SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

JOINT HABITAT & CORAL ADVISORY PANEL MEETING

Charleston Marriott Hotel
Charleston, South Carolina

November 7-8, 2007

Summary of Minutes

Habitat AP:

Dr. Doug Rader, Chair
Mike Street
Susan E. Hilfer
Cameron Sebastian
Kenneth Banks
Janie Thomas
Wilson Laney
Dr. Christopher Elkins
Patrick Geer
Jenkins Mikell, Jr.
Pricilla Wendt
Jessie Thomas
Miles Croom

Coral AP:

Stephen Blair, Chair
Roland Ferry
Kurtis Gregg
Kimberly Puglise
Steve Ross
Margot Stiles
Clark Alexander
David Gilliam
Jocelyn Karazsia
John Reed
Andy Shepard

Council Members:

George Geiger
Robert Boyles, Jr.
Duane Harris
John Wallace

Council Staff:

Bob Mahood
Myra Brouwer
Julie O'Dell
Roger Pugliese
Mike Collins

Observers/Participants:

Michael Callahan
Greg McFall
Ed Eudaly
Sarah Fangman
Kay Davy
Pace Wilber

Paul Carlson
Tina Udouj
Richard Vendetti
Sandra Brooke
Dr. George Sedberry
Andrea Miller
Craig Martin

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The Joint Meeting of the Habitat and Environmental Protection Advisory Panel and Coral Advisory Panel of the South Atlantic Fishery Management Council convened in the Topaz Room of the Charleston Marriott Hotel, Charleston, South Carolina, Wednesday morning, November 7, 2007, and was called to order at 8:50 o'clock a.m. by Chairman Steve Blair.

Mr. Blair: Good morning. My name is Steve Blair and I'm the chair of the Coral Advisory Panel and on behalf of Doug Rader, Chair of the Habitat Advisory Panel, and Roger and the South Atlantic Fishery Management Council, we welcome you all here today. We have a rather busy agenda and schedule and there are some modifications to that, which we will get to in a moment, but we would like to first have some introductions and we would like to go around the room and have individuals please give both their name and their affiliation as well as -- Since we are kind of intermixed here, as both the Coral and Habitat AP, please provide the association of which panel you're on as well.

Dr. Rader: Good morning. My name is Doug Rader and I chair the Habitat and Environmental Protection Advisory Panel. I apologize for being late this morning. I thought I had allowed plenty of time in from Florence, but events proved otherwise on I-26. Anyway, I apologize personally for that. I represent Environmental Defense, working out of Raleigh, North Carolina.

Mr. Pugliese: I'm Roger Pugliese and I'm the Fishery Ecosystem Plan coordinator and I work on our Fishery Ecosystem Comprehensive Amendment and habitat activities for the council.

Mr. Alexander: I'm Clark Alexander from the Skidaway Institute of Oceanography and I'm on the Coral AP.

Mr. Callahan: Michael Callahan with Florida Fish and Wildlife Conservation.

Ms. Brooke: Sandra Brooke, Ocean Research and Conservation Association, Coral AP.

Dr. Ross: Steve Ross and I'm with the University of North Carolina at Wilmington and I'm on the Coral AP.

Mr. Geer: Patrick Geer, Georgia DNR, Habitat AP.

Ms. Wendt: Priscilla Wendt, South Carolina DNR, and I'm on the Habitat AP.

Ms. Hilfer: Susan Hilfer and I'm a recreational fisherman on the Habitat Panel from Beaufort, South Carolina.

Mr. Mikell: Jenkins Mikell, South Carolina Marine Advisory Committee, recreational fisherman, Habitat Committee.

Mr. Gregg: Kurtis Gregg, South Florida Water Management District, Coral AP.

Dr. Elkins: Chris Elkins, recreational fisherman, North Carolina, and I'm on the Habitat AP.

Mr. Harris: I'm Duane Harris. I'm Vice Chairman of the South Atlantic Council and Chairman of the Ecosystem and Habitat Committees.

Mr. Shepard: Andy Shepard, National Undersea Research Center at the University of North Carolina at Wilmington, Coral AP.

Dr. Gilliam: Dave Gilliam, Coral AP, Nova Southeastern University.

Ms. Karazsia: Jocelyn Karazsia, National Marine Fisheries Service, Habitat Conservation Division, Coral AP.

Mr. Sebastian: Cameron Sebastian, Operations Manager for Coastal Scuba Little River Fishing Fleet, Habitat AP.

Ms. Pugliese: Kimberly Pugliese, NOAA's Undersea Research Program, Silver Spring, Maryland, Coral AP.

Mr. Banks: I'm Ken Banks, Broward County Environmental Protection Department, Habitat Panel.

Ms. Thomas: Jessie Thomas, Atlantic States Marine Fisheries Commission, Habitat AP.

Ms. Fangman: Sarah Fangman and I'm with the Southeast and Gulf of Mexico Region of the National Marine Sanctuary Program. I am here for Bill Goodman, who is on the Habitat AP.

Mr. McFall: Greg McFall, Gray's Reef National Marine Sanctuary, and I'm on the Coral AP.

Mr. Ferry: Roland Ferry with the U.S. Environmental Protection Agency, Coral AP.

Ms. Stiles: Margot Stiles and I'm with Oceana Conservation Group and I'm on the Coral AP.

Mr. Street: Mike Street, North Carolina Division of Marine Fisheries, Morehead City, Habitat Protection, and I'm on the Habitat AP. If anybody wants a copy of the North Carolina Coastal Habitat Protection Plan, there's CDs back on the table.

Dr. Laney: I'm Wilson Laney with the U.S. Fish and Wildlife Service. I'm the South Atlantic Fisheries Coordinator and I'm on the North Carolina Sub-Panel of the Habitat AP.

Mr. Croom: Hi, I'm Miles Croom and I'm with National Marine Fisheries Service, Habitat Conservation Division in the Regional Office in St. Petersburg, Florida, and I'm on the habitat panel.

Ms. Udouj: I'm Tina Udouj. I work for the Florida Fish and Wildlife Conservation Commission and I'm an invited participant today.

Ms. Brouwer: Hi, I'm Myra Brouwer and I'm a fisheries scientist with the South Atlantic Fishery Management Council. I assist the council on coral-related activities and I am editor of the Fishery Ecosystem Plan.

Mr. Reed: I'm John Reed with Harbor Branch Oceanographic Institution, a coral biologist there, and I'm on the Coral AP.

Mr. Blair: One point that I would like to add is throughout the day -- This is being recorded and in order to assist, to make the record appropriate, please when you do address or make a comment, please just state your last name so that you can be appropriately recorded and if you see a hand raised, it means that you probably forgot it and we're going to have to ask you to do it, but if you can -- Hopefully if he gets a little bit more familiar with names, he'll be able to capture it, but just state your last name before you make your comment.

As I said, today and tomorrow we have a pretty packed agenda. Roger, as always, has assembled a challenging path for us to be able to take, but also a very interesting path as well. We'll be receiving information and updates on research, mapping, and GIS tools relative to the proposed coral HAPCs and related areas and in light of that information, our charge over the next couple of days is to be able to take that information and incorporate it and review the recommendations that were made during the June meeting by the joint panels and after review and evaluation of those, hopefully come up with a finalized set of recommendations to pass on to the council.

Additionally, another charge that we'll have is to review the process and status of the development and writing of the Fishery Ecosystem Plan, in order to specifically with aspects towards our two APs and evaluate both the status of it and determine, finalize, or -- Get a plan for finalizing those areas that still need to be addressed in development of that plan.

For those of you who were with us last night, I just wanted to make a comment that we had a very enjoyable evening and I thank the council very much for both arranging that as well as the preview of *Revealing the Deep*, which was a production for kind of increasing awareness of the deepwater coral communities that exist along the eastern coast of the United States, and it was absolutely spectacular.

It was a fantastic production that I think is going to do very well in being able to increase awareness of both the existence, the sensitivity, and uniqueness of those habitats and go a long way in aiding us to be able to provide appropriate protection to those communities as well. Immense kudos to Roger, John Reed, Steve Ross, Sandra Brooke, George Sedberry and Doug and the South Atlantic Fishery Management Council for putting that together. I believe, Roger, has all members of the AP received copies or are they available?

Mr. Pugliese: Yes, we've distributed it to all the Habitat and Coral Advisory Panel members, but also did note that if you would like both a high-definition version of that or other copies for distribution, please let us know, because we are getting ready to actually reorder and look at the demand. It's been pretty much focused on a smaller group right now and so the opportunity to get the distribution out I think is now. Please contact us if there's other needs.

Mr. Blair: With that part of it taken care of, we'll move on in the agenda and the first aspect is the approval of the agenda. I hope everybody did receive a modified agenda. There is a modified agenda outside on the table. If you haven't, we're going to review very quickly what the changes are and you can update your agenda that you brought with you.

The changes that are occurring on Wednesday is the fourth presentation, we are actually inserting a presentation by George Sedberry on updating mapping and characteristics on the Charleston Bump and Blake Plateau. That's an added presentation that goes between the Cooperative Multi-Platform Mapping Cruise Report and Development of Rapid Assessment Tools.

Then at the end of the day, we'll be taking the last presentation on Thursday, on Habitat and Ecosystem Internet Mapping, the IMS, and we will be moving that to the end of today. In association with that, then on Thursday we will be adding a presentation on research area development and process for Gray's Reef National Marine Sanctuary by George Sedberry and in lieu of that and those changes that are occurring, we will also be adding the wrap-up, closing comments and so forth, that were originally planned for Friday morning and by doing so, we have eliminated Friday morning from the agenda and so we will close business as of tomorrow afternoon.

With that, are there any other comments or considerations for the agenda? Hearing none, I ask that we have the agenda approved by consensus. We are consensed. The next point is Approval of the Minutes from the June 2006 meeting. Are there any comments, changes, additions or deletions that have either been submitted or wish to be made now? Is there any objections to approval of the minutes? Hearing none, they're approved. Doug, would you care to add some comments?

Dr. Rader: For those of you that have been involved in the council's initiative on deepwater corals of the Southeast, congratulations to have come so far. I think it's pretty clear that an important endpoint is in sight now, as we complete our evaluations with the new information that's been developed over the last year, to give the benefit of that new information, in our best professional judgment, as the best available science to the council as they begin their formal deliberations for the amendments to the regulatory programs and other programs of the council under the U.S. government.

The reason I say it so formally is recall the way the Magnuson-Stevens Act works is that the Science and Statistical Committee appointed by the council is responsible for our biding the best available science on the full array of programs.

If you look at the make-up of the SSC now, it has principally two committees, two subcommittees, one on biology, and in this case biology means mostly population biology and stock assessment, and the other on social science. The fact is that these two panels have been operating functionally as the determiners of best available science with respect to habitat and deepwater corals generally for the council.

In that sense, I want to be careful, by the time we are done today, in crafting our specific advice

about this matter and to couch it in a way that is unambiguous in terms of that advice constituting the best available science on deepwater corals and associated ecosystems.

When we get into this, the meat of the work today, we will be trying to craft exactly that from the recommendations that we have made over the last several years, back to the fall of 2004, when we first recommended to the council this action and when they, at their December meeting in North Carolina that year, wholeheartedly endorsed and adopted the intent to move forward to protect as habitat areas of particular concern all known deepwater coral communities of the South Atlantic region.

For that reason, we are working a little more formally, in my view, today than we might otherwise and so once we have been fully briefed on the best available science, including new developments since we last met to consider this topic, then we'll be attempting to make sure that that best available science is translated specifically into the recommendations that go to the council.

I would also like to thank Duane Harris and George Geiger both for being here for our two-day meeting. They spend a lot of time on the road anyway and I think their presence here today reflects both the importance of what we're about and then also their eagerness to translate what we do into the council actions and similarly, staff is well represented and Executive Director Bob Mahood is also here, in the back. In case you haven't met Bob, shake his hand. We're delighted to have you.

With that setup, admittedly personal, but I just to make sure that you understand that this is our near-final bite at the apple before it goes to the formal public process. We want to make sure that we get this right today. Do you have anything similar, Steve, or do you agree that?

Dr. Ross: Absolutely. I think you put it in very concise terms on where we need to be at the end of the two days here today.

Mr. Pugliese: I think that's definitely the challenge to this group and the commitment from the council is expressed by the representation, not to overwhelm the group in terms of what we provided. The materials provided really set the foundation of a lot of the information that you have had in the past or building to this point, the compendium of both the detailed scientific recommendations and publications and consolidated documents that were provided to the council, in addition to the advisory panel recommendations building that.

The entire administrative record information on distribution and characterization, to a great degree, has been included in the materials and so a lot of it is where we have gotten to and then the updates are really what we're looking at right now.

Dr. Rader: Great. Thanks, Roger. With that in mind, let's jump into it and, John; you're going to lead us off? Take it away.

Mr. Reed: Thank you, Doug and Steve. This morning, I want to -- I'm going to try to summarize what we know about the habitat in this proposed deepwater coral HAPC and there's

quite a diversity of habitats and I just want to try to summarize what we know about that diversity. It's just not one habitat and it's just not coral, but it's a variety of habitats, hard bottom and live bottom, habitat that needs to be protected.

As Doug mentioned, this is based on the best available science that we have now and I just want to emphasize that basically all of this research, or the great majority of it, is really in its infancy. The work that Steve Ross and myself and Sandra Brooke and others who have been working out there and funded primarily through NOAA OE or through Harbor Branch funding or the State of Florida or maybe NOAA NURP.

We're just really touching and just learning. The last five years, it's been incredible what we have discovered out there. Basically five or seven years ago, we really didn't realize that these reefs were out there, for the most part.

We knew there were some reefs off of North Carolina and some reefs off of Stetson Bank and we certainly knew about the Charleston Hump, but we had no clue of the diversity and the extent of this deepwater coral hard bottom habitat and this is what I'm challenging you and this committee and the South Atlantic Fishery Council to protect for future fisheries and future generations.

First off, I just want to kind of summarize just some of the recent publications in the last couple of years that kind of summarize what we know about these reefs. This was a publication that basically describes -- This was the first publication, in 2005, that described the hard bottom communities in Pourtales Terrace, the sinkhole and the bioherms, or the high-relief reefs, off the Florida Keys in deep water. This described the habitat, the fish, and the benthic community.

Last year, since our meeting that we had in 2006, this paper came out, which described primarily the habitat throughout the proposed coral HAPC, from South Carolina and the Stetson Reefs down through Georgia and the east coast of Florida and the lophelia reefs and the Miami Terrace hard bottom community off of Miami and Fort Lauderdale and the Pourtales Terrace also, describing, again, the habitat, the fish communities, and the benthic sessile communities, the coral, the sponges, the gorgonians.

Steve, which will speak next, has a recent paper on the fish, a wonderful paper describing the fish communities on the coral. This paper is going to be coming out this month, looking at what happens to a deepwater reef that is trawled on, with bottom trawling. In this paper, I compared twenty-five years of data, taking photo transects that we made back in 1978 on the Oculina reefs and comparing that to recent surveys that we made in 2001 to 2003 and quantitatively describing what happens to the coral reef and it's very sad. I hope we don't allow the same thing to happen to these deepwater lophelia reefs.

This is just, again, a very basic summary of the habitat and fauna out there, based on our research, at Harbor Branch primarily. Very quickly to go through this, we know there are three species of coral that provide habitat in deep water off the southeastern United States, the oculina reefs in about a hundred meters of water and lophelia pertusa and enallopsammia profunda. There are other corals out there, but these are the primary habitat makers.

They all form a very similar morphology, bushes, these very fragile thickets of coral that grow to be up to a meter in height and several meters in diameter, the oculina occurring from two meters to 150 meters throughout the Caribbean, but only off the coast of Florida does it form the bioherms.

Lophelia grows down to 2,000 meters and is known worldwide. Enallopsammia grows down to 1,700 meters, but it's primarily in the western Atlantic, where it forms reefs and spatially off of Florida, it forms massive reefs, sometimes by itself and sometimes intermixed with lophelia. Other species are madrepora and solenosmilia. Basically these high-relief bioherms or lithoherms are mounds, high-relief features, from a few meters in height up to several hundred feet in height that are capped with coral rubble, standing dead corals, standing live coral thickets, and associated sponges and gorgonians and fish communities.

These are the known regions and they kind of all go together, but we separated them out, just to kind of define these different sites. Primarily in the proposed coral HAPC, we have the North Carolina lophelia reefs that Steve Ross has worked on a lot and this region here, on the eastern Blake Plateau; we have the Stetson Reefs over on the western side. These kind of blend into the Savannah Reefs and the Charleston Bump region.

This all kind of blends into south Georgia and this whole eastern Florida lophelia reefs. To the west of those, you have the oculina reefs. This also blends into the Miami Terrace off of Fort Lauderdale and Miami and then the Pourtales Terrace off the Florida Keys.

This just shows the distribution of the corals and the depth distribution, different types of topography, from very rugged high-relief topography, even up to 500 feet tall reefs, 500 feet tall. Just amazing. Other sites though are very low relief, just one or two meters. Some places are just flat bottom, but it's still hard bottom, with coral, coral rubble, or rock.

A lot of our research, most of my research, was done with the Johnson Sea Link Submersible at Harbor Branch. Recently, we've started using AUVs to map out there and this was directed as our primary priority objective for deepwater research. We need to know where those reefs are. We can't protect them unless we know where they are and we've done very, very limited amounts of multibeam mapping out there using AUVs or shipboard mapping.

We've completed, primarily through the assets of NOAA NURP, we've completed the multibeam maps of the oculina reefs and have a long way to go for the deepwater lophelia reefs. Here's the oculina and I'm going to jump through these different sites or regions of the proposed deepwater coral HAPC.

You have the Stetson Reef site, which is basically on the eastern region of the Blake Plateau, about 600 to 900 meters of water. Some of these features are up to 140 meters of relief. It could be over 1,800 square miles and hundreds of coral mounds. Steve has done a lot of work out there the last few years and knows a lot more about it than I do right now, but this is primarily from Stetson's publication originally, back in the 1960s.

Again, it's providing hard bottom for black coral, varied sponges, as well as lophelia. As you

blend into the western Blake Plateau, going into the Charleston Hump region, the Savannah lithoherms, this is a little shallower, about 500 meters depth, and the features are a little smaller, up to about fifty-four meters in relief. These tend to be elongated mounds, or bioherms, of coral, again, coral, sponges, gorgonians, and providing lots of habitat for the fish.

Down through Florida, off the east coast of Florida, northern or southern Georgia, we have a variety of lithoherms and bioherms and "lithoherm" just meaning a rock structure, or a rock mound, that's capped with coral, as compared to a bioherm, which is presumably a build-up of coral debris and sediment that's built up over thousands, maybe tens of thousands, of years, but it's still the same feature, a high-relief feature, capped with coral and sponge habitat.

Off the east coast of Florida, these features are in depths of 700 to 850 meters and up to ninety-seven meters in height. It's cold down there, six or seven degrees centigrade, below forty degrees, and variable currents. This just shows the heights of some of these pinnacles. This goes from number one on the left from Jacksonville and on a transect going down to about West Palm Beach, showing that the heights from fathometer survey kind of average about sixty feet in height and some of them are 200 to 300 feet and a couple are almost 500 feet tall.

Various sponges, elephant ear sponges, and lots of lophelia. Some of these reefs are entirely lophelia and some are enallopsammia and some are mixtures and we're just starting to map those right now and try to figure out what's the difference, why are they different, and does it provide different habitat.

We really don't know about the growth rates that much out here or the associated infauna. Primarily we've been looking at the macrofauna, the larger sponges and gorgonians, associated with it and also looking at the biomedical components of these larger macroorganisms providing possible new chemical compounds for treating human diseases.

We do see golden crab out there. We know this is a different AP for the South Atlantic Fishery Council in deep water. You do have the golden crab and royal rock shrimp out there and a variety of other crustacea and lots of other little weird features.

A little further south, basically these deepwater lophelia mounds are at the deepest part of the Straits of Florida, from north Florida all the way to the southern Florida Keys, all the way down to the Tortugas, but on the shelfward side of Florida, you have the Miami Terrace, basically from Boca Raton to Miami, Florida, about ninety miles long, a huge feature. We've looked primarily at the eastern escarpment of this. This is a rocky, hard bottom habitat which provides -- This rock provides structure for all kinds of coral, sponges, black coral to grow on.

Here's stylaster coral, lophelia, black coral, there's lophelia, and it's an incredible habitat, very diverse. This is a sponge that we're working on. It has very potent biochemical compounds. We've done quite a bit of work out there the last few years. Certain areas of it are providing habitat to large populations of wreckfish that we're seeing over three to four years at a very, very limited site. It appears to be a breeding population of several hundred wreckfish, as well as numerous other fish, sharks.

Further south, the Pourtales Terrace, we're looking at a little shallower, but, again, a similar terrace to the Miami Terrace. It's a rock structure, Miocene-age rock, depths of 200 to 400 meters, up on top of the terrace. It basically goes from the upper Keys, Key Largo, stretching all the way down to almost to the Tortugas, but past the Marquesas.

The part of the HAPC that's proposed is up in this region, where there's high relief lithoherms up here, but there's other structure down here. There's hard bottom all through site here, but along this edge of the Pourtales Terrace, there's some incredible sinkholes, deepwater sinkholes, providing all kinds of habitat for hard bottom and live bottom habitat.

The bioherms are features sixty to a hundred feet tall. The sinkholes are over 1,000 feet deep and some of these over a half-mile in diameter and we know of at least eight of them that we dove in with the submersible. There's not so much lophelia coral, but down here it's primarily stylaster coral and stylaster is just another type of coral, but it's a hydrocoral, and on top of some of these features, it's just thickets of stylaster coral up on top of these mounds and bioherms.

A lot of sponges and gorgonians, as well as fish communities that are associated with these reefs. We've got snowy groupers and a lot of similar fish that we also see on the lophelia reefs, but a different -- There's also some shallow water fish, like the snowy grouper and these anthiinaes and tilefish we get down there also.

In this paper that just came out last year, we described the basic benthic community, the number of sessile organisms, the macro sessile organisms, the sponges, the gorgonians, and the fish fauna and again, this is just very preliminary. There's a lot of work to do, but we found fifty-eight species of fish and I think Steve said it's up to ninety-nine species in the work he's done in the northern part of this region. Anyway, this is just from that paper listing the fish that we found out there and the invertebrates.

In the last couple of years, we've had a number of expeditions and we've tried to expand this research further south. Prior to 2005 and 2006, most of our work was off of northern Florida and eastern Florida and so we had a big gap of data from like Miami south, in the Florida Keys and Tortugas. It's still within the South Atlantic Fishery Council region and so we had five cruises, which were funded through the State of Florida, the Biotechnology Center of Excellence, and also working with the University of Miami geologists and trying to map out different regions down in the Straits of Florida, southern Straits of Florida.

We had two cruises funded by NOAA OE with Sandra Brooke and Chuck Messing at Nova and myself and we also were part involved with two pipeline surveys for the proposed LNG pipeline and port that Jocelyn will talk to us about later, but we did basically a complete video survey from the EEZ between Florida and the Bahamas all the way across from the EEZ to 600 foot of water and so we had about thirty miles of video transect and so we had very good new information of what's out there.

We had dives off the eastern side of the Straits of Florida, off of Bimini and the Bahamas, the Miami Terrace and Pourtales Terrace and the southern Straits of Florida. In that last couple of years, we've discovered at least thirty-eight new deepwater reef sites that we never knew about

before that we ground-truthed with sub or ROV.

We covered over thirty-six nautical miles of transect and we have dozens of new potential targets, based on the bathymetry of what we found with the fathometer or multibeam out there that we haven't ground-truthed, but we know, just by looking at the topography, that it's very likely hard bottom and reef bottom.

These are some of the new sites that we dove on recently, in the last couple of years. Off the Florida Keys, just dozens of high-relief features that we are finding with multibeam with echosounder or fathometers every time we go out. Even though there's in the proposed deepwater coral HAPC we have a gap -- Currently, we have a gap from Miami to the Pourtales Terrace and we're finding new data every time we go out there. There's stuff in there and there's a lot of stuff possibly outside even the proposed HAPC and certainly to the west here, toward the Tortugas. We've found a lot of stuff.

These are potential target sites where I collected data from museum specimens, from the National Museum, Smithsonian, where they found coral or hard bottom organisms that were dredged from the 1800s through the 1900s and were placed in the Smithsonian Museum and we plotted out where these organisms occurred.

There's a lot of dredge sites that were done decades ago that we know that yes, there was coral found in that dredge and so it's very likely reef around there or at least there was reef before they put a dredge through it, but we know at one time there was reef there. Anyway, there's a lot of potential targets to the south that are even outside of the proposed HAPC.

This is a site that I found this summer. This is a really high-relief feature, nearly 400 feet tall, and it doesn't even show up on the best bathymetry of the current NOAA bathymetric charts. You look at the NOAA bathymetric chart and you don't even see this thing in there and so we have a lot to do. We need to map and we need to get funding. I don't know where we get the funding from, but we need to find out where these features are.

This summer, we dove in eight new sinkholes and again, these are just incredible. We've been able, in the southern region, to have a few sites that we mapped with multibeam sonar and it was mapped by the University of Miami, in conjunction with Harbor Branch, that we got to ground-truth and we found these high-relief features and it was wonderful to have a multibeam topographic map of the bottom.

Otherwise, when you go out with a submersible, or ROV, it's like going to the Smoky Mountains during a foggy day and trying to climb up Clingmans Dome without a topo map. You have no clear where you are on the feature. You might be going off a little ravine to the left and you may never find the top of it, which had the best part of it or something.

With this map, we can overlay this on the ship and track the sub or ROV exactly where we want to go and this is exactly what we did. We had this map and so before the dive, we plotted out and we said we want to go up the southern slope from here to here and go along the top ridge and drop down off the north slope, so we would see all the three different habitats. Having that map,

we were able to do it.

