

**Gray's Reef NMS
Sanctuary Advisory Council Meeting
July 16, 2009
Tybee Island Community Building
Tybee Island, GA**

Members Present

(Retiring Chair) Dr. Joe Kimmel, NOAA Fisheries SERO
(Chair) Dr. Clark Alexander, Non-living Resources Res.
(Secretary) Venetia Butler, K-12 Education
(Vice-chair) Will Berson, Georgia Conservation
Capt. Bob Bunkley, Sport Diving
Mary Conley, Regional Conservation
Dr. Daniel Gleason, Living Resource Research
LT Michael Gris, U.S. Coast Guard
Capt. Wendell Harper, Charter/commercial Fishing
Dr. Scott Harris, University Education
SA Al Samuels, NOAA OLE
Dorset Hurley, Sapelo NERR
Dr. George Sedberry, GRNMS Superintendent

Members Absent

Tim Tarver, Sport Fishing
Spud Woodward, GADNR CRD
Sgt. Doug Lewis, GADNR LE

Gray's Reef and other NOAA staff present

Greg McFall, Research, GRNMS
Becky Shortland, Resource Protection, GRNMS
Gail Krueger, Outreach/Communications, GRNMS
C.J. Carroll, Graduate Intern/Research Assistant, GRNMS
Jody Patterson, Administrative Assistant, GRNMS
Sarah Fangman, ONMS SEGoM/Carr Region
Brian Keller, ONMS SEGoM/Carr Regional Science Coordinator
Karrie Carnes, Outreach/Communication, Florida Keys NMS
Karen Raine, NOAA General Council EL

Public in Attendance

Jeff Hart, Team Ocean volunteer diver
Lad Akins, Reef Environmental Education Foundation (REEF)
Chris Williamson, Tybee Island Marine Science Center
LTJg Nathan Downend, U.S. Coast Guard
LT Clell Thomas, U.S. Coast Guard
BM1 Jayson Bullock, U.S. Coast Guard

Welcome and Introductions

Sanctuary Advisory Chair Joe Kimmel welcomed everyone and asked for introductions. New members and participants were introduced to the Council. The agenda was reviewed with no changes made.

Advisory Council Business

Meeting Summary – Dr. Kimmel asked for a motion to approve the April 2009 meeting summary. The motion was made, seconded and passed unanimously.

Membership and Officers – In recognition of their past service to GRNMS, former Advisory Council members Ralph Neely and Christi Lambert were presented framed pictures by George Sedberry. Accepting in Christi's place was Mary Conley.

Applications for the K-12 education and non-living resources research seats were received, reviewed and the nominating committee (Tim Tarver, Danny Gleason and Joe Kimmel) determined that the current representatives were the most qualified and capable making that recommendation to George Sedberry who concurred. Council Secretary Venetia Butler will retain the K-12 seat and Clark Alexander was reappointed to the non-living resources seat.

Joe Kimmel reviewed the terms of the Chair, Vice Chair and Secretary (executive committee). This is Joe's last meeting as Chair under the terms of the GRNMS charter. Danny Gleason made the motion to nominate Clark Alexander to the position of Sanctuary Advisory Council Chair. The motion was seconded by Bob Bunkley and passed unanimously. Joe Kimmel made a motion to nominate Will Berson to the Vice-chair position. The motion was seconded by Venetia Butler with no objections. Motion passed. Joe Kimmel moved to re-elect Venetia Butler to the position of Secretary. The motion was seconded with no objections. Motion passed. Joe also proposed that we table the question of Alternate Seats. Danny Gleason seconded with no objections. Clark Alexander took over as Chair of the GRNMS Sanctuary Advisory Council.

