

**Gray's Reef National Marine Sanctuary
Sanctuary Advisory Council Meeting
Stevens Wetlands Education Center
Richmond Hill, GA
April 29, 2008**

Advisory Council Members Present

Capt. Stephen Adams
Dr. Clark Alexander
Dr. Danny Gleason
LT Charlie Gris
Dorset Hurley
Dr. Joe Kimmel
Christi Lambert
Sgt. Doug Lewis
Tim Tarver
Spud Woodward

Advisory Council Members Absent

Will Berson
Ralph Neely
Venetia Butler

NOAA Staff Present

Leah Cooling
Sarah Fangman
Gail Krueger
Greg McFall
Chad Meckley
Karen Raine
Cathy Sakas
George Sedberry
Becky Shortland

Welcome, Introductions and Advisory Council Business

Advisory Council Chair Dr. Joe Kimmel opened the meeting and welcomed everyone. Sanctuary Superintendent Dr. George Sedberry introduced NOAA Corps ENS Chad Meckley who has just joined the staff as Vessel Operations Coordinator.

April Meeting Summary: Dr. Kimmel asked for approval of the January 2008 meeting summary; a motion was made, seconded and the summary was approved unanimously.

National Meeting: Dr. Kimmel then talked about the National Advisory Council Chairs/Coordinators meeting planned for May 13-15 in Newport News, VA. This is an opportunity for all council chairs to get together with regional and headquarters support staff. He will be presenting the regional case study for the Southeast Region, which is focused on the Gray's Reef research area concept along with other marine protected area initiatives in the Southeast Region.

Next Meeting: Council members then discussed the next meeting after the suggestion was made to meet in late July or early August.

Membership: Capt. Judy Helmey (charter/commercial fishing seat) and Dr. Leslie Sautter (university education seat) have resigned from the Advisory Council. The vacant seats will be advertised as required by the Advisory Council Charter. A small group of the Council will assist in

making the selections that are submitted to ONMS Director Dan Basta for approval. Staffed asked members for help with spreading the word about those vacancies.

Secretary: The Council position of secretary is a one-year term. Venetia Butler has served as secretary of the Council for the last two years; it is time to consider that position again. Although Venetia Butler was absent, the Council unanimously voted to select Venetia to serve another year if she is willing.

Law Enforcement Working Group

Sgt. Doug Lewis of the Georgia Department of Natural Resources (GADNR) Law Enforcement Division gave the quarterly report (see report) of activities under the Joint Enforcement Agreement (JEA). Thirty trips have been made to GRNMS. He expects that the allotted hours will be surpassed by the time the current JEA ends in June. Forty-nine vessels have been boarded and one anchoring case is pending. The new JEA goes into effect on July 1st; increased fuel costs will impact operations.

Captain Stephen Adams then displayed a “job aid” that GADNR has developed to support the officers on water. It is produced on waterproof paper and given to every officer in the region. This allows them to be better informed and therefore more effective at their jobs. The process of developing this binder was helpful for the officers to better understand the scope of regulations they are responsible for including GRNMS.

LT Charlie Gris told the Council that USCG continues its routine patrols and over flights continue as the opportunity arises. Aviation fuel costs have limited hours for operation. USCG had one event of interest and that case has been documented.

Stewardship Coordinator Becky Shortland noted that the Law Enforcement Working Group will be meeting in late June and full participation is expected. The meeting will focus on new information and training. Captain Adams said that he finds that these days young officers want to know “why” they are enforcing specific regulations, so he expects most GADNR officers will be attending. NOAA OEL’s Karen Raine will also talk to the officers about putting an enforcement case together. Last year’s meeting went a long way toward building relationships. Side bar conversations are huge – it will be a big benefit for Gray’s Reef staff to hear the perspective of officers, too. Sgt. Lewis also thanked Karen Raine for all the help she’s given the GA DNR.

R/V NANCY FOSTER Cruise

Research Objectives: Research Coordinator Greg McFall talked about the upcoming research cruise scheduled for two “legs” in May aboard the NOAA Ship *Nancy Foster*. Leg one will include multibeam mapping around Gray’s Reef and hopefully between Gray’s Reef and J-Reef. Recreational fishermen have asked for areas outside Gray’s Reef to fish and we want to understand it scientifically as well. On the second Leg, GA Southern University will be joining us to establish new monitoring sites, which involves drilling into the substrate to establish plots that can be revisited over time for comparison of colonization and succession. Four years of this kind of data exists for J-reef. Scientists will also be deploying acoustic receivers suspended 1-2 meters off the sea floor. They then plan to catch snapper and grouper fish to insert acoustic tags to track individual fish. They will also be attempting to catch fish with traps to implant the receivers. The hope is to eventually tag 42 fish. The tags last over 1000 days, which can give us a lot of information on the movement of these fishes. Researchers will also be doing marine debris work as well by continuing to establish marine debris monitoring sites and conducting surveys. The theory is that much of the debris results from fishing tournaments. Greg then mentioned the new “Team Ocean” program, which is preparing volunteer divers to help with dive surveys like the marine debris at GRNMS.

