

# GRAY'S REEF - RESOURCE PROTECTION



*Each sanctuary's primary goal is protection of its marine resources. Sanctuaries are mandated to maintain natural biological communities, and to protect and (where appropriate), restore and enhance natural habitats, populations, and ecological processes. A principal role for Gray's Reef is to identify and address current and emerging marine resource issues relative to the sanctuary, while considering uses that prove to be compatible with resource protection.*



**Photo credit:**  
Gray's Reef photo archive

## Enforcement

Settlements were reached in the first federal enforcement cases in Gray's Reef National Marine sanctuary. NOAA issued a notice of violation and an assessment of a civil penalty in the amount of \$5,000 against a recreational fisherman for unlawfully anchoring in Gray's Reef. The case was settled through a payment of \$3,000. In a second case, NOAA issued a \$10,000 civil penalty against another recreational fisherman for unlawfully anchoring as well as possessing or using unauthorized fishing gear in the sanctuary.

Anchoring was prohibited in Gray's Reef in February of 2007 when rules under the most recent management plan went into effect. That plan also outlines what type of fishing gear can be used in the sanctuary. Both regulations, and others, are enforced during marine patrols conducted by NOAA, Georgia Department of Natural Resources and



the Coast Guard. GaDNR is authorized under a joint agreement to enforce sanctuary and other federal regulations in Gray's Reef. Additional regulations may be found at the Gray's Reef web site (<http://graysreef.noaa.gov>).

## North Atlantic Right Whales



These highly endangered whales are seen in and around Gray's Reef. In 2008, the sanctuary continued

to participate in the Southeastern US Implementation Team for the Recovery of North Atlantic Right Whales. Staff focused on developing consistent messaging in education materials and getting to word out to shipping interests about the federally mandated reduction in speed for vessels longer than 65 feet transiting through right whales migratory paths.

## Law Enforcement Partnerships Threatened

High fuel costs mean that the total number of hours spent by Georgia Department of Natural Resources (GaDNR) law enforcement officers at Gray's Reef declined substantially in 2008. Gray's Reef and the GaDNR have a joint enforcement agreement through the NOAA Office of Law Enforcement whereby the GaDNR officers enforce the regulations in Gray's Reef. This has been vital as the sanctuary's regulations prohibiting anchoring and establishing a list of permitted gear went into effect last year. GaDNR officers were instrumental in the successful federal cases behind the settlement of civil penalties in the sanctuary for regulatory violations. The sanctuary is working with the GaDNR and NOAA Office of Law Enforcement to enhance the Joint Enforcement Agreement even in the face of fluctuating fuel costs and budget shortfalls.



## Spearfishing Ban on Horizon

Gray's Reef is proposing a complete ban on all spearfishing in the sanctuary after NOAA gathered substantially more socioeconomic information on the practice.

Spearfishing is a highly efficient harvesting gear that selectively targets larger fish relative to other fishing gears and can significantly alter abundance and size structure of target species toward fewer and smaller fish.

Spearfishing in Gray's Reef was considered for regulation during the original designation in 1981 and again in the revised management plan released in 2006. In 1981, only spearfishing with powerheads (a device with an explosive charge attached to a speargun) was prohibited. With the 2006 management plan, NOAA decided to revisit a possible spearfishing prohibition after more socioeconomic information could be gathered. A 2007 survey indicated no charter spearfishing activity and a very small amount of private spearfishing activity at Gray's Reef. Abundant substitution opportunities were also identified for spearfishing at other locations off Georgia. As a result, Gray's Reef is proposing a complete ban on all spearfishing gear in the sanctuary.

# GRAY'S REEF - SCIENCE & EXPLORATION



Each marine sanctuary is mandated to support, promote and coordinate scientific research and monitoring of the living and non-living resources of these marine environments. Research at Gray's Reef is ongoing, with scientists in various fields using the sanctuary as a staging area and jumping off point for studies related to marine species, marine biogeography and other topics of local, regional and national importance.



