

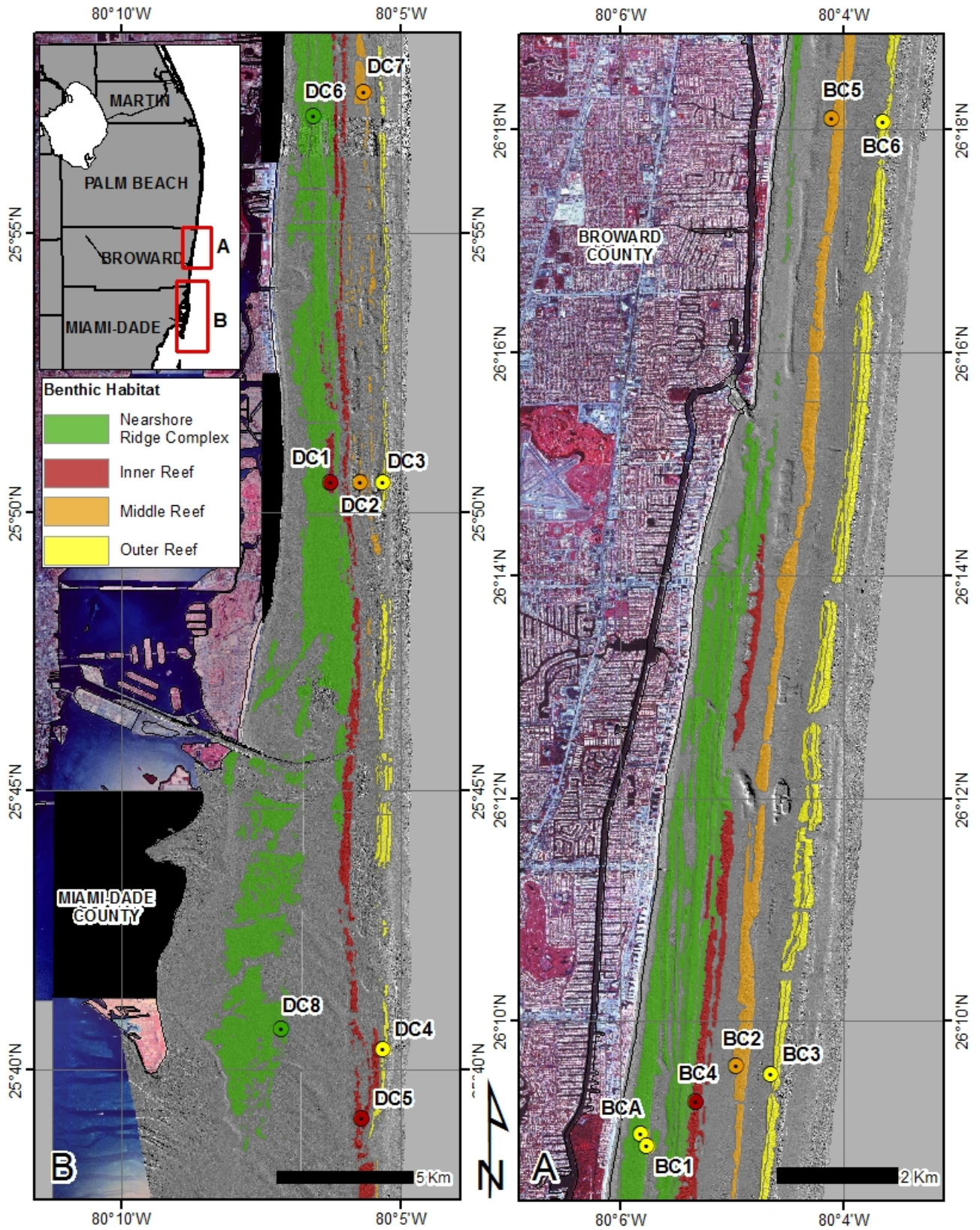
# Southeast Florida Coral Reef Evaluation and Monitoring Project