We found these high-relief structures out in the middle of the Straits of Florida. This is off the Miami region. It's kind of moderate relief features. This is off of Miami, at the base of the Miami Terrace. These are very low-relief features. This site here that we dove on kind of looked like fingers or ridges. These are very low relief and maybe about two meters, six to ten feet tall, at the most. For the most part, you wouldn't even waste a sub dive on it, but we wanted to ground-truth the multibeam map, just to see what they were.

You cannot tell, for the most part, from either multibeam or sidescan what's there. You see the topography and in some regions, you might be able to guess that there's coral there, but for the most part, you can't tell or it would be very difficult to tell.

This turned out to be 100 percent coral bottom. Most of it was coral rubble, but also standing coral and you would not be able to tell that from the multibeam. The stuff on the right were sand dunes, like little sand hillocks. This is another site we dove. These are large sinkholes and also the base of the Miami Terrace in this region there on the left and very low relief, hummocky bottom, one to two meters of relief, maybe three to five-foot relief mounds and ridges, virtually 100 percent coral bottom, mostly dead coral, but still providing habitat for sponges and gorgonians, but then pockets of live coral thickets.

We do know the basic threat out there for these hard bottom fragile communities is fishing gear landing on the coral and destroying the coral habitat, just like it did with the oculina. Bottom trawl would be -- It may not be going on out there right now, but it would be a significant factor if it occurred on these deepwater reef habitats and we know worldwide that various types of bottom trawls have either impacted or totally destroyed deepwater lophelia reefs throughout the world, off New Zealand, the northeastern Atlantic. They're fishing very deep with these deepwater trawls on live, reefy bottom and it's hard to imagine how they do it, but it's obviously being done.

This is just kind of a very quick summary of my paper that's coming out this month about the oculina. As you know, the Oculina Reefs were first protected in 1984. That's the southern part of that yellow zone, ninety square miles. The northern part remained unprotected and open to legal trawling. In 2000, it was expanded. The Oculina HAPC expanded up to Cape Canaveral, protecting the northern part, but that northern part had remained open to trawling since 1984.

I was able to recover all of my old photographs, because I was part of the original photo transects that we did with the Johnson Sea Link submersible back in the 1970s and so I got all these old photos, like thousands of them, and digitized them to TIF files and overlaid the photos with a hundred dots and quantified percent cover of live coral, dead corals, coral rubble, sand and mud and so forth, and compared them.

This is a reef off of Cape Canaveral, big bushes and thickets of lophelia, and we went back to that same site in 2001 and this is what that reef looked like after fifteen years of trawling. It was just bulldozed to rubble and there's no habitat for anything.

These are the various reef sites percent coral lost between that 1978 and 2001. The reef on the left is Cape Canaveral and so you're heading from north to the south, but basically Cape Canaveral, CB is Cocoa Beach, and SB is Sebastian. We're in the unprotected region and had 98 to 100 percent coral loss, based on quantitative analysis. The reefs on the right were in the protected zone, the original coral HAPC.

This shows in 1994 the council extended the no-fishing ban or they extended a no-fishing moratorium for bottom fishing within the original HAPC. Before, you could bottom fish, but you couldn't trawl or use fish traps and so the southern region was still being impacted by fishing weights and fishing line, as well as overfishing, fishing out the fish stocks of gag and scamp grouper.

This shows the percent coral at Jeff's Reef, one of the more healthy reefs. We show from 1977 to 1996 that the coral did drop in percent cover, but after the moratorium on bottom fishing with hook and line, the coral appeared to be coming back, possibly less impact from heavy weight, because you're fishing with very heavy weight in the Gulf Stream out there.

Of course, it's affecting -- The habitat loss is affecting the fish and this is work by Chris Koenig, the chart on the right. The blue bar is the number of scamp in a healthy, unimpacted reef compared to the left, one of the reefs that are crushed down to rubble, virtually no habitat for scamp, gag, the big commercial fisheries that used to be out there.

Certainly the cure is we need public support and so that's what I try to inform the public about these deepwater unseen reefs and why they are important and to get this legislation passed to protect them and it certainly is up to the regional fishery councils to restrict destructive fishing gear in areas of known coral, but then there's the caveat of where is the known coral. Well, it's just where we've mapped it so far and every time we go out, we find more and so the number one priority is to get mapping done, funding for mapping, and habitat characterization.

Right now, this is the proposed HAPC for the entire region, which I would strongly recommend. It certainly covers the majority of the known deepwater coral sites, hard bottom sites, out there, but not all of it. You see the gap between Miami and the Keys and there's certainly a lot more stuff in the Florida Keys that we are just learning about.

Future research, again, mapping and characterization is number one. Certainly a lot more research. We're just starting our research on the biodiversity spatially of the organisms that live within the coral and utilizing that as habitat, similar to what I did with the oculina reefs a long time ago, but we know it is a very diverse community out there and the whole ecological studies, physical oceanographic studies, and we don't even have a clue about these other potential threats of ocean acidification.

I have a grant that we're submitting next year to look at that, how do these deepwater coral lophelia -- Will it be affected by a drop in pH with the ocean acidification that's predicted, as well as our other impacts?

Certainly another important type of research would be getting some buoy systems out there,

some ocean observation systems, both on the oculina and the deep lophelia. That would be very nice to have, both for monitoring the oceanographic conditions out there -- We know very little about the long-term episodic events of upwelling or currents or temperature changes.

In conclusion, these habitats, just like shallow-water coral reefs worldwide, are very diverse and basically irreplaceable resources. They are providing habitat for a variety of fish and invertebrates that could be used for fisheries, if we can figure out how to do it safely and wisely, as well as for biomedical research and certainly various activities, not only fishing, but pipelines and oil and gas production. It could impact these reefs without proper planning and research.

I strongly recommend that the entire proposed HAPC be protected and I would really strongly suggest to this committee, the two committees, when we present our suggestion to the full South Atlantic Council that we put it together as an entire package, based upon the best available research that we have today.

We could spend the next hundred years mapping out all of the reefs out there and still not find them all, but this whole region that we proposed was based on what we know about it right now and as you saw with the Oculina, we left out two-thirds of the reef system in that and it's gone now and so let's don't do it for this one. Let's do a whole package and not break it up piecemeal and certainly I want to thank everybody that's supported our research out there, both NOAA NURP and NOAA OE, NOAA Fisheries, the council, and the State of Florida also, as well as Harbor Branch. Thank you.

Dr. Rader: John, I guess we've been challenged with assessing two different kinds of potential errors in the HAPC, in addition to building the record on the value of these sites, the different kinds of habitats and the linkages among them, the two kinds of errors being errors of comission and omission, comission meaning that there are areas within the HAPC that, based on new evidence, don't support habitats that are linked, strongly linked, to deepwater coral ecosystems.

I haven't heard anything that suggests -- If in fact I've heard anything, it's the opposite, that the areas that we included based on bathymetry only, as new evidence comes in, pretty strongly support the presence of the kinds of communities that we expected. I just wanted to make sure that you don't see in your new information areas that we should not have included that we did and is that right?

Then let me ask the second question. The second question has to do with errors of omission, areas not adequately characterized at the time we drew the lines, where new evidence suggests the prevalence or high abundance, relatively high abundance, of the kinds of high-value target communities that should have been included. I didn't hear any specific recommendations from you about adapting the boundaries as they currently exist and so I guess I value your thoughts on both parts of that question.

Dr. Reed: For the second question, again, primarily my new research, the new research that's on primarily Sandra Brooke and myself and Chuck Messing and my biomedical research group at Harbor Branch have done in the last few years, is primarily south Florida and Florida Keys. We did find a lot of habitat that's outside of the currently proposed HAPC and whether to try to go

ahead with that right now might be -- Maybe down the road to add to that, I don't know.

Anyway, there's a lot of habitat outside of there. In the northern part, I'm not sure what Steve has found, and he can address that later, that could be outside of the proposed area. I'm not sure. As far as within the proposed area, certainly -- It's like anything. It's like a coral reef in the Keys.

The Florida Keys National Marine Sanctuary covers a lot of different habitat, from your shelf edge reefs to your patch reefs to your various hard bottom communities, and that's intermixed with areas of sand. I'm not implying at all that that entire box is 100 percent cover of coral and there's -- Obviously it's not.

What we can do, and should do in the future as we make better maps and as we do get multibeam out there, in conjunction with ground-truthing, that, again, the multibeam -- You cannot tell from the multibeam -- I had the best geophysicists and geologists and whatever looking at these multibeams and could not tell what is that bottom there. We can't tell what the bottom is until we get an eyeball down there with an ROV.

Anyway, there certainly could be areas within the proposed HAPC that could be, as we gain new data and information, suitable for bottom trawling that are strictly muddy, sandy bottom without hard bottom community in a significantly large area where they could trawl. We just don't have that data right now.

The borders of the HAPC kind of go along on the eastern side, along the EEZ, and basically every dive that I've made along that EEZ, at least off of the Florida region, has had coral on it. I'm pretty certain in -- There's definitely a high zone of coral on the eastern side, along the EEZ. The western side, we based it on the shallowest that we've found reefs out there, just strictly based on where we dove the sub.

It's not like we -- We were not funded by NOAA Fisheries to map out this bottom. We were out there doing other research funded for other objectives and so it wasn't like we were doing transects across the entire shelf region looking for reef. It's just we kind of found them by luck and then looking at the bathymetry. Certainly when we see the bathymetry this high relief and rugged, you know -- You can pretty much guarantee that that's going to be live bottom and so the areas that are more uncertain are the lower relief that are hard to tell what it is.

It's hard to -- Right now, I cannot say that yes, here's a whole area that's okay, that's flat sandy mud, except the only two sites that we've done east to west, all the way across, were the two pipeline sites that I did, the Calypso and the Seafarer, and on those, you had a complete transect, from east to west, all the way across the shelf and you could see where there was reef and where there was mud and sand bottom.

Dr. Rader: Quickly in response, I wasn't trying to push you to go beyond the science, but I was looking for your best professional judgment in total about whether there was any adjustments that were necessary, based on your feeling about the best available science. It sounded to me like there's evidence of habitat outside in both the gap between Miami and Pourtales and to the

west, southwest, of the existing HAPC, but not to the level at this point that you're recommending formally that we change the boundary and is that true?

Dr. Reed: No, not right now. I don't have the data here to do that, for one, but certainly for the last two years I could pull the data together and say within that gap of Miami to Pourtales Terrace, as well as the western Pourtales Terrace, this is where we have data, but I can't do that today.

Dr. Rader: I mostly just wanted to make sure that the data that had been produced in the south, since we drew the lines, supported the lines as they currently exist, in your best professional judgment. It sounds like right now the answer is yes.

Mr. Shepard: I think it's important to correct maybe a misconception by you stating, John, that it might take a hundred years to do the mapping job, because it won't take a hundred years to do the mapping job that we could do as far as the bathymetry with multibeam is concerned. That is a doable task within a reasonable period of time and would you agree?

Dr. Reed: Absolutely. We had recently a short multibeam trip on the Nancy Foster and so if we have the availability of ship time and with the multibeam and at those depths, I think the swath of the multibeam is, what, a thousand meters or something. We could do it in a year or so, but it's pricey.

Mr. Croom: I'm wondering -- If I'm jumping the gun, please let me know, but I'm just wondering, given levels of uncertainty, that there may be areas that could be suitable for bottom fishing activities and how will that uncertainty affect the crafting of options for consideration by the full council for protected areas, habitat areas of particular concern?

Ms. Stiles: To that point, I wanted to thank John for his presentation and also perhaps recognize what Doug was speaking to, that research is a continuous process, but it doesn't mean that at any point in time you can't make a distinction between things that are very clearly known and things that you think are likely and then things that you would like to explore in the future.

It sounds to me like that's where we're trying to get at this meeting, is to things that are clearly known, which it sounds like they are in the current boundaries of the proposed HAPCs, and then things that are likely, that maybe need some sort of precautionary approach, but not necessarily need to be in the HAPC, and things in the future, which, of course, we all hope that there is opportunity to do research on them, but right now we don't have any comments on them.

Mr. Blair: One of the aspects about what our charge here today in trying to utilize our best professional judgment to understand how these things can be done is looking at also the sequence that has occurred. As usually is often the case, even with distribution of organisms and so forth that seem to have distributions, it's only because they haven't been looked for in the areas in between their disjunct nature.

Over the research from John and Steve and others in the deepwater areas, there has been a very, I think, obvious pattern of evaluation of relief and where those areas have been able to be verified

of high relief shows hard bottom and coral communities. I think that the process that we're seeing here is that any apparent gaps that we have are only because we haven't been able to evaluate them.

The research in these regions definitely have shown the area within the HAPC is very densely covered with various relief structures and those relief structures that have been verified by visual aspects have shown the presence of either hard bottom and coral communities and I think that we have a responsibility in attempting to look and protect these areas for fisheries purposes to make sure that we are inclusive of the best ability to protect the entire area.

Again, I'm not sure that we have really seen enough information about how much of any of the areas may be appropriate for bottom activities at this time and I think the best professional judgment at this point would point more towards protection of that area and again, as additional information comes forward, if it shows that those areas can be or do exist, that those areas may be able to be modified at a future point.

Dr. Rader: Thanks, Steve. Miles, I suggest we hold further discussion of that question until the end, because really we have more new information to hear before we can, I think, balance it. My point in asking the question, John, was just to confirm sort of a bottom line, in his view, as to whether there were any serious errors of either type.

I didn't hear anything that suggested that there are now newly known unimportant areas of significant magnitude to make us want to change the boundaries now within the existing HAPC, but once we hear the rest of the speakers, we will come back and revisit that question. I did hear some concern about the gap between the two in the south and the extension to the southwest and just for the record, to note that there actually might be an error of omission of some scale in those gaps.

With your permission then, we'll move on to Steve Ross, Steve Ross's presentation. Thanks very much, John. The title, while Steve is getting the thing on the screen, is basically an update on recent research cruises, looking specifically at species use of deepwater habitats.

While they're doing that, I would reiterate what's been said before, that we owe a major debt to John and to Steve and to Andy and to a number of others that have made very, very important contributions here. I'm thinking about when I joined this committee back in the middle 1990s and we knew lophelia was there, but we had no idea that a world-class deepwater reef system existed in this area under the stewardship of the council.

It's really elevated the role of this committee and this council far above what I expected when I took the job. Our plan is to take a break after Steve's talk and after the questions to Steve and so we'll do two and take a break and do two more and take lunch and try to finish the day that way. Chairman Geiger, I think you had mentioned to Roger earlier that you had a remark or two to make and are you interested in doing so in this downtime?

Mr. Geiger: Thank you, Mr. Chairman. What I wanted to do was just welcome the Habitat and Coral APs to this very important meeting and thank Roger and Myra and Kim Iverson for the

dinner last night and reiterate the fact that we council members, and I think we're showing that by Duane and myself and John Wallace's presence here, how much we really rely on the input and advice of this AP.

We take very seriously your charge and I just wanted to encourage you to make sure you get through your agenda and provide us with as much information as possible for our consideration at our December meeting. Thank you.

Dr. Rader: Are there any questions from committee members of the chairman while he's here and near a microphone?

Dr. Laney: George, I have one that's not directly related to -- It's related to habitat, but not directly to this habitat. Last week, at the South Atlantic State and Federal Board meeting, in association with the ASMFC Annual Meeting, and I kind of address this to Miles and to you, but we talked a little bit about red drum essential fish habitat and what would happen to that when that species is transferred to the council.

I was very heartened to hear from Bob Sadler, and also from folks in headquarters, that they think it's possible to retain that EFH through secretarial action and so if that is in fact possible, and I had not understood that in the past, I would strongly encourage the council to support that. Bob was there and Bob indicated that he felt that could happen too and so I just wanted to share that word with the rest of the Habitat AP. I think that's great news and I hope it can happen.

Dr. Rader: That's an important thing not to lose track of. The Habitat AP had commented to the council back a long time ago, when the red drum plan was first considered to be shifted to the ASMFC only, that our major concern with that shift would have to do with the loss of potential leverage on non-fishing threats through the essential fish habitat doctrine. If in fact that's the case, Wilson, it's welcome news. I think we're now ready and, Steve, take it away.

Dr. Ross: Yes, I think we're ready. I'm going to sort of pick up with a slightly different twist, but build on what John started. The talk I'm going to give will have sort of two components, one updating the group on our habitat mapping efforts, partly in this talk and they're also partially covered in the SEADESC talk that I think Tina and I are giving, and the second half will be sort of an update on my whole group's research plan and where we're heading in the next few years and its impact on our Atlantic and Gulf of Mexico research.

One of the things that I would like to also start with is that we've come quite a long way in the last few years, from basically knowing almost nothing, especially biologically, about any of these coral habitats to having a considerable amount of basic information. Along with the publications that John mentioned, counting papers that have already come out and that are in press and a couple that will be submitted by the end of the year, my group has about twelve to fourteen peer-reviewed publications coming out related to deep-sea coral habitats in one way or another.

We've come a long way, but I would also like to reiterate what John said, is that there's still a tremendous amount left to do in terms of documenting the habitat, but in particular the biology.

What we're finding is that the financial resources to continue that work, instead of increasing like they should be, are actually withering away and so that's a great concern for us to be able to continue the momentum that we've had in this area of research.

NOAA will release -- I was hoping it would be out by this meeting, but there's going to be a status of deep-sea corals report for the whole country that's at the printers now and it should be out very soon. Martha Nizinski and I wrote the chapter for the southeastern U.S. and Sandra Brooke and Will Schroeder wrote the chapter for the Gulf of Mexico.

At least at the time when we stopped writing those chapters, they'll be fairly good reviews of the status of corals in this whole southeastern U.S. region, from Mexico to Cape Hatteras. A lot has been done since that report went to press. However, there's continuing information and NOAA will also release our SEADESC report, we hope, before Christmas as well.

Now, to my ill-fated mapping project. We've been very fortunate to have support from the Undersea Research Office at UNC-W that Andy Shepard is the director of to get started with habitat mapping in the southeastern U.S. In 2006, we had a fourteen-day cruise scheduled on the Nancy Foster and because of horrendous weather and mechanical difficulties; it ended up being a six-day mapping cruise. It was the only cruise I've been on in my career where I was literally thrown from a bunk by the weather. It was a horrible ship in a seaway.

This year, in September, we were given another fourteen days on the Nancy Foster and we spent seven days just drifting at sea with a broken engine and so we haven't had very good luck. That cruise was to do multibeam mapping with the ship and with an AUV. The first cruise that I'm going to show you the results of here was with the ship.

Because of the weather -- These maps are quite good considering the weather, but there are pieces of them that need to be redone, particularly in the southern part of the region where we worked. They're good enough for some kinds of work, but they're not as accurate as they should be in other areas.

This is sort of a review map that pulls together a number of different pieces of data. These yellow dots are areas where my research group has made submersible dives and conducted other ship-based work. This is the Stetson area. We've dived up here and throughout these areas. The area we call Savannah is over here and the Jacksonville lithoherm is here and so my group has worked there, as has John and a few other people.

There aren't as many people that have worked on the North Carolina sites. I cut this off at Jacksonville. We have research areas down to the south and John covered those pretty well. This is only known gas hydrate and methane seep location on the Blake Ridge. I've got a couple of other things here for reference points. That's the Snowy Grouper Wreck and so you can see the shallower water MPA. That's at the edge of the North Carolina MPA and it's fairly close to some of these deeper water coral systems, even though that's basically a sand bottom and a very small wreck.

This is the wreck of the Republic, which is a wooden side-wheel steamer that was sunk right

about the Civil War period, and we obtained the high-definition videotapes from the company that salvaged that wreck and added it to our database and it gave a really interesting different view of basically an artificial reef effect in 500 meters of water.

I tried to keep my eye on the fish instead of the gold, as it would fund a tremendous amount of research. It's hard to keep your eyes off all the gold, but -- They picked up a lot of it, but they didn't pick it all up. They won't tell me exactly -- That's sort of an approximate location. They won't give me the exact location, but they'll just give me the depth.

I want to call your attention though to all these red X's, which are results of seismic data from Pete Pompenol, and I think Clark has reanalyzed or re-plotted some of that information from Pete. It never was very well published, but Pete thought each of those X's was potentially a coral mound and he called them coral mounds, even though very few of them were ground-truthed.

In 2005, as we were working our way south, we decided to try to pick up some of these mounds and make submersible dives there and they were tremendous coral mounds. One of things that's misleading though about this kind of information is that you'll see these go in rows and what we don't show you is the rest of the sparker transect and so basically these followed a pattern and that's why they're all lined up.

It gives you the impression that you're following ridges of coral mounds and that's not true at all and so I'll show you that in a minute. In our six days of successful multibeam mapping, we mapped all of these areas, this, this area, and this area. It's split up into sort of a strange mosaic, because of weather issues.

This is the North Carolina area off of Cape Lookout and as far as we know, these are the northernmost coral mounds in the region. There's a museum record about seven kilometers north of here, but it's not a very good record. I was going to try to map that this year, just to extend these maps to see if there was anything further north. I'm not sure that there is and because I'm not very imaginative, I've called this Cape Lookout A and Cape Lookout B.

Our submersible dives were concentrated in this area and here and here and so we've probably visited this area every year between 2000 and 2005. This multibeam map covering six-by-twenty-seven kilometers took a day-and-a-half to make. That's not very much time and we did not know that this existed or that or this huge feature or that or that or the tail-end of this and that's after six or seven cruises of crisscrossing this area with single-beam sonar and trawling around this area.

We trawl around the coral mounds. We try very hard not to hit them, but it gives us some very good supplemental data and we missed all of these features. There's likely a few more out there. This is surrounded by soft sediment and so it's quite different than what happens on the Blake Plateau and one of the interesting things that you also pick up from multibeam mapping, besides a better view of morphology in a general sense, is you pick up process features.

These teardrop shapes are probably current scouring. Well, they're definitely current scouring,

but the question is whether it's a recent feature or an ongoing feature or a relic feature. That's not clear. We do see strong bottom currents down there. I suspect that it's an ongoing recent feature or has been a part of this mound's history for quite a bit of time. You don't see these at all further south, because I suspect that we just dropped below the depth threshold where the currents can create this kind of scouring.

Looking at a 3-D view of these mounds, this is looking at the top set of mounds. The ridges are more or less ranged east to west and quite different than the ones to the south that have this teardrop form with the ridges lined up almost parallel to the current.

This is a very powerful tool for designing research. I wish we had had it years ago, because we can now rotate these things in 3-D and they're very accurate and you can choose what kinds of habitats you want to cover and not waste nearly so much dive time as we have in the past. This is the same area and just looking back in the other direction and then going further down that strip, these are the coral mounds that are towards the base of that area.

Dr. Reed: What was the resolution?

Dr. Ross: I think it was done to a ten-meter grid, I think so, yes. What we had hoped with the AUV was that we would increase that resolution to I think a meter. I'm not sure about that.

Mr. Street: Steve, what is the relief on those sites?

Dr. Ross: I wanted to mention too that this is a fairly informal process and I hope you will ask questions as we go and I think we've got time for that, at least a little bit. These mounds range, up at the Cape Lookout A area, around eighty to a hundred meters, the taller ones do, and down south, they're close to that, seventy to eighty-meter sort of mounds, and then there are lots of small ones, in the ten to twenty to thirty-meter range, that are grouped all around these areas.

This is the small feature, small in area, off of Cape Fear. It's sort of an isolated coral mound and it also has this characteristic current scouring and while we had picked that up in our single-beam mapping, we didn't do a very good job of mapping it. It's a very deep ridge that goes all the way around this coral bank and this bank also is around a hundred meters off bottom. That's a considerable feature when the surrounding plain is flat and it's a magnet for fish.

Now the thing to keep in mind is we've moved south. This area here was traditionally worked over by Stetson and is often called the Stetson Coral System and we've called this, for lack of a better name, the North Stetson Area, because it seems the closest so far, but I think all of these features eventually are going to require some different kinds of naming and they're more continuous than we would have thought and so it's difficult to pick out individual features.

The way a lot of us have approached the research gives the idea that they're isolated coral places scattered throughout the Blake Plateau, but it's actually the habitat is much more continuous. These black dots are where we've conducted submersible dives, a couple of dives up here and here and here.

We concentrated our multibeam mapping, because we had a time crunch, on areas where we had some ground-truthed data, through the submersible work, and ground-truthing is a whole different operation that requires a lot of time, but the actual mapping itself, I think, is fairly straightforward and if we had had a full twenty-eight days of time on the ship, we likely could have mapped probably a third of the northern Blake Plateau area. That's a lot of territory.

I was skeptical that we could make a dent in this huge area when I started, but when I worked with the ship and we mapped for twenty-four hours, covering an 800-meter-wide swath off of North Carolina, and a little deeper down here at Stetson, you can cover a tremendous amount of territory.

These maps look kind of strange because of our problems with weather. We had to break off a couple of times and we ended up with some holes in the data that you can see here and we had to jump up to this area and only got part of that done before we had to finish. Zooming into this -- Now these blue triangles are Pete Pompenol's mounds from seismic work, again, and while they gave us some guide for places to start, they're not really very accurate.

There likely could be some navigation differences between how he located these peaks and how we navigated. You can see if you zoom into this mound system, our two submersible dives are here and you see Pete's sparker line, or whatever it was he was using. I can't remember, Clark, what his equipment was.

Mr. Alexander: I think it was an air gun.

Dr. Ross: Air gun, okay. He came down through here and some mounds he hit and some he didn't. I don't whether that's navigation or not, but there in fact is not a coral mound there, at least not in the resolution of this multibeam mapping, but you can see they don't look anything like what our impression was. It's a complicated series of ridges and mounds. These also are in the sixty to eighty to ninety-meter range in height and that's a 3-D view of this system, I think looking back north across this area. It's very rugged territory.

