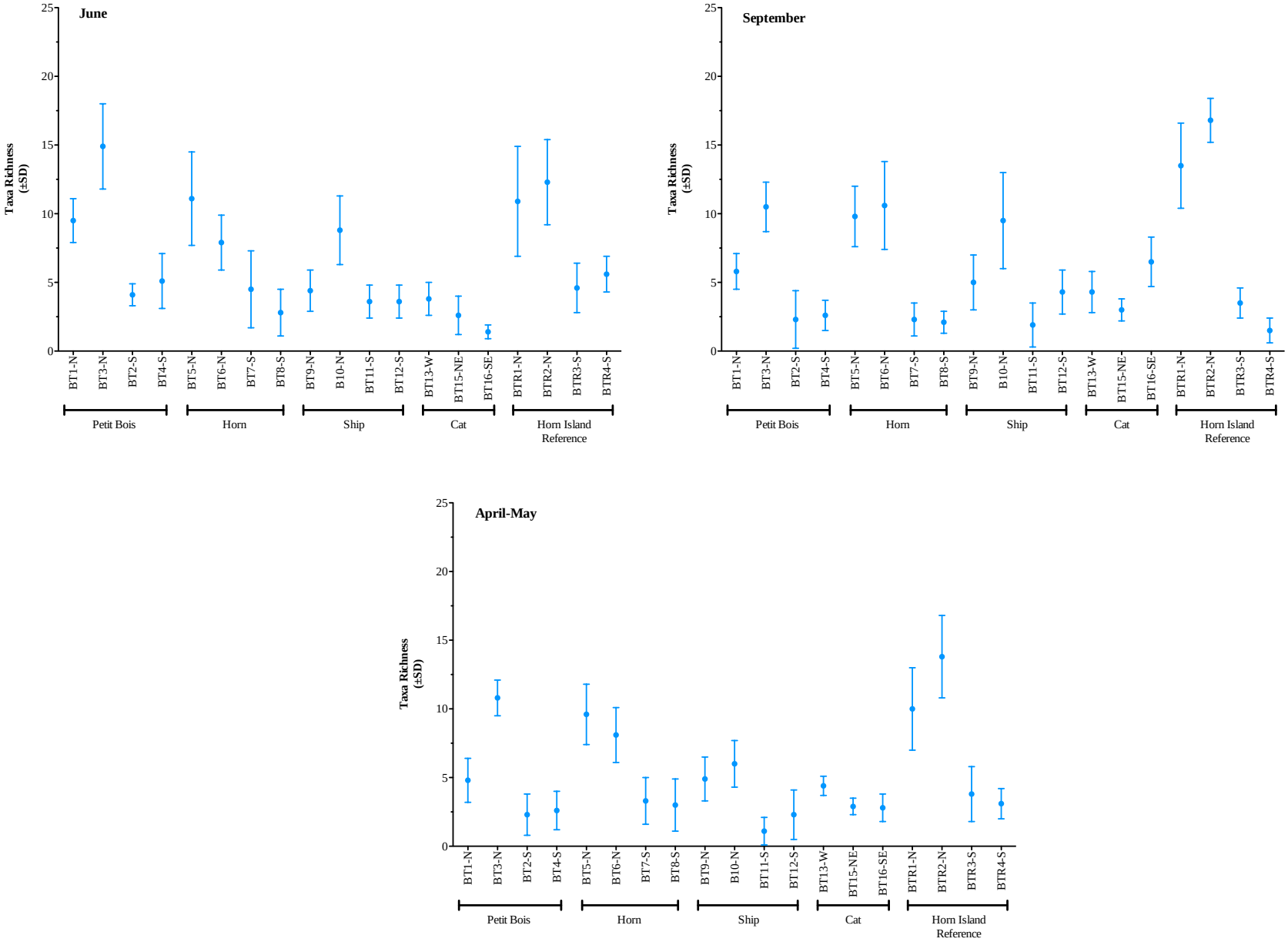


Figure 40. Macroinvertebrate density data for the MsCIP Beach Transect Mid-depth stations, June and September 2010 and April-May 2011.

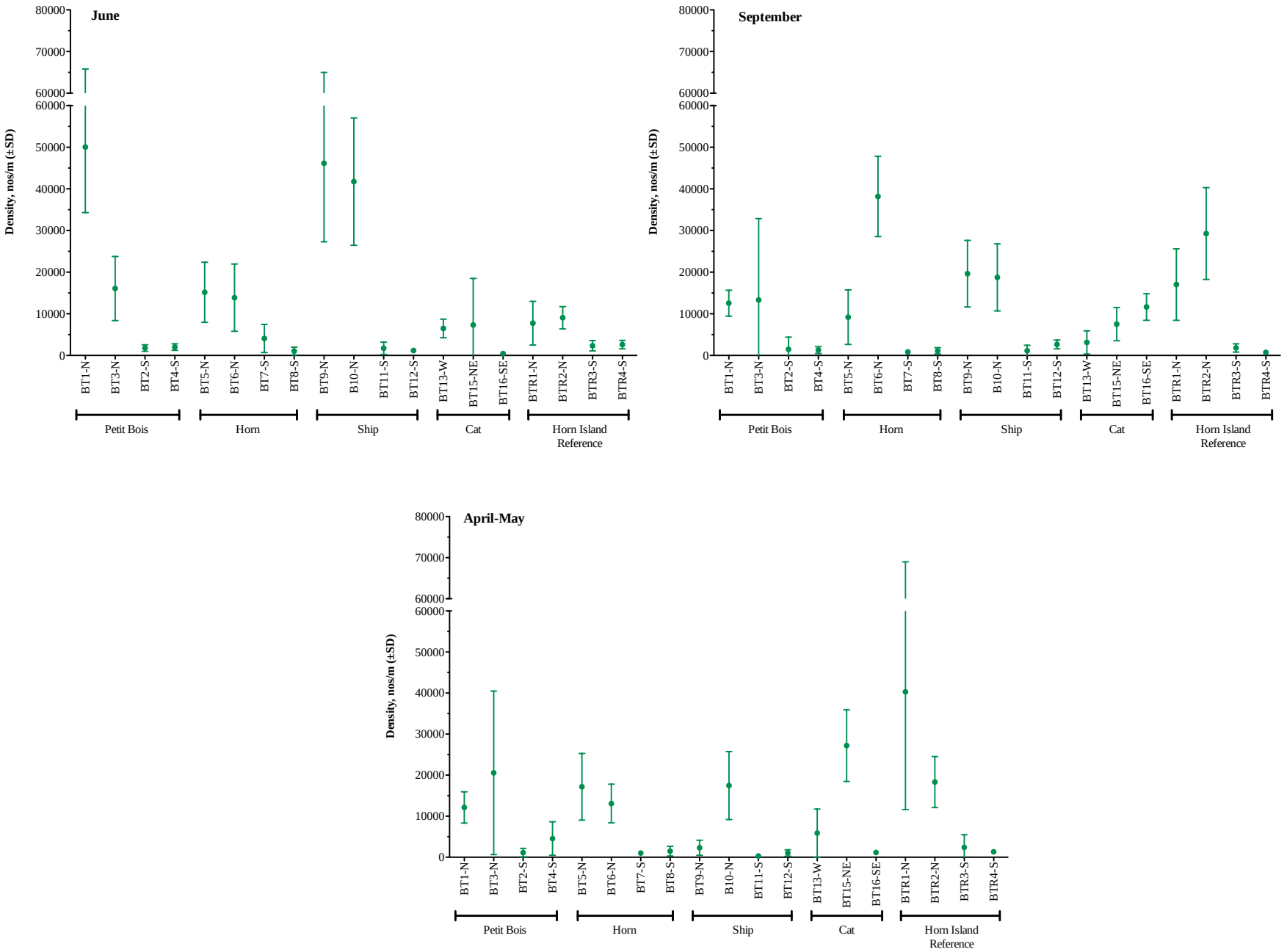


Figure 41. Macroinvertebrate diversity data for the MsCIP Beach Transect Mid-depth stations, June and September 2010 and April-May 2011.

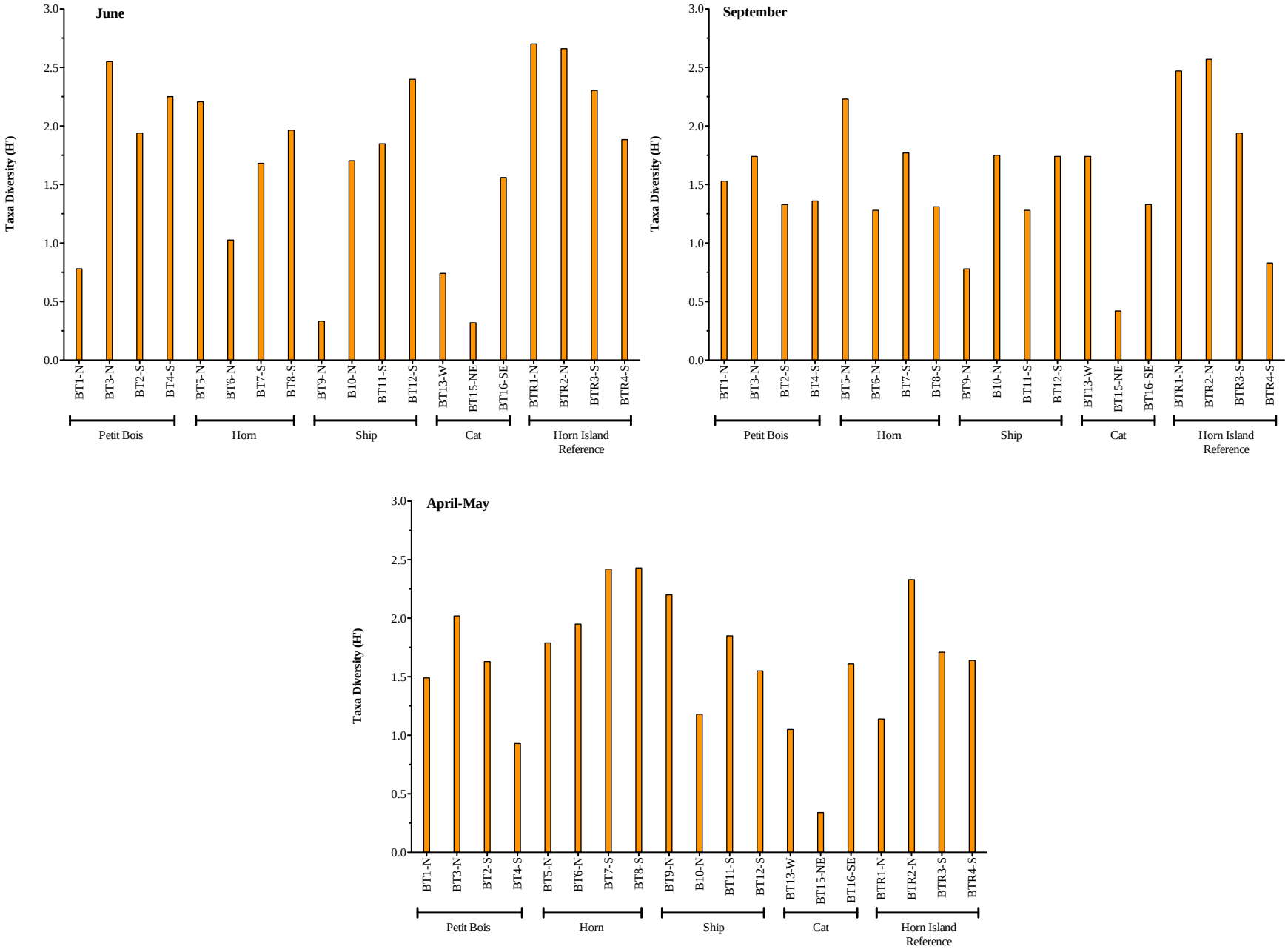
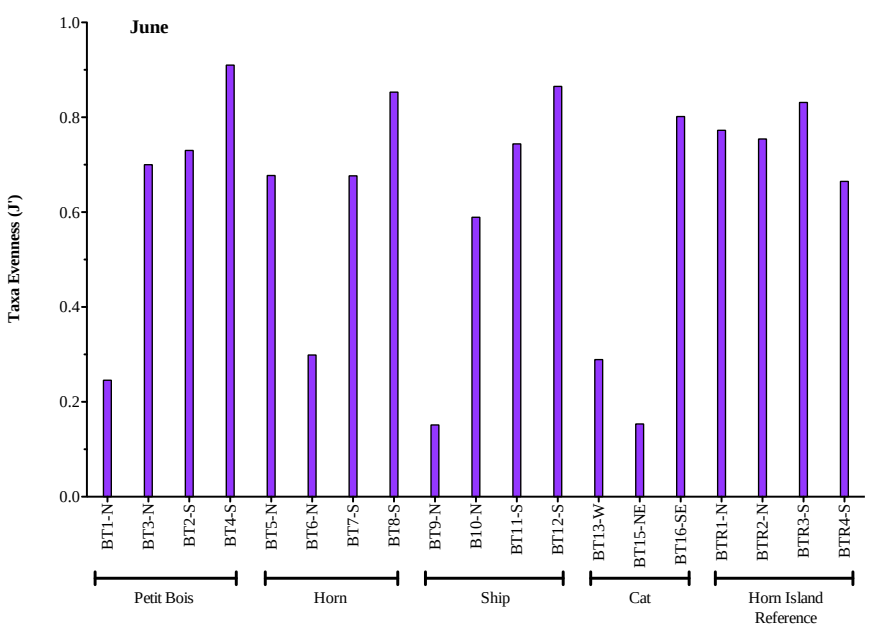
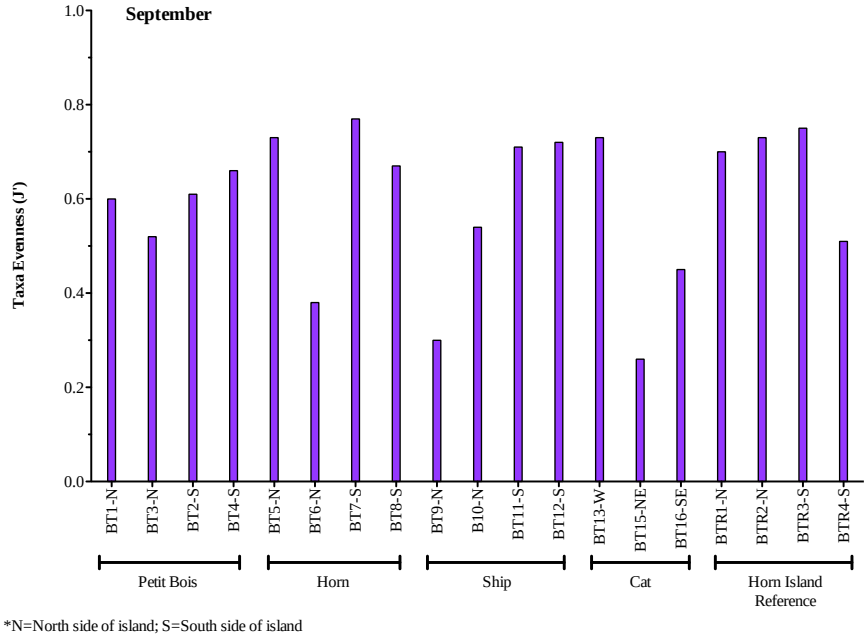