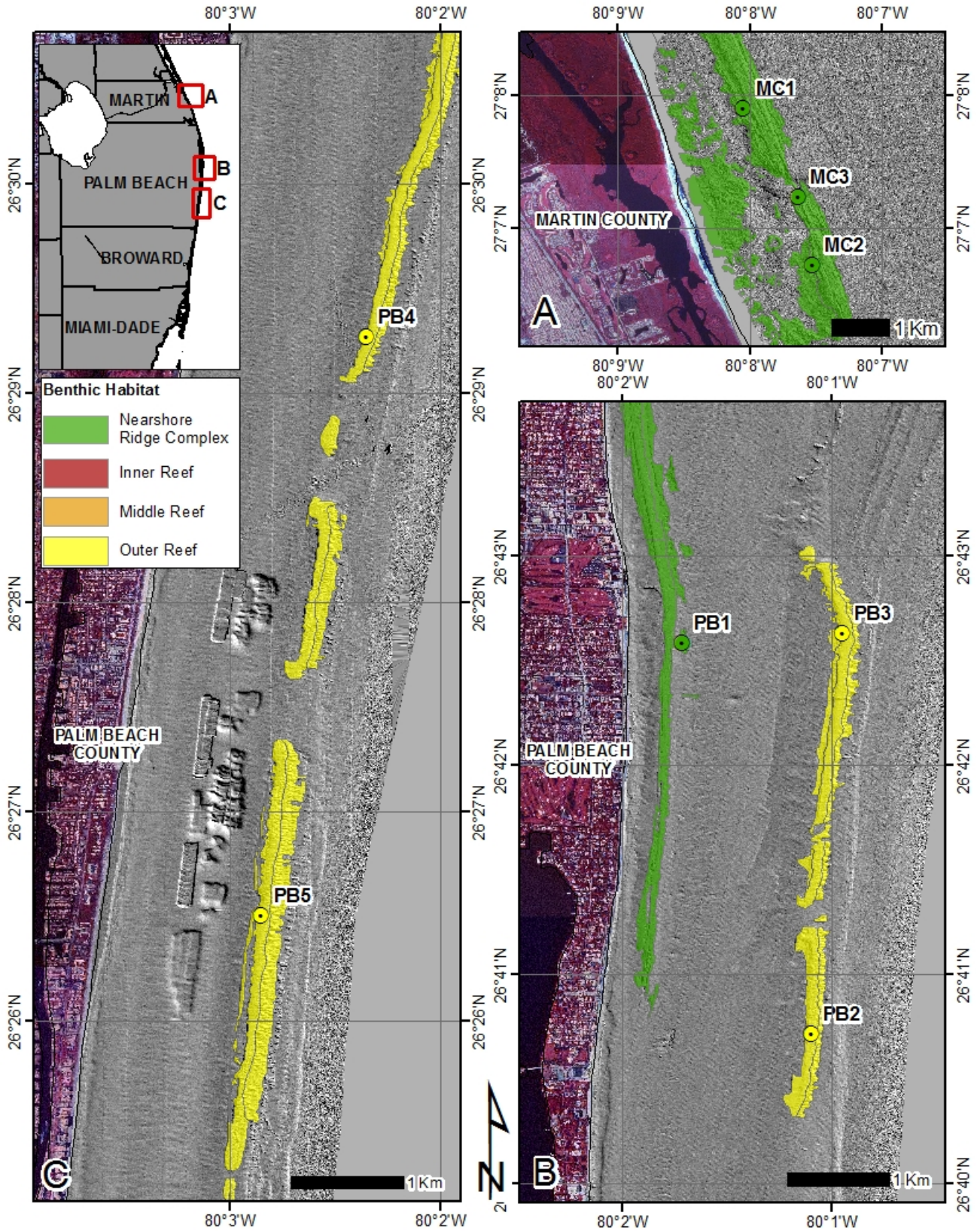
## Executive Summary 2013

### Overview

- The Southeast Florida Coral Reef Evaluation and Monitoring Project (SECREMP) documents the status and trends in the southeast Florida (Miami-Dade, Broward, Palm Beach, and Martin counties) reef system and in 2013 completed its 11<sup>th</sup> year of annual surveys.
- In 2013, 22 sites were surveyed. These 22 sites included six new sites added 2013 (three in Miami-Dade County and three in Broward County) and one site in Martin County (MC3) was discontinued. The data associated with the addition of these new sites permits more meaningful summaries to be presented annually. Data collected at Martin County site MC3 only included stony coral colony fate tracking, and thus the sampling effort was inconsistent with the other SECREMP sites. The financial resources saved by not sampling MC3 facilitated the costs associated with installing and sampling the six new sites. New site locations were chosen to address data gaps along the southeast Florida reef tract, creating a more balanced sampling effort. See Figures 1 and 2 and Table 1 for site location summary information.
- Recent (2012) modifications to survey design now evaluate the benthic communities using two primary methods: (1) demographic surveys to quantify stony coral, octocoral, and *Xestospongia muta* (barrel sponge) density, size class distribution, and condition; (2) image transects to quantify percent cover of major benthic taxa (e.g., stony corals, octocorals, sponges and macroalgae). The prevalence (percentage of colonies with a condition) of the coral boring sponge, *Cliona deletrix*, disease, and bleaching was also recorded during the demographic surveys. All surveys are performed within four permanently marked 22m x 2m stations at all sites (Figure 3).
- The 2013 stony coral, octocoral, sponge, and macroalgae percent benthic cover and demographic data and barrel sponge demographic data are summarized for all 22 sites. In addition, long-term temporal changes in benthic cover for each station at each of the 10 sites sampled from 2003-2012 (DC1, DC2, DC3, BCA, BC1, BC2, BC3, PB1, PB2, PB3) and two from 2006-2012 (Martin County Sites MC1 and MC2) are summarized.
- The 2013 SECREMP Executive Summary provides the Our Florida Reefs Community Working Groups (OFR CWG) with summary information for the entire southeast Florida reef system and for each Community Working Group region. The South CWG region includes the Miami-Dade (8) and Broward (7) county sites and the North CWG region includes the Palm Beach (5) and Martin (2) county sites.



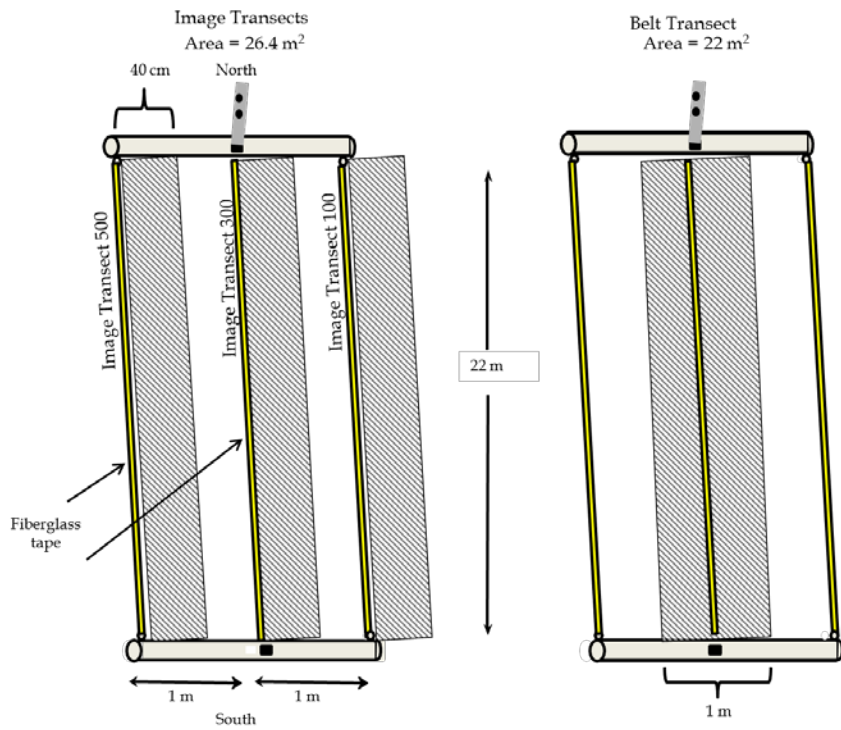
**Figure 1.** South Community Working Group region SECUREMP sites with the Broward County sites shown in panel A and Miami-Dade County sites in panel B.



