

Family/ Common Name	Species	2009		2008		2007	
		Abundance	Size	Abundance	Size	Abundance	Size
Labridae							
Bluehead wrasse	<i>Thalassoma bifasciatum</i>			F	A		
Hogfish	<i>Lachnolaimus maximus</i>			F	A		
Painted wrasse	<i>Halichoeres caudalis</i>	S	A				
Slippery dick	<i>Halichoeres bivittatus</i>	M	A,J				
Spanish hogfish	<i>Bodianus rufus</i>	M	A,J				
Spotfin hogfish	<i>Bodianus pulchellus</i>	F	A,J	F	A,J	M	A,J
Clinidae							
Hairy blenny	<i>Labrisomus nuchipinnus</i>			F	A		
Acanthuridae							
Doctorfish	<i>Acanthurus chirurgus</i>	F	A				
Scaridae							
Stoplight parrotfish	<i>Sparisoma viride</i>	S	J				
Scombridae							
Little tunny	<i>Euthynnus alletteratus</i>					F	J
Scorpaenidae							
Spotted scorpionfish	<i>Scorpaena plumeiri</i>	M	A	F	A		
Balistidae							
Gray triggerfish	<i>Balistes capriscus</i>	F	A			F	A,J
Tetraodontidae							
Bandtail puffer	<i>Sphoeroides spengleri</i>			M	A	F	A,J
Diodontidae							
Porcupine fish	<i>Diodon hystrix</i>	S	A				
	Total	30		28		24	

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 12. Railroad Tie Patches Artificial Reef fish census.

3.8 KD Select Artificial Reef

- Location: Sirotkin Reef
- Materials: Concrete, steel
- Maximum Depth: 129 feet
- Reef High Point: 117 feet
- Year Created: 2007
- Monitoring Date: 12/20/2008, 10/10/2009

3.8.1 History of the KD Select Artificial Reef

This artificial reef was deployed in 120 feet of water in July 2007 along the southern boundary of the Sirotkin Artificial Reef area. The reef was created using approximately 537 tons of waste concrete recovered from the Martin County landfill and stockpiled until enough material was available to create several artificial reefs at once. This reef was named by a local diver and marine services specialist who has worked on Martin County's artificial reef program for three decades.

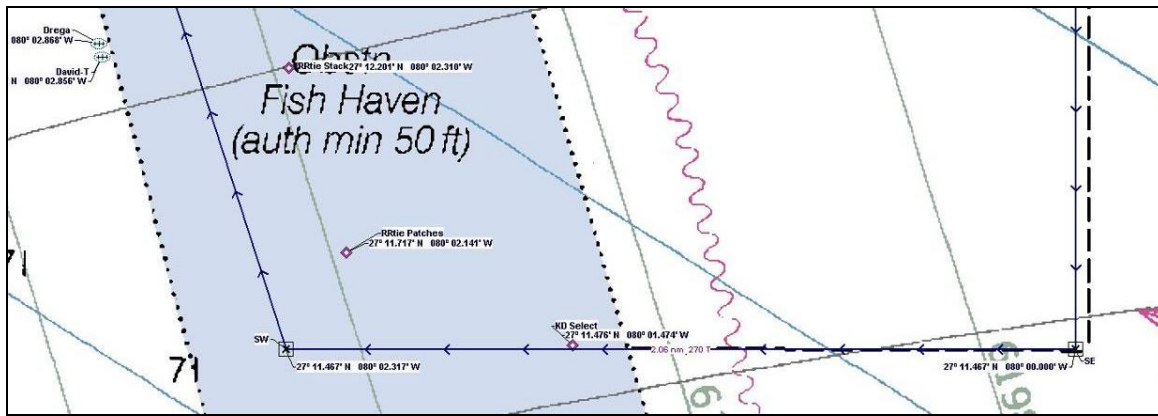


Figure 22. Chart view of the southern Sirotkin Reef area showing location of KD Select Artificial Reef.

3.8.2 Structural Summary

The maximum depth at this artificial reef site is about 129 feet with a maximum relief of about 12 feet. The footprint of the site is generally round with a southeast-to-northwest axis and occupies about 0.3 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.