Photo credit:  
Gray's Reef photo archive

## Condition Report

The overall condition of marine life and habitat of Gray's Reef is mixed, with several resource categories rated as good and several rated as undetermined due to the need for more research and monitoring, according to a first-ever status report issued on the sanctuary's overall condition. None of the sanctuary's resources reviewed was listed in poor condition.

The report is the first attempt to describe the relationship between human pressures and the status and trends of natural resources within the sanctuary and identifies the pressures and impacts that may warrant monitoring and remediation in years to come. A similar report will be issued for each of the nation's sanctuaries.

The report notes Gray's Reef is under emerging threat from invasive marine species such as the Indo-Pacific red lionfish. Waters of the sanctuary are relatively pristine, but human-produced contaminants and pollutants are found in sediments and in water-filtering organisms such as vase sponges. The levels of contaminants are below levels thought to cause and permanent harm to marine life and below EPA guidelines. Illegal anchoring, marine debris, recreational fishing and spearfishing were all also noted as impacting the sanctuary.

The report's 17 questions on status and trends of biological and environmental variables are not specific to Gray's Reef, but instead are general enough to be asked of any sanctuary or marine ecosystem.

The full report is now available online at <http://sanctuaries.noaa.gov/science/condition> along with an interactive web version featuring a breakdown of its findings.

## Research Area

Significant research questions exist at Gray's Reef that can only be addressed by establishing a research area with restrictions on extractive activities like fishing and other activities that disturb the bottom and organisms such as diving. An environmental analysis of such a proposal is being prepared for a planned release in summer 2009 for public comment.

The concept of a research (control) area within Gray's Reef has been under discussion for several years. The idea was first raised in 1999 during the early stages of the Gray's Reef management plan review process. The issue was characterized as a need to increase opportunities to discriminate scientifically between natural and human-induced change to species populations in the sanctuary. In 2006, NOAA accepted the sanctuary Advisory Council's recommendation to formally consider the concept of a research area. The Advisory Council then designed a consensus-driven, constituent-based process to explore the issue. The public scoping process began in 2008.

Participants in the group process also used a specially-designed Geographic Information System (GIS) tool developed by NOAA's Biogeography Team to analyze distribution of habitats, fishing effort and historical research. Extensive investigations resulted in a proposed boundary option that would minimize the impacts on users and allow research to be conducted in several habitats that cannot be conducted anywhere else in the region.



## Fish Tagging Project

Eight reef fish—six scamp, one gag and one red snapper—were outfitted with internal and external tags in May during a research cruise on the NOAA Ship *Nancy Foster*. Over four days of operations, the fish were caught, surgically implanted with acoustic tags, and released back into the sea at their point of capture.

The eight fish are the start of a fish tagging project which will help Gray's Reef identify the home ranges of reef fish within the sanctuary and determine how the fish use different types of habitat. Ultimately, information from the project will inform management decisions as the sanctuary begins to learn how reef fish use the habit throughout their lifecycle, including migrations out of the sanctuary.

Preliminary information suggests that the majority of the eight fish tagged were still near the detection range of the receivers (about 160-feet) in November. The gag seem to stay close to their "home" ledges during this period while the red snapper appears to roam away from the receiver array, returning periodically.

More receivers will be deployed in the near future and plans are being developed with National Centers for Coastal Ocean Science (NCCOS) partners to continue tagging efforts in FY 2009.



## Invasive Species

The titan acorn barnacle, *Megabalanus coccopoma* and the Asian green mussel, *Perna viridis* which had not been seen in Gray's Reef before, were found to cover the entire bottom of the sanctuary data buoy this summer. Samples were collected and their identifications are being positively confirmed at the University of Georgia's Shellfish Laboratory.

Last year, red lionfish, a venomous invasive species from the western Pacific, were confirmed in Gray's Reef. No additional sightings were reported in 2008 and the two individuals seen in 2007 were not present at that site this year. However, sanctuary divers and researchers remain diligent in looking for this invasive species.

