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Coral Reef Monitoring in St. Croix and St. Thomas, United States Virgin Islands

Year Four Final Report
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Executive Summary

Coral reefs in the Caribbean are facing a dramatic decline. To effectively manage and maintain these important ecosystems, the government of the Virgin Islands, in coordination with federal agencies and the University of the Virgin Islands, implemented a long-term coral reef monitoring and assessment program in 2001. This program has established a baseline condition of coral reefs and fish populations for determining the effectiveness of various management initiatives on the sustainability of these important resources. This program will also allow natural resource managers to gauge the impacts of natural disturbances and human activities on coastal habitats and their rates of recovery. This report presents results from the fourth year of monitoring in St. Croix and the second year of monitoring in St. Thomas, with comparisons to previous years. St. Thomas monitoring and assessment employed a stratified design based upon the position of reefs along the insular platform (mid-shelf and shelf-edge). This design was implemented to complement other ongoing monitoring studies and to facilitate a systematic evaluation of the effects of natural and human-induced stresses influencing the decline or recovery of coral reef systems.

Digital video and diver surveys were used to quantify coral diversity and the percent cover of corals, algae and other organisms, incidence of coral bleaching and disease, sea urchin density, and fish community structure at eight permanent sites surrounding the island of St. Croix (Buck Island, Cane Bay, Great Pond, Jacks/Isaacs Bay, Long Reef/Eagle Ray, Mutton Snapper, Salt River, and Sprat Hole) and four permanent sites surrounding the island of St. Thomas (Seahorse Cottage Shoal, South Capella, the Grammanik Bank, and the Red Hind Bank). Current speed and direction and water temperature were assessed at two St. Thomas sites (Flat Cay and the Red Hind Bank) using data recorders.

In St. Croix, turf algae covering dead coral was the predominant benthic cover at most sites. Percent cover of living coral changed little over the four years of monitoring. Percent cover of dead coral covered with turf algae and macroalgae varied, with significant differences between years. Levels of coral disease were lower in 2004 than previous years, while levels of bleaching were variable between sites and years. Sea urchin densities were low and showed little change between years. In 2004, fish diversity ranged from 68 to 80 species, while fish abundance averaged ~ 200 to 400 fish per census. The majority of fish observed on belt transects were small ($\leq$ 5 cm). Commercially important large groupers, snappers, and angelfishes were uncommon to absent at all sites. Four St. Croix monitoring sites showed changes in fish community structure between 2003 and 2004. The changes at one of these sites (Jacks/Isaacs Bay) can be attributed to fishing pressure.

In St. Thomas, living coral was the predominant substrate type at the Grammanik Bank and macroalgae was predominant all other sites. Benthic composition, levels of coral disease and bleaching, and sea urchin density were similar between mid-shelf and shelf-edge reef systems. Benthic composition showed little change between 2003 and 2004. In 2004, levels of bleaching were significantly higher than 2003 at two of the sites and tended to be higher at one site. Sea urchins were observed only at one site, with similar densities to 2003. Current patterns and temperature differed between the mid-shelf and shelf-edge sites, but were similar between years. St. Thomas fish diversity ranged from 40 to 72 species, while fish abundance averaged ~ 60 to 100 fish per census. The majority of observed fish were small (5 – 10 cm). Commercially important large groupers, snappers, angelfishes, and triggerfishes were observed at low densities. Densities of commercially important fishes decreased between 2003 and 2004 and may be the result of fishing pressure at spawning aggregation sites and other habitats around the territory.

Introduction:

The U.S. Virgin Islands consists of three large islands, St. Thomas, St. John and St. Croix, and numerous smaller islands surrounded by a diverse, tropical marine environment that includes coral reefs, seagrass beds, and mangrove forests. The islands of St. Thomas and St John are joined by an extensive shallow water platform that connects them to Puerto Rico and the British Virgin Islands. Sixty-five kilometers to the south of St. Thomas and St. John, St. Croix lies on a separate platform. St. Croix is separated from St. Thomas and St. John by the Virgin Islands Trough (over 7,300 m deep).

Tourism drives the Virgin Islands economy. The marine environment with its clean, clear water and fringing sandy beaches is our major tourist attraction. The waters of the Virgin Islands are ideal for sailing because of the persistent trade winds and the numerous bays that provide protected anchorages. The diverse marine life in the coral reefs and other habitats attracts thousands of skin and scuba divers each year. Sport fishing also makes an important contribution to the economy, especially on St. Thomas.

In addition to their tourist appeal, the coral reefs and other habitats in the Virgin Islands are essential to the lives of hundreds of thousands of species including the economically important queen conch, whelk, snapper and grouper. Over three hundred full-time or part-time commercial fishermen fish in territorial and federal waters on all three islands. In tough economic times, fishing is an important means of supplemental income for many people.

Over the past 20 years, eight major hurricanes, numerous outbreaks of disease and sporadic bleaching events have caused extensive coral mortality to the coral reefs surrounding the Virgin Islands (Gladfelter 1982: Edmunds and Witman 1991; Rogers *et al.* 1991; Causey *et al.* 2000). Recovery from these natural disturbances is hindered by a multitude of human impacts that affect coral reefs such as overfishing, ship groundings, anchor damage, and non-point source pollution (Roberts 1993; Sebens 1994; Rogers and Garrison 2001). Moreover, rapid development of inland and coastal areas has dramatically increased soil erosion and sedimentation onto many of these coral reefs (Rogers 1990; MacDonald *et al.* 1997; Anderson and MacDonald 1998). Chronic sedimentation may affect the abundance and diversity of corals and other reef organisms, increase coral stress and susceptibility to diseases and bleaching, and reduce the ability of corals and other reef organisms to recover and regenerate after natural disturbances such as hurricanes (Acevedo and Morelock 1988; Rogers 1990; Rice and Hunter 1992). The cumulative effects of these human impacts reduce coral abundance and larval recruitment and may make corals more susceptible to disease and bleaching (Nemeth and Sladek Nowlis 2001).

Section I: St. Croix

Methods

Benthic Assessments:

Between May and July 2004, the University of the Virgin Islands determined the benthic composition at eight long-term monitoring sites previously established off the island of St. Croix. Two of the sites (Great Pond and Jacks Bay) are within the East End Marine Park Boundary (Figure 1, Table 1). Details on site selection and prior sampling methodology can be found in Nemeth *et al.* (2004).

Table 1. St. Croix site location information and number of benthic transects at each site.

Site	Date Sampled	GPS Coordinates	Depth (ft.)	No. of Transects
Buck Island	5/5/04	N 17° 47.122, W 64° 36.550	35	6
Cane Bay	5/25/04	N 17° 46.433, W 64° 48.810	30	6
Great Pond	6/2/04	N 17° 42.668, W 64° 39.148	14	6
Jacks/Isaac Bay	5/28/04	N 17° 44.588, W 64° 34.309	35	6
Long Reef/Eagle Ray	5/3/04	N 17° 45.688, W 64° 41.929	30	6
Mutton Snapper	7/20/04	N 17° 38.217, W 64° 51.683	75	6
Salt River West Wall	5/12/04	N 17° 47.116, W 64° 45.564	20	6
Sprat Hole	5/10/04	N 17° 44.038, W 64° 53.722	40	6

At all sites except Mutton Snapper, all video, coral disease and bleaching, and sea urchin density data were collected along six 10 m permanent transects established in previous years. For Mutton Snapper, transects were marked by haphazardly laying 10 m transect lines on areas judged to be representative of the reef. Since permanent transects were not established at this site, data from different years do not represent the exact area of reef, but do correspond to the same general area. In addition, due to logistical challenges presented by the depth of the Mutton Snapper site, the dive team was unable to perform coral disease and bleaching and sea urchin density transects.

To video sample, one diver swam along each transect videotaping the benthic cover using a Sony TRV-950 digital camcorder in a Light and Motion Stingray II underwater housing. The diver swam at a uniform speed, pointing the camera down and keeping the lens approximately 0.4 m above the substrate at all times. A guide wand attached to the camera housing was used to help the diver maintain the camera a constant distance above the reef. After taping, approximately 20 - 30 non-overlapping images per transect were captured and saved as JPEG files on a computer using a Sony video capture card. Captured images represented an area of reef approximately 0.31 m^2 (0.64 m x 0.48 m). Microsoft Excel and Adobe Photoshop were used to superimpose ten randomly located dots on each captured image. The substrate type located under each of the dots was then identified to the most descriptive level possible and entered into a database. For each transect, the percent cover of coral, dead coral with turf algae, macroalgae, sponges, gorgonians, and sand/sediment were calculated by dividing the number of random dots falling on that substrate type by the total

number of dots for that transect. Mean values for percent cover were calculated for each site and coral diversity was measured by using the Shannon-Weaver diversity index. Repeated measures ANOVA tests were performed to determine if there were significant differences in the percent cover of these benthic categories at each site between years.

At all sites except Mutton Snapper, all coral colonies ≥0.1 m in diameter or height that were located directly under the transect lines were measured for maximum width and height and assessed for signs of disease or bleaching. Assessments of each coral colony were done by estimating the percent surface area (planar view) appearing bleached and diseased for each colony. For each site, the mean percent of coral colonies with disease was calculated by dividing the number of colonies with disease by the total number of colonies assessed on each transect, then determining the mean value among all six transects. The mean percent of bleached colonies for each site was calculated in the same fashion. Repeated measures ANOVA tests were used to determine if there were significant differences in the percent of diseased and bleached colonies between years two through four. Since bleaching and disease data were collected by a different method in year one, comparisons to year one were not possible.

Divers also counted the number of *Diadema antillarum* sea urchins within 1 m on either side of each transect at all sites, with the exception of Mutton Snapper. The mean number of sea urchins per 10 m^2 was calculated for each site and repeated measures ANOVA tests were performed to determine if there were differences in the mean density of sea urchins at each site between years.

Fish Census:

In 2004, fish communities were surveyed on St. Croix using two census methods. The first was the belt transect method of Brock (1954) as described previously (Nemeth *et al.* 2004). Belt transects were 30 x 2 m (60 m^2). In brief, each diver affixed a transect tape to the seafloor at haphazardly chosen positions that were sufficiently separated from other transects (> 5 m) and slowly swam a straight distance parallel to the reef profile. All fish observed within this swath or passing in front of (but not behind) the diver were identified to species. Fish size (fork length) was estimated to the nearest cm, and number of individuals was recorded into the following size categories: ≤ 5 cm; 5-10 cm; 10-20 cm; 20-30 cm; 30-40 cm, and >40 cm. During surveys, divers estimated fish length by reference to a PVC measuring "T-bar" marked in 1 cm increments (Bohnsack and Bannerot 1986). On St. Croix, diminutive/cryptic fish species (gobies, blennies, apogonids) were excluded from fish counts. At each site, ten replicate belt transects were conducted with the exception of Mutton Snapper [MS] site (6 transects). An attempt was made to standardize the duration of each belt transect to 20 minutes on St. Croix (Table 2).

In 2004, we also expanded the use of a second fish census method - the Roving Diver Survey (RDS; Kimmel 1985, Kramer and Lang 2003) - to compliment the use of belt transects at each site. In the RDS method, divers swam a haphazard circuit in the immediate vicinity of the survey site while listing all observed fish species into one of five abundance categories as follows: 1 fish; 2-10 fish, 11-100 fish; 101-1000 fish; and > 1000 fish. Observations were recorded onto blank underwater sheets, rather than pre-printed forms (i.e. divers generated a new species list for each survey). Each RDS was 30 minutes in duration and three to five replicate surveys were conducted at each site. RDS were not conducted at MS due to limited bottom time.

On St. Croix, eight sites were surveyed between June 24 and August 24, 2004 (Table 2). The same eight sites were surveyed in 2003 (Nemeth *et al.* 2004), and five of these were surveyed in 2002 as well (Toller 2002). See Nemeth *et al.* (2004) for complete site descriptions and locations. Survey information and observations were recorded onto underwater data forms. In the laboratory, data were entered into Microsoft Excel spreadsheets and analyzed for descriptive statistics of reef fish community structure (average density, species richness, Shannon Diversity [H']).

Table 2. Summary of fish census effort on St. Croix, 2004.
SR = Salt River, CB = Cane Bay, ER = Long Reef/Eagle Ray,
SH = Sprat Hole, BI = Buck Island, IB = Jacks/Isaacs Bay,
GP = Great Pond, MS = Mutton Snapper

Survey Method	Site	Survey Date	Total No. of Replicates	Cumul. Survey Time (min)	Avg Time per Transect (min)
Belt Transect	SR	24-Jun-04	10	185	18.5
	CB	29-Jun-04	10	193	19.3
	ER	9-Jul-04	10	173	17.3
	SH	20-Jul-04	10	184	18.4
	BI	23-Jul-04	10	164	16.4
	IB	27-Jul-04	10	168	16.8
	GP	30-Jul-04	10	180	18.0
	MS	24-Aug-04	6	110	18.3
Roving Diver	SR	24-Jun-04	4	120	30
	CB	29-Jun-04	5	150	30
	ER	9 & 27-Jul-04	4	120	30
	SH	20-Jul-04	4	120	30
	BI	23-Jul-04	3	90	30
	IB	27-Jul-04	3	90	30
	GP	30-Jul-04	5	150	30
	MS	na	0	-	-

as *P. astreoides* and *Millepora alcicornis* (fire coral). This trend may indicate a decrease in overall reef quality at this site (Figure 4A-H). See Nemeth *et al.* (2004) for a more detailed discussion regarding these types of changes in reef community structure.

For 2004, the Shannon – Weaver Diversity Index (H') for coral ranged from a high of 2.23 at Salt River to a low of 0.78 at Mutton Snapper. Coral diversity increased at most sites from 2003 to 2004, with the exception of Buck Island, Jacks Bay, and Long Reef/Eagle Ray (Figure 5).

In 2004, Salt River showed the highest incidence of disease, with diseased corals comprising 5.6% of the sampled colonies. Cane Bay was the only other site with disease. Sprat Hole had the highest incidence of bleaching with 9.8% of the sampled colonies showing signs of bleaching. Buck Island had the lowest incidence of bleaching with 1.5%. In general, levels of disease decreased in 2004, while changes in bleaching levels increased at some sites, decreased at some sites and remained similar at others between 2003 and 2004. As no disease and bleaching assessments were performed at the Mutton Snapper site in 2004, comparisons between 2004 and previous years are not possible (Figure 6). In 2004, *Siderastrea siderea* was the only coral species with disease, while *Montastraea franksii* and *S. siderea* were the most common corals with bleaching (Figure 7). Dark spots disease was the only disease observed.

No *Diadema antillarum* sea urchins were present at most sites in 2004, the exceptions being Great Pond (5.7 urchins/10 m^2) and Salt River (0.2 urchins/10 m^2). No significant differences in urchin density were found between years.

Detailed summaries of the benthic data from each St. Croix site are included in Appendix I: Summary of Coral Video Data, Appendix II: Summary of Non-coral Video data, and Appendix III: Summary of Urchin, Bleaching, and Disease Data.
These data will be also made available on the University of the Virgin Islands web site http://rps.uvi.edu/VIMAS/reefs.htm.

Fish Census:

A general description of the fish communities found at the eight St. Croix survey sites has already been given (Nemeth *et al.* 2002, Toller 2002, Nemeth *et al.* 2003a, Nemeth *et al.* 2004). Most of these characteristics were again observed in 2004 and they are only discussed briefly here. In terms of reef fish abundance, richness, and diversity (Figure 8A-C), variability was again high within and among sites [see Appendix IV for a more detailed description of species composition], however observations at each site remained relatively consistent between years. As reported for 2003, small fish predominated in 2004 surveys (Appendix V). Most fish (10,654 fish or 50.3 %) fell into the smallest size category (≤ 5 cm). Few large fish (30-40 cm) were observed (65 fish or 0.3 %) and even fewer very large fish (> 40 cm) were observed (46 fish or 0.2 %). Fish abundance, from 10 families (Figure 9A-J) was also similar between years. For example, small planktivores (labrids and pomacentrids) were numerically dominant at all sites in 2003 and 2004 (Figure 9A, B). Groupers (Serranidae) and snappers (Lutjanidae) were relatively rare (Figure 9E, F) and small in size (Appendix V, Appendix VI). Typically, observations were of diminutive serranids, such as hamletfish (*Hypoplectrus* spp.) and harlequin bass (*Serranus tigrinis*) or smallish species

such as coney (*Cephalopholis fulvus*) and graysby (*C. cruentatus*). When compared between years, most other fish families showed no obvious change except as discussed below.

Observed Changes in Reef Fish Communities

Changes at four sites were evident in St. Croix reef fish communities based upon the comparison of data from 2003 and 2004 (Table 3). The observed changes at three sites [SH, MS, BI] are attributed to natural variation. Changes at a fourth site [IB] are interpreted to result from fishing pressure. Each site is presented individually below.

Table 3. Observed trends in fish communities on St. Croix between 2003 and 2004

Site	Fish Family	Affected Species	Observed Trend: 2003 to 2004	Affected Size Class	Most Probable Explanation (see text)
SH	Labridae	creole wrasse	increase	all	natural variation, schooling
MS	Pomacentridae	blue chromis	decrease	all	natural variation, schooling
		brown chromis	decrease	all	natural variation, schooling
		bicolor damsel	decrease	all	natural variation , mortality(?)
BI	Scaridae	striped parrotfish	decrease	< 5 cm	variation in recruitment
		princess parrotfish	decrease	< 5 cm	variation in recruitment
		redband parrotfish	decrease	< 5 cm	variation in recruitment
IB	Acanthuridae	ocean surgeon	decrease	10-20 cm	fishing pressure
	Scaridae	various scarids	decrease	> 10 cm (?)	fishing pressure

At Sprat Hole, wrasses (Labridae) showed a marked increase in density in 2004 (Figure 9A). Wrasse diversity is relatively low at SH, with only four species - bluehead wrasse (*Thalassoma bifasciatum*), yellowhead wrasse, (*Halichoeres garnoti*), Spanish hogfish (*Bodianus rufus*), and creole wrasse (*Clepticus parrae*) – commonly observed during the two years. Creole wrasse abundance increased significantly in 2004 and no change was observed for the other three wrasses (Figure 10A). Data from RDS supported the substantial abundance of creole wrasse at SH in 2004, with an Average AI of 4.8 – the highest in this survey (Appendix VII). Creole wrasses are only loosely associated with reefs (Randall 1967) and this inter-annual variation may be partly explained by the foraging movements of large schools of adults. However abundance increased proportionally across three size classes (< 5 cm, 5-10 cm, 10-20 cm) relative to 2003 (not shown) suggesting that a recent and substantial creole wrasse recruitment event has contributed to their numbers as well.

The average abundance of fish at the Mutton Snapper [MS] site declined from 2003 to 2004 (Figure 9A). This decline was largely restricted to the damselfishes (Pomacentridae), as shown in Figure 9B. Of the 7 or 8 common damselfish species at MS, three species – blue chromis (*Chromis cyanea*), brown chromis (*C. multilineata*) and bicolor damselfish (*Stegastes partitus*) – accounted for most of the inter-annual disparity (Figure 10B). Blue and brown chromis are small planktivores that routinely feed in schools high above the reef (Randall 1967). A decrease in their numbers might be explained by movement of schools out of the immediate survey area. The 2004 survey at MS was conducted under conditions of strong current (~2 knots), which may have influenced *Chromis* foraging behavior. Bicolor damselfish are territorial and more strongly associated with reef features so their observed decline in their abundance is not explicable by movement. In 2003, bicolor damselfish populations were predominated by small fish (78.8% were < 5 cm) compared to 2004, when

size distributions were almost equal (58.3% < 5 cm, 41.7% 5-10 cm). This suggests that young bicolor damselfish experienced high levels of mortality during the intervening time period.

At Buck Island [BI], parrotfish (Scaridae) showed a marked decrease in overall abundance from 2003 to 2004 (Figure 9D). Parrotfish diversity remained relatively high (7-9 species) at BI and species composition was similar across years (not shown). Examination of scarid size distribution (Figure 11) showed a significant difference in the smallest size class (< 5 cm). For both years, the recruits were primarily from three species: striped parrotfish (*Scarus croicensis*), princess parrotfish (*Scarus taeniopterus*), and redband parrotfish (*Sparisoma aurofrenatum*). Collectively, the three species comprised 89.2% and 86.4% of scarid recruits at BI in 2003 and 2004, respectively. Larger scarid size classes were comparable between years (Figure 11). Together, these data suggest that the observed decrease in abundance of parrotfish at BI is best explained as natural, inter-annual variation in recruitment processes.

In contrast to the previous three sites, the abrupt decrease in surgeonfish (Acanthuridae) abundance at Isaacs Bay [IB] from 2003 to 2004 (Figure 9C) suggests that fishing has impacted the fish communities there. Three acanthurid species occur at IB - ocean surgeonfish (*Acanthurus bahianus*), blue tang (*A. coeruleus*) and doctorfish (*A. chirurgus*). Between 2003 and 2004 surveys, ocean surgeonfish declined significantly in abundance (Figure 12A) while blue tang and doctorfish remained relatively constant. The size distribution of ocean surgeonfish (Figure 12B) indicates that the decline occurred in the largest size class (10-20 cm). However, if this species had formed large roaming schools as suggested by RDS data, they may have been underestimated by belt transect surveys (Nemeth *et al.* 2003b). Parrotfishes from the same site (Figure 12C) also decreased in relative abundance. For three larger scarid species - queen (*Scarus vetula*), redtail (*Sparisoma chrysopterum*) and yellowtail (*Sp. rubripinne*) parrotfishes - no individuals ≥ 10 cm were observed in 2004 (Figure 12C). Parrotfishes are a common target of the local commercial fishery, as are blue tang and doctorfish. Ocean surgeonfish may not be targeted but they are frequently harvested as bycatch with nets, after which they may be consumed or discarded (Tobias 2004). During the past three years of fish surveys at IB, there were no recorded observations of parrotfish > 30 cm. At least two common species (*Sc. vetula* and *Sp. viride*) grow larger than 40 cm and individuals larger than 30 cm were common in St. Croix commercial landings (Appeldoorn *et al.* 1992). Collectively, these observations suggest that commercial fishing with traps and/or trammel nets (Tobias 2004) are having a measurable impact upon acanthurids and scarids. The ecological consequences of over-harvesting the predominant vertebrate herbivores from a coral reef ecosystem are probably detrimental (Hughes 1994, Pennings 1996). For this reason, St. Croix's populations of scarids and acanthurids should be monitored carefully in the future.

Utility of RDS to assess rare species

The RDS method was incorporated into the St. Croix annual fish survey to provide greater detection of rare species. In particular, it was suggested that RDS would enable quantification of the larger, long-lived resident reef fishes (e.g. some grouper and snapper species) that were nearly absent from previous years' fish surveys on St. Croix.

Compared to the belt transect method, RDS enabled a slightly greater enumeration of fish species - a total of 119 species representing 41 families were observed in 28 RDS surveys at seven sites (Appendix VII). By contrast, the belt transect method yielded 103 species from 33 families in 76 belt transects at eight survey sites (Appendix IV). As expected (Roger *et al.* 1994), at each site the RDS yielded higher estimates of species richness (Table 4). At no site, however, did the RDS enumerate all species that were observed in belt transects. From cumulative site lists, RDS (3-5 replicates) identified about 90% of the fish species (range 83% - 96%) and belt transects (10 replicates) identified about 73% (range 65% - 81%) at each site. These surveys are not meant to be exhaustive species lists for these sites (see Nemeth *et al.* 2003b) but the data do indicate that use of the RDS method increased our ability to enumerate species.

Table 4. Comparison of reef fish community richness estimates obtained using belt transects and roving diver surveys (RDS) at seven St. Croix sites, 2004.

Site	Total No. Spp. Obs. at Site (either method)	Belt Transects				RDS			
		Total Survey Time (min)	No. Spp. Observed	Avg. No. Per Repl. (St.Dev)	% of Total Obs. at site	Total Survey Time (min)	No. Spp. Observed	Avg. No. Per Repl. (St.Dev)	% of Total Obs. at site
SR	77	185	54	21.1 (5.9)	70.1%	120	73	35.0 (13.8)	94.8%
CB	75	193	55	27.1 (3.1)	73.3%	150	72	41.6 (7.6)	96.0%
ER	80	173	52	24.7 (3.5)	65.0%	120	73	47.0 (9.2)	91.3%
SH	78	184	61	28.3 (3.9)	78.2%	120	65	40.0 (13.3)	83.3%
BI	70	164	57	24 (3.5)	81.4%	90	59	36.3 (11.2)	84.3%
IB	68	168	49	20.3 (4.8)	72.1%	90	63	40.7 (11.5)	92.6%
GP	69	180	51	20.8 (3.2)	73.9%	150	64	39.0 (7.8)	92.8%
Avg	73.9	178.1	54.1	23.8	73.4%	120.0	67.0	39.9	90.7%

In terms of quantifying commercially important, rare, and/or vulnerable fishes, the results from RDS were rather disappointing (Table 5). From a list of 12 selected fishes, only four species were observed by either method: red hind (*Epinephelus guttatus*), tiger grouper (*Mycteroperca tigris*), mutton snapper (*Lutjanus analis*), and blue parrotfish (*Scarus coeruleus*). The low density of red hind as estimated from RDS at four sites (Abundance Index 0.2 to 0.7) was corroborated by belt transects at two sites (each with 1 fish observed in 600m^2). Although RDS provided some "gain" in signal strength relative to belt transects (8 sightings vs. 2 sightings), results from both methods suggest that population densities for all 12 species are effectively near or at zero for the sites surveyed.

From a monitoring point of view, the data on rare species set a one-sided baseline - an increase in fish abundance should be easy to detect but a further decrease would be difficult to demonstrate for the selected species. More accurate censusing of these species could be accomplished by 1) expanding the spatial coverage of sampling, 2) sampling from a greater variety of habitats, and/or 3) the use of baited stations. Alternatively, some of these species could be censused during periods of spawning aggregations - if such a behavior applies and aggregation sites are known. For the purposes of this monitoring study, however, it is recommended that greater effort (sampling and analytical) be directed towards other fish species that are of present economic importance.

Table 5. Abundance of 12 commercially important, rare and/or vulnerable fish species on St. Croix, 2004

			Relative Fish Abundance*											
Site	Method	Total Survey Time (min)	Nassau grouper	yellowfin grouper	yellowmouth grouper	tiger grouper	red hind	cubera snapper	mutton snapper	dog snapper	hogfish	rainbow parrotfish	blue parrotfish	midnight parrotfish
Salt River	belt	185	-	-	-	-	-	-	-	-	-	-	-	-
	RDS	120	-	-	-	-	0.5 (1,0)	-	0.25 (1,0)	-	-	-	-	-
Cane Bay	belt	193	-	-	-	-	-	-	-	-	-	-	-	-
	RDS	150	-	-	-	0.2 (1,0)	-	-	0.4 (2,0)	-	-	-	-	-
Isaac's Bay	belt	168	-	-	-	-	-	-	-	-	-	-	-	-
	RDS	90	-	-	-	-	0.3 (1,0)	-	-	-	-	-	-	-
Eagle Ray	belt	173	-	-	-	-	-	-	-	-	-	-	-	-
	RDS	120	-	-	-	-	-	-	-	-	-	-	-	-
Sprat Hole	belt	184	-	-	-	-	-	-	-	-	-	-	-	-
	RDS	120	-	-	-	-	-	-	-	-	-	-	-	-
Buck Island	belt	164	-	-	-	-	1	-	-	-	-	-	-	-
	RDS	90	-	-	-	-	0.7 (1,0)	-	-	-	-	-	-	-
Great Pond	belt	180	-	-	-	-	1	-	-	-	-	-	-	-
	RDS	150	-	-	-	-	0.2 (1,0)	-	-	-	-	-	0.2 (1,0)	-
Mutton Snapper**	belt	110	-	-	-	-	-	-	-	-	-	-	-	-

*Belt transect observations reported as total number of fish in 10 replicate surveys. RDS observations reported as mean Abundance Index (AI) over 3 to 5 replicate surveys with maximun and minimum AI in parentheses. AI: 0=no fish, 1=1fish, 2=2-10 fish, 3=11-100 fish, 4=101-1000 fish

**At Mutton Snapper site, only six belt transects were conducted. No RDS were performed.

Results and Recommendations

Benthic Assessments:

In 2004, the percent cover of living coral at the St. Croix sites ranged from a low of 4.2% at Jack's Bay to a high of 35.2% at Mutton Snapper. The percent cover of living coral remained fairly constant at each site from 2001 to 2004, with no significant differences between years at any site (Figure 2A). In 2004, turf algae covering dead coral was the most dominant substrate type at most sites, except Jacks Bay, Mutton Snapper and Sprat Hole, where macroalgae was the most abundant substrate type. Dead coral with turf algae ranged from a low of 10.7% at the Mutton Snapper site to a high of 82.2% at Great Pond. At most sites, dead coral covered with turf algae varied between years, with significant differences at Buck Island between all years except between 2002 and 2003 and between 2001 and 2004; Cane Bay between 2004 and all previous years; Great Pond between 2002 and all other years; Jacks Bay between 2002 and 2004; Long Reef/Eagle Ray between 2002 and 2003 and between 2003 and 2004; Mutton Snapper between all years; and Sprat Hole between all years except years 2001 and 2003 and years 2002 and 2004 (Figure 2B). In 2004, macroalgae ranged from a low of 4.9% at Great Pond to a high of 57.0% at Jacks Bay. Macroalgae varied between years with significant differences at Buck Island between all years; Cane Bay between 2004 and years 2001 and 2003; Jacks Bay between 2004 and years 2001 and 2002; Long Reef between 2001 and years 2002 and 2004, and between years 2002 and 2003; Mutton Snapper between years 2002 and 2004; Salt River between 2004 and years 2002 and 2003; and Sprat Hole between all years except between 2001 and 2003 and between 2002 and 2004 (Figure 2C). In most cases, significant increases/decreases in turf algal cover corresponded with significant decreases/increases in macroalgal cover. Seasonal variations in macroalgal cover can affect the integrity of annual comparisons. See *et al.* (2002, 2003a, and 2004) for detailed discussion involving the collection and analysis of turf and macroalgae video transect data. Sponges and gorgonians each comprised less than 10% of the benthic cover at all sites, with sponge cover increasing significantly at Buck Island between 2003 and years 2001 and 2002 (Figure 2D, E). Sand/sediment was the only non-living substrate type found at the sites, ranging from 0.1% at Salt River to 20.1% at Buck Island. Percent cover sand/sediment was fairly constant at most sites between years, with significant differences only at Buck Island between year 2004 and years 2002 and 2003; Long Reef/Eagle Ray between 2003 and all other years; and Sprat Hole between years 2001 and 2004 (Figure 2F).

The coral reefs of St. Croix were generally dominated by coral species in the genus *Montastraea*. For analysis purposes, corals within the *Montastraea annularis* complex (*M. annularis*, *M. faveolata*, and *M. franksii*) were grouped into a single MACX category (Figure 3, Figure 4A-H). In 2004, *Montastraea* spp. were the most abundant corals at six of the eight sites. *Millepora complanata* was the most abundant at Great Pond and *Porites astreoides* was the most abundant at Sprat Hole. At all sites, species composition tended to differ between years (Figure 4A-H). At several sites, trends noted in percent composition of corals during previous years (see Nemeth *et al.* 2004) were reversed. Buck Island, Cane Bay, Mutton Snapper and Sprat Hole showed increases in the percent composition for corals in the *M. annularis* complex. In many cases, increases in *Montastraea* complex corals corresponded with decreases or only marginal increases of the stress tolerant corals *Porites astreoides* and *Siderastrea siderea*. This is encouraging, as it may indicate an improvement in overall reef quality at these sites. However, *Montastraea* complex corals continued to decrease at Salt River, corresponding with increases of ubiquitous stress-tolerant corals, such

Recommendations

The foregoing results indicate that our methodological approach is relatively robust for the study of coral reef fish communities and trends can be distinguished in some instances. Continued monitoring will undoubtedly reveal more temporal patterns. However, as noted previously (Nemeth *et al.* 2004), any conclusions about status and trends of St. Croix's coral reef fish communities are still compromised by lack of a stratified sampling design. The threat(s) under study should be identified explicitly and *a priori* so that appropriate data are collected to test for correlations. Most of the salient threats to USVI coral reef ecosystems have been identified (Catanzaro *et al.* 2002).

With respect to coral reef fish communities of St. Croix, a rather obvious threat is overfishing. Fishing pressure may alter reef fish community structure in numerous ways (e.g. Dayton *et al.* 2002) however two impacts are likely to be detected using visual census methods: 1) the reduction in absolute abundance of targeted species, and 2) the selective removal of the largest individuals from populations of targeted species. Data collected in this study to date, however, have treated either the entire diversity of fish assemblages at specific reef sites or trends within individual families of fish. Instead, an emphasis should be placed on species-level information for fish that are targeted by the local fishery. Fisheries-dependent information is directly applicable to our monitoring study design and analyses. The last stock assessment for the USVI was conducted 12 years ago (Appeldoorn *et al.* 1992) and harvest patterns may have changed in the interim. However, biostatistical data from the USVI commercial fisher port sampling program have been collected for reef fish landings on St. Croix for over 20 years. This under-utilized database could be used to focus sampling and analytical efforts towards targeted fish species.

Section II: St. Thomas

Methods

Benthic Assessments and Abiotic Parameters:

In May and June 2004, the University of the Virgin Islands assessed the benthic composition at four sites and in St. Thomas, USVI (Figure 13, Table 6). Three of these sites were chosen from the monitoring sites established in 2003, with one new site added in 2004. Monitoring in St. Thomas was based upon a stratified design to test hypotheses involving differences between reef systems located at different points along the insular platform, as well as to fill gaps in existing knowledge on previously unstudied reef systems. See Nemeth *et al.* (2004) for a detailed description and rational for site selection. In 2004, monitoring was discontinued at the near-shore sites and Flat Cay (a shallow mid-shelf reef associated with a small island) was replaced with South Capella (a deeper mid-shelf reef unassociated with a landmass). This was done to better complement other UVI monitoring activities and to achieve a more balanced experimental design. As part of the Territorial Biological Monitoring Program in 2004, UVI is incorporating a stratified design to monitor near-shore reefs and shallow mid-shelf reefs associated with landmasses. To develop the most effective and complementary balance between monitoring efforts, the State and Territory Coral Reef Ecosystem Monitoring Program will concentrate on mid-shelf reefs not associated with landmasses and shelf-edge reef systems. The changes in the monitoring sites for benthic composition in 2004 reflect this goal.

Table 6. St. Thomas site location information.

Site	Date Sampled	GPS Coordinates	Depth (ft.)	No. of Transects
Seahorse Cottage Shoal[1]	5/25/04	N 18° 17.680, W 64° 52.050	61 - 80	10
South Capella[1]	6/08/04	N 18° 15.760, W 64° 52.342	80	10
Grammanik Bank[2]	6/15 & 6/16/04	N 18° 11.468, W 64° 57.019	126	10
Red Hind Bank[2]	6/04 &6/18/04	N 18° 12.130, W 65° 00.095	128 - 131	10

[1] mid-shelf sites
[2] shelf-edge sites

Video transects, coral disease and bleaching assessments, and sea urchin counts were all performed using the same methodology as 2003 (see Nemeth *et al.* 2003a). However, in 2004, the number of transects (of all types) completed at each site was increased from six to ten (Table 6). This was done to ensure that the parameters at each site were properly quantified, as the mid-shelf and shelf-edge transects were non-permanent and haphazardly established. All data were analyzed and statistically tested using the methodology previously described for St. Croix. In addition, one way ANOVA tests were used to test for significant differences in percent cover, coral disease and bleaching levels, and sea urchin densities between mid-shelf and shelf-edge reef systems.

Abiotic parameters were measured at the mid-shelf and shelf-edge in 2004 by Aanderaa RCM 9 MkII data recorders located at the sites established in 2003, Flat Cay and the Red Hind Bank (Figure 13, Table 7). While the Flat Cay site was replaced with South Capella for the assessments of biotic parameters in 2004, the nature of the installation of the data recorder prohibited relocation to the new site. The data recorders were set to record temperature, current speed, and current direction at hourly intervals.

Table 7. Dates Aanderaa data recorders deployed and retrieved.

	Set 1		Set 2	
Data recorders:	Deployed	Retrieved	Deployed	Retrieved
Flat Cay	2/24/04	5/26/04	5/28/04	9/13/04
Red Hind Bank	3/2/04	5/26/04	5/28/04	9/13/04

After retrieval, data from the data recorders were downloaded into a personal computer according to the manufacturer's instructions using software supplied by Aanderaa instruments.

Fish Census:

Fish communities at four sites were monitored in 2004, including three sites established the previous year, (Nemeth *et al.* 2004) and one new site, South Capella (SCP). Surveys were conducted from May 27, 2004 to June 30, 2004 (Table 8). Methods used to survey fish communities off St. Thomas were identical to those used off St. Croix with the following exceptions. On all sites, ten belt transect replicates and three roving diver survey (RDS) replicates were conducted (Table 8). Belt transects were standardized to a transect time of 7.5 minutes or 4-m/min. The duration of the RDS replicates was standardized depending on depth. On the mid-shelf reefs (SC and SCP) replicates were 30 minutes in duration and on shelf-edge sites (GB and RH) surveys were 10 minutes each. All species of fish observed were recorded during both survey types (belt transect and RDS) with the exception of the glass goby (*Coryphopterus personatus*).

Table 8. Summary of fish census effort on St. Thomas, 2004.

Survey Method	Site	Survey Date	Total No. of Replicates	Total Survey Time (min)	Ave. Time per Replicate (min)
Belt Transect	SH	17-Jun-04	10	75	7.5
	SC	8-Jun-04	10	75	7.5
	GB	27-May-04	10	75	7.5
	RH	28-May-02	10	75	7.5
Roving Diver	SH	23-Jun-04	3	90	30
	SC	17-Jun-04	3	90	30
	GB	2-Jul-04	3	30	10
	RH	30-Jun-04	3	30	10

Data was recorded, managed and analyzed using the same methodology, software and descriptive statistics as that for St Croix. Fish abundance and community structure was compared between 2003 and 2004 surveys, as well as between the mid-shelf and shelf-edge communities.

Results and Recommendations

Benthic Assessments:

For the St. Thomas sites, percent cover of living coral ranged from a low of 25.7% at Seahorse Cottage Shoal to a high of 49.6% at the Grammanik Bank. The percent cover of dead coral covered with turf algae ranged from 9.6% at the Grammanik Bank to 23.1% at Seahorse Cottage Shoal. The percent cover of macroalgae ranged from 33.1% at the Grammanik Bank to 40.4% at South Capella (Figure 14A-C). Sponges, gorgonians, and sand/sediment each comprised less than 10% of the benthic cover at all sites. (Figure 14D-F). There were no significant differences in percent cover of any benthic category between 2003 and 2004 or between mid-shelf and shelf-edge sites. Given the small sample size (n = 2) for each reef type and the high variation between reefs within each category, comparisons between reef types are difficult. We recommend sampling a greater number of reefs of each type to make comparisons more statistically robust. In future monitoring, additional sites of each reef system will be added as resources allow.

