

**LEE E. HARRIS, Ph.D., P.E.**

**Consulting Engineer**

Office: Division of Marine & Environmental Systems, Florida Institute of Technology,  
Melbourne, FL 32901 Phone: 321/674-7273 FAX: 321/674-7212 Email: Lharris@fit.edu

310 Ormond Ave.

Indianalantic, FL 32903

**Date:** October 3, 2002

**Subject: Monitoring Report for Mitigation Nearshore Artificial Reefsite "C"**

**Location:** Approximately 1000-ft. offshore Stuart Public Beach, north end  
Confirmed GPS coordinates **N27 13.335 / W80 10.513** at the center of the reefsite

**Crewmembers:** Project Director Lee Harris, Ph.D., Boat operator Capt. Leon Morrison, Lead diver Kerry Dillon, guest scientist and diver Mark Perry

**Project Date:** July 23, 2002

The following is a field report to document as found conditions on the nearshore mitigation reef "C" the southernmost of three such reefs in Martin County. The report will address three types of data collected. Fishlife species identification and quantity, Reef components stability, and benthic species identification.

### **HISTORY OF NEARSHORE REEF "C"**

To offset some damage that may have occurred during past beach renourishment projects, Martin County has created three nearshore mitigation artificial reefsites. These are localized reefs that 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 specifically targeted to be utilized for mitigation nearshore 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 x 4 x 5 ft. each
- 19 steel/concrete roadway sections approx. 40 x 5 x 4 ft. each

These materials were deployed from an unanchored barge around several temporary surface buoys placed just east of the natural reefline in the flat sandy areas approximately 1000 feet east of the beach. Water depths to natural bottom was from 15 – 24 ft. deep and shallowest spot to the top of the reef components was 7 ft. with the average being 12 – 15 ft.

### **FISH SPECIES & ABUNDANCE FINDINGS:**

Fish identification and abundance was 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 was also utilized to accurately document fish species and abundance. Below are the results of those findings:

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<u>Marine species identified</u>	<u>Quantity observed</u>	<u>Juvenile or Adult</u>
Goliath Grouper	1	J (50 – 60 lbs.)
Porkfish	> 20	mixed
Grey snapper	> 10	A
Sheepshead	3	A
Beaugregory	5	J
Spottail pinfish	1	A
Tomtate	> 30	A
Common Snook	1	A
Atlantic Spadefish	> 20	A
Highhat	7	J
Sergeant Major	4	A
Doctorfish	2	1 - A & 1 - J
Sailors Choise	> 50	J
Hairy Blenny	1	A
Gray Triggerfish	1	A
Barracuda (4 ft.)	1	A
Bermuda Chub	1	A
Schoolmaster	1	A
Spiny Lobster	1	A

### **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. It can be assumed that some shifting has occurred during large ocean swell events although without plotting each individual piece of material and tracking it over time that cannot be accurately determined. The same divers have been utilized for the last two years and no one has seen any quantifiable movement of materials. The individual pilings that settled horizontally on the flat sandy bottom have been partially buried into the sand. The worst observed is about 75% covered. It is known that the sands in this area have a history of shifting seasonally so it is felt that some of the lower profile components may at times bury then become exposed again, mimicking nearby natural reefs. Many of the components that stacked on top of each other appear to be quite stable providing many overhangs and crevices which are providing excellent habitats for a variety of marine organisms.

### **BENTHIC SPECIES IDENTIFICATION:**

The roving diver method was also used for benthic species identification. The divers would roam 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 was also utilized to accurately document benthic species and distribution.

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It has been quite interesting to see the rapid proliferation of the benthic organisms at this site as compared to many other deeper offshore artificial sites. It is obvious the shallower water with more sunlight and possibly the higher oxygen content near the surf zone has helped create this rapid benthic development. The video footage portrays this quite clearly.

Below are the results of those findings:

**Marine benthic species identified:**

Calerda racemosa

Octocorals

Calerda mex Dutyofa

Black tunicates

Mat coral

Padina

Codium gaciliaria

Branching coral (orange & yellow)

Soft coral (yellow & green)

Barnacles

**CONCLUSIONS:**

It is obvious to this observer that this nearshore site has become an active living artificial reef community for both fish and benthic organisms while helping to stabilize the fragile sandy substrate off the nearshore areas of Stuart, Florida. The underwater video and still photography document these findings visually.

**CERTIFICATION:**

This written field report narrative of the underwater inspection of the nearshore artificial reef Site "C" is true and accurate to the best of my knowledge and belief.

Date: October 2, 2002

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Lee E. Harris, Ph.D., P.E., On-site Observer  
Consulting Engineer, FL PE # 26252