Education Objectives: Education Coordinator Cathy Sakas explained that this year’s cruise offered a unique opportunity to include teachers. Teachers who are participating in the cruise were specially selected and they will be responsible for maintaining on the web a log of activities on board each day. The teachers will be also be communicating with their classrooms via email;

entire schools will be able to get involved through this communication. They are responsible for creating an activity or lesson derived from the cruise for posting on the web site.

ROV Competition

Cathy Sakas also reported on the recent Remotely Operated Vehicle competition that involved 14 teams. The competition is based on workshops that taught teachers to construct ROVs. The teachers then go back to the classroom repeating the process and developing teams to compete in the Southeast competition. Students are given a challenge to accomplish with their team-constructed ROV. The two winning teams will go to San Diego in June to compete internationally. The workshop and competition are designed to teach ocean science engineering.

Film Festivals

Outreach Coordinator Gail Krueger reported about the upcoming 2008 film festival scheduled for September 19-21 at Trustee's Theater in Savannah. She also announced that the BLUE Ocean Film Festival is partnering with GRNMS for a large "film maker to film maker film" event to be held in Savannah June 2009. She explained that this will elevate the GRNMS festival as BLUE Ocean is much bigger and connected nationally. BLUE Ocean wants to take this film festival on the road doing it every other year. We're hoping they can do it at other sanctuaries.

Spearfishing Reassessment

Superintendent George Sedberry reviewed the past actions regarding spearfishing activities in GRNMS that led up to the current status. Staff are preparing a draft Environmental Assessment to analyze the options of no action and prohibiting all spearfishing in the sanctuary (see attached ppt. slides). The primary question is whether spearfishing is compatible with the primary purpose of resource protection. Although powerheading has been prohibited in the sanctuary since 1981, it is still occurring. Law enforcement is difficult to impossible under the current circumstances. Dr. Sedberry reminded members of the socioeconomic assessment that was presented in January by ONMS Economist Rod Ehler that showed that there are an abundance of substitution opportunities and overall there is no measureable economic impact of a spearfishing ban at Gray's Reef.

The next step in the process is to request that the South Atlantic Fishery Management Council (SAFMC) prepare draft regulations, which would be included in the Draft Environmental Assessment. George will be presenting that request at the SAFMC's June meeting.

George was asked how he would characterize the private users as less than one percent. He responded that it is based on individual surveys that the economist conducted. But they did not survey all individual private boaters due to the challenge of finding them. Danny Gleason noted that he can see spearfishers arguing that there are so few of them that their impact is negligible. He asked how to address that. George responded that their impact is disproportionate to their numbers; they are selecting the largest fish. Many of these species change sex – the large fish that are targeted will change the number of the sex. There are small numbers now but in the future there may be more spearfishers. Banning all spearfishing would be a proactive measure to try to avoid that. Enforcement is also a significant reason. To enforce the powerhead ban effectively you need to ban all spear guns. Burden of proof on the government to enforce the existing regulation is very high. Danny also asked how enforcement would prove that the fish comes from Gray's Reef. NOAA Office of Enforcement and Litigation's Karen Raine responded that yes we do have to have some proof that the fish came from Gray's Reef. We would have to be able to show that in some way because of the rebuttable presumption. Capt. Adams added that regulations need to be easily understood by the officer so the officer is not forced to make tough decisions. A full ban would be a lot clearer for the officer and the user; there would be no grey line, which exists now. Sgt. Lewis added that he is not sure there are many divers going to GRNMS now that don't go to spearfish. Danny Gleason concluded that in a marine environment it seems you need to have many more angles of proof than you have to have in the terrestrial environment; and he appreciated the discussion so he knows how to respond if asked by the public. Spud Woodward asked how spearfishing is handled in other sanctuaries. Becky Shortland responded that spearfishing and spearfishing gear are banned completely in Flower Garden

Banks NMS; there are various spearing restrictions throughout the Florida Keys NMS and Fagatele Bay NMS has restrictions as well.

Research Area

Scoping Comments: Becky Shortland presented an overview of the range of comments received during scoping on the research area concept. She explained that there have been a broad range of comments in the 116 comments received; this includes seven organizations (representing a larger group of members). She reviewed some of the comments in each category (see ppt. presentation).

