

5.3 AARON VAUGHN MEMORIAL REEF

- Location: Donaldson Reef
- Materials: 30” square concrete pile cut-offs (various lengths) from the Veterans Memorial Bridge
- Maximum Depth: 63 feet
- Reef High Point: 50 feet
- Year Created: 2012
- 2012 Monitoring Date: None
- 2013 Monitoring Date: 9/04/2013
- Total Cost: \$40,430 FWC grant 11176 & 33% Martin County)

5.3.1 History of the Aaron Vaughn Memorial Reef

In July 2012, this memorial artificial reef was deployed in the Donaldson Reef Site off the coast of Martin County. The reef was built using precast concrete piling cut-offs from the Veterans Memorial Bridge. The site received two barge loads of approximately 147 pile cut-offs that varied in length from 3 ft to 31 ft, and weighed approximately 1,037 tons (according to the MPR’s). Figure 13 shows the location of the Aaron Vaughn Memorial Reef.

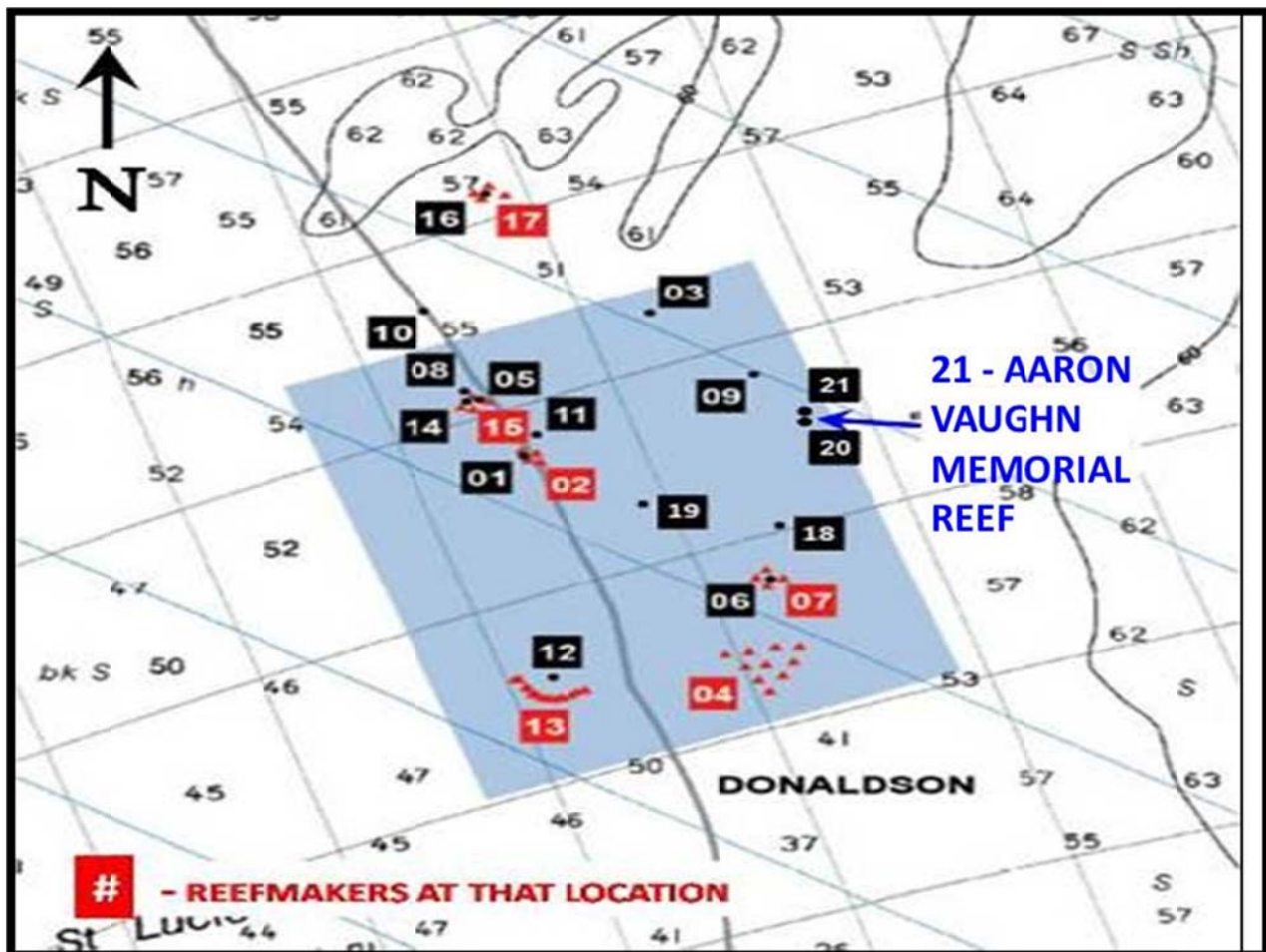


Figure 13. Chart of the Donaldson Reef site showing the Aaron Vaughn Reef location.

5.3.2 Structural Summary

The Aaron Vaughn, within close proximity to Kyle’s Crossbar Reef (No. 20), has a seafloor footprint of approximately 55 ft (north/south) by 60 ft (east/west), almost a perfect circle. The entire reef was built from the same type of concrete components (piling cut-offs), so visually it appears as a very symmetrical, cone shaped reef with a recorded profile height of 13 ft. The varying lengths of the piling cut-offs, approximately 280 pieces, or 1,037 tons, have yielded many overhangs, tunnels, and voids that formed during deployment which makes for an