

Each sanctuary's primary goal is protection of its marine resources. Sanctuaries are mandated to maintain natural biological communities, 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 credits:
GA DNR - Gray's Reef photo archive
Coast Guard vessel Oak - Gray's Reef photo archive
Marine debris - Laurie Bauer, NCCOS
Flounder - Greg McFall, Gray's Reef
Right whale - Gray's Reef photo archive



GRAY'S REEF - RESOURCE PROTECTION & MANAGEMENT

New Regulations Add to Enforcement

Protection of Gray's Reef's livebottom habitats and living resources got an added boost when new regulations went into effect February 2007. The regulations, which stem from a revised management plan adopted in 2006, prohibit anchoring, discharge and the use of certain types of fishing gear in the sanctuary. Compliance with the new rules is being carefully monitored after an extensive outreach campaign to alert users to the changes.



Law Enforcement Partnerships Enhanced

A key ingredient in sanctuary resource protection is enforcement of sanctuary regulations. Gray's Reef hosted a law enforcement summit in April which included all its law enforcement partners—Georgia Department of Natural Resources (GaDNR), U.S. Coast Guard, and the NOAA Fisheries Office for Law Enforcement. The Joint Enforcement Agreement between NOAA and the GaDNR was reviewed and improved. Enforcement reporting is now a regular part of the quarterly Sanctuary Advisory Council meetings and a law enforcement working group of the council has been formed.



Marine Debris

With support from NOAA's Biogeographic Team, nine long-term monitoring sites are being established throughout the sanctuary to compare debris accumulation rates among areas with differing levels of human use. Sites will be monitored by trained volunteer divers on a quarterly basis. The data will allow sanctuary managers to target locations in need of debris removal and to determine the frequency of monitoring and cleanup efforts. This monitoring data will build on the first assessment of marine debris within the sanctuary completed in March 2007 which found that debris — mostly fishing gear and other items such as cans, bottles and rope — was primarily located at rocky ledges within the areas of the sanctuary most intensely used by recreational anglers. The monitoring data will be used to enhance cleanup efforts and reduce harmful impacts on sanctuary resources. The project is funded by the NOAA Marine Debris Program.

Spearfishing

The management plan approved for the Sanctuary in 2006 continued to allow spearfishing without powerheads as part of sanctuary regulations with a pledge to revisit the issue with more socioeconomic information in two years. Near the end of 2007, NOAA completed a socio-economic study as a step toward re-examining the issue. In 2008, Gray's Reef management expects to open a public process to reassess spearfishing in the sanctuary.



North Atlantic Right Whales

These highly endangered whales are seen in and around Gray's Reef. In 2007, Gray's Reef continued to participate in the Southeastern U.S. Implementation Team for the Recovery of North Atlantic Right Whales. Staff focused on developing a matrix of audiences and tasks to reach more people with right whale messages. Gray's Reef features information about the whales and their winter presence in Georgia waters on its web site and in its radio messaging.

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.

GRAY'S REEF - SCIENCE & EXPLORATION

Science Team Maps Ocean Bottom

Gray's Reef staff completed two cruises aimed at mapping areas within proposed deepwater coral habitats and golden crab habitats off the East coast of Florida, and the shelf-edge spawning grounds of reef fishes off South Carolina and Georgia. Working from the NOAA ship *Nancy Foster*, researchers with the South Atlantic Fishery Management Council (SAFMC), NOAA Office of Ocean Exploration and other cooperating agencies gathered information to identify areas for further protection. The National Undersea Research Center at Wilmington, NC supported the efforts with their Autonomous Underwater Vehicle (a free-diving robot equipped with sonar), while the *Foster's* multibeam system enhanced the work.

During one leg of the *Foster* cruise, several ancient paleochannels were discovered meandering through Gray's Reef and nearby livebottom areas, some



cutting down to 20 meters below the sea floor. Paleochannels are old river and stream beds. Divers collected ancient scallop shells, thought to be 32,000 to 38,000 years old, from paleochannels near the sanctuary. A whale bone, evaluated for later study, was dated to about 35,000 years old. One of the primary goals of the expedition was to identify and describe the sediment and rock layers found within the sanctuary and surrounding areas to help understand geologic history.

