

Georgia's Offshore Artificial Reef Project Historical Summary

The Georgia Department of Natural Resources (GADNR) Offshore Artificial Reef (OAR) Project was established to develop long-term fisheries habitat to increase the availability of quality recreational fishing sites in the Atlantic Ocean near Georgia. The OAR Project began in 1970 under the authority of the Georgia State Game and Fish Commission (GSGFC) and is currently administered by GADNR's Coastal Resources Division (CRD). Georgia's OARs provide Essential Fish Habitat (EFH) as established by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) illustrating the importance of these purpose-built ecosystems (NOAA 2007). MSFCMA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

Artificial Reefs play an important role in Georgia's marine ecosystems and coastal economies. In addition to the benefits realized by anglers and businesses, Reefs create numerous opportunities for wildlife. Artificial Reefs have long been used to supplement existing natural structures in aquatic environments (Lukens and Selberg, 2004). These Reefs provide habitat for both fishes and other marine life in a similar fashion as naturally occurring geological formations. Reef surfaces act as attachment points for fouling and sessile organisms in search of hard substrates such as anemones, octocorals, sponges, algae, and others. Many species of crustaceans; echinoderms; worms, small fishes, and enormous schools of baitfish (Sardines; Scad; and Atlantic Menhaden) use Reefs to forage, shelter, evade predators, and rest from strong currents associated with Georgia's high tidal amplitudes. Larger fish, turtles, mammals and even birds are attracted to OARs by opportunities for food and shelter.

The OAR Project covers 116 square miles and consists of 20 OARs, eight decommissioned Department of Defense (DOD) Tactical Air Crew Training System (TACTS) Towers, and two Beach Reefs (Figure 1). These 30 OAR sites are the GADNR permitted areas authorized for material deployments. The 20 OARs and eight TACTS tower areas are two nautical mile (nm) and one nm square grids respectively, while Beach Reef sites are circular with a 400 yard diameter. TACTS Towers resemble oil / gas production platforms and are located approximately 40 to 70 miles offshore. Towers legs serve as OAR communities with plans underway with DOD to deploy Towers to the seafloor where the entire structure can serve as Reef habitat. Towers currently provide recreational opportunities and are popular deep water fishing (~144') and diving destinations. In 2001, GADNR developed three Beach Reef sites ("BL", "BH", and "TC") constructed over known "hangs" on the seafloor. The "BL" and "BH" sites are still actively used, however the "TC" site was eliminated from the OAR Project in 2013 as acoustic surveys indicated materials settled below the surface of the sea floor.

OAR permitting began in 1971 under the GSGFC. Sites were individually permitted until the OAR Project became established, and then multiple Reef sites were housed under one Regional Permit (RP). Regional Permit #36 (RP 36) was originally issued by the United States Army Corps of Engineers (USACE) on July 17, 1991 on a 5 year cycle. On July 22, 2011 RP 36 was

re-approved and then modified (March 31, 2014) by the USACE and remains valid until July 21, 2016. RP 36 authorizes the deployment and maintenance of materials at Georgia's 30 OAR sites located in the Atlantic Ocean (Table 1).

The South Atlantic Fishery Management Council (SAMFC) designated 19 of GADNR OARs as Special Management Zones (SMZs). SMZs assist in increasing numbers of fish in an area and / or create fishing opportunities that would not otherwise exist ("SAMFC"). SMZs allow for: 1) fishing gear restrictions to prevent overexploitation of fishery resources; 2) orderly use of fishery resources on and around Artificial Reefs; 3) reductions in potential user group conflicts; and 4) maintain the intended socioeconomic benefits of Artificial Reefs. Gear restrictions at the 19 GADNR SMZ sites ("A"; "ALT"; "CAT"; "CCA-JL"; "CDH"; "DRH"; "DUA"; "DW"; "F"; "HLHA"; "JY"; "KBY"; "KC"; "KTK"; "L"; "MRY"; "SAV"; "SFC"; "WW") include: 1) fishing may only be conducted with hand line, rod and reel, and spearfishing; 2) use of sea bass pot or bottom long line is prohibited; and 3) possession of South Atlantic snapper-grouper taken with a power head is restricted to bag limits. Furthermore, the SAMFC has designated SMZs as Essential Fish Habitat – Habitat Areas of Particular Concern (EFH-HAPC). These are considered high priority areas for conservation, management, or research because these habitats are rare, sensitive, stressed by development, or important to ecosystem function (NOAA 2007).