I'm going to go down to -- Actually, I think I have -- If this works, it will be the first time in my career, I think. Just to briefly, I think, let you turn that around and sort of get a little better view of the diversity of this system and now your eye is drawn to the large features and that's a data gap, what they call a data holiday, but there are a lot of small features throughout this area.

One of the things I'll point out when I start to talk about the area to the south is that just because this part is flat, especially as we've moved south into the Blake Plateau, it doesn't mean it's sand. There's quite a lot of coral habitat out here, coarse sands and rocky pavement in a lot of places, and we often find bamboo and black corals and sponges all through this area.

We've moved to that other part of the box, further south, and this is a view looking south. There's a large almost a trench on the eastern side of this Stetson area and one of the things that's interesting, that we really didn't pick up very well from our single-beam mapping, was that there's nearly a continuous line of mounds and here we've backed up a little further north and are still looking south along this ridge.

This is almost a continuous range of what we think are coral mounds, probably. At least every one we've looked at has some amount of coral habitat on it and very likely these were formed by the corals, but they're on top now of fairly hard substrate in a lot of places. The character of the substrate on the Blake Plateau is different than that off of North Carolina.

This is moving over to the western side of that Stetson area, a view looking toward the north, and then back south. You see these large plateaus and complicated canyons with mounds developed all over the edges and in some places, more mound diversity further back. Here's another quick tour. It's a lot of complicated mound development on the west side of this ridge and a little flatter back here, but I'll remind you again that this can have quite a lot of coral sponge habitat away from the actual mounds.

One of the things that we need to continue to do, as John pointed out, is more of this kind of mapping. At least with ship-based mapping, it's cost effective and it doesn't take that much time. We've I think not emphasized that enough. Going along with that, there has to be a certain amount of ground-truthing.

That may take a little bit longer, but we don't have to look at every single mound. We have to look at enough of them to sort of get a feel for how many may be coral and how many may be live or dead corals. I'll leave that, unless there's some questions. We may come back a little bit to habitat in our SEADESC talk.

One of the things that my group is doing is emphasizing several biological topics and we're trying to integrate our different topics as best we can and look at a large area, ultimately covering the whole southeast and the Gulf of Mexico. Our topics and now what we're emphasizing are community structure and diversity, particularly fishes and macrofauna, and we've just added a benthos component.

We're looking at community structure through genetic approaches, as well as a more traditional macrofaunal sort of surveys, and we started our population evaluation with genetics, looking only at corals, but we're now adding other organisms to take a community genetics approach and looking for patterns that may be the same or different and because we know something about the biology of those species, it may be instructive. What we're finding out is that there's a tremendous amount more diversity in the structure of organisms than what we had thought.

We're also looking at energy flow through trophodynamics, using stable isotopes and traditional diet analysis, and that's maybe one of the things that would help us explain why things are different down there.

I'm going to move forward from here and this is sort of a diagram of how we see these things working together. Of course, habitat is basic to all of the organisms and whether it's coral or hard substrate, but one of the things that's unique about coral is that it's a living habitat and we can apply some biological studies, like our genetics component in this bubble relates to population structure and gene flow in the habitat itself, as well as the other organisms.

The smaller invertebrates and larger invertebrates are interacting through energy flows and we're looking for patterns throughout this region. Just to hit a few high points of some of the fish research, I think I mentioned last night in the movie, and John reiterated, that we found ninety-nine species of fish so far. There are more to be found, but that certainly hits the high points and that's more fishes using this habitat than yet have been documented for other deep-sea corals that I'm aware of and so there's something a bit different about our area.

These fishes also show a strong habitat affinity. There's a strong reef effect in a number of species. One of the surprising things is that we are finding assemblages of fishes that differ geographically. It's not too surprisingly that complex benthic habitats support higher diversity, but it hasn't been well documented in these areas and we're just starting, as are other people, to document that.

One of the things that I found surprising though, especially for the fishes, is that they have sequestered species, essentially. Of those ninety-nine fishes, I think 19 percent of them yielded new information about their ranges, in terms of either depth or latitudinal extensions, and that's not too surprising. That usually happens in a frontier area like this, where there wasn't previous information.

What was surprising is that we've also found two new species of fishes and there's a third species being evaluated by an expert in Copenhagen and supposedly the western North Atlantic is one of the best studied regions in the world, in terms of fisheries research, and yet we're finding what we think are going to be at least three new species of fishes.

This is also characteristic of every animal group that we've examined so far. I forget the percentage, but there are a large number of galatheid crabs that seem to be new species and those are being worked on by one of my colleagues. We've examined the hydroids and we have a paper coming out in *Deep Sea Research* early next year and in the hydroids, they also yielded a tremendous amount of new range information and potentially four new species. Every group we look at has this increase in knowledge about biodiversity.

One of the things that we're coming to realize is that there are some fairly complex mechanisms that are apparently structuring deep-sea communities and those may be combinations of things that are both biological and physical, limits to the habitat and limits to the species, but we're finding a tremendous amount more heterogeneity down there, in terms of the communities, than what we would have expected.

That was very surprising with our preliminary genetics results, in that the corals appear to be divided up into numerous fairly unique communities, or populations, and we didn't expect to find that. We found less cloning than what we expected and what that means is that potentially each one of these mounds may have a unique community and a loss of any mound may lose significant genetic material and we're still analyzing those data, but that's a fairly different find.

My model so far of using the fish as an example and looking at the larger picture is the fish communities off of North Carolina were different than these two and these each were different from each other, even though they were more similar.

The Republic wreck fish community matched that in the Carolina area more than that other sites and that appears to be related to the structure of the wreck, compared to some of these sites here. The things that seem to be influencing these assemblages are combinations of potentially depth and habitat structure. It's not zoogeography and it's not range limits.

That does come into play when I've looked at the data that we had collected off Virginia and off Hatteras in the same kind of way. These two communities of fishes were different from each other and both were different from everything to the south, partly as a result of zoogeographic limits. We have not analyzed all of our data in the same kind of way, but I know by looking at the fish community there that they will be different. We hope to add this as a comparative site in 2008 and continue working through this whole region for the next four years.

Mr. Blair: Sorry I missed that, but there was a purpose for the various coloration of the sites, the yellow and blue versus all the red?

Dr. Ross: The red are all the coral study sites. This was the canyon system at the point and that was just to highlight the difference off of Virginia. It's a coral site again here and I don't know why I chose that color. It should be red, maybe. I just thought that was pretty. We're going to start a four-year deep-sea coral project in the Gulf of Mexico in 2008 and our field plan in 2008 is to use the Nancy Foster, hopefully, if it's working, and in a partnership with NURC to try to bring the MaxRover ROV down to that ship.

The other thing we hope to add to that picture are two industrial-sized benthic landers, shown here, here, and here that will be brought in by the Dutch scientists at NIOZ. They're writing proposals now to fund their part of it. We've already lined up the resources, I think, to fund our part. These, I think, will add a tremendous amount of basic data that we don't have. They have rotating programmable sediment traps that can collect twelve samples on some kind of program schedule.

The information from the sediment traps will give us some particle flux data, which we will be able to use to examine the kind of food delivery to these reef systems. We'll analyze those sediment traps for stable isotopes. The Dutch have already published a couple of papers on that. That's the kind of work that they do. These landers will have ADCP, so we can get current information, side-looking Doppler current meters, as well as ADCPs looking up, a standard CTD package and a couple of different kinds of cameras. We're not sure yet exactly which cameras we're going to put on them. We'll probably put a passive acoustic monitor and some settling plate experiments. There are a lot of things you can hang on these.

They'll be down for five to six months in the Gulf of Mexico. We hope to bring them up and put them in the Atlantic for five to six months. We're hoping for a one-year commitment from the Dutch.

This will start to give us some information about the physical characteristics of the bottom and a few pieces of biological information that we don't have. This will be, to my knowledge, the first long-term, high-intensity data collected from coral mounds in the U.S. The Europeans are way

ahead of us in this arena. They're publishing very interesting and complicated papers using multibeam mapping of habitats and landers and all sorts of things.

Ms. Brooke: I was just wondering if they have any kind of fixative in the rotating sediment trap to get zooplankton as well.

Dr. Ross: They do, yes. They are preserved for long term. They leave these landers down often for a year and so sometimes they take monthly samples. We'll probably take twice-monthly samples and they do have preservatives. That's it for me.

Dr. Rader: The same question. Have you got advice to us? It looks like there's way more, both topography and biology, than we realized at the time that we drew the boundaries. Have you got -- Do you believe that the information that currently exists supports the current boundaries or supports expansion or contraction of the current boundaries of the HAPC?

Dr. Ross: I think it supports them as they are. I don't see any need -- I would like to plot that boundary on here and I haven't done that. I think it comes somewhere across this area, but we had some of these data when we drew that and we moved the boundary to the 400-meter contour because of what we knew and I don't see anything to change that.

If my cruise this year had been successful, one of things that we need to do is to map out in this direction so that we can see when this complicated coral field tapers out and the habitat starts to look more sandy, like a typical slope, until you get to these isolated mounds off of North Carolina. That may change the boundary slightly.

Dr. Reed: Could you just kind of trace the 400-meter bathymetry line to the south?

Dr. Ross: You can't see it because it's a light blue. The tip of the arrow is moving down the 400-meter contour.

Dr. Reed: Which is the west edge of the HAPC?

Dr. Ross: Right. There are a few of these X's outside of that, but not many and it's hard to -- We don't really know -- In Pete's mapping, or in this kind of map using his data, all the X's look equal and that's not necessarily true. Those data are useful, but as we saw from the multibeam mapping up here, they aren't telling us nearly everything we need to know.

Dr. Rader: A follow-up question, Steve. One the northern satellite sites, A and B, all of those features are inside?

Dr. Ross: Yes, right. All of that is inside the current single boundary for Cape Lookout.

Dr. Rader: Including the little pimple on the right?

Dr. Ross: I believe so. I'm not certain of that, but I think so.

Dr. Rader: Then the cold seep site, I would ask is that in the EEZ?

Dr. Ross: I can't remember where the boundary is there, but I think it probably is.

Dr. Rader: I, on your behalf, had reminded the council -- Help me, Roger, but when was that, in December of last year, is that right? It was up in North Carolina maybe? That that live bottom feature of a different type might be outside and we were given largess to include that for consideration and I neglected to follow up on that and so you don't know?

Dr. Ross: I don't know for sure. It may be just outside.

Dr. Rader: Roger, would you help me check on that?

Mr. Alexander: Do you know the water depth of the site?

Dr. Ross: I did. I can't recall exactly. It's like 4,000 meters.

Mr. Alexander: It's probably outside the EEZ then, since 2,000 meters is defining, at least through a lot of the sea, the base of the EEZ.

Dr. Ross: I thought it was 200 miles.

Mr. Alexander: There's also an alternative method, which is why the USGS has been mapping the 2,000-meter isobath all up and down the east coast.

Dr. Ross: We have EEZ that's deeper than that, I believe, in this area, at least in the current boundary.

Mr. Shepard: Steve, you may not get the chance, and I don't know if you will or not, to tell the council about the international work that you're working on. You touched on that with the landers, but there's lots more going on and could you say just a brief word about that?

Dr. Ross: That's true. I didn't want to go on too long about all of that. We are trying to develop an international program that will start perhaps in 2009 or 2010 that would bring similar objectives for deep coral research and perhaps more standardized methodology to both sides of the Atlantic.

Dr. Murray Roberts from the Scottish Association of Marine Science is spending his sabbatical in my lab for the next year and his main task is to round up support for that effort. He's got very good initial support from the European Union and from the Canadians and there's a little bit slower development here in the U.S., but what we're hoping for is potentially the ability to tie deep coral research from the Gulf of Mexico across the southeastern U.S. and across to the eastern Atlantic, in some kind of similar comparative framework.

Mr. Alexander: I just have a general comment. When you were asking whether there was any new information that would make you think that you should shrink the areas, I think that the

approach to take is to understand that the geology is really structuring all of the areas where you're finding corals and that the geology doesn't change over short length scales and so you would be more likely to find habitat extending between areas than you would to be finding it starting and stopping, even though we only see coral habitat where we've mapped it. It would be more logical to say that it is extensive rather than limited in its scope.

Dr. Rader: I agree with that and I actually wasn't even proposing that we shrink it, but it's just the question had come up several times with the size of the gaps in affirmative information about the degree to which the best available science sustained the lines as they are currently drawn. I guess I haven't heard it here -- We'll talk about it when we come back to it at the end of the day, in the morning, to make decisions about the recommendations.

I haven't heard anything yet that suggests that as information improves that any such gaps have been identified, at least to date, and in fact, we're learning more about the different kinds of habitats and their ecological importance and linkages. Are there other questions for Steve?

Mr. Gregg: Mr. Reed earlier mentioned that there was a pretty strong correlation between high relief shown on multibeam and coral communities, but that the correlation is a lot weaker with lower relief and flatter terrain and what that your experience as well?

Dr. Ross: Remind me of the correlation you were talking about, John. Could you repeat the question? I sort of remember -- I think the question was that there was a statement from you about a correlation of communities with high profile being different than with low profile and is that restatement?

Mr. Gregg: The high relief that's shown on multibeam, John indicated that there were usually corals associated with that, but in lower relief, the correlation was a lot weaker and it was harder to tell. He would see flat stuff that had coral on it. My concern from a management perspective is when energy projects are being developed that do a geohazard survey and they seek out the flat areas and if that were the case, would any crossings of these types of habitats be impacting important habitats?

Dr. Ross: We both may have to answer that. I sort of remember what John was saying there and I'm not sure that was exactly it. It's that regardless, multibeam can't resolve what the habitat is entirely. It can only map the bathymetry. Using backscatter data, you can approach getting some idea of what the bottom is like, in terms of maybe whether it's hard or soft, but still, that doesn't tell you whether there were corals there.

I think what we found is with the higher profile systems, there's more likely to be coral there, but we also find coral, including the structure-building corals, on fairly flat bottom in isolated hummocks all around and certainly lots of black coral and bamboo coral that don't map at all with any kind of bathymetry, no matter what its resolution.

Dr. Reed: Could you go back to your multibeam of the northern area? Back to your question, again, about the different relief or stuff, kind of realize that this is done -- When we do the shipboard multibeam, it's at pretty low resolution and I believe you said these were made at

about ten-meter resolution. That's pretty big, ten meters, thirty foot. You could have a rock that would go to the ceiling here or a reef that would be that tall and it wouldn't pick up on this thing.

The other thing is like in the map in the upper right, where you see this low hummocky regions, and as I showed you in my multibeam, it's very low relief, hummocky that we picked up with the higher resolution multibeam, where you have to use an AUV to get closer to the bottom. With the higher resolution multibeam, you can get resolution of one to two meters. You're actually seeing bolder size or one-meter-sized coral heads, possibly.

Again, even where we saw that very extensive area off of Miami, it just showed like miles and miles of low hummocky bottom that we couldn't tell from the multibeam or sidescan what it was, other than we knew it wasn't muddy, until we put the sub down.

I think what I tried to allude to was that certainly in this region where you come across a high-relief feature, say high-relief of ten meters or larger, in every case that I've ground-truthed with the sub, that has proved to be a reef, a coral reef, coral bank. The lower relief ones are probably just as likely to be hard bottom, but it's harder to tell, until you get the high-resolution multibeam. It's hard to tell. In a few cases, they might have been sand dunes or sand waves, but it's difficult to tell without looking at it.

Dr. Ross: One of the things to keep in mind is that these maps are fairly processed and they give you the impression that things are smooth in places. These look like fairly smooth, worn features and that's not necessarily the case. It's a function of processing the data and the ten-meter resolution. The bottom is even more rugged than what these maps imply.

Now, there are sand waves that you can't necessarily tell, like John said, what's going on with them, but in these areas, all of these places that we've examined visually have been coral-developed mounds in various stages.

Dr. Rader: I think we should go ahead and take a break. I think the question though is an interesting one and it presages the discussion we're going to have on the energy policy when we get back to that, because as many of you know, the governor of Florida, but also just about every other official who is looking for clean energy sources, is looking at marine habitats and how to site potentially large amounts of green and blue, meaning environmentally preferable, ocean energy.

If you're looking at two gigawatts of capacity in the Straits of Florida, to deliveries of Florida current, how do you do that? There are policy questions related to how we draw these boundaries, because among other things, they will shift that kind of development into areas that aren't HAPCs. We just need to think about those kinds of habitat effects and cascading policy effects as we go forward. We'll have time to talk about that.

Take advantage of the next ten minutes exactly, if we can, because we've got two more presentations before lunch, both to refresh yourself and to pen these two gentlemen if you have further questions and then we'll reconvene exactly at eleven o'clock.

Mr. Pugliese: Let me make a quick comment, as you get ready to do the presentation. We had a unique opportunity really, to a great degree provided through Greg and a number of individuals seen, an opportunity to have a very close collaboration between many NOAA and regional partners to have an opportunity to look at multiple technologies and to support high-priority management needs at the council with available cruise time that had occurred.

This was actually the first time that both the multibeam mapping from a vessel as well as an AUV was employed and we had an opportunity to direct it to many of the needs that we had here on information to support what is moving forward on the HAPCs.

I did want to jump in on the front end of it and saying that hopefully we have future opportunities for this type of collaboration, because it really went directly to high-priority needs and information, mapping and things that the council was moving forward in the process. I would like to personally thank you, Greg, and Sarah Fangman and the rest of the group that was involved in this.

Mr. McFall: Thank you for that, Roger. I appreciate that intro. The sad truth is, or the reality of the situation is, that we just felt sorry for Roger. No, truthfully, I've been asking him for many years to develop a high-priority list of things that need to be conducted, surveys that need to happen or investigations that need to happen, and I feel like if we all have an idea of what those things are, that we can start knocking some of them off and certainly mapping is a huge priority.

It really hit me hard when I was asked to review and provide comments on the deep coral research and monitoring plan and every paragraph I read, I kept saying oh my God, how are you going to do this?

It's great work and it needs to be done, but I think it really hit me last year and we had some ship time and offered it up to Roger and he came up with certainly more priorities than we could address. As we go through this, just keep in mind I'm not a deep coral biologist and I'm not a hydrographer and so I might have to defer some of your questions, if you have them, but certainly ask at any time.

Some of the objectives were to use multibeam aboard the Nancy Foster and the NURC/NIOZ AUV, and I'll explain all that later, to collect acoustic multibeam and backscatter information and to be able to compare the data that got from both of these different platforms and see how they compared and, of course, we took this technology out into the proposed coral HAPCs to collect the multibeam and backscatter in some of the shallower areas and compare that as well, to provide outreach products for the enhancement of habitat and ecosystem websites and the IMS map server that Roger and Tina have been working on for so many years, and hopefully we can get some of these more sexy projects, like Steve Ross showed here a little while ago, with the Fledermaus fly through and to work out some of the kinks.

This was really the first time -- Andy, correct me if I'm wrong, but this is one of the first times that the AUV was really sent out for its first operational mission, to really go out and collect data in a real-time situation with real-time scientific expectations of the platform and its performance, and I'll talk more about that.

Some of the areas that we decided to hit -- We wanted to hit some of the mid-shelf areas here off of the coast of central Florida. We asked Roger for a prioritized list of areas and he gave us more than we could possibly hit, but that was good, as it turns out, because we had several technological problems to overcome. John also provided a lot of points here in the proposed HAPC, as you can see, and provided for us a kind of cruise track to be able to go through and hit some of those highlights or hot spots.

We wanted to focus on the Miami Terrace, which is a Miocene-age terrace off of southeastern Florida which has very high-relief areas, as we've already seen. The depth ranges from 300 to 600 meters and can be found just south of Boca Raton, all the way down to Biscayne Bay.

We used the Nancy Foster and I didn't mean to laugh at Steve. I hope he didn't hear me all the way at the other end of the table, but we were all fraught with problems with the Nancy Foster. You can't really complain about free ship time, but sometimes you have to, but we were able to use the Nancy Foster, which has on it a multibeam head that we used, and you can see one of the little multibeam strips that we hit through John's highlight areas and so the multibeam on the Foster worked pretty well for us, for the most part, but we had a couple of other issues.

Just some sonar basics, I know some people here are scientists and some aren't and you hear terms like bathymetry and backscatter and I think most everybody knows what those are, but as the ship moves along and collects the bathymetry, that is the difference in vertical relief of the bottom, it also collects a unique set of data that in the early days of multibeam a lot of scientists just thought was junk.

I would encourage and Roger and would encourage you to encourage those who are not collecting backscatter to do it. Backscatter essentially is not only an indication of the signal strength, or the signal return, which gives you the bathymetry, but also the quality of the return. The way that signal comes back to the head will give you a lot of information about what type of bottom is down there.

You may not be able to tell the difference between living coral and dead coral, but you can certainly tell the difference between coral and mud, which is very important as we discuss areas that may not be high-priority areas to include in the proposed HAPCs. I'm going to digress here for just a second and show you what backscatter can get you.

This is the entirety of Gray's Reef National Marine Sanctuary and if you just take these four habitat types here, just a very simplistic design, you can certainly tell where the densely colonized, equal to high-relief, areas are in the sanctuary, where the rippled sand is, the flat sand is, and where the low-relief, or sparsely colonized, bottom exists.

This is a very accurate map. If you go out in Gray's Reef, and it's all georeferenced, but if we pick out this little ledge right here, we have the coordinates for it and you throw over a marker buoy and you dive on it, by God it's there, but there's a lot of ground-truthing that had to go into this. Backscatter by itself is not going to tell you everything. It's not going to give you the whole picture. There has to be, as Steve alluded to, a very significant proportion of the ground-

truthing.

The Eagle Ray, we were really excited. Andy has been talking about AUVs, God bless him, for many, many years and finally we got the opportunity to use the Eagle Ray on this cruise. Some of the capabilities, very generally, are it's manufactured by International Submarine Engineering. It's about seventeen feet long and weighs around 2,000 pounds.

I thought it could go down to only about a thousand meters and Andy says it can go to 2,200 and so it's very deep capabilities and the duration is about thirty hours and it can multibeam at around six knots and you can see here that it has several electronic components inside it. It's got the EM-2000 transmitter, which is the multibeam head, incorporated into it and a receiver. It also has a CTD and all kinds of other electronics, to be able to maintain its courses and depths and be able to communicate with the ship.

The launch process -- I thought you just put a couple of lift straps on the thing and you throw it over the side and it goes and does its stuff and you pick it back up, but it's actually much more complicated than that and I really have to thank Andy and his crew, because even though they met several very difficult challenges along the way, they met each one of them one at a time and this was a great opportunity for them to be able to field test this and to work out some of the additional bugs.

Essentially what you see here is what they call a LARS, or a launch and recovery system. It's got a sliding tray here. You can see that this cradle on which the AUV sits can be pulled out with, in this case, the crane on the Nancy Foster and it just slides right out and the crane operator can boom out with it and then tilt it down.

You can see that right here it's hinged along this end and so what they do when they're ready is they just tilt that down and it slides off and goes along its way, but that whole process, that whole evolution, takes anywhere from thirty to forty-five minutes to complete. They can monitor the AUV in real-time at a station where they can look at the different attributes, the depth, the speed, the heading. They can send it corrections and change things on the fly, in some cases, and so it's a pretty neat little setup.

The shipboard multibeam is inside an area they just call the dry lab. This is Missy Partyka and she's the only multibeam tech onboard, hydro tech onboard, and she's an incredible technician and she's got an entire array of screens that she's watching to collect the shipboard multibeam and these are two of the students that College of Charleston sent us, thanks to Leslie Sautter.

Some of the multibeam that we collected out there, this is the shipboard multibeam and this is in an area in the Miami Terrace that Roger identified as what we just called AUV Priority Area 1 and you can see that the resolution that we're getting off of the shipboard multibeam is very good. This area here that's blown up is just a very small portion of this area down here and the next area that I'm going to show you for comparison is just a little strip that's taken out of right here that we're going to use for comparison between the shipboard and the AUV.

I call this what a difference a day makes or many, in terms of technology, how far we've come

with what we use and how we use it. This is a very bad picture, but maybe it says more than it wanted to, but the single-beam -- We've been using single-beam sonar for such a long time to map areas and doing the very best that we can to try to figure out how to map those contours and make them into something that's meaningful, but visually it's just -- It almost makes you nauseous.

Then along comes multibeam. In this single-beam, you would be lucky if you got thirty meters of resolution to be able to tell the difference between these different mounds. The shipboard multibeam, depending on how you tweak it, can give you about two meter resolution, at its very highest, and you can see that this is an area that was also mapped by the AUV.

This is the shipboard multibeam and you can see some of the sinkholes that John was talking about and if you look at the Eagle Ray mapping of the same area, you can see that it picks up the same sinkholes, but what you really can't appreciate from this PowerPoint slide is just how deeply into this image you can go.

We're talking sub-meter resolution at its best and so it can resolve differences in bathymetry that are less than one meter. You might not want to do this for every instance, because it takes up a lot of the storage space on the AUV in terms of memory, but certainly if you can go over with a lower resolution system, like the shipboard multibeam, and get a lot of the mapping done and then identify from those high-priority areas to go back with the AUV and map in much higher resolution, I think you get the most bang for the buck.

Just some of the things that you can see, we decided to look at one of these sinkholes. This sinkhole right here -- The beauty of the data, as Steve was suggesting, is that you can manipulate it.

You can turn it around on different edges and look at it in different ways and so we took this sinkhole and looked at it and you really can't resolve the bottom of this sinkhole very well from the PowerPoint, but right down here is the bottom of this hole and the bottom -- From this level here down to the bottom is about forty meters. It's 120-foot deep sinkhole, or karst topography, that exists out in this area. It's just one of the more interesting features that you can see from this strip of AUV multibeam.

Some of the challenges that we faced, we lost three days to Tropical Storm Barry before we ever left port and so Roger is calling us up every twelve hours and saying are you going yet, are you going yet, but then finally when we decided that we were about ready to leave, we had a couple of days lost to personnel issues.