Figure 42. Macroinvertebrate evenness data for the MsCIP Beach Transect Mid-depth stations, June and September 2010 and April-May 2011.





*N=North side of island; S=South side of island

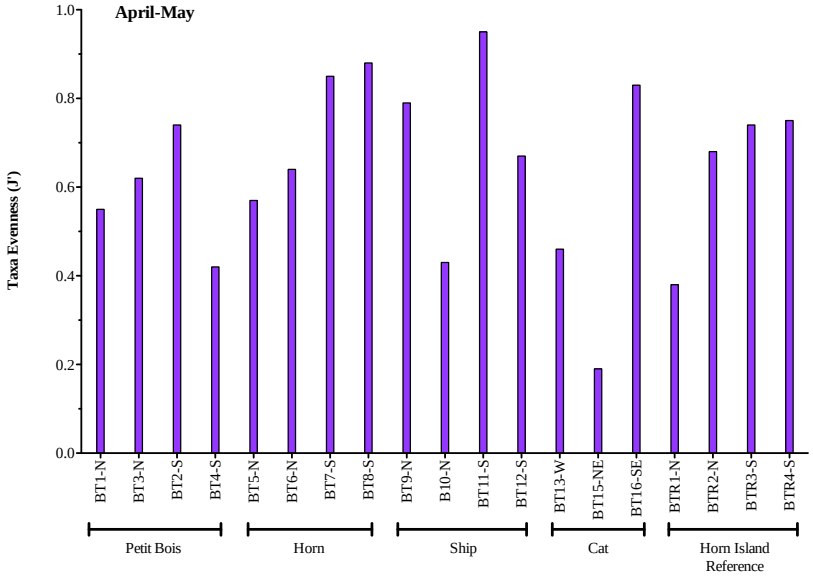


Figure 43. Comparison of taxa richness data for the MsCIP Beach Transect Mid-depth stations, June and September 2010 and April-May 2011.

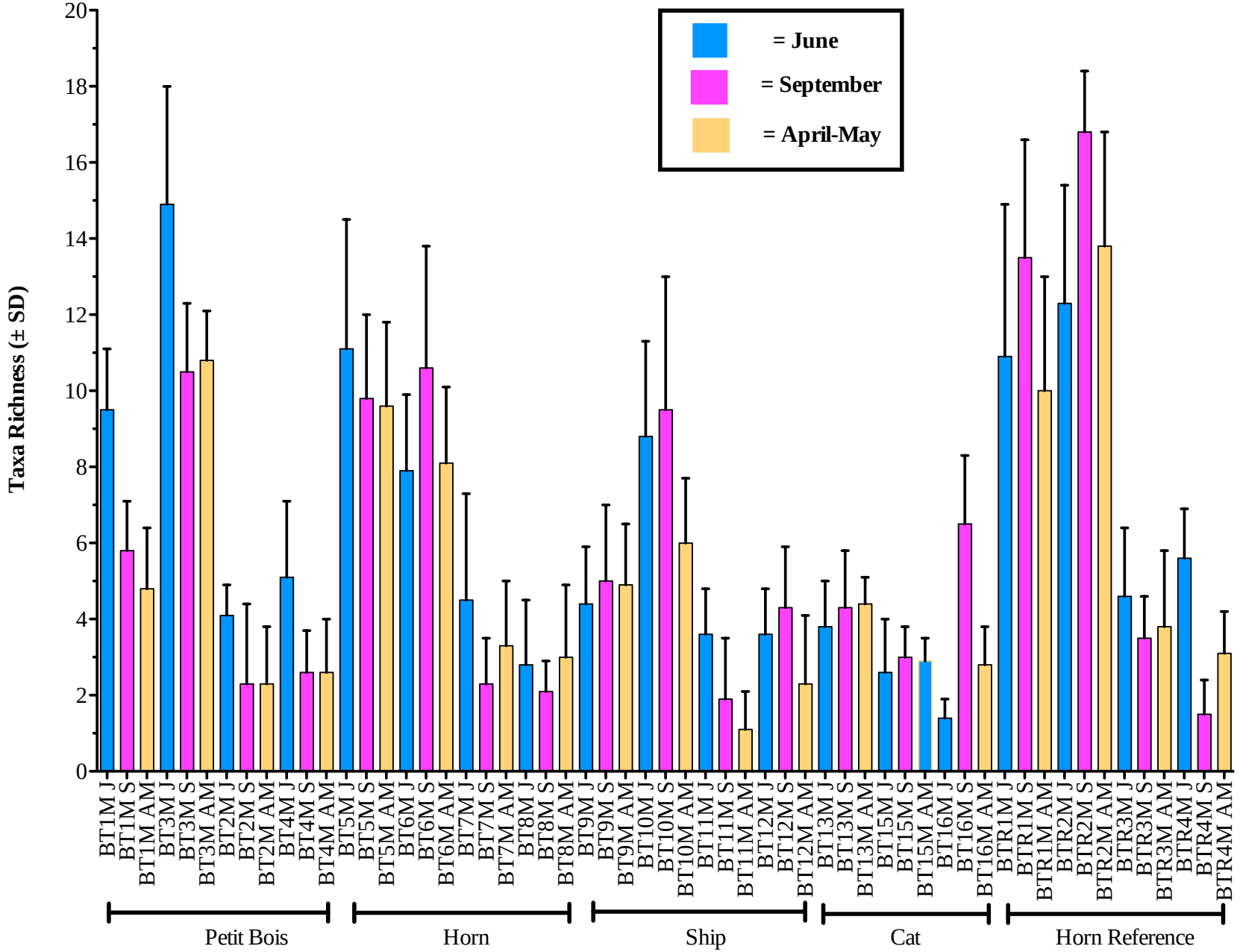


Figure 44. Comparison of density data for the MsCIP Beach Transect Mid-depth stations, June and September 2010 and April-May 2011.

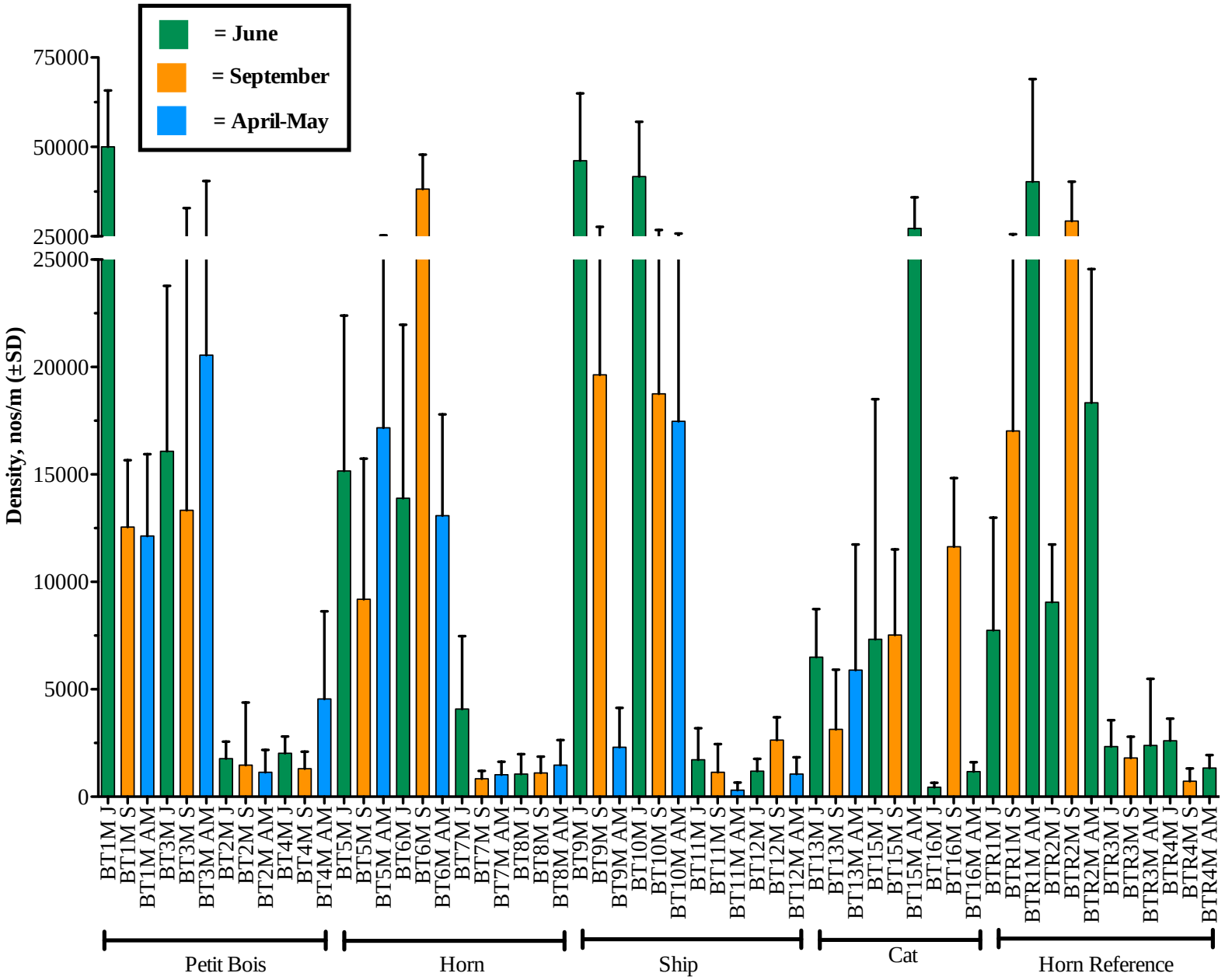


Figure 45. Taxa richness data for the MsCIP Beach Transect Deep stations, June and September 2010 and April-May 2011.