# GRAY'S REEF - OUTREACH



*Enhancing public awareness, understanding and appreciation of the marine environment is a mission of both the National Marine Sanctuary Program and Gray's Reef. The outreach program brings the sanctuary and the marine environment to the public in non-curriculum, non-programmatic learning environments such as fishing tournaments, festivals and exhibits. The sanctuary engages people who may not have an established interest in the marine environment, as well as those who do, in thought-provoking ways. Gray's Reef also strives to keep the public informed about its activities through the media.*



## Ocean Film Festival

The Gray's Reef Ocean Film Festival has grown into the sanctuary's largest outreach event and is being used as a model in other sanctuaries. In 2008, our fifth year, the sanctuary lengthened the festival by one night and expanded into another venue through a partnership with the start-up BLUE Ocean Film Festival.

The Gray's Reef Ocean Film Festival was a tremendous success with more than 3,000 attending the festival over the course of four days. Adults and children were treated to a wonderful array of ocean-oriented films and outstanding speakers and presenters. A review of audience comments indicated that those who attended left with a greater understanding of ocean issues and the work undertaken by NOAA, Gray's Reef and the Office of the National Marine Sanctuaries.

The Gray's Reef Ocean Film Festival's on-going success inspired BLUE to bring its film industry event and community film screening to Savannah. Blue Ocean and Gray's Reef Ocean Film Festival are working cooperatively to enrich both festivals. When BLUE happens in June 2009, Gray's Reef is slated to be the Host Sponsor for the global oceans event, which will draw marine filmmakers, researchers and broadcasters from around the world.

## Exhibits

The Gray's Reef exhibit program allows the sanctuary to reach people across the region—far more than could be reached in a traditional visitor's center. In 2008, the sanctuary worked with the staff of the University of Georgia Marine Education Center and Aquarium to upgrade that facility and to install a Gray's Reef diorama and interactive kiosk. Additional invertebrate models were added to the exhibit later in the year. Gray's Reef's administrative offices and the aquarium are both on the campus of the Skidaway Institute of Oceanography. The new Gray's Reef exhibit gives campus visitors a window into the offshore environments. Other exhibit partners active in 2008 include the Georgia Aquarium, South Carolina Aquarium, and Georgia Southern Museum. Gray's Reef exhibits at Fernbank Museum of Natural History in Atlanta, the Tybee Island Marine Science Center and the Sapelo Island Visitor Center are also still drawing visitors.



In 2008, the sanctuary met with several area municipal entities including the Savannah Area Convention and Visitors Bureau and the Coastal Heritage Society to re-visit the concept of a regional sanctuary-related exhibit and outreach facility within the city limits.

## Events

Gray's Reef participates in several ocean-themed events with our various partners including the Savannah International Boat Show; CoastFest and Beach Week with the Coastal Resources Division of the Georgia Department of Natural Resources; Marine Science Day with the Skidaway Institute of Oceanography, and Earth Day with the City of Savannah among others. Events are added to and subtracted from the schedule as staff and volunteer time permits and with an eye toward how and where we can best get our messages to stakeholders and the general public.

One of the more unusual ways is our annual participation in the Savannah College of Art and Design's Sidewalk Arts Festival and Sand Arts Festival. Some 600 artists competed for the Gray's Reef Fantastic Fishes Award and the Gray's Reef Sea Creatures Award at the 2008 festivals. The art festivals draw thousands to view the artwork and provide a way to get people—some of whom may not spend much time thinking about the ocean—to think about the marine environment as a source of inspiration.

## The Media, Publications & Speakers

Media coverage of Gray's Reef has a multiplier effect, enabling Gray's Reef to reach many more people than staff could on a one-on-one basis. In 2008, area, regional, and national reports about resource management, scientific research, invasive species and public events were among the stories that included Gray's Reef. Staff is frequently interviewed on radio, television and in the local press about local, regional and even national marine issues.

