

Family/ Common Name	Species	2009		2008	
		Abundance	Size	Abundance	Size
Blue runner	<i>Caranx chrysos</i>	M	A	M	A
Rainbow runner	<i>Elegatis bipinnulata</i>	F	A		
Round scad	<i>Decapterus punctatus</i>	A	A,J		
Yellow jack	<i>Caranx bartholomaei</i>				
Lutjanidae					
Gray snapper	<i>Lutjanus griseus</i>	M	A	F	A
Lane snapper	<i>Lutjanus synagris</i>	M	A,J	M	A
Red Snapper	<i>Lutjanus campechanus</i>			F	J
Vermillion snapper	<i>Rhomboplites aurorubens</i>			M	A
Yellowtail snapper	<i>Ocyurus chrysurus</i>	F	A,J		
Haemulidae					
Pigfish	<i>Orthopristis chrysoptera</i>	F	A		
Porkfish	<i>Anisotremus virginicus</i>	F	A		
Tomtate	<i>Haemulon aurolineatum</i>	A	A,J	M	A
White grunt	<i>Haemulon plumieri</i>	F	A		
Sparidae					
Sheepshead	<i>Archosargus probatocephalus</i>	M	A	F	A
Sheepshead pogy	<i>Calamus penna</i>	M	A	F	A
Sciaenidae					
Cubby	<i>Equetus umbrosus</i>	M	A	M	A,J
Pomacanthidae					
Blue angelfish	<i>Holocanthus bermudensis</i>	F	A		
Pomacentridae					
Beaugregory	<i>Pomacentrus leucostictus</i>	M	A,J	M	A,J
Yellowtail reeffish	<i>Chromis enchrysurus</i>	M	A		
Labridae					
Slippery dick	<i>Halichoeres bivittatus</i>	M	A,J	F	A
Spanish hogfish	<i>Bodianus rufus</i>	F	A,J		
Sphyraenidae					
Sennet	<i>Sphyraena guachancho</i>			M	A
Acanthuridae					
Doctorfish	<i>Acanthurus chirurgus</i>	F	J		
Scombridae					
Little tunny	<i>Euthynnus alletteratus</i>			M	A
Tetraodontidae					
Bandtail puffer	<i>Sphoeroides spengleri</i>			M	A
Balistidae					
Gray triggerfish	<i>Balistes capriscus</i>	S	A		
	Total	33		18	

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 16. Mango Artificial Reef fish species census.

3.12 Grand Teton Artificial Reef

- Location: Ernst Reef
- Materials: Concrete, steel
- Maximum Depth: 62 feet
- Reef High Point: 34 feet
- Year Created: 2007
- Monitoring Date: 6/19/2008, 9/26/2009

3.12.1 History of the Grand Teton Artificial Reef

Staff from Martin County Engineering sought to simplify the collection and transport of materials of opportunity to aid artificial reef construction. Arrangements were made to allow local contractors to drop acceptable reef materials at the Martin County Landfill with no tipping fees. These materials were taken to Harbor Pointe Park in Ft. Pierce, loaded on barges, and brought to the north end of the Ernst Artificial Reef area. On June 15 and 26, 2007, 728 tons of concrete culverts, bridge components, and other large forms were unloaded from an anchored barge to form the Grand Teton Artificial Reef.

3.12.2 Structural Summary

The maximum depth at this artificial reef site is about 62 feet with a maximum relief of about 28 feet. The footprint of the site is generally round but has an irregular margin and occupies about 0.5 acres of seafloor. The sheer volume and variety of materials placed at this site occupy a relatively small footprint. 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. Numerous concrete light posts were placed on this reef and several project upward from the reef pile prominently. Several large culvert sections provide cavernous recesses that are used extensively by large and small fish alike. The seafloor at this site is comprised of a shell/coarse sand mixture and appears to provide a solid base for the heavy concrete and steel pieces, as scouring is not significant. Figure 27 shows a chart with the location of the Grand Teton Artificial Reef.



Figure 29. Grand Teton Artificial Reef photographs from 2008 and 2009.

3.12.3 Biological Survey Results

Fish surveys indicate an increasing trend in species diversity since 2008, although 2009 was only the second year of monitoring since deployment. Seabasses and jacks represented the most numerous species in both 2008 and 2009, although grunts, wrasses and snappers were also common. Vast schools of adult and juvenile round scad were observed around and above the

reef crest. Additionally, two adult red lionfish were observed on this reef and may constitute the first sightings of this invasive species off the coast of Martin County. Invertebrate biomass on the artificial reef also appeared to have increased since deployment. The most common species included sea urchins, hydroids, tube worms, sea anemones, encrusting sponges and sea cucumbers. Fire worms and various crabs were also observed. Table 17 presents the fish species observed during 2008 and 2009.