Historically, OAR materials have been transported by U.S. Army helicopters and dropped in place or materials have been towed to reef sites where explosives were used to sink them. These methods are no longer used to deploy reef materials as current project deployments are performed by materials pushed over the sides of barges with heavy equipment and / or barges and vessels sunk by cutting holes in sides and bottoms. An assortment of materials has been deployed at Georgia's OARs. "Materials of opportunity" range from donated concrete telephone poles to specially designed concrete tetrahedrons for fisheries enhancement materials. Other deployed materials include subway cars; M-60 battle tanks; barges; bridge rubble; landing crafts; boat molds; metal chicken transport cages; culvert pipe; truck tire units; steel vessels; pallet balls; and steel tug boats. In June of 1994, the U.S. military formed the REEF-EX Program which de-militarized obsolete military tanks and donated them to Reef Programs throughout the country. GADNR worked with USACE to obtain and deploy military hardware (M-60 battle tanks) in August of 1995 at six different OAR locations along Georgia's coast.

GADNR annually deploys materials of opportunity at multiple OAR locations in order to provide continued benefits. All Artificial Reef materials must remain stable and long lasting, and free of contaminants per Environmental Protection Division and USACE regulations. To learn which materials are present per individual OAR site visit: <http://coastalgadnr.org/sites/uploads/crd/pdf/Reef/ReefUpdate.pdf>

Georgia DNR has used various methods of monitoring OARs: 1) chevron traps to capture and tag fish; 2) still photography to categorize various species and habitats; 3) roving fish counts;

and 4) video documentation to assess structural integrity of materials as well as fish and invertebrate species diversity. The GADNR dive team currently contains 12 members whom each hold Self-Contained Underwater Breathing Apparatus (SCUBA) and Enriched Air Nitrox (mixed gas) certifications. Project SCUBA divers seasonally visit as many OAR sites as possible to document structural integrity of materials, epifauna growth, and biomass changes that have occurred since initial deployments. Minimal underwater visibility from poor water clarity can cause delays in site inspection, surveying, and / or photography. In these instances the Research Vessel MARGUERITE conducts side scan sonar surveys to confirm OAR site clearances are within permitted depth limits.

The GADNR OAR Project is currently funded through federal dollars from the Department of Interior, United States Fish and Wildlife Services, Federal Aid in Sport Fish Restoration Program. Historically, state funding was limited during the 1980's; although some budget increases were afforded sporadically during the 1990's and beyond through occasional legislative appropriations. Following the licensing of recreational fishermen in Georgia's marine waters in 1998, funding for the Project increased and stabilized. The Georgia General Assembly modified Georgia law (O.C.G.A. Title 27 Game and Fish Code) to require persons to possess a fishing license when recreational fishing (finfish, crabbing, shrimping, shellfish harvesting) in salt waters of the State of Georgia. A portion of the license sales proceeds can be allocated to the OAR Project via the approved state budgeting process.

State funds were used when available to buoy 21 out of the 30 OAR sites and to provide maintenance on all 30 Reefs. State funding sources have unfortunately been eliminated in recent years as the overall economy has struggled. Subsequently, federal funds have been used to deploy and maintain OARs but the overall reduction in funding due to state cuts has slowed expansion of some areas. Due to these budget reductions the OAR Buoy System has been discontinued and buoys removed as they failed. In 2014, GADNR finished cataloging all offshore buoys and no buoys remain. Developments in navigational electronics have helped lower the cost of highly accurate Global Positioning Systems and sonar systems rendering buoys obsolete.