The coral reefs of St. Thomas were dominated by coral species in the genus *Montastraea*. Coral species composition was similar between mid-shelf and shelf-edge sites and between years for all sites. Corals within the *M. annularis* complex were the most abundant corals at all sites (Figure 15, Figure16).

In 2004, the Shannon – Weaver Diversity Index (H') for coral ranged from a high of 1.38 at the Red Hind Bank to a low of 0.90 at South Capella. Mid-shelf sites tended to have a lower diversity than the shelf-edge sites (Figure 17).

The Grammanik Bank showed the highest incidence of both diseased and bleached coral colonies, with diseased corals comprising 10.35% of the sampled colonies and bleached corals comprising 27.93% of the sampled colonies. The Red Hind Bank showed the lowest incidence of diseased corals (2.5%) and South Capella showed the lowest incidence of bleached corals (20.24%). There were no significant differences in incidence of disease between 2003 and 2004 or between the mid-shelf, and shelf-edge sites. There was significantly more bleaching at Seahorse Cottage Shoal and the Grammanik Bank in 2004 than 2003. Bleaching levels tended to be higher at the Red Hind Bank in 2004, but were not statistically different from 2003 (Figure 18). Levels of bleaching were similar between mid-shelf and shelf-edge reef systems. Once again, the small sample size and the high variation within each category made comparisons between reef types difficult. *Montastraea franksii* was the most common coral with disease and bleaching (Figure 19). Diseases observed by divers included black band disease, dark spots disease, yellow blotch disease and white plague.

D. antillarum sea urchins were observed only at the Grammanik Bank, with a density of 0.1 urchins/10 m^2. No significant differences in sea urchin density were found between years or reef systems.

Detailed summaries of the benthic data from each St. Thomas site are included in Appendix I: Summary of Coral Video Data, Appendix II: Summary of Non-coral Video data, and Appendix III: Summary of Urchin, Bleaching, and Disease Data. These data will be posted on the University of the Virgin Islands website in the near future.

Abiotic Parameters:

The current at Flat Cay flowed predominantly to the west in 2004, and as was observed in 2003, flowed strongest all year in the SSW direction (Figure 20). A minor exception in 2004 was the month of April, which also had some relatively strong currents to the W and WNW. On the Red Hind Bank, current flow was strongest and most often in a north or south direction, with highest velocities measured during the summer months (July, August and September; Figure 21). Very similar patterns were seen in 2003.

Daily mean water temperatures at Flat Cay and the Red Hind Bank in 2004 were fairly consistent with temperatures recorded during 2003 at those sites (Figure 22, Figure 23). The lowest daily mean temperature was recorded in the first week of March 2004 at Flat Cay (25.7°C) and in the first week of April 2004 at the Red Hind Bank (25.7°C). High daily mean temperatures were recorded at Flat Key in the last week of August 2004 (29.2°C) and at the Red Hind Bank between August 14 and August 21, 2004 (28.3°C). Daily mean temperatures were slightly higher at Flat Cay than the Red Hind Bank and less variable, with the exception of one cold spell in late February when temperatures dropped 1°C at Flat Cay in one week. This was not reflected in the Red Hind Bank temperature data.

Fish Census:

A total of 3106 fish representing 76 species and 20 families were observed in 40 belt transects during surveys off St. Thomas in 2004 (Appendix VIII). As in 2003, fish abundance, species richness and community diversity was variable within and between sites and with the exception of the Grammanik Bank, was fairly similar between years (Figure 24A-C). All three of these community structure indices were lower at the Grammanik Bank in 2004. The new mid-shelf site, South Capella had slightly lower average fish abundance than the three established sites, but similar species richness and community diversity.

During roving diver surveys a total of 98 species representing 25 families were observed in 2004. Table 9 presents a summary of the total number of species observed and species richness values for each site, using both belt transects and RDS. As in 2003, species richness values were higher on RDS than belt transects at all sites, even when significantly less time was spent on the survey (Grammanik Bank and Red Hind Bank). Species richness values for RDS were not comparable across reef sites or years due to differences in the duration of the surveys.

Table 9. Comparison of Species Richness across sites off St. Thomas, using belt transect data and roving diver data.

Site	Belt Transects			RDS		
	Total Survey Time (min)	Total No. Species	Ave. Species Richness (+/- St. Dev.)	Total Survey Time (min)	Total No. Species	Ave. Species Richness (+/- St. Dev.)
SC	75	38	18.9 (4.0)	90	66	44.7 (6.7)
SCP	75	38	15.1 (2.8)	90	72	43.0 (6.0)
GB	75	35	9.6 (2.8)	30	49	25.0 (6.2)
RH	75	38	14.0 (5.4)	30	40	25.6 (0.6)

The size distribution of fishes surveyed in belt transects in 2004 was similar to that of 2003. The majority of fish observed in 2003 and 2004 were less than 10 cm TL (68.2% and 70.2% respectively). Fish intermediate in size (10-30 cm TL) made up 28.0% of the total in 2003 and 28.9% in 2004. Large fish (>30 cm) were rare in belt transects in 2003, but were rarer still in 2004. Large fish made up only 0.8% of the total fish observed in 2004, compared to 3.9% in 2003. Complete data for the size distribution of fish observed on St. Thomas in 2004 is given in Appendix IX.

As in 2003, planktivorous pomacentrids and labrids were predominant at all sites in the 2004 surveys (Figure 25A-J). Blue chromis (*Chromis cyanea*) numerically dominated all four sites, followed by bicolor damselfish (*Stegastes partitus*) on South Capella, and creole wrasse (*Clepticus parrae*) on the shelf-edge sites, the Grammanik Bank and the Red Hind Bank. Herbivorous damselfish and parrotfish were again seen in relatively high densities on Seahorse Cottage Shoal. Labrid densities were lower on the mid-shelf than shelf-edge sites, and were represented primarily by the omnivorous bluehead wrasse (*Thalassoma*

bifasciatum), yellowhead wrasse (*Halichoeres garnoti*) and slippery dick (*H. bivittatus*). As in 2003 surveys, Acanthurids (tangs) were represented by three species (*Acanthurus coeruleus, A. bahianus* and *A. chirurgus)* in moderate numbers on all four sites. Scarids were most commonly represented by the princess parrotfish (*Scarus taeniopterus*) and striped parrotfish (*Sc. inserti*) and were again in 2004 more common on the mid-shelf than off-shore sites. The remaining families (Figure 25E-J) were observed at low densities on all four sites but were similar between years with the following exceptions. The commercially important serranids (groupers) were uncommon at all sites but were less common on the shelf-edge sites than in 2003. Groupers were represented only by the small coney (*Epinephelus fulvus*) and graysby (*Cephalopholis cruentatus*) on the mid-shelf sites. On the Grammanik Bank, large groupers observed during belt transects in 2004 included only one tiger grouper (*Mycteroperca tigris*), and two red hind (*E. guttatus*). On belt transects in 2003 by contrast, five red hind (*E. guttatus*) were observed on the site, as well as one Nassau grouper (*E. striates*) and three tiger grouper (*M. tigris*). Lutjanids (snappers) were also observed at low densities, if at all in 2004. A school of schoolmaster snapper (*Lutjanus epodes*) was observed at the Red Hind Bank, but other than that only a rare fish here and there was encountered. No lutjanids were seen on belt transects at the Grammanik Bank. The large variety of snapper species observed in 2003 at Seahorse Cottage Shoal was not seen in the belt transects in 2004. Balistids (triggerfishes) were very rare to absent on all sites in 2004. In 2003 the black durgeon (*Melichthyes niger*) represented the most common balistid, which was seen in low densities at the Grammanik Bank. This species was not observed on belt transects in 2004.

The most noticeable differences in terms of fish between the 2003 and 2004 surveys off St. Thomas were decreases of snapper and grouper observations on the shelf-edge sites. This was especially true on the Grammanik Bank and was reflected in the RDS observations as well (Table 10). The large groupers were also in lower numbers than the previous year at the Red Hind Bank. Because densities of these fish are generally very low, the differences that we observed between years could simply reflect natural variation. An alternative explanation may be fishing pressure. Although the Red Hind Bank is part of a marine protected area, the Grammanik Bank is fished for grouper regularly in the winter and spring months by both hook and line and trap fishers. The large groupers are highly mobile during the spawning season and many migrate to the Grammanik Bank to spawn. Decreases in observations at both shelf-edge sites may reflect fishing pressure at the spawning aggregation site or around the territory.

Table 10. Abundance of 12 commercially important, rare, and/or vulnerable fish species, ST. Thomas 2004.

Site	Method	Total Survey Time (min)	Rare Species Observed During Surveys											
			Nassau grouper	yellowfin grouper	yellowmouth group	tiger grouper	red hind	cubera snapper	mutton snapper	dog snapper	hogfish	rainbow parrotfish	blue parrotfish	midnight parrotfish
Seahorse Cottage	belt*	75	-	-	-	-	-	-	-	-	-	-	-	-
	RDS**	90	-	-	-	-	-	-	.07(0,2)	-	-	-	-	-
South Capella	belt	75	-	-	-	-	-	-	-	-	-	-	-	-
	RDS	90	-	-	0.3(0,1)	-	0.3(0,1)	-	.03(0,1)	1.0(0,2)	-	-	-	-
Grammanik Bank	belt	75	-	1	-	-	2	-	-	-	-	-	-	-
	RDS	30	.03(0,1)	0.3(0,1)	0.3(0,1)	0.7(0,1)	-	1.3(0,3)	-	0.3(0,1)	-	-	-	-
Red Hind Bank	belt	75	-	-	-	1	2	3	-	-	1	-	-	-
	RDS	30	-	-	-	-	-	-	-	-	-	-	-	-

*Belt transect occurances reported as total number of fish observed over 10 repetitive surveys.

**RDS occurances reported as mean Abundance Index (AI) over 3 repetitive surveys with maximum and minimum AI in parentheses.

AI: 0=no fish, 1=1fish, 2=2-10 fish, 3=11-100 fish, 4=101-1000 fish

Summary

St. Croix

On St. Croix, turf algae covering dead coral was the dominant substrate at most sampled sites, ranging from 10.7% to 82.2%. The percent cover of other benthic organisms ranged from 4.2% to 35.2% for living hard coral, 4.9% to 57.0% for macroalgae, 0.1% to 4.2% for sponges, and 0% to 9.5% for gorgonians. Coral species composition was similar between most sites. Coral diversity (H') varied between 0.78 and 2.19 between sites. Coral condition varied between sites with incidence of coral disease and bleaching ranging from 0% to 5.6% and 1.5% to 9.8%, respectively. *Diadema* sea urchins were uncommon and observed on transects at only two of the eight sites.

Annual comparisons showed little change in percent cover of live coral. However, species composition tended to differ between years at all sites. At several sites, trends indicating possible decreases in reef quality reversed in 2004. At this stage, it is difficult to attribute these changes in species composition to a specific cause. Due to the slow growth rates of corals, assessments must continue over a greater time period to determine if these changes are the result of actual changes in coral community structure, or are the result of sampling variation. Coral diversity increased at most sites from 2001 to 2004. Percent cover of sponges, gorgonians and sand remained fairly constant between years, with only one site (Buck Island) showing significant changes in percent sponge cover between year 2003 and other sampled years. Percent cover of turf and macroalgae varied significantly between years at most sites. Between 2003 and 2004, percent cover turf algae tended to decrease at most sites, with corresponding increases in macroalgal cover. This trend warrants special attention, as macroalgae can overgrow or overshadow corals, leading to a loss of live coral and a phase shift to a macroalgal dominated reef.

Levels of disease tended to decrease in 2004, while levels of bleaching varied between sites and years. Only one type of disease (dark spots disease) was observed in 2004, in contrast to several diseases in previous years. No significant annual differences in sea urchin density were found.

Fish abundance averaged from approximately 200 to 400 fish per census. The number of fish species observed at the St. Croix sites ranged from 68 to 80 species. The St. Croix fish fauna was numerically dominated by planktivorous wrasses and damselfishes. The commercially important large groupers, snappers, and angelfishes were uncommon to absent at all sites. The majority of fish observed in 2004 were small, with most fish $\leq$5 cm. Relatively few large fish (30 – 40 cm) and very few larger fish ($\geq$40 cm) were observed.

Changes in reef fish communities between 2003 and 2004 were evident at four of the St. Croix sites. Changes at three of these sites can be attributed to natural variation. Changes at the fourth site (a decrease in surgeonfish and parrotfish abundance at Jacks/Isaac Bay) can be attributed to fishing pressure from trap or trammel net commercial fishing. The ecological consequences of over-harvesting the predominant vertebrate herbivores from a coral reef ecosystem are detrimental and surgeonfish and parrotfish populations in St. Croix should be closely monitored in the future.

Results to date indicate that the approach being used to monitor St. Croix fish communities is relatively robust and trends can be distinguished in some instances. However, as noted previously (Nemeth *et al.* 2004), conclusions about the status and trends of these fish communities are compromised by the lack of a stratified sampling design. Also, more emphases should be placed on species-level information for locally targeted fisheries species. Incorporating biostatistical data from the USVI commercial fisher port sampling program to identify the most targeted species can enhance the effectiveness of this monitoring program.

St. Thomas

On St. Thomas, macroalgae was the predominant substrate at three of the four sites, and ranged from 33.1% to 40.4% across all sites. Living coral was the predominant substrate at one site (the Grammanik Bank) and ranged from 25.7% to 49.6% across all sites. The percent cover of sponges ranged from 2.9% to 5.7% and the percent cover of gorgonians ranged from 0% to 3.5%. There were no significant differences in percent cover for any benthic category between mid-shelf, and shelf-edge reefs. The coral reefs of St. Thomas were generally dominated by coral species in the genus *Montastraea*, with species composition being similar between reef systems. Coral diversity (H') ranged between 0.90 and 1.38, with mid-shelf sites tending to have lower diversity than shelf-edge sites. Levels of coral bleaching and disease were similar between reef systems and ranged from 2.5% to 10.4% and 20.2% to 27.93%, respectively. *Diadema* sea urchins were uncommon and observed only at one site, with no significant difference in sea urchin density between reef systems.

Benthic composition, coral community structure, and coral diversity were similar between 2003 and 2004. There were no significant differences in levels of coral disease between 2003 and 2004. Levels of bleaching tended to increase in 2004, with significant increases at two sites.

Abiotic factors at the St. Thomas reefs tended to differ between the sampled mid-shelf site (Flat Cay) and the shelf-edge site (the Red Hind Bank). Current headed predominantly west at Flat Cay and predominantly both north and south at the Red Hind Bank. Since Flat Cay is located east of the most heavily developed areas of St. Thomas, this reef may be significantly affected by terrigenous stresses despite the reef's mid-shelf location (see Nemeth *et al.* 2004 for a more detailed discussion). Daily mean temperature at Flat Cay tended to be higher than the Red Hind Bank. Higher current speeds occurred in late summer at both sites and the highest temperatures occurred in August at both sites. Current and temperature patterns in 2004 were very similar to those recorded in 2003 (see Nemeth *et al.* 2004).

Fish abundance averaged from approximately 60 to 100 fish per census. The number of fish species observed at the St. Thomas sites ranged from 40 to 72 species. The St. Thomas fish fauna was numerically dominated by planktivorous wrasse and damselfishes at all sites. The commercially important large groupers, snappers, angelfishes, and triggerfishes were observed at low densities at all sites. The majority of fish observed in 2004 were small or intermediate in size, with most falling into the 5 – 10 cm size category. Relatively few large fish were observed.

Three of the St. Thomas sites monitored in this study have been determined as spawning aggregation sites for grouper (Red Hind Bank, Grammanik Bank) and snapper (Seahorse Cottage Shoal, Red Hind Bank, and Grammanik Bank). The Red Hind Bank is within a marine protected area (Red Hind Bank Marine Conservation District), while Seahorse Cottage Shoal and the Grammanik Bank are currently unprotected. Continued monitoring at these sites is vital to detect changes in these ecologically important areas. The number of groupers and snappers observed in St. Thomas decreased from 2003 to 2004. Since densities of these fish are generally low, this difference may be a reflection of natural variation. However, it may be the result of fishing pressure. In particular, the Grammanik Bank is unprotected and regularly fished, especially during the spawning season. Over-harvesting of aggregating fishes at this site may have impacts throughout the territory and could be responsible for the decrease in the number of groupers observed in 2004. Protection of spawning aggregation sites is essential for the proper management of Virgin Islands fisheries.

Acknowledgments

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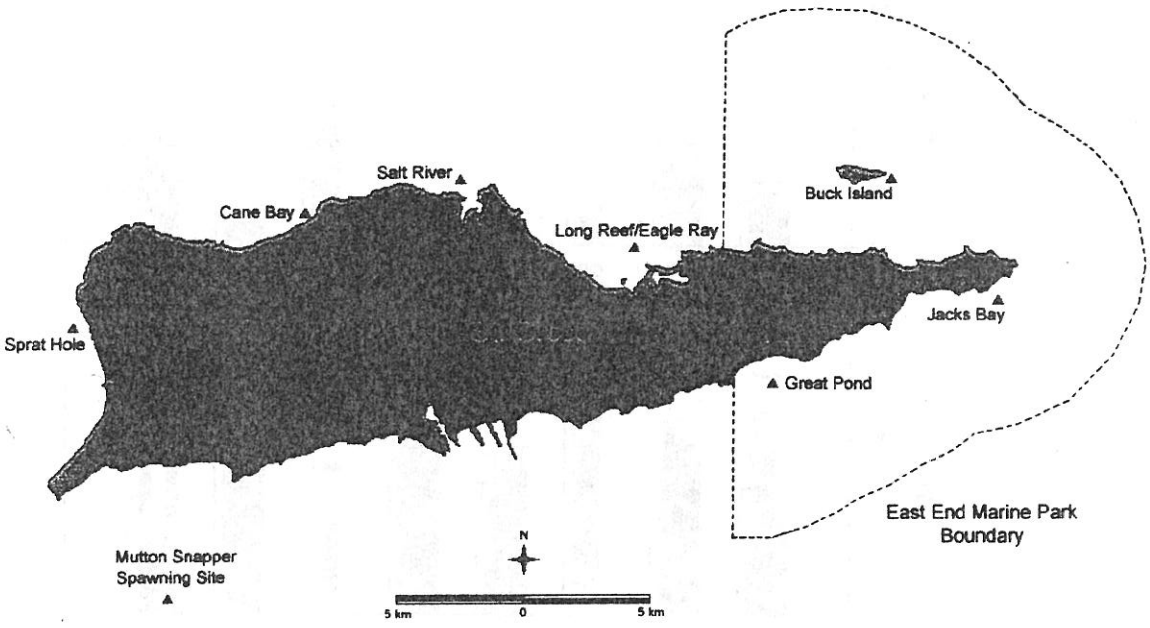


Fig. 1 Locations of monitoring sites in St. Croix, USVI. Great Pond and Jacks Bay are located within the East End Marine Park. Buck Island is located within the Buck Island Reef National Monument.

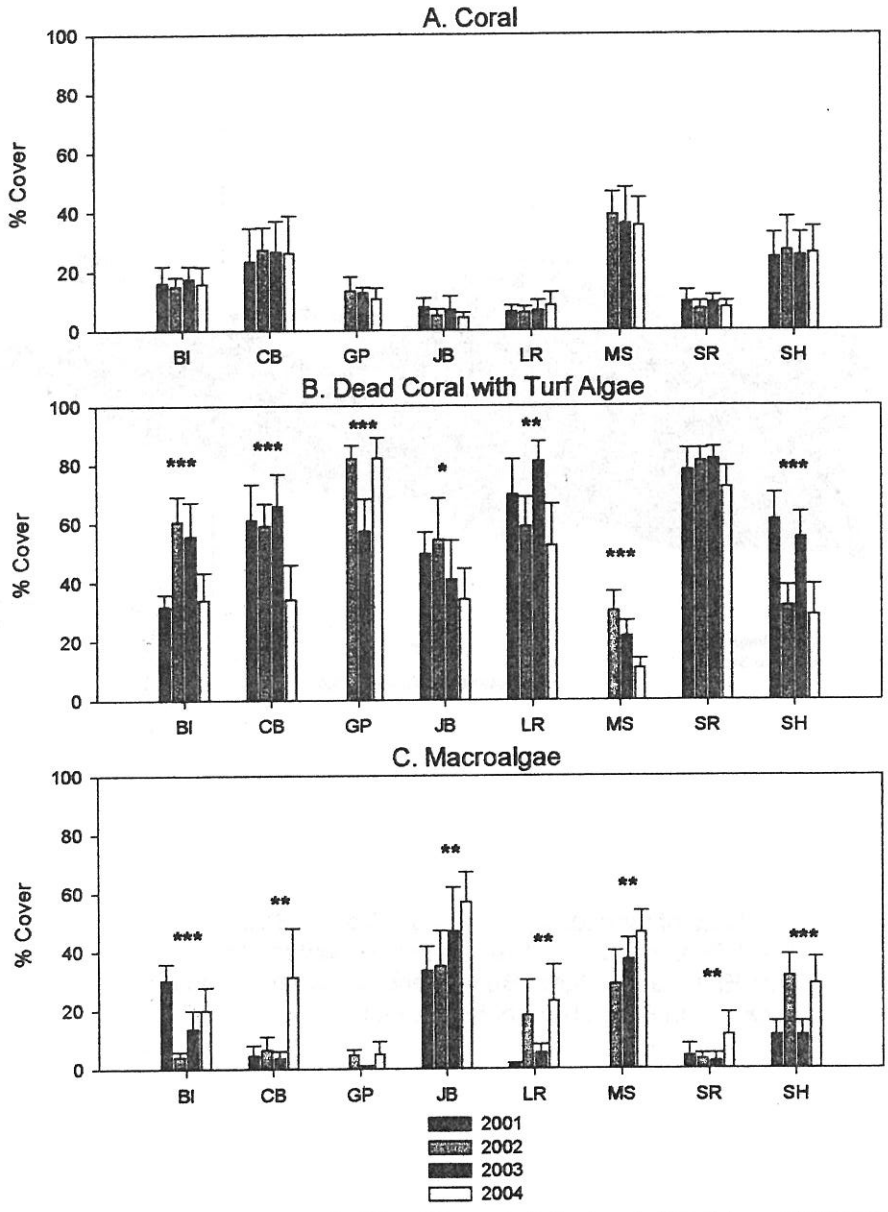


Fig. 2A, B, C Mean percent cover of A. Scleractinian corals, B. Dead coral with turf algae, and C. Macroalgae for 2001 - 2004 at eight monitored sites: BI Buck Island; CB Cane Bay; GP Great Pond; JB Jacks Bay; LR Long Reef/Eagle Ray; MS Mutton Snapper; SR Salt River; SH Sprat Hole.
GP and MS sampling began in 2002. n = 6 transects for all sites, except for n = 3 transects for BI in 2001 and 2002 and n = 5 transects for MS and SH in 2002.
Error bars represent standard deviation. Asterisks denote significant differences:
* = $P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$

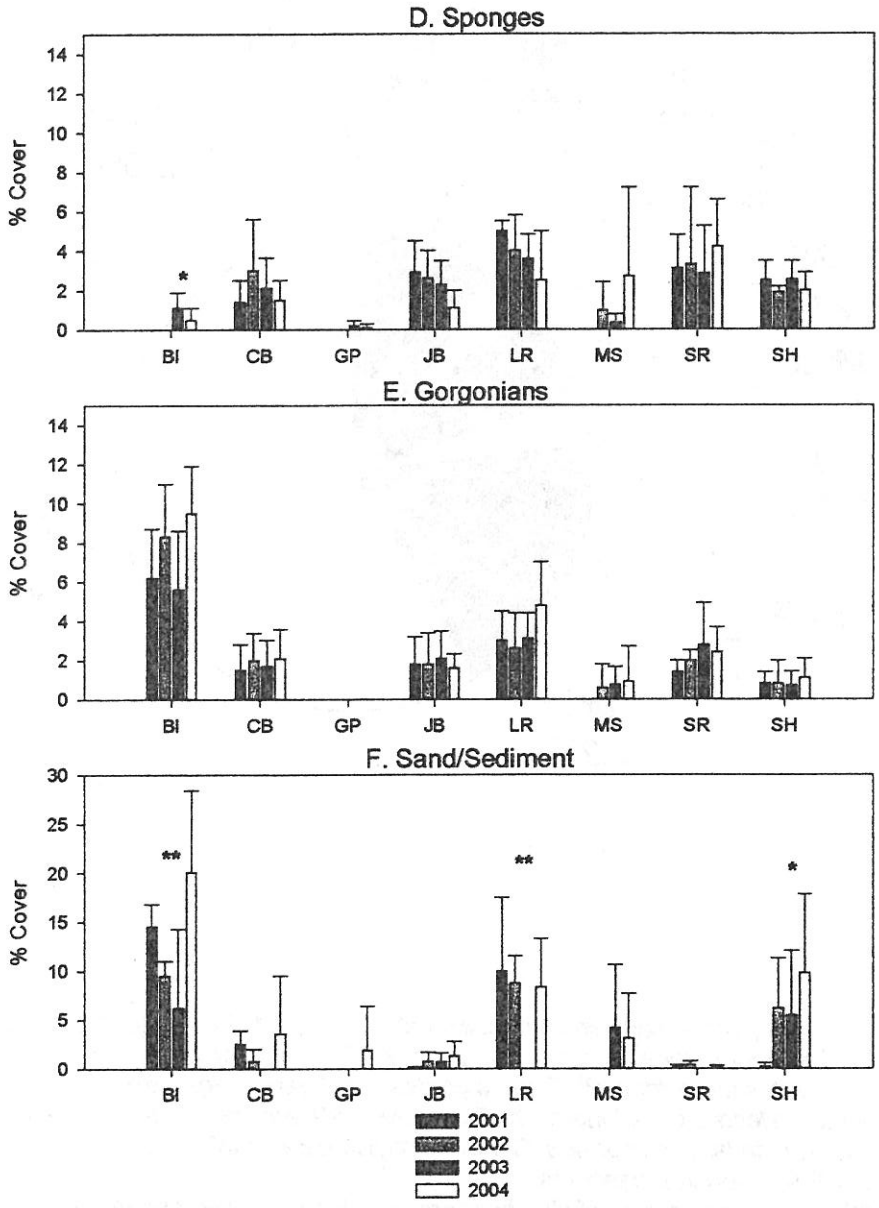


Fig. 2D, E, F Mean percent cover of D. Sponges, E. Gorgonians, and F. Sand/Sediment for 2001 - 2004 at eight monitored sites: BI Buck Island; CB Cane Bay; GP Great Pond; JB Jacks Bay; LR Long Reef/Eagle Ray; MS Mutton Snapper; SRW Salt River; SH Sprat Hole. GP and MS sampling began in 2002. n = 6 transects for all sites, except for n = 3 transects for BI in 2001 and 2002 and n = 5 transects for MS and SH in 2002. Error bars represent standard deviation. Asterisk denotes significant difference: * = $P < 0.05$; ** = $P < 0.01$

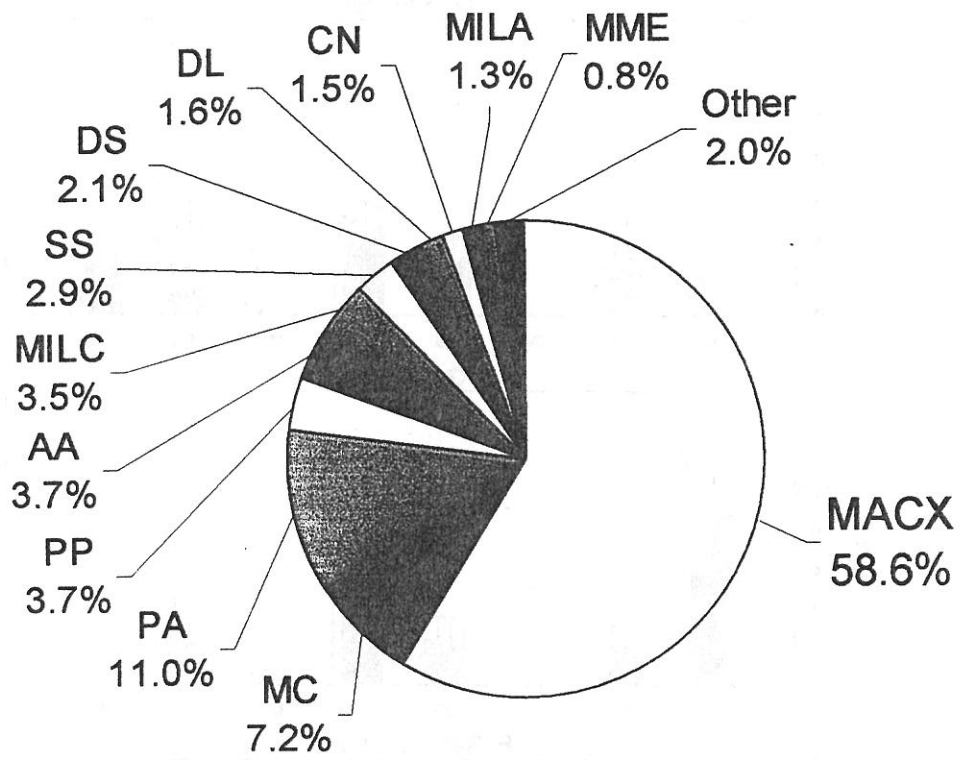


Fig. 3 Percentage coral species composition at all sampled sites in St. Croix, USVI. MACX *Montastraea annularis* complex; MC *Montastraea cavernosa*; PA *Porites astreoides*; PP *Porites porites*; AA *Agaricia agaricites*; MILC *Millepora complanata*; SS *Siderastea siderea*; DS *Diploria strigosa*; DL *Diploria labyrinthiformes*; CN *Colpophyllia natans*; MILA *Millepora Alcicornis*; MME *Meandrina meandrites*.
Other denotes percent of all other coral species combined and includes: *Acropora palmata, Dendrogyra cylindrus, Dichocoenia stokesii, Diploria strigosa, Eusmilia fastigiata, Isopyhyllastrea rigida, Madracis decactis, Madracis mirabilis, Mycetophyllia ferox, Porites furcata, Siderastrea radians*, and *Stephanocoenia michelinii*.

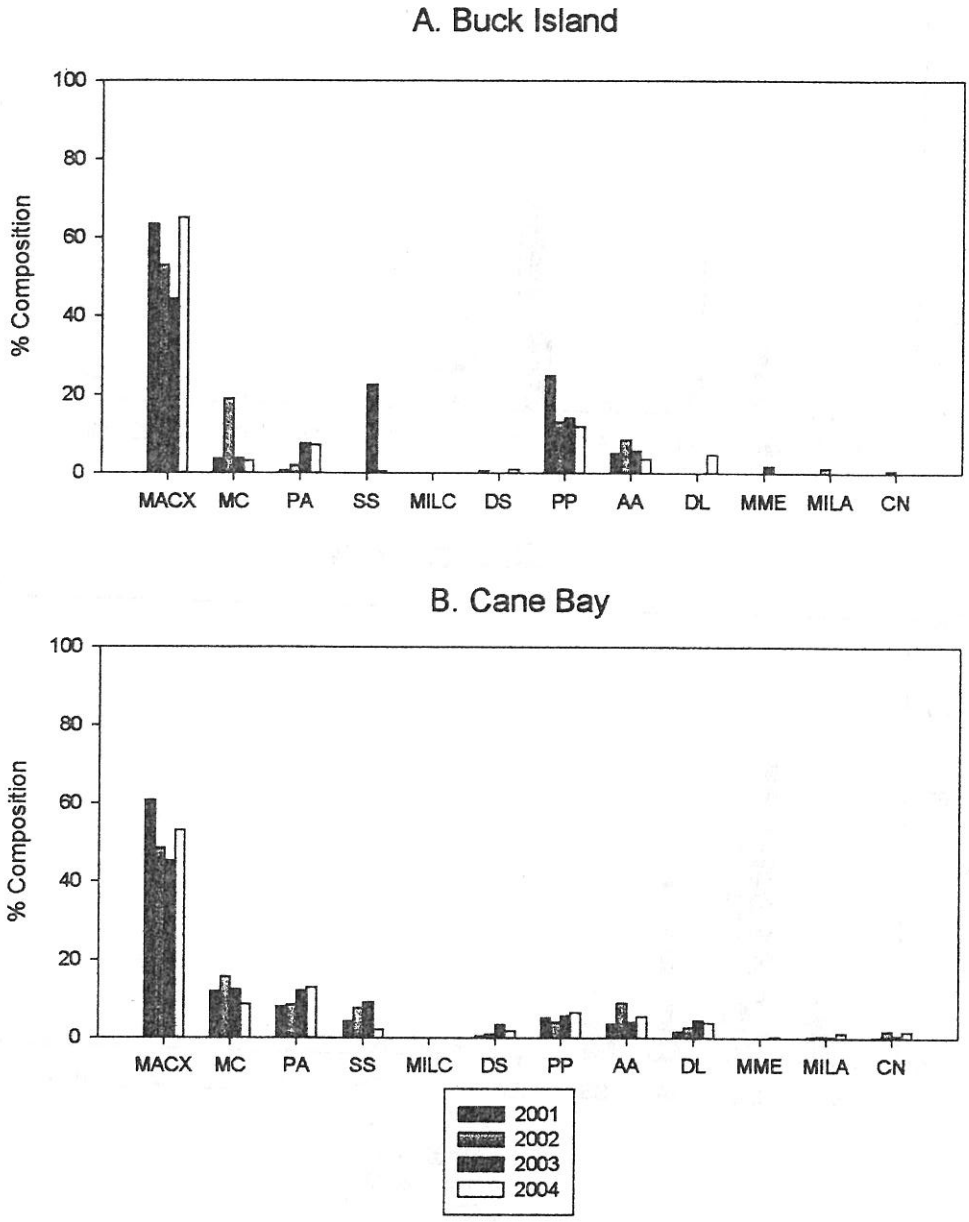


Fig. 4A, B Percent of species composition of living coral cover of the most common coral species at A. Buck Island and B. Cane Bay for years 2001, 2002, 2003 and 2004
MACX *Montastraea annularis* complex; MC *M. cavernosa*; PA *Porites astreoides*; SS *Siderastrea siderea*; MILC *Millepora complanata*; DS *Diploria strigosa*; PP *P. porites*; AA *Agaricia agaricites*; DL *D. labyrinthiformis*; MME *Meandrina meandrites*; MILA *Millepora alcicornis*; CN *Colpophylia natans*.
n = 6 transects for all samplings, except n = 3 transects for Buck Island in 2001 and 2002.

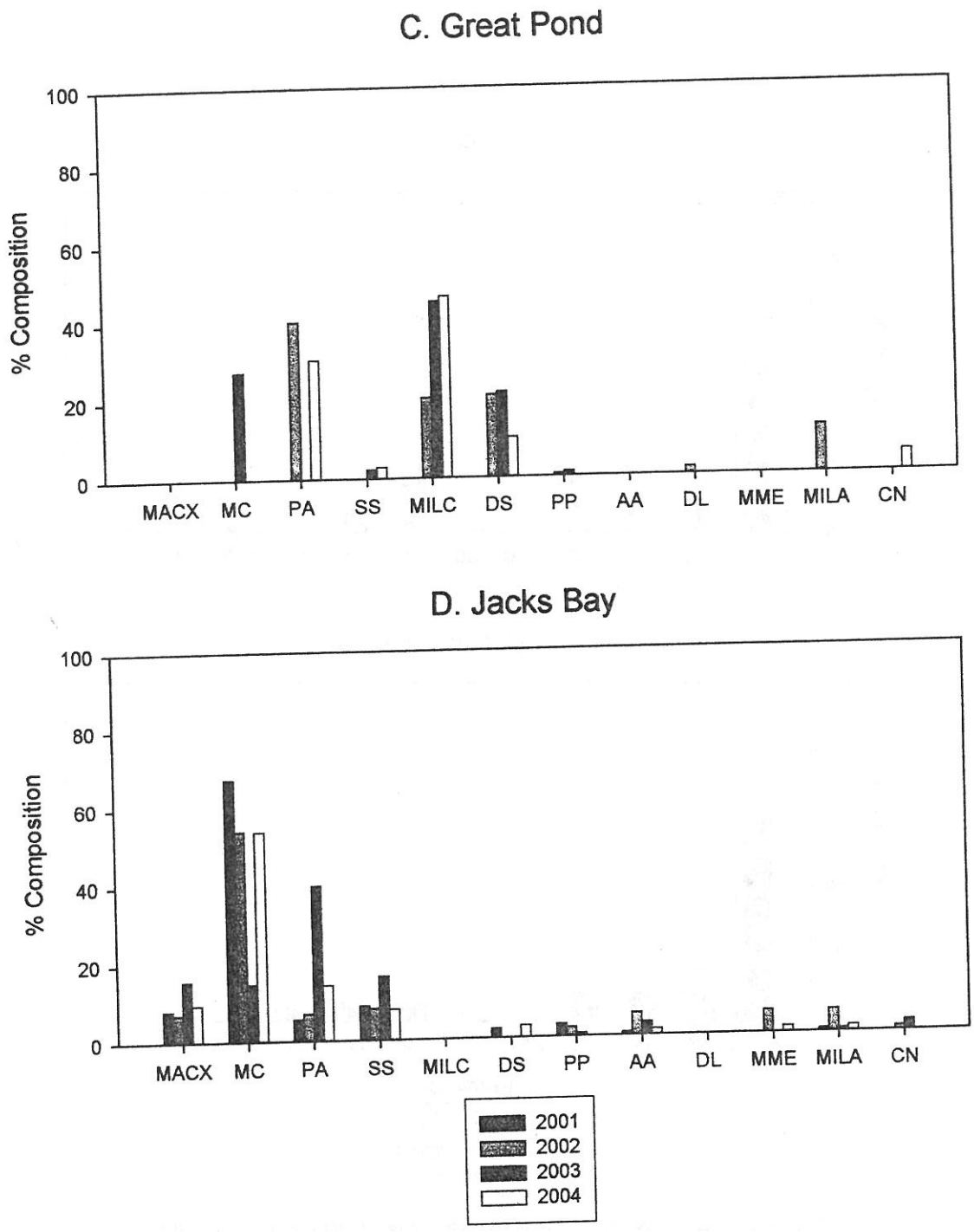


Fig. 4C, D Percent of species composition of living coral cover of the most common coral species at C. Great Pond and D. Jacks Bay for years 2001, 2002, 2003 and 2004.
MACX *Montastraea annularis* complex; MC *Montastraea cavernosa*; PA *Porites astreoides*; SS *Siderastrea siderea*; MILC *Millepora complanata*; DS *Diploria strigosa*; PP *Porites porites*; AA *Agaricia agaricites*; DL *Diploria labyrinthiformis*; MME *Meandrina meandrites*; MILA *Millepora alcicornis*; CN *Colpophylia natans*.
n = 6 transects for all samplings. Sampling of GP began in 2002.