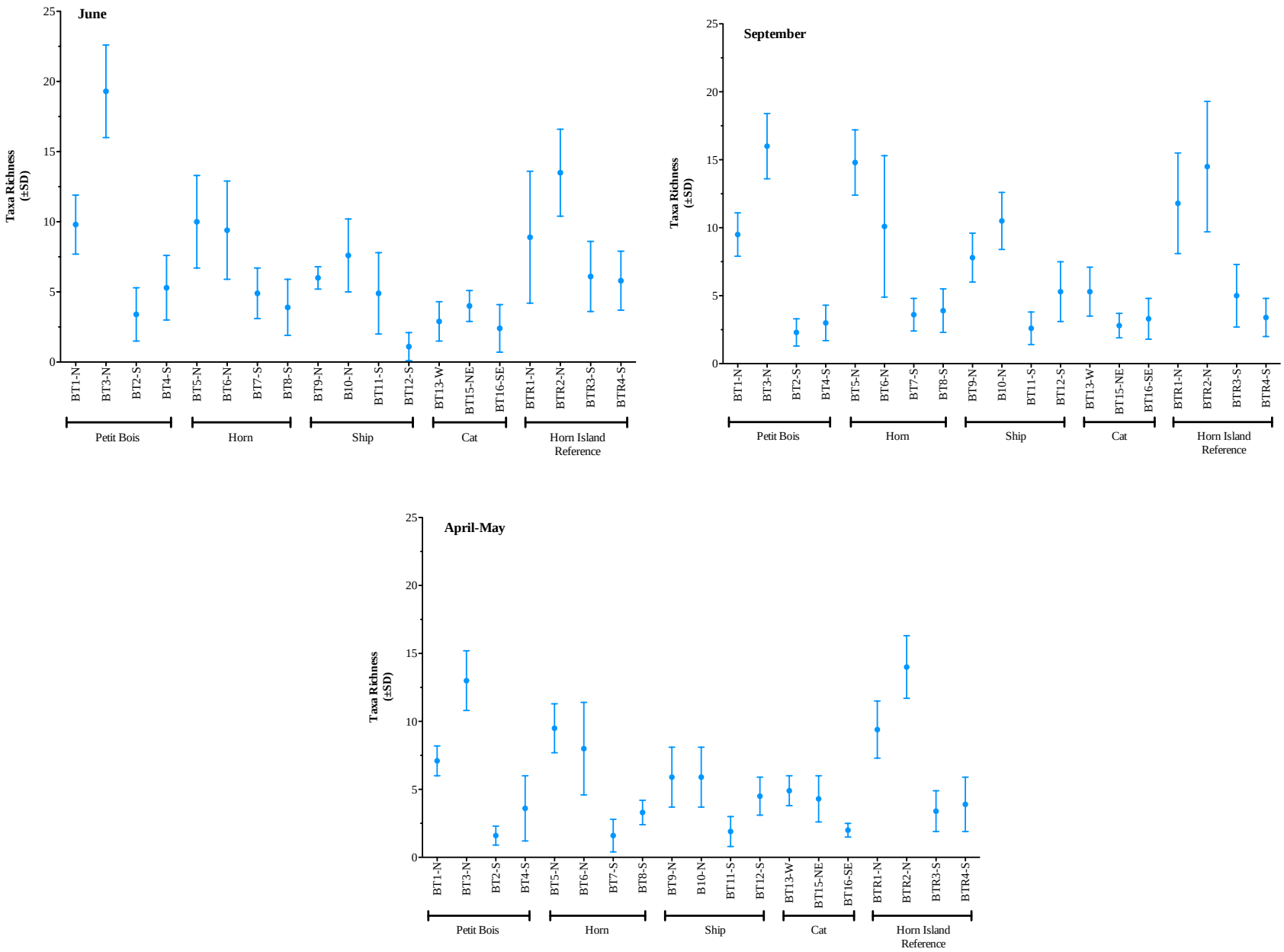


Figure 46. Macroinvertebrate density data for the MsCIP Beach Transect Deep stations, June and September 2010 and April-May 2011.

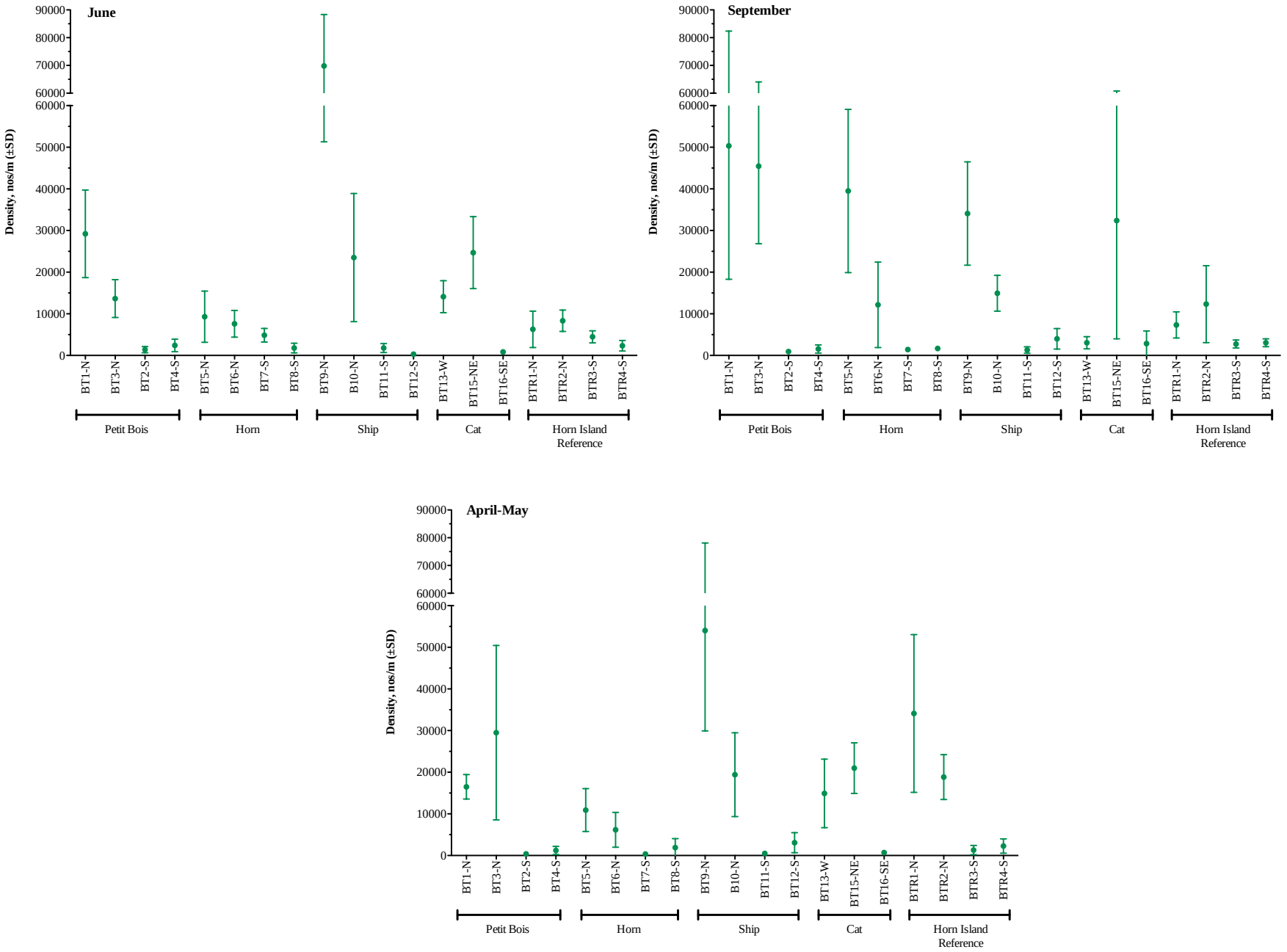


Figure 47. Macroinvertebrate diversity data for the MsCIP Beach Transect Deep stations, June and September 2010 and April-May 2011.

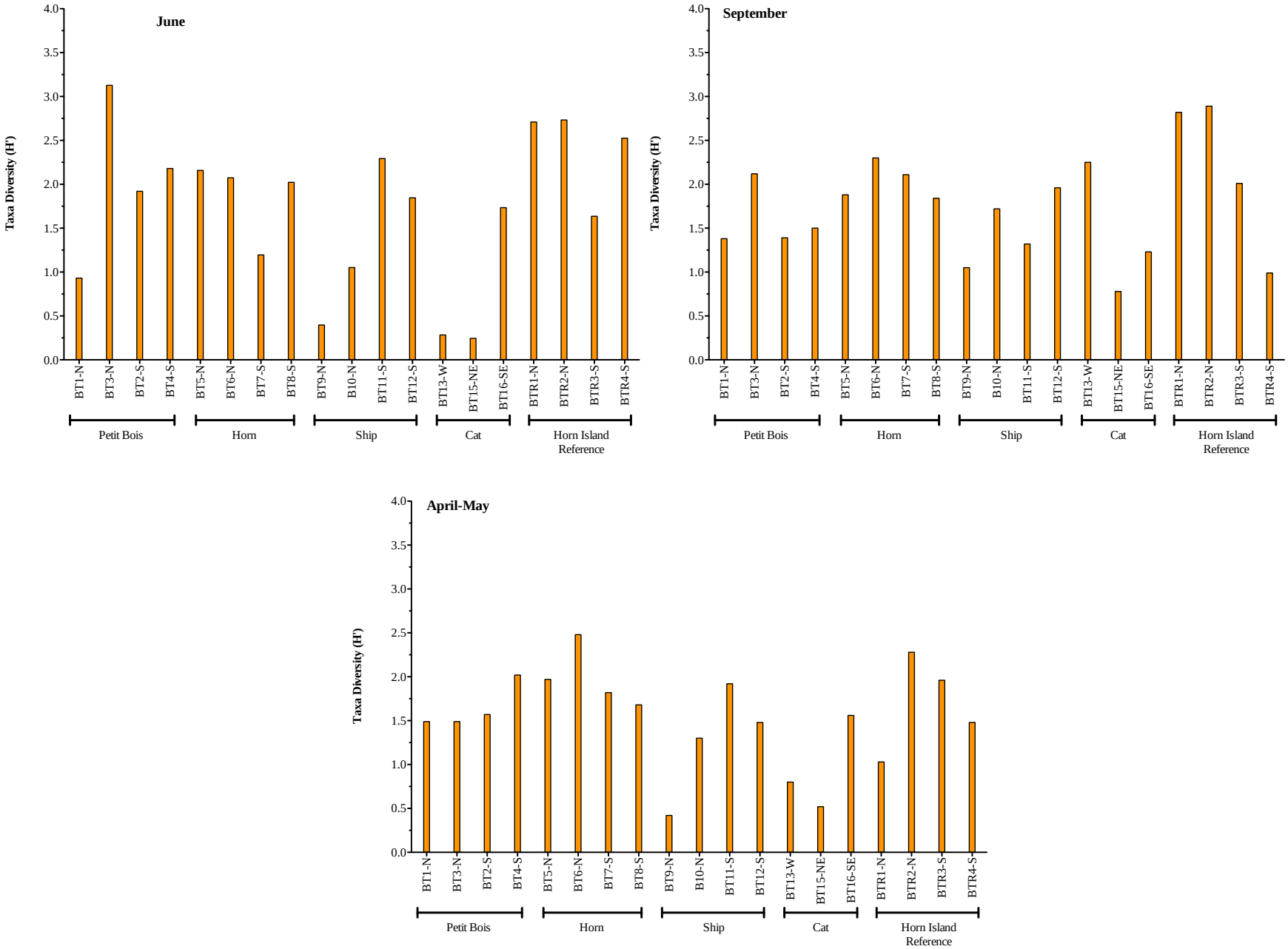


Figure 48. Macroinvertebrate evenness data for the MsCIP Beach Transect Deep stations, June and September 2010 and April-May 2011.

