

Family/ Common Name	Species	2009		2008		2007	
		Abundance	Size	Abundance	Size	Abundance	Size
Gray angelfish	<i>Pomacanthus arcuatus</i>			S	A		
<b>Pomacentridae</b>							
Beaugregory	<i>Pomacentrus leucostictus</i>	M	A,J	F	A,J	F	
Bicolor damselfish	<i>Pomacentrus partitus</i>					F	
Sergeant major	<i>Abudefduf saxatilis</i>			F	A	F	
Yellowtail reeffish	<i>Chromis enchrysurus</i>	M	A,J	M	J		
<b>Labridae</b>							
Painted wrasse	<i>Halichoeres caudalis</i>	S	A				
Slippery dick	<i>Halichoeres bivittatus</i>	M	A,J	A	A,J	M	
Spanish hogfish	<i>Bodianus rufus</i>	F	A	S	A	F	
<b>Sphyraenidae</b>							
Great barracuda	<i>Sphyraena barracuda</i>	S	A				
Guaguanche	<i>Sphyraena guachancho</i>	M	J				
<b>Clinidae</b>							
Hairy blenny	<i>Labrisomus nuchipinnus</i>	F	A	M	A	F	
<b>Acanthuridae</b>							
Blue tang	<i>Acanthurus coeruleus</i>					S	
Doctorfish	<i>Acanthurus chirurgus</i>	F	A	F	A	F	
<b>Scorpaenidae</b>							
Spotted scorpionfish	<i>Scorpaena plumeiri</i>	F	A				
<b>Balistidae</b>							
Gray triggerfish	<i>Balistes capricus</i>					F	
<b>Tetraodontidae</b>							
Bandtail puffer	<i>Sphoeroides spengleri</i>	F	A	M	A,J	F	
Sharpnose puffer	<i>Canthigaster rostrata</i>	F	A	F	A		
<b>Diodontidae</b>							
Porcupine fish	<i>Diodon hystrix</i>	S	A				
	Total	47		35		31	

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 8. PCL Shallow Artificial Reef fish census.**

### 3.4 PCL Deep Reef

- Location: Sirotkin Reef
- Materials: Concrete, steel
- Maximum Depth: 120 feet
- Reef High Point: 104 feet
- Year Created: 2006
- Monitoring Date: 12/20/2008, 10/2/2009
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#### 3.4.1 History of the PCL Deep Artificial Reef

In October 2006, seven barge loads of concrete and steel materials totaling approximately 3,900 tons were deployed in 120 feet of water within the Sirotkin reef site. These materials came from the decommissioned Ernest Lyons draw bridge that spanned the Indian River Lagoon between Sewalls Point and Hutchinson Island and included some of the largest concrete and steel structural members removed from the old bridge. The new reef was named for the construction

company that built the new bridge, demolished the old bridge and built the artificial reef, covering all costs for transportation and construction.