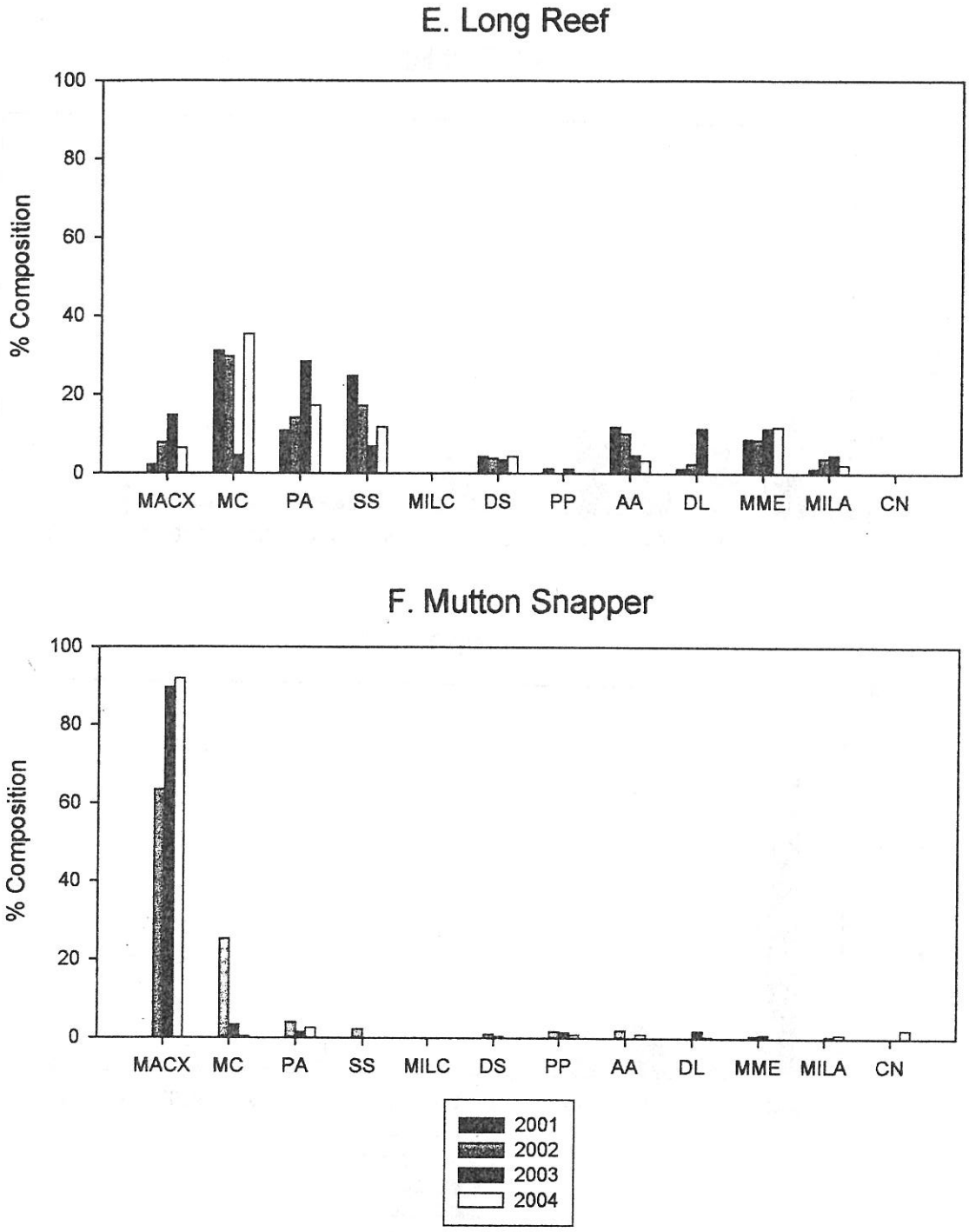


Fig. 4E, F Percent of species composition of living coral cover of the most common coral species at E. Long Reef and F. Mutton Snapper for years 2001, 2002, 2003 and 2004.
MACX *Montastraea annularis* complex; MC *Montastraea cavernosa*; PA *Porites astreoides*; SS *Siderastrea siderea*; MILC *Millepora complanata*; DS *Diploria strigosa*; PP *Porites porites*; AA *Agaricia agaricites*; DL *Diploria labyrinthiformis*; MME *Meandrina meandrites*; MILA *Millepora alcicornis*; CN *Colpophylia natans*.
Sampling of MS began in 2002.
n = 6 transects, except for n = 5 transects at MS in 2002.

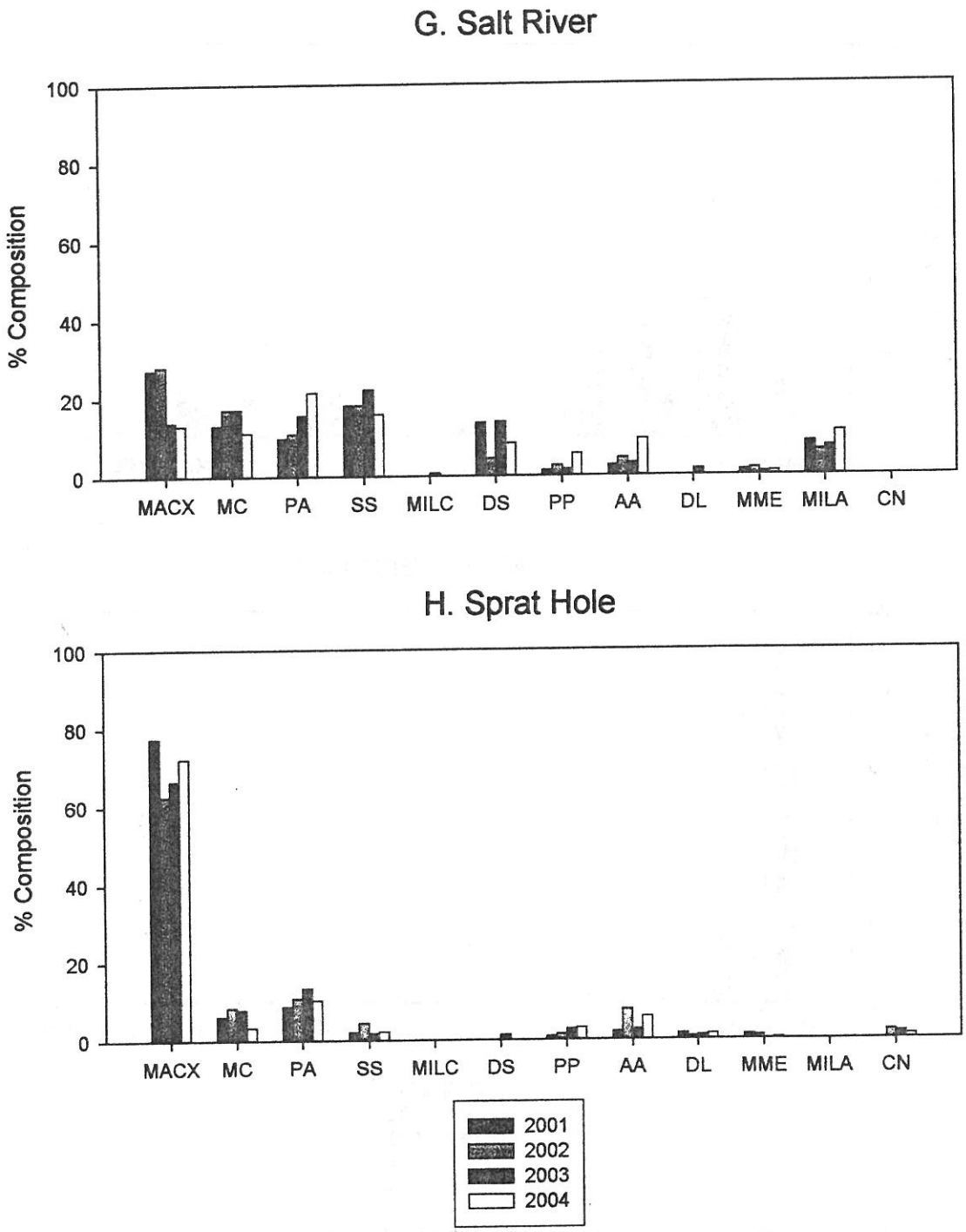


Fig. 4G, H Percent of species composition of living coral cover of the most common coral species at G. Salt River and H. Sprat Hole for years 2001, 2002, 2003 and 2004.
MACX *Montastraea annularis* complex; MC *Montastraea cavernosa*; PA *Porites astreoides*; SS *Siderastrea siderea*; MILC *Millepora complanata*; DS *Diploria strigosa*; PP *Porites porites*; AA *Agaricia agaricites*; DL *Diploria labyrinthiformis*; MME *Meandrina meandrites*; MILA *Millepora alcicornis*; CN *Colpophylia natans*.
n = 6 transects for all samplings, except n = 5 transects for SH in 2002.

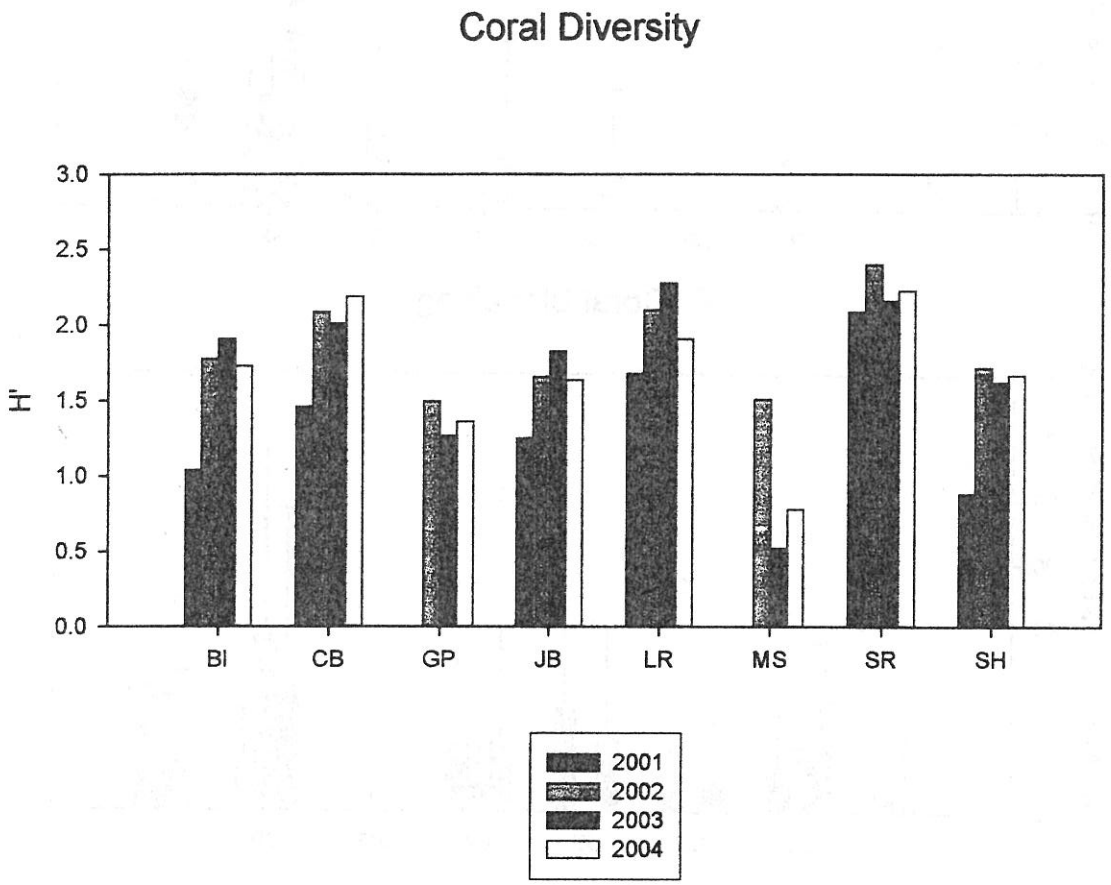


Fig. 5 Shannon - Weaver Diversity Index (H') for corals at eight monitored sites in St. Croix, USVI for years 2001- 2004.
BI Buck Island; CB Cane Bay; GP Great Pond; JB Jacks Bay; LR Long Reef/Eagle Ray; MS Mutton Snapper; SR Salt River; SH Sprat Hole
Sampling for Great Pond and Mutton Snapper began in 2002.

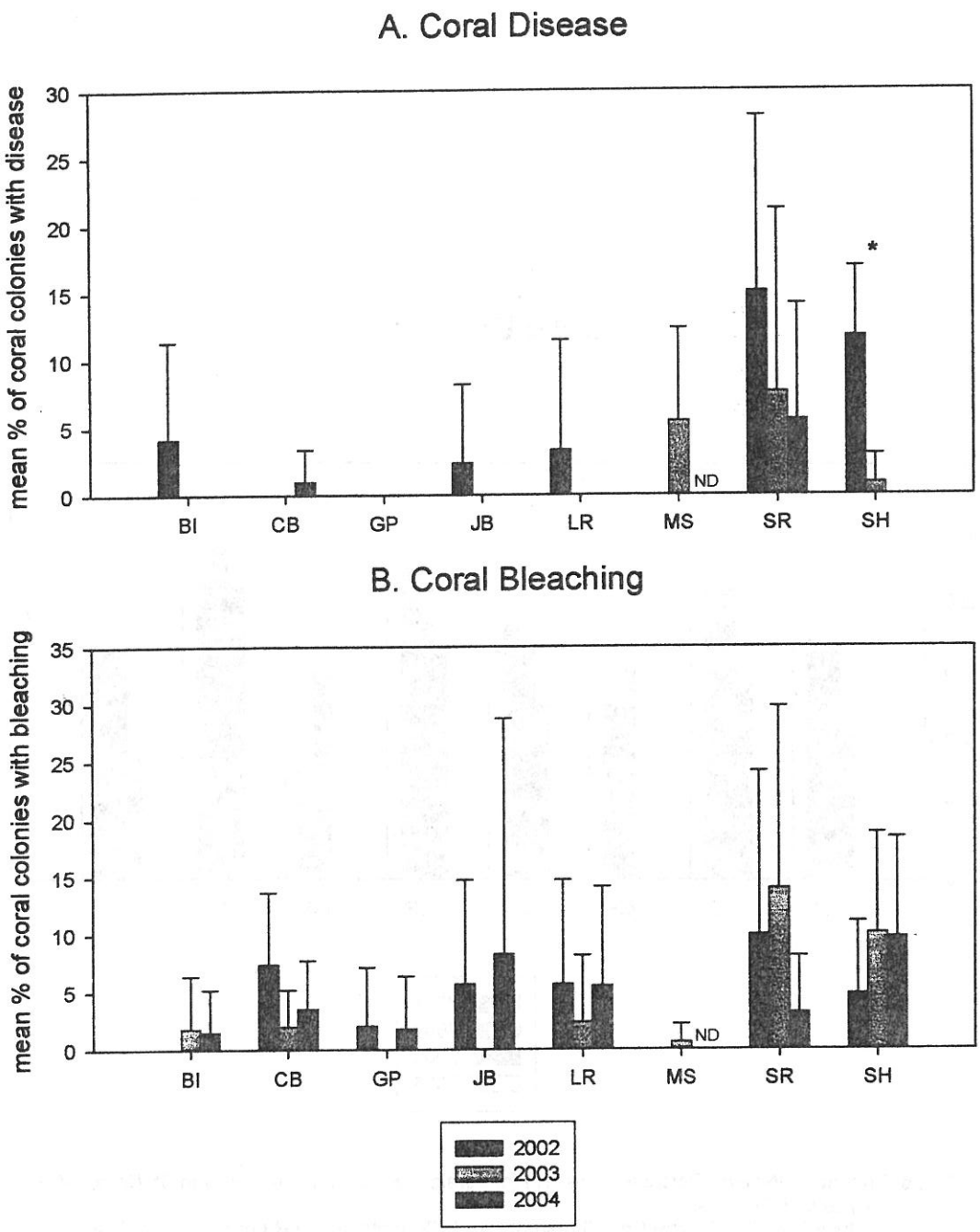


Fig. 6 Mean percentage of A. colonies with disease and B. colonies with bleaching of all coral colonies sampled at each monitoring site.
BI Buck Island; CB Cane Bay; GP Great Pond; JB Jacks Bay; LR Long Reef/Eagle Ray; MS Mutton Snapper; SR Salt River; SH Sprat Hole
n = 6 transects for all sites, except for n = 3 transects for BI in 2001 and 2002 and n = 5 transects for MS in 2002. MS was not sampled in 2004. Asterisk denotes significant difference: * = $P < 0.01$

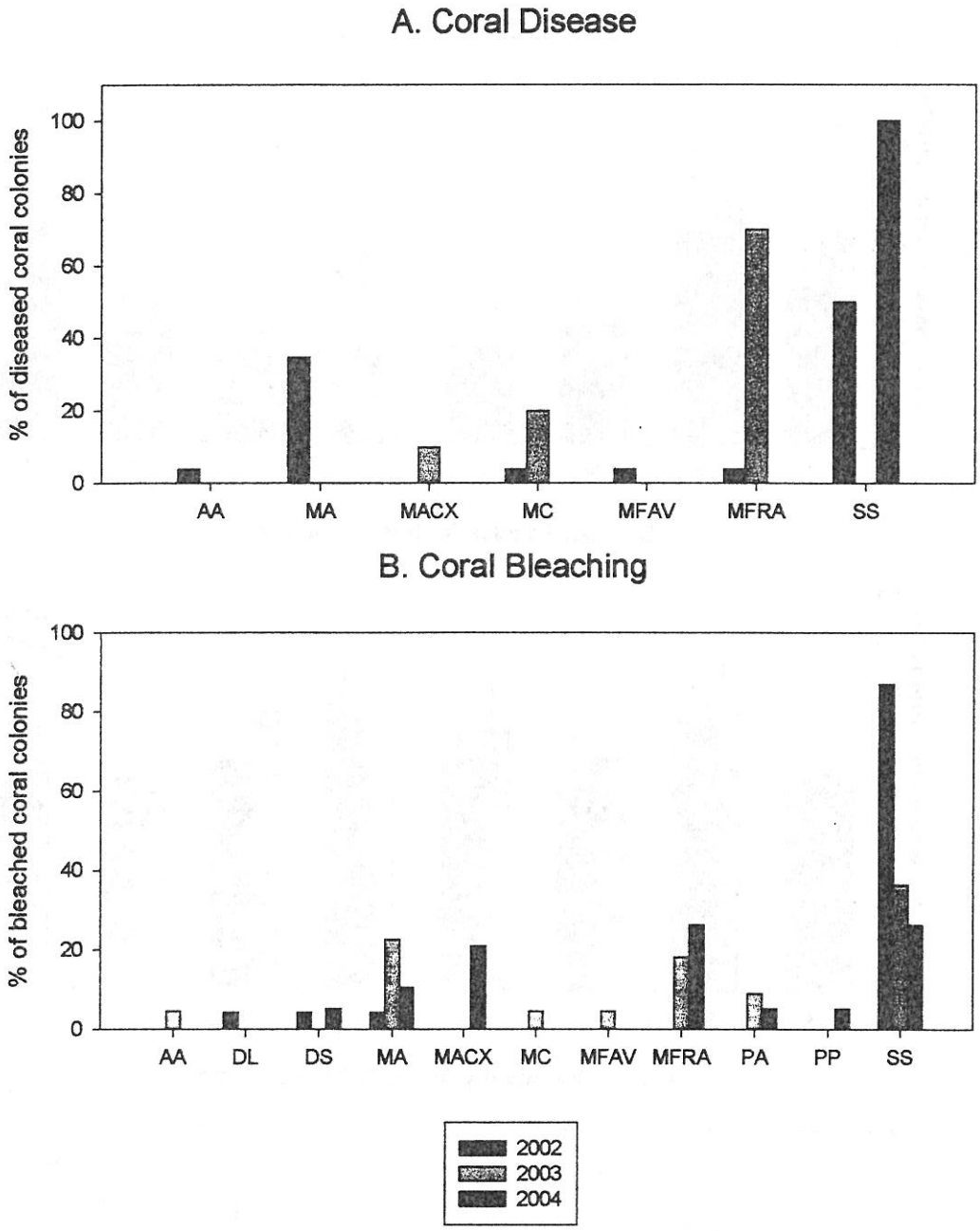


Fig. 7 Percentage of A. diseased colonies and B. bleached colonies of all coral species with disease and bleaching sampled at all St. Croix monitoring sites, with the exception of Mutton Snapper. AA *Agaricea agaricites*; DL *Diploria labyrinthiformis*; DS *Diploria strigosa*; MA *Montastraea annularis*; MACX unidentified species belonging to the *M. annularis* complex; MC *M. cavernosa*; MFAV *M. faveolata*; MFRA *M. franksii*; PA *Porites astreoides*; PP *Porites porites*; SS *Siderastrea siderea*

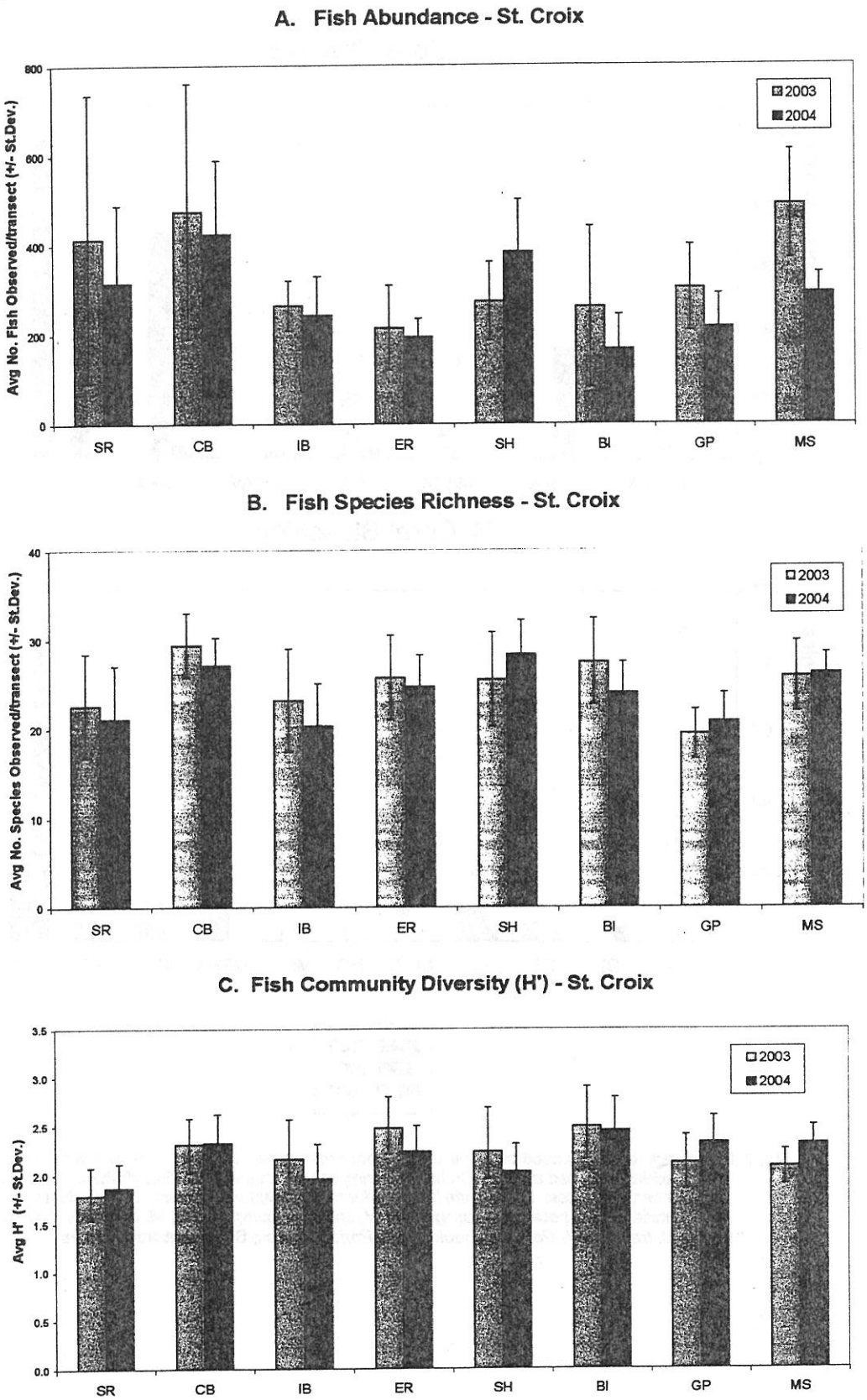


Fig. 8 Reef fish community structure across eight St. Croix reef sites. Data are from belt transect surveys conducted in 2003 and 2004. A. Average abundance. B. Average species richness. C. Average Shannon-Weaver diversity (H'). Reef sites are as follows: SR=Salt River, CB=Cane Bay, IB=Isaacs Bay, ER=Eagle Ray, SH=Sprat Hole, BI=Buck Island, GP=Great Pond, MS=Mutton Snapper

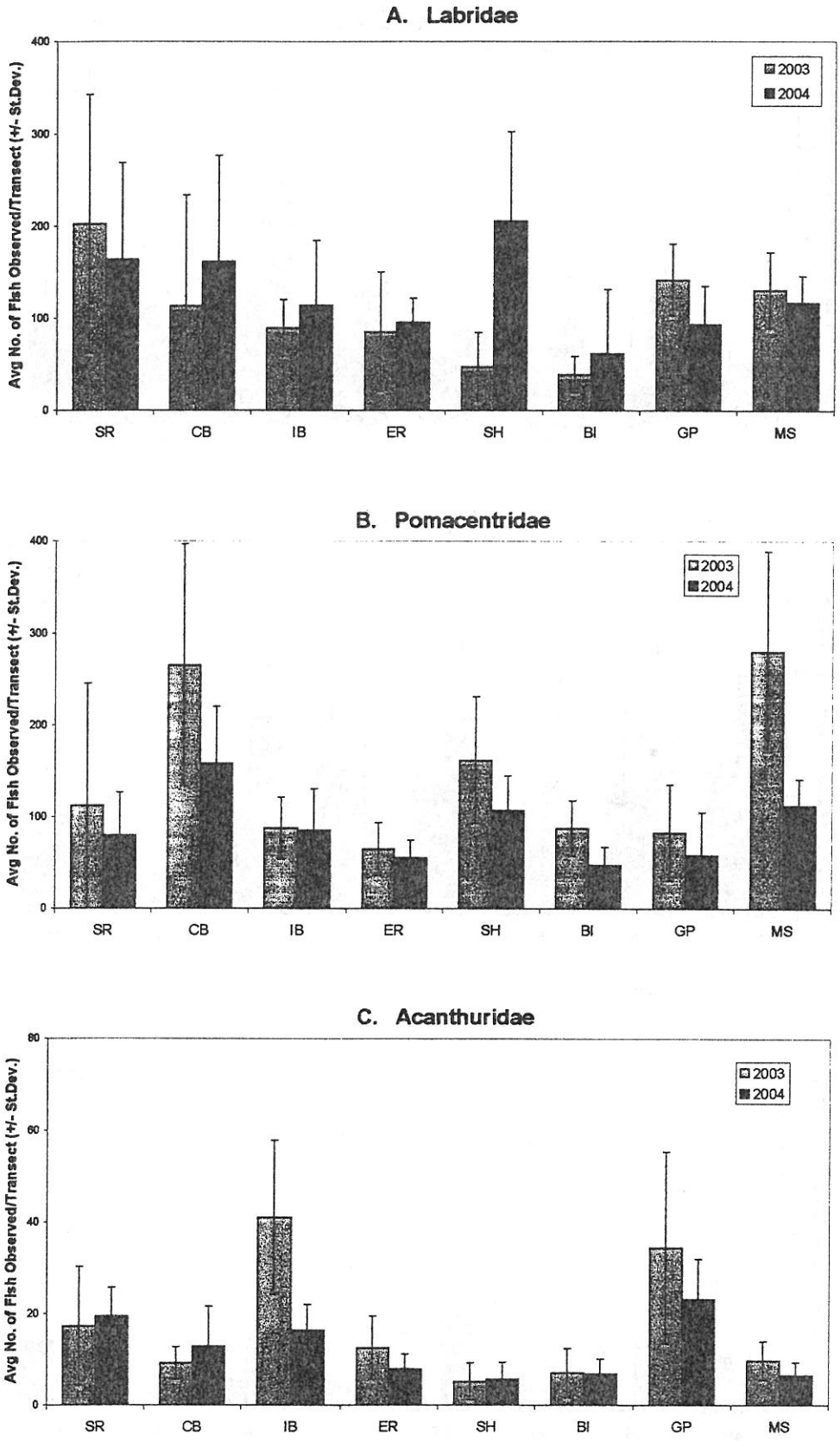


Fig. 9 Fish abundance by family across eight St. Croix reef sites. Data are from belt transect surveys in 2003 and 2004. Abbreviations as in Figure 8.

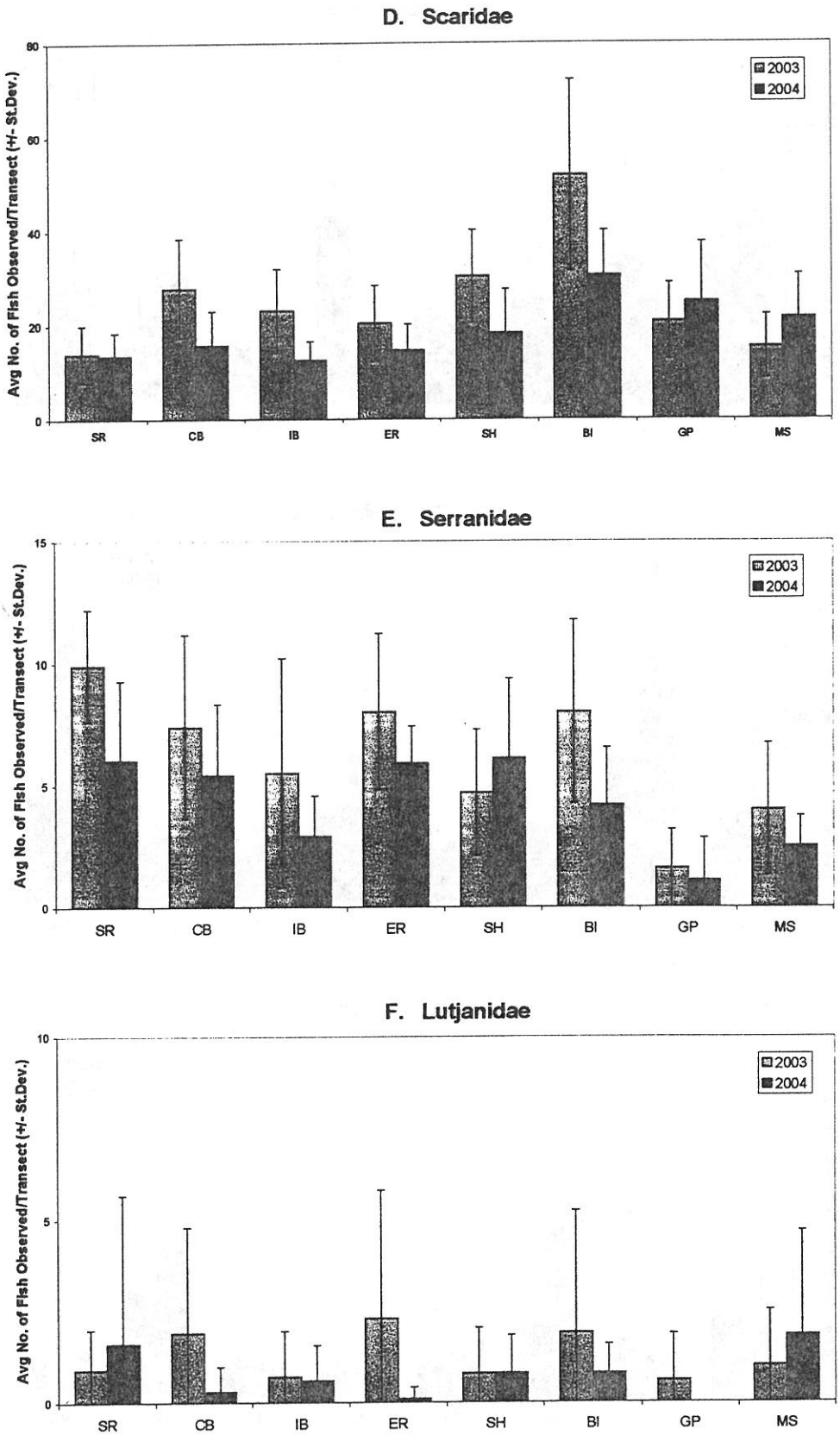


Fig. 9 (cont.) Fish abundance by family across eight St. Croix reef sites. Data are from belt transect surveys in 2003 and 2004. Abbreviations as in Figure 8.

Percent Cover by Transect

Coral Species	T1	T2	T3	T4	T5
Acropora cervicornis (AC) - coral	0.00	0.00	0.00	0.00	0.00
Acropora palmata (AP) - coral	0.00	0.00	0.00	0.00	0.00
Acropora prolifera (APR) - coral	0.00	0.00	0.00	0.00	0.00
Agaricia agaricites (AA) - coral	0.00	0.00	0.00	0.00	0.00
Agaricia fragilis (AF) - coral	0.00	0.00	0.00	0.00	0.00
Agaricia grahamae (AG) - coral	0.00	0.00	0.00	0.00	0.00
Agaricia humilis (AH) - coral	0.00	0.00	0.00	0.00	0.00
Agaricia lamarcki (AL) - coral	0.00	0.00	1.06	0.00	2.19
Agaricia tenuifolia (AT) - coral	0.00	0.00	0.00	0.00	0.00
Agaricia undata (AU) - coral	0.00	0.00	0.00	0.00	0.00
Agaricia species (AGSP) - coral	2.17	0.96	0.53	0.45	0.00
Colpophyllia natans (CN) - coral	0.00	0.00	0.00	0.00	1.75
Dendrogyra cylindrus (DCY) - coral	0.00	0.00	0.00	0.00	0.00
Diploria clivosa (DC) - coral	0.00	0.00	0.00	0.00	0.00
Diploria labyrinthiformis (DL) - coral	0.00	0.00	1.06	0.00	0.00
Diploria strigosa (DS) - coral	0.00	0.00	0.00	0.00	0.00
Dichocoenia stokesii (DSO) - coral	0.00	0.00	0.00	0.00	0.00
Eusmilia fastigiata (EF) - coral	0.00	0.00	0.00	0.00	0.00
Favia fragum (FF) - coral	0.00	0.00	0.00	0.00	0.00
Isophyllia sinuosa (IS) - coral	0.00	0.00	0.00	0.00	0.00
Isopyhyllastrea rigida (IR) - coral	0.00	0.00	0.00	0.00	0.00
Leptoseris cucullata (LC) - coral	0.00	0.00	0.00	0.00	0.00
Manicina areolata (MAR) - coral	0.00	0.00	0.00	0.00	0.00
Madracis decactis (MD) - coral	0.00	0.96	0.53	0.00	0.00
Madracis formosa (MAFO) - coral	0.00	0.00	0.00	0.00	0.00
Madracis mirabilis (MM) - coral	0.00	0.00	0.00	0.00	0.00
Meandrina meandrites (MME) - coral	0.00	0.00	0.00	0.00	0.00
Montastraea annularis (MA) - coral	0.00	0.00	0.00	0.00	0.00
Montastraea annularis complex (MACX)	0.00	0.00	0.00	0.91	0.00
Montastraea cavernosa (MC) - coral	0.00	0.00	1.59	1.36	0.00
Montastraea faveolata (MFAV) - coral	4.78	0.00	0.00	0.00	1.75
Montastraea franksi (MFRA) - coral	20.87	24.40	21.69	15.91	0.88
Montastraea species (MSPP) - coral	0.00	0.00	0.00	0.00	0.00
Mussa angulosa (MAN) - coral	0.00	0.00	0.00	0.00	0.00
Mycetophyllia aliciae (MAL) - coral	0.00	0.00	0.00	0.45	0.00
Mycetophyllia danaana (MDA) - coral	0.00	0.00	0.00	0.00	0.00
Mycetophyllia lamarckiana (ML) - coral	0.00	0.00	0.00	0.00	0.00
Mycetophyllia ferox (MF) - coral	0.00	0.00	0.00	0.00	0.00
Mycetophyllia species (MYSP) - coral	0.00	0.00	0.00	0.00	0.00
Oculina diffusa (OD) - coral	0.00	0.00	0.00	0.00	0.00
Porites astreoides (PA) - coral	0.00	0.00	0.00	0.91	0.44
Porites branneri (PB) - coral	0.00	0.00	0.00	0.00	0.00
Porites divaricata (PD) - coral	0.00	0.00	0.00	0.00	0.00
Porites furcata (PF) - coral	0.00	0.00	0.00	0.00	0.00
Porites porites (PP) - coral	0.00	0.00	0.00	0.00	0.00
Porites branching species (PBSP) - coral	0.00	0.00	0.00	0.00	0.00
Scolymia cubensis (SC) - coral	0.00	0.00	0.00	0.00	0.00
Scolymia lacera (SL) - coral	0.00	0.00	0.00	0.00	0.00
Scolymia species (SCSP) - coral	0.00	0.00	0.00	0.00	0.00
Siderastrea radians (SR) - coral	0.00	0.00	0.00	0.00	0.00
Siderastrea siderea (SS) - coral	0.00	1.91	0.00	0.00	0.44
Siderastrea species (SSPP) - coral	0.00	0.00	0.00	0.00	0.00
Solenastrea bournoni (SB) - coral	0.00	0.00	0.00	0.00	0.00
Solenastrea hyades (SH) - coral	0.00	0.00	0.00	0.00	0.00
Stephanocoenia michelinii (SM) - coral	0.00	0.00	0.00	0.00	0.00
Tubastraea aurea (TA) - coral	0.00	0.00	0.00	0.00	0.00
Millepora alcicornis (MILA) - coral	0.00	0.00	0.00	0.00	0.00
Millepora complanata (MILC) - coral	0.00	0.00	0.00	0.00	0.00
Millepora squarrosa (MILS) - coral	0.00	0.00	0.00	0.00	0.00
Coral juvenile (CORJU) - coral	0.00	0.00	0.00	0.00	0.00
Hard Coral, unknown spp. (CORAL) - coral	0.00	0.00	0.00	0.91	0.44