Clark Alexander asked if the ledges are more dispersed in the Southern Option and if so is that a positive or negative. Danny Gleason responded that could be either depending on objectives for the research area. Capt. Adams noted that enforcement interests would like to have an even numbered boundary line.

After some further discussion it was agreed that Becky will prepare a full summary of all of the comments. This will be sent to the advisory council as a draft document for council members to review and confirm we didn't miss anything. After the Advisory Council review the summary will be finalized and distributed to the interested public and all who participated in scoping. Joe Kimmel also asked that the Research Area Working Group (RAWG) also receive the summary.

Advisory Council members then went on to discuss convening the RAWG now that scoping is completed. The working group could review and discuss scoping comments along with any new information since their October 2007 meeting. This could result in narrowing options down further and a recommendation to the full Advisory Council. A motion was made, seconded and passed unanimously to convene the RAWG before the next Advisory Council meeting late July or August.

Socioeconomic analysis: Becky Shortland then went on to update members on enhancements to the research area socioeconomic analysis. Questions had been raised about use of charter fishing as a proxy for tournament fishing. Thanks to Spud Woodward and SAFMC Georgia member Duane Harris working with ONMS Economist Rod Ehler, more accurate figures have been developed and the calculations have altered the analysis slightly (see ppt. presentation). Becky emphasized that this analysis is a baseline to work from when boundary and restriction options are narrowed for a Draft Environmental Impact Statement.

Public Comment

Advisory Council Chair Joe Kimmel next opened the public comment period. Several members of the public were present and gave the following comments:

- Research Area scenario six would be the best option
- Not a spearfishermen but against powerhead spearfishing; have to shut it down completely to ban spears
- Concerns about crossing a research area boundary if kingfish on the line and I'm not disturbing anything by doing this
- Trolling should be allowed as long as you don't get the bottom; it shouldn't hurt the bottom.
- I hear a lot of rumors at the fishing tournaments about what regulations are coming
- Trying to understand the reasoning about closing one area or another; curious about what is the game plan
- Concerned about how large the research area will be and how long it will be closed
- Noticed that the sanctuary boundary corners are not marked anymore; will they be marked
- Concern for the drop in law enforcement hours at Gray's Reef due to fuel costs
- Are enforcement hours concentrated during peak activity or do you spread it out?
- Most people want to do the right thing in terms of compliance
- Option area six appears to have the least impact on guys that are fishing and will be easier to patrol

- Kind of hard to figure what the offshore fishing is going to hold for anyone in the future with fuel prices going the way they are
- With the economy going the way it is, Gray's Reef is going to get more visitation. To shut down the area that is used for fishing will be a bad impact on fishing in Georgia. This is an area that is there for the public to use
- We should all be looking to do what we can to protect the resources. I'd like to see you all try to do the right thing, but let's not go overboard and put a padlock on everything

Adjourn

The meeting was adjourned at 8:00 p.m.



National Marine Sanctuary Program: Developing Issues at Gray's Reef National Marine Sanctuary



Some recent issues:

- **A Research Area for Gray's Reef**
 - Restricting activities in part of GRNMS
- **Re-examination of spearfishing at GRNMS**





Gray's Reef Issues: Re-examination of Spearfishing at Gray's Reef



- **1981 considered spearfishing regs at designation: only powerheads prohibited**
- **Prohibition proposed with revised draft management plan 2003**
 - Concerns regarding take of large fish (protogynous males, fecund females)
 - Evidence of powerheads found at GR despite prohibition; law enforcement urged prohibiting all spearfishing
- **Final management plan 2006: No change**
 - Only powerheads prohibited
 - Commitment to socioeconomic survey and revisit in 2 years



Gray's Reef Issues: Re-examination of Spearfishing



- **Issues of concern: Is spearfishing compatible with Resource Protection mandates?**
 - **Highly efficient harvesting gear**
 - **Alters abundance and size structure of grouper and other fish populations (Chapman and Kramer 1999; Jouvenel and Pollard 2001; Matos-Caraballo et al. 2006)**
 - **Shown to have greater overall impact on reef fishes than hook and line fishing (Meyer 2007)**
 - **Effectiveness and efficiency has resulted in overharvest and restrictions on the fishery in many other parts of the world (e.g., Colla et al. 2004)**



Gray's Reef Issues: Re-examination of Spearfishing



- **Issues of concern: Is spearfishing compatible with Resource Protection mandates?**
 - **Targets the largest fish (Sadovy et al. 1994; Morales-Nin et al. 2005; Myer 2007)**
 - **Selective fishing on males can make the population susceptible to sperm limitation (Alonzo and Mangel 2004)**
 - **Spearfishermen remove more biomass per outing (i.e., larger fish) than other recreational fishing modes (Morales-Nin et al. 2005)**
 - **Largest fish important as predators maintaining balanced/complete ecosystem; selective removal causes ecological imbalance (McClanahan and Muthiga 1988; Dulvy et al. 2002)**