**Figure 2.** North Community Working Group region SECREMP sites with the Martin County sites shown in panel A and the Palm Beach County sites in panels B and C (Note MC3 was not sampled in 2013).

**Table 1.** Site locations and depths (DC = Miami-Dade; BC = Broward; PB = Palm Beach; MC = Martin) (\* indicates sites first sampled in 2013) (NRC = Nearshore Ridge Complex).

Site Code	County	OFR CWG	Reef Type	Depth (ft)	Latitude (N)	Longitude (W)
DC1	DC	South	Inner	25	25° 50.530'	80° 06.242'
DC2	DC	South	Middle	45	25° 50.520'	80° 05.704'
DC3	DC	South	Outer	55	25° 50.526'	80° 05.286'
DC4	DC	South	Outer	41	25° 40.357'	80° 05.301'
DC5	DC	South	Inner	24	25° 39.112'	80° 05.676'
*DC6	DC	South	NRC	15	25° 57.099'	80° 06.534'
*DC7	DC	South	Middle	55	25° 57.530'	80° 05.639'
*DC8	DC	South	NRC	15	25° 40.707'	80° 07.111'
BCA	BC	South	NRC	25	26° 08.985'	80° 05.810'
BC1	BC	South	NRC	25	26° 08.872'	80° 05.758'
BC2	BC	South	Middle	40	26° 09.597'	80° 04.950'
BC3	BC	South	Outer	55	26° 09.518'	80° 04.641'
*BC4	BC	South	Inner	30	26° 09.273'	80° 05.313'
*BC5	BC	South	Middle	45	26° 18.100'	80° 04.095'
*BC6	BC	South	Outer	55	26° 18.067'	80° 03.634'
PB1	PB	North	NRC	25	26° 42.583'	80° 01.714'
PB2	PB	North	Outer	55	26° 40.710'	80° 01.095'
PB3	PB	North	Outer	55	26° 42.626'	80° 00.949'
PB4	PB	North	Outer	55	26° 29.268'	80° 02.345'
PB5	PB	North	Outer	55	26° 26.504'	80° 02.854'
MC1	MC	North	NRC	15	27° 07.900'	80° 08.042'
MC2	MC	North	NRC	15	27° 06.722'	80° 07.525'



**Figure 3.** A typical SECREMP station showing the image transect area and the stony coral, octocoral (note the octocoral belt area is 1 m x 10 m), and barrel sponge belt transect survey area (highlighted in grey).

**Results**

**2013 Benthic Cover**

- Table 2 summarizes percent benthic cover at all sites for four benthic community taxa (stony coral, octocoral, sponge, and macroalgae) and substrate (benthic areas generally colonized by a turf algae community).

**Table 2.** 2013 mean ( $\pm$ SD) SECREMP site and Community Working Group (CWG) region percent taxa benthic cover (DC = Miami-Dade; BC = Broward; PB = Palm Beach; MC = Martin) (SC = stony coral, OC = octocoral, SP = sponge, MA = macroalgae, and SB = substrate).

