

### 5.3 REEFMAKER PATCH - NORTH

- Location: Sirotkin Reef
- Materials: Concrete
- Maximum Depth: 101 feet
- Reef High Point: 92 feet
- Year Created: 2005
- Monitoring Date: 7/24/2011
- Total Cost: \$3,975 (FWC 89% & Martin County 11%)

#### 5.3.1 History of the Reefmaker Patch - North

Martin County received a \$47,700 grant in 2005 from the FWC to enhance existing artificial reef sites by deploying sixty Reefmaker “Florida Special” artificial reef modules adjacent to existing reef materials in the Donaldson and Sirotkin reef sites and four stand-alone sites. The Reefmaker modules are large three-sided pyramids fabricated using concrete and steel. The Reefmaker Patch – North was one of three patch reefs (North, Center, and South – 5 Reefmaker units at each) where 5 Reefmaker “Florida Special” units were deployed utilizing \$3,975 of the FWC grant. A chart showing the placement of the modules at the reef location for the North Patch is shown in Figure 9.

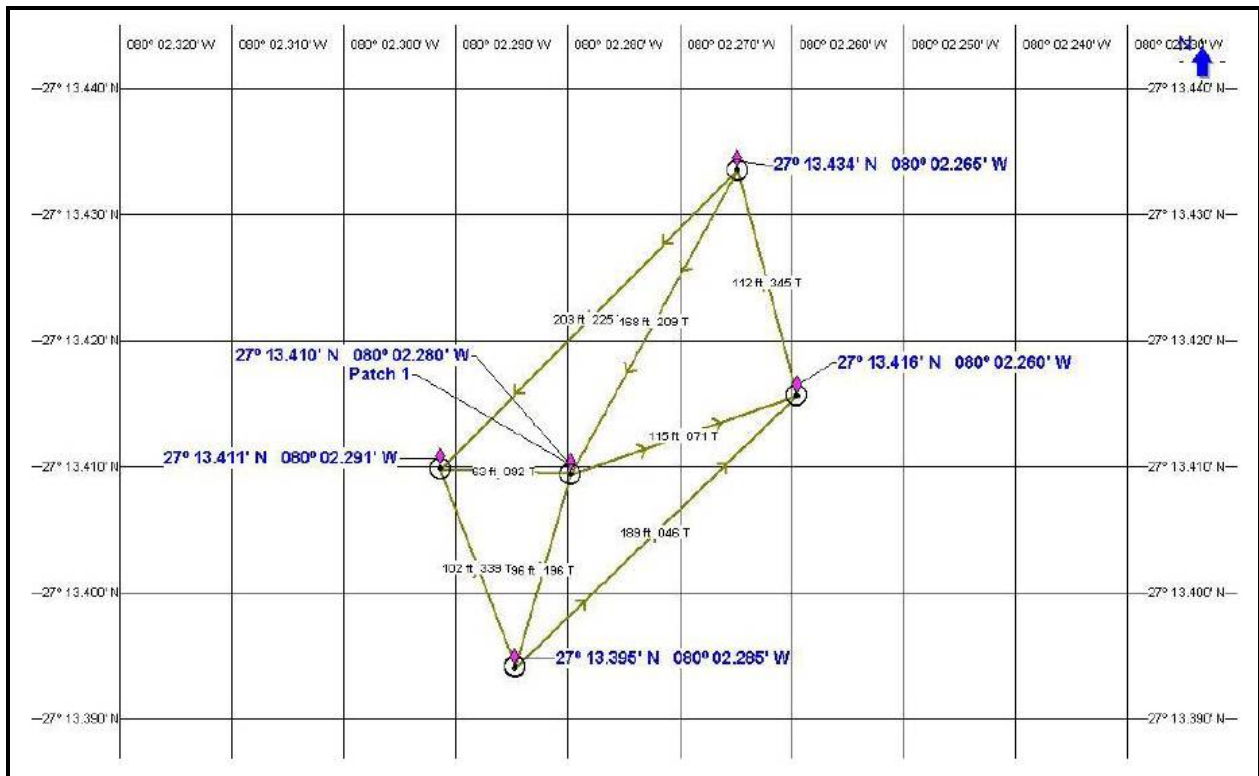


Figure 9. Sirotkin Reef chart showing the Reefmaker Patch - North unit locations.

