GRAY'S REEF NATIONAL MARINE SANCTUARY
SANCTUARY PROGRAM REPORT

REPORTING PERIOD DECEMBER 2010—JUNE 2011

HOT TOPICS

Meet Our Volunteer of the Year

Randy Rudd, a Gray's Reef Team Ocean volunteer diver, was named the sanctuary's own Volunteer of the Year and The National Marine Sanctuary Foundation's (NMSF) 2011 Volunteer of the Year.

Rudd is a scientific diver who collects data for numerous Gray's Reef projects. The NMSF awarded him the national Volunteer of the year award at its ninth annual Leadership Awards Dinner on June 7 in Washington, DC. The event was part of the Capitol Hill Ocean Week (CHOW), Washington DC's leading ocean-focused annual conference.

Rudd received the award for his leadership and dedication working as a volunteer diver with Gray's Reef. He serves as an eager advocate for the sanctuary's missions and goals while striving to improve the safety and efficiency of the program. After completing his training and certification in record time, Rudd became an important asset within his first two weeks as a volunteer diver. He was a major part of the design and data collection of his first research study and enthusiastically assisted the crew any way he could. His contributions did not go unnoticed by visiting media and were highlighted in press coverage of the research cruise.

"We can say without hesitation that the sanctuary has safely completed significant research and monitoring operations that would have been impossible without his participation," said Gray's Reef Superintendent George Sedberry. "Randy possesses an untiring volunteer ethic, is completely dedicated to the helping the site achieve its goals and embodies the very spirit of volunteerism at its best."

Rudd also took the initiative to identify ways the program could operate more effectively. After observing some delayed missions were due to a short-handed crew, Rudd spent his own money to earn a U.S. Coast Guard license to operate the Gray's Reef small boats.

Meet Our Newest Council Member

John C. McGovern (Jack) is the South Atlantic Branch Chief with the Sustainable Fisheries Division at the NOAA Fishery Service's Southeast Regional Office. He is replacing Joe Kimmel as the NOAA Fisheries representative on the council.

McGovern received a Masters Degree from the College of Charleston in

1986 and a Ph.D. from the College of William and Mary in 1991. During 1991 to 1993, he worked for the State of Florida and from 1993 to 2003 he was the Principal Investigator of the Marine Resources Monitoring Assessment and Prediction Program (MARMAP) at the South Carolina Department of Natural Resources. McGovern's work with MARMAP included monitoring reef fish abundance and tagging fishes at Gray's Reef National Marine Sanctuary. He has been working at the Southeast Regional Office since 2003, primarily on aspects of managing snapper-grouper stocks in the South Atlantic. His areas of interest include larval fish taxonomy, population dynamics, reef fish life history, and fisheries management.

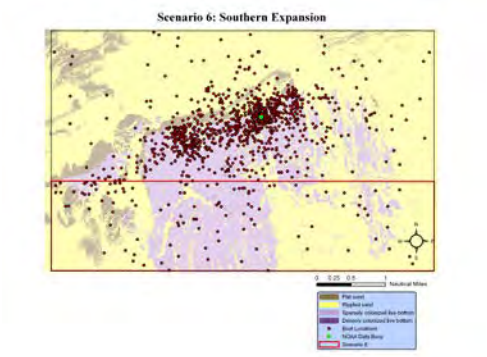
The Georgia conservation seat on the council is still open.

A Research Area in Gray's Reef

The final Environmental Impact Statement (FEIS), final rule and record of decision for the proposed research area within the sanctuary have all been submitted for NOAA review. As of this writing, that is where the documents remain.

Comments by the public and agencies are addressed and incorporated into the final environmental impact statement and final rule for the research area. NOAA proposes closing about one-third of the sanctuary to fishing and diving, in order to have a control area where research and monitoring can be conducted on reef habitats that have minimal direct human impact.