Percent Cover by Transect

Coral Species	T 6	T7	T8	T9	T10	Mean % Cover
Acropora cervicornis (AC) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Acropora palmata (AP) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Acropora prolifera (APR) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Agaricia agaricites (AA) - coral	0.30	4.00	1.34	0.00	0.00	0.56
Agaricia fragilis (AF) - coral	0.00	0.33	0.00	0.00	0.31	0.06
Agaricia grahamae (AG) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Agaricia humilis (AH) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Agaricia lamarcki (AL) - coral	2.74	1.67	2.34	2.92	0.00	1.29
Agaricia tenuifolia (AT) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Agaricia undata (AU) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Agaricia species (AGSP) - coral	0.61	0.00	0.33	0.00	0.63	0.57
Colpophyllia natans (CN) - coral	0.00	0.00	0.00	0.00	0.00	0.18
Dendrogyra cylindrus (DCY) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Diploria clivosa (DC) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Diploria labyrinthiformis (DL) - coral	0.00	1.00	0.00	0.00	0.00	0.21
Diploria strigosa (DS) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Dichocoenia stokesii (DSO) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Eusmilia fastigiata (EF) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Favia fragum (FF) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Isophyllia sinuosa (IS) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Isopyhyllastrea rigida (IR) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Leptoseris cucullata (LC) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Manicina areolata (MAR) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Madracis decactis (MD) - coral	0.00	0.00	0.00	0.00	0.00	0.15
Madracis formosa (MAFO) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Madracis mirabilis (MM) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Meandrina meandrites (MME) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Montastraea annularis (MA) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Montastraea annularis complex (MACX)	3.05	0.00	0.67	5.19	1.57	1.14
Montastraea cavernosa (MC) - coral	0.00	1.00	0.00	3.90	0.00	0.78
Montastraea faveolata (MFAV) - coral	7.01	0.00	2.68	8.12	9.12	3.35
Montastraea franksi (MFRA) - coral	22.87	17.33	24.75	9.09	21.38	17.92
Montastraea species (MSPP) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Mussa angulosa (MAN) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Mycetophyllia aliciae (MAL) - coral	0.00	0.00	0.00	0.00	0.00	0.05
Mycetophyllia danaana (MDA) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Mycetophyllia lamarckiana (ML) - coral	0.00	0.00	0.67	0.00	0.00	0.07
Mycetophyllia ferox (MF) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Mycetophyllia species (MYSP) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Oculina diffusa (OD) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Porites astreoides (PA) - coral	1.52	0.67	0.00	1.62	0.31	0.55
Porites branneri (PB) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Porites divaricata (PD) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Porites furcata (PF) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Porites porites (PP) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Porites branching species (PBSP) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Scolymia cubensis (SC) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Scolymia lacera (SL) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Scolymia species (SCSP) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Siderastrea radians (SR) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Siderastrea siderea (SS) - coral	3.05	0.00	0.00	3.25	0.31	0.90
Siderastrea species (SSPP) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Solenastrea bournoni (SB) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Solenastrea hyades (SH) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Stephanocoenia michelinii (SM) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Tubastraea aurea (TA) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Millepora alcicornis (MILA) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Millepora complanata (MILC) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Millepora squarrosa (MILS) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Coral juvenile (CORJU) - coral	0.00	0.00	0.00	0.00	0.00	0.00
Hard Coral, unknown spp. (CORAL) - coral	0.00	0.00	0.00	0.00	0.00	0.13

Appendix II:
Summary of non-coral video data

St. Croix

Mean Percent Cover for all Sites

Categories	Buck Island	Cane Bay	Great Pond	Jacks Bay	Long Reef	Mutton Snapper	Salt River	Sprat Hole
Gorgonians (GO) - go	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.53	0.00	0.00	0.08	0.00	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
Soft Coral - Sea Fan (FAN) - go	0.26	0.34	0.00	0.00	0.95	0.00	0.00	0.00
Soft Coral - Plume form (PLUME) - go	0.26	0.85	0.00	0.06	0.54	0.45	0.08	1.00
Soft Coral - Rod form (ROD) - go	8.29	0.91	0.00	1.44	3.27	0.41	2.36	0.08
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.08	0.00	0.22	0.43
Barrel/Vase Sponge (BASP) - spo	0.00	0.26	0.00	0.07	0.56	0.00	1.17	0.00
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	0.00	0.35	0.00	0.38	0.79	1.12	0.49	0.51
Rope Sponge (ROPE) - spo	0.00	0.21	0.00	0.00	0.22	0.07	0.29	0.00
Tube Sponge (TUBE) - spo	0.00	0.00	0.00	0.00	0.17	0.37	0.00	0.22
Sponge (SPO) - spo	0.50	0.64	0.08	0.63	0.73	1.10	2.02	0.86
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.16	0.00	0.25	0.00	0.96	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	5.56	19.15	4.75	18.78	8.08	11.70	7.77	11.32
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	4.10	11.26	0.00	35.96	14.01	1.64	3.72	2.96
Halimeda spp. (HALI) - maca[calc]	0.00	0.13	0.15	0.35	0.09	0.07	0.00	6.79
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
Lobophora variegata (LOBO) - maca	0.00	0.77	0.00	0.41	0.17	32.95	0.00	0.00
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	1.49	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	10.48	0.07	0.00	0.06	0.65	0.00	0.00	7.73
Coralline Algae (CALG) - calg	0.00	0.85	0.00	0.34	0.00	0.90	1.02	3.33
Dead coral w/ turf algae (DCA) - dca	33.92	34.15	82.21	34.23	52.53	10.66	72.15	28.66
Boulder (B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	20.11	3.58	1.92	1.30	8.32	3.11	0.07	9.80
Rubble (R)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.14	0.08	0.07	0.00	0.22	0.06	0.14
Unknown (UNK)	0.00	0.00	0.08	0.14	0.11	0.00	0.07	0.00

St. Thomas

Mean Percent Cover for all Sites

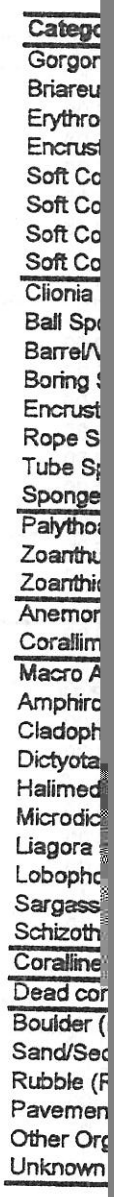
Categories	Seahorse Cottage	South Capella	Grammanik Bank	Red Hind Bank
Gorgonians (GO) - go	0.07	0.08	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.04	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.18	0.00
Soft Coral - Sea Fan (FAN) - go	1.11	0.95	0.00	0.00
Soft Coral - Plume form (PLUME) - go	0.36	0.04	0.00	0.00
Soft Coral - Rod form (ROD) - go	1.91	1.03	0.00	0.00
Soft Coral - Whip form (WHIP) - go	0.04	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.03
Barrel/Vase Sponge (BASP) - spo	0.83	0.81	0.21	0.00
Boring Sponge (BOSP) - spo	0.00	0.00	0.07	0.63
Encrusting Sponge (ENSP) - spo	0.42	3.49	2.22	3.10
Rope Sponge (ROPE) - spo	1.09	0.46	0.07	0.32
Tube Sponge (TUBE) - spo	0.22	0.22	0.30	0.10
Sponge (SPO) - spo	0.37	0.38	1.77	1.56
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.04	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	3.12	7.98	6.03	4.03
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	12.83	13.76	0.80	0.58
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	21.66	18.38	25.35	34.35
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.30	0.95	0.61
Coralline Algae (CALG) - calg	0.00	0.00	1.85	5.20
Dead coral w/ turf algae (DCA) - dca	23.10	21.54	9.63	16.24
Boulder (B)	0.00	0.00	0.00	0.00
Sand/Sediment (S)	6.69	1.20	0.30	4.48
Rubble (R)	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00
Other Organisms (O)	0.04	0.00	0.24	0.20
Unknown (UNK)	0.34	0.27	0.42	0.66

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5	T6	Mean % Cover
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.77	0.00	0.00	0.00	0.00	0.00	0.13
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	3.16	0.00	0.00	0.00	0.53
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	1.54	0.00	0.00	0.00	0.00	0.00	0.26
Soft Coral - Plume form (PLUME) - go	0.00	0.00	0.00	0.00	0.00	1.58	0.26
Soft Coral - Rod form (ROD) - go	4.62	12.08	4.21	12.50	10.00	6.32	8.29
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rope Sponge (ROPE) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tube Sponge (TUBE) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sponge (SPO) - spo	0.77	1.25	0.00	1.00	0.00	0.00	0.50
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coralliimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	1.54	8.75	1.05	9.00	3.53	9.47	5.56
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	6.15	6.25	2.63	8.00	0.00	1.58	4.10
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	15.00	11.67	3.16	7.00	22.35	3.68	10.48
Coralline Algae (CALG) - calg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dead coral w/ turf algae (DCA) - dca	49.23	27.08	35.79	25.50	26.47	39.47	33.92
Boulder (B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	10.77	20.42	32.11	13.50	16.47	27.37	20.11
Rubble (R)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown (UNK)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5	T6	Mean % Cover
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	1.63	0.00	0.42	0.00	0.34
Soft Coral - Plume form (PLUME) - go	0.77	3.13	1.22	0.00	0.00	0.00	0.85
Soft Coral - Rod form (ROD) - go	0.38	0.00	1.22	0.00	0.84	3.03	0.91
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	1.54	0.00	0.00	0.00	0.00	0.00	0.26
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	0.00	0.00	0.00	0.42	1.68	0.00	0.35
Rope Sponge (ROPE) - spo	0.00	0.00	0.00	0.84	0.42	0.00	0.21
Tube Sponge (TUBE) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sponge (SPO) - spo	0.00	0.39	0.41	0.00	0.00	3.03	0.64
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	35.38	20.31	16.26	12.55	14.71	15.66	19.15
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	20.77	21.09	7.32	6.69	4.62	7.07	11.26
Halimeda spp. (HALI) - maca[calc]	0.38	0.00	0.00	0.42	0.00	0.00	0.13
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	4.23	0.39	0.00	0.00	0.00	0.00	0.77
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.39	0.00	0.00	0.00	0.00	0.07
Coralline Algae (CALG) - calg	0.38	0.00	2.85	0.84	0.00	1.01	0.85
Dead coral w/ turf algae (DCA) - dca	22.69	19.92	31.71	35.98	46.64	47.98	34.15
Boulder (B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	0.00	0.00	1.22	0.00	14.71	5.56	3.58
Rubble (R)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.81	0.00	0.00	0.00	0.14
Unknown (UNK)	0.00	0.00	0.00	0.00	0.00	0.00	0.00


Categ
Gorgon
Briareu
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Soft Co
Soft Co
Soft Co
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Clionia
Ball Sp
Barrel/V
Boring
Encrust
Rope S
Tube Sp
Sponge
Palytho
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Dead cor
Boulder (
Sand/Sed
Rubble (R
Pavemen
Other Org
Unknown

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5	T6	Mean % Cover
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00	0.40	0.07
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.49	0.00	0.00	0.08
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Plume form (PLUME) - go	0.00	0.00	0.37	0.00	0.00	0.00	0.06
Soft Coral - Rod form (ROD) - go	1.11	2.08	0.37	0.98	1.69	2.37	1.44
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	0.00	0.00	0.00	0.00	0.00	0.40	0.07
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	0.00	0.00	1.86	0.00	0.00	0.40	0.38
Rope Sponge (ROPE) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tube Sponge (TUBE) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sponge (SPO) - spo	0.74	0.42	0.74	1.47	0.00	0.40	0.63
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	5.19	8.75	14.50	29.41	27.54	27.27	18.78
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	40.00	37.50	40.89	20.10	44.07	33.20	35.96
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.49	0.42	1.19	0.35
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	0.00	0.00	0.00	2.45	0.00	0.00	0.41
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	7.35	0.00	1.58	1.49
Schizothrix spp. (SCHIZ) - maca	0.37	0.00	0.00	0.00	0.00	0.00	0.06
Coralline Algae (CALG) - calg	0.37	0.00	0.37	0.00	1.27	0.00	0.34
Dead coral w/ turf algae (DCA) - dca	47.04	45.83	32.34	31.37	20.34	28.46	34.23
Boulder (B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	0.00	0.42	1.49	3.92	0.00	1.98	1.30
Rubble (R)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.00	0.00	0.42	0.00	0.07
Unknown (UNK)	0.00	0.42	0.00	0.00	0.42	0.00	0.14

Categories
Gorgonians (GO) - go
Briareum asbestinum (BRIA
Erythropodium caribaeorum
Encrusting Gorgonian (ENG
Soft Coral - Sea Fan (FAN)
Soft Coral - Plume form (PL
Soft Coral - Rod form (ROD
Soft Coral - Whip form (WH
Clionia delitrix (CLIO) - spo
Ball Sponge (BALL) - spo
Barrel/Vase Sponge (BASP
Boring Sponge (BOSP) - sp
Encrusting Sponge (ENSP)
Rope Sponge (ROPE) - spo
Tube Sponge (TUBE) - spo
Sponge (SPO) - spo
Palythoa caribaeorum (PAL
Zoanthus sociatus (ZOSO) -
Zoanthids (ZO) - zo
Anemone (ANEM) - other
Corallimorpharians (CMOR)
Macro Algae (MACA) - maca
Amphiroa spp. (AMPH) - ma
Cladophora spp. (CLAD) - ma
Dictyota spp. (DICT) - maca
Halimeda spp. (HALI) - macal
Microdictyon spp. (MICRO) -
Liagora spp. (LIAG) - maca
Lobophora variegata (LOBO)
Sargassum spp. (SARG) - ma
Schizothrix spp. (SCHIZ) - ma
Coralline Algae (CALG) - calg
Dead coral w/ turf algae (DCA
Boulder (B)
Sand/Sediment (S)
Rubble (R)
Pavement (P)
Other Organisms (O)
Unknown (UNK)

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5	T6	Mean % Cover
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Plume form (PLUME) - go	0.00	0.75	0.00	1.95	0.00	0.00	0.45
Soft Coral - Rod form (ROD) - go	0.00	0.00	0.00	2.44	0.00	0.00	0.41
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	6.25	0.00	0.00	0.49	0.00	0.00	1.12
Rope Sponge (ROPE) - spo	0.42	0.00	0.00	0.00	0.00	0.00	0.07
Tube Sponge (TUBE) - spo	0.00	0.00	0.00	0.00	2.24	0.00	0.37
Sponge (SPO) - spo	5.00	1.12	0.00	0.49	0.00	0.00	1.10
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	7.92	11.61	17.11	9.76	17.54	6.28	11.70
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	3.33	3.00	3.51	0.00	0.00	0.00	1.64
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.42	0.07
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	30.42	37.45	36.84	34.15	28.73	30.13	32.95
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coralline Algae (CALG) - calg	0.00	2.25	0.00	1.95	0.37	0.84	0.90
Dead coral w/ turf algae (DCA) - dca	8.33	7.12	15.79	8.78	13.06	10.88	10.66
Boulder (B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	0.00	0.00	1.32	5.37	11.57	0.42	3.11
Rubble (R)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.88	0.00	0.00	0.42	0.22
Unknown (UNK)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Categories	T1	T2
Gorgonians (GO) - go	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00
Soft Coral - Plume form (PLUME) - go	0.00	0.00
Soft Coral - Rod form (ROD) - go	0.84	1.93
Soft Coral - Whip form (WHIP) - go	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	1.67	0.39
Boring Sponge (BOSP) - spo	0.00	0.00
Encrusting Sponge (ENSP) - spo	1.67	0.39
Rope Sponge (ROPE) - spo	0.00	0.00
Tube Sponge (TUBE) - spo	0.00	0.00
Sponge (SPO) - spo	1.67	0.39
Palythoa caribaeorum (PALY) - zo	0.00	2.70
Zoanthus sociatus (ZOSO) - zo	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00
Anemone (ANEM) - other	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00
Macro Algae (MACA) - maca	4.60	12.74
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00
Dictyota spp. (DICT) - maca	5.44	4.25
Halimeda spp. (HALI) - maca[calc]	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00
Lobophora variegata (LOBO) - maca	0.00	0.00
Sargassum spp. (SARG) - maca	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.00
Coralline Algae (CALG) - calg	3.35	1.93
Dead coral w/ turf algae (DCA) - dca	72.80	68.34
Boulder (B)	0.00	0.00
Sand/Sediment (S)	0.00	0.00
Rubble (R)	0.00	0.00
Pavement (P)	0.00	0.00
Other Organisms (O)	0.00	0.39
Unknown (UNK)	0.00	0.00

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5	T6	Mean % Cover
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.42	0.00	0.00	0.00	0.00	0.00	0.07
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Plume form (PLUME) - go	1.67	0.00	0.44	1.36	2.09	0.44	1.00
Soft Coral - Rod form (ROD) - go	0.00	0.00	0.00	0.45	0.00	0.00	0.08
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.44	1.31	0.00	0.42	0.44	0.43
Barrel/Vase Sponge (BASP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	0.42	0.00	0.44	0.45	0.00	1.75	0.51
Rope Sponge (ROPE) - spo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tube Sponge (TUBE) - spo	0.00	1.31	0.00	0.00	0.00	0.00	0.22
Sponge (SPO) - spo	0.42	1.31	0.87	0.45	1.67	0.44	0.86
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	10.42	14.85	14.85	14.09	6.28	7.46	11.32
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	5.83	4.37	1.75	5.00	0.84	0.00	2.96
Halimeda spp. (HALI) - maca[calc]	12.50	6.99	13.54	1.82	5.02	0.88	6.79
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.42	0.00	0.07
Lobophora variegata (LOBO) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.87	11.35	15.00	2.51	16.67	7.73
Coralline Algae (CALG) - calg	2.50	0.44	9.61	3.18	2.51	1.75	3.33
Dead coral w/ turf algae (DCA) - dca	35.83	33.19	13.54	26.36	20.92	42.11	28.66
Boulder (B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	0.00	4.37	14.85	16.82	18.83	3.95	9.80
Rubble (R)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.00	0.00	0.84	0.00	0.14
Unknown (UNK)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Percent Cover by

Categories	T1	T2	T3
Gorgonians (GO) - go	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.73	1.11	1.79
Soft Coral - Plume form (PLUME) - go	0.00	0.00	0.00
Soft Coral - Rod form (ROD) - go	1.82	0.37	0.72
Soft Coral - Whip form (WHIP) - go	0.00	0.37	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	0.36	0.00	0.00
Boring Sponge (BOSP) - spo	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	0.73	0.00	0.00
Rope Sponge (ROPE) - spo	2.55	0.37	0.00
Tube Sponge (TUBE) - spo	0.00	0.00	1.79
Sponge (SPO) - spo	0.36	0.00	0.00
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00
Macro Algae (MACA) - maca	1.45	1.48	0.36
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	9.82	14.07	5.02
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	37.45	18.15	42.65
Sargassum spp. (SARG) - maca	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.00	0.00
Coralline Algae (CALG) - calg	0.00	0.00	0.00
Dead coral w/ turf algae (DCA) - dca	14.18	9.63	11.11
Boulder (B)	0.00	0.00	0.00
Sand/Sediment (S)	1.45	11.85	19.35
Rubble (R)	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.00
Unknown (UNK)	0.00	0.00	0.36

Percent Cover by Transect

Categories	T6	T7	T8	T9	T10	Mean % Cover
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.74	0.07
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.36	0.00	0.04
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	0.00	4.66	0.37	1.11
Soft Coral - Plume form (PLUME) - go	0.00	0.00	0.00	2.87	0.74	0.36
Soft Coral - Rod form (ROD) - go	1.15	2.32	5.68	3.58	1.11	1.91
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00	0.04
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	3.85	1.54	0.00	1.79	0.37	0.83
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	0.00	0.00	0.00	0.36	0.37	0.42
Rope Sponge (ROPE) - spo	1.15	0.77	2.18	0.00	0.74	1.09
Tube Sponge (TUBE) - spo	0.00	0.00	0.00	0.36	0.00	0.22
Sponge (SPO) - spo	0.77	0.00	0.00	1.79	0.37	0.37
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.38	0.00	0.00	0.00	0.00	0.04
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00	0.00
Coralliimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	3.85	1.54	2.62	4.30	8.15	3.12
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	18.46	18.15	10.04	15.41	15.56	12.83
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.00	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	10.00	15.83	13.10	12.19	14.44	21.66
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.00	0.00	0.00	0.00	0.00
Coralline Algae (CALG) - calg	0.00	0.00	0.00	0.00	0.00	0.00
Dead coral w/ turf algae (DCA) - dca	31.92	25.10	24.89	22.22	37.04	23.10
Boulder (B)	0.00	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	11.54	1.93	4.37	2.15	0.00	6.69
Rubble (R)	0.00	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.44	0.00	0.00	0.04
Unknown (UNK)	0.00	0.39	0.00	0.36	0.74	0.34

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	0.00	0.74	0.74
Soft Coral - Plume form (PLUME) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Rod form (ROD) - go	2.32	1.15	0.74	0.37	1.11
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	0.00	1.54	0.00	0.00	1.11
Boring Sponge (BOSP) - spo	0.00	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	7.72	0.77	1.11	4.81	4.07
Rope Sponge (ROPE) - spo	0.00	0.00	1.11	0.37	0.37
Tube Sponge (TUBE) - spo	0.00	0.00	2.22	0.00	0.00
Sponge (SPO) - spo	0.00	0.00	0.00	0.74	0.00
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	3.47	4.62	8.52	11.85	9.63
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	8.11	8.46	12.59	15.56	17.78
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	19.69	23.08	25.56	31.11	27.04
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.00	2.22	0.37	0.00
Coralline Algae (CALG) - calg	0.00	0.00	0.00	0.00	0.00
Dead coral w/ turf algae (DCA) - dca	12.74	20.38	25.19	12.22	13.33
Boulder (B)	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	0.00	0.00	0.00	0.00	0.00
Rubble (R)	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	0.00	0.00	0.00	0.00
Unknown (UNK)	0.00	0.00	0.00	0.74	0.74

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	1.75	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Plume form (PLUME) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Rod form (ROD) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	0.00	0.00	0.00	2.11	0.00
Boring Sponge (BOSP) - spo	0.73	0.00	0.00	0.00	0.00
Encrusting Sponge (ENSP) - spo	2.55	0.00	0.96	0.00	0.64
Rope Sponge (ROPE) - spo	0.73	0.00	0.00	0.00	0.00
Tube Sponge (TUBE) - spo	0.00	0.52	0.00	2.46	0.00
Sponge (SPO) - spo	2.18	2.59	2.39	0.00	5.75
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	1.82	1.04	5.74	4.56	10.54
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	1.09	0.00	0.96	0.70	2.56
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	24.36	34.72	17.70	30.53	15.65
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	0.00	0.00	1.91	1.75	1.60
Coralline Algae (CALG) - calg	2.55	1.55	0.96	0.00	1.60
Dead coral w/ turf algae (DCA) - dca	20.00	21.76	5.26	6.67	2.24
Boulder (B)	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	0.73	0.00	0.96	0.00	0.00
Rubble (R)	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	0.00	1.55	0.00	0.00	0.00
Unknown (UNK)	0.36	0.00	2.39	0.70	0.00

Categorie
Gorgonian
Briareum
Erythropo
Encrusting
Soft Coral
Soft Coral
Soft Coral
Soft Coral
Clionia deli
Ball Spong
Barrel/Vas
Boring Spo
Encrusting
Rope Spor
Tube Spon
Sponge (S
Palythoa ca
Zoanthus s
Zoanthids (
Anemone (
Corallimorp
Macro Alga
Amphiroa s
Cladophora
Dictyota sp
Halimeda s
Microdictyo
Liagora spp
Lobophora
Sargassum
Schizothrix
Coralline Al
Dead coral
Boulder (B)
Sand/Sedir
Rubble (R)
Pavement (
Other Orga
Unknown (U

Percent Cover by Transect

Categories	T1	T2	T3	T4	T5
Gorgonians (GO) - go	0.00	0.00	0.00	0.00	0.00
Briareum asbestinum (BRIA) - go	0.00	0.00	0.00	0.00	0.00
Erythropodium caribaeorum (ERYTH) - go	0.00	0.00	0.00	0.00	0.00
Encrusting Gorgonian (ENGO) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Sea Fan (FAN) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Plume form (PLUME) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Rod form (ROD) - go	0.00	0.00	0.00	0.00	0.00
Soft Coral - Whip form (WHIP) - go	0.00	0.00	0.00	0.00	0.00
Clionia delitrix (CLIO) - spo	0.00	0.00	0.00	0.00	0.00
Ball Sponge (BALL) - spo	0.00	0.00	0.00	0.00	0.00
Barrel/Vase Sponge (BASP) - spo	0.00	0.00	0.00	0.00	0.00
Boring Sponge (BOSP) - spo	0.00	3.35	2.65	0.00	0.00
Encrusting Sponge (ENSP) - spo	1.74	1.91	0.53	1.36	1.75
Rope Sponge (ROPE) - spo	0.00	0.96	1.59	0.00	0.00
Tube Sponge (TUBE) - spo	0.00	0.00	0.00	0.00	0.00
Sponge (SPO) - spo	0.00	4.78	1.06	2.73	3.51
Palythoa caribaeorum (PALY) - zo	0.00	0.00	0.00	0.00	0.00
Zoanthus sociatus (ZOSO) - zo	0.00	0.00	0.00	0.00	0.00
Zoanthids (ZO) - zo	0.00	0.00	0.00	0.00	0.00
Anemone (ANEM) - other	0.00	0.00	0.00	0.00	0.00
Corallimorpharians (CMOR) -other	0.00	0.00	0.00	0.00	0.00
Macro Algae (MACA) - maca	4.35	1.91	5.82	6.36	3.95
Amphiroa spp. (AMPH) - maca[calc]	0.00	0.00	0.00	0.00	0.00
Cladophora spp. (CLAD) - maca	0.00	0.00	0.00	0.00	0.00
Dictyota spp. (DICT) - maca	0.00	1.44	2.12	0.91	0.00
Halimeda spp. (HALI) - maca[calc]	0.00	0.00	0.00	0.00	0.00
Microdictyon spp. (MICRO) - maca	0.00	0.00	0.00	0.00	0.00
Liagora spp. (LIAG) - maca	0.00	0.00	0.00	0.00	0.00
Lobophora variegata (LOBO) - maca	42.61	44.50	44.44	36.82	20.18
Sargassum spp. (SARG) - maca	0.00	0.00	0.00	0.00	0.00
Schizothrix spp. (SCHIZ) - maca	3.04	0.00	0.00	0.00	3.07
Coralline Algae (CALG) - calg	0.00	2.39	1.59	2.27	1.32
Dead coral w/ turf algae (DCA) - dca	18.70	10.05	13.76	22.73	24.56
Boulder (B)	0.00	0.00	0.00	0.00	0.00
Sand/Sediment (S)	0.00	0.00	0.00	3.18	32.46
Rubble (R)	0.00	0.00	0.00	0.00	0.00
Pavement (P)	0.00	0.00	0.00	0.00	0.00
Other Organisms (O)	1.30	0.00	0.00	0.00	0.00
Unknown (UNK)	0.43	0.48	0.00	2.73	1.32

Categories
Gorgonians (GO) - go
Briareum asbestinum (BRIA) -
Erythropodium caribaeorum (E
Encrusting Gorgonian (ENGO
Soft Coral - Sea Fan (FAN) - g
Soft Coral - Plume form (PLU
Soft Coral - Rod form (ROD) -
Soft Coral - Whip form (WHIP
Clionia delitrix (CLIO) - spo
Ball Sponge (BALL) - spo
Barrel/Vase Sponge (BASP) -
Boring Sponge (BOSP) - spo
Encrusting Sponge (ENSP) - sp
Rope Sponge (ROPE) - spo
Tube Sponge (TUBE) - spo
Sponge (SPO) - spo
Palythoa caribaeorum (PALY) -
Zoanthus sociatus (ZOSO) - zo
Zoanthids (ZO) - zo
Anemone (ANEM) - other
Corallimorpharians (CMOR) -ot
Macro Algae (MACA) - maca
Amphiroa spp. (AMPH) - maca[
Cladophora spp. (CLAD) - mac
Dictyota spp. (DICT) - maca
Halimeda spp. (HALI) - maca[c
Microdictyon spp. (MICRO) - m
Liagora spp. (LIAG) - maca
Lobophora variegata (LOBO) -
Sargassum spp. (SARG) - mac
Schizothrix spp. (SCHIZ) - mac
Coralline Algae (CALG) - calg
Dead coral w/ turf algae (DCA)
Boulder (B)
Sand/Sediment (S)
Rubble (R)
Pavement (P)
Other Organisms (O)
Unknown (UNK)

Appendix III:
Summary of Urchin, Bleaching, and Disease Data

	Mean % of Coral Colonies with Disease (±SD)	Mean % of Coral Colonies with Bleaching (±SD)	Mean Density of *Diadema* (/m^2) (± SD)
St. Croix:			
Buck Island	0	1.52 ± 3.71	0
Cane Bay	0.98 ± 2.4	3.57 ± 4.22	0
Great Pond	0	1.85 ± 4.54	5.67 ± 7.06
Jacks/Isaac Bay	0	8.33 ± 20.41	0
Long Reef/Eagle Ray	0	5.56 ± 8.61	0
Mutton Snapper	N.D.	N.D.	N.D.
Salt River	5.56 ± 8.61	3.18 ± 4.94	0.17 ± 0.41
Sprat Hole	0	9.78 ± 8.66	0
St. Thomas:			
Seahorse Cottage Shoal	6.48 ± 9.97	23.08 ± 11.71	0
South Capella	8.08 ± 12.75	20.24 ± 24.47	0
Grammanik Bank	10.35 ± 8.98	27.93 ± 14.23	0.1 ± 0.32
Red Hind Bank	2.5 ± 7.91	23.66 ± 20.94	0

Transect 1
5/5/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	35	25	0	0
MA	13	6	0	0
MA	17	7	0	0
MA	30	8	0	0
MA	12	5	0	0
MACX	35	16	0	0
MFRA	35	5	0	0
MA	25	10	0	0
MA	12	4	0	0

Transect 2
5/5/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MA	12	6	0	0
MA	16	8	0	0
PP	25	12	0	0
MA	13	5	0	0
MA	12	7	0	0
MA	17	6	0	0
MA	11	5	0	0
PA	18	6	0	0
MACX	22	10	0	0
MFRA	18	5	0	0

Transect 3
5/5/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MA	13	6	0	0
PA	75	60	0	0
MFRA	20	6	0	0
MFRA	10	10	0	0
MFRA	20	15	0	0
MFRA	25	10	0	0
MFRA	30	15	0	0
MA	24	6	0	0
MFRA	14	8	0	0
MFRA	22	10	0	0

Transect 4
5/5/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
AA	18	8	0	0
PA	16	3	0	0
PA	43	8	0	0
MA	30	8	0	0
MA	11	7	0	0
MC	60	25	0	0
MA	30	6	0	0
MA	22	4	0	0
MA	22	5	0	0
MA	12	6	0	0
MA	24	7	0	0
DSO	22	15	0	0
PA	20	6	0	0
MACX	22	8	0	0
MFRA	50	30	0	0

Transect 5
5/5/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	23	18	0	0
MFRA	27	13	0	0
DL	17	5	0	0
PP	35	7	0	0
PP	20	8	0	0
MA	11	7	0	0
MFRA	50	30	0	0

Transect 6
5/5/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 9.09

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	30	15	0	0
MACX	32	15	0	20 B
MFRA	20	18	0	0
PP	25	15	0	0
MA	18	8	0	0
MFRA	30	10	0	0
MFRA	22	12	0	0
MA	18	8	0	0
MFRA	38	14	0	0
PP	12	8	0	0
MFRA	15	5	0	0

Transect 1
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
AA	18	12	0	0
DS	23	21	0	0
AA	12	14	0	0
MA	76	35	0	0
MACX	15	18	0	0
PA	24	8	0	0
AA	15	6	0	0
PA	18	12	0	0
MA	12	6	0	0
PA	24	16	0	0
MA	22	22	0	0
MA	22	12	0	0
MA	30	14	0	0
MA	22	8	0	0

Transect 2
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 5.56

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
ML	12	4	0	0
DL	25	10	0	0
DL	62	26	0	0
MACX	55	20	0	0
MC	25	10	0	0
MA	22	15	0	0
MC	45	50	0	0
AA	22	12	0	0
PP	25	15	0	5 B
MACX	30	16	0	0
MC	35	20	0	0
MC	40	25	0	0
AA	23	5	0	0
MA	40	10	0	0
CN	20	5	0	0
MA	30	15	0	0
PA	25	15	0	0
MA	35	25	0	0

Transect 3
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
PP	50	25	0	0
PA	12	5	0	0
MFAV	25	10	0	0
MC	30	14	0	0
PA	20	5	0	0
SS	54	20	0	0
PA	15	20	0	0
AA	20	5	0	0
MA	45	25	0	0
MF	18	5	0	0
AA	16	7	0	0
MA	40	20	0	0
PA	25	15	0	0
CN	28	10	0	0
MA	25	15	0	0
MA	88	30	0	0
CN	26	20	0	0
MA	56	30	0	0
CN	15	10	0	0
CN	30	10	0	0

Transect 4
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 5.88
% of Coral Colonies with Bleaching: 5.88

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MACX	30	14	0	0
MFAV	48	32	0	0
PA	40	15	0	0
MFAV	42	22	0	0
MFAV	78	30	0	0
EF	25	15	0	0
MF	25	35	0	0
MA	52	80	0	0
MA	25	16	0	0
AA	25	15	0	0
SS	24	8	20 DS	0
MA	60	25	0	0
MA	48	12	0	0
MACX	22	16	0	15 B
MA	15	7	0	0
MA	12	6	0	0
MF	14	6	0	0

Transect 5
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 10

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MACX	35	18	0	0
MC	18	6	0	0
MC	14	6	0	0
MA	25	12	0	0
MA	16	12	0	0
MC	25	22	0	0
MA	22	12	0	0
SS	11	4	0	0
AA	18	6	0	0
MACX	36	32	0	10 B

Transect 6
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
AA	18	12	0	0
DS	23	21	0	0
AA	12	14	0	0
MA	76	35	0	0
MACX	15	18	0	0
PA	24	8	0	0
AA	15	6	0	0
PA	18	12	0	0
MA	12	6	0	0
PA	24	16	0	0
MA	22	22	0	0
MA	22	12	0	0
MA	30	14	0	0
MA	22	8	0	0

Transect 1
6/2/2004
No. of *Diadema*:
% of Coral Colonie
% of Coral Colonie
Coral Species
MILC
MILC
MILC
MILC
PA
MILC
PA
MILC
MILC

Transect 3
6/2/2004
No. of *Diadema*:
% of Coral Colonie
% of Coral Colonie
Coral Species
MILC
MILC
PA
MILC
MILC
PA
PA
PA
PA
MILC
MILC
PA

Transect 5
6/2/2004
No. of *Diadema*:
% of Coral Colonie
% of Coral Colonie
Coral Species
DS
DS
MILC
MILC
MILC
MILC
DS
DC
MILC
AP
MILC
MILC

Transect 1
5/28/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	15	5	0	0
SS	25	15	0	0
PP	15	10	0	0
MC	35	20	0	0
SS	12	4	0	0
PP	10	5	0	0
MICA	20	10	0	0

Transect 2
5/28/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
DS	15	5	0	0
MC	15	10	0	0
SS	20	10	0	0
PA	10	5	0	0

Transect 3
5/28/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	40	20	0	0
PA	15	5	0	0

Transect 4
5/28/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 50

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
AA	30	10	0	0
MACX	13	6	0	5 B

Transect 5
5/28/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
PA	10	5	0	0
MC	15	10	0	0
MC	10	5	0	0

Transect 6
5/28/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MACX	10	15	0	0
PA	10	5	0	0

Transect 1
6/3/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	12	3	0	0
MC	25	10	0	0
AA	11	5	0	0
MC	30	8	0	0
MC	20	8	0	0
DCY	25	15	0	0

Transect 2
6/3/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 16.67

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MA	18	7	0	0
PA	14	8	0	0
MME	18	10	0	0
SS	22	8	0	5 B
PA	25	5	0	0
DS	20	7	0	0

Transect 3
6/3/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 16.67

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	50	30	0	0
SS	30	10	0	10 B
MME	22	15	0	0
SS	35	20	0	0
PA	25	5	0	0
PA	15	7	0	0

Transect 4
6/3/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	25	20	0	0
MFRA	15	5	0	0
MFRA	22	5	0	0
MFRA	20	10	0	0
MME	12	5	0	0
MC	12	5	0	0

Transect 5
6/3/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	15	10	0	0
MC	12	5	0	0
MC	30	5	0	0
MC	18	10	0	0
MC	20	7	0	0
DCY	22	10	0	0

Transect 6
6/3/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	25	25	0	0
MC	25	15	0	0
AA	20	5	0	0
AA	11	2	0	0
MC	30	15	0	0

Transect 1
5/12/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 9.09

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MA	12	5	0	0
PA	12	4	0	0
PF	15	6	0	0
SS	25	7	0	10 B
PF	12	5	0	0
MA	15	12	0	0
DS	20	7	0	0
PA	12	8	0	0
SM	13	9	0	0
PA	10	5	0	0
MC	11	3	0	0

Transect 2
5/12/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 10

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
PA	13	5	0	0
SS	17	3	0	0
PA	15	11	0	0
SM	13	3	0	0
DS	20	7	0	0
SS	35	10	0	10 B
MC	18	6	0	0
PA	11	4	0	0
DS	13	5	0	0
SS	19	6	0	0

Transect 3
5/12/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
DCY	13	5	0	0
MD	12	7	0	0
SM	11	6	0	0
DL	14	8	0	0
MC	11	4	0	0
PA	11	7	0	0
PA	18	10	0	0

Transect 4
5/12/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
AA	11	5	0	0
MILA	8	5	0	0
PP	25	12	0	0
MC	12	5	0	0
MC	17	7	0	0
MACX	12	5	0	0
PA	12	4	0	0
PA	10	5	0	0
MC	30	8	0	0
PA	11	6	0	0

Transect 5
5/12/2004
No. of *Diadema*: 1
% of Coral Colonies with Disease: 16.67
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	13	8	0	0
SS	10	4	5 DS	0
MD	11	3	0	0
MA	15	6	0	0
PA	20	9	0	0
DS	12	5	0	0

Transect 6
5/12/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 16.67
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MILA	12	12	0	0
IS	11	3	0	0
PF	30	7	0	0
SS	25	8	5 DS	0
MILA	10	8	0	0
MFRA	45	20	0	0
MC	11	4	0	0
MILA	24	7	0	0
AA	20	18	0	0
MC	18	11	0	0
MILA	11	8	0	0
SS	48	20	5 DS	0

Transect 1
5/10/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
PA	15	5	0	0
MA	20	10	0	0
MFRA	15	7	0	0
PA	20	6	0	0
AA	20	5	0	0
MA	40	12	0	0
MFRA	35	15	0	0
MFRA	35	45	0	0
MFRA	40	25	0	0
MC	25	15	0	0
MA	50	40	0	0
MA	25	22	0	0
PA	20	8	0	0
MA	25	14	0	0
MC	25	13	0	0
SS	18	5	0	0
MA	17	11	0	0
SS	25	20	0	0
MA	20	11	0	0
MA	25	10	0	0
PA	15	5	0	0

Transect 2
5/10/2004
No. of *Diadema*: 0
% of Coral Colonies with Dise
% of Coral Colonies with Blea

Coral Species	Width
PA	1
PA	1
MA	2
PA	2
MA	3
MA	2
MC	2
MC	1
MFRA	4
MA	2
MFRA	2
MFRA	2
SS	4
DL	3
MA	2
PA	2
SS	2
MC	3
AA	1

