

| 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.

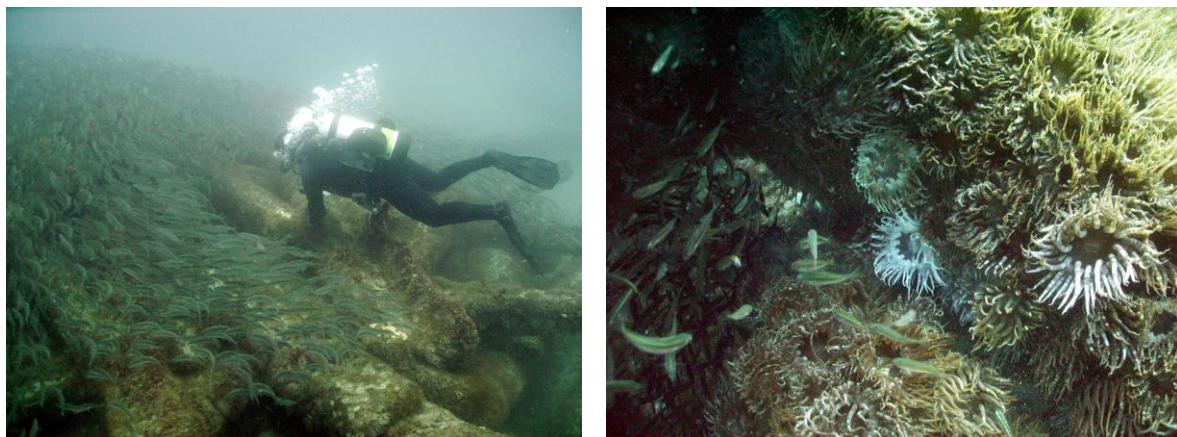


Figure 30. West 400 Artificial Reef photographs from 2008.

3.13.2 Structural Summary

The maximum depth at this artificial reef site is about 62 feet with a maximum relief of about 12 feet. 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. 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 West 400 Artificial Reef.

3.13.3 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. Invertebrate biomass on the artificial reef also appeared to have increased since deployment. Most common species included sea urchins, hydroids, tube worms, encrusting sponges and sea cucumbers. Fire worms and various crabs were also observed. Table 18 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> | S | A | | |
| Centropomidae | | | | | |
| Common snook | <i>Centropomus undecimalis</i> | F | A | F | A |
| Serranidae | | | | | |
| Belted sandfish | <i>Serranus subligarius</i> | M | A | M | A |
| Black seabass | <i>Centropristis striata</i> | M | A,J | M | A,J |
| Goliath grouper | <i>Epinephelus itajara</i> | F-7 | A | F | A |
| Scamp | <i>Mycteroperca phenax</i> | S | J | | |
| Grammistidae | | | | | |
| Whitespotted soapfish | <i>Rypticus maculatus</i> | F | A,J | | |
| Echeneididae | | | | | |
| Sharksucker | <i>Echeneis naucrates</i> | F | A | | |
| Carangidae | | | | | |
| Blue runner | <i>Caranx chrysos</i> | A | A | F | A,J |
| Round scad | <i>Decapterus punctatus</i> | A | A | A | A |
| Lutjanidae | | | | | |
| Gray snapper | <i>Lutjanus griseus</i> | | | F | A |
| Lane snapper | <i>Lutjanus synagris</i> | | | F | A,J |
| Yellowtail snapper | <i>Ocyurus chrysurus</i> | S | A | F | A |
| Haemulidae | | | | | |
| Tomtate | <i>Haemulon aurolineatum</i> | A | A,J | M | A |
| Sparidae | | | | | |
| Sailor's choice | <i>Lagodon parra</i> | | | F | J |
| Sheepshead | <i>Archosargus probatocephalus</i> | M | A | F | A |

| Family/ Common Name | Species | 2009 | | 2008 | |
|------------------------|---------------------------------|-----------|------|-----------|------|
| | | Abundance | Size | Abundance | Size |
| Sciaenidae | | | | | |
| Cubbyu | <i>Equetus umbrosus</i> | M | A | M | A |
| Ephippidae | | | | | |
| Atlantic spadefish | <i>Chaetodipterus faber</i> | F | A | | |
| Chaetodontidae | | | | | |
| Reef butterflyfish | <i>Chaetodon sedetarius</i> | | | F | A |
| Pomacanthidae | | | | | |
| Blue angelfish | <i>Holocanthus bermudensis</i> | F | A,J | | |
| Pomacentridae | | | | | |
| Beaugregory | <i>Pomacentrus leucostictus</i> | F | A,J | F | A,J |
| Yellowtail reeffish | <i>Chromis enchrysurus</i> | S | J | F | J |
| Labridae | | | | | |
| Slippery dick | <i>Halichoeres bivittatus</i> | F | J | | |
| Clinidae | | | | | |
| Hairy blenny | <i>Labrisomus nuchipinnus</i> | | | F | A |
| Scombridae | | | | | |
| Little tunny | <i>Euthynnus alletteratus</i> | | | M | A |
| Spanish mackerel | <i>Scomberomorus maculatus</i> | F | A | | |
| Istiophoridae | | | | | |
| Saifish | <i>Istiophorus platypterus</i> | S | A | | |
| Scorpaenidae | | | | | |
| Spotted scorpionfish | <i>Scorpaena plumeiri</i> | | | F | A |
| Balistidae | | | | | |
| Bandtail puffer | <i>Spheroides spengleri</i> | | | F | A |
| Orangespotted filefish | <i>Cantherhines pullus</i> | S | J | | |
| | Total | 22 | | 20 | |

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 18. West 400 Artificial Reef fish species census.

3.14 Fogel Capital Management Artificial Reef

- Location: South County Reef
- Materials: Concrete
- Maximum Depth: 67 feet
- Reef High Point: 60 feet
- Year Created: 2007
- Monitoring Date: 8/31/2009

3.14.1 History of the Fogel Capital Management Artificial Reef

Nearly 2,000 tons of large concrete and steel construction waste was delivered to Harbour Pointe Park in Ft. Pierce in 2007 and early 2008 and stockpiled prior to deployment offshore of Martin County. In June 2008, it was loaded on barges and shipped to the South County Artificial Reef area. A total of 245 tons of these materials were dropped in the southwest corner of the reef area from the anchored barge to form the Fogel Capital Management Artificial Reef.