Family/ Common Name	Species	2009		2008	
		Abundance	Size	Abundance	Size
Elasmobranchs					
Southern stingray	<i>Dasyatis americana</i>			F	A
Centropomidae					
Snook	<i>Centropomus undecimalis</i>	F	A	M	A
Serranidae					
Belted sandfish	<i>Serranus subligarius</i>	A	A	M	A
Black seabass	<i>Centropristis striata</i>	F	A	M	A
Goliath grouper	<i>Epinephelus itajara</i>	F-4	A	F-4	A
Grammistidae					
Whitespotted soapfish	<i>Rypticus maculatus</i>	F	A		
Apogonidae					
Twospot cardinalfish	<i>Apogon pseudomaculatus</i>	F	A		
Carangidae					
Amberjack	<i>Seriola dumerili</i>			M	A
Blue runner	<i>Caranx chrysos</i>	A	A	M	A
Rainbow runner	<i>Elegatis bipinnulata</i>	M	A		
Round scad	<i>Decapterus punctatus</i>	A	A	A	A
Lutjanidae					
Gray snapper	<i>Lutjanus griseus</i>	F	A	M	A
Lane snapper	<i>Lutjanus synagris</i>	F	A	M	A
Red snapper	<i>Lutjanus campechanus</i>			F	J
Vermillion snapper	<i>Rhomboplites aurorubens</i>			M	A
Haemulidae					
Pigfish	<i>Orthopristis chrysoptera</i>	M	A	F	A
Tomtate	<i>Haemulon aurolineatum</i>	A	A,J	A	A
Sparidae					
Sheepshead	<i>Archosargus probatocephalus</i>	M	A	M	A
Sheepshead porgy	<i>Calamus penna</i>	F	A	F	A
Sciaenidae					
Cubbyu	<i>Equetus umbrosus</i>	M	A,J	M	A,J
Ephippidae					
Atlantic spadefish	<i>Chaetodipterus faber</i>	F	A	M	A
Chaetodontidae					
Reef butterflyfish	<i>Chaetodon sedentarius</i>	F	A		
Pomacentridae					
Beaugregory	<i>Pomacentrus leucostictus</i>			M	A,J
Yellowtail reeffish	<i>Chromis enchrysurus</i>	M	A,J		
Clinidae					
Hairy blenny	<i>Labrisomus nuchipinnus</i>			M	A
Scombridae					
Little tunny	<i>Euthynnus alletteratus</i>			M	A
Scorpaenidae					
Red lionfish	<i>Pterois volitans</i>	F-2	A		

Family/ Common Name	Species	2009		2008	
		Abundance	Size	Abundance	Size
Balistidae					
Gray triggerfish	<i>Balistes capricus</i>			F	A
Tetraodontidae					
Bandtail puffer	<i>Sphoeroides spengleri</i>	F	A,J	M	A,J
Sharpnose puffer	<i>Canthigaster rostrata</i>	F	A,J		
	Total	22		23	

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 17. Grand Teton Artificial Reef fish species census.

3.13 West 400 Artificial Reef

- Location: Ernst Reef
- Materials: Concrete
- Maximum Depth: 62 feet
- Reef High Point: 46 feet
- Year Created: 2007
- Monitoring Date: 6/27/2008, 9/26/2009

3.13.1 History of the West 400 Artificial Reef

Staff from Martin County Engineering sought to simplify the collection and transport of materials of opportunity to aid artificial reef construction. Arrangements were made to allow local contractors to drop acceptable reef materials at the Martin County Landfill with no tipping fees. These materials were taken to Harbor Pointe Park in Ft. Pierce, loaded on barges, and brought to the north end of the Ernst Artificial Reef area. On June 15, 2007, 400 tons of concrete culverts, bridge components, and other large forms were unloaded from an anchored barge to form the West 400 Artificial Reef.

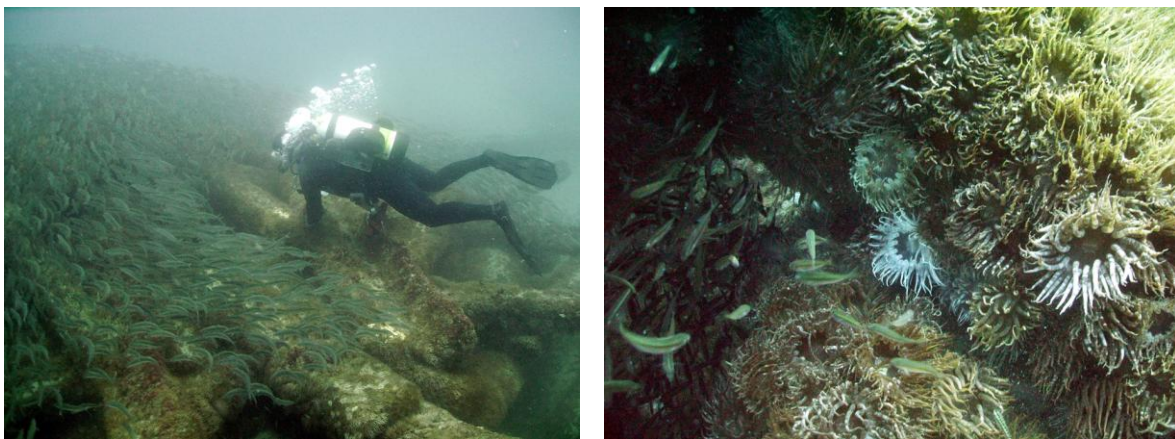


Figure 30. West 400 Artificial Reef photographs from 2008.