endless pattern of hiding places for fish and benthic creatures to inhabit. Given the configuration, it is anticipated that these heavy and dense components should remain during storm events and winter swells. Depth measurements taken at the perimeter of the reef, and depths 25 ft from the perimeter indicate that some scouring has occurred at the newly deployed reef. Refer to Table 15.

Table 15. Summary of Aaron Vaughn Depth Measurements.

Direction	Distance from reef high point to the perimeter (ft)	Perimeter Depth (ft)	Depth at 25 ft from perimeter (ft)
North	90	62	62
East	72	63	64
South	22	63	63.5
West	48	63	63

Note – Reef top depth was recorded via dive computer to be 50 ft.

According to County records (MPR’s), the original maximum deployment depth for the Aaron Vaughn site was recorded at 60 ft with a maximum material height of 15ft. In comparing our 2013 structural data with County records, the site has experienced some minor shifting of sands, as well as slight change in the crest height. Tide could be a minor factor for this discrepancy; however, it is likely that some settlement has occurred, coupled with shifting sands. Regardless, the site appeared stable; no loose or isolated pieces were encountered or observed.

5.3.3 Biological Survey Results

During this post-deployment monitoring survey, nearly fourteen months post construction, thirty seven (37) fish species were identified and photographed. The photographs show the general condition of the Aaron Vaughn reef, and some of the species observed during the monitoring dive.