A research area is a region specifically designed for conducting controlled scientific studies in the absence of certain human activities that could affect the results. NOAA believes a research area will help managers more accurately assess possible impacts from fishing — particularly bottom fishing — on the sanctuary's



natural resources by providing an area relatively free of human activities and impacts that can be compared to the rest of the sanctuary. The research area would also allow scientists to assess the impact of natural events such as hurricanes and droughts on the sanctuary, and it could serve as a place to monitor and study impacts of climate change such as ocean acidification.

Resource Protection & Management

US Coast Guard Overflights

Looking at the sanctuary from the top down--from the observation seat of a Coast Guard helicopter—will enable Gray's Reef staff to better track the larger forms of marine life such as North Atlantic right whales, dolphins, rays and sea turtles that pass through the sanctuary. In addition, we can observe some of the smallest forms of marine life—*Trichodesmium* cyanobacteria—which have been particularly prevalent in large highly-visible blooms offshore of Georgia this spring. *Trichodesmium* is an important photosynthetic nitrogen and CO_2 fixer in the ocean.

Deputy Superintendent Greg McFall and ONMS Aviation Operations Coordinator Matt Pickett met with the Living Marine Resources (LMR) liaison of the U.S. Coast Guard Air Station in Savannah to set up a system whereby Coast Guard helicopter pilots can carry Gray's Reef observers out to the sanctuary on overflights to observe marine life, assess recreational use of the sanctuary, and to determine if users are following the regulations. This

collaboration between agencies will be very important when the Research Area within Gray's Reef is established. Pickett is working with the air station to produce a patrol guide which will provide needed information for the pilots related to regulations and overflight operations.

Offshore bloom of *Trichodesmium spotted on late May overflight operation. Photo: USCG*

Marine Operations Coordinator Todd Recicar, Vessels Operations Coordinator Chris Briand, Education Coordinator Cathy Sakas and Team Ocean Volunteer Diver Randy Rudd all took Coast Guard dunker training at Hunter Army Airfield's pool facility. Other staff members will take it as time allows. The training was conducted by USCG Rescue Swimmers to prepare staff for helicopter ditching and emergency procedures. This training is required to become an observer on US Coast Guard helicopter missions to Gray's Reef. Briand and Sakas were the first Gray's Reef staffer to go on the overflight missions.

Survey Results Are Coming In

Results are beginning to come back on a survey of Knowledge, Attitudes and Perceptions about Gray's Reef. The first lot of surveys went out to users of the sanctuary. The second lot was sent out to non-users of the sanctuary. The surveys are expected to help guide future outreach efforts and strategies for the upcoming Gray's Reef management plan review.

Carbon Dioxide Monitoring Continues

Gray's Reef has been collaborating with the University of Georgia and the Pacific Marine Environmental Laboratory (PMEL) to collect pCO_2 data for the last three years from sensors placed at the surface on the sanctuary data buoy and on the bottom nearby. An increase in dissolved CO_2 in the oceans can result in decreased pH, decreased alkalinity or increased ocean acidification. Gathering long-term data to look for trends in pCO_2 and temperature (and how those two variables correlate) is a critical component of climate change monitoring. The Gray's Reef buoy is one of only seven buoys worldwide to continuously collect measurements of pCO_2. Marine operations to service the data package for pCO_2 monitoring are a routine activity of sanctuary vessel personnel.

Resource Protection Meetings

Gray's Reef staff participates in a variety of resource protection and monitoring meetings throughout the year, making their expertise available to various organizations and gathering information vital to sanctuary management. In the last quarter, Superintendent George Sedberry attended the annual meeting of the Southeast Coastal Ocean Observing Regional Association (SECOORA). The SECOORA members discussed ways to get additional support for ocean observing projects in the southeast, and to make integrated and interpreted data from ocean observing systems available at a single portal on the internet.