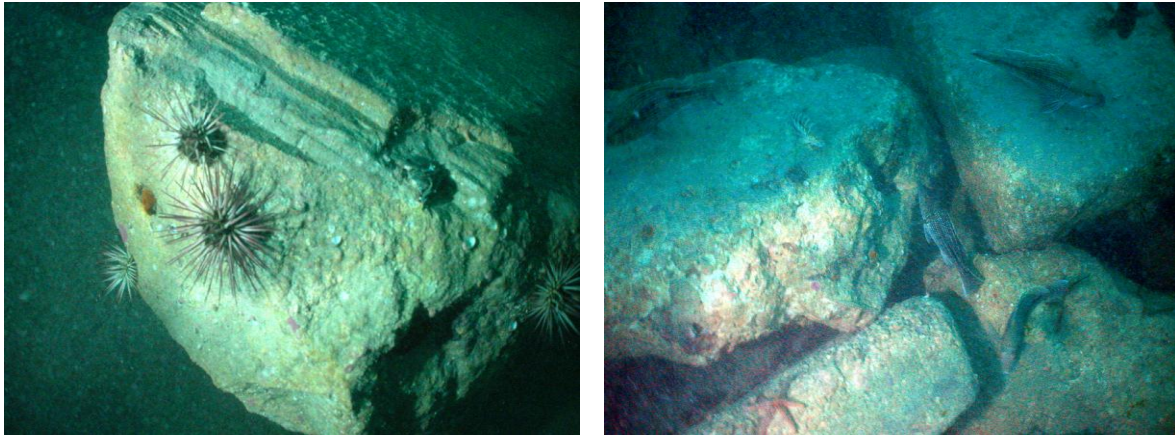


Figure 22. KD Select photographs from 2008 (bottom) and 2009.

3.8.3 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. An adult smalltooth sawfish (federally endangered) was observed at this artificial reef in 2009 and was reported to FWC and the National Sawfish Encounter Database and the FWRI field office in Port Charlotte. Invertebrate biomass on the artificial reef also appeared to have increased since deployment. Most common species included sea urchins, hydroids, tube worms, barnacles, encrusting sponges and sea cucumbers. Fire worms, sea anemones and various crabs were also observed. Table 13 presents the fish species observed during 2008 and 2009.

Family/ Common Name	Species	2009		2008	
		Abundance	Size	Abundance	Size
Elasmobranchs					
Smalltooth sawfish	<i>Pristis pectinata</i>	S	A		
Southern stingray	<i>Dasyatis americana</i>	S	A	S	A
Clupeidae					
Spanish sardine	<i>Sardinella aurita</i>	A	J		
Centropomidae					
Common snook	<i>Centropomus undecimalis</i>	F	A		
Serranidae					
Bank seabass	<i>Centropristis ocyurus</i>			A	A,J
Belted sandfish	<i>Serranus subligarius</i>	M	A		
Black seabass	<i>Centropristis striata</i>	A	A,J	M	A,J
Gag grouper	<i>Mycteroperca microlepis</i>	S	A		
Goliath grouper	<i>Epinephelus itajara</i>	F	A		
Sand perch	<i>Diplectrum formosum</i>	A	A,J	M	A,J
Scamp	<i>Mycteroperca phenax</i>			M	A
Snowy grouper	<i>Epinephelus niveatus</i>	S	J		
Grammistidae					
Whitespotted soapfish	<i>Rypticus maculatus</i>	M	A		
Rachycentridae					
Cobia	<i>Rachycentron canadum</i>	F	A		

Echeneididae					
Sharksucker	<i>Echeneis naucrates</i>	F	A/J		
Carangidae		2009		2008	
Family/ Common Name	Species	Abundance	Size	Abundance	Size
Amberjack	<i>Seriola dumerili</i>			M	A,J
Blue runner	<i>Caranx chrysos</i>	A	A		
Round scad	<i>Decapterus punctatus</i>	A	A,J	A	A,J
Haemulidae					
Tomtate	<i>Haemulon aurolineatum</i>	A	A,J	A	A,J
Sparidae					
Pinfish	<i>Lagodon rhomboides</i>	F	A		
Sheepshead	<i>Archosargus probatocephalus</i>				
Sheepshead porgy	<i>Calamus penna</i>	M	A		
Sciaenidae					
Cubbyu	<i>Equetus umbrosus</i>	M	A		
Mullidae					
Yellow goatfish	<i>Mulloidichthys martinicus</i>	M	A		
Ephippidae					
Atlantic spadefish	<i>Chaetodipterus faber</i>	S	A		
Pomacanthidae					
Blue angelfish	<i>Holocanthus bermudensis</i>	S	A		
Pomacentridae					
Yellowtail reeffish	<i>Chromis enchrysurus</i>	M	A,J		
Labridae					
Painted wrasse	<i>Halichoeres caudalis</i>	F	A		
Balistidae					
Gray triggerfish	<i>Balistes capriscus</i>	F	A		
Total		25		8	

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. KD Select Artificial Reef fish census.

3.9 Frances Langford Memorial Reef

- Location: Sirotkin Reef
- Materials: Concrete, steel
- Maximum Depth: 152 feet
- Reef High Point: 118 feet
- Year Created: 2005
- Monitoring Date: 12/21/2008, 10/10/2009

3.9.1 History of the Frances Langford Memorial Artificial Reef

Between 2000 and 2005, several drawbridges in Martin County were decommissioned and replaced with fixed-span bridges to improve traffic flow and marine navigation. The Frank Wacha drawbridge spanned the Indian River Lagoon at Jensen Beach before it was dismantled and the materials secured for deployment as an artificial reef. Nine barge loads of these concrete and steel materials were deployed on the Frances Langford Memorial Reef in 150 feet of water within the Sirotkin Artificial Reef site. This reef was named in honor of Frances Langford, a