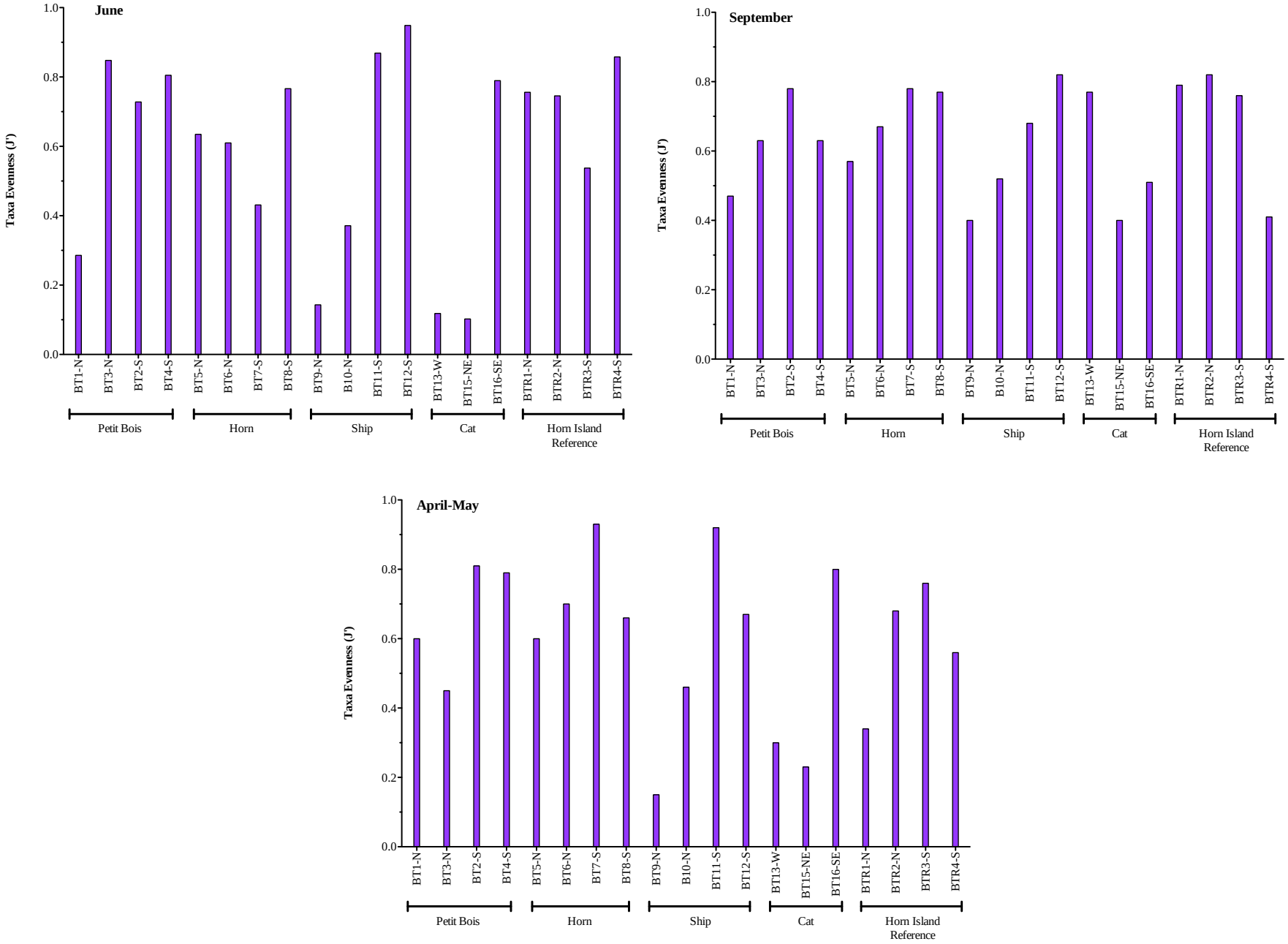


Figure 49. Comparison of taxa richness data for the MsCIP Beach Transect Deep stations, June and September 2010 and April-May 2011.

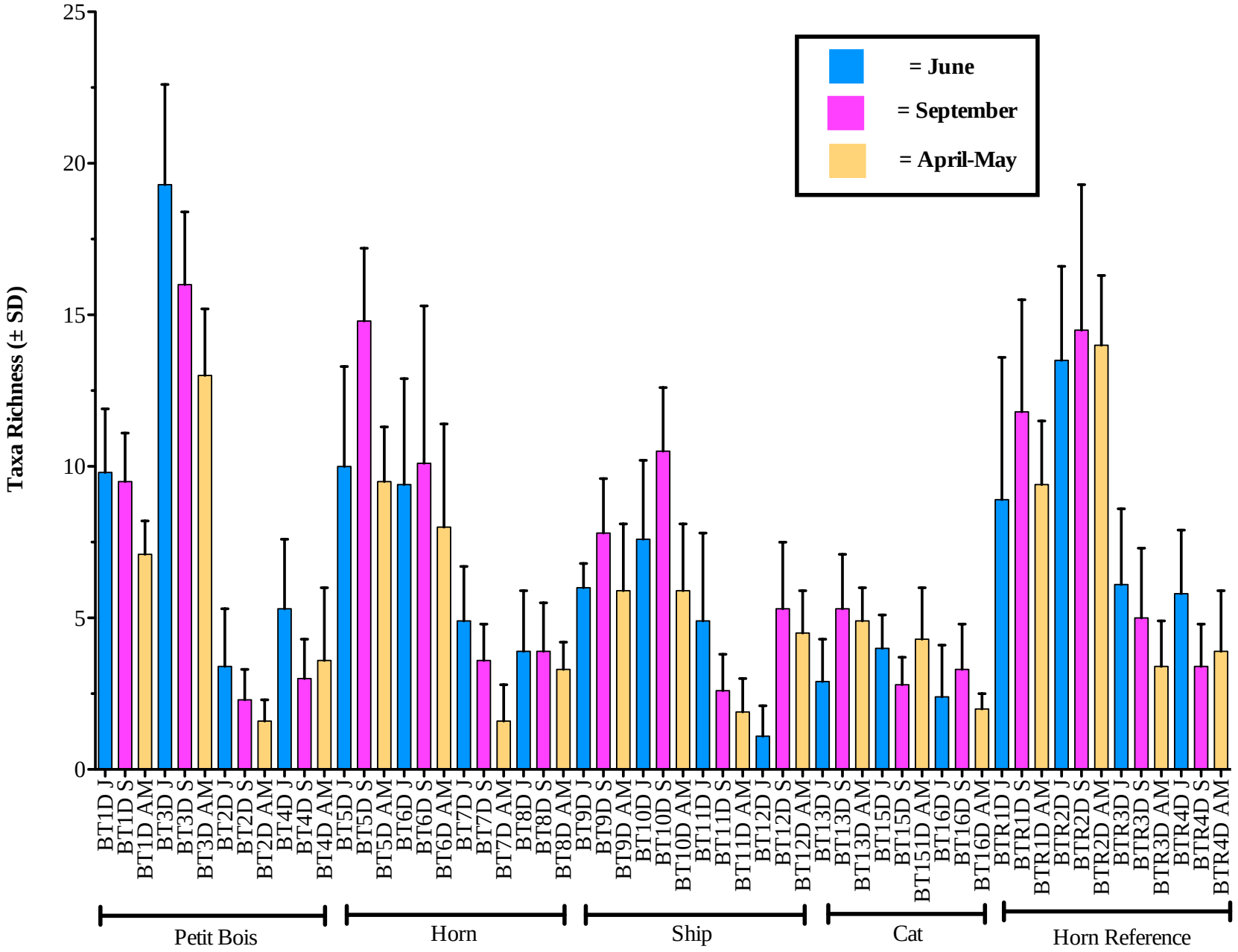


Figure 50. Comparison of density data for the MsCIP Beach Transect Deep stations, June and September 2010 and April-May 2011.

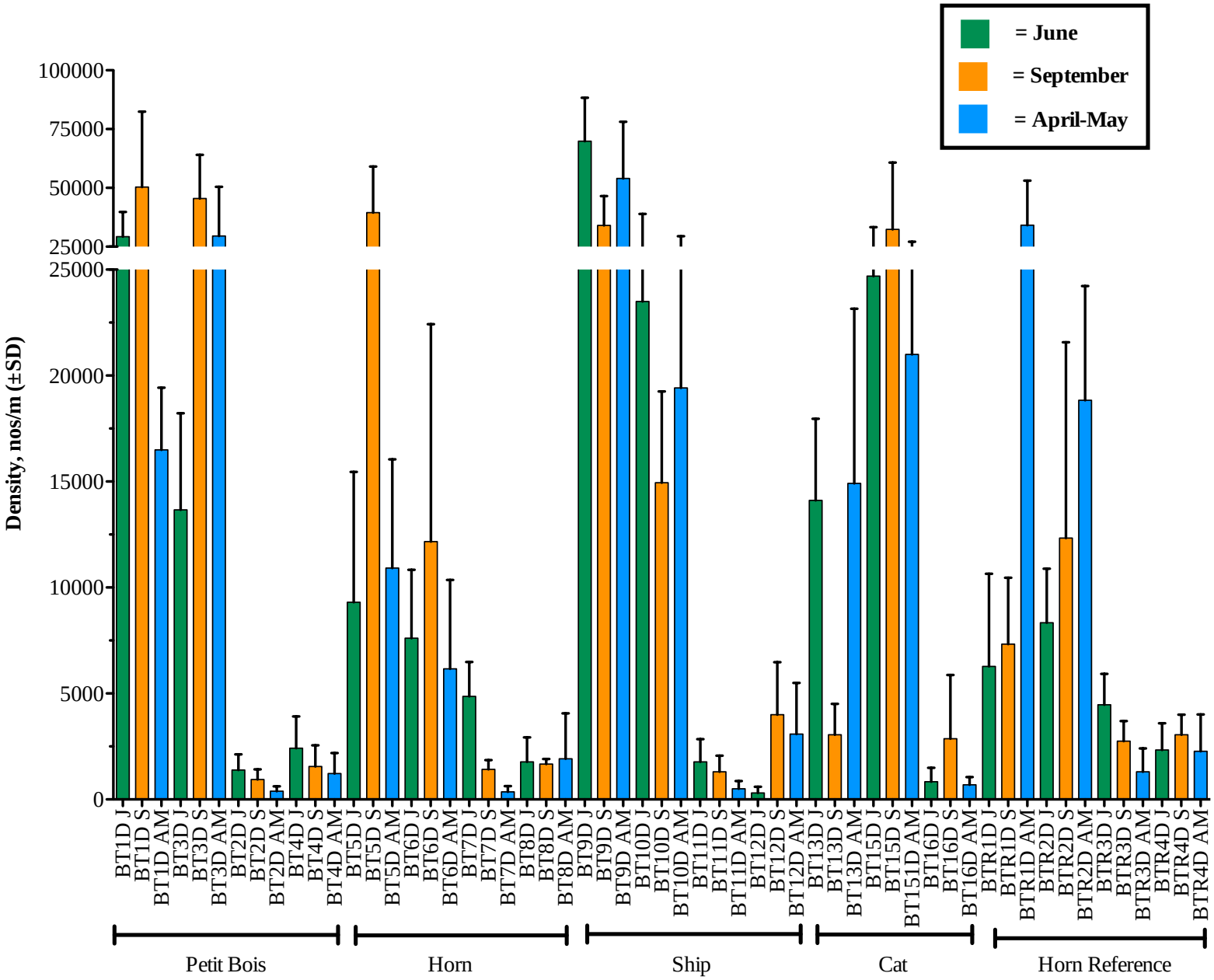


Figure 51. A summary of taxa richness and density for the Borrow Site Stations.