Sedberry serves on the Scientific and Statistical Committee (SSC) of the South Atlantic Fishery Management Council (SAFMC). The committee reviewed Acceptable Biological Catch and Overfishing Levels for several reef fish stocks that do not have stock assessments. For many of these, catch and overfishing levels could not be established because of a lack of data. For some, levels were set based on historical catch levels, if the stock showed no signs of decline. Additional discussions regarded removal of some species from management units because of very low effort and landings or fishery occurrence in state waters; and alternatives for management of red grouper, goliath grouper, and spiny lobster.

The SSC also reviewed the SAFMC's analyses of reductions in bag limits of black sea bass as a means to prevent a prolonged recreational closure for black sea bass. Black sea bass is a popular bottom fishery species at Gray's Reef. The SAFMC closed the fishery throughout the region this year in early February because annual catch limits for the year were reached before the end of the fishing year on 31 May. The recreational fishery reopened on 1 June, but the SAFMC would like to avoid future closures by reducing daily bag limits so that the quota remains unfilled each year.

Sedberry also attended the "Beyond the Horizon" workshop at Mote Marine Laboratory in Sarasota, FL, where he gave a presentation on the National Marine Sanctuaries Act. "Beyond the Horizon" was a discussion of a potential network of special ocean places to help strengthen the ecology, economy and culture of the Gulf of Mexico. The goal of the workshop was to build consensus for establishing ecologically significant protections for key Gulf of Mexico sites to ensure that they continue to provide important services to our society and to identify the mechanisms that allow comprehensive approaches to management and allow for the

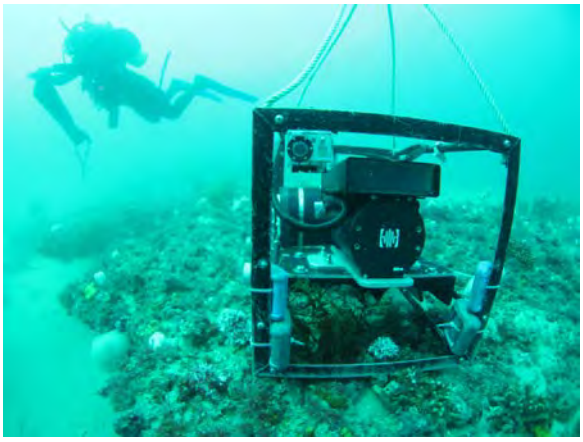
significant involvement of the public in decision making.

Resource Protection Coordinator Becky Shortland attended the spring North Atlantic right whale southeast implementation team meeting in Jacksonville, FL. The team reviewed results of this year's right whale calving season (21 calves), events and mortalities surrounding the season. There were a total of eight right whale mortalities generally from ship strikes and fishing gear entanglements this season.

OCEAN SCIENCE & EXPLORATION

The Nancy Foster Cruise

A highly successful research mission in the sanctuary was conducted aboard the NOAA Ship *Nancy Foster,* from May 17-29. The research focused on describing fish and invertebrate communities and their ecology, and on mapping bottom and water-column features in the sanctuary. Scientists conducted visual censuses (species composition, abundance, size) of fish assemblages, and measured invertebrate density and abundance in measured quadrats. Divers studied the role of pelagic predators (large fish that feed on schools of small baitfish near the sea surface) in driving small prey fish to the bottom, where bottom predators like snapper and grouper feed. High-resolution sonar was used to re-map the sanctuary some ten years after the first sonar mapping of the bottom. A final investigation involved using a non-toxic red dye to trace how materials move into and through the sanctuary. It took three days from the dye release in the Altamaha River sound for the dye to reach the sanctuary in amounts that could be measured with shipboard instruments.