Transect 3
5/10/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 13.33

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
PA	35	7	0	0
MFRA	35	12	0	0
MA	13	8	0	0
MA	25	5	0	30 B
MA	12	5	0	0
PA	20	5	0	0
PA	25	7	0	0
MACX	11	15	0	0
AA	25	15	0	0
AA	13	8	0	0
AA	20	5	0	0
PA	20	5	0	0
PA	25	10	0	10 B
MA	15	5	0	0
AA	11	5	0	0

Transect 4
5/10/2004
No. of *Diadema*: 0
% of Coral Colonies with Disea
% of Coral Colonies with Bleac

Coral Species	Width (
MA	12
MA	11
MA	11
MA	20
MA	10
MA	15
MFRA	25
MA	20
MA	35
MA	12
MA	10
MA	15
MA	17

Transect 5
5/10/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 20

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MA	100	20	0	0
MA	200	20	0	0
MA	12	7	0	0
MA	15	10	0	0
MA	90	10	0	0
MA	50	7	0	0
MA	70	26	0	0
MA	20	10	0	0
MFRA	30	15	0	5 B
PA	11	5	0	0
MME	20	7	0	0
MA	30	10	0	0
MFRA	40	10	0	30 B
SS	28	30	0	10 B
AA	12	5	0	0

Transect 6
5/10/2004
No. of *Diadema*: 0
% of Coral Colonies with Disea
% of Coral Colonies with Bleac

Coral Species	Width
MA	30
CN	50
MFRA	50
MA	30
MFRA	30
PA	25
PA	25
MA	20
PA	22
MA	11
MA	22
MA	40
MA	17
MA	20
MA	24
MA	25
MFRA	30

Transect 7
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 10.53
% of Coral Colonies with Bleaching: 10.53

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	22	10	0	75 PB
MFRA	15	15	0	0
MFRA	35	25	0	0
MFAV	130	35	0	0
MC	15	15	0	0
MFRA	30	15	5 YB	0
MFRA	25	20	0	0
MFRA	45	30	10 YB	0
MFRA	20	10	0	0
MFRA	15	10	0	15 PB
MFRA	10	10	0	0
MFRA	20	10	0	0
MFRA	20	20	0	0
MFRA	15	10	0	0
MC	15	10	0	0
MFRA	15	10	0	0
PA	15	20	0	0
MFRA	15	10	0	0
MFRA	30	20	0	0

Transect 8
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 21.43

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	40	10	0	PB
MFRA	25	10	0	0
AC	55	35	0	0
MFRA	35	15	0	0
MFRA	35	10	0	B
DL	15	10	0	0
MC	35	25	0	0
CN	35	10	0	0
MFRA	40	20	0	0
MFRA	60	35	0	0
MC	20	10	0	0
MFRA	45	45	0	0
SS	10	10	0	PB
MFAV	15	10	0	0

Transect 9
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 18.75

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MA	50	50	0	B
MFRA	25	10	0	0
MA	30	15	0	0
MFRA	60	25	0	0
MFRA	25	15	0	0
MFRA	15	15	0	0
MFRA	30	10	0	0
MM	30	15	0	0
MFRA	45	25	0	0
MFRA	45	40	0	0
MC	45	25	0	0
MFRA	40	20	0	0
SS	40	20	0	B
MFAV	40	25	0	0
MFAV	20	10	0	0
SS	50	35	0	B

Transect 10
5/25/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 22.22

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	35	15	0	0
MFRA	55	50	0	0
DL	40	45	0	PB
MFRA	30	10	0	B
CN	40	10	0	0
SS	50	25	0	PB
MFRA	30	20	0	0
MFRA	15	10	0	0
AC	30	25	0	0

Transect 1
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	50	35	0	0
MFRA	40	10	0	0
PA	20	15	0	0
MFRA	20	10	0	0
MFRA	40	15	0	0
MFRA	25	10	0	0
MFRA	25	10	0	0
MC	15	10	0	0
MFAV	35	10	0	0
PA	35	10	0	0
MFRA	65	20	0	0
MFRA	45	20	0	0
MA	35	20	0	0

Transect 2
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	65	30	0	0
MFRA	30	10	0	0
MFRA	25	10	0	0
CN	55	10	0	0
MFRA	40	10	0	0
MFRA	60	25	0	0
MFRA	45	25	0	0
MFRA	35	20	0	0
SS	35	20	0	B
MA	35	15	0	0
MFRA	45	10	0	0
MFRA	60	30	0	0
MFRA	25	15	0	0
MFRA	35	10	0	0
MFRA	75	30	0	0
MFRA	35	20	0	0
MC	20	35	0	0
MFRA	25	15	0	0
MME	25	15	0	0

Transect 3
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	25	10	0	0
MC	220	25	0	0
MFRA	25	10	0	0
PA	10	10	0	0
PA	40	35	0	0
MFRA	20	25	0	0
MFRA	10	10	0	0
MME	20	10	0	0
SS	20	10	0	0
MFRA	20	10	0	0

Transect 4
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 9.52

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	50	20	0	0
CN	150	50	0	0
MFRA	30	10	0	0
MFRA	35	10	0	B
MFRA	45	10	0	B
MFRA	15	10	0	0
MFRA	35	10	0	0
MFRA	25	10	0	0
MFRA	25	10	0	0
MFRA	25	10	0	0
MFRA	25	10	0	0
MFAV	35	5	0	0
MFRA	50	10	0	0
MFRA	55	25	0	0
MC	30	30	0	0
MFAV	55	35	0	0
MFRA	25	25	0	0
MFRA	25	25	0	0
MFRA	45	30	0	0
MFAV	55	25	0	0
MFRA	65	45	0	0

Transect 5
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	45	30	0	0
MFRA	45	20	0	0
MFRA	55	30	0	0
MFRA	35	25	0	0
PA	10	5	0	0
MFRA	35	35	0	0
MFRA	35	10	0	0
MFAV	90	42	0	0
MA	25	25	0	0
MFRA	65	40	0	0
MFRA	25	20	0	0

Transect 6
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 10

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFAV	55	35	0	PB
AC	25	15	0	0
MFRA	35	10	0	0
MFRA	25	10	0	0
MFRA	35	20	0	0
MFRA	50	25	0	0
MME	30	25	0	0
MFRA	35	20	0	0
MC	35	25	0	0
MFAV	45	15	0	0

Transect 7
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 28.57
% of Coral Colonies with Bleaching: 71.43

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	20	30	0	10 PB
MFRA	30	20	0	10 PB
MFRA	65	55	0	0
SS	25	20	10 DS	80 B
MFR	20	30	0	75 PB
SS	25	10	20 DS	100 B
MFRA	45	45	0	0

Transect 8
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 7.14
% of Coral Colonies with Bleaching: 42.86

Coral Species	Width (cm)	Height (cm)	% D
MFRA	30	20	
MFRA	40	30	
MFRA	20	20	
AA	10	5	
AA	20	20	
MFRA	45	45	
MFRA	10	10	
MC	30	40	2
MFRA	40	40	
MFRA	40	50	
PA	15	10	
MFRA	30	20	
MFRA	30	20	
MFRA	20	20	

Transect 9
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 11.76
% of Coral Colonies with Bleaching: 35.29

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	20	10	0	0
MFRA	100	50	10 YB	30 PB
PA	15	10	0	0
MFRA	15	10	0	0
AA	30	10	0	5 B
MFRA	25	25	0	0
MC	25	25	0	0
MACX	20	10	0	10 PB
MFRA	30	25	0	0
MFRA	45	45	0	0
MFRA	20	35	0	10 PB
MFRA	35	20	10 BB	0
MFRA	50	30	0	10 PB
MFRA	15	10	0	0
PD	20	20	0	0
SS	25	15	0	80 B
MFRA	30	10	0	0

Transect 10
6/8/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 33.33
% of Coral Colonies with Bleaching: 33.33

Coral Species	Width (cm)	Height (cm)	% D
SS	25	10	
MFRA	20	20	
MC	10	5	
MFRA	30	15	
PA	20	15	
MFRA	20	20	

Transect 7
6/16/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 11.11
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFAV	30	5	0	0
MFRA	50	5	0	0
MFRA	55	10	0	0
MFRA	45	10	0	0
MACX	50	5	0	0
PA	15	10	0	0
MFRA	60	10	YB	0
MFRA	60	10	0	0
MFRA	90	15	0	0

Transect 8
6/16/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 27.27

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	40	10	0	0
MACX	25	5	0	PB 20
MFRA	50	10	0	0
AA	20	3	0	0
PA	20	15	0	0
PA	15	5	0	0
MFRA	35	10	0	0
MFRA	60	15	0	PB 20
MFRA	25	5	0	0
SS	20	10	0	PB 50
MFRA	50	5	0	0

Transect 9
6/16/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 10
% of Coral Colonies with Bleaching: 50

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	15	5	0	PB 10
MFRA	30	5	0	PB 10
MFRA	50	5	YB	0
MFRA	35	10	0	PB 40
AA	30	5	0	0
MFRA	50	10	0	PB 20
MFRA	100	10	0	PB 10
AA	20	10	0	0
AA	15	5	0	0
MFRA	15	5	0	0

Transect 10
6/16/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 14.29
% of Coral Colonies with Bleaching: 42.86

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MC	20	10	0	PB 40
PA	30	10	0	0
MFRA	50	15	YB	0
MFRA	55	20	0	0
AA	25	10	0	PB 80
AL	70	15	0	PB 40
MFRA	55	15	0	0

Transect 1
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	60	5	0	0
MA	15	20	0	0
MC	65	35	0	0
MFRA	25	10	0	0
MFRA	65	30	0	0
MC	35	15	0	0
MFRA	55	20	0	0
MFRA	45	20	0	0
PA	25	5	0	0
MFRA	75	5	0	0
MFRA	70	5	0	0
MFA	30	5	0	0
MFRA	40	5	0	0
MFRA	30	5	0	0

Transect 2
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	10	5	0	0
MFRA	75	5	0	0
MFRA	50	20	0	0
MFRA	50	25	0	0
MFRA	30	5	0	0
MFRA	50	10	0	0
PA	15	10	0	0
MFRA	30	10	0	0
MFAV	40	5	0	0

Transect 3
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 18.18

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
AGSP	40	30	0	0
AGSP	40	10	0	0
MFRA	50	10	0	0
MFRA	35	10	0	B
MFRA	25	5	0	B
MFRA	35	5	0	0
MFRA	35	10	0	0
MFRA	40	5	0	0
MFRA	40	2	0	0
MFRA	30	10	0	0
PA	10	5	0	0

Transect 4
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 55.56

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	45	5	0	PB 25
MFAV	5	5	0	PB 15
MFAV	60	15	0	0
MFAV	60	20	0	PB 10
MFRA	60	10	0	0
MFRA	25	10	0	PB 10
AA	25	5	0	0
PA	15	5	0	0
MFRA	60	5	0	PB 80

Transect 5
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 42.86

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	25	15	0	0
MFRA	30	10	0	0
MFRA	45	20	0	B 5
SS	10	5	0	0
MFRA	35	10	0	PB 80
MFRA	35	10	0	0
MFRA	55	10	0	PB 5

Transect 6
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 33.33

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	55	10	0	0
MFRA	30	5	0	0
AA	25	5	0	PB 25
MFRA	30	10	0	PB 50
MFRA	25	5	0	0
MFRA	50	10	0	0

Transect 7
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 25
% of Coral Colonies with Bleaching: 0

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	25	5	0	0
DS	30	10	0	0
MFRA	50	25	0	0
MFRA	45	10	YB	0

Transect 8
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 50

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	30	10	0	PB 25
AA	15	5	0	0
MFRA	45	20	0	0
MFRA	70	20	0	0
MFRA	15	5	0	PB 25
MFRA	45	15	0	PB 50

Transect 9
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 20

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
MFRA	60	2	0	0
MFRA	75	50	0	0
DS	65	45	0	B
MFRA	30	2	0	0
MFRA	40	2	0	0

Transect 10
6/18/2004
No. of *Diadema*: 0
% of Coral Colonies with Disease: 0
% of Coral Colonies with Bleaching: 16.67

Coral Species	Width (cm)	Height (cm)	% Diseased	% Bleached
DL	60	20	0	0
MC	40	2	0	0
MFRA	25	10	0	B
MFRA	40	20	0	0
MFRA	25	2	0	0
MFRA	80	20	0	0
MFRA	50	20	0	B
MFAV	25	2	0	0
MC	25	20	0	0
MFRA	15	10	0	0
MFRA	75	10	0	0
AGSP	25	2	0	0

Appendix IV. Abundance of fish observed in belt transects, St. Croix, 2004

Family	Species	Common Name	Total No. of Fish Observed								
			SR	CB	IB	ER	SH	BI	GP	MS	Total
Acanthuridae											
	Acanthurus bahianus	ocean surgeonfish	126	72	48	26	30	104	146	31	583
	Acanthurus chirurgus	doctorfish	-	1	4	-	1	1	3	1	11
	Acanthurus coeruleus	blue tang	68	55	27	30	37	58	82	7	364
Aulostomidae											
	Aulostomus maculatus	trumpetfish	3	5	-	15	2	1	1	3	30
Balistidae											
	Balistes vetula	queen triggerfish	-	-	-	-	-	2	-	-	2
	Melichthys niger	black durgon	47	124	-	-	-	6	5	30	212
Bothidae											
	Bothus lunatus	peacock flounder	-	-	-	-	1	-	-	-	1
Carangidae											
	Caranx bartholomaei	yellow jack	2	-	-	4	-	-	-	-	6
	Caranx fusus	blue runner	-	-	-	-	-	9	-	-	9
	Caranx ruber	bar jack	26	22	5	15	21	16	7	1	113
Chaetodontidae											
	Chaetodon aculeatus	longsnout butterflyfish	8	2	-	3	-	-	-	1	14
	Chaetodon capistratus	foureye butterflyfish	33	19	21	43	12	-	4	23	155
	Chaetodon ocellatus	spotfin butterflyfish	-	-	2	-	-	-	-	-	2
	Chaetodon sedentarius	reef butterflyfish	-	-	-	1	-	-	-	5	6
	Chaetodon striatus	banded butterflyfish	5	7	6	5	-	9	-	9	41
Cirrhitidae											
	Amblycirrhitus pinos	redspotted hawkfish	-	-	-	1	-	-	-	1	2
Echeneidae											
	Echeneis naucrates	sharksucker	-	-	-	-	1	-	-	-	1

Appendix IV continued. Abundance of fish observed in belt transects, St. Croix, 2004

Family	Species	Common Name	Total No. of Fish Observed SR	CB	IB	ER	SH	BI	GP	MS	Total
Gerreidae											
	Gerres cinereus	yellowfin majorra	-	3	-	-	11	-	-	-	14
Grammatidae											
	Gramma loreto	fairy basslet	58	139	11	14	6	3	-	10	241
Haemulidae											
	Anisotremus virginicus	porkfish	1	-	-	-	-	-	-	-	1
	Haemulon aurolineatum	tomtate	-	-	-	-	5	3	-	-	8
	Haemulon carbonarium	caesar grunt	4	-	-	-	-	1	27	2	34
	Haemulon chrysargyreum	smallmouth grunt	-	17	1	1	7	2	8	-	36
	Haemulon flavolineatum	french grunt	44	43	21	17	30	22	50	24	251
	Haemulon plumieri	white grunt	3	1	-	1	6	2	1	1	15
	Haemulon sciurus	bluestriped grunt	1	1	4	1	1	-	-	-	8
Holocentridae											
	Holocentrus adcensionis	squirrelfish	-	-	-	4	-	2	4	-	10
	Holocentrus rufus	longspine squirrelfish	20	1	8	21	10	10	2	3	75
	Myripristis jacobus	blackbar soldierfish	-	6	35	23	-	6	7	47	124
	Neoniphon marianus	longjaw squirrelfish	1	-	-	5	-	-	-	-	6
	Sargocentron vexillarium	dusky squirrelfish	-	-	-	-	-	-	-	2	2
Inermiidae											
	Inermia vittata	boga	-	250	-	125	8	-	-	-	383
Labridae											
	Bodianus rufus	spanish hogfish	12	11	4	15	1	7	2	10	62
	Clepticus parrae	creole wrasse	540	941	72	1698	435	60	-	413	4159
	Halichoeres bivittatus	slippery dick	-	-	-	-	-	11	131	-	142
	Halichoeres garnoti	yellowhead wrasse	41	34	77	79	85	70	63	41	490
	Halichoeres maculipinna	clown wrasse	2	11	20	-	4	19	57	1	114
	Halichoeres pictus	rainbow wrasse	11	4	10	-	-	-	-	2	27
	Halichoeres poeyi	blackear wrasse	-	-	-	-	-	-	3	-	3

Appendix IV continued. Abundance of fish observed in belt transects, St. Croix, 2004

Family	Species	Common Name	Total No. of Fish Observed								
			SR	CB	IB	ER	SH	BI	GP	MS	Total
Labridae											
	Halichoeres radiatus	pudding wife	-	-	1	-	1	10	19	-	31
	Thalassoma bifasciatum	bluehead wrasse	1034	613	774	266	93	964	660	235	4639
	Xyrichtys splendens	green razorfish	-	-	-	-	-	-	1	-	1
Lutjanidae											
	Lutjanus apodus	schoolmaster	13	-	-	1	4	4	-	2	24
	Lutjanus mahogoni	mahogany snapper	-	3	1	7	3	2	-	9	25
	Ocyurus chrysurus	yellowtail snapper	3	-	-	-	1	-	-	-	4
Malacanthidae											
	Malacanthus plumieri	sand tilefish	-	2	-	-	-	-	7	-	9
Monocanthidae											
	Aluterus scripta	scrawled filefish	-	3	-	-	1	-	-	-	4
	Cantherhines macrocerus	whitespotted filefish	-	-	-	2	-	-	-	-	2
	Cantherhines pullus	orangespotted filefish	3	1	5	1	-	1	1	2	14
Mullidae											
	Mulloidichthys martinicus	yellow goatfish	28	43	-	49	2	-	1	4	127
	Psuedupeneus maculatus	spotted goatfish	4	-	8	-	8	2	7	1	30
Muraenidae											
	Gymnothorax moringa	spotted moray	-	-	1	-	-	1	-	-	2
Ophichthyidae											
	Myrichthys breviceps	sharptail eel	-	-	-	3	-	-	-	-	3
	Myrichthys ocellatus	goldspotted eel	-	-	-	1	-	-	-	-	1
Ostraciidae											
	Acanthostracion ploygonia	honeycomb cowfish	1	2	-	4	1	-	-	1	9
	Lactophrys bicaudalis	spotted trunkfish	1	-	2	3	-	-	1	-	7
	Lactophrys triqueter	smooth trunkfish	-	1	1	2	1	3	1	1	10

Appendix IV continued. Abundance of fish observed in belt transects, St. Croix, 2004

Family	Species	Common Name	Total No. of Fish Observed								
			SR	CB	IB	ER	SH	BI	GP	MS	Total
Pomacanthidae											
	Holacanthus ciliaris	queen angelfish	-	-	-	-	-	3	-	2	5
	Holacanthus tricolor	rock beauty	8	4	3	6	1	6	-	1	29
	Pomacanthus arcuatus	gray angelfish	1	-	-	-	-	-	-	-	1
Pomacentridae											
	Abudefduf saxatilis	sergeant major	99	84	-	3	-	1	30	-	217
	Chromis cyanea	blue chromis	143	622	143	600	272	455	8	293	2536
	Chromis multilineata	brown chromis	95	407	78	151	-	69	259	58	1117
	Microspathodon chrysurus	yellowtail damselfish	13	24	7	4	11	11	77	3	150
	Stegastes diencaeus	longfin damselfish	-	-	4	-	-	-	8	-	12
	Stegastes fuscus	dusky damselfish	52	70	64	33	45	6	101	-	371
	Stegastes leucostictus	beaugregory	4	1	33	-	6	19	7	1	71
	Stegastes partitus	bicolor damselfish	393	310	220	212	59	293	85	307	1879
	Stegastes planifrons	threespot damselfish	-	60	1	62	79	-	1	8	211
	Stegastes variabilis	cocoa damselfish	-	-	-	4	2	-	7	4	17
Priacanthidae											
	Heteropriacanthus cruentatus	glasseye snapper	-	-	1	1	-	-	-	-	2
	Priacanthus arenatus	bigeye	-	-	-	1	-	-	-	-	1
Scaridae											
	Scarus croicensis	striped parrotfish	4	4	57	35	108	3	96	30	337
	Scarus taeniopterus	princess parrotfish	47	61	18	56	55	22	8	60	327
	Scarus vetula	queen parrotfish	-	6	-	5	13	-	20	-	44
	Sparisoma atomarium	greenblotch parrotfish	-	-	1	-	31	2	-	-	34
	Sparisoma aurofrenatum	redband parrotfish	73	50	65	42	73	79	19	33	434
	Sparisoma chrysopterum	redtail parrotfish	1	2	1	-	-	-	-	-	4
	Sparisoma radians	bucktooth parrotfish	-	-	-	-	-	-	4	-	4
	Sparisoma rubripinne	yellowtail parrotfish	-	-	1	-	-	-	46	-	47
	Sparisoma viride	stoplight parrotfish	10	35	4	45	25	20	57	7	203
Sciaenidae											
	Equetus punctatus	spotted drum	-	-	-	-	-	1	-	-	1
	Odontoscion dentex	reef croaker	-	-	-	1	-	-	-	-	1

Appendix IV continued. Abundance of fish observed in belt transects, St. Croix, 2004

Family	Species	Common Name	Total No. of Fish Observed								
			SR	CB	IB	ER	SH	BI	GP	MS	Total
Scombridae											
	Scomberomorus regalis	cero mackerel	2	-	-	-	1	-	2	-	5
Scorpaenidae											
	Scorpaena plumieri	spotted scorpionfish	-	-	-	1	-	-	-	-	1
Serranidae											
	Cephalopholis cruentatus	graysby	2	16	17	32	8	8	-	8	91
	Cephalopholis fulvus	coney	39	28	8	13	4	21	9	-	122
	Epinephelus adcensionis	rock hind	1	1	-	-	-	-	1	-	3
	Epinephelus guttatus	red hind	-	-	-	-	1	-	1	-	2
	Hypoplectrus chlorurus	yellowtail hamlet	-	1	1	-	10	-	-	1	13
	Hypoplectrus guttavarius	shy hamlet	2	-	-	-	-	-	-	-	2
	Hypoplectrus nigricans	black hamlet	-	-	2	3	9	-	-	-	14
	Hypoplectrus puella	barred hamlet	3	-	3	4	7	-	-	3	20
	Hypoplectrus sp.	tan hamlet	-	-	-	-	-	-	-	1	1
	Hypoplectrus unicolor	butter hamlet	1	-	1	3	2	-	-	-	7
	Liopropoma rubre	peppermint basslet	-	-	-	-	-	-	-	1	1
	Paranthias furcifer	creolefish	-	2	-	-	-	-	-	1	3
	Serranus tabacarius	tobacco fish	-	1	1	1	-	-	-	-	3
	Serranus tigrinius	harlequin bass	12	5	26	5	1	-	-	-	49
Sphyraenidae											
	Sphyraena barracuda	great barracuda	-	2	-	-	2	-	-	1	5
Synodontidae											
	Synodus intermedius	sand diver	3	-	-	1	-	-	9	-	13
Tetraodontidae											
	Canthigaster rostrata	sharpnose puffer	7	19	11	30	8	5	2	5	87
	Sphoeroides spengleri	bandtail puffer	-	-	-	-	1	-	-	-	1
n = 103 species		Total =	3,158	4,252	1,940	3,840	1,663	2,435	2,158	2,158	21,197

Appendix V. Size distribution of all fish observed in belt transects, St. Croix, 2004.

Species	Common Name	Total Length (cm) 0-5	5-10	10-20	20-30	30-40	> 40	Total No.
Acanthuridae								
Acanthurus chirurgus	doctorfish	0	6	4	1	0	0	11
Acanthurus bahianus	ocean surgeonfish	161	99	317	6	0	0	583
Acanthurus coeruleus	blue tang	74	73	210	7	0	0	364
Aulostomidae								
Aulostomus maculatus	trumpetfish	0	1	8	5	6	10	30
Balistidae								
Balistes vetula	queen triggerfish	0	0	2	0	0	0	2
Melichthys niger	black durgon	3	25	70	108	6	0	212
Bothidae								
Bothus lunatus	peacock flounder	0	0	0	0	1	0	1
Carangidae								
Caranx bartholomaei	yellow jack	0	0	0	0	0	6	6
Caranx fusus	blue runner	0	0	0	9	0	0	9
Caranx ruber	bar jack	0	18	57	31	1	6	113
Chaetodontidae								
Chaetodon aculeatus	longsnout butterflyfish	1	13	0	0	0	0	14
Chaetodon capistratus	foureye butterflyfish	6	127	22	0	0	0	155
Chaetodon ocellatus	spotfin butterflyfish	0	0	2	0	0	0	2
Chaetodon sedentarius	reef butterflyfish	0	6	0	0	0	0	6
Chaetodon striatus	banded butterflyfish	3	11	27	0	0	0	41
Cirrhitidae								
Amblycirrhitus pinos	redspotted hawkfish	0	2	0	0	0	0	2
Echeneidae								
Echeneis naucrates	sharksucker	0	0	0	0	0	1	1
Gerreidae								
Gerres cinereus	yellowfin majorra	0	0	13	1	0	0	14
Grammatidae								
Gramma loreto	fairy basslet	226	15	0	0	0	0	241
Haemulidae								
Anisotremus virginicus	porkfish	0	0	0	1	0	0	1
Haemulon aurolineatum	tomtate	0	1	7	0	0	0	8
Haemulon carbonarium	caesar grunt	0	16	16	2	0	0	34
Haemulon chrysargyreum	smallmouth grunt	0	1	34	1	0	0	36
Haemulon flavolineatum	french grunt	0	78	169	4	0	0	251
Haemulon plumieri	white grunt	0	5	4	6	0	0	15
Haemulon sciurus	bluestriped grunt	0	0	0	6	1	1	8

Appendix V (continued). Size distribution of all fish observed in belt transects, St. Croix, 2004.

Species	Common Name	Total Length (cm) 0-5	5-10	10-20	20-30	30-40	> 40	Total No.
Holocentridae								
Holocentrus adcensionis	squirrelfish	0	4	4	2	0	0	10
Holocentrus rufus	longspine squirrelfish	0	9	59	7	0	0	75
Myripristis jacobus	blackbar soldierfish	0	36	88	0	0	0	124
Neoniphon marianus	longjaw squirrelfish	0	0	6	0	0	0	6
Sargocentron vexillarium	dusky squirrelfish	0	0	2	0	0	0	2
Inermiidae								
Inermia vittata	boga	250	133	0	0	0	0	383
Labridae								
Bodianus rufus	spanish hogfish	26	16	16	2	2	0	62
Clepticus parrae	creole wrasse	1763	1439	957	0	0	0	4159
Halichoeres bivittatus	slippery dick	70	66	6	0	0	0	142
Halichoeres garnoti	yellowhead wrasse	239	175	76	0	0	0	490
Halichoeres maculipinna	clown wrasse	44	61	9	0	0	0	114
Halichoeres pictus	rainbow wrasse	14	10	3	0	0	0	27
Halichoeres poeyi	blackear wrasse	0	1	2	0	0	0	3
Halichoeres radiatus	pudding wife	7	22	2	0	0	0	31
Thalassoma bifasciatum	bluehead wrasse	3710	891	38	0	0	0	4639
Xyrichtys splendens	green razorfish	0	1	0	0	0	0	1
Lutjanidae								
Lutjanus apodus	schoolmaster	0	0	19	2	2	1	24
Lutjanus mahogoni	mahogany snapper	0	6	17	2	0	0	25
Ocyurus chrysurus	yellowtail snapper	0	0	1	2	1	0	4
Malacanthidae								
Malacanthus plumieri	sand tilefish	0	1	5	0	2	1	9
Monocanthidae								
Aluterus scripta	scrawled filefish	1	0	1	1	0	1	4
Cantherhines macrocerus	whitespotted filefish	0	0	0	2	0	0	2
Cantherhines pullus	orangespotted filefish	2	4	7	1	0	0	14
Mullidae								
Mulloidichthys martinicus	yellow goatfish	0	33	94	0	0	0	127
Psuedupeneus maculatus	spotted goatfish	0	8	17	5	0	0	30
Muraenidae								
Gymnothorax moringa	spotted moray	0	0	0	0	1	1	2
Ophichthyidae								
Myrichthys breviceps	sharptail eel	2	0	0	0	0	1	3
Myrichthys ocellatus	goldspotted eel	0	0	0	0	0	1	1
Ostraciidae								
Acanthostracion polygon.	honeycomb cowfish	0	1	3	3	2	0	9
Lactophrys bicaudalis	spotted trunkfish	2	1	2	2	0	0	7

Appendix V (continued). Size distribution of all fish observed in belt transects, St. Croix, 2004.

Species	Common Name	Total Length (cm) 0-5	5-10	10-20	20-30	30-40	> 40	Total No.
Ostraciidae								
Lactophrys triqueter	smooth trunkfish	1	5	4	0	0	0	10
Pomacanthidae								
Holacanthus ciliaris	queen angelfish	1	0	2	2	0	0	5
Holacanthus tricolor	rock beauty	10	6	12	1	0	0	29
Pomacanthus arcuatus	gray angelfish	0	0	0	0	1	0	1
Pomacentridae								
Abudefduf saxatilis	sergeant major	1	83	133	0	0	0	217
Chromis cyanea	blue chromis	1637	899	0	0	0	0	2536
Chromis multilineata	brown chromis	370	732	15	0	0	0	1117
Microspathodon chry.	yellowtail damselfish	25	49	76	0	0	0	150
Stegastes diencaeus	longfin damselfish	8	4	0	0	0	0	12
Stegastes fuscus	dusky damselfish	108	259	4	0	0	0	371
Stegastes leucostictus	beaugregory	12	58	1	0	0	0	71
Stegastes partitus	bicolor damselfish	1441	438	0	0	0	0	1879
Stegastes planifrons	threespot damselfish	45	166	0	0	0	0	211
Stegastes variabilis	cocoa damselfish	6	8	3	0	0	0	17
Priacanthidae								
Heteropriacanth. Cruent.	glasseye snapper	0	0	0	1	0	1	2
Priacanthus arenatus	bigeye	0	0	1	0	0	0	1
Scaridae								
Scarus croicensis	striped parrotfish	96	175	57	8	1	0	337
Scarus taeniopterus	princess parrotfish	64	97	124	38	4	0	327
Scarus vetula	queen parrotfish	0	6	12	19	7	0	44
Sparisoma atomarium	greenblotch parrotfish	9	21	4	0	0	0	34
Sparisoma aurofrenatum	redband parrotfish	92	114	184	39	5	0	434
Sparisoma chrysopterum	redtail parrotfish	0	0	1	1	1	1	4
Sparisoma radians	bucktooth parrotfish	3	1	0	0	0	0	4
Sparisoma rubripinne	yellowtail parrotfish	13	16	13	4	0	1	47
Sparisoma viride	stoplight parrotfish	62	47	33	42	16	3	203
Sciaenidae								
Equetus punctatus	spotted drum	0	0	0	1	0	0	1
Odontoscion dentex	reef croaker	0	0	0	1	0	0	1
Scombridae								
Scomberomorus regalis	cero mackerel	0	0	0	0	0	5	5
Scorpaenidae								
Scorpaena plumieri	spotted scorpionfish	0	0	0	1	0	0	1
Serranidae								
Cephalopholis cruentatus	graysby	1	20	58	11	1	0	91
Cephalopholis fulvus	coney	2	34	72	14	0	0	122

Appendix V (continued). Size distribution of all fish observed in belt transects, St. Croix, 2004.

Species	Common Name	Total Length (cm) 0-5	5-10	10-20	20-30	30-40	> 40	Total No.
Serranidae								
Epinephelus adcensionis	rock hind	0	0	2	1	0	0	3
Epinephelus guttatus	red hind	0	0	0	0	2	0	2
Hypoplectrus chlorurus	yellowtail hamlet	0	12	1	0	0	0	13
Hypoplectrus guttavarius	shy hamlet	0	0	2	0	0	0	2
Hypoplectrus nigricans	black hamlet	0	3	11	0	0	0	14
Hypoplectrus puella	barred hamlet	2	9	9	0	0	0	20
Hypoplectrus sp.	tan hamlet	0	1	0	0	0	0	1
Hypoplectrus unicolor	butter hamlet	0	5	2	0	0	0	7
Liopropoma rubre	peppermint basslet	0	1	0	0	0	0	1
Paranthias furcifer	creolefish	0	0	3	0	0	0	3
Serranus tabacarius	tobacco fish	0	3	0	0	0	0	3
Serranus tigrinius	harlequin bass	3	37	9	0	0	0	49
Sphyraenidae								
Sphyraena barracuda	great barracuda	0	0	0	0	0	5	5
Synodontidae								
Synodus intermedius	sand diver	0	2	7	2	2	0	13
Tetraodontidae								
Canthigaster rostrata	sharpnose puffer	38	48	1	0	0	0	87
Sphoeroides spengleri	bandtail puffer	0	1	0	0	0	0	1
	Total =	10,654	6,775	3,252	405	65	46	21,197
	% =	50.3%	32.0%	15.3%	1.9%	0.3%	0.2%	100.0%

Appendix VIA. Salt River belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Thalassoma bifasciatum	bluehead wrasse	42	124	46	13	36	42	89	52	128	88	100%	660	66.0	39.0
Acanthurus bahianus	ocean surgeonfish	24	6	31	14	26	10	7	13	6	9	100%	146	14.6	9.1
Halichoeres bivittatus	slippery dick	29	16	11	8	26	4	2	10	3	22	100%	131	13.1	9.7
Acanthurus coeruleus	blue tang	11	7	3	3	8	14	10	10	10	6	100%	82	8.2	3.5
Microspathodon chrysurus	yellowtail damselfish	4	4	1	5	4	11	15	6	17	10	100%	77	7.7	5.3
Sparisoma viride	stoplight parrotfish	1	5	6	4	1	5	8	12	9	6	100%	57	5.7	3.4
Stegastes fuscus	dusky damselfish	12	5	0	6	8	9	23	10	12	16	90%	101	10.1	6.3
Stegastes partitus	bicolor damselfish	26	6	7	2	0	13	14	6	6	5	90%	85	8.5	7.5
Chromis multilineata	brown chromis	23	0	2	12	0	8	95	35	70	14	80%	259	25.9	32.3
Halichoeres garnoti	yellowhead wrasse	33	2	2	0	9	11	2	2	0	2	80%	63	6.3	10.1
Sparisoma rubripinne	yellowtail parrotfish	8	0	1	4	13	11	0	1	2	6	80%	46	4.6	4.7
Sparisoma aurofrenatum	redband parrotfish	1	2	5	1	0	0	1	2	4	3	80%	19	1.9	1.7
Scarus croicensis	striped parrotfish	0	12	2	4	0	0	25	0	34	19	60%	96	9.6	12.4
Scarus vetula	queen parrotfish	4	0	0	1	0	3	0	4	4	4	60%	20	2.0	1.9
Halichoeres radiatus	pudding wife	0	3	3	0	0	0	3	7	2	1	60%	19	1.9	2.2
Halichoeres maculipinna	clown wrasse	0	21	13	5	0	0	0	0	10	8	50%	57	5.7	7.3
Haemulon flavolineatum	french grunt	1	0	0	22	1	6	0	20	0	0	50%	50	5.0	8.6
Stegastes diencaeus	longfin damselfish	0	4	1	0	1	0	0	0	1	1	50%	8	0.8	1.2
Abudefduf saxatilis	sergeant major	0	0	0	4	0	0	12	5	9	0	40%	30	3.0	4.4
Psuedupeneus maculatus	spotted goatfish	0	0	1	1	0	0	0	3	0	2	40%	7	0.7	1.1
Stegastes leucostictus	beaugregory	0	0	4	1	0	0	0	1	0	1	40%	7	0.7	1.3
Cephalopholis fulvus	coney	5	0	0	2	0	0	0	2	0	0	30%	9	0.9	1.7
Chromis cyanea	blue chromis	4	3	1	0	0	0	0	0	0	0	30%	8	0.8	1.5
Caranx ruber	bar jack	0	0	0	0	0	1	0	1	5	0	30%	7	0.7	1.6
Malacanthus plumieri	sand tilefish	0	0	3	2	0	0	0	0	0	2	30%	7	0.7	1.2
Stegastes variabilis	cocoa damselfish	0	0	0	0	4	2	1	0	0	0	30%	7	0.7	1.3
Melichthys niger	black durgon	0	0	0	0	1	0	1	0	3	0	30%	5	0.5	1.0
Chaetodon capistratus	foureye butterflyfish	0	0	0	0	2	0	1	1	0	0	30%	4	0.4	0.7
Holocentrus adcensionis	squirrelfish	2	0	1	0	0	0	0	0	1	0	30%	4	0.4	0.7
Haemulon carbonarium	caesar grunt	15	0	0	0	0	0	0	12	0	0	20%	27	2.7	5.7
Synodus intermedius	sand diver	3	0	0	0	6	0	0	0	0	0	20%	9	0.9	2.0
Haemulon chrysargyreum	smallmouth grunt	0	0	0	0	0	0	0	0	6	2	20%	8	0.8	1.9
Scarus taeniopterus	princess parrotfish	0	0	0	0	7	0	0	1	0	0	20%	8	0.8	2.2
Myripristis jacobus	blackbar soldierfish	6	0	0	0	0	0	1	0	0	0	20%	7	0.7	1.9

Appendix VIA (continued). Salt River belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Acanthurus chirurgus	doctorfish	0	1	2	0	0	0	0	0	0	0	20%	3	0.3	0.7
Bodianus rufus	spanish hogfish	1	0	0	0	0	0	0	1	0	0	20%	2	0.2	0.4
Sparisoma radians	bucktooth parrotfish	0	0	4	0	0	0	0	0	0	0	10%	4	0.4	1.3
Halichoeres poeyi	blackear wrasse	0	0	3	0	0	0	0	0	0	0	10%	3	0.3	0.9
Canthigaster rostrata	sharpnose puffer	0	2	0	0	0	0	0	0	0	0	10%	2	0.2	0.6
Holocentrus rufus	longspine squirrelfish	0	0	0	0	0	2	0	0	0	0	10%	2	0.2	0.6
Scomberomorus regalis	cero mackerel	0	0	0	0	0	0	0	2	0	0	10%	2	0.2	0.6
Aulostomus maculatus	trumpetfish	0	0	0	0	0	0	0	1	0	0	10%	1	0.1	0.3
Cantherhines pullus	orangespotted filefish	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Epinephelus guttatus	red hind	0	0	0	0	0	0	0	1	0	0	10%	1	0.1	0.3
Haemulon plumieri	white grunt	1	0	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Lactophrys bicaudalis	spotted trunkfish	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Lactophrys triqueter	smooth trunkfish	0	0	0	0	0	0	1	0	0	0	10%	1	0.1	0.3
Mulloidichthys martinicus	yellow goatfish	0	0	0	1	0	0	0	0	0	0	10%	1	0.1	0.3
Stegastes planifrons	threespot damselfish	0	1	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Epinephelus adcensionis	rock hind	0	0	0	0	1	0	0	0	0	0	10%	1	0.1	0.3
Xyrichtys splendens	green razorfish	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
	n = 51 species	256	224	154	115	154	153	311	221	342	228	Total = 2,158 fish			