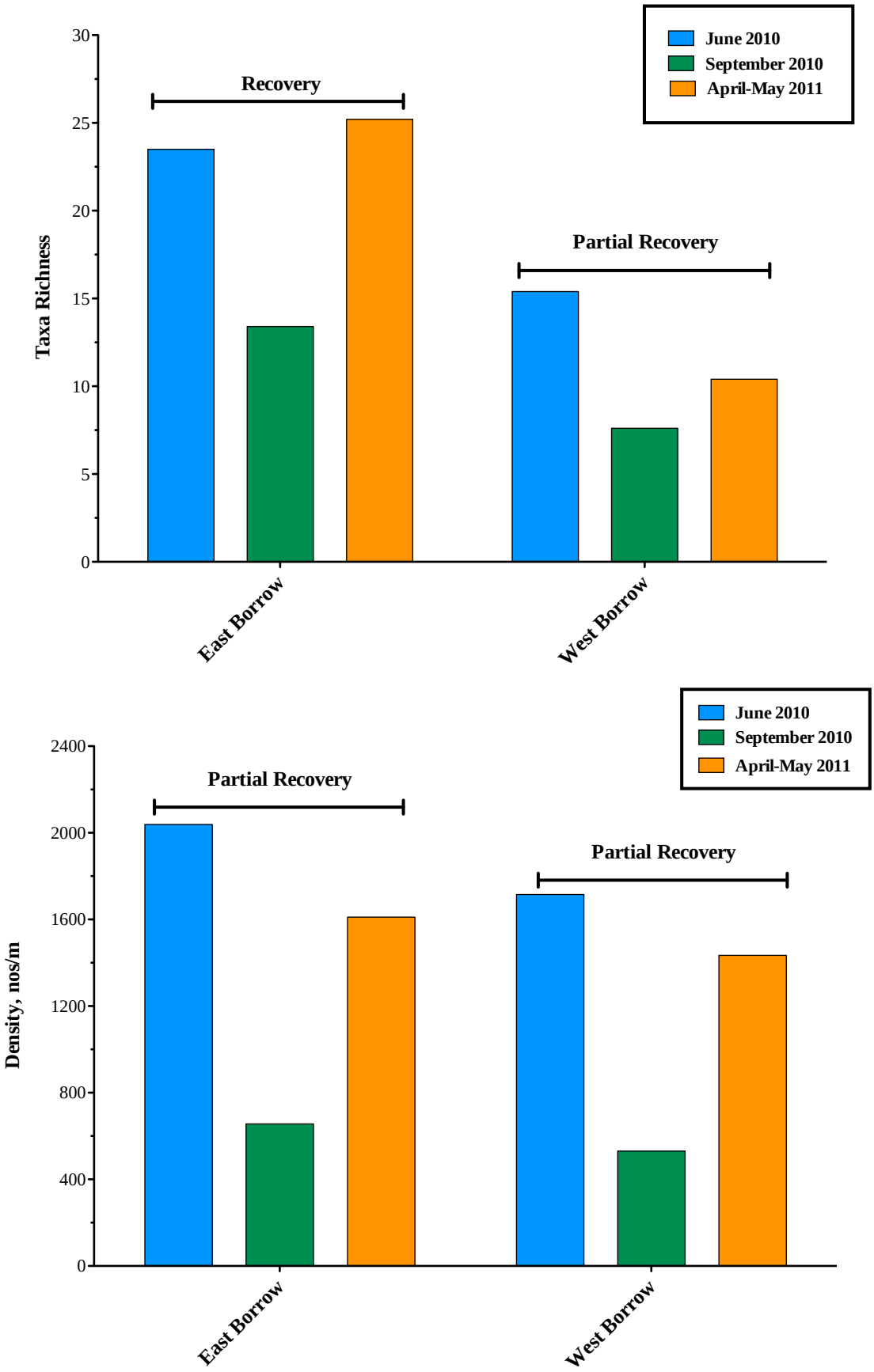
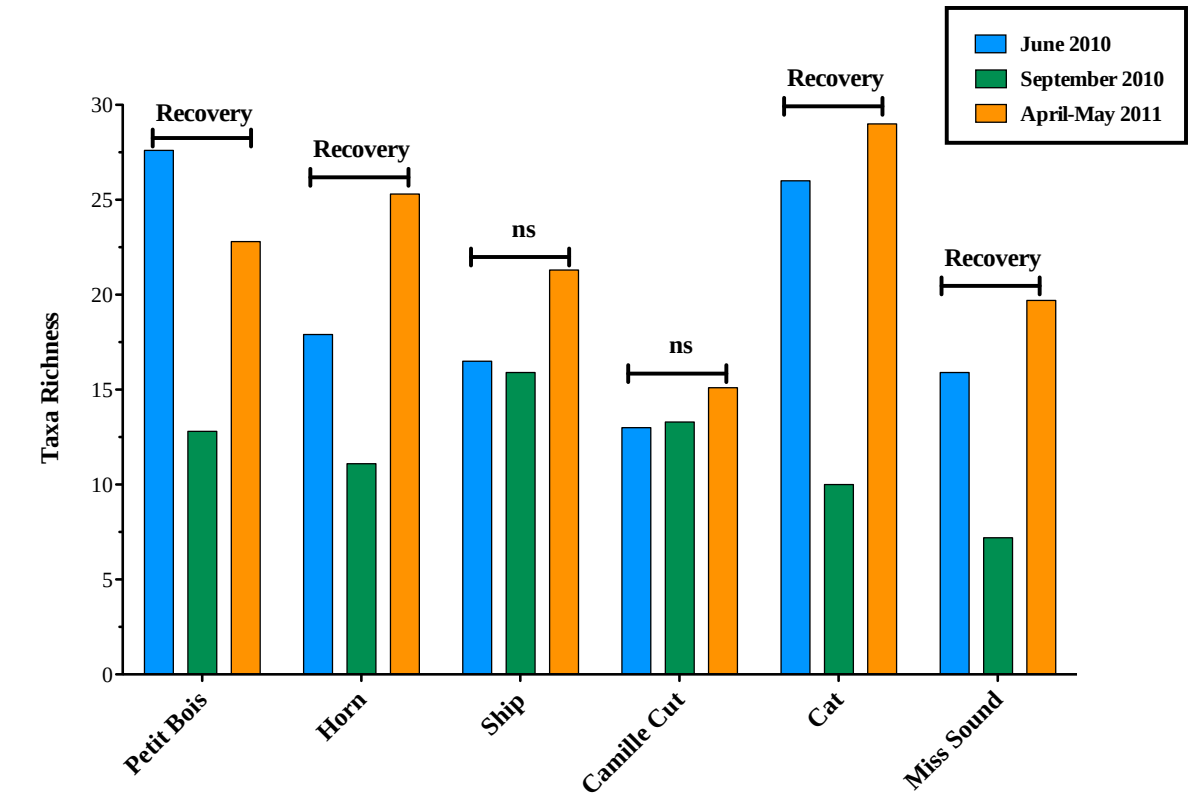


Figure 52. A summary of taxa richness and density for the Placement Site Stations.