Georgia Southern University scientists

continued study of Gray's Reefs diverse invertebrate community, particularly sponges and corals. Sampling in and around Gray's Reef was conducted to support invertebrate identification in the region and creation of an on-line invertebrate field guide. Scientists from the South Carolina Department of Natural Resources conducted sediment sampling to collect benthic organisms to add to the Southeast Regional Taxonomic Center.

Research Area & Condition Report

Scientists from the National Center for Coastal Ocean Sciences (NCCOS) biogeography team, with input from the Sanctuary Advisory Council's Research Area Working Group, refined the Geographic Information System (GIS) analysis tool developed for Gray's Reef. The tool, based on a detailed habitat map and using stakeholder-guided information, will assist Gray's Reef management in the placement of boundaries for a potential research area within the sanctuary.

In 2006, NOAA accepted the Sanctuary Advisory Council's recommendation to formally consider the concept of a research area. In 2007, the concept was topic for several public workshops of the Working Group and of Advisory Council meetings. The public scoping process will begin in 2008.

The Council's research advisory panel worked with Gray's Reef staff throughout 2007 to develop a Sanctuary Condition Report, a periodic review of the state of the sanctuary's natural environments and living resources. That report will be released in 2008.

Sponge Die-off

Gray's Reef scientists monitored a sponge die-off at the sanctuary and surrounding areas outside the sanctuary throughout the summer. The affected sponges appear to be of the genus *Ircinia* which are the most commonly sighted sponges on the hard bottom

reefs of the South Atlantic Bight in waters less than 100 feet deep. The vase- and ball-shaped sponges "bleached" (lost the pigmentation they have as result of cyanobacterial/microalgal organisms which reside in their tissue) and many died while still attached to the substrate. The cause of the event is unknown. Samples were taken and sent to regional partners to look for potential evidence of Harmful Algal Blooms (HABs) or other indications of stress which might be causing the die-off. Some of the samples are still under study. Staff will continue to monitor the sanctuary's sponges.

Sponge die-offs happened in various areas through the southeast region including the Florida Keys National Marine Sanctuary where Gray's Reef and University of North Carolina at Wilmington scientists monitored the giant barrel sponge (*Xestospongia muta*) to try and determine why they bleached and died.

Lionfish Arrive at Gray's Reef

Red lionfish, a venomous invasive species from the western Pacific Ocean, were confirmed for the first time in the sanctuary when two adult lionfish were photographed in late September during a scientific dive. The lionfish were spotted between 60 and 70 feet below the surface, making it one of the shallowest confirmed adult lionfish sightings. This finding may shed light on how close to shore they can survive off the East coast south of Cape Hatteras, where near-shore water temperatures are cool in winter. Sanctuary officials are asking that divers report any lionfish sightings they have within Gray's Reef.



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.

Photo credits:
Trustee's Theater - Doug Wyatt

GRAY'S REEF - OUTREACH

New Regulations & Outreach

Gray's Reef's new regulations, which include prohibiting anchoring and requiring the use of only certain types of fishing gear, were the focus of outreach efforts throughout the year. Staff and volunteers attended the captain's meetings of six major pelagic fishing tournaments to inform the recreational anglers of the new regulations in person. At those same meetings, staff also delivered messages about eliminating marine debris. Several give-away items imprinted with the sanctuary's new regulations and phone numbers were handed out. Posters with the new regulations were delivered by sanctuary volunteers in person to marinas, fish camps, boat ramps, sporting goods stores and dive shops up and down the coast.

Staff worked with the National Data Buoy Center and the National Weather Service (Charleston, SC, office) to ensure that information about the effective date of new Gray's Reef regulations was found on both the Data Buoy and Weather Service links from the Gray's Reef website. The information was also broadcast on weather radios during the marine forecast segments. An advertisement about the new regs was placed in the Georgia Fishing Regulations Guide, a publication with a print run of more than 200,000 targeted to recreational anglers. The sanctuary published a new rack card which includes the new regulations as well as other information about visiting Gray's Reef. In addition, the sanctuaries program of paid radio advertising and PSAs were all focused on getting information out about the new regulations.