The sanctuary produces press releases, public service announcements and calendar notices on a regular basis. In addition, the sanctuary website is undergoing a format change to be more flexible and easier to keep fresh with new information on science and resource management issues. A list serve for event alerts was developed. Delivering more and more information in a paperless fashion is both more economical in this time of tight budgets and greener.

Each month Gray's Reef produces a radio commercial for broadcast on the Adventure Radio Group—a group of seven AM and FM stations with a reach of more the 400,000 households. In addition, Gray's Reef sponsored a National Public Radio program called "Our Ocean World" broadcast in the Georgia coastal region by Peachstate Public Radio station WSVH.

Gray's Reef staff and volunteers frequently talk to civic, non-governmental, business, sport fishing clubs and other organizations in addition to our frequent talks to educators. In late 2008, the sanctuary formalized a speakers' bureau and reached out to more civic groups such as Rotary Clubs. Topics covered by Gray's Reef staff and volunteer speaker range from diving to marine protected areas. In 2008, those general population talks plus outreach at events and festivals reached about 55,000 people.



**Photo credit:**  
Gray's Reef photo archive

# GRAY'S REEF - EDUCATION



*Teacher and student education is one way of meeting the sanctuary program's mandate to enhance public awareness, understanding and appreciation of the marine environment. To that end, Gray's Reef focuses on K-12 education with opportunities for teachers from across the region to use the sanctuary as a living classroom and for students to learn about the tools of marine science.*



*Photo credit: Gray's Reef photo archive*



## One World, One Water

Gray's Reef hosted the National Marine Educators Association (NMEA) conference called One World, One Water in Savannah. Conference themes included the International Year of the Reef, Ocean Literacy Principles and fisheries of the southeast. Staff from the southeast region of the Office of National Marine Sanctuaries took the lead presenting information on the importance of coral reefs. Approximately 800 educators, including classroom teachers, docents, interpreters and other informal educators attended the event.

Concurrent sessions of the conference explored issues facing coastal Georgia and the southeast while plenary sessions explored more universal ocean and marine habitat issues.

## ROV Competition

A record 18 teams competed at the third annual Gray's Reef Southeast Regional ROV MATE Competition in April. With help from Gray's Reef staff and volunteers, 14 out of the registered 18 teams competed all day for first and second places and the right to compete in the MATE International ROV Competition held in San Diego.

Even though chaotic at times, the crowd of 125 students, coaches, supporters and parents mixed with the competition crew to create an exciting, competitive atmosphere. ROV pilots tried to pick up hot rocks off a simulated black smoker and read its temperature. Their machines also had to be capable of picking up simulated hot vent crabs. The event took place inside a collapsed lava dome...at the Chatham County Aquatic Center heated pool in the middle of Savannah far, far, far away from any real black smoker.

Several ROV building workshops were completed ahead of time to prepare teachers for the competition. Two workshops were held at the Georgia Aquarium in Atlanta, one was held at the South Carolina Aquarium. In addition, a special multi-session workshop was held for local area advanced placement students.



## Rivers to Reef Workshops

The annual Rivers to Reef workshops follow the Altamaha River watershed from its headwaters in Atlanta through the state to the coast and offshore to Gray's Reef. In 2008, 32 teachers participated in the program which is run jointly with the Georgia Aquarium. The participants learn to monitor the water quality at each link along the watershed's to obtain ten sets of data that include readings for dissolved oxygen, nitrates, phosphates, pH, salinity/ conductivity and turbidity. While at the sanctuary, an ROV was deployed so participants could see the reef live, without having to dive. The goal is to make the connection that what is done onshore impacts the ocean environment through the watershed.

A special follow up evaluation meeting was held early in the year at the Georgia Aquarium with participants from last year's workshops. The purpose was to determine to what extent the participants used the materials, information and experiences gained during the workshops. Each participant shared how they incorporate the messages into their lessons; however, the most important aspect cited was that the first-hand experiences of following the watershed from beginning to end at Gray's Reef was invaluable in giving them the overall knowledge of how watersheds affect ocean habitats.