The high resolution sonar package on the bottom "listening" for fish. Photo: Peter Auster, U Conn

Diver working on a visual fish census. Photo: Peter Auster, U Conn

A non-toxic red dye is released into the Altamaha River Sound. Photo: Gray's Reef NMS

The research cruise expedition web pages were hosted by the site, a first for the sanctuary program, via the Gray's Reef web site. Randy Rudd, Gray's Reef Team Ocean Diver and 2011 Gray's Reef Volunteer of the Year, coordinated the cruise participants on the ship so that daily logs were posted on the expedition pages. Debbie Meeks, Gray's Reef IT Coordinator and Webmaster, created pages for each daily update. Gail Krueger, Communications Coordinator, edited the text and sent notices via our Facebook page directing people to the updated website, along with email listserv messages issued by Administrative Assistant, Jody Patterson, to our constituency.

Check out the pages here: http://graysreef.noaa.gov/science/expeditions/2011_nancy_foster/welcome.html

Papers and Publications

Publications:

Friess, C. and G.R. Sedberry. 2011. Genetic evidence for a single stock of the deep-sea teleost *Beryx decadactylus* in the North Atlantic Ocean as inferred from mtDNA control region analysis. J. Fish Biol. 78:466-478.

Sedberry, G.R., D.G. Fautin, M. Feldman, M.D. Fornwall, P. Goldstein and R.P. Guralnick. 2011. OBIS-USA: A data-sharing legacy of the Census of Marine Life. Oceanography 24(2): 166–173.

Presentations:

Harris, M.S., K.E. Luciano, K. Johnson, S.K. McMullen, B. Kennedy, L. Sautter, N.S. Levine, A.K. Shah, G.R. Sedberry and A. Deming. 2011. Geologic mapping of surficial sediments and near-surface stratigraphy with multiple remote-sensing techniques: describing and monitoring tidal regions in central South Carolina. Geological Society of America Southeastern Section 60th Annual Meeting (23–25 March 2011). Poster.

Outreach & Education

The Annual ROV Competition

For the third year in a row, Carrollton High School, Carrollton, Ga., took top place in the annual Gray's Reef Southeast Regional Marine Advanced Technology Education (MATE) Remotely Operated Vehicle (ROV) Competition. The sixth annual competition, supported by Administrative and Volunteer Coordinator Jody Patterson, Education Coordinator Cathy Sakas, Gray's Reef staff and volunteers, was held April 2 at the Chatham County Aquatic Center in Savannah with 14 teams maneuvering their ROVs through some challenging mission tasks. Second place honors went to Conyers Middle School and third place honors went to West Forsyth High School in Cumming, Ga. All the competing teams came away with ideas for improving next year's ROV models.

The teams work hard to get to the competition and the pressure is on at the event. Photo: Gray's Reef NMS

Team members take time poolside to fine-turn their ROV. Photos: Cathy Sakas, Gray's Reef NMS

First place winners moved on to the international competition at NASA's Johnson Space Center Neutral Buoyancy Lab, in Houston, TX. The timeliness of the topic for this competition—a top-kill method oil well capping exercise similar to the Deepwater Horizon incident-- was inspirational for the students. The entire competition, which included piloting ROVs in the pool to simulate cutting a damaged riser pipe then capping an oil well, collecting biological and water samples, presentation of technical papers and posters, and an engineering review, increases student and educator awareness of marine technical fields, encourages students to develop the skills necessary for technical careers, and connects students and educators with marine technology employers and professionals. The competition supports the Science, Technology, Engineering and Math (STEM) initiative that is critical to improving science education and making an

ocean literate society, an overarching goal of NOAA Office of National Marine Sanctuaries' education program as well as that of competition originator MATE Center.

Oral History Project

Education Coordinator Cathy Sakas wrapped up the last of the interviews for this past year's NOAA Preserve America Initiative Voices of the Past - Oral Histories from Coastal Georgia Commercial Fishers. The interviews are being processed and will be posted on the Gray's Reef website. The project includes six two- hour interviews with multigenerational families who have been fishing commercially over many decades. The project proved to be very interesting in that many of the interviewees underscored what the records from commercial landings indicated: there has been a definite decline over the decades in the number of pounds landed for each market species.