Appendix VIB (continued). Cane Bay belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Lutjanus mahogoni	mahogany snapper	0	2	0	0	0	0	0	0	1	0	20%	3	0.3	0.7
Aluterus scripta	scrawled filefish	0	0	1	2	0	0	0	0	0	0	20%	3	0.3	0.7
Sphyraena barracuda	great barracuda	1	1	0	0	0	0	0	0	0	0	20%	2	0.2	0.4
Paranthias furcifer	creolefish	1	1	0	0	0	0	0	0	0	0	20%	2	0.2	0.4
Malacanthus plumieri	sand tilefish	0	0	0	1	0	1	0	0	0	0	20%	2	0.2	0.4
Acanthostracion ploygonia	honeycomb cowfish	0	0	0	1	0	0	0	0	0	1	20%	2	0.2	0.4
Inermia vittata	boga	0	250	0	0	0	0	0	0	0	0	10%	250	25	79.1
Halichoeres maculipinna	clown wrasse	0	0	0	0	0	0	0	0	0	11	10%	11	1.1	3.5
Halichoeres pictus	rainbow wrasse	0	0	0	0	0	0	0	0	0	4	10%	4	0.4	1.3
Gerres cinereus	yellowfin majorra	0	0	0	0	0	0	0	0	3	0	10%	3	0.3	0.9
Sparisoma chrysopterum	redtail parrotfish	2	0	0	0	0	0	0	0	0	0	10%	2	0.2	0.6
Chaetodon aculeatus	longsnout butterflyfish	0	0	0	0	0	0	2	0	0	0	10%	2	0.2	0.6
Stegastes leucostictus	beaugregory	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Serranus tabacarius	tobacco fish	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Lactophrys triqueter	smooth trunkfish	0	1	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Hypoplectrus chlorurus	yellowtail hamlet	0	0	0	0	0	0	0	0	1	0	10%	1	0.1	0.3
Holocentrus rufus	longspine squirrelfish	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Haemulon sciurus	bluestriped grunt	0	1	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Haemulon plumieri	white grunt	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Epinephelus adcensionis	rock hind	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Cantherhines pullus	orangespotted filefish	0	0	0	0	0	0	1	0	0	0	10%	1	0.1	0.3
Acanthurus chirurgus	doctorfish	0	0	0	0	0	0	0	0	1	0	10%	1	0.1	0.3
	n = 55 species	369	718	228	623	414	244	417	353	311	575	Total = 4,252 fish			

Scarus croicensis	striped parrotfish	4	6	11	4	2	9	4	3	5	9	100%	57	5.7	3.0
Acanthurus bahianus	ocean surgeonfish	4	3	7	3	3	5	8	4	6	5	100%	48	4.8	1.8
Stegastes leucostictus	beaugregory	6	2	4	4	1	1	4	1	5	5	100%	33	3.3	1.9
Serranus tigrinius	harlequin bass	2	1	1	1	4	5	4	3	2	3	100%	26	2.6	1.4
Haemulon flavolineatum	french grunt	2	3	2	2	1	1	1	3	3	3	100%	21	2.1	0.9
Myripristis jacobus	blackbar soldierfish	6	8	1	2	1	5	0	4	4	4	90%	35	3.5	2.5
Acanthurus coeruleus	blue tang	2	1	8	1	4	2	0	4	4	1	90%	27	2.7	2.4
Scarus taeniopterus	princess parrotfish	3	4	2	0	2	1	2	1	3	0	80%	18	1.8	1.3
Cephalopholis cruentatus	graysby	0	2	3	0	2	2	1	4	2	1	80%	17	1.7	1.3
Chaetodon capistratus	foureye butterflyfish	2	4	0	2	6	0	2	1	0	4	70%	21	2.1	2.0
Chromis multilineata	brown chromis	15	15	0	0	0	5	0	16	2	25	60%	78	7.8	9.1
Canthigaster rostrata	sharpnose puffer	0	2	3	0	2	1	1	2	0	0	60%	11	1.1	1.1
Cephalopholis fulvus	coney	1	0	2	1	1	0	0	0	1	2	60%	8	0.8	0.8
Holocentrus rufus	longspine squirrelfish	0	1	0	2	0	2	1	0	1	1	60%	8	0.8	0.8
Microspathodon chrysurus	yellowtail damselfish	1	0	0	0	0	2	1	1	1	1	60%	7	0.7	0.7
Psuedupeneus maculatus	spotted goatfish	0	0	1	1	4	1	1	0	0	0	50%	8	0.8	1.2
Cantherhines pullus	orangespotted filefish	1	0	0	0	1	0	0	1	1	1	50%	5	0.5	0.5
Clepticus parrae	creole wrasse	15	25	16	0	0	16	0	0	0	0	40%	72	7.2	9.7
Chaetodon striatus	banded butterflyfish	2	1	2	0	0	1	0	0	0	0	40%	6	0.6	0.8
Sparisoma viride	stoplight parrotfish	0	1	1	0	1	1	0	0	0	0	40%	4	0.4	0.5
Halichoeres maculipinna	clown wrasse	0	0	0	1	0	0	0	0	5	14	30%	20	2	4.5
Gramma loreto	fairy basslet	0	5	0	0	0	0	0	0	3	3	30%	11	1.1	1.9
Bodianus rufus	spanish hogfish	0	0	1	0	0	0	0	0	1	2	30%	4	0.4	0.7
Haemulon sciurus	bluestriped grunt	2	0	0	1	0	0	1	0	0	0	30%	4	0.4	0.7
Holacanthus tricolor	rock beauty	0	0	0	0	0	1	0	0	1	1	30%	3	0.3	0.5
Hypoplectrus puella	barred hamlet	0	0	0	1	0	0	0	0	1	1	30%	3	0.3	0.5
Halichoeres pictus	rainbow wrasse	1	0	9	0	0	0	0	0	0	0	20%	10	1	2.8

Appendix VIC (continued). Eagle Ray belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Caranx ruber	bar jack	0	0	0	0	0	3	0	0	2	0	20%	5	0.5	1.1
Acanthurus chirurgus	doctorfish	0	0	0	0	2	0	2	0	0	0	20%	4	0.4	0.8
Stegastes diencaeus	longfin damselfish	0	0	0	0	0	1	0	0	0	3	20%	4	0.4	1.0
Hypoplectrus nigricans	black hamlet	0	1	0	1	0	0	0	0	0	0	20%	2	0.2	0.4
Lactophrys bicaudalis	spotted trunkfish	1	0	0	0	0	0	0	0	0	1	20%	2	0.2	0.4
Chaetodon ocellatus	spotfin butterflyfish	0	0	2	0	0	0	0	0	0	0	10%	2	0.2	0.6
Gymnothorax moringa	spotted moray	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Haemulon chrysargyreum	smallmouth grunt	0	0	0	0	0	0	0	0	1	0	10%	1	0.1	0.3
Halichoeres radiatus	pudding wife	0	0	0	0	1	0	0	0	0	0	10%	1	0.1	0.3
Heteropriacanth.cruentatus	glasseye snapper	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Hypoplectrus chlorurus	yellowtail hamlet	1	0	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Hypoplectrus unicolor	butter hamlet	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Lactophrys triqueter	smooth trunkfish	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Lutjanus mahogoni	mahogany snapper	0	0	0	0	0	0	0	0	1	0	10%	1	0.1	0.3
Serranus tabacarius	tobacco fish	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Sparisoma atomarium	greenblotch parrotfish	1	0	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Sparisoma chrysopterum	redtail parrotfish	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Sparisoma rubripinne	yellowtail parrotfish	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Stegastes planifrons	threespot damselfish	1	0	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
	n = 52 species	214	245	267	138	149	208	160	171	186	202	Total = 1,940 fish			

Appendix VID. Sprat Hole belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Clepticus parrae	creole wrasse	200	274	10	216	68	317	120	84	153	256	100%	1698	169.8	99.5
Chromis cyanea	blue chromis	96	46	81	41	48	42	16	94	107	29	100%	600	60.0	31.7
Thalassoma bifasciatum	bluehead wrasse	12	30	10	28	37	11	30	41	51	16	100%	266	26.6	14.1
Stegastes partitus	bicolor damselfish	11	12	6	25	15	37	23	21	36	26	100%	212	21.2	10.4
Halichoeres garnoti	yellowhead wrasse	9	6	9	7	9	2	5	13	5	14	100%	79	7.9	3.7
Scarus taeniopterus	princess parrotfish	3	1	4	11	5	4	12	1	9	6	100%	56	5.6	3.9
Chaetodon capistratus	foureye butterflyfish	2	2	5	5	2	11	2	4	5	5	100%	43	4.3	2.8
Sparisoma aurofrenatum	redband parrotfish	3	1	2	8	4	2	2	11	4	5	100%	42	4.2	3.1
Cephalopholis cruentatus	graysby	2	3	2	3	2	7	1	4	5	3	100%	32	3.2	1.8
Chromis multilineata	brown chromis	36	35	13	1	12	30	4	18	2	0	90%	151	15.1	14.1
Mulloidichthys martinicus	yellow goatfish	2	5	1	14	0	1	1	22	1	2	90%	49	4.9	7.3
Sparisoma viride	stoplight parrotfish	5	5	1	5	2	4	0	12	4	7	90%	45	4.5	3.4
Acanthurus bahianus	ocean surgeonfish	0	2	1	3	2	4	4	3	4	3	90%	26	2.6	1.3
Stegastes fuscus	dusky damselfish	3	9	5	5	1	0	4	0	2	4	80%	33	3.3	2.8
Holocentrus rufus	longspine squirrelfish	0	1	1	0	6	1	1	4	4	3	80%	21	2.1	2.0
Aulostomus maculatus	trumpetfish	1	0	1	0	2	4	1	2	2	2	80%	15	1.5	1.2
Stegastes planifrons	threespot damselfish	10	0	0	0	8	8	7	11	10	8	70%	62	6.2	4.4
Acanthurus coeruleus	blue tang	0	2	0	5	0	4	6	4	1	8	70%	30	3.0	2.8
Canthigaster rostrata	sharpnose puffer	1	0	0	3	4	9	0	4	5	4	70%	30	3.0	2.9
Myripristis jacobus	blackbar soldierfish	3	8	1	6	0	3	1	1	0	0	70%	23	2.3	2.8
Haemulon flavolineatum	french grunt	2	3	0	0	5	2	3	1	0	1	70%	17	1.7	1.6
Bodianus rufus	spanish hogfish	0	2	0	1	0	4	2	0	1	5	60%	15	1.5	1.8
Gramma loreto	fairy basslet	2	2	0	0	0	2	3	1	0	4	60%	14	1.4	1.4
Cephalopholis fulvus	coney	0	0	1	4	0	1	2	0	1	4	60%	13	1.3	1.6
Chaetodon striatus	banded butterflyfish	0	0	1	1	0	1	1	1	0	0	50%	5	0.5	0.5
Scarus croicensis	striped parrotfish	10	0	0	0	0	0	11	12	2	0	40%	35	3.5	5.2
Caranx ruber	bar jack	0	3	0	2	0	0	9	0	1	0	40%	15	1.5	2.8
Lutjanus mahogoni	mahogany snapper	0	1	0	3	1	0	2	0	0	0	40%	7	0.7	1.1
Holacanthus tricolor	rock beauty	0	0	1	0	3	0	1	0	1	0	40%	6	0.6	1.0
Scarus vetula	queen parrotfish	1	2	0	0	0	0	0	1	1	0	40%	5	0.5	0.7
Acanthostracion ploygonia	honeycomb cowfish	0	0	0	1	1	1	0	0	1	0	40%	4	0.4	0.5
Hypoplectrus puella	barred hamlet	0	0	0	1	0	0	1	1	1	0	40%	4	0.4	0.5
Serranus tigrinius	harlequin bass	1	0	0	0	0	2	0	0	0	2	30%	5	0.5	0.8

Lactophrys triqueter	smooth trunkfish	0	0	0	1	0	1	0	0	0	0	20%	2	0.1	0.4
Neoniphon marianus	longjaw squirrelfish	5	0	0	0	0	0	0	0	0	0	10%	5	0.5	1.6
Caranx bartholomaei	yellow jack	0	0	0	0	0	0	4	0	0	0	10%	4	0.4	1.3
Holocentrus adcensionis	squirrelfish	0	0	4	0	0	0	0	0	0	0	10%	4	0.4	1.3
Amblycirrhitus pinos	redspotted hawkfish	0	0	0	0	0	0	0	1	0	0	10%	1	0.1	0.3
Cantherhines pullus	orangespotted filefish	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Chaetodon sedentarius	reef butterflyfish	1	0	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Haemulon chrysargyreum	smallmouth grunt	0	1	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Haemulon plumieri	white grunt	0	0	0	0	0	0	1	0	0	0	10%	1	0.1	0.3
Haemulon sciurus	bluestriped grunt	0	0	0	0	0	0	1	0	0	0	10%	1	0.1	0.3
Heteropriacanth.cruentatus	glasseye snapper	0	0	0	0	0	0	0	1	0	0	10%	1	0.1	0.3
Lutjanus apodus	schoolmaster	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Myrichthys ocellatus	goldspotted eel	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Odontoscion dentex	reef croaker	0	0	0	0	0	0	0	1	0	0	10%	1	0.1	0.3
Priacanthus arenatus	bigeye	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Scorpaena plumieri	spotted scorpionfish	0	0	0	0	1	0	0	0	0	0	10%	1	0.1	0.3
Serranus tabacarius	tobacco fish	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Synodus intermedius	sand diver	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
	n = 61 species	424	459	163	401	240	522	309	379	420	523	Total = 3,840 fish			

Appendix VIE. Buck Island belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Chromis cyanea	blue chromis	37	19	20	46	19	63	4	36	10	18	100%	272	27.2	18.0
Thalassoma bifasciatum	bluehead wrasse	3	6	18	11	12	3	2	1	21	16	100%	93	9.3	7.3
Halichoeres garnoti	yellowhead wrasse	3	14	9	6	7	12	5	9	7	13	100%	85	8.5	3.6
Sparisoma aurofrenatum	redband parrotfish	9	10	4	12	5	10	5	5	7	6	100%	73	7.3	2.8
Stegastes partitus	bicolor damselfish	1	3	3	9	11	6	3	4	17	2	100%	59	5.9	5.0
Acanthurus coeruleus	blue tang	1	3	6	6	5	2	0	6	4	4	90%	37	3.7	2.2
Haemulon flavolineatum	french grunt	6	1	3	0	4	5	2	6	1	2	90%	30	3.0	2.2
Sparisoma viride	stoplight parrotfish	2	3	3	7	1	1	0	1	3	4	90%	25	2.5	2.0
Clepticus parrae	creole wrasse	0	0	72	19	1	65	14	50	209	5	80%	435	43.5	64.3
Scarus croicensis	striped parrotfish	7	8	15	15	12	28	0	0	13	10	80%	108	10.8	8.1
Stegastes fuscus	dusky damselfish	0	2	4	3	10	1	11	10	0	4	80%	45	4.5	4.3
Stegastes planifrons	threespot damselfish	12	12	12	12	0	17	0	0	8	6	70%	79	7.9	6.2
Scarus taeniopterus	princess parrotfish	3	0	2	0	21	0	10	10	6	3	70%	55	5.5	6.6
Acanthurus bahianus	ocean surgeonfish	4	0	7	2	4	0	5	0	5	3	70%	30	3.0	2.4
Chaetodon capistratus	foureye butterflyfish	2	2	2	0	0	0	2	1	1	2	70%	12	1.2	0.9
Holocentrus rufus	longspine squirrelfish	0	0	2	0	1	1	1	1	1	3	70%	10	1.0	0.9
Canthigaster rostrata	sharpnose puffer	2	0	1	1	0	1	0	1	1	1	70%	8	0.8	0.6
Sparisoma atomarium	greenblotch parrotfish	7	8	2	4	4	0	0	0	0	6	60%	31	3.1	3.1
Caranx ruber	bar jack	14	0	1	1	1	0	2	2	0	0	60%	21	2.1	4.3
Cephalopholis cruentatus	graysby	2	1	0	0	1	1	2	1	0	0	60%	8	0.8	0.8
Psuedupeneus maculatus	spotted goatfish	2	1	0	1	1	2	0	0	0	1	60%	8	0.8	0.8
Microspathodon chrysurus	yellowtail damselfish	1	0	1	0	3	0	2	4	0	0	50%	11	1.1	1.4
Hypoplectrus chlorurus	yellowtail hamlet	0	2	2	0	3	0	0	2	1	0	50%	10	1.0	1.2
Hypoplectrus nigricans	black hamlet	1	0	2	2	0	3	0	0	1	0	50%	9	0.9	1.1
Scarus vetula	queen parrotfish	0	0	1	3	0	0	0	0	6	3	40%	13	1.3	2.1
Stegastes leucostictus	beaugregory	0	1	1	1	0	0	0	0	3	0	40%	6	0.6	1.0
Haemulon aurolineatum	tomtate	0	1	0	1	0	0	0	0	1	2	40%	5	0.5	0.7
Haemulon chrysargyreum	smallmouth grunt	0	0	1	0	0	1	0	0	0	5	30%	7	0.7	1.6
Hypoplectrus puella	barred hamlet	2	3	2	0	0	0	0	0	0	0	30%	7	0.7	1.2
Gramma loreto	fairy basslet	3	2	0	0	0	1	0	0	0	0	30%	6	0.6	1.1
Cephalopholis fulvus	coney	0	1	0	0	2	0	0	1	0	0	30%	4	0.4	0.7
Lutjanus mahogoni	mahogany snapper	0	0	1	0	1	0	0	1	0	0	30%	3	0.3	0.5
Gerres cinereus	yellowfin majorra	0	0	0	0	1	10	0	0	0	0	20%	11	1.1	3.1

Appendix VIE (continued). Buck Island belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Lutjanus apodus	schoolmaster	0	0	0	2	0	2	0	0	0	0	20%	4	0.4	0.8
Aulostomus maculatus	trumpetfish	0	1	0	0	0	1	0	0	0	0	20%	2	0.2	0.4
Hypoplectrus unicolor	butter hamlet	0	0	0	0	1	0	0	0	1	0	20%	2	0.2	0.4
Mulloidichthys martinicus	yellow goatfish	0	0	0	0	1	0	0	1	0	0	20%	2	0.2	0.4
Sphyraena barracuda	great barracuda	1	0	0	0	0	1	0	0	0	0	20%	2	0.2	0.4
Inermia vittata	boga	0	0	0	0	0	0	0	0	8	0	10%	8	0.8	2.5
Haemulon plumieri	white grunt	6	0	0	0	0	0	0	0	0	0	10%	6	0.6	1.9
Halichoeres maculipinna	clown wrasse	0	0	0	0	0	0	0	0	4	0	10%	4	0.4	1.3
Stegastes variabilis	cocoa damselfish	0	0	0	0	0	0	0	0	0	2	10%	2	0.2	0.6
Acanthostracion ploygonia	honeycomb cowfish	0	0	0	1	0	0	0	0	0	0	10%	1	0.1	0.3
Acanthurus chirurgus	doctorfish	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Aluterus scripta	scrawled filefish	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Bodianus rufus	spanish hogfish	1	0	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Bothus lunatus	peacock flounder	0	0	0	0	1	0	0	0	0	0	10%	1	0.1	0.3
Echeneis naucrates	sharksucker	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Epinephelus guttatus	red hind	0	0	0	0	0	0	0	1	0	0	10%	1	0.1	0.3
Haemulon sciurus	bluestriped grunt	0	0	0	1	0	0	0	0	0	0	10%	1	0.1	0.3
Halichoeres radiatus	pudding wife	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Holacanthus tricolor	rock beauty	0	0	0	0	0	0	1	0	0	0	10%	1	0.1	0.3
Lactophrys triqueter	smooth trunkfish	1	0	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Ocyurus chrysurus	yellowtail snapper	0	0	0	0	0	0	0	0	1	0	10%	1	0.1	0.3
Scomberomorus regalis	cero mackerel	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Serranus tigrinius	harlequin bass	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Sphoeroides spengleri	bandtail puffer	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
	n = 57 species	133	104	198	166	133	239	71	154	340	125	Total = 1,663 fish			

Chaetodon striatus	banded butterflyfish	3	1	0	0	2	0	3	0	0	0	40%	9	0.9	1.3
Holacanthus tricolor	rock beauty	0	0	1	1	0	1	3	0	0	0	40%	6	0.6	1.0
Myripristis jacobus	blackbar soldierfish	0	0	0	0	1	0	0	1	1	3	40%	6	0.6	1.0
Stegastes fuscus	dusky damselfish	0	1	1	0	0	0	0	2	0	2	40%	6	0.6	0.8
Canthigaster rostrata	sharpnose puffer	2	0	0	2	0	0	0	1	0	0	30%	5	0.5	0.8
Haemulon aurolineatum	tomtate	0	1	0	0	0	1	0	0	0	1	30%	3	0.3	0.5
Scarus croicensis	striped parrotfish	1	1	0	0	0	0	0	0	0	1	30%	3	0.3	0.5
Clepticus parrae	creole wrasse	0	0	0	0	0	0	0	30	0	30	20%	60	6.0	12.6
Caranx ruber	bar jack	0	0	0	0	0	0	0	0	15	1	20%	16	1.6	4.7
Halichoeres bivittatus	slippery dick	6	5	0	0	0	0	0	0	0	0	20%	11	1.1	2.3
Caranx fusus	blue runner	0	0	0	0	0	0	0	2	0	7	20%	9	0.9	2.2
Lutjanus apodus	schoolmaster	0	0	0	0	0	0	0	3	0	1	20%	4	0.4	1.0
Gramma loreto	fairy basslet	0	0	0	0	0	0	0	1	0	2	20%	3	0.3	0.7

Appendix VIF (continued). Isaacs Bay belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Haemulon plumieri	white grunt	0	0	0	0	0	1	0	0	0	1	20%	2	0.2	0.4
Holocentrus adcensionis	squirrelfish	0	0	0	1	0	0	0	0	0	1	20%	2	0.2	0.4
Lutjanus mahogoni	mahogany snapper	0	0	1	0	0	0	0	0	1	0	20%	2	0.2	0.4
Psuedupeneus maculatus	spotted goatfish	0	1	1	0	0	0	0	0	0	0	20%	2	0.2	0.4
Holacanthus ciliaris	queen angelfish	0	0	0	0	0	0	0	0	0	3	10%	3	0.3	0.9
Lactophrys triqueter	smooth trunkfish	0	0	0	0	0	0	0	3	0	0	10%	3	0.3	0.9
Balistes vetula	queen triggerfish	0	0	0	0	0	0	0	0	2	0	10%	2	0.2	0.6
Haemulon chrysargyreum	smallmouth grunt	0	0	0	0	0	0	0	0	0	2	10%	2	0.2	0.6
Sparisoma atomarium	greenblotch parrotfish	0	0	0	0	0	2	0	0	0	0	10%	2	0.2	0.6
Abudefduf saxatilis	sergeant major	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Acanthurus chirurgus	doctorfish	0	1	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Aulostomus maculatus	trumpetfish	0	0	0	0	1	0	0	0	0	0	10%	1	0.1	0.3
Cantherhines pullus	orangespotted filefish	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Equetus punctatus	spotted drum	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
Gymnothorax moringa	spotted moray	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
Haemulon carbonarium	caesar grunt	0	0	0	0	0	0	0	0	0	1	10%	1	0.1	0.3
	n = 49 species	282	307	173	295	365	209	150	315	89	250	Total = 2,435 fish			

Appendix VIG. Great Pond belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Thalassoma bifasciatum	bluehead wrasse	42	124	46	13	36	42	89	52	128	88	100%	660	66.0	39.0
Acanthurus bahianus	ocean surgeonfish	24	6	31	14	26	10	7	13	6	9	100%	146	14.6	9.1
Halichoeres bivittatus	slippery dick	29	16	11	8	26	4	2	10	3	22	100%	131	13.1	9.7
Acanthurus coeruleus	blue tang	11	7	3	3	8	14	10	10	10	6	100%	82	8.2	3.5
Microspathodon chrysurus	yellowtail damselfish	4	4	1	5	4	11	15	6	17	10	100%	77	7.7	5.3
Sparisoma viride	stoplight parrotfish	1	5	6	4	1	5	8	12	9	6	100%	57	5.7	3.4
Stegastes fuscus	dusky damselfish	12	5	0	6	8	9	23	10	12	16	90%	101	10.1	6.3
Stegastes partitus	bicolor damselfish	26	6	7	2	0	13	14	6	6	5	90%	85	8.5	7.5
Chromis multilineata	brown chromis	23	0	2	12	0	8	95	35	70	14	80%	259	25.9	32.3
Halichoeres garnoti	yellowhead wrasse	33	2	2	0	9	11	2	2	0	2	80%	63	6.3	10.1
Sparisoma rubripinne	yellowtail parrotfish	8	0	1	4	13	11	0	1	2	6	80%	46	4.6	4.7
Sparisoma aurofrenatum	redband parrotfish	1	2	5	1	0	0	1	2	4	3	80%	19	1.9	1.7
Scarus croicensis	striped parrotfish	0	12	2	4	0	0	25	0	34	19	60%	96	9.6	12.4
Scarus vetula	queen parrotfish	4	0	0	1	0	3	0	4	4	4	60%	20	2.0	1.9
Halichoeres radiatus	pudding wife	0	3	3	0	0	0	3	7	2	1	60%	19	1.9	2.2
Halichoeres maculipinna	clown wrasse	0	21	13	5	0	0	0	0	10	8	50%	57	5.7	7.3
Haemulon flavolineatum	french grunt	1	0	0	22	1	6	0	20	0	0	50%	50	5.0	8.6
Stegastes diencaeus	longfin damselfish	0	4	1	0	1	0	0	0	1	1	50%	8	0.8	1.2
Abudefduf saxatilis	sergeant major	0	0	0	4	0	0	12	5	9	0	40%	30	3.0	4.4
Psuedupeneus maculatus	spotted goatfish	0	0	1	1	0	0	0	3	0	2	40%	7	0.7	1.1
Stegastes leucostictus	beaugregory	0	0	4	1	0	0	0	1	0	1	40%	7	0.7	1.3
Cephalopholis fulvus	coney	5	0	0	2	0	0	0	2	0	0	30%	9	0.9	1.7
Chromis cyanea	blue chromis	4	3	1	0	0	0	0	0	0	0	30%	8	0.8	1.5
Caranx ruber	bar jack	0	0	0	0	0	1	0	1	5	0	30%	7	0.7	1.6
Malacanthus plumieri	sand tilefish	0	0	3	2	0	0	0	0	0	2	30%	7	0.7	1.2
Stegastes variabilis	cocoa damselfish	0	0	0	0	4	2	1	0	0	0	30%	7	0.7	1.3
Melichthys niger	black durgon	0	0	0	0	1	0	1	0	3	0	30%	5	0.5	1.0
Chaetodon capistratus	foureye butterflyfish	0	0	0	0	2	0	1	1	0	0	30%	4	0.4	0.7
Holocentrus adcensionis	squirrelfish	2	0	1	0	0	0	0	0	1	0	30%	4	0.4	0.7
Haemulon carbonarium	caesar grunt	15	0	0	0	0	0	0	12	0	0	20%	27	2.7	5.7
Synodus intermedius	sand diver	3	0	0	0	6	0	0	0	0	0	20%	9	0.9	2.0
Haemulon chrysargyreum	smallmouth grunt	0	0	0	0	0	0	0	0	6	2	20%	8	0.8	1.9
Scarus taeniopterus	princess parrotfish	0	0	0	0	7	0	0	1	0	0	20%	8	0.8	2.2

Lactophrys bicaudalis	spotted trunkfish	0	0	0	0	0	1	0	0	0	0	10%	1	0.1	0.3
Lactophrys triqueter	smooth trunkfish	0	0	0	0	0	0	1	0	0	0	10%	1	0.1	0.3
Mulloidichthys martinicus	yellow goatfish	0	0	0	1	0	0	0	0	0	0	10%	1	0.1	0.3
Stegastes planifrons	threespot damselfish	0	1	0	0	0	0	0	0	0	0	10%	1	0.1	0.3
Xyrichtys splendens	green razorfish	0	0	1	0	0	0	0	0	0	0	10%	1	0.1	0.3
	n = 51 species	256	224	154	115	154	153	311	221	342	228	Total = 2,158 fish			

Appendix VIH. Mutton Snapper belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	%Freq	Total	Avg	StDev
Clepticus parrae	creole wrasse	44	41	78	86	102	62	100%	413	68.8	24.2
Stegastes partitus	bicolor damselfish	36	47	83	56	45	40	100%	307	51.2	17.0
Chromis cyanea	blue chromis	38	46	74	52	58	25	100%	293	48.8	16.9
Thalassoma bifasciatum	bluehead wrasse	51	23	63	44	31	23	100%	235	39.2	16.3
Scarus taeniopterus	princess parrotfish	10	12	8	7	15	8	100%	60	10.0	3.0
Myripristis jacobus	blackbar soldierfish	9	17	2	12	3	4	100%	47	7.8	5.9
Halichoeres garnoti	yellowhead wrasse	1	15	5	7	8	5	100%	41	6.8	4.7
Sparisoma aurofrenatum	redband parrotfish	2	13	3	6	4	5	100%	33	5.5	3.9
Acanthurus bahianus	ocean surgeonfish	4	10	8	2	3	4	100%	31	5.2	3.1
Haemulon flavolineatum	french grunt	6	6	3	4	2	3	100%	24	4.0	1.7
Chaetodon capistratus	foureye butterflyfish	6	3	3	3	6	2	100%	23	3.8	1.7
Chromis multilineata	brown chromis	36	0	1	8	9	4	83%	58	9.7	13.4
Melichthys niger	black durgon	13	1	0	5	2	9	83%	30	5.0	5.1
Scarus croicensis	striped parrotfish	4	13	0	2	1	10	83%	30	5.0	5.3
Bodianus rufus	spanish hogfish	3	4	1	0	1	1	83%	10	1.7	1.5
Chaetodon striatus	banded butterflyfish	2	2	0	1	2	2	83%	9	1.5	0.8
Cephalopholis cruentatus	graysby	0	3	1	2	1	1	83%	8	1.3	1.0
Sparisoma viride	stoplight parrotfish	1	0	1	2	1	2	83%	7	1.2	0.8
Gramma loreto	fairy basslet	1	0	2	5	0	2	67%	10	1.7	1.9
Acanthurus coeruleus	blue tang	1	0	1	0	3	2	67%	7	1.2	1.2
Canthigaster rostrata	sharpnose puffer	1	1	0	1	2	0	67%	5	0.8	0.8
Stegastes planifrons	threespot damselfish	1	0	0	0	4	3	50%	8	1.3	1.8
Hypoplectrus puella	barred hamlet	0	1	1	1	0	0	50%	3	0.5	0.5
Microspathodon chrysurus	yellowtail damselfish	1	0	1	0	0	1	50%	3	0.5	0.5
Lutjanus mahogoni	mahogany snapper	0	4	5	0	0	0	33%	9	1.5	2.3
Chaetodon sedentarius	reef butterflyfish	0	0	1	4	0	0	33%	5	0.8	1.6
Mulloidichthys martinicus	yellow goatfish	0	0	2	0	0	2	33%	4	0.7	1.0
Aulostomus maculatus	trumpetfish	0	2	1	0	0	0	33%	3	0.5	0.8
Holocentrus rufus	longspine squirrelfish	1	0	0	0	2	0	33%	3	0.5	0.8
Lutjanus apodus	schoolmaster	0	1	1	0	0	0	33%	2	0.3	0.5
Sargocentron vexillarium	dusky squirrelfish	0	0	0	1	1	0	33%	2	0.3	0.5
Stegastes variabilis	cocoa damselfish	4	0	0	0	0	0	17%	4	0.7	1.6
Cantherhines pullus	orangespotted filefish	2	0	0	0	0	0	17%	2	0.3	0.8

Appendix VIH (continued). Mutton Snapper belt transect data, St. Croix, 2004

Species	Common Name	Transect No. 1	2	3	4	5	6	%Freq	Total	Avg	StDev
Haemulon carbonarium	caesar grunt	0	0	2	0	0	0	17%	2	0.3	0.8
Halichoeres pictus	rainbow wrasse	0	0	0	0	2	0	17%	2	0.3	0.8
Holacanthus ciliaris	queen angelfish	0	2	0	0	0	0	17%	2	0.3	0.8
Acanthostracion ploygonia	honeycomb cowfish	0	1	0	0	0	0	17%	1	0.2	0.4
Acanthurus chirurgus	doctorfish	1	0	0	0	0	0	17%	1	0.2	0.4
Amblycirrhitus pinos	redspotted hawkfish	0	0	0	0	1	0	17%	1	0.2	0.4
Caranx ruber	bar jack	0	0	1	0	0	0	17%	1	0.2	0.4
Chaetodon aculeatus	longsnout butterflyfish	0	0	0	0	1	0	17%	1	0.2	0.4
Haemulon plumieri	white grunt	0	1	0	0	0	0	17%	1	0.2	0.4
Halichoeres maculipinna	clown wrasse	0	0	1	0	0	0	17%	1	0.2	0.4
Holacanthus tricolor	rock beauty	0	0	0	0	0	1	17%	1	0.2	0.4
Hypoplectrus chlorurus	yellowtail hamlet	0	0	0	1	0	0	17%	1	0.2	0.4
Hypoplectrus sp.	tan hamlet	1	0	0	0	0	0	17%	1	0.2	0.4
Lactophrys triqueter	smooth trunkfish	0	0	0	0	0	1	17%	1	0.2	0.4
Liopropoma rubre	peppermint basslet	0	0	0	0	1	0	17%	1	0.2	0.4
Paranthias furcifer	creolefish	0	0	0	0	0	1	17%	1	0.2	0.4
Psuedupeneus maculatus	spotted goatfish	0	0	0	0	1	0	17%	1	0.2	0.4
Sphyraena barracuda	great barracuda	0	0	0	0	1	0	17%	1	0.2	0.4
Stegastes leucostictus	beaugregory	0	0	1	0	0	0	17%	1	0.2	0.4
	n = 52 species	280	269	354	312	313	223	Total = 1,751 fish			

Halichoeres garnoti	yellowhead wrasse	2	2	3	1	100%	2.00	0.8		
Holocentrus rufus	longspine squirrelfish	2	1	2	2	100%	1.75	0.5		
Mulloidichthys martinicus	yellow goatfish	1	2	2	2	100%	1.75	0.5		
Thalassoma bifasciatum	bluehead wrasse	4	4	5	0	75%	3.25	2.2		
Clepticus parrae	creole wrasse	3	4	5	0	75%	3.00	2.2		
Chaetodon striatus	banded butterflyfish	2	3	0	3	75%	2.00	1.4		
Ocyurus Chrysurus	yellowtail snapper	2	3	0	2	75%	1.75	1.3		
Stegastes fuscus	dusky damselfish	2	0	2	3	75%	1.75	1.3		
Scomberomorus regalis	cero mackerel	0	2	2	2	75%	1.50	1.0		
Sparisoma viride	stoplight parrotfish	2	0	2	2	75%	1.50	1.0		
Chaetodon aculeatus	longsnout butterflyfish	1	0	2	2	75%	1.25	1.0		
Lutjanus apodus	schoolmaster	1	0	1	3	75%	1.25	1.3		
Epinephelus guttatus	red hind	1	0	0	1	75%	0.50	0.6		
Chromis cyanea	blue chromis	0	0	4	3	50%	1.75	2.1		
Acanthurus coeruleus	blue tang	3	3	0	0	50%	1.50	1.7		
Chromis multilineata	brown chromis	0	0	3	3	50%	1.50	1.7		
Hypoplectrus puella	barred hamlet	0	0	2	2	50%	1.00	1.2		
Scarus croicensis	striped parrotfish	2	0	2	0	50%	1.00	1.2		
Serranus tigrinus	harlequin bass	2	0	2	0	50%	1.00	1.2		
Bodianus rufus	spanish hogfish	0	0	2	1	50%	0.75	1.0		
Cantherhines pullus	orangespotted filefish	2	1	0	0	50%	0.75	1.0		
Anisotremus virginicus	porkfish	0	0	1	1	50%	0.50	0.6		
Haemulon carbonarium	caesar grunt	1	0	1	0	50%	0.50	0.6		
Haemulon sciurus	bluestriped grunt	1	0	1	0	50%	0.50	0.6		
Coryphopterus personatus/hyal.	glass/masked goby	0	0	5	0	25%	1.25	2.5		

Appendix VIIA (continued). Salt River Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	4	%Freq	Avg AI	StDev
Caranx ruber	bar jack	0	0	3	0	25%	0.75	1.5
Gramma loreto	fairy basslet	0	0	3	0	25%	0.75	1.5
Sparisoma aurofrenatum	redband parrotfish	3	0	0	0	25%	0.75	1.5
Apogon townsendi	belted cardinalfish	0	0	2	0	25%	0.50	1.0
Bothus lunatus	peacock flounder	0	2	0	0	25%	0.50	1.0
Canthigaster rostrata	sharpnose puffer	0	0	2	0	25%	0.50	1.0
Cephalopholis cruentatus	graysby	0	0	2	0	25%	0.50	1.0
Coryphopterus glaucofrenatum	bridled goby	0	0	2	0	25%	0.50	1.0
Coryphopterus lipernes	peppermint goby	0	0	2	0	25%	0.50	1.0
Equetus punctatus	spotted drum	0	0	2	0	25%	0.50	1.0
Haemulon plumieri	white grunt	0	0	2	0	25%	0.50	1.0
Halichoeres maculipinna	clown wrasse	0	0	2	0	25%	0.50	1.0
Holocentrus adcensionis	squirrelfish	0	0	0	2	25%	0.50	1.0
Hypoplectrus guttavarius	shy hamlet	2	0	0	0	25%	0.50	1.0
Myripristis jacobus	blackbar soldierfish	0	0	2	0	25%	0.50	1.0
Psuedupeneus maculatus	spotted goatfish	2	0	0	0	25%	0.50	1.0
Sparisoma rubripinne	yellowtail parrotfish	0	0	0	2	25%	0.50	1.0
Stegastes leucostictus	beaugregory	0	0	2	0	25%	0.50	1.0
Stegastes planifrons	threespot damselfish	0	0	2	0	25%	0.50	1.0
Acanthostracion ploygonia	honeycomb cowfish	1	0	0	0	25%	0.25	0.5
Aulostomus maculatus	trumpetfish	0	0	1	0	25%	0.25	0.5
Balistes vetula	queen triggerfish	0	0	0	1	25%	0.25	0.5
Cantherhines macrocerus	whitespotted filefish	0	1	0	0	25%	0.25	0.5
Dasyatis americana	southern stingray	0	0	1	0	25%	0.25	0.5
Echeneis naucrates	sharksucker	0	0	1	0	25%	0.25	0.5
Epinephelus adcensionis	rock hind	1	0	0	0	25%	0.25	0.5
Ginglymostoma cirratum	nurse shark	0	0	0	1	25%	0.25	0.5
Gymnothorax funebris	green moray	0	0	0	1	25%	0.25	0.5
Haemulon aurolineatum	tomtate	0	0	1	0	25%	0.25	0.5
Holacanthus tricolor	rock beauty	1	0	0	0	25%	0.25	0.5
Hypoplectrus chlorurus	yellowtail hamlet	0	0	1	0	25%	0.25	0.5
Hypoplectrus nigricans	black hamlet	0	0	1	0	25%	0.25	0.5
Hypoplectrus unicolor	butter hamlet	0	0	1	0	25%	0.25	0.5
Kyphosus sectatrix	Bermuda chub	1	0	0	0	25%	0.25	0.5