Gray's Reef Issues: Re-examination of Spearfishing



- **Issues of concern: Is spearfishing compatible with Resource Protection mandates?**
 - **Spearfishing alters fish behavior, causing fish to move to different (and perhaps less favorable) habitats (Jouvenel and Pollard 2001)**
 - **Vulnerable pre-spawning aggregations of gag occur at GRNMS**
 - **There is no catch-and-release spearfishing**
Regulatory discards are dead





Gray's Reef Issues: Re-examination of Spearfishing



- **Issues of concern: Is spearfishing compatible with Resource Protection mandates?**
 - **During public comment on the draft management plan, we received comments from a number of constituencies that supported a spearfishing ban**
 - **Powerhead use found at GR despite prohibition; allowing spearfishing at GRNMS makes enforcement of powerhead ban difficult or impossible**





Gray's Reef Issues: Re-examination of Spearfishing at Gray's Reef



- **New socioeconomic assessment completed**
 - **No dive charters go to GRNMS: “Break even” business**
 - **Dive club one trip a year (1 day, 6 divers)**
 - **Private boat-based use estimated < 1% of all fishers**
 - **Private boat-based survey difficult, cost prohibitive: “A statistically valid sample would be nearly impossible to obtain.”**



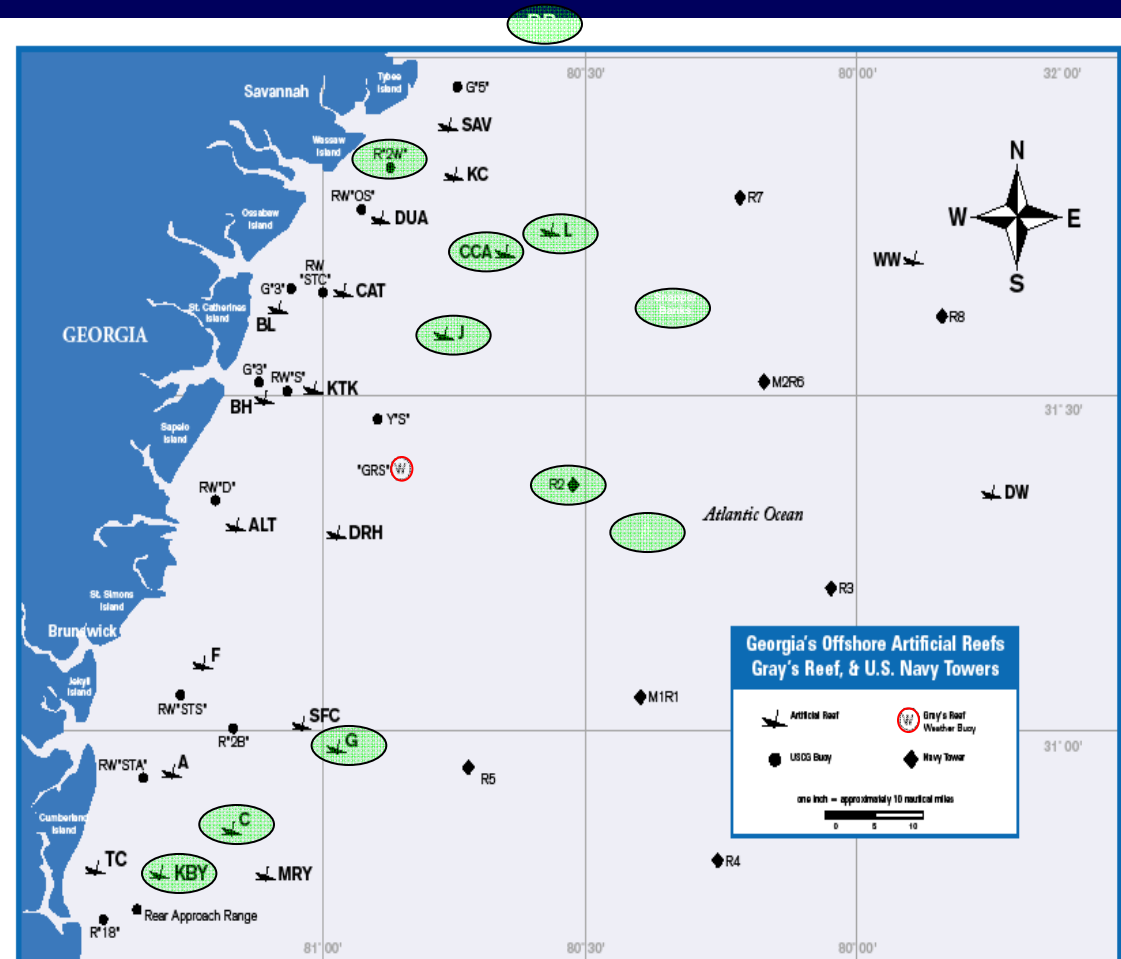
Gray's Reef Issues: Re-examination of Spearfishing at Gray's Reef