### 5.3.2 Structural Summary

These 5 Reefmaker units were deployed at a depth of 101 ft and although this site received a direct hit from Hurricane Wilma (Category 2) in Oct. 2005, five months after the deployment of the units, all 5 units have remained stationary. The only noticeable change overtime has been some steel corrosion and erosion on the lower 2 ft. of the steel side panels. This is minor as compared to other Reefmaker units deployed in 60 feet or less which show severe corrosion and erosion probably resulting from higher oxygen content, increased wave action and sand abrasion.

The concrete appears to be holding up well with little sign of deterioration. Each of the 5 units has settled into the seafloor a nominal 1-foot, therefore reducing the total profile from 10 ft. down to 9 feet. The photographs in Figure 10 show the general condition of the Reefmaker Patch - North and the area surrounding the Reefmakers observed during the monitoring dive.



Figure 10. Reefmaker Patch - North 2011 photographs.

### 5.3.3 Biological Survey Results

Sport fish seen during this monitoring were black sea bass, greater amberjack, and vermillion snapper along with 1000's of baitfish in the water column above the Reefmaker units. One protected species, a goliath grouper, was seen inside one of the units. A rarely observed fish, an adult red hind, was also observed. On the ascent above the reef the divers noted a large school (> 50) of cownose rays. For the relatively small size of this artificial reef (5 units) the type and amount of marine life attracted to this reef is impressive. Table 12 and Table 13 list the species/taxa, their relative abundance and size class (adult, intermediate, and juvenile) observed during the monitoring dive.

Table 12. Reefmaker Patch - North Fish Species Census.

Family/ Common Name	Species	2011	
		Abundance	Size
<b>Carangidae</b>			
Round scad	<i>Decapterus punctatus</i>	M	A
Greater Amberjack	<i>Seriola dumerili</i>	F	J & A
<b>Lutjanidae</b>			
Vermilion snapper	<i>Rhomboplites aurorubens</i>	F	A
<b>Sciaenidae</b>			
Cubbyu	<i>Pareques umbrosus</i>	S	A
<b>Scorpaenidae</b>			
Spotted scorpionfish	<i>Scorpaena plumeiri</i>	F	A
<b>Serranidae</b>			
Bank sea bass	<i>Centropristis ocyurus</i>	M	A
Black sea bass	<i>Centropristis striata</i>	M	J & A
Goliath grouper	<i>Epinephelus itajara</i>	S	A
Red hind	<i>Epinephelus guttatus</i>	S	A
Whitespotted soapfish	<i>Rypticus maculatus</i>	S	J/A
<b>Sparidae</b>			
Sheepshead porgy	<i>Calamus penna</i>	F	A
<b>Myliobatidae</b>			
Cownose ray	<i>Rhinoptera bonasus</i>	M (50+)	J & A
<b>Tetraodontidae</b>			
Bandtail puffer	<i>Sphoeroides spengleri</i>	F	J
	<b>Total</b>	<b>13</b>	

Abundance Key: S=single, F=few (2-10), M=many (11-100), A=abundant (>100)

Size Key: A=adult, J=juvenile, A/J=intermediate

Table 13. Reefmaker Patch – North Benthic Species Census.

	Common Name	Scientific Name
<b>Echinoderms</b>	Rock Boring Urchin	<i>Echinometra lucunter</i>
	3 Rowed Sea Cucumber	<i>Isostichopus badiionotus</i>
	Common Arbacia Urchin	<i>Arbacia punctulata</i>
	Notched Sand Dollar	<i>Encope aberrans</i>
<b>Cnidarians</b>	Sea Anemones	<i>Aptasia sp.</i>
	Hydroids	Unidentified species
<b>Ascidians</b>	Overgrowing Tunicates	<i>Didemnidae</i>
	Button Tunicates	<i>Distaplia corolla</i>
<b>Crustaceans</b>	Yellowline Arrow Crab	<i>Stenorhynchus seticornis</i>

	<b>Common Name</b>	<b>Scientific Name</b>
	Sessile barnacles	<i>Thoracica</i>
<b>Mollusca</b>	Rough Fileclam	<i>Lima scabra</i>
<b>Ectoprocta</b>	Encrusting Bryozoans	Unidentified Species
<b>Anthozoa</b>	Gorgonians	
<b>Porifera</b>	Star Encrusting Sponge	<i>Halisarca sp.</i>
	Orange Encrusting Sponge	<i>Ulosa ruetzleri</i>
<b>Phaeophyta</b>	Brown Algae	<i>Sargassum natans</i>
<b>Annelida</b>	Variiegated Feather Duster	<i>Bispira variegata</i>