The GADNR annually seeks donations from fishing clubs and other interested organizations in order to further develop Georgia's OAR System. Given that state and federal funds are capped with limited budgets, donations are a critical component of Artificial Reef development and assist in increasing the quantity of habitats available for many different recreational offshore species. The OAR Project has thrived over the years due to the generosity of its many donors (Table 2). Donations have been provided in the following forms: financial support, material donations, volunteered time and labor, and use of property. With the support of these and other partners, Georgia's OAR Project will continue to provide quality habitats and angling opportunities in the waters off of Georgia's Atlantic Coast.

In future years, the OAR Project plans to coordinate with the DOD to fully submerge the eight decommissioned TACTS Towers. Once successfully deployed to the seafloor, ownership will be transferred to GADNR and the OAR Project will manage them to enhance both habitat and recreational opportunities. GADNR will also design an OAR Monitoring and Management Plan to assess and continue development of Georgia's offshore habitats.

References

Lukens, Ronald R., and Carrie Selberg. 2004. Guidelines for Marine Artificial Reef Materials. Second Edition. Joint Publication of the Artificial Reef Subcommittees of the Atlantic and Gulf States Marine Fisheries Commissions. Vol. 121. 2 p.

NOAA. 2007. Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265). Washington (DC): NOAA. 6 p.

“SAFMC.” *Special Management Zones*. Web. 18 August 2014.
 <<http://safmc.net/managed-areas/special-management-zones-smzs>>

Figure 1. Map of Georgia's Offshore Artificial Reef System.