They were understaffed in their engineering department and we couldn't leave port. We spent a lot of hours though in the meantime troubleshooting some of the communications problems with the AUV and so it's lucky that we had some downtime operationally before we got out there.

With four days left on the water, we lost the CTD and the redundant CTD didn't work and so we essentially lost four days of multibeam mapping because we couldn't collect the data that's necessary to be able to calibrate the information that's coming from the multibeam and so

hopefully some of these bugs can be worked out. Roland Ferry and I were talking earlier and we would like to think they're lessons learned, but maybe they need to be lessons remembered from year to year. We're working through some of these things, some of these problems, with the ship.

Even power outages, you want to see somebody pucker up quick, watch an AUV technician with an AUV down at 950 meters when you lose all power to the ship and communications with the AUV and so we met quite a few challenges, but we realized some very nice accomplishments as well.

We got about fifteen square nautical miles of high-resolution multibeam in the Miami Terrace, about 200 linear kilometers of mapping through John's deep coral hotspots, we got some very necessary field testing done on the AUV in real-time conditions and with expectations and we hope that in future cruises that that will help out and we were certainly glad to do it.

Outreach efforts were provided on a daily basis back to the South Atlantic Council's website and updates on the cruises were posted every day, thanks to Jocelyn and everybody back on shore, Roger and Myra and Tina. Roger was supposed to be on the cruise, but there was something about an incident with a ladder and a broken ankle, but hopefully we can get him back out there at some point.

Partners, eleven different entities came together to help us conduct this cruise and I think in times of lean, and I know we've all suffered the budget crunches in the recent past, but I think that's the time to come together and kind of cook what you can with what everybody brings to the pot.

I had some ship time and Roger had the need and Andy had the AUV and the need to test it in a real-time environment and John certainly provided lots of information on places to go. Jocelyn came along from Fisheries. We had OAR, Fisheries. If we had had Weather Service and -- I think just Weather Service and we would have had all of the line offices represented in NOAA and we could have called it a One NOAA Cruise. We did anyway, but -- We invited them, but they just didn't come.

The College of Charleston provided us with a couple of hydro technicians and these were young guys that were excited about learning more about the technology and certainly Tina and FWRI helped us out and Craig Harmack was on the cruise and he was a great addition. We got a hydro technician from NOS, from the bathymetry group out there, who was just as excited as he could be about being able to participate with the AUV cruise and so now we've got people from NOAA Hydro that are excited about this technology as well and it's not just going to be used for mapping.

South Carolina DNR was out there. Dr. Betty Winter was onboard with us and certainly all the fine folks on the Foster helped us out as well and so hopefully, as Roger said, this is just the beginning of collaborative efforts that can happen in the future and I think as long as we all have a basic understanding of what each other's needs are and what each other's resources are that we can draw upon them from time to time, to get more accomplished then we might otherwise.

Besides, who wouldn't want to help out a guy like this? Any questions? I would be happy to field them and if not, I'll defer them.

Mr. Banks: Is this hydrographic data available to outsiders?

Mr. McFall: You would have to ask Roger that. He and Tina are kind of the owners, as it is, right now, but I think the intent is that we need to share that information and certainly that's open for discussion, but as more and more people are working in these areas, I think it should become at least scientific domain.

Mr. Pugliese: To that specifically, I think we'll get into a little more discussion of that when Tina gets into the developing IMS system, because there definitely is the intent to not only build this information to support management activities, but also work with researchers and other managers that may be able to use this information to support broad information in the southeast.

There's opportunity, I think, to do that with as we continue to refine and develop and expand that whole internet mapping system. It may be just internet mappings, but it's really building a comprehensive mapping component for this whole southeast region, of which this information will be part of that.

There will be very clear avenues whether -- Because that's one of the avenues we want to have some of these so that they can be accessible and pulled off as JPEGs or TIFs or whatever, but also have a researcher capability, access points, to be able to get to the more refined data, in addition to other information, habitat distribution and species and the other associated information, but we'll get into a little bit of discussion later on about the IMS.

Mr. Shepard: One of the tests and evaluation phases to get our data management manual together for the Eagle Ray was to make sure we had metadata records and the best records we can be put on a clearinghouse of some sort and so we're in the process of getting there, so that those things can be shared within the limitations of a research program and scientists who need to use the data for publication. There are some restrictions there and we're still working through that with our data manual as well.

Mr. Croom: I'm just curious, and I guess for John and Greg both, were there any results that you got from the cruise that provided any surprises or revelations to the work that you've done, John, in looking at some of the hotspots?

Dr. Reed: Actually, I haven't seen the data. I was supposed to go on the cruise, but then I had another ongoing Harbor Branch cruise and so I've been waiting to get the data processed, to see how it overlays with our previous data. For your linear 200-mile transect, that was with the shipboard?

Mr. McFall: Yes.

Dr. Reed: What was the north and south end of that trip?

Mr. McFall: I'm going to say somewhere off of Jacksonville was about where we started and then all the way down to the Terrace.

Dr. Reed: How wide was the swath?

Mr. McFall: It was just a single swath and so it was three times water depth and the water depth changes through there a bit and so at one point --

Dr. Reed: It could be 1,800 meters wide, maybe.

Mr. McFall: Correct.

Mr. Pugliese: As a follow-up to that, I think the biggest new point was that in creating the track, it basically created track over those fathometer readings, to be able to identify and validate the actual existence of pinnacles within the systems.

What has happened is that there's even more -- When he showed that range of 300 pinnacles within at least the bounds of the effort on this cruise, there were even more new ones that weren't even identified in that list of fathometer tracks and so it's showing even more extensive pinnacle structure even within that one swath of area. It will provide target areas for submersible dives, more refined target areas, which will be provided to John and researchers as time moves forward.

Dr. Rader: A question for Greg maybe or for Andy maybe or for all of you. What are the prospects of the South Atlantic region acquiring AUV time or AUV and ship support time in the coming years?

Mr. Shepard: The AUV is still available and is going to be operated or placed at the University of Mississippi, which owns the vehicle, starting next year. That doesn't mean it's not available for use. What we'll have to do is come up with, at least for 2008, $5,000 a day for day rate and then to be seen what the day rate would be after that.

By comparison, if you wanted to go rent the Yugan vehicle, that's $90,000 a day and so it's a pretty cheap venture, especially if we can get the ship time. Certainly we have to come up with that, but it should be available and we just have to schedule with the Mississippi people.

Mr. McFall: In terms of the ship time, in answer to your question, that's certainly something that we can help out with from time to time and I hope George is not ready to throw something at me, but I think we certainly have a commitment to play in a larger arena than just Gray's Reef. We've been very lucky to get and compete for ship time every year, but certainly we can start writing for South Atlantic-specific cruise time, to be able to support the efforts that we have.

Mr. Pugliese: Just as a follow-up to Andy, I was able to attend Oceans 2007 this year and one of my biggest efforts was to spend a good amount of time with Vernon Asper, who is essentially the technically the owner at the University of Southern Mississippi of the AUV, and he assured me wholeheartedly that their intent is it's a NOAA asset. They built it and we had some opportunity

to get the multibeam actually put in it, through the collaboration and resources from the council, and the intent is to support council activities in the future.

He even went far beyond that. Their intention is not only to do that, but to get into an exciting phase of going far beyond multibeam capabilities and incorporating acoustic capabilities and potentially incorporating a camera system that they are apparently going to be able to develop and put on it, as well as even things such as fish counting sonar capabilities.

There is concepts that may go far beyond even just the base mapping, which will even get into characterization and validation of species, and it really opens up the ability to use that even in targeted -- Say, for example, targeted mapping of a spawning aggregation. Once these type of technologies get added and expanded, this type of vehicle, and additional ones that are already, I know, planned in the future, are going to provide amazing amounts of information, far beyond even the mapping capabilities.

The bottom line, at least from that end, is that hopefully yes, the South Atlantic is a high priority focus area and even to be able to use a lot of these other capabilities as they get expanded into the system. I'm hoping that holds true and it's going to be just our challenge, as the NOAA resource becomes put on the table, that we are able to get together proposals that highlight how important those types of capabilities and mapping needs and the future are.

I'm hoping also some of the collaboration in the entire southeast, through the Southeast Regional -- Well, two things, the Southeastern Alliance that's developing, the governors' alliance that is in the works in the background, as well as what I was also thinking about was the regional associations for ocean observing systems, that these types of assets be acknowledged as part of that and have the ability to get funded to be part of not only mapping, but characterization of the environment, the water column system, et cetera.

I think that hopefully also will get pulled into and we'll be able to tap in on resources through those systems. If we work altogether and keep these collaborations going, there's a lot of avenues, I think, that this asset could really make a big difference and many applause to Andy for shepherding this forward, literally, over many years. That was bad, bad, and it wasn't even intentional, really, for a number of years. It's good to see that, as Greg has indicated, this first real opportunity for such a broad collaboration.

Mr. Blair: As noted earlier, we're inserting a presentation at this point. George Sedberry will be giving us an update on the mapping and characterization on the Charleston Bump and Blake Plateau.

Mr. Sedberry: Thank you. This is going to be really kind of a superficial update of what we've been doing out on the Charleston Bump. I think I've addressed this group a couple of times with updates on the Charleston Bump and the research that we've been doing out there since about 2000, or even before that.

I just want to kind of give you an update of what we've been doing last year and this year in terms of habitat mapping and some of the ocean exploration work we've been doing out there.

I'm really glad that both Greg and everybody has covered some of the technology involved and some of the technical difficulties involved.

My interest on the Charleston Bump stemmed originally from the interest in the wreckfish fishery that I've been studying for a number of years and so I've kind of concentrated on the wreckfish grounds and not coral in particular, but we, of course, have run into a lot of coral out there, as everybody has.

This slide here, this shows the HAPC. You can see on this slide the deepwater coral HAPC. The areas where we've caught wreckfish before are the blue dots. Areas where we've done submersible dives are the red dots and then the red crosshatch area is where we've done a lot of our sonar work associated with the wreckfish grounds.

As Steve and a lot of others have pointed out, you know in the old days we would have had these nice multibeam images of this Charleston Bump feature and some of the other really spectacular relief out there and we would go oh, wow, look at that and then when multibeam came along, we would go holy mackerel, look at that.

It really gives us this really nice 3-D image that we can overlay and put all the previous work that we've done and it helps direct future work and helps put previous work in perspective and so it's a really nice tool. This shows a scarp that's actually -- If you look at the location of it there, it's really off of Brunswick, Georgia, but it's part of the Charleston Bump and now that I've moved to Georgia, I might think about renaming the Charleston Bump.

This shows the area that we've mapped so far with multibeam sonar. It's kind of out of context, because there's not a chart on there, but this is kind of off of Savannah here and this is off of Brunswick here and using Fledermaus and all the other nice toys that are available, like everyone said, we can rotate these and look at them and get really nice images of what the Charleston Bump features look like.

This is, again, the entire area that we've mapped so far and then a transect across it showing the kind of relief that we're seeing, up to 150 meters or 200 meters of nearly vertical relief in some places. The wreckfish grounds that I was initially interested in, the wreckfish seem to be more associated with the lower relief stuff that's not in the main access of the Gulf Stream and I think they have a hard time maintaining themselves and these really nearly vertical really shear rock faces are in such strong current areas that we're not seeing a lot of economically valuable fish associated with them, but, of course, it's an important habitat for a lot of other kinds of things.

Again, another transect here across some of the features. This runs from 500 meters down to 620 meters and so quite a lot of relief. I have to show my movie, too. Most of the data that you're looking at here is old NGDC, National Geophysical Data Center, data and it shows that the shelf is really flat and smooth and that there's a couple ridges out there on the slope that Brooks and Bane described back in 1978, but when you look at those ridges in detail, which we've been able to do with the multibeam, you can see that it's lot more complex than we've ever known before and that the fish are really associated with this very complex bottom here. You get the idea that this new data that's coming out just gives us a much better picture of what the bottom looks like.

Again, I was interested in, particularly from the wreckfish point of view, what kinds of habitats do wreckfish live on that we can do with submersibles and ROVs and visual mapping and then using the sonar to rapidly map how much of that habitat is out there, to get some idea of what size the resource might be.

We have both kinds of data now. We have a lot of sonar data in the region and we have places where we've caught wreckfish and then we have places where we've caught wreckfish for which we don't have sonar data, too. It would be interesting to map these to see what kind of habitat the wreckfish prefer and then, again, using these tools to map the whole region, so we can get an idea of what size the resource might be.

As Steve and other people are looking at, there's a lot of different kinds of habitat features out there and there's different species of fish associated with different habitat features. We're looking at using the submersible data to go along with the sonar data to look at correlations of different fish species with different kinds of habitats, including deepwater corals.

There's also, as Steve pointed out, a depth component. When you look at these scarps that are in shallow water, they're dominated by wreckfish and when you look out at 900 meters or so, you see very similar kind of scarps, but you don't see any wreckfish out that deep. They're replaced -- They're not replaced, but there's just other kinds of fish out there and so we're trying to look at not only bottom complexity and bottom type, but the depth that enters into it.

The hydrography, these really high-relief features, this is 400 meters on top and about 600 meters on the bottom. The Gulf Stream flows over it and it actually creates standing waves in the Gulf Stream that you can see at the surface. You always know when you get to this spot because you can spot it from miles off, because there's waves breaking over it or ripples on the surface.

It's a really spectacular feature and it really affects the oceanography, too. We think it's not just the bottom type and the coral type and the depth, but maybe the currents are affecting the fish distribution as well and we hope to be able to look at all these factors by analyzing the videotapes, which Kim Wieber is doing here for her master's thesis, and looking at the bottom type, coral cover, and hydrography to see what kinds of things affect the fish distribution the most.

The Charleston Bump does affect the hydrography and so we're also putting out satellite track drifters on this site. We're finishing this work up. We've put out satellite track drifters on the wreckfish spawning grounds and we know from DNA studies that wreckfish do drift across the North Atlantic, but the Charleston Bump also sets up this Charleston Gyre, which brings Gulf Stream water in close to shore, in a counterclockwise circulation, which we think is important in the life history of other fish as well, besides wreckfish.

We know things like gag grouper and a lot of the groupers, a lot of the shelf fish, will go out to the edge of the continental shelf and spawn, where the red triangles are. When we look at plankton samples and look at the distribution of grouper larvae in the plankton, they're way out

there beyond the hundred-fathom curve. They're out here in blue water, but somehow they make their way into oyster habitat or seagrass habitat as juveniles, to spend the first few month of their life.

We think that the oceanography set up by the Charleston Bump helps them to do this and so we're looking at that as well. We've deployed drift bottles on the spawning sites on the day that we think the fish are spawning or the day that we know the fish are spawning, really. We've got it pinned down pretty well and we see where those drift bottles end up.

A lot of them -- For gag spawning off South Carolina, those drift bottles end up in the North Carolina sounds and in the seagrass beds. We also -- We're getting school kids to help us with this drift bottle experiment too and so we're involving an education component as well.

We're doing a little more high-tech stuff, too. We're putting out satellite track drifters not only out on the Charleston Bump, but in the oceanographic features that are created by the Charleston Bump. Again, the red triangles are gag spawning locations. They spawn on full moons in March and April and that's when we go out there to deploy these things and we see that there's a way that these larvae don't just get carried off by the Gulf Stream. They get retained in the system and even drift right into the sounds of North Carolina. This Charleston Bump feature also sets up an oceanographic pattern that helps recruitment of fishes on the continental shelf as well.

Again, this is just a close-up of some of those drifter tracks, showing them coming into the North Carolina sounds. It takes about thirty to forty days for them to do this, which is the larval duration of gag grouper. The groupers figured this out a long time ago and we're just now figuring it out.

With the council working on the marine protected areas, we're interested in looking at the connectivity, oceanographic connectivity, between these protected areas as well and the Charleston Bump, because of its affect on the Gulf Stream, helps these areas stay connected, we think, between spawning locations and juvenile habitats as well. The drifters are giving us some data on the connectivity as well of the proposed marine protected areas and we're looking at the proposed MPAs, where we know fish are spawning, and seeing what the circulation pattern around those is.

A really interesting pattern we see here, this is for snowy grouper, which we know spawn in the Oculina Bank off of Florida, and drifters that we put down there during the summer, when snowy grouper are spawning. That drifter gets carried all the way up to North Carolina, really, and then comes back down to Florida to shallow water, which is the juvenile habitat of snowy grouper. It does this in fifty days, which is the larval duration of snowy grouper.

For snowy grouper that are spawning off of South Carolina, the pattern there that's set up by the Charleston Bump, the water just circulates for forty to sixty days right around the spawning ground, between the deepwater spawning ground and then the shallower juvenile habitats on the shelf, retaining those larvae in the system. Again, this is all set up by the Charleston Bump and how it affects the oceanography.

This is kind of an interesting little video that shows -- We put out drift bottles made by the school kids in the Oculina Bank and on the same day, we put out a satellite track drifter. The drift bottles washed up on Jacksonville Beach about a month later and were returned to us. They were covered with barnacles and you might think that the drift pattern was directly onto the beach, but the satellite track drifter that we put out at the same time shows that it went all the way up to North Carolina and then back down to Jacksonville Beach in about -- I guess that was forty to fifty days. There's the dates right there.

The other thing that we're doing on the Charleston Bump is looking at movements and dependence of large pelagic fishes around the Charleston Bump, billfish and sharks. We've done a lot of satellite tagging on the Charleston Bump and those fish, most of them don't stay there. They're transient. Some of the swordfish do stay and some of the sailfish do stay. Most things move off to the northeast as the water warms in the summer, but some things, like scalloped hammerheads and sailfish, do move to the south.

The sailfish, for example, hang out around the Charleston Bump in the summer and then for the winter they go down to the Bahamas, which is kind of nice way to live, I guess, and then come back the following spring to the Charleston Bump, to take advantage of a lot of food production there caused by upwelling and caused by the bottom feature.

This is, again, sailfish satellite tagging data and doing some GIS analysis on densities of where they're spending most of their time and, again, this is the first quarter of the year, second quarter, third and fourth. In the warmer months, they're spending their time around the Charleston Bump, but, again, in the winter, they're moving down towards the Bahamas and we have tags that we put out on a couple of sailfish that have stayed on long enough to see that this pattern is repeated, at least for a couple of fish, and probably for many of them.

As Steve is doing, we're also looking at trophic structure and, again, concentrating on the wreckfish grounds on the Charleston Bump, what enables that habitat to support this large population of these really large fish in depths that don't produce much food and so Sarah Goldman, a graduate student at the College of Charleston, is looking at the feeding habits of fish that are caught in the wreckfish fishery, wreckfish, barrel fish, red brim, and other bycatch species.

I just wanted to throw in a couple of other things that we're doing. Again, we're doing these multibeam sonar cruises on the Nancy Foster and we've had the same problems that Steve has had and so I won't go into those.

We've heard enough about that, but we're also mapping some of the proposed MPAs out on the edge of the continental shelf that are important spawning grounds for many of the shelf species and for which the Charleston Bump oceanography helps influence their life history. We've mapped some of those areas as well.

A couple of interesting things. This is a snowy grouper and blueline tilefish spawning ground here that are interested in mapping. You can't really see on the map here, but it's off of Charleston. I wanted to see what those habitats looked like. We had done a couple of

submersible dives and then when we did the multibeam sonar, this is what it looked like. These are the spawning locations and then up here on this little plateau, we found these really straight tracks that almost look like trawl tracks, but they're a hundred meters wide.

It looks manmade, but after studying them for a while, not me, but geologists at Coastal Carolina University, Paul Gayes and some of his post docs, determined that these are iceberg scours off of South Carolina.

The ice sheet during Pleistocene was about 500 miles north of Charleston, but icebergs could break off of it and they run into this shallow plateau here, about 175 meters deep, and just get dragged across it and then they meander a little bit in this deep area and then they ran into this slope and slow down again and cut these very straight tracks, some of which are eroded by the melt water running back off of them. Anyway, we thought that this was really cool, to find iceberg tracks off of Charleston. Some of them are fairly deep, ten to twenty meters, and about a hundred meters wide.

We're continuing, we hope maybe even this year, if we can get some make-up time, which we've been told we can get on the Nancy Foster, to continue mapping these shelf-edge reefs that are important spawning grounds and are the proposed marine protected areas. We've got a fair amount of it covered, but as you can see, there's a lot more that needs to be done.

We've got these very detailed three-dimensional images from the multibeam of what these spawning grounds look like. We're towing sidescan sonar simultaneously, so we get a nice picture of actually -- You can see corals and smaller rocks and holes that are excavated by spawning fish as they build nests.

We can see those kinds of things using the sidescan sonar and again, we're bringing all this into the GIS that Tina is going to talk about and these show spawning locations for scamp and gag grouper, mainly, along that shelf-edge reef off of South Carolina. We're able to take all this historical data we've been collecting for thirty years on spawning locations and see what kinds of features are really important in the spawning of these fish along the shelf-edge reef.

When we look at our historical data, we've done a lot of sampling along this reef here and we've done sampling out here and caught a lot of reef fish, but we haven't mapped that habitat yet and so there's more of this kind of reef that occurs out there and so additional mapping is needed and that's it.

This last slide here shows the areas that we've mapped in the last two years, 2006 and 2007, using the Nancy Foster, the shelf-edge reef, the slope reef where we see the iceberg scours, and then the Charleston Bump area out here. Thank you.

Dr. Rader: Questions for George?

Mr. Street: This is just a comment to add on to what he was saying about the gag. We are just in the process of completing digital aerial photography of our estuarine shorelines, aimed primarily at mapping SAV for the entire coast of North Carolina, and ground-truthing is just about

completed as well. We've done a good 90 percent of the estuarine system in the last six weeks.

Mr. Sedberry: When these marine protected areas go into place, they're going to protect some of the spawning grounds for gag that are off of South Carolina, but those gag, they spend the first few months of their life in the estuary, and so if you're missing that link to where they're found in the estuary and how much of that estuarine habitat exists in the estuarine reserve or some kind of protected area as well -- If you're missing that link, then protecting the spawners isn't going to help you very much and so it's important to complete the whole life cycle and know what habitats that we do need to protect.

Dr. Rader: Thanks, George. This was great. We've heard a lot more and we're scheduled to break now for lunch. Does anybody have any comments you would like to make on the record, given what we've heard so far?

Remember that we've got an additional series of information presentations through the afternoon that we'll digest overnight and come back and put together our recommendations tomorrow, but one more chance to ask questions of people you've heard from this morning. If not, then catch them at lunch if you can and otherwise -- We're actually going to break for an hour-and-a-half, in case you don't want to eat on site, to give you time to get out and back, but we will start promptly, really, really, really promptly, at 1:30.

Mr. Blair: If we go to 5:30, just remember that we gave you another half-hour at lunch.

(Whereupon, the meeting recessed at 11:55 o'clock a.m., November 7, 2007.)

The Joint Meeting of the Habitat and Environmental Protection Advisory Panel and Coral Advisory Panel of the South Atlantic Fishery Management Council reconvened in the Topaz Room of the Charleston Marriott Hotel, Charleston, South Carolina, Wednesday afternoon, November 7, 2007, and was called to order at 1:40 o'clock p.m. by Chairman Doug Rader.

Dr. Rader: Let's reconvene. We're only ten minutes late. We're going to begin the afternoon session with a two-part presentation by Steve Ross and Tina Udouj, looking at the SEADESC program and the integration of that methodology into the habitat and ecosystem IMS. As you know, we've been working on it for a long time. Steve, if you are ready to lead off, we would appreciate it.

Dr. Ross: I took a three-week cruise this summer and did my laundry during the cruise and realized I couldn't find my thumb drive and then several days later I did find it. It had gone through a complete laundry cycle, washer and dryer, and still had everything there. It gives new meaning to the word "clean data" and so you can dive with them, I assume, and then wash them.

This is layout for the front and back cover of what's going to be called the SEADESC Report. It was an initiative that we started a year-and-a-half ago to try to make some sense of a variety of habitat mapping data, particularly visual data that was collected either with ROV or submersible, and our objectives, as I just said, were to continue characterizing and mapping habitats,

particularly focused on deep-sea coral or hard bottom habitats.

We only used a subset of the data available, those data that were funded by NOAA Ocean Exploration, and from the years 2001 to 2004. We had a task of developing a methodology to deal with visual data in a GIS sort of format and actually, one of the main reasons this project came about at sea was I realized I had some information from my colleagues about where deep-sea corals and other interesting places were located and they had some of the same information from me and we tried to use -- Several of us have tried to use that at sea to get to interesting spots, to save ourselves some time and just looking.

What happens though is when I got to these spots, I never was sure I was looking at exactly the same thing my colleagues had seen and I started to think that there needs to be some mechanism for us to be able to share basically proprietary information with our colleagues and with the management community without jeopardizing our ability to publish these data.

Sometimes it takes a couple of years, or sometimes longer, to get publications out, yet there certainly is some amount of information that we should be able to release and so this project was an attempt at that kind of compromise. Our hope was that the products would be useful to researchers, as well as the management community. We were looking at one of the objectives of this thing to be able to help coordinate regional management, potentially, and the project might grow beyond just habitat mapping.

The subset of data that we were looking involved, as I said, Ocean Exploration funded projects. We only looked at the data deeper than 200 meters. There's more dives than indicated here, because a lot of these dots overlap. We only looked at, in the first iteration of this project, my dives from 2000 to 2004. We weren't able to fit that one in and George's projects from 2001 to 2004. There are lots of other data out there that fit within this project umbrella, but that funding, we tried to keep it in a manageable system timewise, because of the amount of funding we had.

Basically, those data allow us to characterize ten areas illustrated in these white boxes. There were a few miscellaneous dives outside those ten areas and we analyzed sixty-six dives from those two projects and that will be the main body of this report. It's at the printer now, I think, and should be out before Christmas in hard copy format.