Gray's Reef River Street Markers

Soon, tourists and residents will see brass markers about Gray's Reef along Savannah's well visited River Street Rousakis Plaza area. Text for six brass markers to be embedded in the brick sidewalk has been approved by the Metropolitan Planning Commission Historic Signs and Markers Review Panel and the final steps for approving the overall appearance of each is nearing completion. Sottile and Sottile Urban Design firm rendered the mockups and has been working through the final steps towards casting and installation. Once internal review by Gray's Reef and National Marine Sanctuaries staff and edits are made, the mock-ups will be reviewed by MPC staff and, if approved, they will then be reviewed and hopefully approved by Savannah City Council before being cast in bronze and installed on River Street in Rousakis Plaza.

Savannah Ocean Exchange

At least 40 potential "solutions" to global ocean issues have been submitted to address Savannah Ocean Exchange's 2011 theme of "Shaping the Future of Our Coasts." The top ten solution creators will travel to Savannah to present their solutions to the 29 members of the Board of Governors and their 10 invited guests for an audience of about 300. The winning solution will receive the $100,000 Gulfstream Navigator Award. While the invitation-only Solutions Exchange is taking place from the evening of September 6 through noon on September 9, many events open to the public will take place in one of the four Public Exchanges: Culture & Cuisine, Events & Excursions, Presentations & Performances and Vessels & Viewings throughout the month of September. Please visit http://www.savannahoceanexchange

.org/ for a detailed list of events with dates and times.

Gray's Reef Ocean Film Festival

The festival has received grants totaling $2,500 so far enabling programming plans to move ahead. Southeast Regional Director Billy Causey has pledged additional funding for the annual festival slated to take place Sept. 22-24. This year, to save expenses, films have been individually selected with a focus on the themes of ocean acidification and marine debris. In addition to films, a special photo exhibit of "Water Images'' by international award-winning photographer Sal Lopes will be held at the Jepson Center for the Arts. For updated information, check the Gray's Reef website at http://graysreef.noaa.gov/news/features/2011/film_festival_2011/welcome.html and the film festival Facebook page at http://www.facebook.com/pages/Ocean-Film-Festival-Savannah-Grays-Reef/117429584976075

Outreach Events

Spring is festival season along the Georgia coast and Gray's Reef staff participate in many events that bring the public closer to the sanctuary through information booths, educational and fun activities, sponsored activities and competitive events. If the event has an ocean or environmental theme, Gray's Reef participates. Recent events where staff participated in various ways from judging to teaching to manning an information booth included:

- The Tybee Island Water Fair highlighting coastal water conservation initiatives;
- May Howard Elementary School Math & Science Night
- The Georgia-South Carolina regional competition of the National Ocean Sciences Bowl;
- The regional southeast Georgia science fair in Environmental Science and for the NOAA Special Award;
- The Savannah International Boat Show;
- The National Ocean Sciences Bowl student film competition;
- Savannah's Earth Day Festival;
- Georgia Sea Turtle Center's Earth Day festival on Jekyll Island;
- The Savannah College of Arts and Design's (SCAD) Sidewalk Arts Festival and Sand Arts Festival;
- The Georgia Sea Turtle Center's annual triathlon and turtle release event (Turtle Crawl Triathlon & Nest Fest);
- NOAA's Hurricane Awareness Day in conjunction with the National Weather Service; West Chatham Middle School Career Fair; and
- The World Oceans Day and Jacques Cousteau's 101st birthday celebration at the UGA Marine Education Center and Aquarium.

Volunteers & Community

Volunteer Coordinator Jody Patterson has recruited and trained several sanctuary volunteers to participate in a citizen science project for NOAA's Phytoplankton Monitoring Network. Water samples are collected at the Gray's Reef dock and analyzed for signs of Harmful Algal Blooms (HABs) and environmental disturbance. In addition to monitoring for the presence of the potentially toxic species, volunteers observe and record the occurrence of other phytoplankton species in their sample along with physical atmospheric conditions. The data will be used to build a long-term record noting species presence and abundance in the region. Offshore sampling will begin as time and volunteer availability allow.