- **Socioeconomic Assessment**

- **Abundant substitution opportunities**

- **Bottom Line: NO measurable economic impact**





Gray's Reef Issues: Re-examination of Spearfishing at Gray's Reef



- **Additional Concerns: Does spearfishing equal hook-and-line fishing?**
 - **Hook-and-line fishermen usually reach bag before catching the largest fish; bag dominated by smaller fish**
 - **Spearfishing bag usually includes the largest fish**
 - **Numbers of spearfishermen relative to anglers is small**
 - **Banning of spearfishing will have little or no socioeconomic impact**
 - **Banning of all fishing could have more of a socioeconomic impact**



Gray's Reef Issues: Re-examination of Spearfishing at Gray's Reef



- **Next Steps:**
 - **Regulations Request for SAFMC**
– **June 2008**
 - **Draft Environmental Assessment**
– **Summer 2008**



Spearfishing at Gray's Reef

Existing regulation:

(5)

(i) Injuring, catching, harvesting, or collecting, or attempting to injure, catch, harvest, or collect, any marine organism, or any part thereof, living or dead, within the Sanctuary by any means except by use of **rod and reel, handline, or spearfishing gear without powerheads.**

(ii) There shall be a rebuttable presumption that any marine organism or part thereof referenced in this paragraph found in the possession of a person within the Sanctuary has been collected from the Sanctuary.

(6) Except for possessing fishing gear stowed and not available for immediate use, possessing or using within the Sanctuary any fishing gear or means except **rod and reel, handline, or spearfishing gear without powerheads.**

Possible regulatory language:

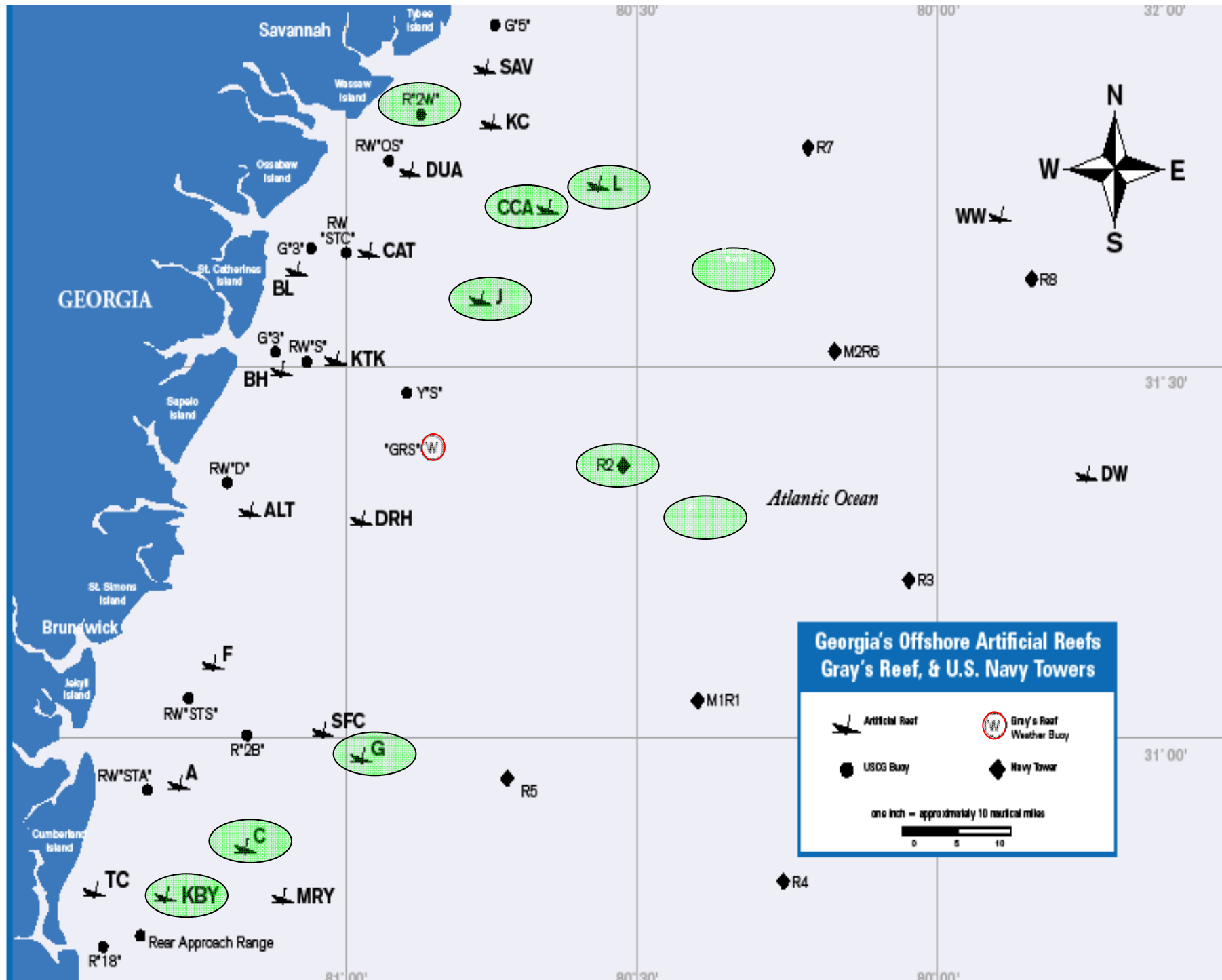
(5)