I know you can't see or read this very well, but one of our first tasks, as we developed methodologies, was to come up with some sort of basic, general habitat classification scheme. The intention in this classification scheme was never to meet all the needs of every researcher, nor to be particularly detailed. It was developed with the idea that people could classify habitats to some level of utility fairly rapidly and fairly consistently.

Our goal was to try to characterize the main variability in habitats on the continental slope and so we applied these thirteen habitat types to those sixty-six dives and basically, the process was to take our submersible track or you could take any piece of information, whether it's a point source or a transect. The submersible tracks, as they are delivered from the ship often are pretty messy and there's a process involved in cleaning those up into some sort of track that allows you to see where the submersible went.

We plotted that in three dimensions and then we georeferenced the video data from those submersible dives to that track and applied these habitat criteria so that we now have a map of habitat types across that submersible dive.

You can't read this very well, but every single submersible dive -- This is a page from the report. Every single submersible dive resulted in basically two pages, a series of metadata information here, indicating the project, the kind of data that were collected, whether they were videotapes or not, whether there was CTD data collected.

There's a small map that references that spot in general. There's sort of a 3-D map and these things are crude, because they rely on the available data at the time for bathymetry. As we gain multibeam data, these maps can become much more detailed and the habitat types are color coded here and you can't see it very well because this room is so bright, but the submersible track goes up this coral mound and the colors change as the habitat changed.

At various places, A, B, C, and D, are georeferenced photos that give examples of what some of those habitats look like. There's a brief overview of what was seen in the biology and the physical environment and some comments sometimes on the quality of the tapes. The idea was that every single dive would have these same two pages and when multiple dives coincided in an area, like one of those ten areas, there's a summary page that tries to wrap all of that together, showing all the dives in a particular area and a few photographs and some more information about that region. That much is done.

We're still trying to move forward with the project, to product more enhancements to the database. The data are currently in Microsoft Access. Eventually it could be a searchable database, either on the web or via CD. There are a lot of different things you could do with it. You could have fly throughs of all these dives or you could have a number of videos and photographs tied to this kind of archive.

We continually need to refine the analysis protocols. There are probably some easier ways for us to do this kind of work. We had a committee that tried to manage how the project went, so it wasn't just one person trying to put this together. There are a lot of other data that can be added to the SEADESC project and NOAA, at least OE at one time, was looking at a way for this to replace their at-sea data gathering activities and they're still evaluating that. I should have made this flash in big red letters. Like everything, we still need some additional funding to move this forward.

However, I do have funding to take it one more step, at least some way down the path, of evaluating all the museum records for deep-sea corals in the southeast. It's fairly easy to accumulate these dots and a number of different agencies have done that, have plotted them for various kinds of purposes. The problem with that is you don't really know what you're looking at.

Some of these dots are inaccurate and some of them are simply not good. When you go to a museum and actually look at some of these specimens and look at the detailed data that often are

not available electronically, you find out that there are errors in the database, you find out that perhaps these dots are represented by long dredge tracks, maybe taken in the 1800s. The coral record may be a fragment of rubble, which is dead coral, or it perhaps could be a living coral. You just don't know.

Our take on this part of the project will be to actually physically examine and photograph the records that are behind each one of these dots and put those into the database, so that when you look at this kind of information, you can put some kind of quality criteria on it and so its utility should be enhanced and that's maybe all the introduction to that project that I have now. I don't know exactly where you're going to go with it or whether we should have questions.

Ms. Udouj: If it's okay, I would like to wait and present some of the SEADESC materials as I talk about the deepwater habitat GIS that we're developing and so if there are any questions for Steve about the SEADESC project in general, I think now would be a good time.

McFall: Steve, can the SEADESC model be used for other shallower habitat types? Do you see the utility of something like that for use in shallower areas in the South Atlantic Bight or southeast?

Dr. Ross: Yes, that was the original intention, was that it would go beyond deep-sea corals. Now, probably what would have to happen is the general habitat classification would have to be revisited. It may or may not work in shallow areas. There may be some additional habitats, but the idea was that it could be applied to any kind of visual data anywhere.

This will be either a hard copy or an electronic tool that any researcher could pick up and say now I see what he did and I see where he went and a little bit of what he saw and I would have found that extremely useful, if I had that at sea, from other people I knew that had been to these places.

Ms. Stiles: I'm curious, is the text of the database searchable? Can you look for particular words in the fields that you've entered?

Dr. Ross: I'm sorry, Margo, but --

Ms. Stiles: Is the text of the database searchable? Can you look for particular words or do you need to know sort of where you're expecting to find particular records?

Dr. Ross: You can search for any word. We haven't really applied -- We know that can be done, but we haven't really applied that to the database, but that was one of the reasons we did it in that kind of format. It was awkward to enter the data in some ways, but the idea is that it would be searchable. If you wanted to find all the coral sites off of a particular geographic location, they would pop up.

Mr. Pugliese: I think what we wanted to do is step back. There was one thing we were going to present before we wrapped up pretty much the presentations on the updates on habitat information and research activities. John had compiled an updated or some new video footage

off some of the newer cruises that I think it probably would be worthwhile for the group to see, identifying other species use of the areas and unique habitat. If we can go ahead and show that and then we can move into the ESDIM presentation after that, if that's okay with --

Dr. Reed: This is just about an eight-minute video just kind of highlighting the various habitats that I spoke about earlier, both the deepwater lophelia sites, the Miami Terrace site, and the Pourtales Terrace site. You can't hear the audio and so it's just the movie there.

This is a camera site that we placed on the Miami Terrace and this is near the wreckfish site and so we had placed a time lapse camera for a week and we had this crab trap that we placed out and also an acoustic recorder. This deepwater lophelia site there seemed to be a breeding ground for that type of shark, dogfish, and a lot of the sponges and even gorgonians that we're finding out there. Right now, we're putting together a paper. There's three new species of this glass sponge, or type of glass sponges, three new species, one new genus.

Ms. Brouwer: I'm sorry, but it appears to be stuck on this area.

Dr. Rader: John, would you like to tell us what we missed?

Dr. Reed: A giant squid came up and ate the submersible. Actually, we were attacked a number of times by swordfish, actually, in the sinkholes and I had a few videos showing both the golden crab and the royal red shrimp within the coral habitat. They're both in the coral habitat, as well as away from it, but that's fine.

Dr. Rader: Tina is going to present next on the ESDIM Program Deepwater Habitat Completion Report.

Ms. Udouj: While this is closing down, I'm Tina Udouj and I work for Florida Fish and Wildlife Conservation Commission and just recently, I've relocated to Arkansas. I still work for the commission though and I'm still working with the South Atlantic Council on their IMS and different GIS projects.

Today, I'll talk about the ESDIM Deepwater Habitat Mapping Project. Hopefully most of you are familiar with the SEAMAP bottom mapping project. This effort collected habitat data in our region, from North Carolina to the Florida Keys, out to the 200-meter bathymetric contour and when they completed this project in 2001, they realized that the next logical step was to move efforts into the deeper water regions.

For our project, we extended the study area from 200 meters, that's the yellow area, out to 2,000 meters, which encompasses this orange area on the screen. This was a multiphase project. Phase 1 identified protocols for defining bottom types in the region. Phase 2 involved collecting or identifying and summarizing relevant datasets in the region and then Phase 3, which I'm mostly talking about today, was the actual process of acquiring those data and processing and mapping the data.

Our partners that we worked with on the project included Harbor Branch, the South Carolina

Department of Natural Resources, the Skidaway Institute of Oceanography and the University of North Carolina Wilmington. The funding source for this project was NOAA's ESDIM Program, which is now defunct, but we were glad we were able to get the funds to complete this project, and the South Atlantic Council provided oversight for the project.

In today's talk, I'll be demonstrating some of the mapping products that came out as a result of this effort. The first product that I'll show is a map atlas series and this was -- We provided all these different formats of maps to ensure that we reached a wider audience. The map atlas series is just a series of compiled PDF documents that have integrated links and so it's very easy for non-GIS users to view all of the habitat data that we collected for the project.

We have another type of map that's called ArcReader project and this is for casual GIS users. There's more opportunity to interact with the data and so it's designed for casual GIS users and then we offer an ArcGIS map document, which is, for lack of a better word, heavy GIS users and then an internet map service, which provides an easy access for all types of users.

I'll show a few examples. The first map atlas shows the bottom type locations for all of the data points collected for this effort and this is just a regular PDF document that most people have Adobe Reader on their computers and can kind of zoom around and check out data and these links for pages are integrated, so that you can zoom around. It's just a nice way to see all the data collected for the project.

Then we have another typical map product, similar to the last one, which shows coded grid cells based on those point locations and then finally, and I'll show this last one, we provide opportunity to look at the original SEAMAP bottom mapping project data and you can view it with the deepwater project data.

There is a few differences in the habitat classifications, but those are defined in the legend below, so that you can tell the differences between the two datasets. The final report is in Attachment 12, I think, on the CD and so you can read more about the project if interested.

The ArcReader project, as I mentioned earlier, provides a little more opportunity to interact with the data. The PDF documents, while anybody can view them, there's not opportunity to turn data on and off and this ArcReader project offers that capability. It's a free software. It's pretty easy to use and you can download it from this website and I'll demonstrate that very quickly as well.

The ArcReader project users can turn data on and off. I've compiled all the data that was used in analysis in this ArcReader project. We can turn on polygonal data for bottom type areas and then the legend changes dynamically based on the data layers that you're choosing and then we have a nice format for people, if they print maps, that you can see who all contributed to the project at the bottom of the screen there.

There's also a few simple tools. You can search for data. If I wanted to see what Reed has done, it would return and some information about data points that John Reed provided. Just a little more functionality offered in this project and it's -- Like I mentioned earlier, it's a free software.

You can zoom in and zoom out and just fun stuff and identify information about all of the layers, if you choose.

Picking a particular point, we can see that that was a special habitat point, information on -- I'm not finding what I wanted to show. There it is, okay. This originally came from the Pompenoe data and just some more information about that particular point. That's ArcReader and it's free and fun and available for anybody.

Then, finally, the ArcGIS map document that was used to compile all the data is offered on a CD product with the accompanying datasets and that offers users the ability to do more traditional GIS functionality and it also gives them an opportunity to view this ESDIM deepwater habitat data with their local data sources or other data sources that are available online. That's a time-consuming project and I won't demonstrate it.

Then, finally, the fourth map product that we are going to make available through this effort is an internet map service. It could be a stand-alone application that would only be accessible by appropriate users that we identified for researchers or managers or it could be incorporated into the habitat and ecosystem IMS. We have to work out the kinks and I think have everybody kind of sign off on the data, that they agree that it's ready to be distributed, and what kind of audience we want to make it available to.

Real quickly, I made just kind of a demo to show today, but all of that data that's available through the ArcReader project, the Arc map document, would be available in an IMS application as well, with the simple tools to identify and query features and print maps. This could change. It could be a part of the larger IMS system or be its own entity.

Our future work for this project, it's pretty much done, but if we do decide to kind of use the ESDIM habitat data as a foundation for building a researcher only site, where we don't have to worry so much about -- We have to have the metadata, of course, but so much about the data sensitivity and its distribution.

Future work would be if we do decide to kind of build this up for researchers only, it would be to incorporate those metadata links, incorporate some images. The IMS doesn't carry over a lot of the relationship classes that were defined in the GIS and so those would have to be programmed in and just kind of customize it with a special header and logos and a disclaimer about this dataset.

I need to finalize the CD product that I've referred to, where all of these different mapping products are available, the final report, the data from individual data partners. It all would be available on a CD and that needs to be finalized and we need to determine how that would be distributed and that's something that I need to work with the council and the major data partners on.

I'll just take this opportunity to acknowledge all the people that helped make this project and the final outcome very successful. I won't read them all off, but they're all there and it was a great collaborative effort and I'm glad, for the most part, it's complete. Thanks and any questions

about this project please let me know. There's my contact information, if you would like to discuss the project or have any questions. Please feel free to contact me.

Mr. Alexander: Are there plans to smash the shallow-water and the deepwater datasets together in the internet map server, so you can access it all at once?

Ms. Udouj: We can do that. Just before going public, we really need to have a sign-off from everybody that they like what they see.

Mr. Pugliese: I think in the beginning discussions of the development of this, the idea was that we definitely wanted to be able to have access and have individual access across all the different habitats the IMS is building, to compile as much as possible. I think there's the opportunity to put various types of process layers at one accessibility and then as this concept of a researcher-accessible point develops, then the more detailed information, the point information or whatever, to build that and it would be available to the researchers, in addition to a lot of other types of datasets. That's, I think, where the power is.

The answer, at least from the developing IMS system for our region, is it's going to be the most useful for a lot of different activities and individuals involved in permitting activities as we develop refined information for essential habitat, background layers for additional deepwater habitat targeting new researchers.

The long answer to a short question is at least the intent is to yes, have them together, which essentially you've already done that, to some degree, and the next is to really make it functional at a number of different levels for access in the future.

Ms. Udouj: Doug, do you have any comments?

Dr. Rader: I don't think so. Steve and I were trying to figure out -- It looks like we're going to -- If we move through the next two or three presentations, we'll be done with this material and we'll have time left and we were trying to figure out how best to take advantage of that time during the day today, to get us done as expeditiously as possible tomorrow.

We were thinking what we could do is actually put up the recommendations from last time. It was basically the Standing Habitat and Coral AP recommendations, against which we would be working tomorrow to finalize the recommendations this time.

Alternatively, we could move ahead in the agenda and leave that hanging and we sort of wanted to leave some time tonight for people to get together and talk about things and be ready to react in the morning to that. I'm not quite sure. We'll keep cogitating on this and so let's go ahead and finish your presentation. Are you going next, Roger, or is --

Mr. Pugliese: I just wanted to pretty much open the discussion, because Tina is really going to be getting into the guts of what actually is accomplished with this deepwater habitat information. In order to pull together a lot of the detailed GIS information that has supported the different iterations of the development of the HAPC information over the years, we had -- Some of it has

been building into the IMS already.

We had a very direct -- Originally, it was going to be a coordinated meeting and it ended up being really a compilation with all the individuals that were doing research or had access to GIS or other information that could be built into the IMS or into a deepwater GIS and provide those directly to Tina, with the intent of bringing it altogether and putting it in the context of the HAPCs and being able to have all these different layers presenting the available information, whether it be multibeam mapping, detailed bathymetry, really the compendium of information that we have.

With that, I'll pass it on over to Tina, to get really into what the presentation -- This is really taking a snapshot of many of the things you've seen by individual researchers and collapsing a lot of those into multiple layers of information supporting the HAPC designation.

Ms. Udouj: Thank you, Roger. The purpose, as Roger just elaborated on, was to compile data to support our coral HAPC designations in the South Atlantic. We wanted to be able to have one location for researchers and managers to access this data that's been compiled and through that process, identify data gaps that could be occurring in the region and to ultimately help manage these resources more effectively.

The primary data sources for this particular GIS effort involves collecting data from recent research cruises, working with principle investigators such as John Reed, Steve Ross, George Sedberry, and the Gray's Reef and South Atlantic Fishery Management Council cruise this summer and compiling some of the data that came out of that effort, using traditional bathymetric data, the vector sources from Coastal Services Center and NCDDC and then part of this project, I downloaded and georeferenced several NOAA nautical charts that I really didn't know were available and it's a better scale than we had before.

John Reed provided some of his bathymetric charts, fishing charts, and then a product from the University of Miami is available in this dataset and then we took all the information from recent benthic habitat mapping projects, such as the deepwater project I just discussed, the usSEABED datasets, some of the SEADESC data, and the original SEAMAP continental shelf mapping project.

This is just a screenshot. I can go into my ArcMap document and we can kind of cruise around and check things out, but just a few screen shots to show the purpose of this effort. Here, we're looking at John Reed's dive locations over the last couple of years. The orange are dives that occurred before 2004 and the green dives show that he's kind of been concentrating his efforts, as he said, down here off the coast of southeast Florida.

In context, you can see that his research drove a lot of the decisions to draw these boundaries where we have for the coral HAPCs. He likes this area off of Florida and I found out why, because he had a nice bathymetric chart.

I think that Greg McFall showed this particular chart earlier and it was an example that could make you seasick, but it does provide a lot more information than any traditional NOAA chart

would have and so John's dives are overlaid on this image too and this, as Greg mentioned as well, helped them target the AUV sites during that recent Gray's Reef/South Atlantic Fishery Management Council cruise.

This is that product from the AUV. It's wonderful and beautiful and that's just an overlay of those two, to show that while this traditional vector map underneath was not exactly perfect, it was pretty good. Then this is just another image with some of the deepwater mapping project, the ESDIM data, overlaid with John Reed's dive. From that ESDIM data, then you can find out more of how that data was collected and what he found there.

Real quickly, this is just some of the data that George Sedberry provided when Roger asked recently and so this is some of the information that's been collected over the areas that they're targeting in the Charleston Bump region and this is just a few of the SEADESC samples that Ross provided and so it's kind of a good range geographically, showing some of the capabilities that SEADESC can do, and that's a particular dive that's classified and you're zoomed in very closely at this point.

This is a 3-D product that we really won't have that capability to portray in IMS or even within my ArcGIS product. He's got some fancy stuff. I think ArcScene is required to view this kind of data, but it's a really nice product and perhaps we could provide links to his final publication with a corresponding dive number, so that users could view this data and then gather more information from the comprehensive SEADESC publication.

Now I'll show that ArcMap. I had this open earlier and I apologize, but during the movie, I thought it was taking up too much resources. I think this demonstration will help answer a lot of the questions that have been coming up through the day. It really makes me excited to be in the room and to hear these discussions and knowing that I can answer that and I've got the data right over here.

Like Roger said, we've asked for the scientists in the region to kind of provide data they've been collecting over the last few years and this area here, I've got a lot of information on the screen right now and I'll try to turn it off, but George Sedberry provided this information. These shape files show the distribution and the efforts for OE cruises recently.

Then we have some multibeam products that you can see and he had the nice fly throughs for these areas. It really demonstrates that these coral habitat areas of particular concern, we do have a lot of data and we are working with the best available science, I believe, to make these recommendations for these areas to be protected. That was the George Sedberry data. Let me --

Then from point locations that John Reed has provided, they targeted particular tracks off of Florida and that recent Gray's Reef cruise provided one long swath of multibeam from the Nancy Foster and this is just an example of what that information provided. You can see lots of pinnacles, information that wasn't available before and really provides lots of good insight to what can be going on here. It's just a little hint. I think that's a kilometer across and ten-meter resolution.

Anyway, this goes on for miles, but then we'll zoom in on the AUV stuff. This is the resulting product from AUV and there could be more data. I think definitely there's more data that was collected on this cruise, but this was the only -- These two data sources, the one from the AUV at one-meter resolution and then the long swath of multibeam, were the only ones that were processed enough for me to be able to work with.

Just lots and lots of great information all in one spot. This could be the foundation for that researcher site that I discussed earlier. I've got basically another IMS site that has that same data available that we could distribute on the web, but to a more narrow audience, due to the sensitivity of some of these datasets.

This, again, would have to be further customized and these data layers grouped into meaningful categories, so you wouldn't have to scroll like I was just doing in that ArcMap document, but we've compiled the usSEABED data, as I mentioned earlier, and we're also working with Tim Havilland at NOAA and he's recently provided some summations of data and they've been scrubbed. Some of this is confidential and so I don't have that data here, but just information on catch statistics for the region and this, we were very excited to finally get to see.

This is king mackerel and it provides information on particular sizes for some of live pounds from 1996 to 2002, I think. It's 1990 to 2006 and then an average live pounds per year for like a particular grid cell. That information, the fishery information with the sediment information with the habitat information, kind of really helps draw the picture that these areas are special.

Then I just want to kind of show this diagram, that if we continue this circle of data collection and data sharing and data distribution, I think that we can help the council to manage these resources wisely. Down the road, the next talk, talking about how the IMS will expand, we have the FLEMLR database that we are geospatially enabling. It's a fancy word, but basically putting it in a GIS format. That FLEMLR stands for Florida Estuarine and Marine Living Resources. It's based on the EMLR project and through this effort, I'm going to take EMLR data that was provided to the council, but not in a digital format, and make that available through IMS, incorporate some more of these EcoGIS output products.

The SEA-GEOFISH website has custom queries for looking at the MARMAP data specifically. We've worked with CSE and we have some code to incorporate that and also trying to develop a new database of research project footprints for this region, so that you can determine a research project's footprint, like the spatial footprint for it, and then have associated data, what are they doing, what kind of research they're doing, who is the principle investigator and what kind of information are they collecting. That's coming down the pipe for the IMS.

Again, thank you and thanks to the council for inviting me. Last night was wonderful and I would be glad to leave the ArcMap document up for our discussions on boundary determinations for the HAPCs, if needed. Any questions?

Dr. Rader: Questions for Tina? Comments or thoughts or opinions?

Mr. Harris: Tina, it looked like in one of the slides you showed that the extent of the coral reef

extended beyond one of the proposed HAPC areas. I don't know whether I misread that or whether that's actually the case.

Ms. Udouj: Does this look like what you're referring to?

Mr. Harris: No, it was an earlier slide than the last few. It may have been right after that one. No. It was one of those two on the left right -- No, no, no, no, no, no.

Ms. Udouj: That's it for the slides.

Mr. Harris: I don't know what I saw then, but I thought I saw something that it looked like the line of the proposed HAPC was on it and then to the east of that line, it looked like there were some areas where coral was found. Maybe John can enlighten us.

Dr. Reed: I'm not sure, but some of those dots might have been to the east of the EEZ, on the Bahamas side, possibly, but I don't know.

Ms. Udouj: Are you talking about these stars?

Mr. Harris: No, it actually was a more detailed slide than that, but it was one that had the proposed -- I thought it was the proposed HAPC and then I thought there was an extent of coral and it may have been that lower part down there, around the Miami Terrace area, that -- That's it.

Ms. Udouj: These green stars?

Mr. Harris: No, that's it and I think I was misreading it, because that's the -- That bold line on the right is the proposed boundary and is that correct?

Mr. Udouj: Yes, that corresponds with the EEZ, too.

Mr. Pugliese: Again, let me open it up and then we'll go directly into the IMS discussion from here. What she's presented so far is really a pretty solid foundation for all the deepwater habitat information that is going to be integrated into the system and in the broader sense, the council has been working with FWRI for a number of years to build a tool that's going to support long-term ecosystem management in the region, support the Fishery Ecosystem Plan, support everything from the possibility of permitting activities, information on essential fish habitat, future activities on understanding what the implications are, fishing relative to non-fishing activities, like LNG proposals, any future alternative energy proposals, a vehicle or a mechanism that has the ability to provide a lot of these information directly in context of concerns or management actions the council is working on or other partners in the region.

The development of the IMS system is really a core from which it really is expanding to include many of the other capabilities Tina has identified in the future, to make that even more functional in the region.

Some of the areas we're even investigating will provide linkages and connectivity such as being

done with the ocean observing, where the data information systems are actually offsite and it queries and provides layers from which to integrate into this broader sense, but with that, it is going to be a very powerful tool for the council and for all our partners in the southeast region, as it continues to develop and evolve.

With that, let me hand it over to Tina to get into just a little -- To a great degree, you've highlighted many of the new activities we're going to be doing in the future with EcoGIS and the FLEMLR transforming into EcoSpecies to -- Say with the EcoSpecies module of this evolution, it's not going to only have base species information, but it's also going to evolve where it provides base information about the species in context in the region, connections into habitat information, status of the resources, and ultimately, if the system evolves correctly, we'll have connections into the SEDAR process, where there can be direct information on status of the resources and the other direction on the latest available information on natural mortality and basic species information for the region.

If that can evolve that way, it becomes a very powerful tool in the future. The researcher component, I think, is going to be expanded and also provide that type of guidance on what we don't know and where we don't know it, but also open the door for collaborations between partners in the region, identifying who is working on things or has worked on things, but also, if it's integrated right into the researcher section, the ability to begin to open the door on people doing other research on individual species, where people know about grey literature availability. It is really trying to open other avenues to get the most comprehensive presentation of that information to support this broader move towards ecosystem-based management in the region.

Tina has really laid out a lot of the capabilities that at least the deepwater focus exists now. Other aspects, it will include all the essential fish habitat, spatial presentations, which will be acknowledged in the Ecosystem Comprehensive Amendment and the Fishery Ecosystem Plan, and then really all the other non-fishing layers, to address some of the other potential avenues.

Right now, many of the layers include land-based activities for each of the individual states, land use information. The areas will also present other fish -- As she indicated, the EcoSpecies will be across all the information from the Atlantic Coast Cooperative Statistics Program.

It will be translated in the layers it can, either fixed layers or accessible information on catch by area for everything that we can, to encourage use of and embracing of the Atlantic Coast Cooperative Statistics Program and in relationship to any of the management actions that are being proposed or other activities going on in the southeast region.

With that, if there's any other -- Tina has said a lot about everything we're doing and where we're going with this, I guess anything I may have missed on other layers that are being built or expanding for the benefit of the group would be appreciated.

Ms. Udouj: I think you did a fine job describing the vision of what we're trying to do. I did miss the EFH creation. That is something that we're currently working on and that's just a time-consuming process. We have to have the metadata and that's always as issue, but as soon as those are complete, they'll go on this site and then we do hope to kind of -- There's a lot of

information on the IMS site right now and maybe cater it so there's more of a public base and then more for researchers.

I also just want to take this opportunity to kind of verify that those IMS sites that I was showing earlier, they're not sitting on a server where people can view those right now. This is all of my laptop and so I didn't want anybody to be worried that the data was out there without being blessed.

I don't know what else to say, except that we do want to continue to make things better. Down the road, we are also looking at ArcGIS server capabilities, which would offer more analytical tools online. We're kind of looking at that process now and that's kind of a development stage and to see whether that's a realistic goal.