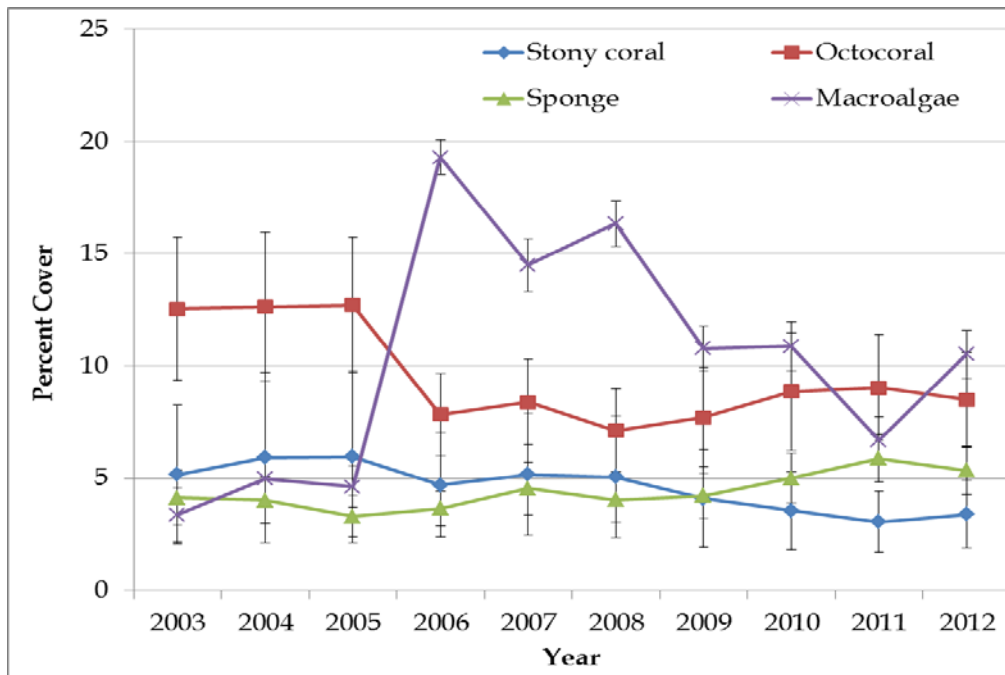
Site Code	OFR CWG	SC	SD	OC	SD	SP	SD	MA	SD	SB	SD
DC1	South	3.3	0.9	9.7	0.7	2.7	0.6	15.4	6.7	61.8	9.2
DC2	South	0.6	0.2	13.6	4.2	5.0	0.4	4.8	5.7	69.7	9.7
DC3	South	0.3	0.3	8.2	1.9	4.7	0.8	1.7	5.0	80.0	6.9
DC4	South	1.2	0.6	14.5	2.2	6.4	1.7	3.1	1.9	70.9	6.2
DC5	South	1.8	0.1	16.1	1.2	3.9	0.6	7.5	1.1	67.8	4.4
DC6	South	3.0	0.3	9.3	3.5	2.5	1.3	11.0	1.8	71.3	9.7
DC7	South	0.5	0.8	9.5	1.7	7.9	0.5	2.6	1.4	67.0	2.4
DC8	South	1.5	0.5	16.4	1.7	3.4	0.8	6.3	2.1	69.6	2.3
BCA	South	10.3	2.3	2.5	0.5	3.4	3.3	2.9	2.6	80.3	7.9
BC1	South	12.9	2.3	7.1	1.5	3.7	0.4	6.9	3.0	66.9	4.3
BC2	South	0.5	1.2	5.5	1.1	6.6	0.4	3.3	6.6	83.6	8.6
BC3	South	0.5	0.3	14.0	0.8	6.6	0.5	2.2	1.2	70.1	2.4
BC4	South	3.5	0.6	4.8	1.1	3.1	1.5	28.8	6.5	55.1	11.7
BC5	South	1.2	0.2	7.7	1.0	7.4	1.4	11.5	1.3	63.3	3.0
BC6	South	0.7	0.3	15.6	2.6	5.1	0.6	3.7	1.7	49.5	21.8
South CWG		2.8	3.8	10.3	4.7	4.8	2.0	7.4	7.7	68.5	11.7
PB1	North	0.2	0.2	0.0	0.0	1.9	1.9	0.3	0.2	95.5	3.2
PB2	North	1.8	0.5	17.9	9.4	7.3	0.7	0.5	0.4	60.2	15.1
PB3	North	1.3	0.7	12.8	2.8	10.3	0.8	6.2	1.7	55.5	11.4
PB4	North	1.9	0.2	17.2	3.6	14.2	5.8	3.9	1.7	55.6	12.5
PB5	North	1.6	0.5	19.9	2.4	7.8	1.2	13.0	3.1	52.6	8.1
MC1	North	1.9	1.5	0.1	0.1	1.4	0.5	25.9	13.1	52.9	3.2
MC2	North	0.8	0.3	0.0	0.0	2.5	1.0	47.4	4.2	47.2	5.9
North CWG		1.4	0.9	9.7	9.5	6.5	5.0	13.9	17.0	59.9	17.4

- Substrate dominated mean ( $\pm$ 1 standard deviation [SD]) percent benthic cover ( $>50\%$  at 20 sites). Substrate was  $68.5\pm 11.7\%$  in the South region and  $59.9\pm 17.4\%$  in the North region (Table 2).
- Octocorals contributed more to percent cover than the other taxa in eight South region sites and in four North region sites with a South region mean ( $\pm$ SD) of  $10.3\pm 4.7\%$  and a North region mean of  $9.7\pm 9.5\%$  (increased to  $14.3\%$  if the Martin sites are removed) (Table 2).

- Macroalgae generally followed octocorals in percent benthic cover with a South region mean ( $\pm$ SD) of  $7.5\pm 7.7\%$  and a North mean of  $13.9\pm 17.0\%$  (decreased to 4.8% if the Martin sites are removed) (Table 2).
- Sponges contributed more than 5% to benthic cover at 7 of the South sites which had a region mean of  $4.8\pm 2.1\%$  and at 4 North sites which had a region mean of  $6.5\pm 5.0\%$  (Table 2).
- Stony coral contributed less than 2% cover at 10 of the South sites and at all seven North sites. Stony coral cover was  $\geq 3\%$  at three South sites and two sites, BCA and BC1, had cover greater than 10%. The South region mean was  $2.8\pm 3.8\%$  (decreasing to 1.4% if BCA and BC1 are excluded) and the North region mean was  $1.4\pm 0.9\%$  (Table 2).
- BC1 and BCA had the greatest percent stony coral cover in the project,  $12.9\pm 2.3\%$  and  $10.3\pm 2.3\%$ , respectively (Table 2). Both sites are located on the nearshore ridge complex offshore mid-Broward County (Table 1). BC1 is dominated by larger ( $>50$  cm diameter) colonies and BCA is a staghorn coral, *Acropora cervicornis*, patch with *A. cervicornis* accounting for  $>95\%$  of the total stony coral cover at this site.

### Long-term Trends – 2003-2012

- Long-term trends in benthic cover taxa (stony coral, macroalgae, octocoral, and sponge) were examined using a generalized mixed model regression. Trends were examined at the site level with stations as replicates ( $n =$  four stations per site) and project-wide with the data averaged for 12 sites. County-wide summaries (each county) were not analyzed statistically because lower replication limited the statistical power of within county analyses. Project-wide there was no significant trend identified for stony coral cover. Mean stony coral cover has remained below 5% since 2008 (Figure 4) but the lower value is attributed to site BCA (South region) which is the only site to have experienced a significant trend of decreasing cover since 2003. BCA is a site dominated by *Acropora cervicornis* and cover at this site has dropped from a high of 40% in 2005 to a low of 14% in 2011.
- Project-wide there has been a significant decreasing trend identified for octocoral cover (Figure 4). Three South region sites (DC3, PB3, and PB1) and two North region sites (PB1 and PB3) had a significant decreasing trend in octocoral cover since 2003.
- Sponge cover has shown a significant increasing trend project-wide since 2003 (Figure 4). Two South region sites (DC1 and BC3) and one North region site (PB2) were determined to show this increasing trend in sponge cover.
- Macroalgae cover has fluctuated greatly over the last 10 years from less than 5% in 2003 to nearly 20% in 2006 (Figure 4). No trend was identified for macroalgae cover at the project-wide or site level.
- The mean ( $\pm 1$ SD) annual (2003-2012) percent benthic cover for stony coral, macroalgae, octocoral, and sponge are presented for each OFR CWG region is shown in Figure 5.