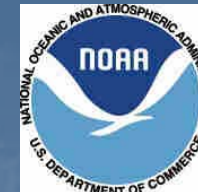
(i) Injuring, catching, harvesting, or collecting, or attempting to injure, catch, harvest, or collect, any marine organism, or any part thereof, living or dead, within the Sanctuary by any means except by use of **rod and reel, and handline gear;**

(ii) There shall be a rebuttable presumption that any marine organism or part thereof referenced in this paragraph found in the possession of a person within the Sanctuary has been collected from the Sanctuary.

(6) Except for possessing fishing gear stowed and not available for immediate use, possessing or using within the Sanctuary any fishing gear or means except by use of **rod and reel, and handline gear;**







Gray's Reef National Marine Sanctuary Research Area Concept Scoping Summary



April 2008

Sample Scoping Comments

Education and Outreach

- Education of anglers will be a critical component of achieving research success.

Enforcement

- Support need for enforcement
- Enforcement will be a nightmare, if not impossible
- Area must be marked
- May need to close entire area to all boat traffic to enforce
- Don't want to be hassled by enforcement officers
- Scenario #6 seems best for enforcement
- Need buffer zone so people will know they are getting close to the restricted area
- Crossing boundary of research area if fish snagged outside carries me inside
- Enforcement agencies not sufficiently funded or staffed; more and better enforcement of fishing regulations needed

Sample Scoping Comments, cont'd

Fishing Rights and Access

- Concern that: closing off one section of the sanctuary for research area will lead to total closure; closure will be the best fishing areas; fishing not available to future generations
- Research is not important enough to justify excluding fishing
- Taking away the "right" of fishermen
- Numerous governmental impacts on users
- Fishing is a valid use of the resource
- Don't want the only people who can enjoy the resources be researchers
- Gray's Reef is only available to the relatively few fishermen who can afford to pay charter fees or have their own boats
- You're taking a big chunk of the ocean accessible to small boats.
- Suggest closing some area besides Gray's Reef as it is the best fishing area
- Gray's Reef is the only place to fish; close another area

Sample Scoping Comments, cont'd

General or Status of Resources

- Georgia has spent significant funds creating artificial reefs. Must we also continue to defile our most outstanding natural reef?
- Fishing pressure at Gray's Reef is low; impacts are less than at other areas where studies have investigated fishing pressure
- What about the majority of people who naively believe a sanctuary is a sanctuary, and are entrusting the government to protect the area as stated
- We see more fish and bigger fish than ever before; no problem at Gray's Reef
- Only catch few black sea bass now
- Most fishing done during tournaments
- Impacts coming from Florida fishermen
- Commercial fisheries doing all the damage, not recreational fishers
- Concern closing an area to fishing will put more pressure on other areas.
- SAFMC should manage fishing in Gray's Reef

Sample Scoping Comments, cont'd

Mitigation

- Consider artificial reef mitigation to replace what is taken

Opposition

- Strong opposition to designating all or any portion of Gray's Reef as a MPA; fishing should be priority
- I am not in support of CCA's position.
- You can call the whole reef a research area if you'd like, but just don't close it to the fishing community.
- With escalating gas prices, many of the problems will take care of themselves
- Most species are migratory and you need to manage the species and catch rate not the area.

Socioeconomics

- Fuel costs impact fishing effort
- Cost of managing and enforcing the research area is prohibitive
- Concern about socioeconomic impacts of research area
- Estimate value of having a research area vs. closure costs to fishermen

Sample Scoping Comments, cont'd

Research

- Request information on origin of marine debris
- Interested in knowing relationship between pelagic and bottom
- Research is one component of the National Marine Sanctuary mission; valuable lessons may be learned by closing a portion of GRNMS to some activities for some time.
- Understanding the ecological consequences of exploitation is a necessary component of ecosystem-based management; requires knowledge of fishing mortality, investigation of links between species and the habitat.

