

Southeast Florida shallow-water habitat mapping & coral reef community characterization

INTRODUCTION

The southeast Florida coast contains significant, valuable coral reef communities existing in shallow water between 2m and 10m depths along the shoreline from Key Biscayne north to Hillsboro Inlet. These habitats house many significant coral reef resources, including octocorals, sponges, and threatened and endangered coral species. Many individual assessments and monitoring projects have been conducted in the region over the years, but most had much smaller, focused study areas and none were designed for assessment at a regional scale. Baseline mapping and quantitative assessment data are required prior to future permitted or un-permitted impacts in order to determine the pre-existing state of the benthic resources, therefore, it is imperative that these data be collected on the ecologically sensitive and economically valuable shallow-water coral reef habitats in southeast Florida.

HABITAT AREAS

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SE El Nearshara Bont	hic Habitats - Total Man	and Area (173km	2)		
Habitat	Type	Modifier	Modifier Area (km ²)	Habitat Area (km ²)	
	Acropora cervicornis		0.16 ; 0.09%	81.30 ; 47.07%	
	Colonized Pavement	Shallow	38.36 ; 22.21%		
	Ridge	Shallow	25.52 ; 14.77%		
	Linear Reef	Inner	14.99 ; 8.68%		
Loionized	Aggregated Patch Reef	Shallow	0.64 ; 0.37%		
	Patch Reef	Shallow	0.013 ; 0.008%		
	Scattered Coral/Rock		1 62 . 0 0 40/		
	in Sand	Shallow	1.02 , 0.94%		
Unconsolidated Sediment	Sand	Shallow	71.40 ; 41.34%	71.40 ; 41.34%	
6	6	Continuous	inuous 11.89 ; 6.88%		
Seagrass	Seagrass	Discontinuous	4.25 ; 2.46%	16.14 ; 9.35%	
	Artificial		2.59 ; 1.50%		
Other Delineations	Inlet Channel		1.17 ; 0.67%	3.88 ; 2.25%	
	Sand Borrow Area		0.13 ; 0.07%		

MAP ACCURACY 97.9%

PROJECT OBJECTIVES:

- Increase map resolution
- Quantitative community information
- Investigate latitudinal differences

METHODS

Detailed aerial photographs were collected in March

2013. Habitat mapping of the imagery and recent lidar was accomplished by visual interpretation at a 1:1000 scale with a minimum mapping unit of 0.1ha.

Maps were initially groundtruthed by a combination of underwater drop camera video and snorkeling. Accuracy was assessed by collecting video at 494 random drop camera sites. Main habitats were assessed to determine the benthic community composition and current condition, as well as how communities vary across shelf and with latitude.

KEY FINDINGS - NEWLY DISCOVERED DENSE ACROPORA & LARGE RESILIENT CORALS



Of the 187 potential 2m-5m wide corals, 53 were visited and 23 were live. These corals are hundreds of years old and have survived conditions that have caused many to perish.

Thirty-five locations of dense *A. cervicornis* were found, only seven of which were previously reported. These are the largest dense patches in the continental United States. Using aerial photography delineation estimates, their area exceeds 156,000 m².



Total Stony Coral Species	hy Coral Species Abundance			
Species	Abundance	Per		
Porites astreoides	1356	29.		
Siderastrea siderea	801	17.		

Differences were measured in stony coral, gorgonian, and sponge densities

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Total	4568	100%
Agaricia lamarcki	1	0.02%
Solenastrea Hyades	1	0.02%
Madracis decactis	3	0.07%
Mycetophyllia aliciae	3	0.07%
Eusmilia fastigiata	4	0.09%
labyrinthiformis	5	0.11%
Pseudodiploria		0 1 1 0 (
Orbicella annularis	6	0.13%
Colpophyllia natans	12	0.26%
Agaricia fragilis	_26	0.57%
Pseudodiploria clivosa	28	0.61%
Orbicella faveolata	33	0.72%
Pseudodiploria strigosa	39	0.85%
Meandrina meandrites	101	2.21%
Solenastrea bournoni	191	4.18%
Dichocoenia stokesii	209	4.58%
Agaricia agaricites	233	5.10%
Montastraea cavernosa	282	6.17%
Stephanocoenia intersepta	352	7.71%
Porites porites	411	9.00%
Acropora cervicornis	471	10.31%

across habitats and latitudes indicating the habitats were distinct from one another and not homogenous throughout the region. However, these distinctions were not present in all data.







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