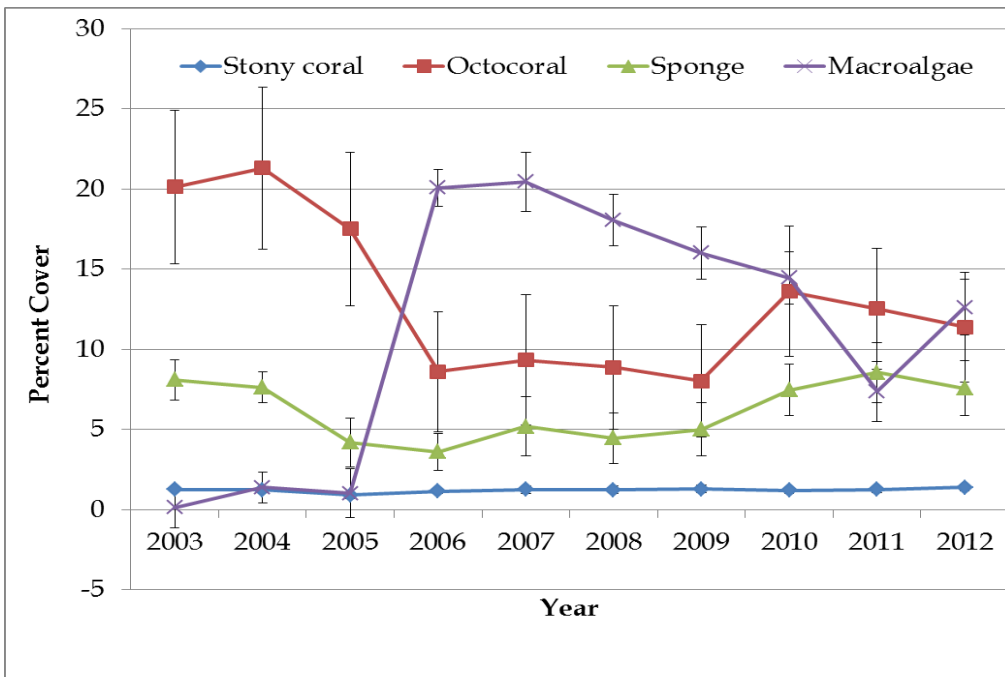
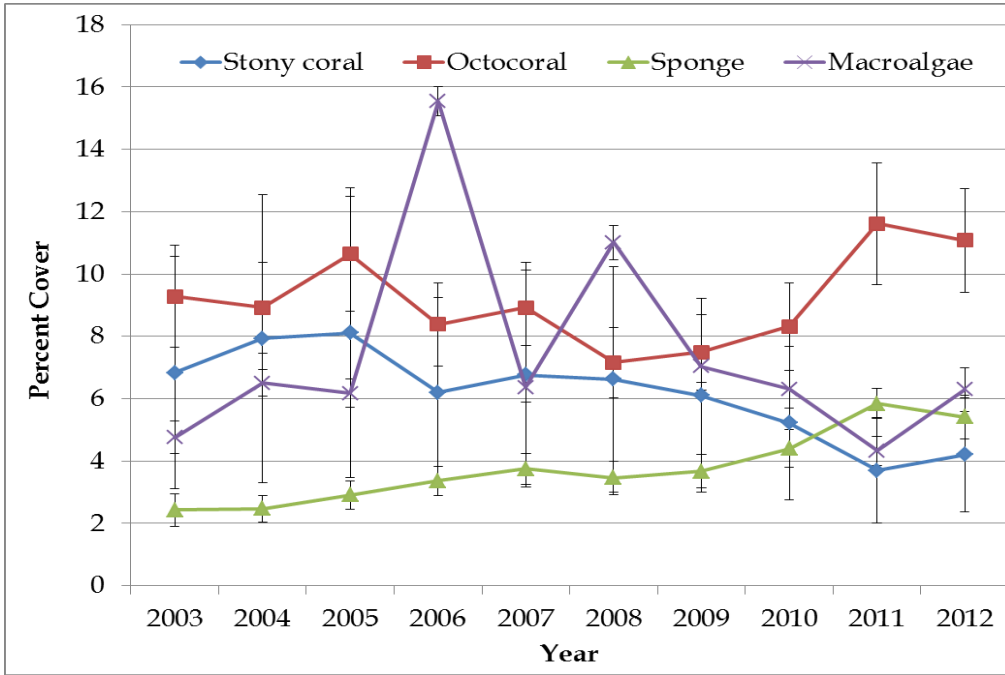


**Figure 4.** Mean ( $\pm 1$  standard error [SE]) project-wide ( $n = 10$  sites 2003-2006 and 12 sites 2006-2012) annual stony coral, octocoral, sponge, and macroalgae percent cover.

