

COASTAL RECREATIONAL FISHING LICENSE

FINAL REPORT

Recipient: NC Division of Marine Fisheries

Grant Award #: 2009-H-007 (2416-1557)

Grant Title: Coastal Fishing Reef/Oyster Sanctuary (Gibbs Shoal)

Grant Award Period: Start Date: July 1, 2008 End Date: June 30, 2013

Project Costs: \$1,795,028.26

Expenditures for the Period: July 1, 2008 through June 30, 2013

<u>Category</u>	<u>Expenditures</u>
Fuel	\$84,883.54
Travel	\$249,389.35
Equipment	\$16,974.96
Supplies	\$14,039.08
Contractual (installment of dolphins)	\$23,798.00
<u>Reef Structures</u>	<u>\$1,405,943.33</u>
TOTAL	\$1,795,028.26

Total Remaining Balance: \$787.06

Description of Work:

The Division of Marine Fisheries constructed a new Coastal Fishing Reef/Oyster Sanctuary (Gibbs Shoal) located at the tip of Gibbs Shoal in Hyde County (outside Engelhard) as an expansion of the North Carolina's oyster sanctuary network. This 30 acre in size and 240 mounds was completed in April 2013 over a four and half year period.

The North Carolina Division of Marine Fisheries (DMF) was provided funds from the Coastal Recreational Fishing License program to expand North Carolina's oyster sanctuary network between Gibbs Shoal and the Pingleton Shoal area of Hyde County, near Engelhard. This expansion included the construction of a 30 acre coastal reef, consisting of 240 mounds over a five year period.

The concept of this sanctuary reef is to provide long term protected oyster habitat and to increase the number and availability of estuarine artificial fishing reefs.

The benefits for an expansion to the coastal reef/oyster sanctuary network by constructing this new coastal reef will enhance fish habitat and fishing access for fishermen in addition to enhancing the contribution of oyster larvae into the Pamlico Sound system by increasing the spawning stock biomass. A fully developed coastal fish reef site with an oyster sanctuary can greatly improve recruitment into historical oyster producing areas that can be planted with cultch material to receive the additional larvae.

The site will provide increased nursery habitat for utilization by numerous marine and estuarine species during key phases of their life cycles. The sanctuary site as well as the areas seeded by the larvae from the sanctuary will provide water quality benefits. The Gibbs Shoal Sanctuary Reef will provide and protect important complex estuarine habitats for many estuarine and marine species in accordance the North Carolina Coastal Habitat Protection Plan. The reef will provide additional fishing access sites for the public, as identified in the Strategic Plan for the Conservation and Improvement of North Carolina's Marine Resources through funding from the Coastal Recreational Fishing License.

The funds for this grant have been used to purchase reef structures to build the artificial reefs and to support loading, transport and deployment of the structures. These funds have also been used to provide travel expenses such as per diem and fuel for program owned vehicles to get to and from the vessel anchorage and reef material stockpile site. The majority of these expenditures were used for the purchasing of reef structures (Class B rip rap limestone, ultra balls and reef Cubes), four 3-pile dolphins for marking the sanctuary boundaries, travel and deployment operations including supplies and fuel.

Site selection for this sanctuary was based on oyster productivity in the area, bottom composition, and suggestions/meetings with local commercial fishermen in the area of the sanctuary. A public meeting was held prior to the project execution date and included a DMF Sanctuary Biologist and staff, the local community and fisherman.

All CAMA and Coast Guard permits were submitted and approved for the site selection, materials to be deployed, construction, and installation of the pilings. Below is a list of the applicable permits and the dates obtained.

- CAMA Permit applied and approved on November 3, 2009
- Coast Guard Permit approved on December 3, 2009 for four buoys to mark the sanctuary boundaries
- CAMA Modification Permits were approved on:
 - ✓ June 2011 for the use of concrete structures (ultra balls)
 - ✓ April 10, 2012 addition of 5 ultra balls per mound for 141 mound locations and to replace the boundary marking buoys with 3-pile dolphins.
 - ✓ December 14, 2012 use of concrete structures (reef cubes) and the addition of 12 ultra balls at each 141 mounds for a total of 37.
- Coast Guard Permit approved on May 22, 2012 for four 3-pile dolphins to mark the sanctuary boundaries

Deployed material has been monitored for oyster recruitment and survival indicating preliminary successful reef establishment.