## Outreach Materials

Gray's Reef education staff and volunteers are regularly called upon to give special presentations and classes for students from K -12. Some of the programs are given in person and some are given via telepresence systems that bring the sanctuary into classrooms far and wide. Hundreds of students and their teachers are reached this way each year.

Gray's Reef publishes a wide variety of educational materials including posters, workbooks, videos/ DVDs and teaching guides. All materials are free and available to educators and the public upon request. In 2008, the sanctuary distributed approximately 175 education posters, 51 sets of right whale education materials, 60 sets of Rivers to Reef curriculum materials, 200 items with regulatory information and a variety of other materials. There were many requests for the Gray's Reef education posters that went unfilled due to budget restraints which prohibited printing additional posters.

# GRAY'S REEF - COMMUNITY INVOLVEMENT & PARTNERSHIPS



*Effective marine resource protection and conservation bridges all boundaries and borders. Our partnerships with constituents—users, researchers, educators, and other federal and state management agencies—are a critical element of sanctuary management. Partners include NOAA Fisheries, United States Coast Guard, Georgia and South Carolina Departments of Natural Resources, South Atlantic Fishery Management Council, the Skidaway Institute of Oceanography and the University System of Georgia among many others. Gray's Reef relies on collaboration with sanctuary partners to enforce sanctuary regulations, maximize the use of funds, eliminate duplication of efforts and effectively manage its nationally valuable resources.*



**Photo credit:**  
Gray's Reef photo archive

## Team Ocean Volunteers

Gray's Reef trained local recreational scuba divers to become "Team Ocean Volunteer Divers." So far five divers from the Blackbeard Scuba Club have completed the rigorous requirements to become NOAA volunteer divers. The divers will help Gray's Reef staff to collect data from marine debris transects, download fish movement data from acoustic receivers and otherwise assist in the collection of scientific data. The program will be expanded in 2009.

A cadre of land-loving volunteers regularly assists sanctuary staff at outreach events such as the Ocean Film Festival, CoastFest and Earth Day. In addition, Clean Coast volunteers conduct a "Sweep the Beach, Sweep the Reef," shore-side trash pick up each June in honor of World Ocean Day and again in September for CoastWeeks.

In addition to Team Ocean, Gray's Reef got some special assistance from Navy divers this summer. A team of eight U.S Army divers wielding scuba tanks

and welding torches assisted Gray's Reef National Marine sanctuary in the first phase of an important fish-tagging project in March.

The divers, part of the U.S. Army Dive Company, based in Ft. Eustis, Va., were on the front line of a new partnership that will benefit the nation's marine sanctuary systems and the military. The divers applied their dive time towards annual training and proficiency requirements.

The divers focused on field testing the capabilities of acoustic receivers and transmitters that support sanctuary fish behavior research and monitoring. Bad weather kept the Army divers ashore for part of their two-week deployment at Gray Reef. During that time, the divers welded together special mounts for the receivers which will be placed on the ocean floor in the sanctuary. The Skidaway Institute of Oceanography donated the stainless steel for the mounts and let the divers use the shop area on campus.



## The Battle of the Atlantic

For three weeks this summer, the sanctuary marine operations team and R/V *Sam Gray* were in North Carolina to support the Office of National Marine Sanctuaries' Battle of the Atlantic 2008 Expedition. The expedition was conducted by the Monitor National Marine Sanctuary, the Maritime Heritage Program and East Carolina University. During this underwater field expedition, three sites where German U-boats were sunk in battle by American forces in engagements during World War II were explored.

The 2008 summer expedition was the first part of a larger multi-year project to research and document a number of historically significant ships that went down during WWII. The project is dedicated to raising awareness of the war that was fought so

close to the American coastline and to preserving our nation's maritime history. Explored ships will include American, British and German naval vessels, as well as merchant vessels all located in an area known as the Graveyard of the Atlantic.

