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

former Hollywood actress and long-time Martin County resident, conservationist and supporter of the Florida Oceanographic Society. Ms. Langford's support for the Society helped establish the FOS Coastal Science Center on Hutchinson Island.

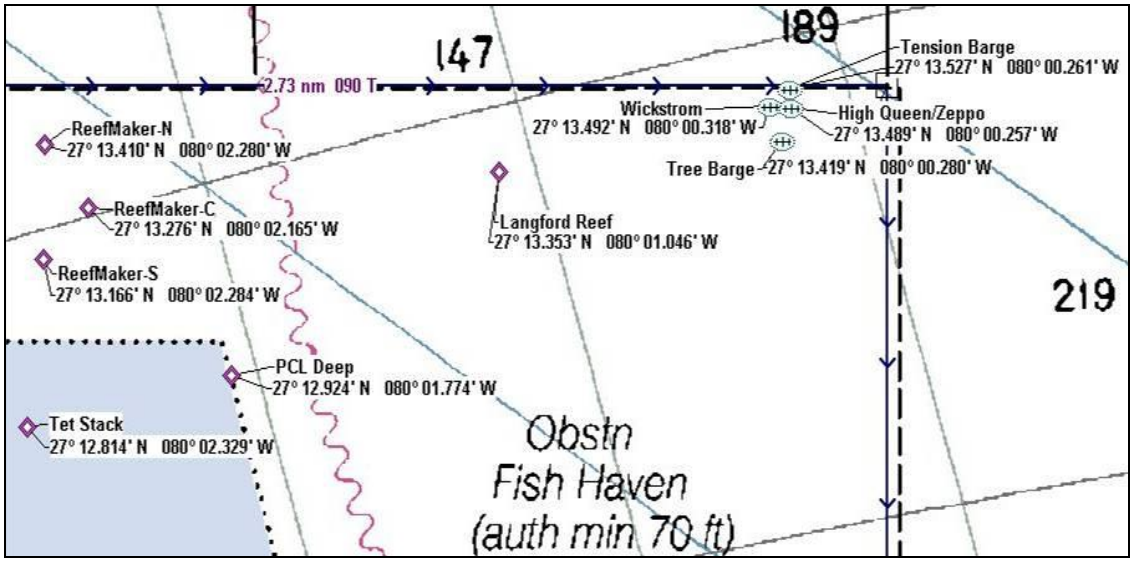

Figure 23. Chart view of Sirotkin Reef showing location of Langford Memorial Reef.

3.9.2 Structural Summary

This artificial reef is a sprawling field of large concrete and steel bridge debris on a flat, sandy seafloor. Because this reef was deployed over a period of several weeks using numerous separate loads of material (3,500 tons), the footprint is long and irregular. The large debris field is scattered over a north to south axis and varies considerably in both width and maximum relief along its length. Many components of the old bridge are plainly visible, including the bridge tender's house, concrete support columns and sections of steel roadway grating. Some of these larger components rise 20 feet above the seafloor. The reef components appear to be stable, despite random and haphazard stacking that occurred during deployment. Reef settling remains minor and sand scouring is not significant along any of the reef margins. Figure 23 shows a chart with the location of the Langford Memorial Reef.