Ocean Film Festival

Approximately 2,500 people attended the fourth annual Gray's Reef Ocean Film Festival held at venues in Savannah and on Tybee Island, Ga., during the weekend of September 21-23. More than 30 films were shown, including several



National Marine Sanctuary Program productions and the ground-breaking documentary, *Sharkwater*, which made its national premiere at the film festival. In the week prior to the event, Gray's Reef garnered a great deal of media attention offering staff an opportunity to talk about sanctuary accomplishments as well as the film festival.

Exhibits and Events

The Gray's Reef exhibit program allows the sanctuary to reach millions of people across the region—far more than could be reached in a traditional visitor's center. In 2007, 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. 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 include the Georgia Aquarium, South Carolina Aquarium, Fernbank Museum of Natural History, Georgia Southern University, Tybee Island Marine Science Center and the Sapelo Island Visitor Center.

Some 600 artists competed for the Gray's Reef Fantastic Fishes Award and the Gray's Reef Sea Creatures Award at the 2007 Savannah College of Art

and Design's Sidewalk Arts Festival and Sand Arts Festival. 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.

Gray's Reef also participated in several ocean-themed events with our various partners including CoastFest 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. New events included Earth Day festivities at the Georgia Aquarium and at the BWM plant in Spartanburg, SC.

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 2007, area, regional, and national reports about new regulations at the sanctuary, research cruises, scientific research, invasive lionfish and sanctuary events were among the stories that included Gray's Reef. Staff is frequently interviewed on radio, television and in the local press about marine issues.

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 than 300,000 households. In addition, Gray's Reef sponsors 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 and other organizations in addition to our frequent talks to educators. In 2007, those general population talks plus outreach at events and festivals reached about 30,000 people.

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.

GRAY'S REEF - EDUCATION

ROV Workshops & Competition

A team of student Remotely Operated Vehicle (ROV) builders from Pickens High School in Pickens County, GA., traveled to St. John's, Newfoundland for the international ROV building competition. The team won the second annual Southeastern Region ROV Competition held in April 2007 after participating in a Gray's Reef sponsored ROV building workshop. Another group of Savannah area students built ROVs as part of an extra curricular advanced science seminar. A workshop for 18 teachers was held at the Georgia Aquarium so they could learn how to start ROV building programs at their own schools. Gray's Reef sponsors the workshops and regional competition in order to promote marine science awareness at the high school level.



Photo credits:
ROV workshop photos - Gail Krueger, Gray's Reef
Rivers to Reef Educators Workshop - Cathy Sakas, Gray's Reef



Rivers to Reef Educators 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 2007, 32 teachers participated in the program which is run jointly with the Georgia Aquarium. Participants conducted water quality monitoring along the way and learned how science is conducted in the sanctuary by observing a Remotely Operated Vehicle in Gray's Reef at the end of the journey. The goal is to make the connection that what is done onshore impacts the ocean environment through the watershed.

Student Intern & Outreach to Underserved Populations

A college student from the marine science department of Savannah State University (SSU) is regularly chosen to work with the Gray's Reef Education Coordinator as an intern. The intern receives training by arranging programs and field trips for students in high school or younger grades and by interacting with Sanctuary professionals. In 2007, the intern conducted after school enrichment programs on a wide variety of marine topics for inner city middle school students at the Frank

Callen Boys & Girls Club. The Boys & Girls Club provides after school and weekend programs for children and teenagers from inner city housing projects; all of the students are considered under-represented and under-served.

Education 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 2007, the sanctuary distributed approximately 150 education posters, 200 sets of right whale education materials, 100 sets of Rivers to Reef curriculum materials, 1,500 200th NOAA anniversary posters and other materials.

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 credits:
SAC meeting - Gray's Reef photo archive
Savannah Mayor, Otis Johnson (background) and
Greg McFall - Coastal Heritage Society photo
Volunteer photo - Doug Wyatt

GRAY'S REEF - COMMUNITY INVOLVEMENT & PARTNERSHIPS

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 2007, 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 including as far inland as Jesup, Ga. and along the coast in places like Shellman Bluff. In addition, the council added 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 research area working group deliberated on the design of, and explored options for, a designated research area in the sanctuary. The council's education and outreach working group helped disseminate information on marine debris prevention.