That would be great to see and we have an ArcGIS server installed and we're kind of pounding on it and trying to figure out what we can do with it, but there's a lot of IT issues to work through and so hopefully that's coming down the pipe as well.

Dr. Rader: One of the dangers of getting ahead of the curve is that you get left behind when money gets shifted into other places that aren't ahead of the curve and we've experienced that I think the first time around in SEAMAP, by making it look like we had way better -- Accidentally making it look like we had way better evidence than we do.

I guess one resonant theme in all the presentations we've had today is the scarcity, and maybe even relative scarcity, relative to some of the regions, resources available to turn the fantastic tools that you guys are all involved in building into something that really can provide the uniform data coverages, information coverages, that we need to be able to do some of the planning that we're talking about.

For instance, if at some point the council has fully recovered from Amendment 14 and wants to look at building a real science-based network of marine protected areas, and I mean that in the broadest sense, sort of every possible category of management, extending from the deep waters all the way into state waters and linking up all the fantastic networks of different types that exist, than we have to have better -- I'm not necessarily advocating that, but anything place-based like that requires a generation better of primary information than we have.

We've seen, in some ways, the very best cutting-edge information coming out of some of the best researchers in the country, but if you look at the overall data density, your maps, what percentage of your maps are populated with high-quality data? What would you say; it's less than 10 percent or 15 percent or something low?

At some point, we have to leverage these great results to begin making the heat for the fire hotter and demanding the resources that we need to do this job right. Does anybody have any words of wisdom about how we do that?

I'm hoping -- I've got to tell you that the great work that the South Atlantic Council is doing on this deepwater coral initiative can help spark that interest, so that the kinds of money that's been

spent on the Puerto Rican shelf and the Northwest Hawaiian Islands and maybe other similar world-class reefs, coral reefs, can also be brought here, to help make all of our habitat programs better. I don't mean to preach at you, but I just keep being struck by how world-class people are telling us that they're really not getting the resources that they need to do their part of our job better. Ideas or thoughts about that?

Are there other ideas or thoughts about how we can make the internet map server, the GIS-based system, any of this habitat mapping stuff, better and more usable for your needs and our needs and other programs?

If not, what we'll -- I don't want to cut that off, but we're going to go ahead and take a ten-minute break and get reorganized and see if we can get more of our business done this afternoon, including perhaps -- We won't wrap up the recommendations on deepwater coral, but what our plan is right now is to go through the recommendations that we have made before that have been adopted as a foundation for deciding whether or the extent to which new information under girds those recommendations or alters them, et cetera, et cetera, et cetera.

We'll get that set up and if we have time, we might even get some recommendations formulated today. We won't finalize them today, because we want you to be able to sleep on them and talk to whoever you want to talk to about them. Even if we get that far, we'll bring them back in the morning, before we finalize those recommendations, but that would get a good lick in on tomorrow and it would only leave two major jogs for then.

Other questions for Roger or for Tina or anybody else about that topic? Okay. Let's take ten minutes and come back at five after or probably it will be ten after. We'll go into recess. I'm going to say five after and it will really be ten after, but we'll come back into session at that time, to try to finalize deepwater corals.

Mr. Blair: If we can be seated, we'll reconvene. In honor of my being from Miami, it looks like this break was on Cuban time and so we'll get ourselves back. What we are wanting to do is to take a look and review recommendations made at the last meeting to either look to see what level of potential addition or modification of those recommendations relative to the deepwater coral HAPCs and in a separate action relative to the FEP, or in a separate discussion.

The idea today is to review those recommendations that were made in June and have table discussions at this point and we will then, depending on how the table discussions go, allow people to have considerations of the information we received today and will finalize those, any recommendations as necessary, tomorrow.

That will go first -- First, we'll review the recommendations for both the deepwater coral HAPCs and the FEP process and amendments and then we will open them up for discussion and Roger is going to kind of lead us through the review of our June recommendations.

Mr. Pugliese: Everybody was distributed the original June recommendations, two documents, Attachments 13 and 14, I think it is. One is the summary recommendations and the other one is the more expensive full presentation of available information.

Dr. Rader: It reminds me of the early days of PowerPoint, where we all went to conferences where everyone was excited about all the bells and whistles and like 90 percent of the presentations ended up failing.

Mr. Pugliese: What we've done is gone ahead and cut out the portions of those that really specifically address the developed recommendations from the 2006 activities. I would just like to walk through the entire set and then we can come back and move through it. The recommendations relative to the proposed deepwater coral HAPCs, the first three had to do with refining the information, or the designation areas, based on the new information that was provided to the advisory panel, to the council, and in a number of different documents and deliberations.

The first had to do with the proposed HAPC be expanded based on new research and look at very specifically that the large central area be expanded to connect to Stetson Reefs and enlarged north to include newly documented sites and to include the 400-meter isobath. That was done in the proposal that was provided to the council.

In addition, the second large central area should be connected to the Miami Terrace C-HAPC, again using the 400-meter isobath on the western boundary. That was accomplished. The third is the Miami HAPC should be expanded on the edge of the EEZ to the east to include the mounds, pinnacle structures that extend into the Bahamian EEZ.

The western boundary at that area should be the 300-meter isobath and to include the newly documented deepwater coral habitats. Those recommendations were provided in the updated HAPC structure. In addition, the expansion of the Pourtales Terrace to, again, look at the newly documented habitats. Those ones have been accomplished.

The next one is, recognizing the deepwater ecosystems are not closed; we have no connections internationally and have no connections internationally. The panel requested the council interact with the Bahamian government and department of state and to work with them and find ways to collaborate on research, as well as protection measures. The council could communicate within the Bahamian government directly or through the U.S. Department of Commerce and Department of State.

Two new areas that have been added in response to the discussions early this morning were the acknowledgement of the methane seeps, as well as an additional provision identifying new information has been identified, potentially high-value deep coral habitats between Miami and Pourtales Terrace and south. The panel recommends additional characterization work be factored in the future.

Dr. Rader: I guess Steve and I heard a lot of good new information that tends to support what we did before. It was a lot of the gaps on the map, a fair number of them, have been filled in and the direction of filling those gaps in, as investments are made to explore the direction, is towards finding the habitats that we expected in those places.

In that sense, we didn't see a reason, at this point, and would love your input in thinking about it, to either expand or reduce the area, with the potential exception of the methane seep question, and let's come back to that. We also heard a lot of new information that there are habitats, from John, in the area bridging Miami Terrace and Pourtales Terrace and potentially to the south and west of Pourtales Terrace, but you heard the recommendation from him that at this time, until we get better characterization information, that we go forward with what we have.

This is like a strawman that would be basically a status quo recommendation and when Roger gets done, we'll come back to that. That's the first thing we'll revisit, is the proposed delineation.

Mr. Pugliese: Do you want me to read directly the recommendations here? Let me go through the actual recommendations relative to the management. Recommended management measures in all deepwater coral HAPC sites include the following: prohibit all bottom disturbing activities, prohibit harvest of corals, and compile a list of threats.

The intent would be to prevent any allowable harvest presently permitted under the coral plan in any deepwater coral HAPC. To prohibit the collection of gorgonians in the coral HAPC, clarify the prohibition would not apply to biomedical or taxonomic collections, to prohibit any type of anchoring, to identify the potential damages associated with other bottom gears. For example, under future research, if damage occurs from other things, such as use of planers or cannonball weights.

The panel also reaffirmed the recommendation that damaging gear be precluded. In addition, the panel requested that the council consider establishing allowable gear and to identify appropriate non-damaging gears. Non-fishing impacts would be fully covered in the fishery ecosystem plan and in future habitat policy statements.

Dr. Rader: Roger, that's the same wording as before, is that right?

Mr. Pugliese: Yes, this is the wording that's in the 2006 recommendations.

Mr. Street: I'll be a little bit of a devil's advocate. We've talked about the importance of these habitats all day long to fisheries resources. To have a fisheries resource, you have to allow a fishery and that means people can use it. What we are looking here -- Because the distribution of most of these species is restricted absolutely to the habitat and what we are saying is to at least severely restrict fishing, if not completely eliminate it, we need to be very, very clear on our purposes and why we're saying to do this.

I'm not saying in any way that this is not habitat overall that's rare and I'm not saying it should not be protected. I'm just wanting us to be very clear what our intentions are and properly describe them.

Mr. Croom: Just to sort of pick up on that point a little bit, I think one of the points that's been raised along those lines is fishing activities beyond these areas that would be designated as habitat areas of particular concern and how those activities could be provided passage through an

HAPC. I think it's the same kind of question that if the panel wants to go with some sort of recommendations on allowable activities or allowable gears, there does have to be an anticipation of what would be appropriate, in addition to what would not be allowed.

Ms. Brooke: I just wanted to clarify what you mean by corals when you're talking about harvesting corals, because you -- I can't read it very well, but I think it says we'll prohibit coral harvesting and then later on, you specify gorgonians. Corals is kind of an umbrella that encompasses a whole number of different families and so if you're going to specify gorgonians, I think you should include antipatharians as well, you know the black corals, as prohibiting harvest. I think we really need to be a bit more specific on what we mean by corals.

Mr. Pugliese: I think the intent of bringing in specific gorgonians was trying to address the allowable harvest of octocorals under there and the intent, at least in my understanding, and I'm pretty sure the way it was, is that all species covered under the coral, coral reef, and live hard bottom plan would be prohibited and that was to shore up that. By specifically identifying gorgonians, we would cover all species, including black corals and including any other species that is in that habitat complex managed under that FMP.

Mr. Blair: There's a couple of points. I think it is in the broader sense and perhaps there needs to be that specific -- I'm sure it's there somewhere, but in the final document, we need that specificity of what the word "corals" is being meant to imply.

I'll make a comment relative to yours. The corals are very defined in their habitat and they are a support to the fisheries, but corals are also a managed species and therefore, have their own process in dealing with it. I appreciate your comments and truly believe we do need -- We need a lot of very defined and explicit and as Doug said, unambiguous reasons for making this occur. I believe that we're getting that documentation together.

Dr. Ross: I had another question about the wording in the regulation. There's allowable collections for biomedical and taxonomic reasons and it seemed like that should be more broadly worded to include research, just generally research, because there are other things, like paleoecology and paleoclimate work that would be useful. It seems kind of restrictive.

Dr. Rader: I hate to weigh in with a comparison, because it's generated a firestorm in the northwest Hawaiian Islands and Environmental Defense has been involved with that, but figuring out what the governance mechanism is on that gets complicated. Not anything that anybody at all would consider to be research would necessarily be allowable without some kind of oversight on research.

It's not a big deal, but the idea is to establish a level of intervention that is condensed with maintaining the health of the ecosystems and scientists, like every other user, obviously would need to be accountable and held to some standard of performance, et cetera, et cetera, et cetera. We're trying to allow for the use without saying anything that anybody would consider to be research would be fair game.

Dr. Ross: I think though that we just want to make sure we're not getting into a situation where

somebody comes along and wants to do very important paleoclimate research on black corals and then find themselves prohibited from doing so.

Dr. Rader: I wasn't arguing against your wording, but I was just suggesting that we'll have to find some way to thread the needle so that we're --

Mr. Pugliese: I was just discussing it a little bit with Miles, because technically in the process that exists now, there are research permits that you have to go to the Regional Administrator to secure and all of you have been doing this and so I don't think it would be much -- It would essentially be the same process, to do research, and I'm sure that's where Harbor Branch has done any of their biomedical. It's a component of research and so the mechanism, I think, exists in the existing prosecution of the coral plan or really anywhere where there's a prohibited species that is being used for research activities. It actually has to come to the council more recently.

Dr. Ross: As long as that's true. It's just we don't want to build ourselves into a box where we can't do legitimate and valuable work.

Dr. Reed: Just so I understand if somebody wants to do research within the HAPC, where do we get the permit? Is that through NOAA Fisheries and Crabtree's office or what?

Mr. Pugliese: It would be through the Regional Administrator's, through Roy's, office. It would be requesting research permits to do that and that's what you've essentially done in the past, through the permitting process.

Mr. Blair: It's actually called a letter of acknowledgement. It's not a permit per se, I guess.

Mr. Pugliese: If you want to make it clear here, then this is the time to clarify that point.

Mr. Blair: That was the point I was going to say, is that it sounds definitely like we need to modify that wording to either say it doesn't preclude that process from occurring within this or a reflection that a process does exist for appropriate approved scientific and research activities.

Mr. Street: Would a differentiation of research -- What if a useful biomedical compound were found from one of these corals, but the only way then to obtain it for use was from harvest? Would that kind of a harvest be allowed?

Mr. Blair: That would be up for the Regional Administrator to decide, but I would imagine that's an actual take and that's not a research aspect. That's a different function and it would have to be outside the area. It would be at least something that we certainly hope is part of the purpose of that process, to prevent that type of harvest from occurring.

Dr. Rader: That would be bottom-disturbing fishing and it would be subject to regulation as such, by council advisement to the agency, I would guess.

Ms. Brooke: That was exactly my concern and so it's now a non-question and you've answered it and thank you.

Dr. Ross: I just wanted to make sure we do have a mechanism for doing research. We apply to the Regional Office for a letter of acknowledgement and they evaluate what we're going to do and then they send us one and I just got mine that's good now through 2010. The problem that I want to make sure we avoid is if we send in the request for that letter of acknowledgement and NOAA Fisheries looks at this language and they don't exclude legitimate research. If that's not going to happen, fine. If it is, that's why I would raise that issue.

Mr. Alexander: I just want to agree with Steve that I don't think that we should be stipulating what types of activities constitute research if there's going to be a manager at a higher level that's going to be making the determination of whether it's appropriate or not. I don't think we should be picking winners. I don't think the wording of "biomedical or taxonomic" even belongs there.

Mr. Blair: I think, as I said, it seems as though for that purpose and the fact that there is a process that does allow evaluation of the research needs, that it would be more appropriate to put wording in that says it is not the intent to preclude existing processes for approval or -- I don't know if "permitting" is the right word, but approval of research activities in the HAPC. I would definitely look for anyone else to come up with more refined or additional wording to make sure that we're not being too broad in that.

Mr. Croom: I'll just throw something out along those lines. We could say something like the regulations shall ensure that research activities are conducted in accordance with existing protective or oversight mechanisms, that research is done consistent with those tools.

Mr. Gregg: The wording that jumps out to me when I read that is "deepwater coral HAPC sites include the following: prohibit all bottom disturbing activities". Is that bottom-disturbing fishing activities or are we reaching beyond the scope of the council to things like liquefied natural gas deepwater ports and gas transmission lines and electrical transmission lines?

Dr. Rader: My response is that -- First of all, it doesn't go beyond the purview of the council. It's just that the administrative role is different in non-fishing activities, although I suppose anchoring fits in between somewhere. The point is that it would use the existing processes, the council advising the agency to manage on fishing that relates to direct regulatory impacts on regionally-advised FMPs and on federal FMPs, the council is still advisory to the secretarial FMPs. Then on non-fishing activities, they use the essential fish habitat doctrine advice and potential elevation process to address it, as with all other HAPC issues. Is that right, Miles?

Mr. Croom: Yes, that's right.

Dr. Rader: The intent is to use all the tools at the disposal of the agency to protect these special habitats against the full suite of threats and Congress, in its wisdom, has given different mechanisms for fishing and non-fishing activities.

Why don't we go back and look at this in order? Let's just confirm and, again, we're not going to take a final action today. We'll take final action in the morning, but confirm the first part of

this and that is the strawman, strawperson, that we threw up that basically is a status quo recommendation in terms of the areal extent of the proposed coral HAPC, as amended after our last recommendations, and so taking into account the recommendations we made last time already included.

Again, the one little outlier to that is that I brought it up to the council in September, it must have been December of last year, because it was in North Carolina, about the intent to make sure that the one live bottom methane seep community that's been documented in this region, if it is in the EEZ, was included in the area proposed for consideration.

Again, they would make the final decision about whether it ends up in it or not. That would be the only amendment that I would propose to you, but how do you feel? You've heard the same recommendations that we have. Do you want to talk about considering either contracting or expanding this area? We've been around this block a few times and this is maybe the last formal opportunity to talk about it before we make a decision in the morning.

Dr. Laney: In view of John's work on the Oculina Area and what happened there, I guess to the extent that we can support it with best available data, I would always favor making the boundary as expansive as possible, rather than excluding things, for several reasons.

One is to be conservative and take a precautionary approach to management, from a habitat perspective, because we know these are very delicate habitats and they take years, if not decades, if not centuries, in some cases, to reach full maturity and it can be destroyed in the blink of an eye, almost, or maybe the pass of a trawl. The second reason would be that it's a whole heck of a lot easier, in general, to go back in and gather additional data and then open portions of the area, if it's appropriate to do so, as opposed to trying to expand the area to include places that we inadvertently omitted in the first place.

To the extent that we can do that, I would like us to recommend that they be as inclusive as possible and I would defer to Steve and John and Andy to inform us as to how they should be expanded, if we can justify doing so. Again, just to be as inclusive as possible from the beginning, as opposed to having to go back and try and add things later on.

Mr. Blair: In general, I agree very much and being conservative, especially in management of this resource, but I think we really need to kind of review it a little bit and take a look at the seep relative to the existing proposed HAPC boundaries and some of the information, maybe, that we've already been provided about the more recent information may let us know the justification for expanding or for potentially recommending its own HAPC. I'm just thinking of the areal inclusion that has to be done in order to expand it versus some of the size of the sites we have now. We need the IMS map up.

Dr. Rader: I know Curtis brought up earlier the implications of designating and not designating and especially in the Straits of Florida. There is an implication, I think, of delay. That is that prudent developers, including energy developers, are likely to go to places where entanglements with HAPCs and other things are minimized, as the best available science on where the high-value habitats exist.

We are likely steering those kinds of developments, if they occur in these depths at all, into those areas that fall in between the HAPCs down to the south. That's just something to bear in mind as we go forward down this pathway.

One other thing that has come up is the alternative approach, particularly under the National Environmental Policy Act, and this is something Miles brought up earlier, of segmenting this proposal into alternatives of individual pieces. I had the strong feeling last time, and particularly after the council acted twice, that it was the feeling of most of us that this suite of sites together, with their linkages, ought to be recommended as a network of coral HAPCs, in its current form and not as alternatives to be considered for selection.

That's the other request and Miles brought the question up earlier and I know I would appreciate your thoughts about both of those issues and maybe separately. Let's come back to the network question and is there any other discussion? I see Andy's hand and is that pertinent to the question about the areas in between or --

Mr. Shepard: Especially about the methane seeps. First, a question about them. Has anybody come to the panels and given a presentation on what these things are where they are?

Dr. Rader: Actually, Cindy Van Dover, from Duke University Marine Lab, gave a talk at the Charleston Aquarium that a number of people here were there for and formally requested that I ask the council whether or not that was appropriate. The result of that query, in December of 2006, was that it was appropriate. On the other hand, my belief is that there's only one site that has been documented and I believe it's a satellite site to the north and east of the current large area going out to Stetson Reef. Steve had it on his map before. I'm not sure if it's in the EEZ or not.

Dr. Ross: I think it maybe is, but there's only one very small site and that's it. Those sites are considered special in the Gulf of Mexico where they're extremely abundant and I guess it would fit the criteria for protection here, but just be clear that there's not a lot of these that anybody knows about. There's that one.

Mr. Shepard: That's right and it is very close to your existing area and it would be a very easy thing to expand around. It's on the Blake nose there and it's something that I think would fit nicely and be easy to do boundary-wise.

Dr. Rader: Actually, that's a good idea. If it is close, in those waters, I don't think it's nicely to affect many users differently one way to the other if we stretched it a little bit to include it. If it was your recommendation to allow us to do that, we would so recommend, but if we find that it isn't, we could throw it into the basket of other HAPC recommendations that we're going to take up tomorrow by state. We would just give you notice that it would be my intention to make sure that it's nominated as an HAPC, an EFH HAPC, although it does fit in the category of live bottom hard bottom, irrespective of how many, quote, corals there are there.

We can handle that either way and if you'll give us the largess to find out, perhaps overnight, for

sure whether it is or isn't included and how close it is or isn't, we'll bring back a recommendation to you on that overnight. Is that --?

Ms. Stiles: I just had a clarifying question on what you just said. Are you suggesting that rather than a coral HAPC that it could go under the general recommendations for EFH or are you suggesting that it would go in a future part of the Fishery Ecosystem Plan amendment?

Dr. Rader: I was not trying -- I think it ought to be handled now, in the first comprehensive amendment to the fishery management plans. Remember that the council is talking about segmenting the consideration of different elements of the fishery ecosystem plan and I think we'll actually come back to that in a minute, because there, in addition to the HAPC designation process per se, there's the question of how that nests back to the allowable gear zone concept that remember we had recommended to them.

That concept has gotten, I believe -- Perhaps we should get some comment from council members, but I believe it's got entangled, to some extent, in other issues of SFA parameters and Amendment 7 to the shrimp plan and other questions of exactly how you would draw allowable gear zones in the absence of the VMS, vessel monitoring system, information that we would need to advise the council on.

Ms. Stiles: It sounds like that's not what you're recommending though and I wanted to understand what you had suggested.

Dr. Rader: I was suggesting that we recommend that that single known site be included in this round of HAPC designation and in the spirit of the initial finding by the council that they wanted to include all the known important deepwater live bottom hard bottom coral reef ecosystems in this first round.

The question is whether administratively it's close enough to stretch it into the existing Stetson Reef sort of northeast edge or whether it needs to be its own more isolated little circle and if the latter, would we call it a deep coral HAPC or an EFH HAPC? I don't care, because it would probably attract the same gear limitations one way or another, recommendations for those.

Dr. Ross: If I did understand that, you were suggesting two different ways of looking at that. I don't think you could justify extending the Stetson box out that far to the northeast. It would be too far and probably cover a lot of habitat that you wouldn't want to exclude and it's a very small site and so it probably should be discreet.

Dr. Rader: That's fine with me and I expect -- You know better than anybody else and so I expect that is what we'll find in looking at it. We would propose to create an additional small site. It really is small, right? If you put --

Dr. Ross: It hasn't been that well surveyed, except by -- The geologists have surveyed the hydrates there. There's a number of publications on the hydrates on the Blake Ridge and they're extensive, but as far as the biological community associated with the methane seep, it appears to be small, but there hasn't been a lot of exploration there, just a few dives by Cindy and that's it.

Dr. Rader: Right. We would create a small, perhaps one-by-one or two-by-two, HAPC on top of that. I guess my preference would be to throw it into this bag and consider it a coral, et cetera; HAPC, but we could handle it the other way, too. Are there other thoughts?

Mr. Street: Could we see a map? How far removed from the proposed boundary is this site and does it in fact have coral?

Dr. Rader: It doesn't have to have coral to be a proper subject for this, remember. The management plan is the coral and coral reef and live bottom hard bottom fishery management plan and we're addressing deepwater coral ecosystems, generally. You can split that hair if you want to, but I would argue the other way. I don't think it hurts anything and it adds a lot.

Dr. Reed: You might be able to take -- If Steve Ross has -- He has that point on his map and I don't know if it's georeferenced, but he might give the coordinates to give to Tina for her to overlay it on the GIS map, to show the relationship to the EEZ and the HAPC and that.

Dr. Rader: I'm actually supposed to have them here and Cindy emailed them to me, but my email has been archived and I'm not sure if I have them or not. Anyway, that's a small technical detail. The question is the consensus of the group as to how you want to move forward. Let's handle it in pieces and first the big question.

With the existing proposed coral HAPC site, the evidence you've heard of some habitats in between, the recommendation from, I think, both Steve and John to go with what we have, but also to -- Given that it's now better supported than it was in the past, but also to recognize that some habitats exist in between.

Dr. Laney has suggested that another alternative would be to go ahead and try to basically connect the lines, to have a single HAPC that includes those sites, newly recognized. That's another option for debate and what's your pleasure? You don't have to have a pleasure. You can think about it overnight, but one way or another, we'll call the question before we leave.

Mr. Street: Let's see a map, because if you want to connect them, how big are these connections and what might be the impacts of those connections on existing uses or likely uses of any kind, whether it be fishing or pipeline routes or whatever?

Mr. Shepard: I'll give Tina the exact lat/long of that chemosynthetic community tonight and then you can put it on your chart. I can get it to you. I'll bring it over as soon as I find it in my archive.

Dr. Rader: We should recognize, Mike, that either way we do this, we'll steer those kinds of projects. In some ways, it's sort of too bad, because it's really the emerging new uses that we're trying to steer away from sensitive habitats. That's a noble calling, but anyway.

Mr. Harris: Just a comment and a note to you all. As you are deliberating what it is you're going to recommend to the council here, if you have a recommendation that you want to put

forth, put it on the board. Under the NEPA program, we have got to have considered but rejected alternatives. If you've got any alternatives that you want to be considered, put it up there, because that's going to help us in developing this amendment.

Dr. Rader: That's a fabulous point and I should have thought of that. I'm dropping the ball as chair, but that's right. In other words, we could forward two alternatives to the council as a recommendation. Of course, our job is to protect habitat and so we could propose an expanded coral HAPC that based on the best available science would identify the broader occurrence of those habitats.

We could also recommend to the council a status quo alternative that would be better supported than that that would recommend the recognize the value of those habitats. If the council went with the second alternative, we would also recommend that they help find and direct funds to better characterize the habitat value of those areas that aren't being protected, recognizing that they would be at more or less greater exposure of development for oil and gas and alternative energy and mariculture and other potential alternative non-fishing uses of the EEZ as a result, something along those lines, and then you put it into your calculus.

Mr. Harris: If I can add to that. For example, with respect to this methane seep, one alternative could be to add it to the existing Stetson Reef complex. Another alternative could be that it would be a stand-alone complex and another alternative could be that you considered it and that you don't recommend it at this time, for whatever reason.