Figure 14. Aaron Vaughn Reef Member, Various Species of Hard and Soft Coral

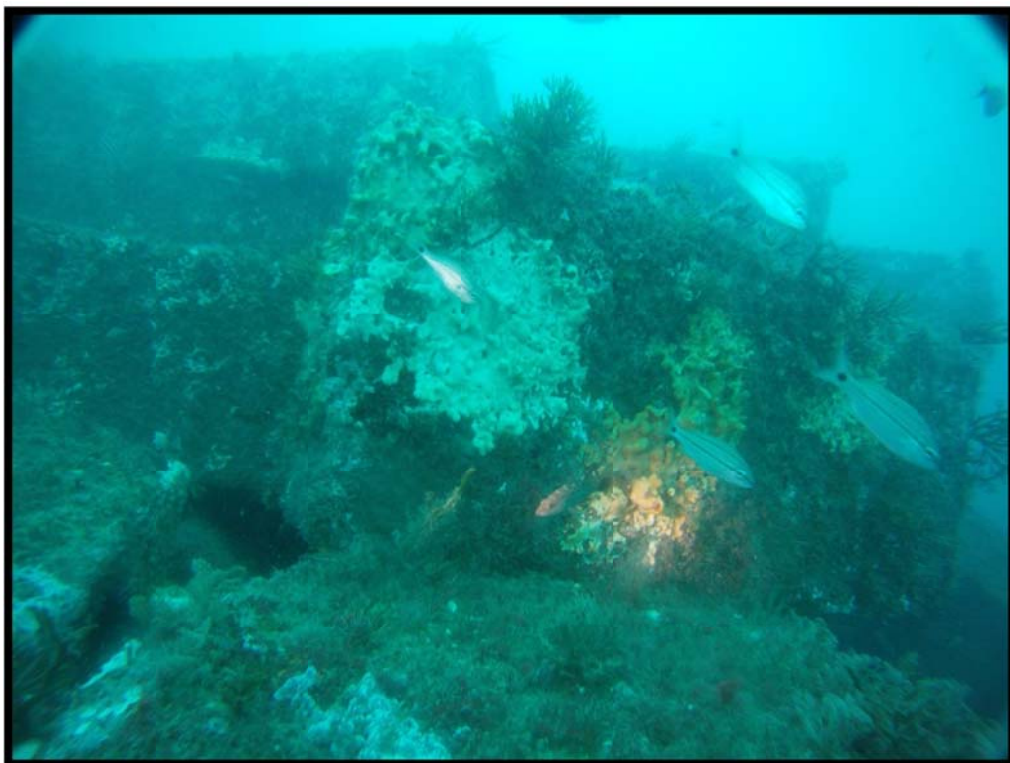


Figure 15. Aaron Vaughn Reef, Tomtates, 2013.



Figure 16. Aaron Vaughn Reef Benthic Species, Possibly a Warty Seacat, 2013 Monitoring

The most notable attached benthic organisms consisted of slight algae slime and small barnacles that seemed to cover every exposed surface. These findings represent the base of the food chain. Table 16 lists the fish species census, including the relative abundance, and size class (adult, intermediate, and juvenile), while Table 17 lists the benthic species observed during the monitoring dive.

Table 16. Aaron Vaughn Memorial Reef Fish Species Census.

Family/Common Name	Species	2013	
		Abundance	Size
Elasmobranchs			
Nurse shark	<i>Ginglymostoma cirratum</i>	S	A
Southern stingray	<i>Dasyatis americana</i>	S	A
Clupeidae			
Spanish sardine	<i>Sardinella aurita</i>	A	A
Centropomidae			
Snook	<i>Centropomus undecimalis</i>	M	A
Serranidae			
Belted sandfish	<i>Serranus subligarius</i>	M	A
Black seabass	<i>Centropristis striata</i>	M	A,J
Goliath grouper	<i>Epinephelus itajara</i>	F	A
Scamp	<i>Mycteroperca phenax</i>	S	J
Grammistidae			
Whitespotted soapfish	<i>Rypticus maculatus</i>	F	A
Carangidae			

Family/Common Name	Species	2013	
		Abundance	Size
Amberjack	<i>Seriola dumerili</i>	F	A
Atlantic bumper	<i>Chloroscombus chrysurus</i>	A	A
Blue runner	<i>Caranx chrysos</i>	M	A
Round scad	<i>Decapterus punctatus</i>	A	A
Lutjanidae			
Gray snapper	<i>Lutjanus griseus</i>	F	A
Lane snapper	<i>Lutjanus synagris</i>	M	A
Mutton snapper	<i>Lutjanus analis</i>	F	A
Yellowtail snapper	<i>Ocyurus chrysurus</i>	F	A
Haemulidae			
Black margate	<i>Anisotremus surinamensis</i>	M	A
Bluestriped grunt	<i>Haemulon sciurus</i>	M	A
Porkfish	<i>Anisotremus virginicus</i>	M	A
Tomtate	<i>Haemulon aurolineatum</i>	A	A
White grunt	<i>Haemulon plumieri</i>	F	A
Sparidae			
Sheepshead	<i>Archosargus probatocephalus</i>	M	A
Sheepshead porgy	<i>Calamus penna</i>	F	A
Sciaenidae			
Cubby	<i>Equetus umbrosus</i>	A	A
Pomacentridae			
Beaugregory	<i>Stegastes leucostictus</i>	F	A
Sergeant major	<i>Abudefduf saxatilis</i>	F	A
Yellowtail reeffish	<i>Chromis enchrysurus</i>	M	A,J
Labridae			
Slippery dick	<i>Halichoeres bivittatus</i>	M	A
Spanish hogfish	<i>Bodianus rufus</i>	F	A
Clinidae			
Hairy blenny	<i>Labrisomus nuchipinnus</i>	M	A
Acanthuridae			
Doctorfish	<i>Acanthurus chirurgus</i>	F	A
Scombridae			
King mackerel	<i>Scomberomorus cavalla</i>	F	A
Little tunny	<i>Euthynnus alletteratus</i>	M	A
Scorpaenidae			
Spotted scorpionfish	<i>Scorpaena plumieri</i>	M	A
Tetraodontidae			
Bandtail puffer	<i>Sphoeroides spengleri</i>	F	A
Sharpnose puffer	<i>Canthigaster rostrata</i>	F	A,J
TOTAL		37	