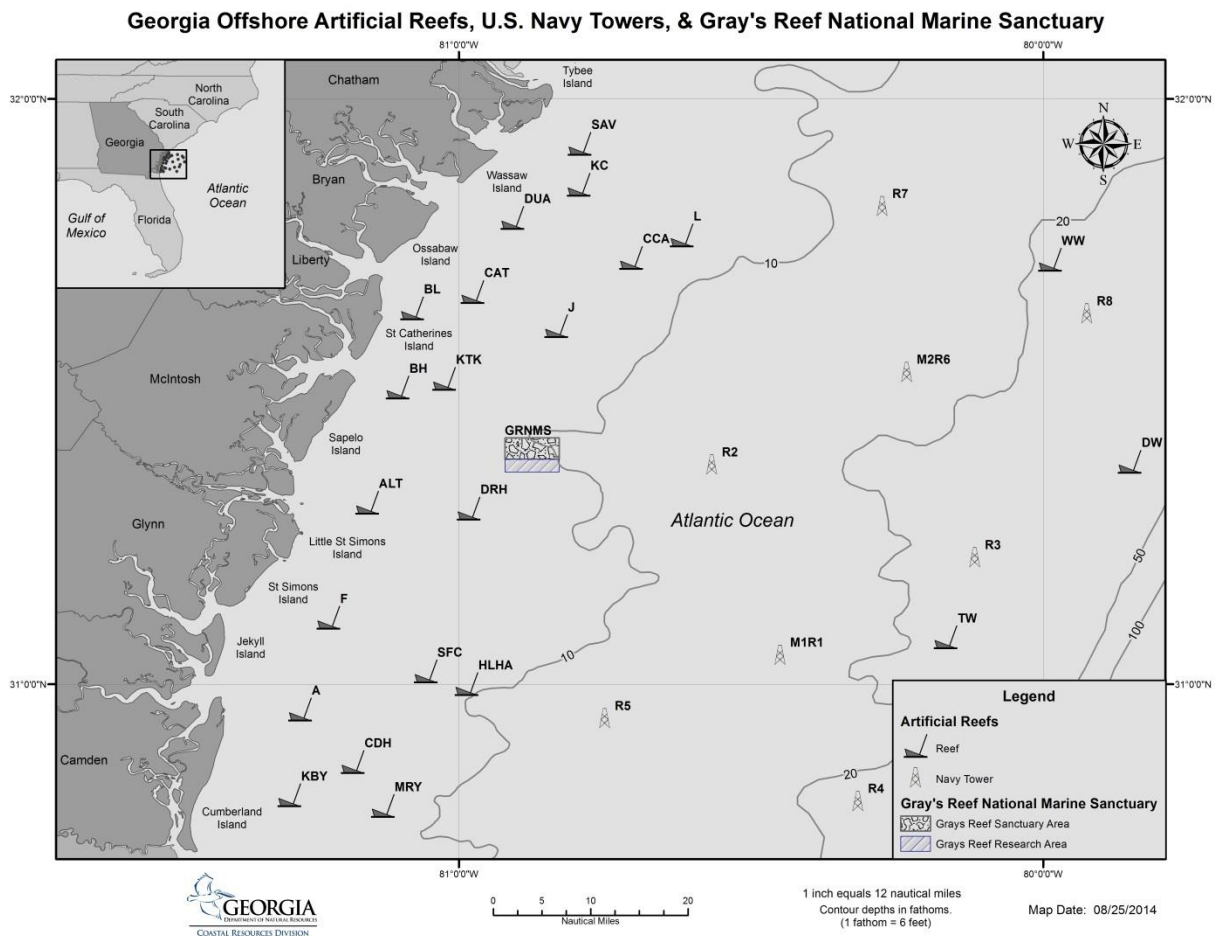


Table 1. GADNR’s 30 OAR sites listed with permitted material clearances & site water depths.

20 Offshore Reefs	Min.-Max. Water Depths	Minimum Material Clearances	2 Beach Reefs	Min.-Max. Water Depths	Minimum Material Clearances	8 TACTS Towers	Min.-Max. Water Depths	Minimum Material Clearances
“A”	32’-42’	22’	“BH”	16-19’	12’	“M1R1”	60’-102’	60’
“ALT”	32’-40’	22’	“BL”	12-15’	10’	“R2”	35’-72’	35’
“CAT”	37’-43’	22’				“R3”	60’-144’	60’
“CCA- JL”	50’-60’	28’				“R4”	60’-138’	60’
“CDH”	44’-55’	28’				“R5”	38’-72’	38’
“DRH”	41’-53’	28’				“M2R6”	60’-102’	60’
“DUA”	35’-48’	22’				“R7”	40’-84’	40’
“DW”	152’-172’	60’				“R8”	60’-144’	60’
“F”	37’-42’	28’						
“HLHA”	54’-70’	35’						
“JY”	52’-72’	28’						
“KBY”	34’-45’	22’						
“KC”	39’-50’	22’						
“KTK”	32’-45’	22’						
“L”	54’-65’	35’						
“MRY”	50’-60’	46’						
“SAV”	35’-42’	22’						
“SFC”	48’-55’	28’						
“TW”	132’-150’	60’						
“WW”	119’-138’	60’						

Table 2. OAR Project donors and donations.

Donors	Type of Donation
Claxton Poultry Company	Metal Chicken Transport Cages
Coastal Conservation Association of Georgia	Facilitation of Donations
East Coast Terminal Company	Use of Property to Stage Materials
Fieldale Farms	Metal Chicken Transport Cages
Fort McAllister Sport Fishing Club	Financial
Georgia Natural Resources Foundation	Financial
Georgia Power Company	Concrete Power Poles
Georgia Transmission Commission	Concrete Power Poles
Golden Isles Kingfish Classic	Financial
Industrial Marine Services, Inc.	Labor & Equipment to Load Materials
Myrick Marine Contracting Corporation	Deck Barge
Rayonier, Inc.-Coastal Resource Unit	Concrete Culvert
Sapelo Saltwater Fishing Club	Financial & Steel Hull Vessel
Savannah Sport Fishing Club	Financial & Facilitation of Material Donations
Savannah Steel Terminal LLC	Hopper Barge
Two-Way Sport Fishing Club	Financial
TW3 Transportation	Discounted Transportation
Valmont – Newmark, Inc.	Labor to Cut Power Poles & Transportation