I don't want to put any words in anybody's mouth, but those are alternatives that you can put forth today and then choose the one that you want to recommend to the council or if you want the council to make the decision, that's fine. Just make it clear that that's what your recommendation is.

Dr. Rader: I think we will develop for you those alternatives precisely and then in the morning -- You'll think about it overnight and we'll be in the position of selecting a preferred recommendation, the same way the council will have to make a preferred recommendation to NOAA. Any other alternatives that you would like for us to develop or for which you would like to speak?

Ms. Karazsia: I just wanted to add that in addition to meeting the NEPA requirement, but also to those that haven't been involved in these discussions in the last several years, who haven't seen all the alternatives that we've gone through, it might be a good idea to compile a list of those alternatives and to outline the pros and cons associated with those alternatives, so that that entire package can go to those that haven't been involved in these discussions over the last few years.

Dr. Reed: I'll just throw this out, but as an alternative, if you wanted to consider the expansion of the HAPC, at least in the Pourtales Terrace region, that I was talking to Tina and with the available data that I have here in my little jump drive from the recent cruises, we're going to see if we can overlay my map from my PowerPoint slide into her GIS and compare my new dive sites to the current HAPC boundary and see if I can come up with a reasonable alternative to expand possibly over other hard bottom sites on the Pourtales Terrace and also out toward the

Tortugas, as well as the sinkhole sites which are totally outside of the HAPC right now.

Dr. Rader: Obviously respecting the council's boundary on the west, right, since it cuts across there somewhere, but Tina has got that, for sure. Are there other comments or thoughts or questions? Is that a reasonable thing for us?

Ms. Stiles: Did you want to talk more about the network question that you had raised?

Dr. Rader: I was going to come back to that. I was going to try to break this into pieces and get some additional decisions made. Is there any thinking about that?

Dr. Ross: Just to review, we're going to compile some information over the night and bring back a map showing where the location of the seep area itself is relative to known information that we've got and in lieu of that, even though it's kind of part of the alternative development and review process, we'll still have alternatives that we can evaluate, but I think that will help us a great deal in deciding which one we may want to recommend. We will look at it, but let us get that together and be able to present that to you tomorrow morning.

Dr. Rader: Any other comment on that issue? What about the network question, because there is some discussion, along the same lines, of creating alternatives that might have some of these and not others and that kind of stuff.

Obviously that's the council's prerogative and NOAA's prerogative, but our recommendation doesn't have to pick and choose, if we don't want it to. We could maintain a strong recommendation that all of these sites, with the exception of the question we haven't resolved, of exactly what we mean by that.

In other words, if we were to coalesce them into one site, plus two satellites at the north and a methane site, for instance, then that would give you a different algebra than what we have right now, but the notion of sort of weighing the total political impact and choosing Pourtales and not Miami and this and not that. I haven't heard any interest in doing that and one way to help strengthen the recommendation would be that all of these sites, as proposed, are of high value and we recommend that all of them, as an integrated whole, be identified as coral HAPCs. I would recommend that to you, but is there any discussion about that point?

Mr. Croom: I guess I would ask -- The underlying premise ought to be can we describe a scientific reason for recommending that collection of sites as a network. For example, do we know enough about larval recruitment and connectivity and that sort of thing to describe that as a foundation for making the recommendation for a network, as opposed to some other way of collecting a series of sites?

Dr. Rader: Of course, the easiest network is all, which was the initial charge, although we quickly backed away from that when we realized that Oculina was part of the complex and Oculina goes into really shallow water. That would be all over the place. Steve, have you got any thoughts about that question?

It strikes me that there are important challenges to these systems in addition to acidification and other things. We see a lot of standing dead material and the notion of colonization and how it occurs is a pretty important one, of which we are nearly totally ignorant and is that right? It strikes me that choosing to omit any of the items in this particular stream is really risky. Have you got any thoughts about that, Steve?

Dr. Ross: I guess I'm a little confused by the conversation altogether, in that I thought we had already recommended that those blocks go as a continuous block and the reasons were there to support that. I'm not sure I understand why we're discussing the network issue.

Dr. Rader: I guess it has to do with the deep coral ecosystem as a whole and what kinds of steps might be taken to protect it, recognizing that one step might be just a step and in other words, protecting only part of it. We're trying to recommend as strong as we know how that this ecosystem as a whole, the way we understand it together, be protected as an integral whole, as opposed to a bunch of alternatives that you could pick or choose from on a map. The reason for doing that is that the issue has been raised by the administrative agencies and perhaps others. I'm not sure. I wasn't there and so --

Dr. Ross: Obviously when somebody looks at the map, they see a huge amount of territory that's going to be set aside and that's a stumbling block in the first place, but --

Dr. Rader: Right, but it also might look like four alternatives or five alternatives or six alternatives and you might choose two from Column A and one from Column B.

Dr. Ross: To me, the only reason there were individual boxes like that is because we had no evidence that they could be connected by similar habitat. Everything that we know today would suggest that the separation between the North Carolina two boxes and the North Carolina and the next one south are legitimate, because we don't think there's significant coral habitat there. We could be wrong and we would have to adjust that later, but everything we know now would indicate that the boxes we have contain most of the continuous hard substrate habitat.

Dr. Rader: Right, but the issue is one of ecological or perhaps genetic linkage among those sites and between them and thus, development and potential risks for threats of integrity of the sites in the very long term by failure to see the thing as other than a simple assortment of places.

Dr. Ross: All of our data are in on the genetics, but the preliminary data so far would indicate that there's a lot of genetic isolation and heterogeneity in the coral population, throughout the Gulf and the Atlantic, and so excluding any of those from protection would put potentially an important genetic component at risk. That's an argument for the whole rather than pieces.

Dr. Rader: A strong argument. Are there other comments? In other words, you like the they're all important and we shouldn't omit any of them argument better than casting it as an ecological network of some sort?

Dr. Ross: Even beyond the genetics, there are other issues. The other communities we've looked at indicate that there are some structuring mechanisms that make groups of coral mounds

in particular areas different and so you couldn't make the argument that we've protected enough of them and if we lose a few that it's okay, because they do seem to be different. The ones off of North Carolina seem to have a different fish structure than the ones to the south.

While you're protecting the same kind of habitat, you're potentially protecting a greater diversity of communities than would be apparent. When you look at the map and you think about the Gulf Stream, the inclination is to think that it should be rather continuous and it's turning out, to me, to be somewhat surprising that it's not. That's a further argument that protecting the whole is protecting a greater diversity that's unique.

Dr. Rader: Roger or Myra, have you got any advice for us on this? You've heard the discussion. I think strengthening the language about the protection of all existing sites, just where we started, is really needful as a place to end up and that any reduction in the number of sites chosen is simply unacceptable, from a scientific perspective. Is that an alternative to the network language or what do you think?

Mr. Pugliese: I think the intent was clear from the last round when the advisory panel made the recommendation that they were capturing all of the known habitats within these areas. The connections and distributions are tied to things beyond individual species, the current systems that are distributing the corals and other species throughout the areas.

I think at least even in the last iteration that seemed to be fairly clear, that the intent was to capture all known areas, which would include multiple areas, and if they weren't, then the network becomes part of the entire whole.

Dr. Rader: I guess the issue is we've heard some feedback that one might consider only doing some of them and so our answer to that is no and is that what I'm hearing?

Ms. Stiles: On the network discussion, I think it came from a comment that was made at the council about whether there was a range of alternatives that was broad enough to make the amendment defensible under NEPA. I think if we decide at the AP to recommend that the group of four or five areas be considered only as a whole, we need to address that underlying question of what is the range of alternatives.

Otherwise, the council will generate on their own, using their best judgment, a range of alternatives. I think our only opportunity to participate in that is here and so it would be in our interest to -- If we decide to say these need to be considered as a group, we need to then follow up and address that concern.

We could do that in a lot of different ways. We could suggest different levels of gear restrictions and indicate our preferred level would be just as it is. We could describe other ranges of alternatives, but if we just say no, then they will go and have to come up on their own with a range of alternatives. I think it's in our interest to not simply just repeat their earlier recommendation, when we've gotten that feedback.

Mr. Blair: A couple of points. John brought up the fact that this is an endpoint that we've gotten

through in compiling that aspect of what we've done to reach here. I think that will provide us the suite of alternatives that we can present to be able to say why we're here and why this is the recommended alternative. It's not as though this is the first thing we drew and the first thing we came to.

I think that they're there. They're not reflected in the June 6th minutes, because we were discussing our final recommendations. I think we can go back and provide that information to tell us how we got there.

Additionally, one of the things we're tasked with is protection of the deepwater coral habitats and to base that on the scientific knowledge that has been gathered and is available and that is what's led us here. To remove any one of those boxes excludes and discounts information that we've been mandated to take and consider and that should be part of our reasoning for being able to take this recommendation for all.

Dr. Rader: It does strike me that there are alternatives that are more stringent and we've considered them and actually rejected them already in getting this far, but we can remind the council of that. One is everything deeper than 300 meters and another is everything deeper than 400 meters.

We've also considered the pieces in between and we'll have that as a created alternative, but we're basically sending a message to the council that we believe that no alternative that is less expansive than what will probably end up being our preferred alternative, which is sort of a status quo or a status quo plus a little bit alternative, is acceptable or consistent with the direction we've been given.

In other words, the creation of artificial alternatives that are less expansive than that, we would find to be inconsistent with the best available science. In other words, NEPA doesn't force you to create alternatives that are inconsistent with the law and we would hold -- If it does, then that's a problem with the law or with the way the judges have found the law to read. Are there other thoughts about this?

I think we have our marching orders for tonight. We'll bring you back recommendations for your final determination in that arena. Now, what about the other outstanding question, which is the sort of regulations or measures to be taken in these waters? We began that discussion. Do you have any recommendations for specific changes you would like to see? We already have made the change about changing the research language.

Mr. Ferry: I have a question about that. In that first part, it states there that we recommend that there's going to be a prohibition for all types of destructive gear and given that, I'm wondering what the thinking is that -- Near the end there, that the panel thinks that it's a good idea and then to begin to talk about specific gear. Coming from a regulatory agency, that first part seems pretty clear to me anyway.

Dr. Rader: What's your pleasure? Do you have a specific idea or does anybody else have a reaction? I'm not sure. I'm not really a gear expert myself and I would rather punt to the people

that are. In other words, we're interested in the impacts on the bottom, on the deep coral ecosystems, all the different kinds of habitats that comprise that system.

Mr. Street: Are we -- Do we comment in any way on non-fishery uses, specifically with especially the energy development issues? Would that be part of this recommendation? Should it be part of this recommendation?

Dr. Rader: Yes, it should be and again, recognizing that the mechanisms are different. In other words, we would be providing the science that would help the agency to identify consultation -- Through the consultation and potentially elevation process, help protect these against non-fishing threats. It probably is worth saying, in the face of increasing potential for non-fishing uses in these waters, that we would like to request that all available tools be used to protect these ecosystems against non-fishing threats as well as fishing threats. It does seem to get outside the purview a bit to delve into that too much.

Mr. Croom: I was, I guess, going to remark on that. I wonder what that adds to the existing mechanism the council has to develop policies that talk about those kinds of activities and how habitats need to be protected from the adverse impacts.

Dr. Rader: I don't think it does. I think the two things interplay between the HAPC designation and regulation and the policies that are used to implement those, in the policy statements that the council has adopted that the agency uses, I hope you use, in reviewing projects. It could go a little bit of both places, given that we have the energy policy discussion coming up and we also have a mariculture policy in place, more or less.

The question is whether there are other uses for which we do not yet have such policies in place, so that we would like the potential risk to other developing uses, maybe in things we can't even conceive today, would be recognized here. That's all I can think of.

Mr. Croom: That was the other part of my observation, maybe, was that -- I guess I would ask the panel how much effort it's worth to try to look into that crystal ball and come up with a suite of activities that may or may not occur and may or may not be problematic, as opposed to relying on the existing mechanisms for activities as they arise that have the potential for adversely effecting EFH and dealing with those in time as they come up.

Dr. Rader: Of course, to me, the logical alternative is not to try to delve into them in any depth, but simply to recognize here that there is a potential for non-fishing impacts and that we would hope, we would recommend, that wherever the ability existed for the agency to use essential fish habitat protection, since this is an essential fish habitat tool, to basically use that to protect these systems. It would just be a general recognition of the potential for non-fishing threats is all it would be. I don't think we would get into it except in the policy statements.

Mr. Pugliese: Really, you pretty much identified this in the last iteration, by saying that in the Fishery Ecosystem Plan and future policy statements these specific activities would be addressed, to ensure that there wasn't -- Tying it to the way we have built policy statements in the past and have recommended those be used to address non-fishing activities and that focus of

essential fish habitat and especially habitat areas of particular concern be used in many of those deliberations for non-fishing.

That's been kind of the most important use of the HAPC, essential fish habitat HAPC, designation, which you all have used very effectively in a collaboration between what the council's policies are and how National Marine Fisheries Service, through habitat conservation, has applied those and been successful in applying those in the past.

Originally, you had essentially kind of acknowledged that. We're including all those policy statements, as they exist now, in the Fishery Ecosystem Plan. The threats discussions are all in the Fishery Ecosystem Plan, as least as far as we have information and understanding where those types of threats -- I think we've set the stage and you've set the stage with being able to build additional recommendations as the material is developed in the future, too.

Dr. Rader: You've heard a lot of updates today and I think nothing that really redirects us in a major different direction. Does anybody have any other ideas or thoughts about things we ought to consider or alternatives we ought to take to the council? I'm going to apologize, but I'm going to have to step out in about five minutes and I'll come back, but if I don't take this call, I'm going to get fired.

Mr. Pugliese: Actually, a point of clarification on gear use within the areas. Understanding existing use, the wreckfish fishery is prosecuted in a number of areas within here. To address the habitat impacts, the fishery prohibits the use of bottom longlines and it is a motor fished fishery. At least in the context of the way it's written, the understanding is that that would not be a prohibited gear and you just need to get a clarification on the record or what the position of the advisory panel is relative to the wreckfish fishery.

Dr. Rader: I see a lot of blank looks. Maybe we need to cogitate on that one overnight, Roger. We'll bring back some recommended language in the morning and we'll act on that. I am going to go ahead and step out now and we've got one more thing that Steve is going to manage for you.

Mr. Blair: With the help of Roger. What we're going to do -- First, I think we did exactly what we wanted to do relative to reviewing this. We got a lot of good information out. One of the things we also wanted to do to kind of set the stage for tomorrow is review the recommendations that were made in June relative to the FEP and again, we may -- We'll see what we have for time. It may be more just a presentation to allow you to think about these things. We'll be discussing it more completely tomorrow, as well as in breakout sessions.

It's really, again, to kind of remind us and take hopefully a bit of the evening to review some of this material, so that we can get through it very productively tomorrow. Roger, would you kind of review the recommendations from the June 2006 meeting, please?

Mr. Pugliese: The recommendations, included in the summary, are presented as follows, that the FEP cover the tremendous transition that has taken place as small fishing villages are being destroyed by development. The council has charged the social science committee with

developing data to address the threats and challenges of working waterfronts and a workshop to address this is coming up.

To include a good economic evaluation, to quantify ecosystem services, to provide a link to each existing ESA recovery plan, to accurately characterize fisheries. An example is the Atlantic menhaden purse seine fishery no longer exists and making sure that was acknowledged. Provide information on how offshore shoals provide EFH. Applications for alteration of offshore shoals have been submitted and a workshop on how they provide EFH is scheduled.

Such areas off North Carolina are important during the wintertime for striped bass and other species, including Atlantic sturgeon. In addition, offshore soft substrates are import habitat for polychaetes and other species. Federal agency partners are working on the passage through FERC licensed facilities, but there are many others that aren't federally licensed and the use of the state priority lists for dam removal, where they exist, in the FEP should recommend some priorities. Update, revise and include the council's water flow policy, written in 2004, especially to address the Roanoke and Savannah Rivers.

Mr. Blair: Roger, I know that you're planning to provide kind of an update on the status and so forth of this tomorrow. Is there anything you want to kind of provide as a seed to that for us?

Mr. Pugliese: I guess to the degree that we have been able to since the deliberations of this panel, the Fishery Ecosystem Plan has expanded significantly, especially shoring up a lot of the information on both fishing and non-fishing threats that were identified and addressing a number of the points that have been raised here, but there's an amount of work that's being done with other areas to address economic evaluations and social science information and things beyond.

What we have in there, it's definitely more refined, in terms of fishery operations and fishery information, to address some of these specific points. There are some proposals on near-shore bottoms directly from the state of North Carolina as proposals for new EFH HAPCs, which may be addressing, again, some of the recommendations. The inclusion of information on protected resources is a lot more expansive within the document.

To the level we have ecosystem services; they're covered under pieces and parts throughout the document. However, there may be refinement as the FEP is completed to really define those greater. Just as a quick, very quick, update relative to us getting into the discussion tomorrow, the document has been refined fairly significantly and moved forward.

One of the most important points, I think, is the shoring up of really a lot of all the habitat descriptions and species descriptions, to a great degree, from the original habitat plan. I think it's one of the more important activities that has occurred within this effort.

Ms. Brouwer: Also, to follow on Steve's question, one thing that I would invite you to do, if you haven't already, is before you dive into the FEP, which is a monstrous document; there is also an attachment that is an outline of what the document looks like right now, the various volumes of it.

What I did was walk through it and provide a status report for each one of the sections of the document. It says on there which sections still need to be revised and which sections are complete and so using that, if you could maybe make suggestions to us as far as what type of information should still be included and where we could find it and whether somebody could provide it to us, then that would be very helpful.

Mr. Blair: I think that's the meat of a lot of tomorrow and our breakout sessions, is try to be able to start filling those gaps and as Roger said, there is an immense amount of work that's already been conducted in revising and putting together that FEP, but there is still a lot of work that needs to be done and we need to be able to identify both resources and information to be able to complete those.

With that said, is there any other -- Is there any comments or questions or thoughts regarding either the recommendations that were included in the 2006 meeting or future relative to the FEP? Okay. As we said, again, this is -- I think as we get into it, just I think in the same way that things got expanded a little bit when we actually started doing the discussions on the HAPC proposals, we'll get into it pretty deeply tomorrow.

We are looking though tomorrow to be able to hopefully come up with the final recommendations for the deepwater coral HAPCs. I think that is something that we definitely want to focus on and make sure that gets -- Hopefully it's our consensus agreement to send forward tomorrow.

The Fishery Ecosystem Plan is going to be an ongoing process, but we do definitely need to be able to identify hopefully individuals, resources, and information necessary to complete that process. Roger, can you review the anticipated timeline for the FEP?

Mr. Pugliese: Actually, for both the FEP and the comprehensive amendment, it would probably be good to understand how these are moving forward. The intent is -- One next step is that the council will be convening the Deepwater Shrimp Advisory Panel and Golden Crab Advisory Panel at the end of January to provide recommendations on what their fishing areas are relative to the proposals that are on the table for conservation of coral.

The intent is that the council's next deliberation in March be the focus of looking at the FEP and the comprehensive amendment for approval to bring to public hearing. With that timeline, bringing it to public hearing and providing the input and providing refinement and recommendations, you're looking at approval in fall, submission toward the end of 2008, and Duane may want to clarify if there's anything more refined you would like to acknowledge, but that's at least the base timeline that has been acknowledged. The critical point right now is bringing this forward for completion and approval for recommendation for public hearing in March.

Ms. Brooke: Is there a provision, or a precedent rather, for making provisions for existing fisheries that now fall within any HAPC that's established that have potentially bottom damaging impacts and specifically in this case if you're talking about the trawling for red shrimp, which I don't believe is going on in that proposed HAPC right now, but then there's the golden crab

fishers that might damage the bottom, but they've been fishing there historically and how do you -- Is this just negotiated on a per-time basis or is there a precedent for how you deal with this?

Mr. Pugliese: The council at the last meeting actually began to address with the -- Kind of step back to that, because what happened is the council pared down the entire comprehensive ecosystem amendment to focus on the coral conservation measures. The HAPC proposals were put forward as the major management action.

In addition, there was recommendation to begin to look at allowable trawl areas for rock shrimp and royal red, potentially, as well as requiring VMS for the golden crab fishery if there are areas that they are not impacting habitats. It was qualified to that degree, that if that can be acknowledged and identified, there would be a requirement either across the fishery for all vessels or on vessels that would want to be able to go in areas that could be identified as not habitat areas that they would be impacting and there would have to be the requirement for that.

Those were laid out as considerations for the council's way of addressing or beginning to look at what fisheries may be either impacting or even if there's an allowable operation. There was specific discussion about shoring up the information on the habitat from this panel, so that when the deepwater shrimp and golden crab fishermen sit down with this that they can provide that and then it's going to be -- The council will have to be able to deliberate on what their opinions and decisions are with the information from the fisheries, as well as from the Coral and Habitat Advisory Panel relative to the science.

Ms. Brouwer: I just wanted to add a little bit to what Roger said and to clarify that the recommendations that were included in the draft comprehensive ecosystem amendment that the council looked at at the last meeting have not been reviewed or commented on by the fishermen. The plan is to give the fishermen a chance to give us their input and recommendations at a meeting that will take place next year.

Then the council will have recommendations from the Habitat and Coral AP and the information from the fishermen as far as what they would like to see in regards to their fisheries and then the council, at their March meeting, once they have all the information in front of them, they can consider what management options are feasible to address this.

Mr. Street: I've got some comments maybe a little different. I have a few notes I've made on the outline and I thank you for that outline. It's a lot better than trying to go through 2,000 pages, which I did not attempt. Also, a couple of thoughts on a couple of things up on the screen there and is this an appropriate time to say anything about those or --

Mr. Blair: Yes. I think, as we stated, this is kind of like a period for open discussion and we'll get into detail and so forth tomorrow.

Mr. Street: A couple of things. The Atlantic menhaden fishery in North Carolina still does exist with purse seines, but it's not by any North Carolina-based vessels. It's by Virginia-based vessels and they still do fish off north of Hatteras. They can legally come south of Hatteras, but they just don't.

Of course, that fishery may not exist much longer, since a bill has been introduced in Congress to totally outlaw menhaden fishing in all waters of the U.S. north of South Carolina, i.e., from North Carolina northward. Also then, about dams and that sort of thing, there are needs for priorities for dam removals, but with the current drought, I do believe we're going to see recommendations for new dams.

In North Carolina, the Tar Basin, the Neuse Basin, the Upper Cape Fear Basin, because that area is still extreme dry, they are looking for water and that's what they're going to be looking at. Also, about six or seven years ago, our environmental management commission enacted rules requiring what's called the Central Coastal Plan Capacity Use Area. It's nineteen counties in east central North Carolina or central eastern North Carolina actually, east of Raleigh to get off ground water, because they were pumping beyond recharge capacity.

They were given a fifteen-year period to reduce groundwater use by I think 80 percent. Anyway, in excess of 50 percent. Was it 60 percent? Anyway, those communities that are doing that are going to go to the rivers and the creeks. That's all there is if you can't pump ground water and so there is going to be movement towards more surface water storage.

Mr. Blair: Thanks. That's good consideration and that's what we want to be able to identify and work and address, either directly here or in potential policy statements that need to be developed associated with those processes. Other comments?

Mr. Harris: Just a comment to Dr. Brooke's question a minute ago. I think what the council wants to do is, number one, protect these coral habitats. That's foremost on our agenda. Number two, to the extent we can accommodate certain fishing activities within those HAPCs, like golden crabs -- It's a relatively small fishery and not a lot of fishermen. We've had a great working relationship with those folks for over twenty years.

To the extent that we can do that, we will. I don't think there's any question that's the action that the council will take, as long as we can be assured that those traps are going to be placed in such a way that they're not going to damage coral resources. If that helps any, I think that's the direction I see the council going with respect to this issue.

Mr. Blair: Thank you. Are there other points or thoughts? We will be looking tomorrow to probably kick off with a review of information and maps and locations relative to the seep areas and hopefully jump into the agenda to do a final review of the HAPC recommendations that the panels will forward to the council and follow that with the FEP discussion and on with the agenda from there.

Mr. Croom: Will it be too much to ask that tomorrow when we look at the proposals that there be some range of alternatives based on what we've heard today and some of the historical thinking that has gone into leading us up to the point where we are today, just to get a rough sense of what this panel might recommend to the council in terms of helping them with their NEPA analysis?

Mr. Blair: Yes, I think that -- The answer is yes. We'll see how we can do that and hopefully we'll present both some of the process alternatives that have brought us to this point as well as direct draft alternatives that we would forward to the council. We'll look for you to all help compile that as well, as far as the final alternatives. Roger, any closing comments for the day?

Mr. Pugliese: Just thank you for all the persistence in moving forward with a lot of tough issues and I look forward to getting the recommendations in a package that's going to make it useable by the council. I think you're on the right track and everything seems to be moving forward well. Thank you all.

Mr. Blair: With that being said, we're adjourned until 8:30 tomorrow morning. Thank you.

(Whereupon, the meeting recessed at 4:45 o'clock p.m., November 7, 2007.)

The Joint Meeting of the Habitat and Environmental Protection Advisory Panel and Coral Advisory Panel of the South Atlantic Fishery Management Council reconvened in the Topaz Room of the Charleston Marriott Hotel, Charleston, South Carolina, Thursday morning, November 8, 2007, and was called to order at 8:50 o'clock a.m. by Chairman Steve Blair.

Mr. Blair: We're trying to get one or two things finalized and get some things printing, so that people will have a hard document in front of them, but we can kind of get ourselves organized and get ready to start, please.

Dr. Rader: Let's call the meeting to order. Good morning, I'm Doug Rader and this is Steve Blair, co-chairs of the consolidated Joint Coral, Coral Reef, Live Bottom and Hard Bottom AP and Habitat and Environmental Protection AP for the South Atlantic Council. I see we have a couple of people with us today that weren't here yesterday. Do you want to introduce yourself?