Appendix VIIA (continued). Salt River Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	4	%Freq	Avg AI	StDev
Lutjanus analis	mutton snapper	0	0	0	1	25%	0.25	0.5
Lutjanus mahogoni	mahogany snapper	0	0	1	0	25%	0.25	0.5
Neoniphon marianus	longjaw squirrelfish	0	0	1	0	25%	0.25	0.5
Sparisoma chrysopterum	redtail parrotfish	0	0	1	0	25%	0.25	0.5
Synodus intermedius	sand diver	0	0	1	0	25%	0.25	0.5
	No. of Species =	34	21	54	31		Total = 73 species	

Species	Common Name	1	2	3	4	5	%Freq	Avg AI	StDev
Chromis cyanea	blue chromis	5	5	5	4	4	100%	4.60	0.5
Chromis multilineata	brown chromis	4	5	4	4	4	100%	4.20	0.4
Thalassoma bifasciatum	bluehead wrasse	4	5	4	4	4	100%	4.20	0.4
Clepticus parrae	creole wrasse	4	4	4	4	4	100%	4.00	0.0
Melichthys niger	black durgon	4	3	3	3	3	100%	3.20	0.4
Acanthurus bahianus	ocean surgeonfish	3	3	3	3	3	100%	3.00	0.0
Scarus taeniopterus	princess parrotfish	3	3	3	3	3	100%	3.00	0.0
Sparisoma aurofrenatum	redband parrotfish	3	3	3	3	3	100%	3.00	0.0
Abudefduf saxatilis	sergeant major	3	3	3	3	2	100%	2.80	0.4
Acanthurus coeruleus	blue tang	3	4	2	3	2	100%	2.80	0.8
Mulloidichthys martinicus	yellow goatfish	3	3	2	3	3	100%	2.80	0.4
Haemulon flavolineatum	french grunt	3	3	2	2	2	100%	2.40	0.5
Chaetodon capistratus	foureye butterflyfish	2	2	2	2	2	100%	2.00	0.0
Myripristis jacobus	blackbar soldierfish	2	2	2	2	2	100%	2.00	0.0
Sparisoma viride	stoplight parrotfish	2	3	2	2	1	100%	2.00	0.7
Aulostomus maculatus	trumpetfish	2	1	1	1	2	100%	1.40	0.5
Stegastes partitus	bicolor damselfish	4	0	4	4	2	80%	2.80	1.8
Stegastes planifrons	threespot damselfish	4	3	3	0	3	80%	2.60	1.5
Ocyurus chrysurus	yellowtail snapper	0	3	3	2	3	80%	2.20	1.3
Lutjanus apodus	schoolmaster	0	2	2	3	3	80%	2.00	1.2
Microspathodon chrysurus	yellowtail damselfish	3	3	0	2	2	80%	2.00	1.2
Stegastes fuscus	dusky damselfish	2	3	3	0	2	80%	2.00	1.2
Bodianus rufus	spanish hogfish	3	0	2	3	1	80%	1.80	1.3
Aluterus scripta	scrawled filefish	2	2	0	2	2	80%	1.60	0.9
Caranx ruber	bar jack	3	0	1	2	2	80%	1.60	1.1
Cephalopholis cruentatus	graysby	2	2	2	0	2	80%	1.60	0.9
Chaetodon striatus	banded butterflyfish	0	2	2	2	2	80%	1.60	0.9
Halichoeres garnoti	yellowhead wrasse	3	0	3	1	1	80%	1.60	1.3
Holocentrus rufus	longspine squirrelfish	1	2	1	2	0	80%	1.20	0.8
Lutjanus mahogoni	mahogany snapper	1	2	1	0	2	80%	1.20	0.8
Gramma loreto	fairy basslet	4	0	4	0	2	60%	2.00	2.0
Canthigaster rostrata	sharpnose puffer	2	0	2	0	2	60%	1.20	1.1
Cephalopholis fulvus	coney	2	0	2	2	0	60%	1.20	1.1

Appendix VIIB (continued). Cane Bay Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	4	5	%Freq	Avg AI	StDev
Halichoeres radiatus	pudding wife	0	0	1	0	0	20%	0.20	0.4
Hypoplectrus chlorurus	yellowtail hamlet	1	0	0	0	0	20%	0.20	0.4
Mycteroperca tigris	tiger grouper	0	1	0	0	0	20%	0.20	0.4
Rypticus saponaceus	greater soapfish	0	0	1	0	0	20%	0.20	0.4
Sphyraena barracuda	great barracuda	0	0	0	0	1	20%	0.20	0.4
Synodus intermedius	sand diver	1	0	0	0	0	20%	0.20	0.4
	No. of Species =	49	36	50	33	40	Total = 72 species		

Appendix VIIC. Eagle Ray Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	4	%Freq	Avg AI	StDev
Thalassoma bifasciatum	bluehead wrasse	4	4	5	4	100%	4.3	0.5
Stegastes partitus	bicolor damselfish	4	4	4	4	100%	4.0	0.0
Chromis cyanea	blue chromis	3	4	3	4	100%	3.5	0.6
Chromis multilineata	brown chromis	4	4	3	3	100%	3.5	0.6
Clepticus parrae	creole wrasse	3	4	3	4	100%	3.5	0.6
Halichoeres garnoti	yellowhead wrasse	3	3	5	3	100%	3.5	1.0
Abudefduf saxatilis	sergeant major	2	4	3	3	100%	3.0	0.8
Scarus taeniopterus	princess parrotfish	3	3	3	3	100%	3.0	0.0
Acanthurus bahianus	ocean surgeonfish	3	3	2	3	100%	2.8	0.5
Chaetodon capistratus	foureye butterflyfish	3	3	2	3	100%	2.8	0.5
Myripristis jacobus	blackbar soldierfish	3	3	2	3	100%	2.8	0.5
Stegastes fuscus	dusky damselfish	3	3	3	2	100%	2.8	0.5
Gramma loreto	fairy basslet	1	3	3	3	100%	2.5	1.0
Haemulon flavolineatum	french grunt	2	3	2	3	100%	2.5	0.6
Sparisoma viride	stoplight parrotfish	2	3	2	3	100%	2.5	0.6
Cephalopholis cruentatus	graysby	2	2	2	3	100%	2.3	0.5
Cephalopholis fulvus	coney	2	2	2	3	100%	2.3	0.5
Ocyurus chrysurus	yellowtail snapper	1	3	3	2	100%	2.3	1.0
Bodianus rufus	spanish hogfish	3	2	1	2	100%	2.0	0.8
Canthigaster rostrata	sharpnose puffer	1	2	2	3	100%	2.0	0.8
Microspathodon chrysurus	yellowtail damselfish	2	2	2	2	100%	2.0	0.0
Lutjanus apodus	schoolmaster	1	2	2	2	100%	1.8	0.5
Lutjanus mahogoni	mahogany snapper	1	2	2	2	100%	1.8	0.5
Psuedupeneus maculatus	spotted goatfish	2	2	1	2	100%	1.8	0.5
Serranus tigrinius	harlequin bass	2	2	1	2	100%	1.8	0.5
Haemulon carbonarium	caesar grunt	2	1	1	2	100%	1.5	0.6
Holocentrus rufus	longspine squirrelfish	1	2	1	2	100%	1.5	0.6
Sparisoma aurofrenatum	redband parrotfish	3	4	0	3	75%	2.5	1.7
Acanthurus coeruleus	blue tang	3	3	0	2	75%	2.0	1.4
Melichthys niger	black durgon	0	2	3	2	75%	1.8	1.3
Scarus croicensis	striped parrotfish	2	3	0	2	75%	1.8	1.3
Stegastes leucostictus	beaugregory	3	3	0	1	75%	1.8	1.5
Chaetodon striatus	banded butterflyfish	2	2	2	0	75%	1.5	1.0

Halichoeres pictus	rainbow wrasse	0	2	0	0	25%	0.5	1.0
Stegastes diencaeus	longfin damselfish	0	2	0	0	25%	0.5	1.0
Stegastes planifrons	threespot damselfish	0	0	0	2	25%	0.5	1.0
Acanthostracion ploygonia	honeycomb cowfish	0	1	0	0	25%	0.3	0.5
Amblycirrhitus pinos	redspotted hawkfish	1	0	0	0	25%	0.3	0.5
Balistes vetula	queen triggerfish	0	0	1	0	25%	0.3	0.5
Epinephelus adcensionis	rock hind	0	0	1	0	25%	0.3	0.5
Gerres cinereus	yellowfin majorra	0	1	0	0	25%	0.3	0.5
Gymnothorax funebris	green moray	0	1	0	0	25%	0.3	0.5

Appendix VIIC (continued). Eagle Ray Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	4	%Freq	Avg AI	StDev
Haemulon album	margate (white)	0	0	1	0	25%	0.3	0.5
Heteropriacanthus cruentatus	glasseye snapper	0	1	0	0	25%	0.3	0.5
Holacanthus ciliaris	queen angelfish	0	1	0	0	25%	0.3	0.5
Paranthias furcifer	creolefish	0	1	0	0	25%	0.3	0.5
Scarus vetula	queen parrotfish	0	0	1	0	25%	0.3	0.5
Serranus tabacarius	tobacco fish	0	1	0	0	25%	0.3	0.5
Synodus intermedius	sand diver	0	0	1	0	25%	0.3	0.5
	No. of Species =	40	60	41	47	Total = 73 species		

Appendix VIID. Sprat Hole Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	4	%Freq	Avg AI	StDev
Clepticus parrae	creole wrasse	5	5	4	5	100%	4.8	0.5
Chromis cyanea	blue chromis	4	5	3	4	100%	4.0	0.8
Stegastes partitus	bicolor damselfish	3	4	4	4	100%	3.8	0.5
Chromis multilineata	brown chromis	3	3	3	3	100%	3.0	0.0
Halichoeres garnoti	yellowhead wrasse	3	4	2	3	100%	3.0	0.8
Mulloidichthys martinicus	yellow goatfish	3	3	3	3	100%	3.0	0.0
Scarus taeniopterus	princess parrotfish	3	3	2	3	100%	2.8	0.5
Sparisoma aurofrenatum	redband parrotfish	3	3	2	3	100%	2.8	0.5
Acanthurus coeruleus	blue tang	2	2	3	3	100%	2.5	0.6
Cephalopholis fulvus	coney	3	2	3	2	100%	2.5	0.6
Chaetodon capistratus	foureye butterflyfish	3	2	2	3	100%	2.5	0.6
Sparisoma viride	stoplight parrotfish	2	3	2	3	100%	2.5	0.6
Haemulon flavolineatum	french grunt	2	2	2	3	100%	2.3	0.5
Bodianus rufus	spanish hogfish	1	2	2	2	100%	1.8	0.5
Lutjanus apodus	schoolmaster	1	2	1	2	100%	1.5	0.6
Thalassoma bifasciatum	bluehead wrasse	3	4	0	4	75%	2.8	1.9
Stegastes planifrons	threespot damselfish	3	3	0	4	75%	2.5	1.7
Abudefduf saxatilis	sergeant major	2	0	3	3	75%	2.0	1.4
Acanthurus bahianus	ocean surgeonfish	2	3	0	3	75%	2.0	1.4
Canthigaster rostrata	sharpnose puffer	3	2	0	2	75%	1.8	1.3
Cephalopholis cruentatus	graysby	2	2	0	3	75%	1.8	1.3
Stegastes fuscus	dusky damselfish	0	2	3	2	75%	1.8	1.3
Holacanthus tricolor	rock beauty	0	2	2	2	75%	1.5	1.0
Holocentrus rufus	longspine squirrelfish	2	0	2	2	75%	1.5	1.0
Lutjanus mahogoni	mahogany snapper	3	2	0	1	75%	1.5	1.3
Hypoplectrus unicolor	butter hamlet	2	2	0	1	75%	1.3	1.0
Scarus vetula	queen parrotfish	1	2	0	2	75%	1.3	1.0
Serranus tigrinius	harlequin bass	1	2	0	2	75%	1.3	1.0
Aulostomus maculatus	trumpetfish	2	1	0	1	75%	1.0	0.8
Chaetodon aculeatus	longsnout butterflyfish	2	1	0	1	75%	1.0	0.8
Hypoplectrus chlorurus	yellowtail hamlet	1	2	0	1	75%	1.0	0.8
Lactophrys bicaudalis	spotted trunkfish	1	0	2	1	75%	1.0	0.8
Coryphopterus personatus/hyal.	glass/masked goby	0	4	0	5	50%	2.3	2.6
Heteroconger longissimus	brown garden eel	0	4	0	4	50%	2.0	2.3

Serranus tabacarius	tobacco fish	1	0	0	1	50%	0.5	0.6
Inermia vittata	boga	0	0	0	4	25%	1.0	2.0
Coryphopterus glaucofrenatum	bridled goby	0	0	0	3	25%	0.8	1.5
Elacatinus genie/evelynae	cleaning goby	0	0	0	3	25%	0.8	1.5
Gnatholepis thompsoni	goldspot goby	0	0	0	3	25%	0.8	1.5
Coryphopterus lipernes	peppermint goby	0	0	0	2	25%	0.5	1.0
Haemulon chrysargyreum	smallmouth grunt	0	2	0	0	25%	0.5	1.0
Microspathodon chrysurus	yellowtail damselfish	0	0	0	2	25%	0.5	1.0
Psuedupeneus maculatus	spotted goatfish	2	0	0	0	25%	0.5	1.0
Sparisoma atomarium	greenblotch parrotfish	0	2	0	0	25%	0.5	1.0
Stegastes diencaeus	longfin damselfish	0	0	0	2	25%	0.5	1.0
Chaetodon striatus	banded butterflyfish	0	0	1	0	25%	0.3	0.5
Dasyatis americana	southern stingray	0	0	0	1	25%	0.3	0.5
Haemulon carbonarium	caesar grunt	1	0	0	0	25%	0.3	0.5
Lactophrys triqueter	smooth trunkfish	0	0	0	1	25%	0.3	0.5
Liopropoma rubre	peppermint basslet	0	0	0	1	25%	0.3	0.5
Sphoeroides spengleri	bandtail puffer	0	1	0	0	25%	0.3	0.5
Synodus intermedius	sand diver	0	0	1	0	25%	0.3	0.5
	No. of Species =	37	43	24	56	Total = 65 species		

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Appendix VIIE. Buck Island Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	%Freq	Avg AI	StDev
Clepticus parrae	creole wrasse	5	4	4	100%	4.33	0.6
Chromis cyanea	blue chromis	4	5	3	100%	4.00	1.0
Thalassoma bifasciatum	bluehead wrasse	4	3	3	100%	3.33	0.6
Haemulon flavolineatum	french grunt	3	3	3	100%	3.00	0.0
Sparisoma aurofrenatum	redband parrotfish	3	3	3	100%	3.00	0.0
Stegastes fuscus	dusky damselfish	3	3	3	100%	3.00	0.0
Stegastes partitus	bicolor damselfish	3	3	3	100%	3.00	0.0
Acanthurus bahianus	ocean surgeonfish	2	3	3	100%	2.67	0.6
Acanthurus coeruleus	blue tang	2	2	3	100%	2.33	0.6
Chaetodon capistratus	foureye butterflyfish	2	3	2	100%	2.33	0.6
Holocentrus rufus	longspine squirrelfish	2	3	2	100%	2.33	0.6
Cephalopholis cruentatus	graysby	2	2	2	100%	2.00	0.0
Hypoplectrus nigricans	black hamlet	1	3	2	100%	2.00	1.0
Lutjanus mahogoni	mahogany snapper	2	2	2	100%	2.00	0.0
Coryphopterus personatus/hyal.	glass/masked goby	5	3	0	67%	2.67	2.5
Stegastes planifrons	threespot damselfish	4	4	0	67%	2.67	2.3
Scarus croicensis	striped parrotfish	4	3	0	67%	2.33	2.1
Gramma loreto	fairy basslet	3	3	0	67%	2.00	1.7
Halichoeres garnoti	yellowhead wrasse	0	3	3	67%	2.00	1.7
Sparisoma viride	stoplight parrotfish	3	3	0	67%	2.00	1.7
Haemulon aurolineatum	tomtate	2	3	0	67%	1.67	1.5
Haemulon chrysargyreum	smallmouth grunt	2	3	0	67%	1.67	1.5
Mulloidichthys martinicus	yellow goatfish	2	3	0	67%	1.67	1.5
Psuedupeneus maculatus	spotted goatfish	2	3	0	67%	1.67	1.5
Scarus taeniopterus	princess parrotfish	0	2	3	67%	1.67	1.5
Canthigaster rostrata	sharpnose puffer	2	2	0	67%	1.33	1.2
Scarus vetula	queen parrotfish	3	0	1	67%	1.33	1.5
Stegastes leucostictus	beaugregory	2	2	0	67%	1.33	1.2
Bodianus rufus	spanish hogfish	0	2	1	67%	1.00	1.0
Hypoplectrus unicolor	butter hamlet	1	2	0	67%	1.00	1.0
Aulostomus maculatus	trumpetfish	0	1	1	67%	0.67	0.6
Echeneis naucrates	sharksucker	1	0	1	67%	0.67	0.6
Epinephelus guttatus	red hind	1	0	1	67%	0.67	0.6

Appendix VIIE (continued). Buck Island Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	%Freq	Avg AI	StDev
Halichoeres radiatus	pudding wife	1	1	0	67%	0.67	0.6
Ocyurus chrysurus	yellowtail snapper	1	0	1	67%	0.67	0.6
Synodus intermedius	sand diver	1	1	0	67%	0.67	0.6
Coryphopterus glaucofrenatum	bridled goby	3	0	0	33%	1.00	1.7
Elacatinus genie/evelynae	cleaning goby	3	0	0	33%	1.00	1.7
Sparisoma atomarium	greenblotch parrotfish	3	0	0	33%	1.00	1.7
Acanthurus chirurgus	doctorfish	2	0	0	33%	0.67	1.2
Caranx ruber	bar jack	0	2	0	33%	0.67	1.2
Epinephelus adcensionis	rock hind	0	2	0	33%	0.67	1.2
Haemulon macrostomum	spanish grunt	0	0	2	33%	0.67	1.2
Halichoeres maculipinna	clown wrasse	2	0	0	33%	0.67	1.2
Hypoplectrus chlorurus	yellowtail hamlet	2	0	0	33%	0.67	1.2
Hypoplectrus guttavarius	shy hamlet	0	2	0	33%	0.67	1.2
Serranus tigrinius	harlequin bass	0	2	0	33%	0.67	1.2
Stegastes diencaeus	longfin damselfish	2	0	0	33%	0.67	1.2
Cephalopholis fulvus	coney	1	0	0	33%	0.33	0.6
Dasyatis americana	southern stingray	1	0	0	33%	0.33	0.6
Haemulon plumieri	white grunt	1	0	0	33%	0.33	0.6
Halichoeres pictus	rainbow wrasse	1	0	0	33%	0.33	0.6
Hypoplectrus puella	barred hamlet	1	0	0	33%	0.33	0.6
Lactophrys triqueter	smooth trunkfish	0	0	1	33%	0.33	0.6
Lutjanus apodus	schoolmaster	0	1	0	33%	0.33	0.6
Malacanthus plumieri	sand tilefish	0	1	0	33%	0.33	0.6
Monacanthus tuckeri	slender filefish	1	0	0	33%	0.33	0.6
Scomberomorus regalis	cero mackerel	0	1	0	33%	0.33	0.6
Sparisoma rubripinne	yellowtail parrotfish	1	0	0	33%	0.33	0.6
	No. of Species =	46	39	24	Total = 59 species		

Haemulon flavolineatum	french grunt	3	2	2	100%	2.3	0.6
Stegastes fuscus	dusky damselfish	2	2	3	100%	2.3	0.6
Bodianus rufus	spanish hogfish	2	2	2	100%	2.0	0.0
Calamus calamus	saucereye porgy	2	2	2	100%	2.0	0.0
Cephalopholis cruentatus	graysby	3	1	2	100%	2.0	1.0
Chaetodon striatus	banded butterflyfish	2	2	2	100%	2.0	0.0
Holacanthus tricolor	rock beauty	2	3	1	100%	2.0	1.0
Holocentrus rufus	longspine squirrelfish	2	2	2	100%	2.0	0.0
Lutjanus mahogoni	mahogany snapper	2	2	2	100%	2.0	0.0
Melichthys niger	black durgon	2	2	2	100%	2.0	0.0
Myripristis jacobus	blackbar soldierfish	2	2	2	100%	2.0	0.0
Sparisoma viride	stoplight parrotfish	3	2	1	100%	2.0	1.0
Lutjanus apodus	schoolmaster	2	2	1	100%	1.7	0.6
Acanthurus coeruleus	blue tang	3	2	0	67%	1.7	1.5
Scarus croicensis	striped parrotfish	3	2	0	67%	1.7	1.5
Stegastes leucostictus	beaugregory	3	2	0	67%	1.7	1.5
Canthigaster rostrata	sharpnose puffer	2	2	0	67%	1.3	1.2
Caranx fusus	blue runner	0	2	2	67%	1.3	1.2
Caranx ruber	bar jack	2	0	2	67%	1.3	1.2
Holacanthus ciliaris	queen angelfish	2	2	0	67%	1.3	1.2
Malacoctenus triangulatus	saddled blenny	3	1	0	67%	1.3	1.5
Psuedupeneus maculatus	spotted goatfish	2	2	0	67%	1.3	1.2
Serranus tigrinius	harlequin bass	2	0	2	67%	1.3	1.2
Acanthostracion ploygonia	honeycomb cowfish	2	1	0	67%	1.0	1.0

Appendix VIIF (continued). Isaacs Bay Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	%Freq	Avg AI	StDev
Balistes vetula	queen triggerfish	1	0	2	67%	1.0	1.0
Halichoeres radiatus	pudding wife	2	1	0	67%	1.0	1.0
Holocentrus adcensionis	squirrelfish	2	1	0	67%	1.0	1.0
Lactophrys triqueter	smooth trunkfish	0	1	1	67%	0.7	0.6
Chaetodipterus faber	Atlantic spadefish	0	0	3	33%	1.0	1.7
Clepticus parrae	creole wrasse	3	0	0	33%	1.0	1.7
Elacatinus genie/evelynae	cleaning goby	3	0	0	33%	1.0	1.7
Gnatholepis thompsoni	goldspot goby	3	0	0	33%	1.0	1.7
Gramma loreto	fairy basslet	3	0	0	33%	1.0	1.7
Halichoeres bivittatus	slippery dick	3	0	0	33%	1.0	1.7
Halichoeres maculipinna	clown wrasse	3	0	0	33%	1.0	1.7
Scarus taeniopterus	princess parrotfish	0	0	3	33%	1.0	1.7
Acanthurus chirurgus	doctorfish	2	0	0	33%	0.7	1.2
Haemulon aurolineatum	tomtate	2	0	0	33%	0.7	1.2
Haemulon carbonarium	caesar grunt	2	0	0	33%	0.7	1.2
Haemulon chrysargyreum	smallmouth grunt	2	0	0	33%	0.7	1.2
Mulloidichthys martinicus	yellow goatfish	2	0	0	33%	0.7	1.2
Scarus vetula	queen parrotfish	2	0	0	33%	0.7	1.2
Sparisoma chrysopterum	redtail parrotfish	2	0	0	33%	0.7	1.2
Sparisoma rubripinne	yellowtail parrotfish	2	0	0	33%	0.7	1.2
Cantherhines macrocerus	whitespotted filefish	0	0	1	33%	0.3	0.6
Cantherhines pullus	orangespotted filefish	1	0	0	33%	0.3	0.6
Epinephelus guttatus	red hind	1	0	0	33%	0.3	0.6
Haemulon plumieri	white grunt	1	0	0	33%	0.3	0.6
Haemulon sciurus	bluestriped grunt	1	0	0	33%	0.3	0.6
Malacanthus plumieri	sand tilefish	1	0	0	33%	0.3	0.6
Ocyurus chrysurus	yellowtail snapper	0	0	1	33%	0.3	0.6
Priacanthus arenatus	bigeye	0	0	1	33%	0.3	0.6
Sphyraena barracuda	great barracuda	0	0	1	33%	0.3	0.6
Synodus intermedius	sand diver	0	0	1	33%	0.3	0.6
	No. of Species =	54	34	34	Total = 63 species		

Appendix VIIG. Great Pond Roving Diver Survey (RDS) data, St. Croix, 2004

Species	Common Name	RDS Replicate No. 1	2	3	4	5	%Freq	Avg AI	StDev
Thalassoma bifasciatum	bluehead wrasse	4	4	4	4	3	100%	3.8	0.4
Acanthurus bahianus	ocean surgeonfish	3	3	4	4	3	100%	3.4	0.5
Acanthurus coeruleus	blue tang	3	4	4	3	3	100%	3.4	0.5
Chromis multilineata	brown chromis	3	3	4	3	4	100%	3.4	0.5
Halichoeres bivittatus	slippery dick	4	3	3	4	3	100%	3.4	0.5
Stegastes partitus	bicolor damselfish	3	3	4	4	3	100%	3.4	0.5
Microspathodon chrysurus	yellowtail damselfish	3	3	4	3	3	100%	3.2	0.4
Stegastes fuscus	dusky damselfish	3	3	4	4	2	100%	3.2	0.8
Abudefduf saxatilis	sergeant major	3	3	3	3	3	100%	3.0	0.0
Sparisoma viride	stoplight parrotfish	2	3	4	3	3	100%	3.0	0.7
Halichoeres garnoti	yellowhead wrasse	3	2	3	3	2	100%	2.6	0.5
Sparisoma aurofrenatum	redband parrotfish	3	3	3	2	2	100%	2.6	0.5
Sparisoma rubripinne	yellowtail parrotfish	3	2	3	3	2	100%	2.6	0.5
Cephalopholis fulvus	coney	2	3	2	2	3	100%	2.4	0.5
Mulloidichthys martinicus	yellow goatfish	3	2	2	3	2	100%	2.4	0.5
Myripristis jacobus	blackbar soldierfish	2	2	3	2	2	100%	2.2	0.4
Haemulon carbonarium	caesar grunt	1	3	2	2	2	100%	2.0	0.7
Melichthys niger	black durgon	3	2	2	2	1	100%	2.0	0.7
Bodianus rufus	spanish hogfish	2	3	2	1	1	100%	1.8	0.8
Caranx ruber	bar jack	2	1	2	1	1	100%	1.4	0.5
Haemulon flavolineatum	french grunt	0	4	2	3	3	80%	2.4	1.5
Scarus vetula	queen parrotfish	0	2	4	3	2	80%	2.2	1.5
Malacanthus plumieri	sand tilefish	2	2	3	0	3	80%	2.0	1.2
Chromis cyanea	blue chromis	0	2	3	2	2	80%	1.8	1.1
Ophioblennius atlanticus	redlip blenny	0	2	3	3	1	80%	1.8	1.3
Haemulon chrysargyreum	smallmouth grunt	0	2	2	3	1	80%	1.6	1.1
Halichoeres radiatus	pudding wife	0	2	3	1	2	80%	1.6	1.1
Holocentrus adcensionis	squirrelfish	0	3	2	1	2	80%	1.6	1.1
Psuedupeneus maculatus	spotted goatfish	1	3	1	2	0	80%	1.4	1.1
Haemulon plumieri	white grunt	1	0	1	1	1	80%	0.8	0.4
Scarus croicensis	striped parrotfish	0	3	4	0	3	60%	2.0	1.9
Halichoeres maculipinna	clown wrasse	0	0	4	3	2	60%	1.8	1.8
Stegastes leucostictus	beaugregory	0	2	3	0	2	60%	1.4	1.3

Stegastes variabilis	cocoa damselfish	0	0	2	0	1	40%	0.6	0.9
Holocentrus rufus	longspine squirrelfish	1	0	0	1	0	40%	0.4	0.5
Lutjanus mahogoni	mahogany snapper	0	1	1	0	0	40%	0.4	0.5
Elacatinus genie/evelynae	cleaning goby	0	0	3	0	0	20%	0.6	1.3
Haemulon aurolineatum	tomtate	0	0	0	3	0	20%	0.6	1.3
Acanthurus chirurgus	doctorfish	0	0	2	0	0	20%	0.4	0.9
Cantherhines pullus	orangespotted filefish	0	0	2	0	0	20%	0.4	0.9
Halichoeres pictus	rainbow wrasse	2	0	0	0	0	20%	0.4	0.9
Halichoeres poeyi	blackear wrasse	0	0	2	0	0	20%	0.4	0.9
Synodus intermedius	sand diver	0	0	0	2	0	20%	0.4	0.9
Acanthostracion ploygonia	honeycomb cowfish	0	0	0	1	0	20%	0.2	0.4
Aetobatus narinari	spotted eagle ray	0	0	1	0	0	20%	0.2	0.4
Bothus lunatus	peacock flounder	1	0	0	0	0	20%	0.2	0.4
Epinephelus adcensionis	rock hind	1	0	0	0	0	20%	0.2	0.4
Epinephelus guttatus	red hind	0	0	1	0	0	20%	0.2	0.4
Gerres cinereus	yellowfin majorra	0	0	0	1	0	20%	0.2	0.4
Ginglymostoma cirratum	nurse shark	0	0	1	0	0	20%	0.2	0.4
Gymnothorax moringa	spotted moray	0	0	1	0	0	20%	0.2	0.4
Haemulon sciurus	bluestriped grunt	0	0	1	0	0	20%	0.2	0.4
Lactophrys bicaudalis	spotted trunkfish	0	1	0	0	0	20%	0.2	0.4
Monacanthus tuckeri	slender filefish	0	0	1	0	0	20%	0.2	0.4
Scarus coeruleus	blue parrotfish	0	0	0	1	0	20%	0.2	0.4
Sparisoma chrysopterum	redtail parrotfish	0	0	1	0	0	20%	0.2	0.4
	No. of Species =	31	37	52	39	36	Total = 64 species		

Appendix VIII. Abundance of fish observed in belt transects, St. Thomas, 2004

Family	Species	Common Name	Total No. of Fish Observed SC	SCP	GB	RH
Acanthuridae						
	Acanthurus bahianus	ocean surgeonfish	13	18	5	4
	Acanthurus chirurgus	doctorfish	7	6	10	12
	Acanthurus coeruleus	blue tang	5	12	2	8
Balistidae						
	Belistes vetula	queen trigger	-	-	-	2
	Melichthys niger	black durgon	-	5	-	-
	Catherines pullus	orangespotted filefish	-	1	-	-
Carangidae						
	Caranx ruber	bar jack	-	4	2	-
Chaetodontidae						
	Chaetodon aculeatus	longsnout butterflyfish	-	-	5	2
	Chaetodon capistratus	foureye butterflyfish	12	15	14	25
	Chaetodon ocellatus	spotfin butterflyfish	-	-	-	4
	Chaetodon sedentarius	reef butterflyfish	-	-	1	6
	Chaetodon striatus	banded butterflyfish	1	-	-	-
Grammatidae						
	Gramma loreto	fairy basslet	2	-	8	17
Haemulidae						
	Haemulon carbonarium	caesar grunt	-	1	-	-
	Haemulon flavolineatum	french grunt	-	2	1	4
	Haemulon macrostomum	spanish grunt	-	-	-	3
	Haemulon parra	sailors choice	4	-	-	-
	Haemulon plumieri	white grunt	9	-	-	10
	Haemulon sciurus	bluestriped grunt	1	2	1	-

Appendix VIII continued. Abundance of fish observed in belt transects, St. Thomas, 2004

Family	Species	Common Name	Total No. of Fish Observed SC	SCP	GB	RH
Holocentridae						
	Holocentrus rufus	longspine squirrelfish	7	8	2	14
	Holocentrus adscensionis	reef squirrelfish	1	3	-	-
	Myripristis jacobus	blackbar soldierfish	6	6	-	-
Inermiidae						
	Inermia vittata	boga	-	-	71	-
Kyphosidae						
	Kyphosis sectatrix	Bermuda chub	-	-	1	-
Labridae						
	Bodianus rufus	spanish hogfish	3	-	2	2
	Clepticus parrae	creole wrasse	-	11	110	95
	Halichoeres bivittatus	slippery dick	23	-	-	-
	Halichoeres garnoti	yellowhead wrasse	22	5	3	3
	Halichoeres maculapinna	clown wrasse	-	1	-	-
	Lachnolaimus maximus	hogfish	-	-	-	1
	Thalassoma bifasciatum	bluehead wrasse	52	35	45	18
Lutjanidae						
	Lutjanus apodus	schoolmaster	7	-	8	65
	Lutjanus cyanopterus	cubera snapper	-	-	-	3
	Lutjanus griseus	gray snapper	4	-	-	-
	Lutjanus mahogoni	mahogany snapper	-	1	4	1
	Lutjanus synagris	lane snapper	-	-	2	-
	Ocyurus chrysurus	yellowtail snapper	5	-	-	1
Mullidae						
	Mulloidichthys martinicus	yellow goatfish	4	2	-	4
	Psuedupeneus maculatus	spotted goatfish	-	1	-	1

Appendix VIII continued. Abundance of fish observed in belt transects, St. Thomas, 2004

Family	Species	Common Name	Total No. of Fish Observed SC	SCP	GB	HB
Ostraciidae						
	Lactophrys triqueter	smooth trunkfish	1	-	-	-
	Lactophrys bicaudalis	spotted trunkfish	-	-	2	-
Pomacanthidae						
	Holacanthus ciliaris	queen angelfish	1	-	-	1
	Holacanthus tricolor	rock beauty	5	4	-	1
	Pomacanthus arcuatus	gray angelfish	2	-	-	1
	Pomacanthus paru	french angelfish	-	-	-	1
Pomacentridae						
	Abudefduf saxatilis	sergeant major	9	1	-	-
	Chromis cyanea	blue chromis	305	264	318	285
	Chromis multilineata	brown chromis	3	-	5	11
	Microspathodon chrysurus	yellowtail damselfish	3	4	3	23
	Stegastes diencaeus	longfin damselfish	4	-	4	-
	Stegastes fuscus	dusky damselfish	62	-	-	-
	Stegastes leucostictus	beaugregory	8	3	-	-
	Stegastes partitus	bicolor damselfish	83	38	26	33
	Stegastes planifrons	threespot damselfish	32	36	7	-
	Stegastes variabilis	cocoa damselfish	80	15	-	-
Scaridae						
	Scarus inserti	striped parrotfish	102	33	11	40
	Scarus taeniopterus	princess parrotfish	43	21	23	10
	Scarus vetula	queen parrotfish	-	1	-	-
	Sparisoma aurofrenatum	redband parrotfish	30	8	9	5
	Sparisoma chrysopterum	redtail parrotfish	1	2	-	-
	Sparisoma rubripinne	yellowtail parrotfish	6	8	-	-
	Sparisoma viride	stoplight parrotfish	35	17	2	5

Appendix 1 continued. Abundance of fish observed in belt transects, St. Thomas, 2004

Family	Species	Common Name	Total No. of Fish Observed SC	SCP	GB	RH
Serranidae						
	Cephalopholis cruentatus	graysby	6	8	4	1
	Cephalopholis fulvus	coney	1	2	1	6
	Epinephelus guttatus	red hind	-	-	2	1
	Hypoplectrus chlorurus	yellowtail hamlet	-	2	2	-
	Hypoplectrus nigricans	black hamlet	2	1	-	1
	Hypoplectrus puella	barred hamlet	15	1	-	1
	Hypoplectrus unicolor	butter hamlet	1	1	-	-
	Mycteroperca tigris	tiger grouper	1	-	1	-
	Mycteroperca venenosa	yellowfin grouper	-	-	-	1
	Paranthias furcifer	creolefish	-	-	16	16
	Serranus tabacarius	tobaccofish	1	-	-	-
Sphyraenidae						
	Sphyraena barracuda	great barracuda	-	-	1	1
Synodontidae						
	Synodus intermedius	sand diver	1	-	-	-
Tetraodontidae						
	Canthigaster rostrata	sharpnose puffer	8	2	1	9

Appendix IX. S

Species
Acanthuridae
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Balistidae
Balistes ve
Catherhin
Melichthy
Carangidae
Caranx ru
Chaetodontida
Chaetodor
Chaetodor
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Grammatidae
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Haemulidae
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Imermidae
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Labridae
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Halichoer
Halichoere
Thalassom
Clepticus p
Bodianthus
Lachnolain

Appendix IX continued. Size distribution of all fish observed in belt transects, St. Thomas, 2004.

Species	Common Name	Total Length (cm) 0-5	5-10	10-20	20-30	30-40	> 40	Total No.
Kyphosidae								
Kyphosus saltitrix	Bermuda chub	-	-	-	-	-	1	1
Lujanidae								
Lutjanus apodus	schoolmaster	-	-	6	65	1	-	72
Lutjanus griseus	gray snapper	-	-	1	1	2	-	4
Lutjanus mahogani	mahogany snapper	-	-	2	-	-	-	2
Ocyurus chrysurus	yellowtail snapper	-	-	4	2	-	-	6
Lutjanus synagris	lane snapper	-	1	-	-	2	-	3
Lutjanus cyanopterus	cubera snapper	-	-	-	-	-	3	3
Mullidae								
Mulloidichthys martinicus	yellow goatfish	-	-	2	4	-	-	6
Pseudupeneus maculatus	spotted goatfish	-	3	3	-	-	-	6
Ostraciidae								
Lactophyrs triqueter	smooth trunkfish	-	1	2	-	-	-	3
Lactophyrs bicaudalis	spotted trunkfish	-	2	1	-	-	-	1
Pomacanthidae								
Pomacanthus paru	French angelfish	-	-	-	-	1	-	1
Pomacanthus arcuatus	gray angelfish	-	-	2	1	-	-	3
Holacanthus tricolor	rock beauty	-	3	6	1	-	-	10
Holacanthus ciliarus	queen angelfish	-	-	1	-	-	1	2
Pomocentridae								
Stegastes partitus	bicolor damselfish	58	117	5	-	-	-	180
Stegastes planifrons	3-spot damselfish	35	36	4	-	-	-	75
Stegastes leucostictus	beaugregory	1	9	1	-	-	-	11
Stegastes dorsopunicans	dusky damselfish	2	1	1	-	-	-	4
Stegastes diencaeus	longfin damselfish	4	63	-	-	-	-	67
Stegastes variables	cocoa damselfish	41	39	-	-	-	-	80
Chromis cyanea	blue chromis	443	655	58	97	-	-	1253
Chromis multilineata	brown chromis	12	26	4	-	-	-	42
Microspathodon chrysurus	yellowtail damselfish	-	23	7	-	-	-	30
Abudefduf saxatillis	sergeant major	-	9	1	-	-	-	10
Scaridae								
Sparisoma viride	stoplight parrotfish	6	3	18	18	4	-	49
Sparisoma aurofrenatum	redband parrotfish	1	18	21	3	-	-	43
Sparisoma rubripinne	redfin parrotfish	-	1	6	1	-	-	8
Sparisoma chrysopterum	redtail parrotfish	6	-	-	1	-	-	7
Scarus taeniopterus	princess parrotfish	10	26	32	7	-	-	75
Scarus inserti	striped parrotfish	56	77	43	10	-	-	186
Scarus vetula	queen parrotfish	-	-	1	-	-	-	1

Appendix IX continued. Size distribution of all fish observed in belt transects, St. Thomas, 2004.

