

Table 29. Grand Teton Artificial Reef Benthic Species Census.

	Common Name	Scientific Name
Echinoderms	Rock Boring Urchin	<i>Echinometra lucunter</i>
	3 Rowed Sea Cucumber	<i>Isostichopus badionotus</i>
Cnidarians	Sea Anemones	<i>Aptasia sp.</i>
	Hydroids	Unidentified species
	Algae Hydroids	<i>Thyroscyphus ramosus</i>
Ascidians	Overgrowing Mat Tunicates	<i>Trididemum solidum</i>
	Giant Tunicates	<i>Polycarpa spongiabilis</i>
	White Speck Tunicate	<i>Didemnum conchyliatum</i>
Crustaceans	Yellowline Arrow Crab	<i>Stenorhynchus seticornis</i>
	Giant Hermit Crab	<i>Petrochirus diogenes</i>
	Spiny lobster	<i>Panulirus argus</i>
Mollusca	Rock Snails	<i>Muricidae</i> (Unidentified Species)
Ectoprocta	Encrusting Bryozoans	Unidentified Species
Polychaeta	N/A	<i>Spiroridae</i>
Porifera	Star Encrusting Sponge	<i>Halisarca sp.</i>
	N/A	<i>Clathria sp.</i>

5.9 WEST 400 REEF

- Location: Ernst Reef
- Materials: Concrete
- Maximum Depth: 65 feet
- Minimum Depth: 62 feet (last recorded as the maximum depth in 2009)
- Reef High Point: 46 feet
- Year Created: 2007
- 2009 Monitoring Date: 09/26/2009 (by others)
- 2013 Monitoring Date: 09/05/2013
- Total Cost: \$23,221.25 (64.5% FWC grant 06112 & 35.5% Martin County)

5.9.1 History of the West 400 Reef

According to the MPR, on June 15, 2007, 474 tons of concrete culverts and other large forms of concrete were unloaded from an anchored barge to form the West 400 Reef. Figure 30 shows a chart with the location of the West 400 Reef.

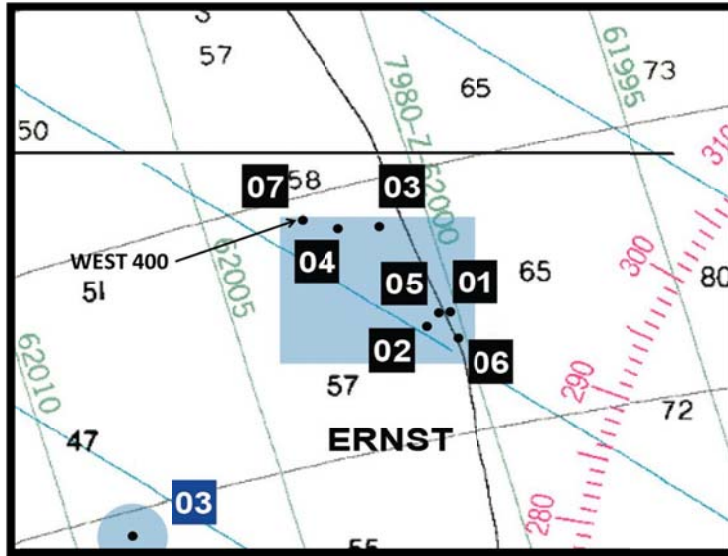


Figure 30. Chart of the Ernst Reef area showing the West 400 Reef location.

5.9.2 Structural Summary

The maximum depth at this artificial reef site is now 65ft (as opposed to 62 feet, as recorded in 2009) with a reef high point of 46 ft; hence there is evidence of scouring on three sides. The footprint of the site is generally round with an irregular margin and occupies about 0.5 acres of seafloor. The deployment barge was securely moored at two points when the reef materials were dropped and the large concrete components settled in a single pile, although a few pieces settled to the bottom a short distance from the reef pile. Several large culvert sections provide cavernous recesses that are used extensively by large and small fish alike. Refer to Table 30 for the recorded depths.

Table 30. Summary of West 400 Depth Measurements.

Direction	Perimeter Depth (ft)
North	65
East	63
South	62
West	64
Reef top Depth = 46	

5.9.3 Biological Survey Results

In reviewing past monitoring efforts, we noticed an increasing trend in both species diversity and total biomass since its construction in 2007, from 22 species to 42 species observed over a five year period. The most notable recreational sport/food fish identified on the reef were common snook, gag grouper, snapper (lane, yellowtail and gray), scamp, and great barracuda. Two venomous fish species were also observed: the spotted scorpion fish (native) and the invasive exotic red lionfish (native to the Pacific Ocean). Lionfish have become a large problem in the western Atlantic and Caribbean Sea waters in recent years, and based on monitoring efforts, are

becoming more common in the waters of Martin County, especially over the last 3 years. Lionfish were encountered in nearly all of the selected 2013 monitoring sites.