National Sanctuary Advisory Council Summit – Attended by K-12 Education Representative and Council Secretary Venetia Butler along with Council Coordinator Becky Shortland in Alpena, Michigan. Venetia Butler gave a short presentation on the summit and information gathered there. Attendees were greeted by the Mayor of Alpena and welcomed by Senator Levin via video. Office of National Marine Sanctuaries (ONMS) Director Dan Basta presented a "State of the Sanctuaries" report. He praised the 14 Sanctuary Advisory Councils with over 400 individual. Council members are citizens involved in the process of monitoring, researching and managing nationally-protected marine areas. Venetia noted Dan Basta's emphasis on the need to reintroduce into Congress and reauthorize the National Marine Sanctuaries Act.

Venetia went on to explain that the summit included presentations and discussion on Thunder Bay NMS, which is managed jointly by the State of Michigan and ONMS, the Olympic Coast Intergovernmental Policy Council, Monterey Bay and Flower Garden Banks sanctuaries, Marine Protected Area Center, law enforcement, and marine protected areas in Korea. The Channel Islands case study was on ocean acidification. Venetia suggested the GRNMS council look at ocean acidification and consider passing a resolution related to this work. Youth involvement in councils was also discussed, including youth seats, non-voting youth seats, shadowing opportunities, working groups, etc.

New Council Business

Regional Communications and Actions – Becky Shortland advised that SAC Chairs from the three sites in the SEGOM Region, superintendents, site SAC Coordinators and regional staff participated in a conference call to begin coordinating and communicating among the sites in the region to consider issues of common interest. Ocean acidification is a priority issue as is the lionfish invasion. Becky was asked if there have been discussions towards a joint regional meeting. She replied that there has, but budget limitations prevent that from happening at this time.

Ocean Acidification – Brian Keller, ONMS Regional Science Coordinator, gave a overview presentation. Rising atmospheric CO₂ over the last two centuries has prompted research of the effects of CO₂ on ocean chemistry. The ocean has been dissolving CO₂. Increasing CO₂ in seawater results in increasing acidity (decreasing pH); decreasing carbonate for organisms that build/maintain calcium carbonate shells and other structures. In the last two hundred years or so, atmospheric CO₂ has been increasing dramatically due to industrialization. Oceans have absorbed half of the Earth's CO₂ emissions causing ocean pH to decrease by 0.1 units, which has a huge impact. At this rate, by the end of this century a decrease in the carbonate saturation state could result in 15-30 percent drop in calcification. Deep corals will lose their ability to calcify.

Danny Gleason then gave a presentation on the biological impacts of ocean acidification, which could be far reaching. Calcifying organisms include: coralline algae, coral reefs, algae, foraminifera, deep corals, bryozoans, bivalves (clams, oysters) echinoderms, crustaceans- all use the calcium that is in the ocean. The concern is that ocean acidification will prevent organisms from being able to create their skeletons. The challenges to marine organisms are their ability to produce or maintain shells or other structural components that contain carbonate, thus limiting their ability to maintain physiological functions. The indirect effects due to the complexities of species interactions are uncertain. Oceans have to be supersaturated with carbonate in order for organisms to calcify. Polar areas are expected to be more affected than other areas of the ocean. The question was asked whether the dissolution of calcium carbonate shells and skeletons might buffer the pH and increase the saturation. Danny replied that is possible and would make a great PhD thesis study. Coral reefs need to calcify at rates greater than natural degradation (bio-erosion and dissolution) in order to grow. A 20 percent reduction in calcification could tip the balance and coral reefs would experience a net loss. Excess CO₂ results in increased carbonic acid in tissues (acidosis). Proteins and enzymes function in a certain pH level. Not a lot is known about how changes in pH will impact proteins and enzymes.

Danny Gleason went on to put ocean acidification into the context of GRNMS, which is special because of the rocky outcrops that attract organisms. GRNMS has polychaete worms that produce calcareous tubes, temperate corals, bryozoans, soft corals, crustaceans and echinoderms. All of these use carbonate to build structure. Indirect effects on food webs of live-bottom communities such as GRNMS are uncertain. Other uncertainties include effects on photosynthesis, non-structural elements, capacity for evolution and interactions between temperature and oceanic acidity.