Perceived Flaws in Research Area Concept

- Fish will move in and out of the research area
- Fish will go to a research area where there is no pressure and therefore the results of research would be biased; protecting area is cheating, there will be more fish
- Being heavily fished is the "natural state" of Gray's Reef and a closed area would be invalid for study because it is unnatural
- Research area is too small to be of scientific value
- Concerned that data will be used to close more areas to fishing
- If not set aside for species, research and education, should not be in the National Marine Sanctuary System.

Sample Scoping Comments, cont'd

Specific Alternatives

- Prefer Scenario #6 (several comments)
- Scenario #6, least intrusive
- Scenario #6 gives a clear separation between public and research areas.
- Scenario #6 best from a research perspective.
- Prefer Scenario #2 (minimum fishing displacement)
- Scenario #3 second preference and could be morphed slightly to align with sanctuary boundaries to ease marking etc; best balance of habitat diversity, minimization of user impacts.
- Prefer a "do nothing" alternative
- Hope site picked for closure will represent the best for all those concerned (fishermen; divers; researchers; and recreational boaters).
- Scenario #6 best suits the need for all those concerned.
- Given the declining state of our fisheries, believe that everyone including recreational anglers will gain by the adoption of scenario #1 which optimizes the scientific value of the research area.

Sample Scoping Comments, cont'd

Support Research Area Concept

- RAWG thoroughly evaluated options available.
- Support the current effort to establish a research only area in Gray's Reef Sanctuary; valuable resource deserving protection
- Recognize the need for a Research Area at Gray's Reef National Marine Sanctuary.
- The South Atlantic Bight does not contain a research area; designation in GRNMS would provide a needed location for research.
- Support research area; central mission of the National Marine Sanctuaries program to better understand, and thereby better preserve, our marine sanctuary resources.
- Strong case to be made for research area; general understanding of live bottom areas very limited.
- Need to differentiate between natural and human changes; must create a control area to limit human impact to the greatest degree possible.
- Close whatever research area is selected to all fishing
- Program aimed at managing and conserving all of the resources of Gray's Reef, not just the fisheries.
- Failure to understand impact of fishing, etc., could undermine the entire system upon which the fisheries depend.
- Good research is key to a future of robust fishing at GRNMS.
- As a matter of enforcement, all fishing activities be curtailed in the area.

Sample Scoping Comments, cont'd

Support Research Area Concept

- Make scientific research top priority choosing size, location
- Gray's Reef logical choice for research area due to existence of a history of research and data collection
- Need to know all we can, especially how climate patterns may affect resource
- Research is imperative to preserve the area's natural qualities
- Proactive effort to prevent things from getting worse
- A number of management-related questions that cannot be answered without the exclusion of fishing pressure of any kind
- Endorse the creation of a true "all fishing impact" exclusion research area.

Sample Scoping Comments, cont'd

Terms of Closure

- Trolling should not be banned; no impacts on the bottom; does not result in much lost gear on bottom; not opposed to idea of research area if trolling allowed; total closure is the objection
- Prefer smaller area for closure.
- Suggest seasonal closure
- Support closure to bottom fishing or fishing for demersal species only; trolling for pelagic species with dead and artificial baits.
- Allow navigation in and through the area.
- Implement after a clear research plan and goals have been communicated to the interested public.
- Include commitment to annually provide public report on research achievements versus the goals.

Sample Scoping Comments, cont'd

Terms of Closure

- Minimize the size of the closed area once goals are met or if it is determined the designated research area is no longer needed.
- Critically review the research plan and goals at least every five years and report to the interested public the results of the review including any changes in the research plan and goals.
- Ban for a maximum period of ten years and that subsequent extensions of the fishing ban would occur after a public process
- As a saltwater recreational angler, I support the position taken by CCA GA as outlined in the Position Statement concerning the proposed MRA within the Gray's Reef National Marine Sanctuary. – (80 comments email, letter and fax)
- Must be well marked

Preliminary Economic Analysis of Recreational Fishing in the Proposed GRNMS Research Area