Project Status/Work Accomplished For Performance Period of : January 1, 2013 through June 30, 2013

- 142 Reef Cubes were deployed by March 27, 2013 at 29 mound locations.
- 316.1 tons of Class B rip rap limestone was deployed at 2 mound locations.
- Pilings were installed and completed for the four 3-pile dolphins by May 10, 2013.

Final Project Summary:

100% Completed.....April 2013

Boundaries:

NE Corner	35° 27.3220'	75° 55.9590'
SE Corner	35° 27.1340'	75° 55.9590'
SW Corner	35° 27.1340'	75° 56.1900'
NW Corner	35° 27.3220'	75° 56.1900'

Total Deployments:

- 16,074.7 tons of Class B rip rap limestone was deployed at 107 mound locations
- 2,700 Ultra Reef Balls was deployed at 108 mound locations
- 961 Reef Cubes was deployed at 28 mound locations
- 240 mounds were constructed creating a 30 acre fishing reef/oyster sanctuary

Deployment based on Calendar Year:

2009:

Mounds 1-4 149 tons of Class B rip rap limestone each

2010:

Mounds 5-62 150 tons of Class B rip rap limestone each

2011:

Mounds 63-99 150 tons of Class B rip rap limestone each

2012:

Mounds 100-105 152.1 tons of Class B rip rap limestone

Mounds 106-179 25 Ultra Balls per mound

Mound 180 26 Ultra Balls

Mounds 181-212 25 Ultra balls

2013:

Exceptions to mounds 181 -212

Mound 212 25 Ultra Balls and 12 Reef Cubes

Mound 211 3 Reef Cube and 25 Ultra Balls

Mound 213 24 Ultra balls and 13 Reef Cubes

Mounds 214-238 37 Reef Cubes per mound

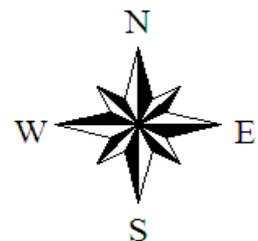
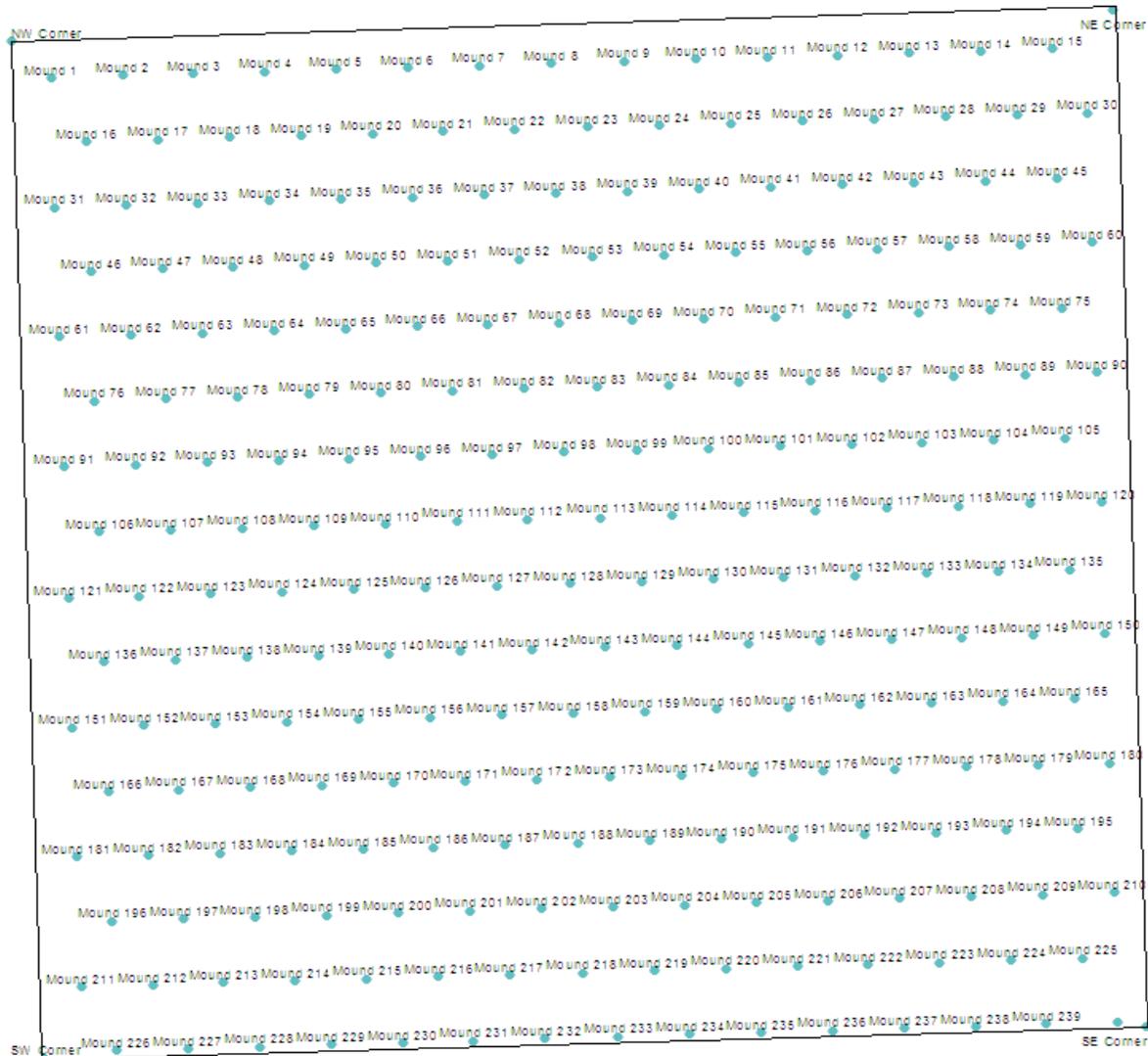
Exceptions to mounds 214-238