### 2013 Demographic Data

#### *Stony Corals (colonies $\geq 4$ cm diameter) including scleractinia and millepora species*

- Mean ( $\pm$ SD) stony coral density (colonies/m<sup>2</sup>) in the South region ranged from  $0.3 \pm 0.2$  (site DC3) to  $3.3 \pm 0.6$  (BC4) and from  $0.5 \pm 0.3$  (PB1) to  $2.3 \pm 0.6$  (PB5) in the North region. Both regions had similar overall densities (pooled for all sites within each region) with  $1.2 \pm 0.8$  colonies/m<sup>2</sup> in the South and  $1.3 \pm 0.6$  colonies/m<sup>2</sup> in the North (Table 3).
- Mean ( $\pm$ SD) stony coral species richness (number of species) in the South region ranged from  $4.0 \pm 1.4$  (DC3) to  $10.5 \pm 1.7$  (BC4) and from  $2.5 \pm 0.7$  (PB1) to  $8.5 \pm 0.6$  (PB5) in the North. An interesting note is that the sites defining the range in colony density were the same as for richness. BCA actually had the fewest species in the South region, but this was expected because it is a unique site dominated by staghorn coral, *Acropora cervicornis*. Mean South region richness was  $5.7 \pm 2.2$  species/site and in the North  $6.5 \pm 2.2$  species/site (Table 3).
- Twenty-five stony coral species were identified within the South region and 21 in the North.
- In both regions the five species which contributed greatly to the stony coral assemblage in terms of frequency of occurrence (total number of stations) and mean station density were *Siderastrea siderea*, *Porites astreoides*, *Montastraea cavernosa*, *Stephanocoenia intersepta*, and *Meandrina meandrites*. *Siderastrea siderea* was most common and was identified in the most stations and in all South and North sites. In the South region *P. astreoides* had the greatest density followed by *S. siderea* and *M. cavernosa* while in North *M. cavernosa* had the greatest density followed by *S. siderea* and *P. astreoides*.



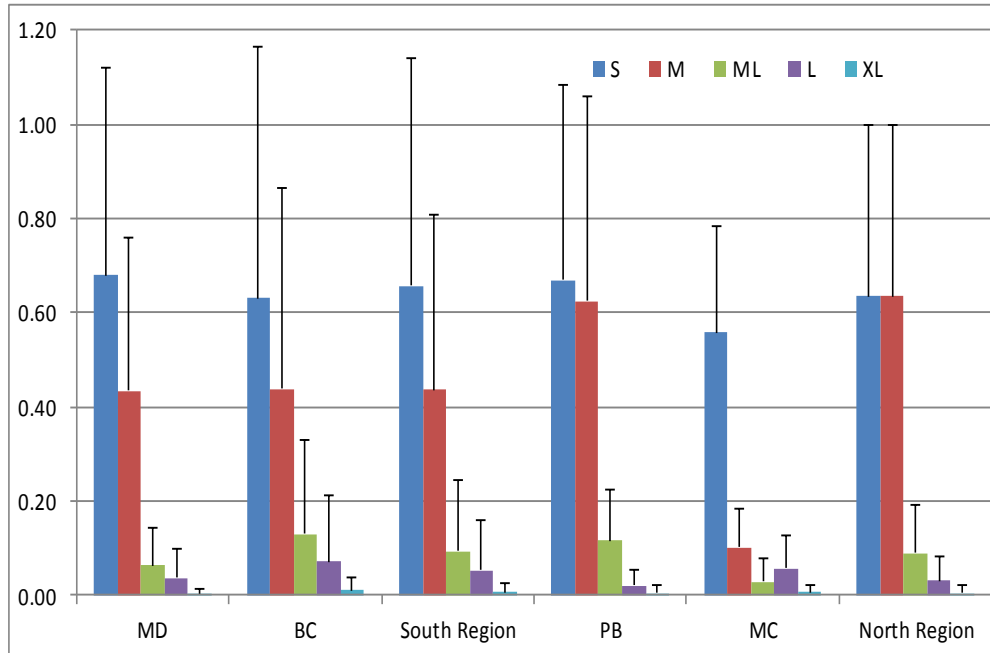
**Figure 5.** Mean ( $\pm$ SE) annual stony coral, octocoral, sponge, and macroalgae percent cover for sites in OFR South CWG region (top graph, n = 7 sites 2003-2012) and North CWG (bottom graph, (n = 3 sites 2003-2006 and 5 sites 2006-2012)). Note: scale of y-axis is different for each graph.



**Table 3.** 2013 mean ( $\pm$ SD) SECREMP site and Community Working Group (CWG) region stony coral demographic data. (DC = Miami-Dade; BC = Broward; PB = Palm Beach; MC = Martin) [Density = colonies  $\geq$ 4cm diameter/m<sup>2</sup>, Richness = number of species, Size = colony diameter (cm), OM = old mortality (percentage of whole colony), RM = recent mortality (percentage of whole colony)]. Note: BCA density does not include colonies of *A. cervicornis*.