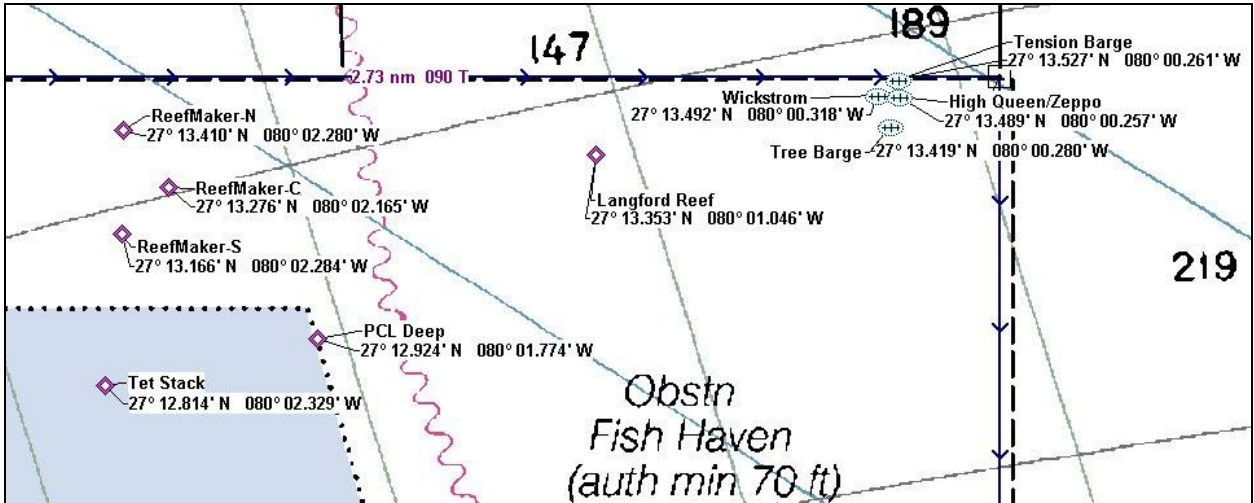


Figure 14. Chart view of Sirotkin Reef area with locations of PCL Deep and nearby reefs.

### 3.4.2 Structural Summary

The maximum depth at this artificial reef site is about 120 feet with a maximum relief of about 16 feet. The footprint of the site is an irregular form with a southeast-to-northwest axis and occupies about 2.5 acres of seafloor. The deployment barge was securely moored at two points when the reef materials were dropped and the large concrete and steel bridge components settled in a scattered fashion, although some of the longer pieces are stacked or interlocked with one another. The massive bridge pieces used on this reef created large overhangs and 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 14 shows a chart with the location of the PCL Deep Reef.



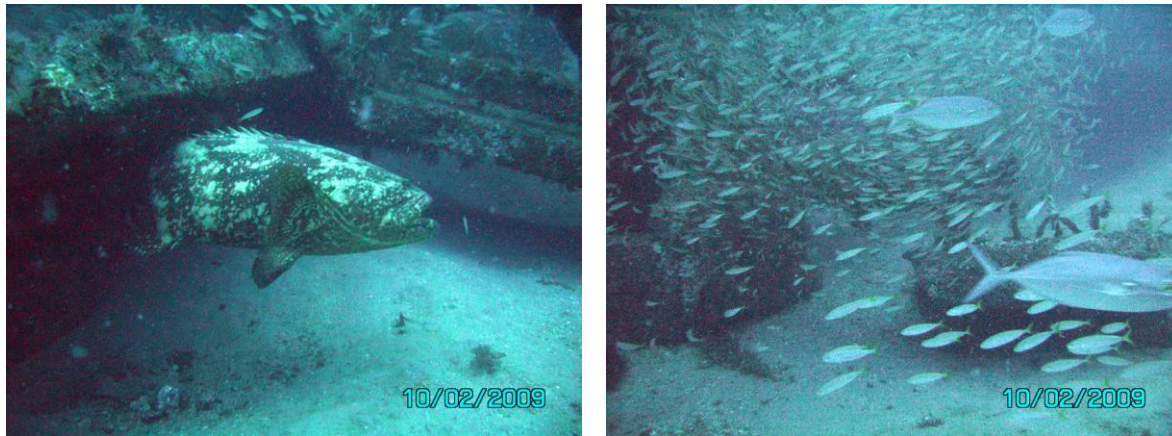


Figure 15. PCL Deep Artificial Reef photographs from 2008 (top) and 2009.

### 3.4.3 Biological Survey Results

Fish surveys indicate an increasing trend in species diversity since 2007, the first annual monitoring period. 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, while some formed tight schools around individual goliath grouper, possibly protecting them from the faster predatory jacks. Invertebrate biomass on the artificial reef had visibly increased in both 2008 and 2009 when compared to the previous monitoring efforts. The most common species included sea urchins, hydroids, sea anemones, tube worms, barnacles, encrusting sponges and sea cucumbers. Spiny lobsters and various crabs were also observed. Table 9 presents the fish species observed during 2007, 2008 and 2009.