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. Aaron Vaughn Memorial Reef Benthic Species Census.

	Common Name	Scientific Name
Cnidarians	Sea Anemones	<i>Aptasia sp.</i>
	Hydroids	<i>Unidentified Species</i>
Crustaceans	Caribbean Spiny Lobster	<i>Panulirus argus</i>
Mollusca	Rock snails	<i>Muricidae (Unidentified species)</i>
	Warty Seacat	<i>Dolabrifera dolabrifera</i>
Porifera	Encrusting Sponge	<i>Halisarca sp.</i>
Polychaeta	N/A	<i>Spirorbidae</i>

5.4 KYLE’S CROSSBAR REEF

- Location: Donaldson Reef
- Materials: Large pieces of concrete, predominantly 30” square concrete piling cut offs, various lengths, from the Veterans Memorial Bridge
- Maximum Depth: 63 feet
- Minimum Depth: 62 feet
- Reef High Point: 41 feet
- Year Created: July 2012
- 2012 Monitoring Date: 09/09/2012
- 2013 Monitoring Date: 09/04/2013
- Total Cost: \$40,430 for both reefs(67% FWC grant 11176 & 33% Martin County)

5.4.1 History of the Kyle’s Crossbar Reef

In July 2012, this artificial reef was deployed in the Donaldson Reef Site. The reef was created using large pieces of concrete, roughly 3 ft to 20ft long. The reef site received two barge loads of 277 chunks of concrete that varied in length from 3 ft to 20 ft and weighed approximately 904 tons. Figure 17 shows a chart with the location of the Kyle’s Crossbar Reef.

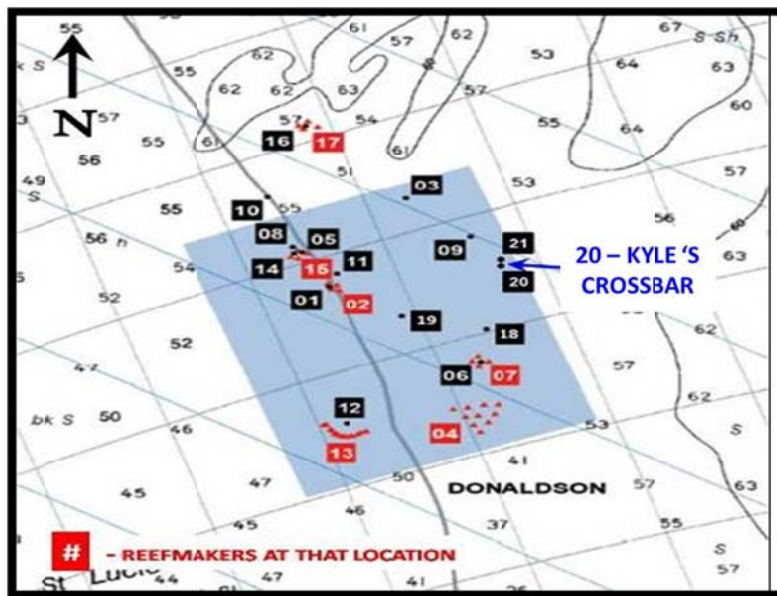


Figure 17. Chart of the Donaldson Reef area showing the Kyle’s Crossbar Reef location.