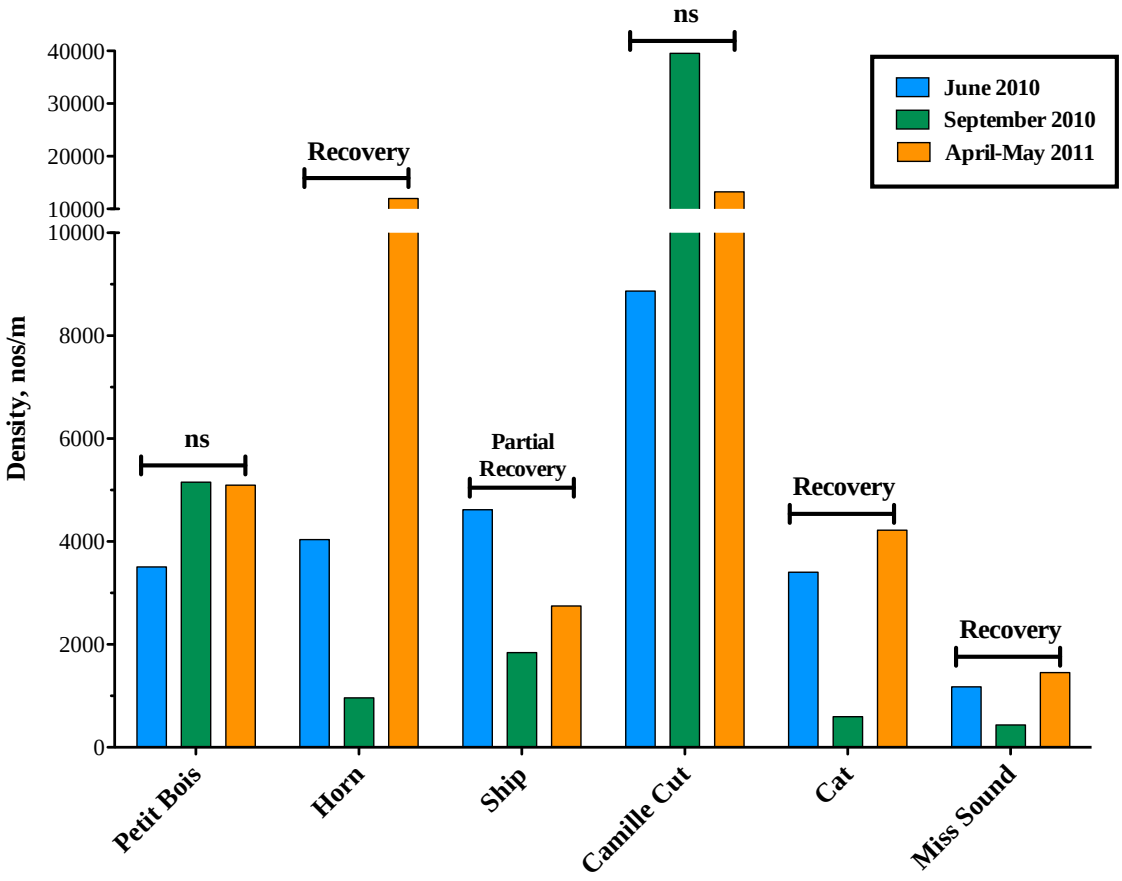
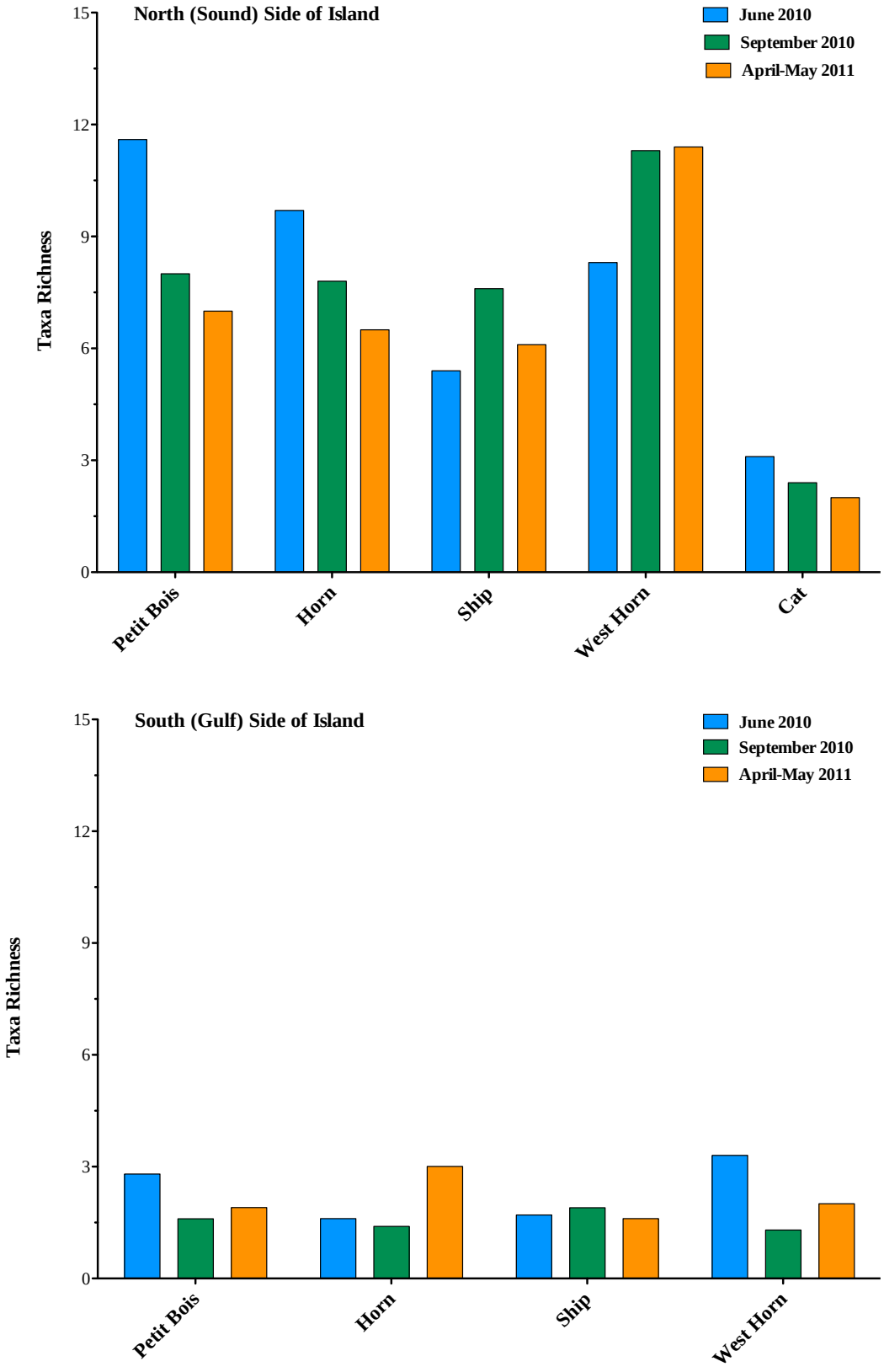
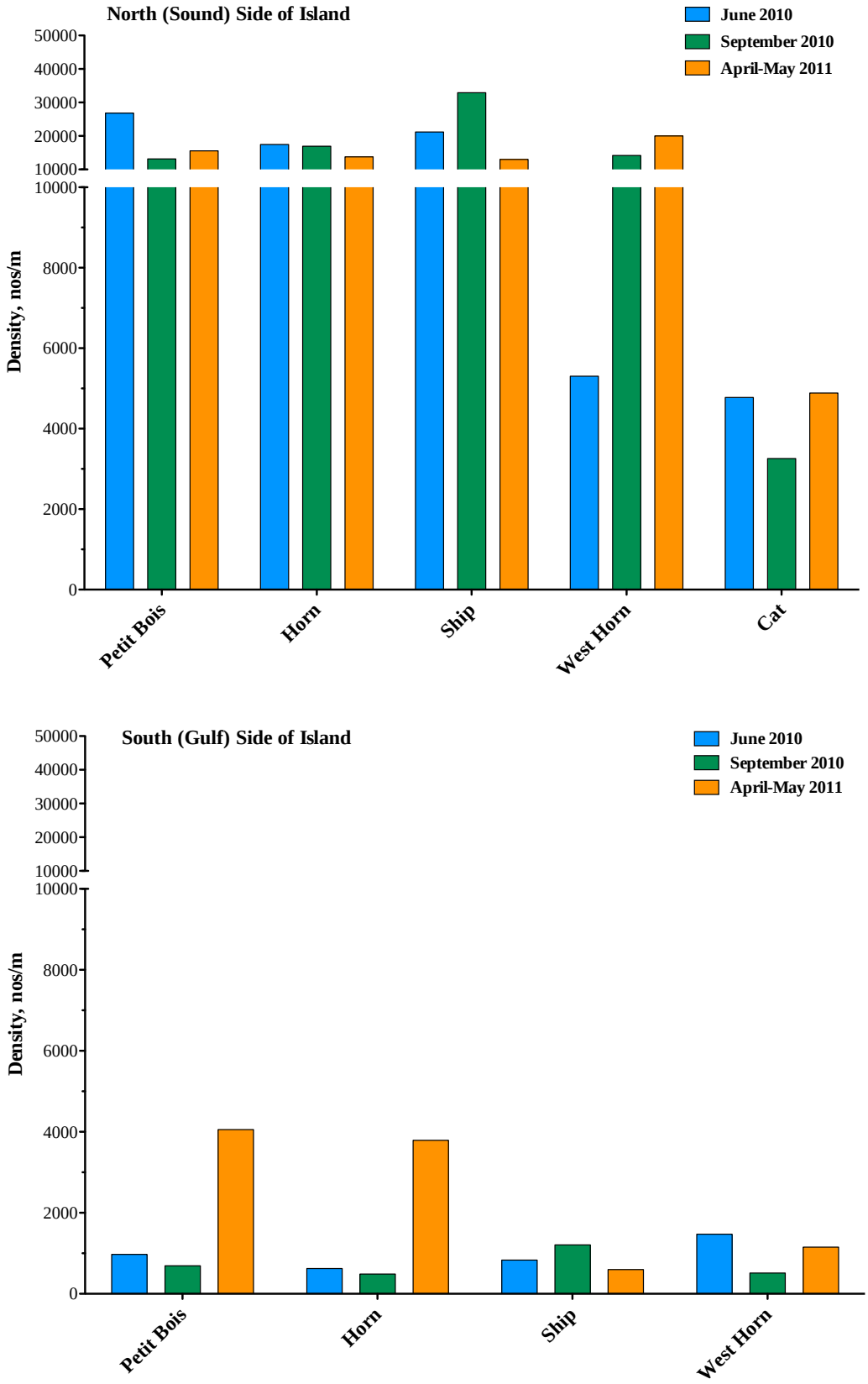


Figure 53. A summary of taxa richness Shallow Beach Transect Stations.



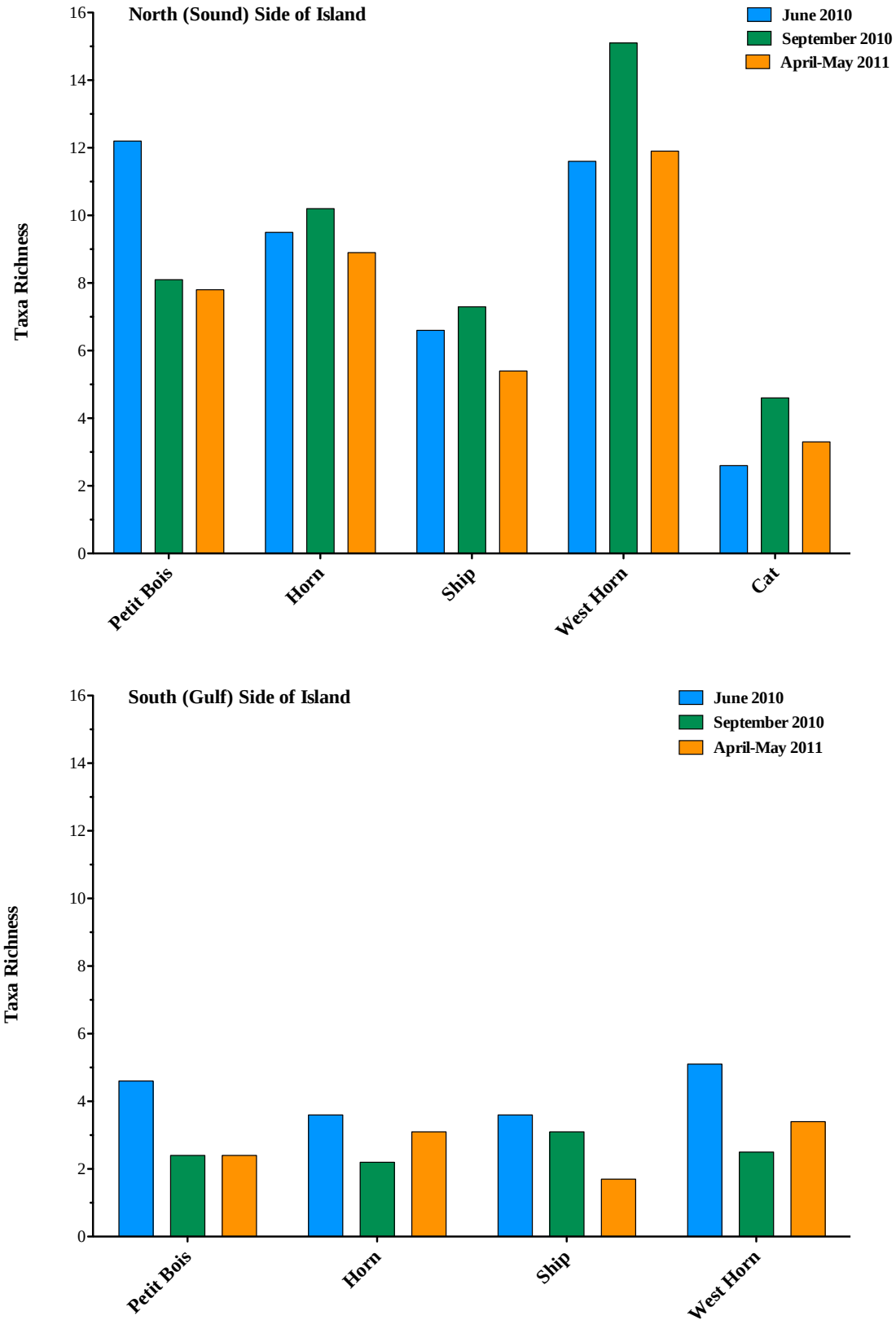
***Cat Island data was not separated into north/south groupings**

Figure 54. A summary of density data for the Shallow Beach Transect Stations.