Updated April, 24 2008



GRNMS Fishing Expenditures

4,694 person days = \$2,017,340 total fishing expenditures

GRNMS		Average Person Day Expenditures		Total Expenditures	
Trip Expenditures	Mode	Resident Spenders (\$)	Nonresident Spenders (\$)	Resident Spenders (\$)	Nonresident Spenders (\$)
Private Transportation	Charter	17	7	36,799	805
	Private/Rental	7	10	15,324	1,142
Food	Charter	30	25	66,907	2,946
	Private/Rental	14	35	31,862	4,135
Lodging	Charter	55	41	122,295	4,792
	Private/Rental	301	27	670,368	3,168
Public Transportation	Charter	15	110	34,371	12,897
	Private/Rental		41	-	4,814
Boat Fuel	Private/Rental	13	13	54,103	2,686
Charter Fees	Charter	178	144	397,559	16,899
Access/Boat Launching	Charter	6	7	12,896	821
	Private/Rental	6	4	12,788	439
Equipment Rental	Charter	193	77	429,718	9,059
	Private/Rental		11	-	1,306
Bait	Charter	13	16	28,031	1,835
	Private/Rental	11	8	25,090	947
Ice	Charter	2	4	4,344	481
	Private/Rental	2	3	5,396	318
Total	Charter	508	431	1,132,919	50,535
	Private/Rental	355	151	814,931	18,954



GRNMS Fishing Expenditures

4,694 person days = \$1,537,985 total fishing expenditures

GRNMS		Average Person Day Expenditures		Total Expenditures	
Trip Expenditures	Mode	Resident Spenders (\$)	Nonresident Spenders (\$)	Resident Spenders (\$)	Nonresident Spenders (\$)
Private Transportation	Tournament	13	13	28,985	1,526
	Private	7	10	15,324	1,142
Food	Tournament	6	6	13,378	704
	Private	14	35	31,862	4,135
Lodging	Tournament	100	100	222,965	11,735
	Private	301	27	670,368	3,168
Public Transportation	Tournament			-	-
	Private		41	-	4,814
Boat Fuel	Tournament	50	50		
	Private	24	23	54,103	2,686
Tournament Entry Fee	Tournament	100	100	222,965	11,735
Access/Boat Launching	Tournament	6	6	13,378	704
	Private	6	4	12,788	439
Equipment Rental	Tournament			-	-
	Private		11	-	1,306
Bait	Tournament	19	19	42,363	2,230
	Private	11	8	25,090	947
Ice	Tournament	6	6	13,378	704
	Private	2	3	5,396	318
Total	Tournament	300	300	668,895	35,205
	Private	365	162	814,931	18,954



Summary

It is estimated that the economic impact of a research area on Georgia recreational fishing will be between 0.11% (scenario 4) and 1.13% (scenario 1) of statewide saltwater fishing expenditures. This is considered to be the maximum potential loss. Rarely does society fail to at least mitigate or off-set most losses.

Scenario #	Boundary #	% GRNMS Impacted	Impacted GRNMS Person Days	Impacts to GRNMS Saltwater Fishing Expenditures	% Impact to GA Person Days of Saltwater Fishing	% Impact to GA Total Saltwater Fishing Expenditures
1	1	67.0%	3,145	\$1,351,651	0.18%	1.13%
2	1	12.4%	582	\$250,055	0.03%	0.21%
2	2	12.2%	574	\$246,676	0.03%	0.21%
2	3	8.8%	413	\$177,404	0.02%	0.15%
2	4	8.7%	409	\$175,715	0.02%	0.15%
3	1	35.9%	1,687	\$724,823	0.10%	0.61%
3	2	34.6%	1,624	\$697,790	0.10%	0.59%
4	1	6.7%	315	\$135,165	0.02%	0.11%
5	1	14.5%	680	\$292,295	0.04%	0.25%
Southern Expansion		9.2%	432	\$185,852	0.03%	0.16%



Summary

It is estimated that the economic impact of a research area on Georgia recreational fishing may be between 0.11% (scenario 4) and 0.86% (scenario 1) of statewide saltwater fishing expenditures. This is considered to the maximum potential loss. Rarely does society fail to at least mitigate or off-set most losses.

Scenario #	Boundary #	% GRNMS Impacted	Impacted GRNMS Person Days	Impacts to GRNMS Saltwater Fishing Expenditures	% Impact to GA Person Days of Saltwater Fishing	% Impact to GA Total Saltwater Fishing Expenditures
1	1	67.0%	3,145	\$1,030,476	0.18%	0.86%
2	1	12.4%	582	\$190,638	0.03%	0.16%
2	2	12.2%	574	\$188,062	0.03%	0.16%
2	3	8.8%	413	\$135,250	0.02%	0.11%
2	4	8.7%	409	\$133,962	0.02%	0.11%
3	1	35.9%	1,687	\$552,593	0.10%	0.46%
3	2	34.6%	1,624	\$531,983	0.10%	0.45%
4	1	6.7%	315	\$103,048	0.02%	0.09%
5	1	14.5%	680	\$222,840	0.04%	0.19%
Southern Expansion		9.2%	432	\$141,690	0.03%	0.12%