Consistent with U.S. and international policy, the expedition did not disturb the wreck sites and treated them as war graves and with respect. Visible sections of the vessels, as well as the biological characteristics of marine life found at the sites, were surveyed, photographed and documented using non-invasive methods. NOAA also ensured that exploration of the German U-boat sites met the provisions outlined by the German government.

## Sanctuary Advisory Council

Gray's Reef has a sanctuary Advisory Council, which, through its members, serves as a liaison to the community with regard to sanctuary issues and represents community interests, concerns and management needs of the sanctuary. Council members represent research, education, recreational fishing and diving, commercial and charter fishing, state and federal government, law enforcement and conservation partners among others.

In 2008, the council continued its commitment to make itself more available to its constituents and the public by holding its quarterly meetings in a variety of locations up and down the Georgia coast to extend their meetings into the region to gather public comments. The council meetings include regular presentations from sanctuary program staff including regional science coordinators and managers of other sanctuaries.

The council's research advisory panel supported development and completion of the Gray's Reef Condition Report, a periodic review of the state of the sanctuary's natural environments and living resources. The council's research area working group deliberated on the design of and explored options for a designated research area in the sanctuary. In 2008, the council initiated an Executive Working Group to streamline the flow of information from sanctuary staff to the council members and the public.

# GRAY'S REEF - HOMEPORT



*The location of Gray's Reef administrative offices on the campus of the Skidaway Institute of Oceanography links the sanctuary with other institutions involved in marine resources research. These include Georgia Southern University, Georgia Tech, and the University of Georgia as well as two units of the UGA Extension Service, all of which have facilities and staff on the Skidaway Campus.*

## Where We Live

Gray's Reef National Marine sanctuary is 17 miles east of Sapelo Island Georgia, in the South Atlantic Bight on an area of the continental shelf where temperate and tropical waters mingle west of the Gulf Stream. Other nearby features include the Charleston Bump and deep water Oculina coral outcroppings. The 20 square miles (approximately 12,500 acres) of Gray's Reef is just a tiny part of the vast Atlantic Ocean, yet it is linked to a much bigger region. Gray's Reef is part of the Office of National Marine sanctuary's Southeast/Gulf of Mexico/Caribbean region which also includes the Florida Keys and Flower Garden Banks National Marine Sanctuaries. Because of Gray's Reef's unique location at the intersection of temperate and tropical waters, the sanctuary serves as a sentential point for various monitoring programs of the Office of National Marine Sanctuaries.

Our administrative offices are on the campus of the Skidaway Institute of Oceanography, an independent unit of the University System of Georgia. This location enhances our ability to work in partnership with a variety of academic and research institutions.

## Vessels

In 2008, Gray's Reef operated the 33-foot R/V *Sam Gray*, the 41-foot renovated Coast Guard patrol vessel, R/V *Joe Ferguson* and one of the newest vessels in the sanctuary fleet, a yet-to-be named 41-foot catamaran (pictured below). All three vessels were used for research and monitoring, dive operations, education and outreach, as well as in support of a variety of activities for our research and academic partners. The sanctuary logged at total of 64 boat days at sea including 12 days on the *Sam Gray* dedicated to support of the Battle of the Atlantic 2008 Expedition.



## Sanctuary Greening

The sanctuary has an active commitment to environmental stewardship that extends beyond its water boundaries. This fall, Gray's Reef spruced up its office by adding eight native shrubs to landscaped beds at the entryway. Native plant species were chosen instead of standard landscape plants because they require less water when established, are somewhat deer-resistant and enhance the natural habitat of our office's woodland setting.

On-going "greening" projects include recycling, lighting management, commitment to two sided printing, commitment to using non-disposable and reusable items at meetings and around the administrative office. Staff has opened a dialog with the managers and vessel operators at the Skidaway Institute of Oceanography about converting their 6,500 gallon fuel tank to biodiesel to fuel all the campus related vessels, forklifts, vehicles and generators.

## Staff

A staff of eight full-time and one part-time are responsible for the daily operations of the sanctuary.

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Gray's Reef photo archive