Preserve America

Gray's Reef worked with the Coastal Heritage Society to get the city of Savannah nominated as a "Preserve America" community. As a White House initiative, Preserve America acknowledges communities that use their historic resources to enliven their present and build their futures. Now that Savannah has achieved Preserve America status, it will be able to compete for grants to recover, restore and archive historical artifacts related to Savannah's rich maritime and coastal heritage.



Volunteers

Gray's Reef established a new volunteer program called "Team Ocean" through a grant from the NOAA Marine Debris Program. Team Ocean volunteer divers will be certified to dive in the sanctuary off Gray's Reef vessels and will be trained to remove and monitor marine debris as part of a long-term effort to study to determine what debris exists in the sanctuary, its effects and where it comes from. In addition to Team Ocean, the sanctuary has a cadre of volunteers who help at outreach events, in ocean monitoring and around the office.

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 including 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.



GRAY'S REEF - HOMEPORT

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 17 square nautical miles (approximately 11,000 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 National Marine Sanctuary Program's Southeast/Gulf of Mexico/Caribbean Region which also includes the Florida Keys and the 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 National Marine Sanctuary Program.

Goodbye to the R/V Jane Yarn

In September 2007, the R/V *Jane Yarn*, previously operated by Gray's Reef for research projects in the sanctuary, was sunk as an artificial reef on a permitted site off the coast of Georgia by the Georgia Department of Natural Resources (GaDNR). The vessel, named



for Georgia conservationist Jane Yarn, had been donated to the GaDNR for use in their artificial reef program.

As an environmental activist, Yarn was instrumental getting Gray's Reef designated as a national marine sanctuary as well as in establishing wildlife refuges and protecting barrier islands on the Georgia coast. It was only natural that the sanctuary named its first research vessel after this remarkable woman. Her legacy in ocean and coastal Georgia conservation continues. In late 2007, the U.S. Coast Guard authorized the GaDNR to change the designation of fish haven buoy J to fish haven buoy JY in honor of her. Eventually, a buoy will be deployed with new markings recognizing JY reef.

Vessels

In 2007, Gray's Reef operated the 33-foot R/V *Sam Gray* and the 41-foot renovated Coast Guard patrol vessel the R/V *Joe Ferguson*. Both vessels were used for research, diver operations and day operations in the sanctuary as well as in support of a variety of activities for our research and academic partners. The sanctuary logged a total of 50 days or 400 boat hours at sea. Sanctuary vessel days were down from previous years due to required repairs on the *Joe Ferguson* and a transfer of marine operations responsibilities.

Sanctuary Greening

Gray's Reef has an active commitment to environmental responsibility. 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 is exploring going green in other areas including vehicle choice and use and marine operations fuel options.

Staff

The year 2007 brought new faces to Gray's Reef. In June, George Sedberry took over as Gray's Reef's second Sanctuary Superintendent. Sedberry replaces Reed Bohne who served as Gray's Reef manager from July 1990 until September 2006 when he became Director of the National Marine Sanctuary Program's Northeast/Great Lakes Region. Sedberry had worked with Gray's Reef staff and in and around the sanctuary for several years as a principal investigating scientist on a variety of projects. His professional experiences include



work with marine fishes from the estuary, continental shelf and slope, deep sea (to 5000 m), and tropical coral reefs; international field sampling; and marine invertebrates from shelf, slope and deep sea waters as well as university teaching. He came to Grays Reef from the South Carolina Department of Natural Resources where he was senior marine fisheries biologist.

Other staff members include Todd Recicar, new Marine Operations Coordinator; Leah Cooling, Administrative Assistant & Volunteer Coordinator; Gail Krueger, Communications & Outreach Coordinator; Greg McFall, Research Coordinator; Debbie Meeks, Administrative Coordinator; Cathy Sakas, Education Coordinator and Becky Shortland, Stewardship Coordinator. Southeast Regional Science Coordinator, Sarah Fangman, is stationed at the Gray's Reef office. During the summer months, when field research is at its most intense, Gray's Reef adds between one and three temporary interns to the staff. In addition, the sanctuary has a cadre of volunteers who help at outreach events, in ocean monitoring and around the office.