The photographs in Figure 31 and Figure 32 show the general condition of the West 400 Reef site, and some of the species observed during the monitoring dive.

Overall, the West 400 Reef supports a uniformly dense assemblage of sessile invertebrates, marine plants, algae and other benthic marine organisms. The fish and invertebrate species observed during the monitoring dive are listed below in Table 31 and Table 32.



Figure 31. West 400 Reef, Hermit Crab, 2013 Monitoring.



Figure 32. West 400 Reef, Goliath Grouper & Yellowtail Snapper, 2013 Monitoring

Table 31. West 400 Reef Fish Species Census.

Family/Common Name	Species	2013	
		Abundance	Size
Muraenidae			
Green moray	<i>Gymnothorax funebris</i>	S	A
Clupeidae			
Spanish sardine	<i>Sardinella aurita</i>	A	A
Syngnathidae			
Pipefish	<i>Syngnathus</i> sp.	F	A
Centropomidae			
Snook	<i>Centropomus undecimalis</i>	F	A
Serranidae			
Belted sandfish	<i>Serranus subligarius</i>	M	A
Black seabass	<i>Centropristis striata</i>	F	A,J
Goliath grouper	<i>Epinephelus itajara</i>	F	A
Sand perch	<i>Diplectrum formosum</i>	F	A,J
Scamp	<i>Mycteroperca phenax</i>	F	J
Grammistidae			
Whitespotted soapfish	<i>Rypticus maculatus</i>	M	A
Carangidae			
Amberjack	<i>Seriola dumerili</i>	F	A
Bigeye scad	<i>Selar crumenophthalmus</i>	A	A
Blue runner	<i>Caranx chrysos</i>	A	A

Family/Common Name	Species	2013	
		Abundance	Size
Round scad	<i>Decapterus punctatus</i>	A	A
Lutjanidae			
Gray snapper	<i>Lutjanus griseus</i>	M	A
Lane snapper	<i>Lutjanus synagris</i>	M	A
Red snapper	<i>Lutjanus campechanus</i>	F	A,J
Yellowtail snapper	<i>Ocyurus chrysurus</i>	F	A
Haemulidae			
Pigfish	<i>Orthopristis chrysoptera</i>	M	A
Porkfish	<i>Anisotremus virginicus</i>	M	A
Tomtate	<i>Haemulon aurolineatum</i>	A	A
Sparidae			
Sheepshead	<i>Archosargus probatocephalus</i>	M	A
Sheepshead porgy	<i>Calamus penna</i>	F	A
Sciaenidae			
Cubbyu	<i>Equetus umbrosus</i>	A	A
Chaetodontidae			
Reef butterflyfish	<i>Chaetodon sedentarius</i>	F	A
Pomacanthidae			
Blue angelfish	<i>Holocanthus bermudensis</i>	S	A
Pomacentridae			
Beaugregory	<i>Stegastes leucostictus</i>	F	A
Blue chromis	<i>Chromis cyaneus</i>	F	A
Cocoa damselfish	<i>Stegastes variabilis</i>	M	A
Yellowtail reef fish	<i>Chromis enchrysurus</i>	A	A,J
Labridae			
Slippery dick	<i>Halichoeres bivittatus</i>	M	A
Spanish hogfish	<i>Bodianus rufus</i>	F	A
Sphyraenidae			
Great barracuda	<i>Sphyraena barracuda</i>	S	J
Clinidae			
Hairy blenny	<i>Labrisomus nuchipinnus</i>	M	A
Acanthuridae			
Doctorfish	<i>Acanthurus chirurgus</i>	F	A
Scombridae			
King mackerel	<i>Scomberomorus cavalla</i>	F	A
Little tunny	<i>Euthynnus alletteratus</i>	A	A
Scorpaenidae			
Lionfish	<i>Pterois</i> sp.	F	A
Spotted scorpionfish	<i>Scorpaena plumieri</i>	F	A
Bothidae			
Gulf flounder	<i>Paralichthys albigutta</i>	F	A
Tetraodontidae			
Bandtail puffer	<i>Sphoeroides spengleri</i>	F	A

Family/Common Name	Species	2013	
		Abundance	Size
Sharpnose puffer	<i>Canthigaster rostrata</i>	F	A,J
TOTAL		42	

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

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

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