Site Code	OFR CWG	Density	SD	Richness	SD	Size	SD	OM	SD	RM	SD
DC1	South	1.8	0.3	8.0	0.8	19.8	2.4	9.5	2.5	1.4	1.7
DC2	South	0.9	0.2	6.3	1.5	10.2	1.8	7.6	8.9	1.1	1.2
DC3	South	0.3	0.2	4.0	1.4	14.3	5.7	6.1	5.0	1.5	2.4
DC4	South	0.7	0.2	6.0	0.8	13.8	4.0	19.4	10.9	0.6	0.7
DC5	South	2.6	0.5	9.3	1.0	12.4	2.9	15.5	2.5	0.3	0.3
DC6	South	1.4	0.5	6.5	1.3	18.1	2.6	16.9	2.0	0.7	0.4
DC7	South	1.1	0.1	7.5	0.6	9.3	2.0	10.8	4.2	2.5	2.5
DC8	South	0.9	0.2	6.5	1.3	11.9	2.4	18.2	5.7	1.4	0.8
BCA	South	0.6	0.4	2.5	0.6	13.4	5.9	19.9	4.9	0.7	0.4
BC1	South	1.8	0.7	7.3	1.3	39.3	6.1	17.6	7.0	1.3	1.8
BC2	South	0.6	0.2	5.3	1.7	10.8	2.9	10.2	5.9	0.6	0.5
BC3	South	0.8	0.2	5.3	1.9	10.9	1.7	12.1	8.3	1.1	0.6
BC4	South	3.3	0.6	10.5	1.7	14.2	2.0	17.4	2.5	1.6	2.8
BC5	South	1.2	0.4	7.3	1.3	11.7	3.3	18.1	5.2	0.8	0.8
BC6	South	0.6	0.2	4.8	0.5	13.7	2.4	12.7	10.0	0.4	0.7
South CWG		1.2	0.8	5.7	2.2	14.9	5.3	14.1	7.1	1.1	1.4
PB1	North	0.5	0.3	2.5	0.7	6.0	0.7	2.8	3.0	0.9	1.2
PB2	North	1.1	0.3	6.0	1.4	17.2	5.1	28.2	8.3	0.8	0.7
PB3	North	1.0	0.6	5.3	2.6	15.7	2.9	25.3	13.3	0.2	0.3
PB4	North	1.8	0.8	7.3	1.9	15.9	4.3	24.9	6.3	0.7	1.1
PB5	North	2.3	0.6	8.5	0.6	14.6	2.9	25.8	8.6	0.3	0.2
MC1	North	1.0	0.2	4.3	1.3	17.0	9.3	17.2	5.1	0.3	0.2
MC2	North	0.5	0.1	4.3	0.5	13.6	3.8	14.3	6.5	0.5	1.0
North CWG		1.3	0.9	6.5	2.2	14.9	7.8	21.1	10.2	0.5	0.7

- Combined for all coral species, mean ( $\pm$ SD) stony coral size (diameter) in the South region ranged from 9.3 $\pm$ 2.0 cm (DC7) to 39.3 $\pm$ 6.1 cm (BC1) and from 6.0 $\pm$ 0.7 cm (PB1) to 17.2 $\pm$ 5.1 cm (PB2) in the North region. Average coral size in both regions was similar; 14.9 $\pm$ 5.3 cm in the South and 14.9 $\pm$ 7.8 cm in the North (Table 3).
- Small (4-10 cm diameter) and medium (11-30 cm) colony size classes had much greater densities than larger size classes at all sites. The distribution of colony size classes was similar within each county and region (Figure 6).
- Colonies greater than 75 cm in diameter were identified at five South region sites and at four North regions sites. In the South, all of these colonies were either *M. cavernosa*, *Orbicella* species (*annularis* or *faveolata*), and *M. meandrites*. In the North, all of these colonies were *Diploria strigosa*, *D. clivosa*, and *M. meandrites*.



**Figure 6.** Mean ( $\pm$ SD) stony coral size class density (colonies/m<sup>2</sup>) by county and CWG region (S = 4-10 cm, M = 11-30 cm, ML = 31-50 cm, L = 51-99 cm, and XL =  $\geq$ 100 cm) (MD = Miami-Dade; BC = Broward; PB = Palm Beach; MC = Martin).

- Mean ( $\pm$ SD) stony coral colony percent tissue old mortality was greater in the North region (21.1 $\pm$ 10.2%) than in the South region (14.1 $\pm$ 7.1%), but mean percent tissue recent mortality was greater in the South region (1.1 $\pm$ 1.4%) than in the North region (0.5 $\pm$ 0.7%) (Table 3).
- The presence of boring sponge was recorded in 12 of the South region sites and in five of the North sites with a mean region prevalence of 2.2 $\pm$ 3.6% and 3.5 $\pm$ 4.7% respectively.
- Mean site disease prevalence in the South region was 0.4 $\pm$ 1.4% and a North mean of 0.6 $\pm$ 3.3%. Only 10 coral colonies in the South region were identified with disease, and of these, six were Dark Spot Syndrome on five *S. siderea* and one *S. intersepta* colonies. In the North region only two colonies were recorded with Dark Spot Syndrome; both located at MC2.

#### Octocorals

- Mean ( $\pm$ SD) octocoral density (colonies/m<sup>2</sup>) in the South region ranged from 1.0 $\pm$ 1.2 (site BCA) to 20.8 $\pm$ 7.6 (BC6) and from 0.5 $\pm$ 0.2 (PB1) to 19.8 $\pm$ 4.7 (PB5) in the North region. Octocorals are rare at the Martin County sites with only two colonies seen within one station in MC2 and no colonies in site MC1. Mean density in the South region was 8.5 $\pm$ 5.6 and in the North 10.1 $\pm$ 9.3 (increased to 14.6% if the Martin sites are removed) in the North (Table 4)
- Because octocorals are challenging to identify to species in the field, five species were targeted to assess changes in the abundance and distribution of the greater octocoral community. These species included: *Eunicea calyculata*, *Pseudopterogorgia/Antillogorgia americana*, *Plexaura/Eunicea flexuosa*, *Pseudoplexaura porosa*, and *Gorgonia ventalina*.

**Table 4.** 2013 mean ( $\pm$ SD) SECREMP site and Community Working Group (CWG) region octocoral demographic data. (DC = Miami-Dade; BC = Broward; PB = Palm Beach; MC = Martin) (TL Density = all colonies/m<sup>2</sup>, TR density = target species colonies/m<sup>2</sup>, Size = colony height).