Family/ Common Name	Species	2009		2008		2007	
		Abundance	Size	Abundance	Size	Abundance	Size
<b>Elasmobranchs</b>							
Southern stingray	<i>Dasyatis americana</i>	S	A	S	A		
<b>Centropomidae</b>							
Common snook	<i>Centropomus undecimalis</i>	F	A				
<b>Serranidae</b>							
Bank seabass	<i>Centropristis ocyurus</i>	F	A	M	A	F	
Belted sandfish	<i>Serranus subligarius</i>	M	A,J	M	A,J	F	
Black seabass	<i>Centropristis striata</i>	M	A	A	A,J	M	
Gag grouper	<i>Mycteroperca microlepis</i>			F	J		
Goliath grouper	<i>Epinephelus itajara</i>	F	A			M	
Scamp	<i>Mycteroperca phenax</i>	F	A/J	M	A,J	F	
<b>Carangidae</b>							
Almaco jack	<i>Seriola rivoliana</i>	F	A/J				
Amberjack	<i>Seriola dumerili</i>	M	J	A	A,J		
Bar jack	<i>Caranx ruber</i>					M	
Blue runner	<i>Caranx chrysos</i>	A	A	A	A	A	
Round scad	<i>Decapterus punctatus</i>	A	A,J				
<b>Lutjanidae</b>							
Gray snapper	<i>Lutjanus griseus</i>	F	A			F	
Lane snapper	<i>Lutjanus synagris</i>	M	A	M	A,J		
Red snapper	<i>Lutjanus campechanus</i>					F	

Family/ Common Name	Species	2009		2008		2007	
		Abundance	Size	Abundance	Size	Abundance	Size
Vermillion snapper	<i>Rhomboplites aurorubens</i>			A	A	F	
<b>Haemulidae</b>							
Black margate	<i>Anisotremus surinamensis</i>			F	A		
Pigfish	<i>Orthopristis chrysoptera</i>	F	A	M	A		
Tomtate	<i>Haemulon aurolineatum</i>	A	A,J	A	A	A	
<b>Sparidae</b>							
Sheepshead	<i>Archosargus probatocephalus</i>	M	A	F	A	F	
Sheepshead porgy	<i>Calamus penna</i>	M	A	M	A	F	
<b>Sciaenidae</b>							
Cubbyu	<i>Equetus umbrosus</i>	M	A	M	A,J	S	
<b>Chaetodontidae</b>							
Reef butterflyfish	<i>Chaetodon sedentarius</i>					F	
Spotfin butterflyfish	<i>Chaetodon ocellatus</i>			S	A		
<b>Pomacanthidae</b>							
Blue angelfish	<i>Holocanthus bermudensis</i>	F	A,J				
<b>Pomacentridae</b>							
Beaugregory	<i>Pomacentrus leucostictus</i>			F	A		
Bicolor damselfish						F	
Yellowtail reeffish	<i>Chromis enchrysurus</i>	M	A,J	F	A		
<b>Labridae</b>							
Slippery dick	<i>Halichoeres bivittatus</i>	M	A				
Spanish hogfish	<i>Bodianus rufus</i>	F	A				
Spotfin hogfish	<i>Bodianus pulchellus</i>	M	A				
<b>Scorpaenidae</b>							
Spotted scorpionfish	<i>Scorpaena plumeiri</i>	F	A				
<b>Tetraodontidae</b>							
Bandtail puffer	<i>Sphoeroides spengleri</i>	F	A	F	J	F	
	<b>Total</b>	<b>25</b>		<b>19</b>		<b>17</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 9. PCL Deep Artificial Reef fish census.**

### 3.5 Sirotkin Diamond South Artificial Reef

- Location: Sirotkin Reef
- Materials: Reef modules (steel and concrete)
- Maximum Depth: 100 feet
- Reef High Point: 90 feet
- Year Created: 2005
- Monitoring Date: 12/21/2008

#### 3.5.1 History of the Sirotkin Diamond Artificial Reef

Martin County received a grant in 2005 from the FFWCC to enhance existing artificial reef sites by deploying sixty Reefmaker “Florida Special” artificial reef modules adjacent to existing reef