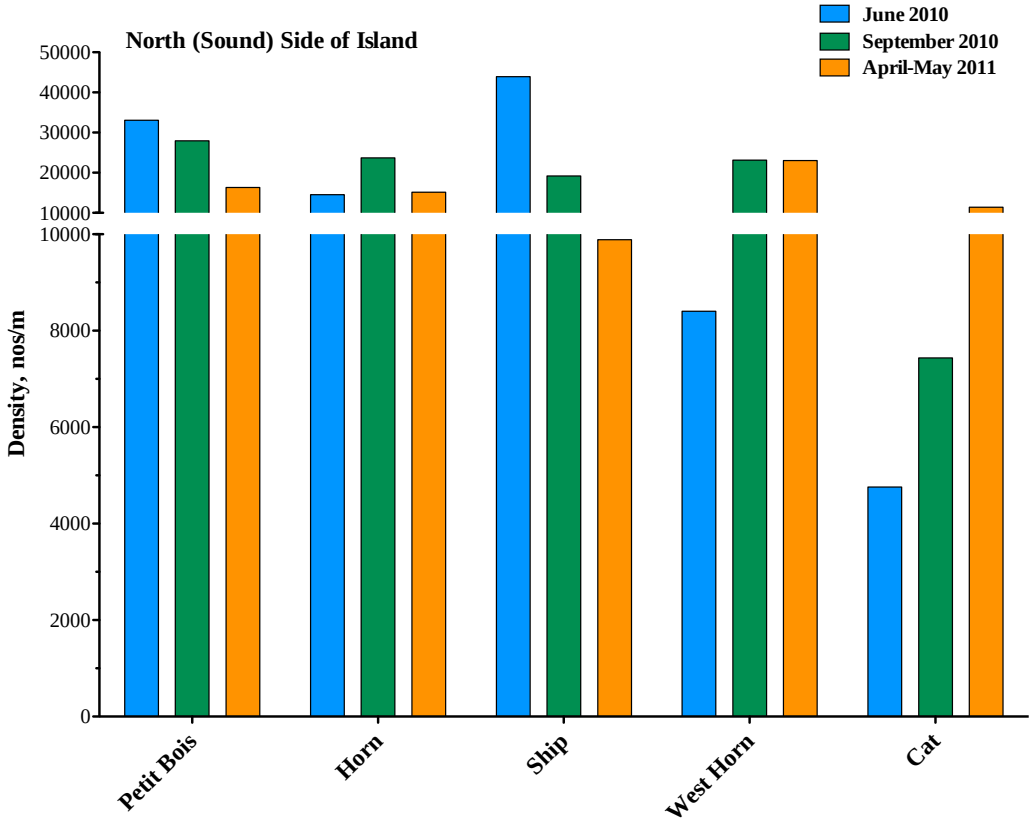
***Cat Island data was not separated into north/south groupings**

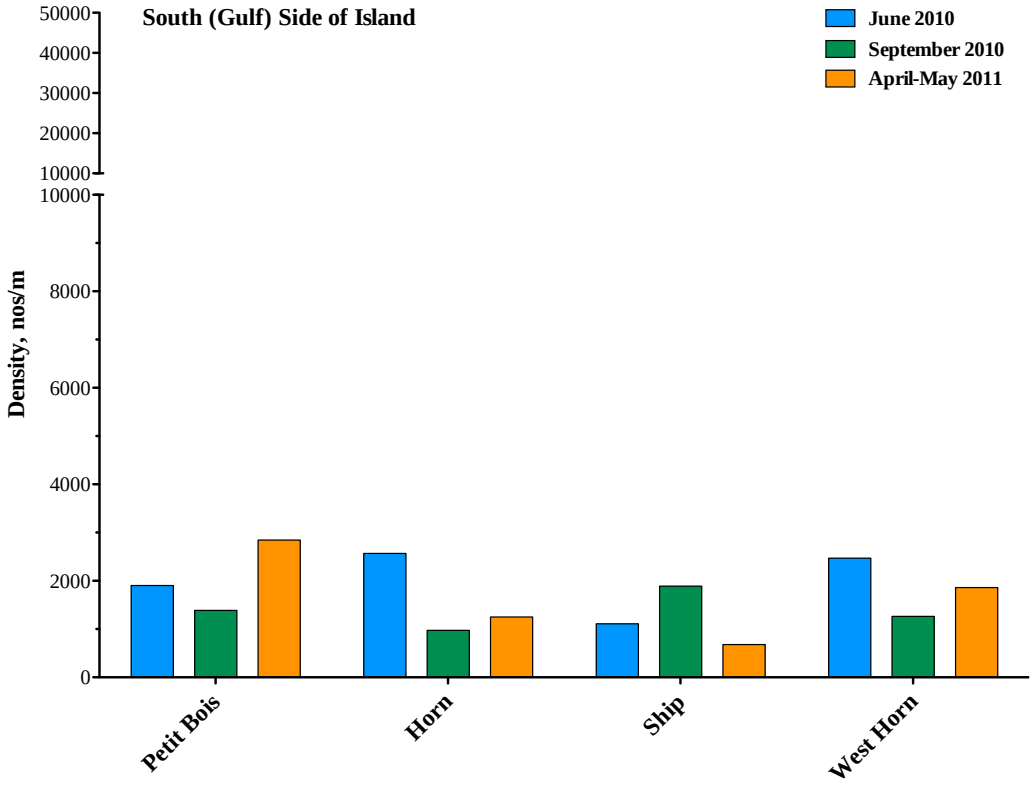
Figure 55. A summary of taxa richness Mid-depth Beach Transect Stations.



***Cat Island data was not separated into north/south groupings**

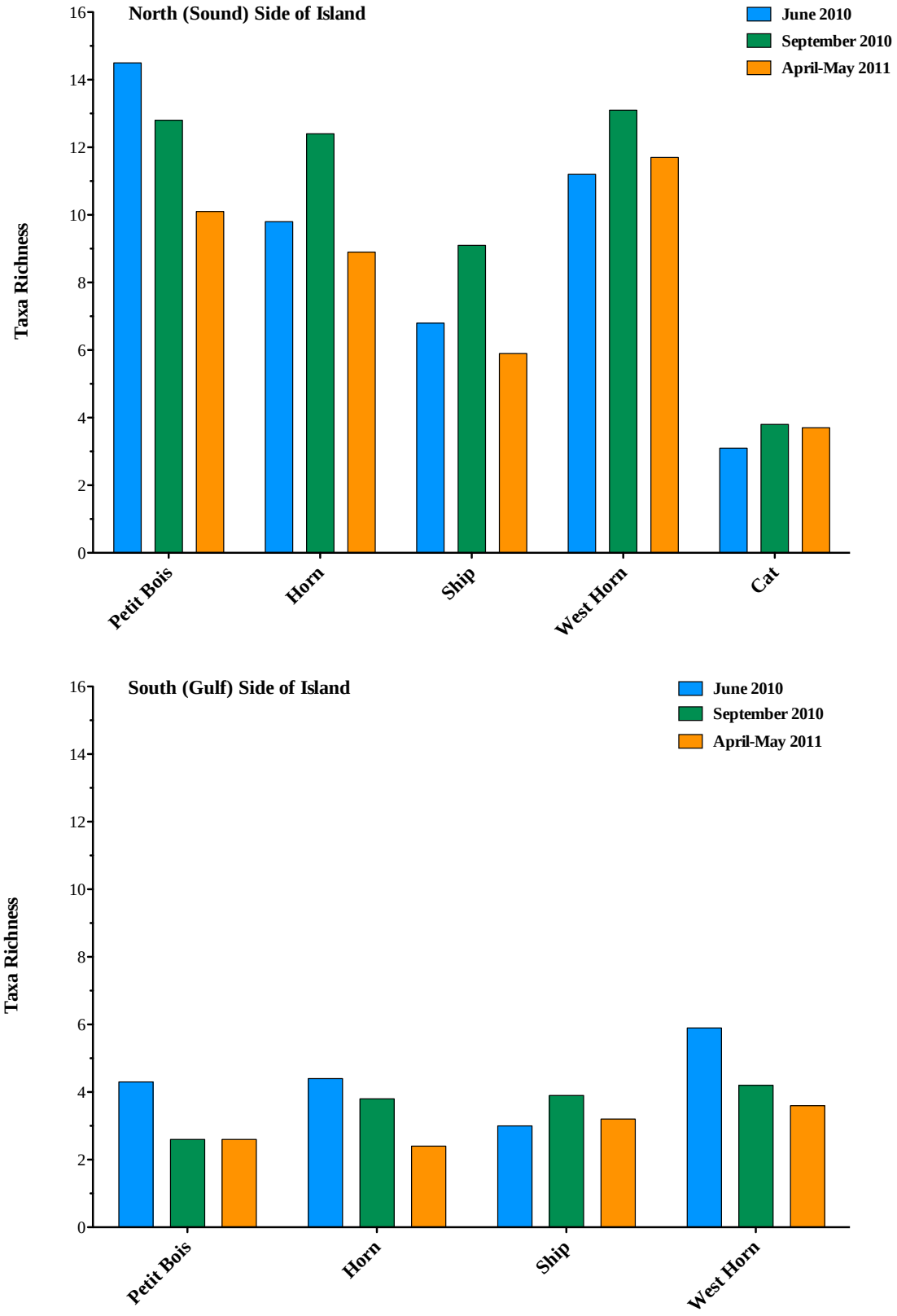
Figure 56. A summary of density data for the Mid-depth Beach Transect Stations.





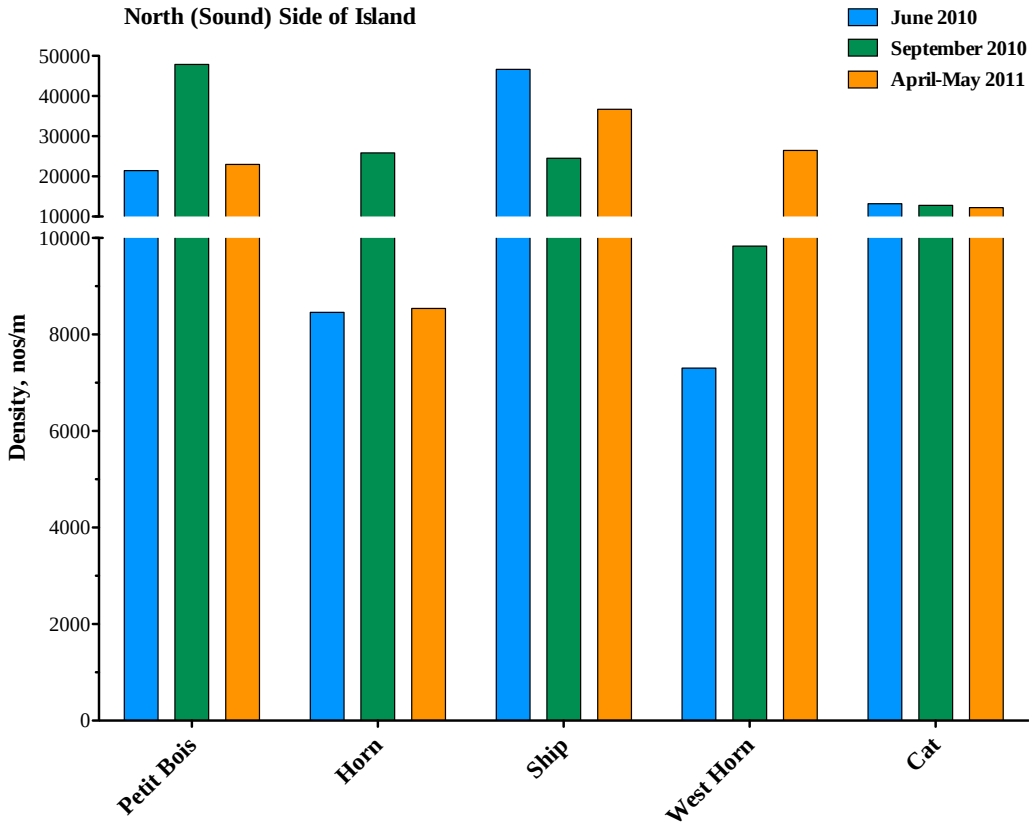
***Cat Island data was not separated into north/south groupings**