Site Code	OFR CWG	TL Density	SD	TR Density	SD	Size (cm)	SD
DC1	South	6.9	2.8	2.4	1.1	28.0	2.1
DC2	South	9.2	0.4	3.4	1.0	34.7	2.4
DC3	South	6.2	2.9	1.9	0.7	24.8	7.1
DC4	South	11.2	5.0	4.0	1.0	25.7	2.1
DC5	South	6.6	2.4	4.6	1.7	30.0	4.7
DC6	South	6.9	1.5	3.1	0.5	23.8	4.9
DC7	South	3.4	0.5	0.9	0.7	26.9	5.0
DC8	South	14.9	2.9	3.4	1.2	23.9	7.1
BCA	South	1.0	1.2	0.1	0.1	10.6	12.3
BC1	South	10.8	1.6	1.9	0.4	32.5	6.5
BC2	South	7.4	2.2	3.4	1.1	18.3	1.8
BC3	South	12.9	2.1	2.6	0.7	34.5	6.2
BC4	South	3.7	1.2	1.9	0.4	20.6	3.5
BC5	South	5.7	1.1	4.1	1.4	18.5	2.6
BC6	South	20.8	7.6	5.7	1.1	34.7	3.7
South CWG		8.5	5.6	2.9	1.6	25.8	8.3
PB1	North	0.5	0.2	0.1	0.0	5.0	0.0
PB2	North	17.0	7.7	0.0	0.1	27.7	3.7
PB3	North	12.9	6.4	5.2	1.7	27.6	4.2
PB4	North	15.6	4.6	4.3	1.2	39.6	7.8
PB5	North	19.8	4.7	3.6	1.4	35.5	5.8
MC1	North	0.0	0.0	5.2	1.3	NA	NA
MC2	North	0.0	0.1	0.0	0.0	NA	NA
North CWG		10.1	9.3	2.6	2.5	31.0	9.7

- All five species were identified in 16 sites and only the Martin County sites had none.
- Mean ( $\pm$ SD) octocoral target species colony height in the South region ranged from 10.6 $\pm$ 12.3 cm (BCA) to 34.7 $\pm$ 3.7 cm (BC6) and from 5.0 $\pm$ 0.0 cm (PB1) to 39.6 $\pm$ 7.8 cm (PB4) in the North region. Mean South region height was 25.8 $\pm$ 8.3 cm and in the North 31.0 $\pm$ 9.8 cm (Table 4).
- Conditions which can compromise octocoral health were recorded for the target species. These included disease, predation, and overgrowth (by sponges, fire coral, macroalgae/turf algae, etc.). Mean site colony prevalence for disease, predation, and overgrowth was greater in the South region (7.9 $\pm$ 8.4%, 12.5 $\pm$ 36.2%, and 53.6 $\pm$ 29.1%, respectively) than in the North region (3.8 $\pm$ 4.9%, 3.1 $\pm$ 5.2%, and 51.7 $\pm$ 44.3%, respectively).

*Barrel sponges (Xestospongia muta)*

- Barrel sponges were recorded at 15 South region sites with a mean ( $\pm$ SD) density (sponges/m<sup>2</sup>) of 0.2 $\pm$ 0.2 (Table 5). Barrel sponges were only observed at four Palm Beach sites. No sponges were recorded at PB1 or the Martin County (MC1 and MC2) sites. Mean density in the North region was 0.3 $\pm$ 0.3 (Table 5).

**Table 5.** 2013 mean ( $\pm$ SD) SECREMP site and Community Working Group (CWG) region barrel sponge (*Xestospongia muta*) demographic data. (DC = Miami-Dade; BC = Broward; PB = Palm Beach; MC = Martin) [Density = sponges/m<sup>2</sup>, Size = sponge height (cm), IP = injury prevalence (percent of colonies with injury)].

Site Code	OFR CWG	Density	SD	Size	SD	IP	SD
DC1	South	0.1	0.1	5.5	3.5	0.0	0.0
DC2	South	0.3	0.0	26.5	3.3	0.0	0.0
DC3	South	0.3	0.1	27.1	6.4	4.2	8.3
DC4	South	0.6	0.1	26.8	4.0	4.2	4.9
DC5	South	0.1	0.1	19.0	18.8	27.8	4.8
DC6	South	0.0	0.0	14.0	0.0	0.0	0.0
DC7	South	0.3	0.1	18.1	7.9	8.6	10.2
DC8	South	0.0	0.0	NA	NA	NA	NA
BCA	South	0.0	0.0	NA	NA	NA	NA
BC1	South	0.1	0.1	11.6	0.5	0.0	0.0
BC2	South	0.4	0.1	13.0	4.6	8.1	9.9
BC3	South	0.3	0.1	26.6	6.1	0.0	0.0
BC4	South	0.2	0.1	26.5	4.4	0.0	0.0
BC5	South	0.6	0.2	14.7	4.2	1.6	3.1
BC6	South	0.4	0.2	17.7	10.4	6.3	7.4
South CWG		0.2	0.2	20.2	8.8	4.9	8.7
PB1	North	0.0	0.0	NA	NA	NA	NA
PB2	North	0.1	0.1	20.6	8.6	12.5	25.0
PB3	North	0.5	0.2	23.6	12.5	2.1	4.2
PB4	North	0.6	0.2	34.4	5.0	6.4	9.4
PB5	North	0.6	0.1	21.5	4.1	11.4	8.0
MC1	North	0.0	0.0	NA	NA	NA	NA
MC2	North	0.0	0.0	NA	NA	NA	NA
North CWG		0.3	0.3	25.3	9.3	8.1	13.3

- Mean ( $\pm$ SD) barrel sponge height in the South region (sites with sponges present) ranged from 5.5 $\pm$ 3.5 cm (DC1) to 27.1 $\pm$ 6.4 cm (DC3) and from 20.6 $\pm$ 8.6 cm (PB2) to 34.4 $\pm$ 5.0 cm (PB4) in the North region. Mean height in the South region was 20.2 $\pm$ 8.8 cm and in the North 25.3 $\pm$ 9.3 cm in the North (Table 5).
- No diseased barrel sponges were identified.
- Visible barrel sponge injury (including recent and old injuries) was recorded and included conditions such as notched, sheared, and multiple barrels. Injured barrel sponges were identified at seven sites in the South region for a region mean ( $\pm$ SD) prevalence of 4.9 $\pm$ 8.7% (Table 5). Injuries to barrel sponges were seen in all four Palm Beach sites which had sponges present with a North region mean prevalence of 8.1 $\pm$ 13.3% (Table 5).

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