Mounds	218, 219, 223, 226	38 Reef Cubes
Mound	238	41 Reef Cubes

Mound 239 152.1 tons of Class B rip rap limestone
Mound 240 164 tons of Class B rip rap limestone

Gibbs Shoal Sanctuary Layout:

Gibbs Shoal Sanctuary



Dolphins and Signage on the four boundary corners of the Sanctuary:



Deviations:

A no cost extension was requested and approved until June 30, 2013

A justification of reef material (from limestone riprap to concrete reef structures know as ultra balls) was submitted and approved in June 2011. The idea was to improve the reef habitat as well as provide cost savings. This was to be accomplished by changing the construction (reef) material from limestone to concrete reef structures. The changes also required a permit modification through the Division of Coastal Management. This permit modification was approved by Coastal Management on XXXXX, which agreed on replacing one limestone mound with 20 Ultra balls (artificial reef structure). Since then the changes have successfully been implemented which have significantly reduced the overall project cost.

Another deviation with this project included a change of buoys from XXXX to 3-pile dolphins. This amendment was needed in order to????to mark the four boundary corners of the sanctuary. The boundaries of Gibbs Shoal coastal fishing reef was

initially marked in 2009 according to NCDMF rule with the standard coastguard approved class 4 buoys. A typical buoy system is built up by a sinker, chain, swivels, shackles and a buoy. All buoy systems at Gibbs Shoal have shown excessive signs of mechanical stress and each year one or more buoy systems have failed and drifted off their mandated location. High wind exposure at the site is believed to be the main cause for the failing buoy systems. Because of the high maintains cost and the frequent failure of buoys it is more cost effective to mark this site with wood pilings. Each corner of the reef site was marked with a US Coast Guard regulatory three-pile-dolphin made out of three 50 ft class C pilings. Two (3X3 ft) signs were posted on each dolphin facing the outside boundaries depicting the orange hazard diamond and the CRFL logo and Oyster Sanctuary Danger Submerged Rock. As a result of these deviations, which included a change of material and better marking of the site, there is an increased structural surface area for fish habitat. The result of these deviations will also provide DMF a more reliable and visible marking system to help maintain the integrity of the site.