A sample containing the phytoplankton *Rhaphoneis amphiceros*, which may be new to our local marine waters, was sent the NOAA NCCOS Center for Coastal Environmental Health and Biomolecular Research for analysis and confirmation.
The Gray's Reef phytoplankton monitoring effort is featured on the Science for Citizens website here: http://scienceforcitizens.net/project/483/

Additional citizen science opportunities include an Adopt-A-Stream workshop with the Ogeechee and Altamaha Riverkeepers to train volunteers on water quality monitoring in their watersheds. A recent study conducted by Drs. Risa Cohen and Daniel Gleason from the Department of Biology at Georgia Southern University continued investigating the extent to which the Altamaha River delivers dissolved substances to Gray's Reef.

This study addresses an important gap in our understanding of the role that rivers play in the health of offshore marine ecosystems. Specifically, a wealth of data has shown that urbanized watersheds deliver pollutants such as pesticides, mercury, and excess nitrogen that result from human activities to the coast, but the majority of these studies have focused on impacts to estuarine and near-shore systems. Results of this study were made available during this session for discussion.

Home Port

The entire Gray's Reef staff participated in a two day retreat on Sapelo Island with Andy Cline of Cline Consulting, LLC. Cline lead the staff through team building exercises and discussions with goal of bring the staff together to be more effective, efficient and forceful in their management of the sanctuary. The retreat wrapped up with a third day of office based individual meetings

and coaching sessions with Cline. After Cline left, the Gray's Reef staff, in general, felt it had gathered momentum as a group and was empowered with additional skills and ideas for successfully guiding the sanctuary and working together.

Gray's Reef staff retreat May 2011. Photo: Gray's Reef NMS

Annual Council Chair Meeting

Gray's Reef hosted the national Sanctuary Advisory Council Summit in Savannah, May 2-4. This annual event brings representatives from the 14 sites in the system together to galvanize the councils to a greater effect at the regional and national level; to engage on the critical issues of our time such as sustainable economies and coastal and marine spatial planning; to educate councils about major ONMS initiatives to project the priorities of the program; and to further integrate council coordinators into program-level issues. Issues included new sites, sanctuaries as sentinel sites, and sustaining our local communities.

Gray's Reef Administrative Assistant Jody Patterson and Resource Protection Coordinator Becky Shortland scouted, planned and supported the coordination of the event, along with the National SAC Coordinators. GRNMS Advisory Council Chair Clark Alexander attended the meeting along with Superintendent George Sedberry, Deputy Superintendent Greg McFall and Education Coordinator Cathy Sakas who all made presentations at the meetings.

Sanctuary Greening

Gray's Reef now has two new Ford Escape hybrid vehicles to use. Staff is looking forward to having smaller, more fuel efficient vehicles to drive. Here's to a reduced carbon footprint!

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Learn More about Your Sanctuary

To learn more about the sanctuary please visit our web site at:
http://graysreef.noaa.gov/.

To learn more about the Sanctuary Advisory Council please visit:
http://graysreef.noaa.gov/sac.html.

The Office National Marine Sanctuaries

The Gray's Reef National Marine Sanctuary is one of 14 marine protected areas in the National Marine Sanctuary System. The Office of National Marine Sanctuaries (ONMS) was established under the National Marine Sanctuaries Act of 1972 which authorizes the Secretary of Commerce to designate as national marine sanctuaries areas of the marine environment or Great Lakes with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or aesthetic qualities. Visit the ONMS web site at:
http://www.sanctuaries.nos.noaa.gov/

Visit your Sanctuary!

For information on visiting Gray's Reef National Marine Sanctuary please see:
http://graysreef.noaa.gov/visiting.html.
This page has information about visitor centers, sanctuary regulations, and recreation in the sanctuary, and about the sanctuary's unique resources and how you can help protect them.