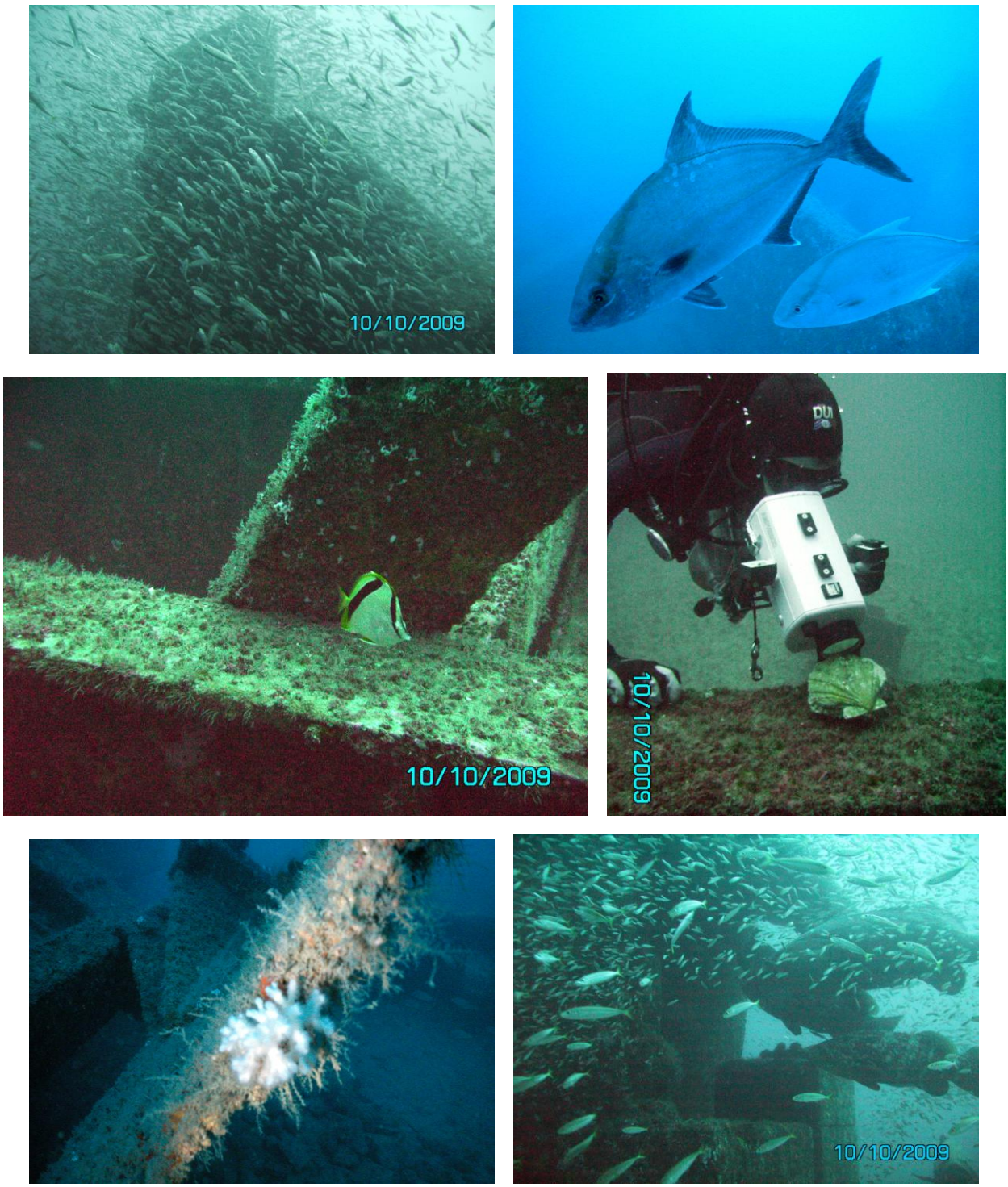

Figure 24. Frances Langford Memorial Reef photographs from 2008 (not dated) and 2009.

3.9.3 Biological Survey Results

With the exception of 2008, fish surveys indicate an increasing trend in species diversity since 2006. Seabasses and jacks are the best represented families with six and five species respectively. Vast schools of 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 and other large fishes. Most other fish species were more closely associated with the reef structure, seeking shelter within cavities when approached by the divers. Invertebrate biomass on the artificial reef had visibly increased in both 2008 and 2009 when compared to the previous monitoring efforts; some examples include sea urchins, hydroids, tube worms, tunicates, encrusting sponges, sea scallops and sea cucumbers. Numerous small colonies of *Oculina* coral were observed growing on the reef surface. Table 14 presents the fish species observed from 2006 through 2009.

Family/ Common Name	Species	2009		2008		2007	
		Abundance	Size	Abundance	Size	Abundance	Size
Elasmobranchs							
Southern stingray	*Dasyatis americana*	S	A			F	
Serranidae							
Bank seabass	*Centropristis ocyurus*	M	A	F	A	F	
Belted sandfish	*Serranus subligarius*	M	A				
Black seabass	*Centropristis striata*	M	A	M	A	M	
Gag grouper	*Mycteroperca microlepis*	F	A	M	A	M	
Goliath grouper	*Epinephelus itajara*	M	A				
Scamp	*Mycteroperca phenax*	M	A	M	A	F	
Carangidae							
Almaco jack	*Seriola rivoliana*	M	A/J	M	A		
Amberjack	*Seriola dumerili*	F	A	A	A	M	
Blue runner	*Caranx chrysos*	M	A				
Round scad	*Decapterus punctatus*	A	A,J				
Lutjanidae							
Gray snapper	*Lutjanus griseus*	M	A				
Lane snapper	*Lutjanus synagris*			F	A	F	
Vermillion snapper	*Rhomboplites aurorubens*			F	A		
Yellowtail snapper	*Ocyurus chrysurus*	F	A				
Haemulidae							
Tomtate	*Haemulon aurolineatum*	A	A	A	A		
Sparidae							
Sheepshead	*Archosargus probatocephalus*	M	A	M	A	F	
Sheepshead porgy	*Calamus penna*	M	A	M	A		
Sciaenidae							
Cubbyu	*Equetus umbrosus*	M	A,J			M	
Chaetodontidae							
Bank butterflyfish	*Chaetodon aya*	F	A	F	A	S	
Reef butterflyfish	*Chaetodon sedentarius*					F	
Pomacanthidae							
Blue angelfish	*Holocanthus bermudensis*					F	
Pomacentridae							
Yellowtail reeffish	*Chromis enchrysurus*	M	A,J				
Labridae							
Slippery dick	*Halichoeres bivittatus*	M	A				
Spotfin hogfish	*Bodianus pulchellus*	F	A			A	
Scorpaenidae							
Spotted scorpionfish	*Scorpaena plumeiri*	S	A				
Balistidae							
Gray triggerfish	*Balistes capriscus*					F	
	Total	**22**		**12**		**13**	

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 14. Frances Langford Memorial Reef fish species census.