Concluding comments were “*reduce, reuse, recycle!*” We need to promote research on effects of CO₂, pH and other variables on calcifiers and we need to educate the public on the topic of climate change!

GRNMS Visitor's Center – George Sedberry opened discussion on establishing a Visitor's Center for Gray's Reef. We want to reach people to inform them about the sanctuary and the issues that relate to it, preferably downtown Savannah where the majority of tourists visit. People that come to Savannah are interested in history, architecture and they go to the beach. They also want to see other attractions. GRNMS will be doing a feasibility study. The Sanctuary Advisory Council's involvement and input would be very beneficial. There are questions about where it should be and how big it should be. We need input in terms of what should go into the visitor's center and the "message" we want to relay to visitors. George proposed a working group to develop concepts. The working group must be chaired by a member of the council. The question was posed about what a working group could offer that paid staff cannot. George explained the primary point of having a working group is to advise staff on ideas, support and implementation. Joe Kimmel offered a motion to form the visitor's center working group. Suggestions were made that this visitor center should be approached "outside the box" considering such ideas as a mobile center as opposed to brick and mortar facilities. There was no opposition to the motion and it passed unanimously.

Program report – Becky Shortland presented the report and opened the floor for opportunity to questions and comments. There were none.

http://graysreef.noaa.gov/pdfs/gr_pgm_rpt_07_2009.pdf

Next meeting – The next quarterly Sanctuary Advisory Council meeting is planned for Monday, October 5th in Charleston, SC. Consideration has been given to a longer meeting and involving an overnight stay to allow for more time for discussion and orientation of new council members. Four council members are Charleston based, thus allowing them the travel reprieve. The USCG SERFTC facility could be considered although public access could be an issue. SC Sea Grant could be considered also. During discussion of hours and accessibility, it was concluded that the council would prefer a one day (9-5) meeting with thought being given to a multiple day retreat in the future. Motion was made, seconded and passed with no objections.

GRNMS Report

Capitol Hill Ocean Week – Attending were George Sedberry and Venetia Butler (Volunteer of the Year) at this annual event put on by the National Marine Sanctuary Foundation in Washington, DC. The main topic this year was the "Ocean and the Economy". They attended many events, including visits to the Capitol, the NOAA Fish Fry and various presentations and seminars.

Research area – The South Atlantic Fishery Management Council has deferred to GRNMS to write the regulations concerning the proposed Research Area. Becky Shortland is also drafting the environmental impact statement (EIS), which after being cleared by NOAA, will go to the public to allow for comment. In other management actions, the proposed rule to ban all spearfishing gear in GRNMS went through public comment in the spring. The comments, final documents and proposed rule are under consideration by NOAA. It could be another six months before action is completed for spearfishing and at least that long before public comment on the research area draft EIS and proposed rule.

Nancy Foster research cruise – Greg McFall presented the recent research performed by staff and partners aboard the NOAA Ship *Nancy Foster*. Four research projects were undertaken during the two weeks at sea: acoustic fish tagging and tracking, piscivore ecology, marine debris monitoring, and multibeam mapping. Eight fish were captured and surgically implanted with acoustic tags which will allow researchers to track fish movement within the sanctuary for several years. A team of University of Connecticut researchers conducted twenty surveys in support of a piscivore ecology project, resulting in over 55 hours of bottom time at three sample sites. Over seventy hours of fisheries acoustics surveys were conducted at these same sample sites to compare diver-based and acoustic survey techniques. Nine permanent marine debris monitoring sites were revisited and marine debris was collected and assessed at each. Finally, multibeam mapping activities were conducted adjacent to the sanctuary to continue characterizing habitats around Gray's Reef. The cruise involved support and participation from over twelve organizations as well as numerous volunteers. Three Teachers-At-Sea participated in the second half of the cruise. Local media visited the ship on two separate days, which resulted in several print and television stories. Here are links to some of them:

<http://www.coastalcourier.com/news/article/14651/>

<http://savannahnow.com/node/741741>

<http://savannahnow.com/node/737589>

At the conclusion of the cruise, an open house was held for public tours of the ship which was docked along River Street in downtown Savannah. ONMS headquarters hosted a web site where photos, logs and more information on the cruise can be found

(http://sanctuaries.noaa.gov/missions/2009nancy_foster/welcome.html)

Invasive Indo-Pacific lionfish – Lad Akins with Reef Environmental Education Foundation (REEF) presented data on the popular aquarium addition, yet environmentally invasive lionfish. Commonly referred to as the red lionfish or the common lionfish, these voracious fish are indigenous to the Indo-Pacific Ocean. A single lionfish was found with 21 juvenile fish in its belly. Most invasive fish species in the Southeast Atlantic (and over 20 have been reported) *do not* persist. The lionfish is a first example of this. There are two species of lionfish now found in the Atlantic that cannot be visually distinguished (*Pterois volitans* and *Pterois miles*). There are two distinct color variations here but the distinction of the two can only be determined genetically, not visually. Most of the invasion is *P. volitans*.

Lad went on to discuss how the lionfish were introduced, their physiology including venomous spines. The venom is a protein based neurotoxin. People don't know how sensitive they are to the sting, with pain, numbness, paralysis, and systemic effects all possible. First aid is immersion of the affected area in hot water. Heat helps with pain and to break down the protein. There have been unprovoked attacks on divers, but it is not common. Lionfish seem to have no specific habitat preference in juvenile or adult stages. Lionfish are becoming one of the most abundant predatory fish on reefs. What is also notable in these areas is what other species of fish are not seen!

REEF has developed a early detection/rapid response approach to the lionfish invasion

using a netting technique. Netting works better in a coral reef environment with close to 95 percent success. In live bottom communities spearing appears to be a better option.

Little is known about lionfish in their native range. There have been few studies, and the natural density in their home range is much lower than what is being seen in the Bahamas. The trend seems to be the same in other areas of the Atlantic showing that the numbers are increasing. Lionfish eat fish and crustaceans and researchers have found fish that are up to half the length of the lionfish in stomach contents. They found commercially important and ecologically important species in the stomach of these predators. Lionfish are ambush predators, which is possibly why they are not readily caught by rod and reel, although deep-drop fishermen in Bermuda are catching a fair number of lionfish. Lionfish also appear to be resident in locations. Fish sighted in a particular location were found at the same location later.

Lionfish can store a lot of energy in their fat so they can go long periods without food, and they reproduce every four days (~30,000 eggs per spawn). Predation experiments have shown little evidence of predators that are targeting lionfish; even sharks show no interest. Humans may be the only potential predator. The REEF lionfish response plan in the Southeast Region includes: Phase 1: early detection/rapid response, outreach/awareness; Phase 2: increased response (local community), monitoring; and Phase 3: control (removal teams, market development). Earlier in the day GRNMS staff cooked and served lionfish caught earlier in the week off Georgia. Developing a market for lionfish could be part of the solution.

South Atlantic Alliance – Mary Conley of The Nature Conservancy presented on this regional organization. The Alliance is being formed to improve coordination among state governments and federal and local governments, academia and coastal and ocean stakeholders to guide research, planning, and management activities that address critical ocean and coastal issues facing North Carolina, South Carolina, Georgia and Florida. This group tasked with developing recommendations for maintaining a healthy ecosystem, working waterfronts, clean coastal and ocean waters, and disaster resilient communities.

Tybee Island Marine Science Center (TIMSC) – Chris Williamson from the TIMSC welcomed members of the council and gave a brief run-down of activities, exhibits, and classes available to the public. TIMSC co-hosted the evening public lecture on lionfish.

The meeting was adjourned at 5:00 p.m. with a round of applause thanking Dr. Joe Kimmel for his four years serving as chair of the GRNMS Sanctuary Advisory Council.