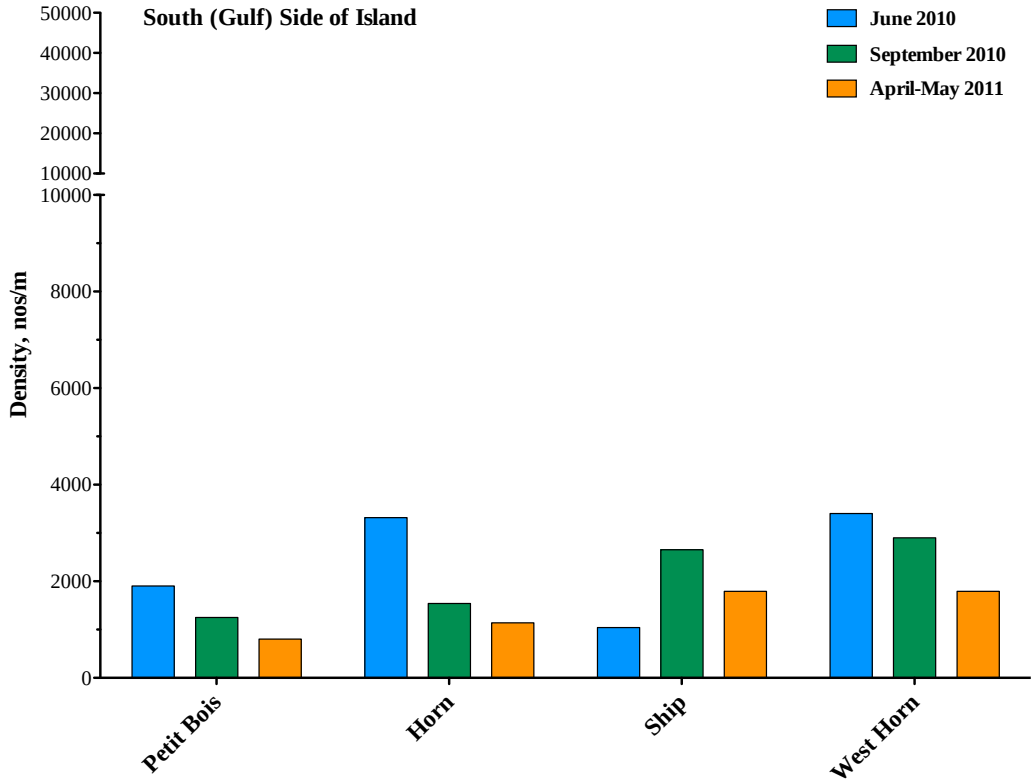
Figure 57. A summary of taxa richness Deep Beach Transect Stations.



***Cat Island data was not separated into north/south groupings**

Figure 58. A summary of density data for the Deep Beach Transect Stations.





***Cat Island data was not separated into north/south groupings**

APPENDIX

DA10 Borrow Area

The DA10 borrow site was sampled on November 29, 2011. Three stations were sampled for various water quality parameters, sediment composition, and benthic macroinfaunal assemblage composition. Station locations for the DA10 borrow site are given in Table A1. Water quality data collected at the three DA10 stations are given in Table A2. Water depths ranged from 4.6 ft to 6.5 ft, salinities were > 32 ppt, and the sediment composition was > 99.5% sand at each station.

Summaries of the biological data collected at the three stations are given in Tables A3 and A4 and Figures A1 and A2. Taxa richness ranged from 7 at Station DA10-2 to 12 at DA10-3 and densities ranged from 650 individuals/m^2 at Station DA10-3 to 1200 individuals/m^2 at Station DA10-1 (Table A3, Figure A1). Taxa diversity (H') ranged from 1.51 at Station DA10-2 to 2.23 at Station DA10-3, and Evenness (J') ranged from 0.66 at Station DA10-1 to 0.90 at Station DA10-3 (Table A3, Figure A2). The dominant taxa collected at each of the DA10 stations is given in Table A4. The polychaete, *Leitoscoloplos* spp., was the dominant taxa collected at each of the three stations and represented between 26.9% (Station DA10-3) and 66.7% (Station DA10-1) of the assemblage. The amphipod, *Acanthohaustorius intermedius*, was also a dominant taxon at Station DA10-2; the amphipods, *Acanthohaustorius* sp. C and *Parahaustorius longimerus*, and the crab, *Pinnixa* (LPIL), were abundant at Station DA10-3; and the clam, *Gemma gemma*, was present in high abundances at each station (Table A4).

Table A1. Coordinates for the DA10 Stations, November 2011.

Station	Latitude	Longitude
DA10-1	30.22575	-88.51466
DA10-2	30.23058	-88.52343
DA10-3	30.22048	-88.51628

Table A2. Water Quality and sediment texture data for the DA10 stations, November 2011.

									Sediment Texture					
Station	**DateTime M/D/Y**	**Depth ft**	**Temp C**	**SpCond mS/cm**	**Salinity ppt**	**pH**	**ODO% %**	**ODO Conc mg/L**	**%Gravel**	**%Sand**	**%Silt**	**%Clay**	**%Silt+Clay**	**USCOE Texture**
DA10-1 B	11/29/11 17:59	4.629	15.44	49.31	32.27	8.05	102.0	8.37	0	99.85			0.15	Sand
M	11/29/11 18:00	2.277	15.44	49.33	32.28	8.08	101.0	8.28						
S	11/29/11 18:00	0.417	15.44	49.32	32.28	8.10	100.8	8.26						
DA10-2 B	11/29/11 18:14	4.789	15.57	49.65	32.52	8.10	99.0	8.08	0	99.96			0.04	Sand
M	11/29/11 18:14	2.611	15.49	49.57	32.46	8.12	97.6	7.99						
S	11/29/11 18:15	0.801	15.47	49.55	32.45	8.13	97.9	8.01						
DA10-3 B	11/29/11 17:48	6.466	15.46	50.10	32.85	7.96	102.2	8.35	0	99.88			0.12	Sand
M	11/29/11 17:49	2.589	15.46	50.02	32.78	8.01	99.3	8.11						
S	11/29/11 17:49	0.705	15.38	49.86	32.67	8.04	98.7	8.08						

B = bottom; M = mid-depth; S = subsurface

Table A3. Macroinfuanal summary data for the DA10 stations, November 2011.

Station	Location	Date (m/d/y)	Total No. Taxa	Total No. Individuals	Density (nos/m^2)	H' Shannon (log e)	J' Pielou Evenness	D Margalef Richness
DA10-1	DA10 Borrow Site	11/29/11	11	48	1200	1.59	0.66	2.58
DA10-2	DA10 Borrow Site	11/29/11	7	33	825	1.51	0.77	1.72
DA10-3	DA10 Borrow Site	11/29/11	12	26	650	2.23	0.90	3.38

Table A4. Percentage abundance of dominant benthic macroinfaunal taxa (> 7% of the total) for the DA10 Stations, November 2011.

	DA10 Borrow Area		
Taxa	DA10-1	DA10-2	DA10-3
Annelida			
Polychaeta			
Leitoscoloplos (LPIL)	50.0	42.4	26.9
Leitoscoloplos fragilis	16.7		
Arthropoda			
Acanthohaustorius intermedius		24.2	
Acanthohaustorius sp. C			11.5
Parahaustorius longimerus			7.7
Pinnixa (LPIL)			15.4
Mollusca			
Bivalvia			
Gemma gemma	16.7	18.2	7.7

Figure A1. Taxa richness and density data for the DA10 stations, November 2011.

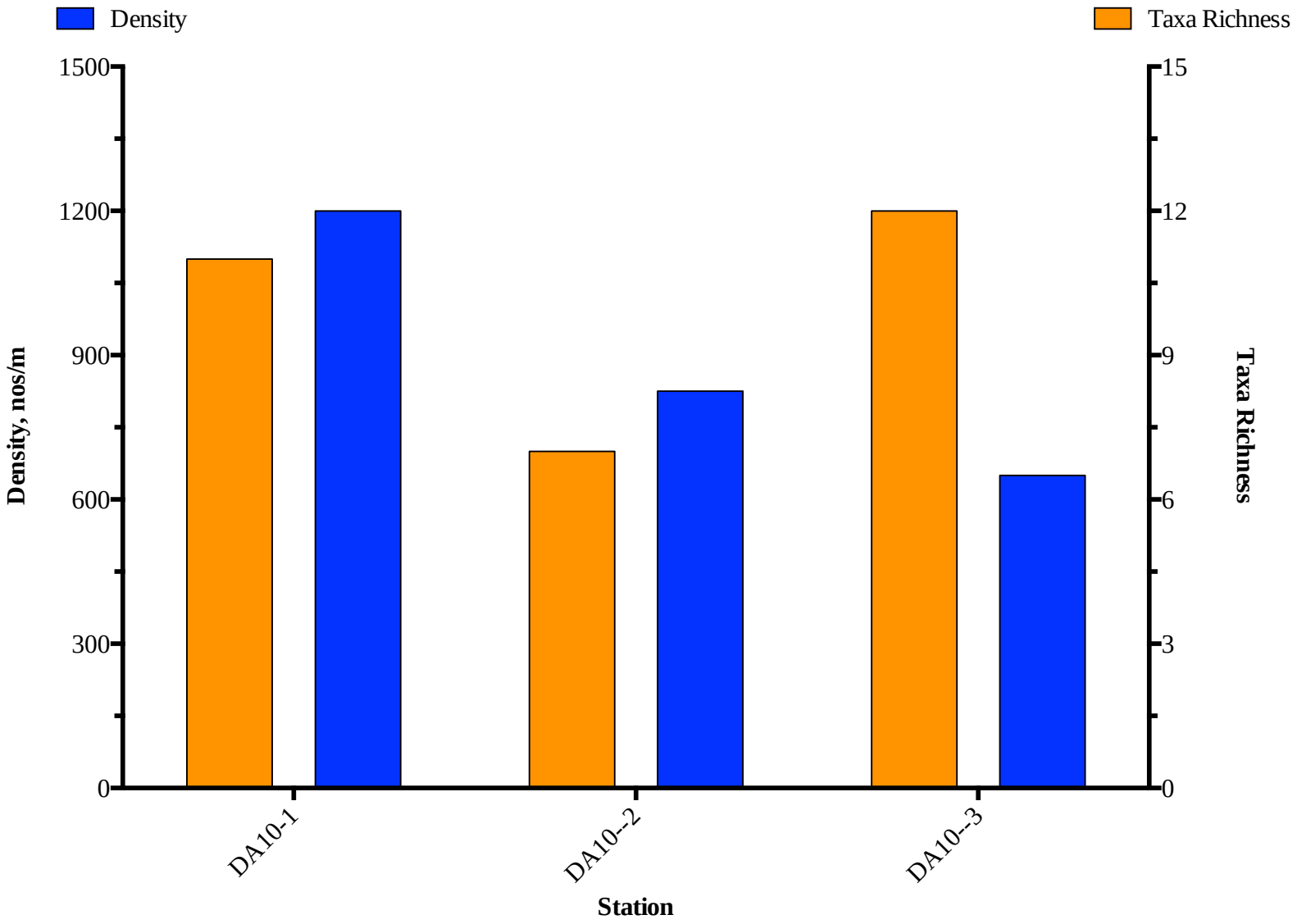


Figure A2. Taxa diversity and evenness data for the DA10 stations, November 2011.