Species	Common Name	Total Length (cm) 0-5	5-10	10-20	20-30	30-40	> 40	Total No.
Serranidae								
Mycteroperca tigris	tiger grouper	-	-	-	-	-	1	1
Epinephelus guttatus	red hind	-	-	-	1	2	-	3
Epinephelus cruentatus	graysby	1	4	9	1	-	-	15
Epinephelus fulvus	coney	-	-	10	-	-	-	10
Mycteroperca venenosa	yellowfin grouper	-	-	-	-	1	-	1
Hypoplectrus puella	barred hamlet	1	7	15	-	-	-	23
Hypoplectrus nigricans	black hamlet	-	2	2	-	-	-	4
Hypoplectrus chlorurus	yellowtail hamlet	-	2	2	-	-	-	4
Hypoplectrus unicolor	butter hamlet	-	-	2	-	-	-	2
Serranus tabacarius	tobacco fish	-	1	-	-	-	-	1
Serranus tigrinus	harlequin bass	-	1	-	-	-	-	1
Paranthias furcifer	creolefish	-	-	32	-	-	-	32
Synodontidae								
Synodus intermedius	sand diver	-	-	-	1	-	-	1
Sphyraenidae								
Sphyraena barracuda	great barracuda	-	-	-	-	-	2	2
Tetraodontidae								
Canthigaster rostrata	sharpnose puffer	-	1	1	-	-	-	2
	Total =	675	1507	625	272	18	9	3106
	% =	21.72	48.51	20.12	8.76	0.58	0.29	100.00

Appendix XA Seahorse Cottage Shoal belt transect data, St. Thomas, 2004.

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Chromis cyanea	blue chromis	18	14	4	122	65	0	0	55	27	0	70	305	30.5	90.1
Scarus inserti	striped parrotfish	10	8	10	0	1	20	0	1	26	26	80	102	10.2	34.5
Stegastes partitus	bicolor damselfish	4	9	4	6	2	4	10	7	37	0	90	83	8.3	33.0
Stegastes variabilis	cocoa damselfish	0	0	0	0	0	0	65	0	2	13	30	80	8.0	29.0
Stegastes fuscus	dusky damselfish	0	0	1	0	0	61	0	0	0	0	20	62	6.2	24.7
Thalassoma bifasciatum	bluehead wrasse	4	6	0	26	0	0	0	0	10	6	50	52	5.2	20.0
Scarus taeniopterus	princess parrotfish	4	6	0	1	15	1	3	13	0	0	70	43	4.3	22.6
Stegastes planifrons	three-spot damselfish	2	3	2	3	2	1	4	7	8	0	90	32	3.2	26.8
Sparisoma aurofrenatum	redband parrotfish	4	1	3	0	6	10	0	0	5	1	70	30	3.0	21.3
Sparisoma viride	stoplight parrotfish	1	0	0	1	1	1	4	0	7	10	70	25	2.5	21.0
Halichoeres garnoti	yellowhead wrasse	0	0	2	0	6	1	1	0	2	10	60	22	2.2	18.0
Hypoplectrus puella	barred hamlet	0	2	4	1	4	0	0	1	3	0	70	15	1.5	20.6
Haemulon flavolineatum	french grunt	1	0	0	4	1	1	1	0	3	2	70	13	1.3	20.7
Acanthurus bahianus	ocean surgeonfish	2	0	0	0	1	1	0	0	3	6	50	13	1.3	14.9
Chaetodon capistratus	foureye butterflyfish	0	0	4	0	0	0	2	0	6	0	30	12	1.2	9.1
Haemulon plumieri	white grunt	0	0	0	1	0	0	5	3	0	0	30	9	0.9	9.0
Abudefduf saxatillis	sergeant major	0	0	0	9	0	0	0	0	0	0	10	9	0.9	4.4
Stegastes leucostictus	beaugregory	0	0	0	0	0	1	4	3	0	0	30	8	0.8	8.9
Canthigaster rostrata	sharpnose puffer	1	1	0	1	2	1	0	1	1	0	70	8	0.8	20.8
Lutjanus apodus	schoolmaster snapper	1	0	2	1	0	0	0	1	1	1	60	7	0.7	17.8
Acanthurus chirurgus	doctorfish	0	0	2	0	0	1	0	1	3	0	40	7	0.7	11.8
Holocentrus rufus	longspine squirrelfish	0	3	0	2	0	2	0	0	0	0	30	7	0.7	8.9
Sparisoma rubripinne	redfin parrotfish	0	0	0	0	0	1	2	3	0	0	30	6	0.6	8.9
Epinephelus cruentatus	graysby	0	0	0	1	1	1	0	2	0	1	50	6	0.6	14.8
Myripristis jacobus	blackbar soldierfish	1	1	0	3	0	0	0	1	0	0	40	6	0.6	11.9
Holacanthus tricolor	rock beauty	0	0	0	0	0	0	2	2	0	1	30	5	0.5	8.9
Ocyurus chrysurus	yellowtail snapper	0	0	0	2	2	1	0	0	0	0	30	5	0.5	8.9
Acanthurus coeruleus	blue tang	0	0	0	1	2	0	0	0	2	0	30	5	0.5	8.9
Haemulon parra	sailors choice	0	0	1	1	0	0	2	0	0	0	30	4	0.4	8.9
Lutjanus griseus	gray snapper	0	0	0	1	0	0	0	0	2	1	30	4	0.4	8.9
Stegastes diencaeus	longfin damselfish	0	1	0	0	2	1	0	0	0	0	30	4	0.4	8.9
Pseudupeneus maculatus	spotted goatfish	1	0	1	0	1	0	0	0	1	0	40	4	0.4	11.9

Hypoplectrus unicolor	butter hamlet	1	0	0	0	0	0	0	0	0	0	10	1	0.1	3.0
Serranus tigrinus	harlequin bass	0	0	0	0	0	0	0	0	1	0	10	1	0.1	3.0
Serranus tabacarius	tobaccofish	1	0	0	0	0	0	0	0	0	0	10	1	0.1	3.0
Lactophyrs triqueter	spotted trunk	0	0	0	0	0	0	0	1	0	0	10	1	0.1	3.0
Holocentrus adscensionis	squirrelfish	0	1	0	0	0	0	0	0	0	0	10	1	0.1	3.0
Synodus intermedius	sand diver	0	0	0	0	0	0	0	0	0	1	10	1	0.1	3.0
	n = 60 species	58	57	40	188	118	112	109	106	154	79		Total fish = 1021		

(X, p. 2)

Appendix XB. South Capella belt transect data, St. Thomas, 2004.

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Chromis cyanea	blue chromis	42	0	0	40	70	10	7	32	23	40	80	264	26.4	22.6
Stegastes partitus	bicolor damselfish	9	0	0	5	8	0	0	5	6	5	60	38	3.8	3.5
Stegastes planifrons	three-spot damselfish	2	0	2	2	2	2	4	2	6	14	90	36	3.6	4.0
Thalassoma bifasciatum	bluehead wrasse	0	0	0	0	0	0	2	0	9	24	30	35	3.5	7.7
Scarus inserti	striped parrotfish	4	12	7	3	0	1	0	2	1	3	80	33	3.3	3.7
Chromis multilineata	brown chromis	8	0	0	0	2	2	0	2	8	1	60	23	2.3	3.1
Scarus taeniopterus	princess parrotfish	1	4	3	0	7	0	4	0	2	0	60	21	2.1	2.4
Acanthurus bahianus	ocean surgeonfish	1	1	0	0	3	2	1	2	3	5	80	18	1.8	1.5
Sparisoma viride	stoplight parrotfish	0	1	3	2	1	2	2	2	0	4	80	17	1.7	1.3
Chaetodon capistratus	foureye butterflyfish	4	2	0	1	0	0	0	4	4	0	50	15	1.5	1.8
Acanthurus coeruleus	blue tang	0	0	1	0	1	2	0	2	0	6	50	12	1.2	1.9
Clepticus parrae	creole wrasse	0	0	0	2	0	6	1	2	0	0	40	11	1.1	1.9
Sparisoma rubripinne	redfin parrotfish	0	1	0	2	5	0	0	0	0	0	30	8	0.8	1.6
Sparisoma aurofrenatum	redband parrotfish	3	0	0	0	0	1	0	1	0	3	40	8	0.8	1.2
Epinephelus cruentatus	graysby	0	1	2	0	0	1	1	3	0	0	50	8	0.8	1.0
Holocentrus rufus	longspine squirrelfish	3	0	0	0	3	0	0	0	1	1	40	8	0.8	1.2
Hypoplectrus puella	barred hamlet	2	0	0	0	0	1	2	0	2	0	40	7	0.7	0.9
Acanthurus chirurgus	doctorfish	0	0	1	5	0	0	0	0	0	0	20	6	0.6	1.6
Myripristis jacobus	blackbar soldierfish	0	0	0	0	0	0	0	0	4	2	20	6	0.6	1.3
Melichthyes niger	black durgon	0	0	0	1	0	1	0	3	0	0	40	5	0.5	1.0
Halichoeres garnoti	yellowhead wrasse	0	0	1	1	1	0	2	0	0	0	40	5	0.5	0.7
Holacanthus tricolor	rock beauty	0	0	0	0	1	2	0	1	0	0	30	4	0.4	0.7
Microspathodon chrysurus	yellowtail damselfish	0	0	0	0	0	1	0	2	1	0	30	4	0.4	0.7
Caranx ruber	bar jack	3	0	0	0	0	0	0	0	0	1	20	4	0.4	1.0
Stegastes leucostictus	beaugregory	2	0	0	1	0	0	0	0	0	0	30	3	0.3	0.7
Holocentrus adscensionis	squirrelfish	0	0	0	0	0	1	0	1	0	1	30	3	0.3	0.5
Haemulon sciurus	bluestriped grunt	1	0	1	0	0	0	0	0	0	0	20	2	0.2	0.4
Haemulon flavolineatum	french grunt	0	0	0	0	0	2	0	0	0	0	10	2	0.2	0.6
Sparisoma chrysopterum	redtail parrotfish	0	2	0	0	0	0	0	0	0	0	10	2	0.2	0.6
Epinephelus fulvus	coney	0	2	0	0	0	0	0	0	0	0	10	2	0.2	0.6
Canthigaster rostrata	sharpnose puffer	0	0	1	1	0	0	0	0	0	10	20	2	0.2	0.4
Hypoplectrus chlorurus	yellowtail hamlet	0	0	0	1	0	0	1	0	0	0	20	2	0.2	0.4
Mulloidichthys martinicus	yellow goatfish	0	0	2	0	0	0	0	0	0	0	10	2	0.2	0.6
Haemulon carbonarium	caesar grunt	0	0	0	0	0	0	0	0	0	1	10	1	0.1	0.3

Appendix XB continued. South Capella belt transect data, St. Thomas, 2004.

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Scarus vetula	queen parrot	0	0	0	0	0	1	0	0	0	0	10	1	0.1	0.3
Lutjanus mahogani	mahogany snapper	0	0	0	0	0	1	0	0	0	0	10	1	0.1	0.3
Catherhines pullus	orangespotted filefish	0	0	0	1	0	0	0	0	0	0	10	1	0.1	0.3
Abudefduf saxatillis	sergeant major	0	0	0	0	1	0	0	0	0	0	10	1	0.1	0.3
Hypoplectrus nigricans	black hamlet	0	0	0	0	0	0	0	0	1	0	10	1	0.1	0.3
Hypoplectrus unicolor	butter hamlet	0	0	0	0	0	0	1	0	0	0	10	1	0.1	0.3
Halichoeres maculipinna	clown wrasse	1	0	0	0	0	0	0	0	0	0	10	1	0.1	0.3
Pseudupeneus maculatus	spotted goatfish	0	0	1	0	0	0	0	0	0	0	10	1	0.1	0.3
	n = 42 species	86	26	25	68	105	39	28	66	71	121		Total fish = 625		

Scarus taeniopterus	princess parrotfish	0	1	0	0	2	3	4	9	4	0	60	23	2.3	2.9
Paranthias furcifer	creolefish	0	0	0	0	0	0	10	6	0	0	20	16	1.6	3.5
Chaetodon capistratus	foureye butterflyfish	2	1	0	1	1	3	4	0	0	2	70	14	1.4	1.3
Scarus inserti	striped parrotfish	4	0	2	0	0	3	0	2	0	0	40	11	1.1	1.5
Acanthurus chirurgus	doctorfish	1	0	2	0	3	2	0	0	0	2	50	10	1.0	1.2
Gramma loreto	fairy basslet	0	0	0	0	0	1	5	2	0	0	30	8	0.8	1.6
Stegastes planifrons	three-spot damselfish	0	0	0	0	0	0	0	7	0	0	10	7	0.7	2.2
Acanthurus bahianus	ocean surgeonfish	0	0	0	0	0	0	2	1	2	0	30	5	0.5	0.8
Chromis multilineata	brown chromis	0	0	5	0	0	0	0	0	0	0	10	5	0.5	1.6
Chaetodon aculeatus	longsnout butterflyfish	0	0	2	0	0	0	0	1	0	2	30	5	0.5	0.8
Epinephelus cruentatus	graysby	0	0	1	0	2	0	0	1	0	0	30	4	0.4	0.7
Halichoeres garnoti	yellowhead wrasse	0	1	0	0	0	2	0	0	0	0	20	3	0.3	0.7
Hypoplectrus chlorurus	yellowtail hamlet	0	0	0	0	0	1	1	0	0	0	20	2	0.2	0.4
Lactophyrs bicaudalis	spotted trunkfish	0	0	0	0	0	2	0	0	0	0	10	2	0.2	0.6
Bodianthus rufus	spanish hogfish	2	0	0	0	0	0	0	0	0	0	10	2	0.2	0.6
Holocentrus rufus	longspine squirrelfish	0	0	2	0	0	0	0	0	0	0	10	2	0.2	0.6
Acanthurus coeruleus	blue tang	0	1	0	1	0	0	0	0	0	0	20	2	0.2	0.4
Caranx ruber	bar jack	0	0	2	0	0	0	0	0	0	0	10	2	0.2	0.6
Sparisoma viride	stoplight parrotfish	0	0	0	0	0	0	0	0	2	0	10	2	0.2	0.6
Epinephelus guttatus	red hind	0	1	0	0	0	0	0	1	0	0	20	2	0.2	0.6
Mycteroperca tigris	tiger grouper	0	0	1	0	0	0	0	0	0	0	10	1	0.1	0.3
Haemulon striatum	striped grunt	0	0	0	0	0	0	0	0	0	1	10	1	0.1	0.3
Canthigaster rostrata	sharpnose puffer	0	0	0	0	1	0	0	0	0	0	10	1	0.1	0.3
Chaetodon sedentarius	reef butterflyfish	1	0	0	0	0	0	0	0	0	0	10	1	0.1	0.3
Sphyraena barracuda	great barracuda	0	0	0	1	0	0	0	0	0	0	10	1	0.1	0.3
Haemulon flavolineatum	french grunt	0	0	0	1	0	0	0	0	0	0	10	1	0.1	0.3
Kyphosus saltitrix	chub	0	1	0	0	0	0	0	0	0	0	10	1	0.1	0.3

Appendix XC continued. Grammanik Bank belt transect data, St. Thomas, 2004.

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Sparisoma chrysopterum	redtail parrotfish	0	0	0	0	0	0	0	0	1	0	10	1	0.1	0.3
Epinephelus fulvus	coney	0	0	0	0	0	1	0	0	0	0	10	1	0.1	0.3
	n = 34 species	66	11	125	120	36	77	85	126	52	8		Total fish = 706		

Appendix XD. Red Hind bank belt transect data, St. Thomas, 2004.

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Chromis cyanea	blue chromis	10	60	64	18	36	4	4	4	35	50	100	285	28.5	80.5
Clepticus parrae	creole wrasse	54	0	0	1	0	20	20	0	0	0	30	95	9.5	30.8
Lutjanus apodus	schoolmaster	1	0	4	0	0	20	20	20	0	0	50	65	6.5	19.8
Scarus inserti	striped parrotfish	4	10	4	6	0	0	0	0	12	4	60	40	4.0	11.6
Stegastes partitus	bicolor damselfish	15	2	0	2	3	0	0	0	5	6	60	33	3.3	10.0
Chaetodon capistratus	foureye butterflyfish	2	2	2	0	4	4	4	0	2	5	80	25	2.5	7.0
Microspathodon chrysurus	yellowtail damselfish	0	0	0	3	0	0	0	0	20	0	10	23	2.3	8.6
Thalassoma bifasciatum	bluehead wrasse	0	7	0	0	0	3	3	3	2	0	50	18	1.8	5.3
Gramma loreto	fairy basslet	5	0	1	0	0	0	0	0	4	7	40	17	1.7	5.2
Paranthias furcifer	creolefish	10	0	0	0	0	3	3	0	0	0	30	16	1.6	5.3
Holocentrus rufus	rock beauty	1	0	0	0	1	6	6	0	0	0	40	14	1.4	4.5
Acanthurus chirurgus	doctorfish	0	2	2	2	3	0	0	0	1	2	60	12	1.2	3.4
Chromis multilineata	brown chromis	0	0	0	0	0	0	0	0	11	0	10	11	1.1	4.4
Haemulon plumieri	white grunt	1	0	1	1	0	2	2	2	1	0	70	10	1.0	2.8
Scarus taeniopterus	princess parrotfish	0	1	0	0	0	0	0	0	4	5	30	10	1.0	3.3
Acanthurus coeruleus	blue tang	0	2	0	0	4	0	0	0	0	2	30	8	0.8	2.5
Chaetodon sedentarius	reef butterflyfish	0	0	0	0	0	2	2	2	0	0	30	6	0.6	1.9
Epinephelus fulvus	coney	0	0	0	0	0	2	2	2	0	0	30	6	0.6	1.9
Sparisoma viride	stoplight parrotfish	0	2	0	0	2	0	0	0	0	1	30	5	0.5	1.6
Sparisoma aurofrenatum	redband parrotfish	1	0	0	0	0	0	0	0	2	2	30	5	0.5	1.6
Chaetodon ocellatus	spotfin butterflyfish	0	0	0	0	0	0	0	4	0	0	10	4	0.4	1.6
Haemulon flavolineatum	french grunt	2	0	1	0	0	0	0	0	1	0	30	4	0.4	1.3
Acanthurus bahianus	ocean surgeonfish	4	0	0	0	0	0	0	0	0	0	10	4	0.4	1.6
Mulloidichthys martinicus	yellow goatfish	0	0	0	0	0	0	0	2	2	0	40	4	0.4	1.3
Myripristis jacobus	blackbar soldierfish	0	0	0	3	0	0	0	1	0	0	20	4	0.4	1.4
Haemulon macrostomum	spanish grunt	0	0	0	0	0	1	1	1	0	0	30	3	0.3	0.9
Lutjanus cyanopterus	cubera snapper	0	0	0	0	0	1	1	1	0	0	30	3	0.3	0.9
Halichoeres garnoti	yellowhead wrasse	0	0	0	0	0	0	1	1	1	0	30	3	0.3	0.9
Chaetodon aculeatus	longsnout butterflyfish	0	0	0	0	0	0	0	0	2	0	10	2	0.2	0.8
Balistes vetula	queen trigger	0	0	0	0	0	1	1	0	0	0	20	2	0.2	0.7
Bodianthus rufus	spanish hogfish	0	0	0	2	0	0	0	0	0	0	10	2	0.2	0.8
Pomacanthus paru	french angelfish	0	0	0	0	1	0	0	0	0	0	10	1	0.1	0.4
Pomacanthus arcuatus	gray angelfish	0	1	0	0	0	0	0	0	0	0	10	1	0.1	0.4

Appendix XD continued. Red Hind Bank belt transect data, St. Thomas, 2004.

Species	Common Name	Transect No. 1	2	3	4	5	6	7	8	9	10	%Freq	Total	Avg	StDev
Holacanthus tricolor	rock beauty	0	0	0	0	0	0	0	0	0	1	10	1	0.1	0.4
Holacanthus ciliarus	queen angelfish	0	0	0	0	1	0	0	0	0	0	10	1	0.1	0.4
Epinephelus guttatus	red hind	0	0	0	0	0	0	0	0	0	1	10	1	0.1	0.4
Epinephelus cruentatus	graysby	1	0	0	0	0	0	0	0	0	0	10	1	0.1	0.4
Mycteroperca venenosa	yellowfin grouper	1	0	0	0	0	0	0	0	0	0	10	1	0.1	0.4
Lutjanus mahogani	mahogany snapper	0	0	0	0	0	0	0	0	0	1	10	1	0.1	0.4
Ocyurus chrysurus	yellowtail snapper	1	0	0	0	0	0	0	0	0	0	10	1	0.1	0.4
Hypoplectrus puella	barred hamlet	0	0	0	0	0	0	0	0	0	1	10	1	0.1	0.4
Hypoplectrus nigricans	black hamlet	0	1	0	0	0	0	0	0	0	0	10	1	0.1	0.4
Lachnolaimus maximus	hogfish	1	0	0	0	0	0	0	0	0	0	10	1	0.1	0.4
Pseudupeneus maculatus	stopped goatfish	0	0	0	0	0	0	0	0	1	0	10	1	0.1	0.4
Sphyraena barracuda	great barracuda	0	1	0	0	0	0	0	0	0	0	10	1	0.1	0.4
Gymnothorax moringa	green moray eel	1	0	0	0	0	0	0	0	0	0	10	1	0.1	0.4
	n = 46 species	115	91	79	38	55	69	70	43	106	88		Total fish = 754		

Clepticus parrai	creolefish	3	3	3	100	3.0	0.0
Acanthurus coeruleus	blue tang	2	3	3	100	2.7	0.6
Acanthurus bahianus	ocean surgeon	2	3	3	100	2.7	0.6
Microspathodon chrysurus	yellowtail damselfish	2	3	3	100	2.7	0.6
Lutjanus apodus	schoolmaster snapper	2	3	3	100	2.7	0.6
Stegastes leucostictus	beaugregory	2	2	3	100	2.3	0.6
Hypoplectrus puella	barred hamlet	2	2	3	100	2.3	0.6
Pseudupeneus maculatus	spotted goatfish	2	3	2	100	2.3	0.6
Holocentrus rufus	longspine squirrelfish	2	3	2	100	2.3	0.6
Stegastes partitus	bicolor damselfish	3	3	0	100	2.0	1.7
Abudefduf saxatillis	sergeant major	2	1	3	100	2.0	1.0
Canthigaster rostrata	sharpnose puffer	2	2	2	100	2.0	0.0
Haemulon parra	sailors choice	3	3	0	66	2.0	1.7
Haemulon aurolineatum	tomtate	3	3	0	66	2.0	1.7
Haemulon plumieri	white grunt	2	2	2	100	2.0	0.0
Mulloidichthys martinicus	yellow goatfish	0	4	2	66	2.0	2.0
Acanthurus chirugus	doctorfish	2	3	0	66	1.7	1.5
Sparisoma aurofrenatum	redband parrotfish	2	0	3	66	1.7	1.5
Sparisoma chrysopterum	redfin parrotfish	0	2	3	66	1.7	1.5
Scarus taeniopterus	princess parrotfish	2	3	0	66	1.7	1.5
Haemulon sciurus	bluestriped grunt	1	2	2	100	1.7	0.6
Epinephelus fulvus	coney	1	2	2	100	1.7	0.6

Appendix XI A continued. Seahorse Cottage Shoal Site Summary of Roving Diver Surveys, St. Thomas 2004

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Lutjanus griseus	gray snapper	2	3	0	66	1.7	1.5
Gramma loreto	fairy basslet	2	3	0	66	1.7	1.5
Stegastes fuscus	dusky damsel	2	2	0	66	1.3	1.2
Balistes vetula	queen trigger	1	1	2	100	1.3	0.6
Hypoplectrus nigricans	black hamlet	1	0	3	66	1.3	1.5
Caranx ruber	bar jack	2	2	0	66	1.3	1.2
Stegastes planifrons	three-spot damselfish	0	0	3	33	1.0	1.7
Holacanthus tricolor	rock beauty	1	0	2	66	1.0	1.0
Hypoplectrus unicolor	butter hamlet	1	2	0	66	1.0	1.0
Lutjanus synagris	lane snapper	0	2	1	66	1.0	1.0
Aulostomus maculatus	trumpetfish	1	0	2	66	1.0	1.0
Bodianus rufus	spanish hogfish	2	0	1	66	1.0	1.0
Inermia vittata	boga	3	0	0	33	1.0	1.7
Stegastes diencaeus	longfin damselfish	0	2	0	33	0.7	1.2
Sparisoma rubripinne	redtail parrotfish	0	2	0	33	0.7	1.2
Cryptotomus roseus	bluelip parrotfish	0	2	0	33	0.7	1.2
Pomacanthus arcuatus	gray angelfish	0	2	0	33	0.7	1.2
Chaetodon striatus	banded butterflyfish	0	2	0	33	0.7	1.2
Haemulon carbonarium	ceaser grunt	2	0	0	33	0.7	1.2
Serranus tabacarius	tobaccofish	2	0	0	33	0.7	1.2
Lutjanus analis	mutton snapper	0	2	0	33	0.7	1.2
Holocentrus adscensionis	reef squirrelfish	2	0	0	33	0.7	1.2
Caranx barthalomew	yellow jack	0	2	0	33	0.7	1.2
Calamus calamus	jolthead porgy	0	2	0	33	0.7	1.2
Haemulon album	white margate	0	0	1	33	0.3	0.6
Haemulon melanurum	cottonwick	1	0	0	33	0.3	0.6
Epinephelus guttatus	red hind	0	1	0	33	0.3	0.6
Halichoeres bivittatus	slippery dick	1	0	0	33	0.3	0.6
Lactophyrs triqueter	smooth trunkfish	1	0	0	33	0.3	0.6
Lactophyrs polygonia	honeycomb cowfish	1	0	0	33	0.3	0.6
Sphyraena barracuda	great barracuda	1	0	0	33	0.3	0.6
Equetus punctatus	spotted drum	0	0	1	33	0.3	0.6
Priacanthus cruentatus	glasseye snapper	0	0	1	33	0.3	0.6

Appendix XI B continued. South Capella Site Summary of Roving Diver Surveys, St. Thomas 2004

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Malacanthus pulmieri	sand tilefish	0	1	0	33	0.3	0.6
Dasyatus americanus	southern stingray	0	1	0	33	0.3	0.6

n = 66 species

Appendix XI B. South Capella Site Summary of Roving Diver Surveys, St. Thomas 2004. Data is reported in abundance categories: 0 = no fish, 1=1 fish, 2=2-10 fish, 3=11-100 fish, 4=101-1000 fish, 5=over 1000 fish.

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Chromis cyanea	blue chromis	4	4	3	100	3.7	0.6
Chaetodon capistratus	foureye butterfly	3	3	3	100	3.0	0.0
Clepticus parrai	creole wrasse	3	4	2	100	3.0	1.0
Acanthurus bahianus	ocean surgeonfish	3	3	2	100	2.7	0.6
Stegastes partitus	bicolored damselfish	3	3	2	100	2.7	0.6
Scarus taeniopterus	princess parrotfish	3	3	2	100	2.7	0.6
Thalassoma bifasciatum	bluehead wrasse	3	4	1	100	2.7	1.5
Acanthurus coeruleus	blue tang	3	3	1	100	2.3	1.2
Scarus iserti	striped parrotfish	3	4	0	66	2.3	2.1
Halichoeres garnoti	yellowhead wrasse	3	2	2	100	2.3	0.6
Chromis multilineata	brown chromis	3	3	0	66	2.0	1.7
Microspathodon chrysurus	yellowtail damselfish	2	3	1	100	2.0	1.0
Sparisoma viride	stoplight parrotfish	2	3	1	100	2.0	1.0
Holacanthus tricolor	rock beauty	2	2	2	100	2.0	0.0
Haemulon flavolineatum	french grunt	2	3	1	100	2.0	1.0
Epinephelus fulvus	coney	2	2	2	100	2.0	0.0
Acanthurus chirurgus	doctorfish	0	3	2	66	1.7	1.5
Stegastes planifrons	three-spot damselfish	0	3	2	66	1.7	1.5
Abudefduf saxatillis	sergeant major	2	2	1	100	1.7	0.6
Chaetodon striatus	banded butterflyfish	2	2	1	100	1.7	0.6
Hypoplectrus puella	barred hamlet	0	3	2	66	1.7	1.5
Epinephelus cruentata	graysby	0	3	2	66	1.7	1.5
Bodianus rufus	spanish hogfish	1	2	2	100	1.7	0.6
Holocentrus rufus	longspine squirrelfish	2	2	1	100	1.7	0.6
Melichthys niger	black durgeon	2	2	0	66	1.3	1.2
Lutjanus mahogoni	mahogany snapper	2	2	0	66	1.3	1.2
Pseudupeneus maculatus	spotted goatfish	2	1	1	100	1.3	0.6
Gramma loreto	fairy basslet	2	0	2	66	1.3	1.2
Myripristis jacobus	blackbar soldierfish	2	2	0	66	1.3	1.2
Caranx ruber	bar jack	2	2	0	66	1.3	1.2
Canthigaster rostrata	sharpnose puffer	2	0	1	66	1.0	1.0

Pomacanthus arcuatus	gray angelfish	0	0	1	33	0.3	0.6
Cantherhines pullus	orangespotted filefish	0	1	0	33	0.3	0.6
Aluterus scriptus	scrawled filefish	0	0	1	33	0.3	0.6
Hypoplectrus unicolor	butter hamlet	0	0	1	33	0.3	0.6
Hypoplectrus aberrans	yellowbelly hamlet	0	0	1	33	0.3	0.6
Epinephelus guttatus	red hind	0	0	1	33	0.3	0.6

Appendix XI B continued. South Capella Site Summary of Roving Diver Surveys, St. Thomas 2004

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Mycteroperca interstitialis	yellowfin grouper	1	0	0	33	0.3	0.6
Lutjanus analis	mutton snapper	1	0	0	33	0.3	0.6
Halichoeres maculipinna	clown wrasse	1	0	0	33	0.3	0.6
Holocentrus vexillarius	dusky squirrelfish	1	0	0	33	0.3	0.6
Spyraenea barracuda	great barracuda	0	1	0	33	0.3	0.6
Synodus intermedius	sand diver	1	0	0	33	0.3	0.6
Calamus calamus	jolthead porgy	0	0	1	33	0.3	0.6
	n = 72 species						

Appendix XI C. Grammanik Bank Site Summary of Roving Diver Surveys, St. Thomas 2004. Data is reported in abundance categories: 0 = no fish, 1=1 fish, 2=2-10 fish, 3=11-100 fish, 4=101-1000 fish, 5=over 1000 fish.

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Chromis cyanea	blue chromis	3	2	4	100	3.0	1.0
Clepticus parrai	creole wrasse	3	2	3	100	2.7	0.6
Gramma loreto	fairy basslet	3	3	2	100	2.7	0.6
Melichthys niger	black durgeon	2	2	3	100	2.3	0.6
Scarus iserti	striped parrotfish	2	2	3	100	2.3	0.6
Sparisoma viride	stoplight parrotfish	2	2	3	100	2.3	0.6
Inermia vittata	boga	4	2	0	66	2.0	2.0
Stegastes partitus	bicolored damselfish	2	1	3	100	2.0	1.0
Chaetodon capistratus	foureye butterfly	0	2	3	66	1.7	1.5
Chromis multilineata	brown chromis	2	0	2	66	1.3	1.2
Holacanthus tricolor	rock beauty	2	2	0	66	1.3	1.2
Haemulon flavolineatum	french grunt	2	2	0	66	1.3	1.2
Lutjanus cyanopterus	cubera snapper	3	1	0	66	1.3	1.5
Myripristis jacobus	blackbar soldierfish	2	2	0	66	1.3	1.2
Scarus taeniopterus	lane snapper	0	2	2	66	1.3	1.2
Bodianus rufus	spanish hogfish	0	2	1	66	1.0	1.0
Chaetodon striatus	banded butterflyfish	2	1	0	66	1.0	1.0
Holacanthus ciliarus	queen angelfish	2	1	0	66	1.0	1.0
Priacanthus cruentatus	glasseye snapper	0	3	0	33	1.0	1.7
Synodus intermedius	sand diver	0	0	3	33	1.0	1.7
Thalassoma bifasciatum	bluehead wrasse	0	3	0	33	1.0	1.7
Acanthurus bahianus	ocean surgeonfish	0	0	2	33	0.7	1.2
Acanthurus chirugus	doctorfish	0	2	0	33	0.7	1.2
Acanthurus coeruleus	blue tang	0	2	0	33	0.7	1.2
Chaetodon ocellatus	spotfin butterflyfish	2	0	0	33	0.7	1.2
Hypoplectrus chlorurus	yellowtail hamlet	0	0	2	33	0.7	1.2
Haemulon sciurus	bluestriped grunt	2	0	0	33	0.7	1.2
Halichoeres garnoti	yellowhead wrasse	0	0	2	33	0.7	1.2
Holocentrus rufus	longspine squirrelfish	0	2	0	33	0.7	1.2
Lutjanus apodus	lane snapper	0	1	1	66	0.7	0.6

Appendix XI C continued. Grammanik Bank Site Summary of Roving Diver Surveys, St. Thomas 2004.

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Lactophyrs triqueter	smooth trunkfish	0	2	0	33	0.7	1.2
Mulloidichthys martinicus	yellow goatfish	2	0	0	33	0.7	1.2
Mycteroperca tigris	tiger grouper	1	1	0	66	0.7	0.6
Sparisoma chrysopterum	redtail parrotfish	0	2	0	33	0.7	1.2
Sparisoma aurofrenatum	redband parrotfish	2	0	0	33	0.7	1.2
Caranx lugubris	black jack	0	0	1	33	0.3	0.6
Caranx ruber	bar jack	1	0	0	33	0.3	0.6
Epinephelus fulvus	coney	1	0	0	33	0.3	0.6
Epinephelus striatus	Nassau grouper	0	1	0	33	0.3	0.6
Elagatis bipinnulata	rainbow runner	0	0	1	33	0.3	0.6
Epinephelus adscensionis	rock hind	0	1	0	33	0.3	0.6
Lutjanus jocu	dog snapper	0	1	0	33	0.3	0.6
Lutjanus mahogoni	mahogany snapper	1	0	0	33	0.3	0.6
Ocyurus chrysurus	yellowtail snapper	0	1	0	33	0.3	0.6
Malacanthus pulmieri	tilefish	0	0	1	33	0.3	0.6
Mycteroperca interstitialis	yellowmouth grouper	0	1	0	33	0.3	0.6
Mycteroperca venenosa	yellowfin grouper	0	0	1	33	0.3	0.6
Sphyraena barracuda	great barracuda	0	1	0	33	0.3	0.6

n = 48 species

Appendix XI D. Red Hind Bank Site Summary of Roving Diver Surveys, St. Thomas 2004. Data is reported in abundance categories: 0 = no fish, 1=1fish, 2=2-10 fish, 3=11-100 fish, 4=101-1000 fish, 5=over 1000 fish.

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Chromis cyanea	blue chromis	4	3	4	100	3.7	0.6
Gramma loreto	fairy basslet	4	2	1	100	2.3	1.5
Scarus iserti	striped parrotfish	2	2	3	100	2.3	0.6
Stegastes partitus	bicolored damselfish	3	2	2	100	2.3	0.6
Thalassoma bifasciatum	bluehead wrasse	1	3	3	100	2.3	1.2
Acanthurus coeruleus	blue tang	2	2	2	100	2.0	0.0
Mulloidichthys martinicus	yellow goatfish	2	2	2	100	2.0	0.0
Myripristis jacobus	blackbar soldierfish	2	2	2	100	2.0	0.0
Scarus taeniopterus	princess parrotfish	0	3	3	66	2.0	1.7
Sparisoma viride	stoplight parrotfish	3	2	1	100	2.0	1.0
Acanthurus chirugus	doctorfish	2	0	3	66	1.7	1.5
Chromis multilineata	brown chromis	0	3	2	66	1.7	1.5
Pseudupeneus maculatus	spotted goatfish	2	1	2	100	1.7	0.6
Acanthurus bahianus	ocean surgeonfish	0	1	3	66	1.3	1.5
Haemulon flavolineatum	french grunt	0	2	2	66	1.3	1.2
Halichoeres garnoti	yellowhead wrasse	3	1	0	66	1.3	1.5
Sparisoma aurofrenatum	redband parrotfish	3	1	0	66	1.3	1.5
Anisotremus surinamensis	porkfish	1	2	0	66	1.0	1.0
Bodianus rufus	spanish hogfish	2	1	0	66	1.0	1.0
Caranx ruber	bar jack	1	0	2	66	1.0	1.0
Chaetodon capistratus	foureye butterfly	0	1	2	66	1.0	1.0
Chaetodon striatus	banded butterflyfish	2	1	0	66	1.0	1.0
Clepticus parrai	creole wrasse	0	3	0	33	1.0	1.7
Hypoplectrus chlorurus	yellowtail hamlet	2	0	1	66	1.0	1.0
Holocentrus rufus	longspine squirrelfish	0	1	2	66	1.0	1.0
Lutjanus apodus	lane snapper	1	0	2	66	1.0	1.0
Pomacanthus arcuatus	gray angelfish	1	2	0	66	1.0	1.0
Chaetodon sedentarius	reef butterflyfish	0	0	2	33	0.7	1.2
Calamus calamus	jolthead porgy	0	0	2	33	0.7	1.2
Cantherhines pullus	orangespotted filefish	0	0	2	33	0.7	1.2
Chaetodon aculeatus	longsnout butterfly	0	2	0	33	0.7	1.2
Holacanthus tricolor	rock beauty	0	1	1	66	0.7	0.6
Lactophyrs triqueter	smooth trunkfish	0	2	0	33	0.7	1.2

Appendix XI D continued. Red Hind Bank Site Summary of Roving Diver Surveys, St. Thomas 2004.

Species	Common Name	Transect No. 1	2	3	%Freq	Avg AI	StDev
Pomacanthus paru	french angelfish	2	0	0	33	0.7	1.2
Abudefduf saxatilis	sergeant major	0	0	1	33	0.3	0.6
Epinephelus fulvus	coney	1	0	0	33	0.3	0.6
Haemulon sciurus	bluestriped grunt	1	0	0	33	0.3	0.6
Holacanthus ciliarus	queen angelfish	1	0	0	33	0.3	0.6
Lactophyrs trigonus	trunkfish	1	0	0	33	0.3	0.6
Priacanthus cruentatus	glasseye snapper	1	0	0	33	0.3	0.6

n =40 species