

Mitigation Reef C	Nearshore Artificial Reef Site	Deployed July-Aug 2000
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Project Date: May 13, 2003

Subject: Annual monitoring report for the Nearshore Mitigation Reef C

Location: Nearshore permitted reefsite C, approximately 1000-ft. offshore of the north end of the Stuart Public Beach, Martin County, Florida

GPS Coordinates: N27 13.335 / W80 10.513 (center of the reefsite)

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The following field report documents the conditions on the artificial reef site known as nearshore mitigation reef “C” the southernmost of three such reefs in Martin County, Florida. The report addresses three types of data collected: Fish species identification, benthic species identification, and reef component stability.

HISTORY OF NEARSHORE REEF “C”

To offset predicted impacts from beach renourishment projects, Martin County has created three nearshore mitigation artificial reefsites. These reefs were constructed during the summer of 2000. Materials utilized were from dismantled concrete and steel components from the old Evans Crary Bridge. Larger sections were placed in the Ernst permitted offshore reefsite in 60 –70 ft. of water while smaller sections were utilized for the shallower nearshore mitigation reefsites.

Nearshore reef C was constructed on 7/19, 22, 25, 28 & 8/16 2000 with five total bargeloads of the following materials:

- 120 concrete piles from 20 – 40 ft. long each
- 24 concrete pilecaps approx. 30 ft. x 4 ft. x 5 ft. each
- 19 steel/concrete roadway sections approx. 40 ft. x 5 ft. x 4 ft. each

These materials were deployed from an unanchored barge using several temporary surface buoys to mark the areas for material deployment. Nearshore reefsite C is approximately 1000 feet offshore of the beach, with water depths to natural bottom 15 – 24 ft. deep. The shallowest spot to the top of the reef components was measured as 7 feet, with the average water depth above reef components being 12 – 15 feet.

REEF COMPONENTS STABILITY:

It was observed that most all components are still close to the same position as when first deployed in the summer of 2000 and monitored in 2001 and 2002. This area is subject to seasonal and storm induced beach profile changes, with covering and uncovering of the nearshore natural and artificial reefs. There has been some settlement (and/or burial) and scour around the bridge pieces. The scour provides habitat similar to that provided by similar scour around nearshore natural reefs in the area.

The individual pilings that were placed horizontally on the flat sandy bottom have been partially buried into the sand, due to either sinking of the unit in the sand or sand accretion (or a combination of both). Many of the components that stacked on top of each other appear to be stable, and are providing many overhangs and crevices which provide excellent habitat for a variety of marine organisms.

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FISH SPECIES & ABUNDANCE FINDINGS:

Fish identification and abundance were determined utilizing the guidelines setup by the Reef Environmental Education Foundation, known as *REEF*. The roving diver method was used for a set time period of 30 minutes. The divers would roam around the reef structure and identify species and abundance and record data on underwater slates. Data would be double-checked once topside using field texts with color photographs and then transferred to the *REEF* data sheets to be added to their worldwide database. Underwater video and digital still photodocumentation were also utilized to accurately document fish species and abundance. Below are the results of those findings:

<u>Marine species identified</u>	<u>Quantity observed</u>	<u>Juvenile or Adult</u>
Porkfish	100's	A
Grey snapper	7	J & A
Sheepshead	6	A
Beaugregory	1	J
Spottail pinfish	10	A
Common Snook	8	J
Atlantic Spadefish	> 10	J & A
Highhat	2	A
Blue Runners	100's	A
Gray Triggerfish	1	A
Barracuda	1	A
Lane Snapper	10's	J & A
Red Porgy	4	A
Mackeral scad	10's	A
Spotted Scorpionfish	1	J
Green Moray eel	1	A
Mutton Snapper	1	A

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<u>Marine species identified (cont.)</u>	<u>Quantity observed</u>	<u>Juvenile or Adult</u>
Gag Grouper	1	J (12")
White Margate	3	A
Black Margate	> 10	A
Intermediate Gray Angelfish	1	J/A
Fry (undeterminable species)	10's	¾ " long

BENTHIC SPECIES IDENTIFICATION:

The roving diver method was also used for benthic species identification. The divers would swim around the reef structure and identify benthic species and record data on underwater slates. Data would also be double-checked once topside using field texts with color photographs. Underwater video and digital still photodocumentation were utilized to accurately document benthic species and distribution. Below are the results of those findings:

Marine benthic species identified:

Calerda racemosa
 Octocorals
 Calerda mex Dutyofa
 Black tunicates
 Mat coral
 Padina
 Codiom gaciliaria
 Branching coral (orange & yellow)
 Soft coral (yellow & green)
 Barnacles
 Tube worms (featherduster)
 Hermit crabs
 Fern Hydroid
 Snail

CONCLUSIONS:

Of the three Martin County mitigation reefsites, Site C has the largest quantity of concrete and steel materials. It was built with 5 total bargeloads using fully loaded barges. Site A had the fewest number of bargeloads (three) & Site B had the same number of bargeloads, but slightly less total material than Site A. Site C appears to have a greater number of fish species and larger total numbers than Sites A and B.