Mr. Carlson: I'm Paul Carlson with Florida Fish and Wildlife.

Dr. Rader: Who else is here that wasn't here yesterday?

Mr. EuDaly: Ed EuDaly with the Fish and Wildlife Service in Charleston.

Dr. Rader: I'm glad you could be here. Also, for those of you that didn't hear yesterday, we worked hard yesterday and are working hard today to try to get done today and believe that we will get done today and I don't know exactly when, but should you desire to check out early and leave today, the hotel is not going to apply any penalty for a reservation you haven't yet cancelled, so feel free to -- Check-out time is 11:00.

What we will do is break by about 10:30, in order for people who haven't yet and want to check out today to be able to do so and obviously you can store your stuff here or in your car or wherever and then we'll continue on and I would say certainly get done today.

Remember that we have three orders of business on the agenda for today. The first one is to complete the actions we initiated yesterday and to take final action on a recommendation to the

South Atlantic Council related to the deepwater coral habitat areas of particular concern. What I did last night, in consultation with the staff and with Steve, was to take the recommendations from yesterday and assemble it in the form of a strawman, strawperson, proposal that we will project up on the screen.

In addition, Steve has asked staff to print them out, so that you can have a hard copy in your sweaty little hands to look at as we go through this. That may take a minute, but we'll begin by reminding you all from whence we came, in terms of the areas to be included.

We'll project some of the previous and including the current what we'll call the status quo alternative, the one that the council had been styling as the, quote, preferred, end quote, alternative and which may well come out of this discussion remaining our preferred alternative, but we'll see how that goes and then we have created, as you requested yesterday, a variety of additional alternatives for you to consider.

The job for this morning is first just to make sure that the styling and wording of the recommendations themselves make you happy, if you are made happy by such things, and second, that the specific ordering of the specific preferred geographic alternative is correct and then third, we'll sort of rearrange the recommendations for management within the HAPC and we'll present them for your approval as well.

Hopefully we can get that done expeditiously, but take as much time as you need, and then we'll move into looking at where the FEP stands and we'll break into sub-panels, joint sub-panels, by space, in order to look at other potential candidate EFH, essential fish habitat, or coral or EFH HAPC candidates that might have slipped through the cracks or that state initiatives have revealed. We'll bring those back to the group as a whole and assemble them for state to treat.

Then the last matter of business for the day will be to look back at the draft energy policy. Remember the council had adopted it after our initial work back in 1990 -- Help me, Roger, but was it 1998? I've forgotten, but thereabouts. We have a slightly revised version of that, but the council has expressed additional interest in our input on new energy-related uses in the U.S. Southeast EEZ, exclusive economic zone.

Obviously we're not going to get that beast wordsmithed today, but what we will take from you is your ideas and findings, what you believe or know to be the case about the nature of those risks that ought to be incorporated into a draft, which we will then bring back to you electronically later. That's where we'll finish the day. That's our plan and are there any objections to completing the agenda that way? We'll move that way.

Reminding you, the process of identification of deepwater coral habitat areas of particular concern in the southeast began back in the -- Obviously it's been going on since the late 1980s and early 1990s in one sense, but under the coral plan since the early 2000s, about 2002, we've looked at spectacular studies that John and Steve and Sandra and others were making in the southeast as being a very important target for protection under the council's authority.

As more investments have been made out there, we've found together more and more and more

truly cool things deserving that protection, yet we don't know everything we need to know to be able to protect exactly all of these deepwater coral reefs and remember that is the charge that the council has given us, to protect basically every known deepwater coral reef compartment or site under this program.

We started in ignorance, admittedly, with a fairly broad analysis of the southeast, recognizing that as discoveries were made that nearly any area of sufficient depth might contain a reef and so the very broadest possible spectrum would be everything deeper than X, with X being something on the order of 300 meters or thereabouts, 400 meters perhaps to the north.

We have, through time, refined that, to narrow the zone, to concentrate the protections under the HAPC authority on areas where we know or based on the best available science and our best professional judgment such deepwater coral reef and associated habitats occur. You notice how carefully I'm using those terms, because I will remind you again that, in my view at least, this panel provides the best available science in its recommendations to the council on the kind of ecological implications, including habitat implications that the currently configured Scientific and Statistical Committee, for the most part, lacks.

Making a finding of that type is, in my view, pretty important and so we have attempted to cover all without covering things that shouldn't be covered and that is the juggling act that we have been about and so what Steve is going to do is to present to you, by way of reminder, where we have been, so that you have firmly in your head what the alternatives have been and we'll then establish an array of prospective alternatives for you to consider and we'll make some decisions.

Mr. Blair: Thanks, Doug. One of the things we want to kind of review as well is the purpose of what we are planning to do with this recommendation and what we are planning to do is to recommend to the council what our best professional judgment, based on scientific data that is available, is the most appropriate series of proposed HAPCs to protect the resources that we can at this time.

It's meant to be -- I state that because it is somewhat different. The record itself builds what we need to use to expand out relative to NEPA requirements. When Doug speaks of alternatives, I'm trying to make sure that we have that separation. It's a different thing than the NEPA process relative to trying to define and identify all those alternatives. They are there in the record and the record develops that.

What we are here to do is decide what we are going to recommend to the council as our recommended plan for the HAPCs. Full alternative development and descriptions and so forth are built within the record, but they aren't necessarily what has to go to the council itself. They will see it in the record, but it's a different process.

As Doug said when we kicked off the meeting yesterday, what we want to have is a rather unambiguous statement to the council, so that they get our best understanding and judgment as to what we feel is the best way to protect those resources and so as we think about the alternatives, I am hoping that we can decide that there is a recommended plan with potential alternatives for consideration. I think that is the way that we really want to be looking towards this.

Doug has also kind of given you an initial aspect, when we first started looking at some of these areas of the deepwater reefs. Obviously individuals that were working there were just scratching the surface as far as understanding both density, diversity, complexity, and spatial arrangement of these, so that some of the initial thoughts and plans that were being considered were very broad sweeping. As Doug said areas below 300 meters out to the edge of the EEZ and areas below 400 meters out to the EEZ.

Obviously some of those were discounted because we knew we would be incorporating large areas that did not contain deepwater reef areas or hard ground areas and would not necessarily be able to be appropriately justified.

Everybody in their briefing packets have received two documents, Attachment 13 and Attachment 14. Attachment 14 has the summary recommendations from the 2006 meeting and Attachment 13 provides the background that leads to each of those summaries or each of those recommendations.

That basically is the story that tells us how we got from our 2004 recommendations, which had six HAPCs, to our 2006 recommendation of four HAPCs. What I'm going to do is kind of go through and review a little bit of where we were with our -- Not necessarily going through the more broad sweeping aspects, but at least show you what the status was in 2004 and what brought us to our present status and so to give you a little bit of an idea of what got us there.

In general, this shows the combined areas for the HAPCs, showing both 2004 and 2006. 2004 is outlined in red and 2006 is outlined in the purple and so this is just the broad sweep. You can see that there are some specific changes and as documented in the background document in Attachment 13 were the specific reasons for these changes and they were based on information from brought to the table by John Reed and Steve Ross and their co-investigators for additional information from these regions.

Just to review relative to the northern two, these two areas were -- The North Carolina sites were proposed in 2004. These are the original formations that existed. No additional information was available to either state any sort of modification to those areas in the 2006 area and thus, they remain the same.

In the larger Savannah, Stetson, and Miami Terrace, originally in 2004 we had information that would indicate high density of reefs in the northeast and down along the east coast, offshore coast area, of Florida, terminating pretty much in the Palm Beach area. With additional data brought to the table by John and Steve and others in 2004, including now identification of many areas of high relief and with the knowledge that with the groundtruthing that had been conducted at that time, each groundtruthed area of high relief showed appropriate either coral habitat or hard ground habitat that would provide appropriate fisheries resources for protection.

Thus, those boundaries were expanded to be more inclusive of those entire areas and that included extending it beyond this initial HAPC, which was defined in the Savannah area to also include the Miami Terrace HAPC.

Originally in 2004, again, there was the indication that high-quality habitat and so forth existed, based on the information available in 2004, within this band from basically Broward County down through the middle of Dade County. With additional that was brought in on 2004 that area was expanded out to the edge of the EEZ, as well as eastward, to be more inclusive of the regions that had high-quality habitat.

Similarly, in the Pourtales Terrace, additional information brought forth that it also should be expanded and be more inclusive of the potential habitat areas in those regions and so we have -- Based on that information in 2006, we decided to modify the recommendation that we had originally provided the council from a six HAPC formation to off the Carolinas and four in the central Florida coast and off Georgia.

Three of those were combined into a single area and we now have the four areas, two off of the Carolinas and the main one off of Georgia and Florida, down the east coast of Florida, and the Pourtales Terrace.

In a real quick nutshell, it kind of gets you to where we initiated and what our initial plan was and what it's been modified to today. The document, again, Attachment 13, provides much more detail, giving the specifics of the additional information that was brought to the table at the 2006 meeting that provided us the information to justify the expansion and combination of those areas.

Dr. Rader: Then yesterday we heard from Steve and John and others detailed information about what's happened since 2006, a summary of that in terms of -- It would have two components. Number one, that as researchers have looked at appropriate bathymetry within the zone and every case so far has yielded the expected coral and associated habitat types and so our uncertainty that the interstices of the dots -- That they contain corals is growing.

I think we do have a very strong basis for maintaining that aggregated site. In addition, there is some evidence that there is or that there may be coral and related habitats to the north, by some amount, based on Steve's guesses, informed guesses, and based on some reconnaissance and company between the Miami Terrace part of the Stetson/Savannah/Miami Complex and Pourtales Terrace and some also to the south and west of the current box, down in there.

The alternatives to recommend that we are setting up -- Let's go ahead and project the written document now. Is everybody happy? Everybody understands the geography and so if we take the map off the screen for now, we're in good shape, yes?

Mr. Street: Just a very, very minor question, but since it will be in the documents, what is the correct spelling of Pourtales? Does it or does it not have a "u" in it? I've seen it both ways projected.

Dr. Rader: I thought it had a "u", but is there someone who feels like they have definitive knowledge. John Reed says it does have a "u" and an accent on the "e", which we won't follow. What I've done in the written document as it comes up -- We'll come back to the narrative expressly, but starting on the alternatives for recommendations, I didn't hear anything yesterday

that supported a contraction in the area we recommended and so I have created no alternatives for you to consider that does so.

In fact, I took the discussion yesterday to suggest that no reduction of the coverage was supported by the best available science and you'll see that written narratively. The alternatives I have created for you to consider, based on our discussion yesterday, are, first of all, status quo and by that, I mean the preferred alternative as it had been discussed, meaning the four compartment or four site mosaic. I'm not going to use the term "network", I guess, since that seems to mean different things to different people.

Meaning the two in North Carolina, the large Stetson/Savannah/Miami Complex, and the Pourtales Terrace site. That's one alternative and another alternative is that plus a small new proposed HAPC, very small, located right on top of the single methane seep live bottom hard bottom community that has been affirmatively identified in this region. That's an alternative.

A third alternative is to add to that five-site mosaic additional potential sites or documented sites to the north in between and to the west. We'll ask John, are you going to be able to project a proposal along those lines or not? I thought you were thinking about that and working on it, potentially.

Dr. Reed: I talked to Tina yesterday afternoon and we kind of looked at some of my new data that came out of this year's cruise, as well as the bathymetry there. We could look at that option if we have the ability to show the HAPC boundaries with that blue NOAA bathymetry background. You can really see the structure. If you want to look at that, I can do that.

Dr. Rader: We'll come back and it may not be necessary. It may be that there's -- These are straw people and then a fifth sort of potential would be to go back to where we started, which would be to be everything deeper. I'm actually not -- It's a fourth possibility. Actually, based on the discussion yesterday, I don't think that's a likely recommendation and so I just put it out as something to be discarded.

I agree with Steve that we should give it our best shot, based on our role as scientists, to recommend a single preferred recommended alternative and the others we can discard, but -- That's where we stand and what's your pleasure in going forward? Why don't you move down to the section, Roger, on -- Let's do geography and then we'll say what we mean by it.

Let's do it in order and what I'm actually going to -- I know this is tedious, but I'm going to read it out loud, so that it's on the record as well as on the screen, if that's okay. Let's just move through these in progression and we won't vote on each one, but please raise questions about each one as we go and then we'll take a vote on the entire package when we're done, okay?

What I've tried to do is to capture the discussion yesterday and this is a combination of findings and recommendation, both. In other words, they're statements of what we believe to be fact and then recommendations. Number one, on the proposed deepwater coral HAPCs and I'm going to read it verbatim, again, the proposed deepwater coral HAPCs (C-HAPCs) should be adopted as soon as possible. Growing pressure for new and more intensive uses of the EEZ, including

potential energy development, mariculture, and emerging deepwater fisheries, requires rapid designation.

Given the technical and other complexities that have arisen associated with the allowable gear areas and SFA, and that means Sustainable Fisheries Act, parameters for deepwater species, the panels recommend shifting those measures into FEP, Fishery Ecosystem Plan, Comprehensive Amendment 2, in order to proceed with the C-HAPCs.

That's what it says and what it means is that we're recommending that the council move forward expeditiously, as expeditiously as due process allows, to go ahead and get these things in place in the water. Is there comment on that or questions about the wording or recommendations for changes in the wording? Take a minute to look at it. Make sure that we captured what you meant yesterday and if we didn't, don't hesitate to say. Remember you'll get another little bite at this apple as we go through, because you can raise things at any point.

Number two, new information compiled for the council and presented to the panels by John Reed and Steve Ross and others constitutes the best available science and continues to strengthen the case for protection of this world-class deepwater coral ecosystem. Additional coral features and related habitats continue to be found within the areas previously identified, including pinnacles, ridges, and escarpments up to 500 feet tall. There's a little bit of rhetoric in there, but that's on purpose.

Ms. Stiles: I was just looking at the second part of the first statement on allowable gear areas and I have some concern that by specifying putting it so specifically that it implies that this panel agrees with those sort of issues that have come up and it might be cleaner to just say "allowable gear areas" and to cut the words "and SFA parameters for deepwater species", just to be concise and not overstate what we're saying.

Dr. Rader: I agree with the first half of that for sure. The second part, I'm not sure. In other words, it might be that uncertainty in developing harvest parameters for golden crab or royal red shrimp actually could also delay things.

Mr. Pugliese: It would be just royal red.

Dr. Rader: For royal red in Amendment 7.

Ms. Stiles: I don't think those are in the options paper right now.

Mr. Pugliese: They're not, but I think that was made clear at the council meeting, that to move anything forward on that action that we have to put in SFA parameters for management of the species, because it's technically not in the -- It's in the fishery, but not in the management plan as a managed species and as soon as it comes online, it has to have the SFA parameters associated with it.

Dr. Rader: The important point is not the particulars. I think you're right that the important point is not the particulars, but other requirements of managing those areas shouldn't -- The

species complexes in those areas shouldn't delay the implementation of the coral HAPCs.

Mr. Blair: Just a suggestion for possible wording, if it might be appropriate, that we could make a statement that the council makes no recommendations as to that allowable gears and SFA, but recommends that these be -- We basically would add a statement that given the technical and other complexities that have arisen associated with the allowable gear areas and SFA parameters for deepwater species --

Ms. Stiles: One things is we haven't had the presentation from Roger and Myra yet about what these are and so I guess -- Are we not going to do that or --

Mr. Blair: The point at this period --

Ms. Stiles: I guess I feel for the advisory panel to make a pronouncement about the allowable gear areas that we haven't really discussed what they are and that there's a lot of detail in that statement.

Mr. Blair: My point is try to include verbiage that states that, that at this point the council is not --

Ms. Stiles: To reflect that we're not making recommendations?

Mr. Blair: At this time the council is not able or is not making recommendations towards allowable gears and SFA parameters for deepwater species; however, the panels recommend shifting those measures to the FEP.

Dr. Rader: I still think the point is well made that we're getting, in some ways, beyond our purview, by getting so deep in the weeds. We could simply say that the panels recommend shifting other measures that might delay HAPC implementation in FEP Comprehensive Amendment 2, period.

Ms. Stiles: I think that's the spirit of my comment, is to make it general. It's not being more specific than we are actually thinking to not speak more specifically than your thinking is.

Dr. Rader: Roger, take out the whole phrase "before the panels".

Ms. Stiles: I do think that the allowable gear areas are a good thing, but if we don't have time to discuss them, then perhaps it's better.

Dr. Rader: Short and sweet is good. I'll reread that last sentence for the record. The panels recommend shifting other measures that may delay C-HAPC implementation into FEP Comprehensive Amendment 2. Is that consistent with the spirit? Any other thoughts about that? I'm happy with that.

I'll just go ahead and read them. You heard Number 2. Number 3 is new research has identified additional deepwater coral habitats of potential high value: 1) some distance north of the current

boundary of the Stetson/Savannah/Miami Complex; 2) between the Miami Terrace and the Pourtales Terrace; and 3) to the southwest of the Pourtales Terrace. The panel recommends additional characterization work on these sites to be factored into future habitat protection amendments.

There's a question about where we end up with the geography embedded in that statement. That's presuming that we would find an alternative preferred that didn't expand from the current four compartment or four-site mosaic. If you make a different decision, we'll come back and edit this to be consistent with your recommendation.

The next recommendation is only one chemosynthetic, quote, methane seep, end quote, live bottom community has so far been documented in the U.S. South Atlantic EEZ northeast of the boundary of the Stetson/Savannah/Miami Complex. It should be protected as a separate C-HAPC.

Next, the panels reiterate the previous request to the council to interact with the U.S. and Bahamian governments to find ways to collaborate on research, as well as protection measures for shared deepwater coral ecosystems. The council could communicate with the Bahamian government directly or through the U.S. Departments of Commerce and State.

Mr. Alexander: The previous statement about the chemosynthetic community, first, I don't know whether it's appropriate to designate it as a coral habitat of particular concern. Are there any corals?

Dr. Rader: Remember, it's not -- The fishery management plan is coral, coral reefs, live bottoms and hard bottoms.

Mr. Alexander: Okay. So a C-HAPC doesn't necessarily imply coral?

Dr. Rader: The problem with identifying it as a non -- I thought about this overnight. The problem with identifying it just as an HAPC is the fact that managed species other than corals, which are managed species in the South Atlantic Council's vernacular, don't really occur there and so it would be difficult to designate it as an EFH site under one of the other plans and for instance, the snapper grouper plan that contains the reef fishes, and mostly because they're not in the management unit there.

Mr. Alexander: I guess I'm just a little uncomfortable with this group designating it as anything. I'm not sure why we would designate it as a special habitat and want to preserve it.

Dr. Rader: Among other things, the council has already given us some general direction, upon the request of the researchers who are working on that site who are not represented here, who have asked for that to be considered and have given direction that we could consider including it.

Mr. Alexander: I would vote that we don't consider it. I don't see the point.

Dr. Rader: The point is the same as the point for the rest of it and that is that new and

developing uses are potential in all of those sites and -- It clearly is in the purview of the two panels together and I would say certainly in the purview of the coral panel as well. Whether you choose to want to do it is another matter.

Actually, that statement -- I didn't mean to preclude discussion on that statement, because the way all these statements read has to be consistent with your recommendation and so we'll make sure that it is.

Mr. Shepard: I would be on the other side of this issue with Mr. Alexander and say that this does fit nicely into the C-HAPC definition and that there is real possibility of threats to this place, because of the potential for hydrate development and the Blake Ridge has a significant hydrate -- It's not maybe the place they're going to go, but it's a place that is small enough that I think it's worthy of this designation.

Dr. Laney: Didn't we discuss yesterday the fact that the Gulf Council has already designated all the methane seeps in their area or were considering designation of those as an HAPCs or some other special classification and if so -- I thought somebody mentioned that and if that's the case, I guess we could argue that we would be following precedent that they've already set and maybe -- Steve Ross maybe said something along those lines. Steve, do you know have they already designated those with any sort of special designation?

Dr. Ross: I don't think they've been designated. I don't even know that they've been discussed that much, from what I've heard. I'm not in the loop with the Gulf Council that much, but I haven't heard that they've got any particular protective mechanism in place for cold seeps, aside from what MMS is trying to promote.

Mr. Alexander: I would just like to respond to that, that on the Gulf Coast these are major sites that are found throughout the Gulf area and so they're much more important habitat than they are at least in terms of the distribution on the east coast now.

Dr. Rader: Which cuts both ways, since it's also, as far as we know, an unusual or maybe even unique habitat in this setting. This is obviously for you to decide.

Mr. Street: What are the potential threats to this habitat specifically?

Dr. Rader: Obviously it's in significant depth. Roger has on the screen the site. It's way out in like 2,200 meters and so it's really deep. Obviously energy exploitation would be the one. There are extensive methane clathrate or methane hydrate deposits out on the plateau that are well documented and apparently pretty extensive.

The idea is not to get in the way unnecessarily of the development of those resources, but to identify sites that are ecologically or biologically interesting or unique and particularly within the clear purview of the coral, coral reef, live bottom and hard bottom fishery management plan. Of course, remember too that designation doesn't necessarily mean anything particular.

What we would recommend in terms of management would then also be up to us and with the

strawman right now, it would apply the same sort of no bottom disturbing fishing activities measure on it and then recommend that for non-fishing activities that the normal EFH process be applied, including both the policies, as Miles suggested yesterday, that the council adopts generally related to activities and then the designation process, too. It's a consultation and potential elevation process that would be applied. It doesn't mean that nothing would happen there. It just means that that's the mosaic in which it would occur.

Mr. Ferry: I would just like to ask -- I realize that only one of those communities has been found out there so far, but I suppose that as you explore the area that you may find others. If we chose at this time not to include that in the designation, how hard would it be to pick these up later if it became more important?

Dr. Rader: You could, in theory, do it in the next comprehensive amendment, whenever that happens. It would initiate in the fall. Other thoughts?

Ms. Stiles: I don't know that much about these areas and I don't have any particular position on them, but I did want to mention that rarity doesn't necessarily mean that it's an unimportant role in the ecosystem for a particular group or assemblage of species. There's an awful lot of sand out there, but we're not saying that that's the most important habitat.

Dr. Rader: Let's not get wrapped up in this too much, because I think we can address it either way. If we can go ahead and resolve the -- You all see where it is based on what's on the screen. Let's go through the rest of the recommendations and make a decision on the geography and then come back to the management. You will be getting the hard copy now.

The panels reiterate the previous recommendation that all alternatives taken to public review and considered by the council should include all well-documented deepwater coral ecosystem sites. This is not part of the recommendation. What that means, remember, is corals and associated habitats. Considered by the council should include all well-documented deepwater coral ecosystem sites and be designated as a whole. While the degree of ecological connectivity among sites remains inadequately known, geological, ecological, and genetic evidence makes clear that all sites are valuable and many are unique.

We've amended it to say: Geological, ecological, and genetic evidence makes clear that all sites are valuable and many are unique. No alternative should be allowed to be evaluated that is inconsistent with the best science currently available. Examples of scientifically inappropriate alternatives include: 1) the now outdated six-compartment proposal and 2) any alternative based on subsets of these sites. I did that attempting to capture discussion about the contraction. Thoughts? Again, you're not committing at this point. Are there thoughts, comments, questions?

Mr. Croom: I would just recommend that perhaps we could put the language in a more positive tone; the sentence that begins "No alternative" could be recast to say something like "All alternatives should be evaluated consistent with the best science currently available."

Dr. Rader: Okay, although "all" is probably too inclusive. Could you say "Alternatives should

be evaluated consistent with the best science current available"?

Mr. Croom: I guess I don't quite follow that. I thought the process of evaluating and identifying HAPCs has to be based on --

Dr. Rader: I didn't mean that. It just was a suggestion in that wording that all alternatives -- In other words, it's too big a universe of alternatives, a million, but it's okay. Go ahead and say "all alternatives" and let me reread it.

Mr. Croom: We could say all alternatives presented to the council.

Dr. Rader: Just considered? It now reads: All alternatives considered should be evaluated with the best science currently available. I think we ought to state that we believe the six-compartment proposal is an old proposal and no longer consistent, if that's your opinion.

Ms. Wendt: I have a suggestion. Perhaps if you say something like only those alternatives that are consistent with the best available science should be considered.

Dr. Rader: Everybody got that? Are there other comments or thoughts? Is that okay, Miles?

Mr. Croom: I can live with it. I wouldn't word it that way. I really think that that wording gets us away from the notion that all alternatives need to be based on and considered within the framework of best available information.

Dr. Rader: I guess my view -- This is me, not chair. I think alternatives that aren't consistent with the law shouldn't even be considered and so I think it's a waste of NEPA resources to create straw people that are illegal and my view is that an alternative that is not consistent with the best available science would not be legal. That's my point and --

Mr. Blair: I think I understand where Miles is going with this. I believe that all of our alternatives that we have evaluated, including those that have been discarded, have been done so based on scientific knowledge.

Dr. Rader: At the time, they were. The point I was making is that they are no longer consistent with the best available science and therefore, should not be allowable as a legal alternative within either the NEPA framework or certainly not a recommendation that we would support.

Mr. Blair: I understand. I think that the point though is just to capture that they all have been evaluated, those that meet the best available of fulfill the best available science are being carried forward, but all were evaluated based on the science available.

Dr. Rader: What's the proposal for alternative language?

Ms. Brouwer: Just a suggestion. I think the intent is to get the panels to recommend and come up with language that indicates to the council that it's important that these areas be designated as a network, as a whole package. Perhaps if we are more clear in stating that the best available

science indicates that these areas should be designated as a network, it would get that point across.

Mr. Blair: Again, I guess it's trying to wordsmith this a little bit, but only those alternatives that are -- Going back to what I think was suggested previously, only those alternatives that are consistent with the best available science will be forwarded for consideration to the council.

Mr. Pugliese: I think we're getting a little mixed up in apples and oranges on the intent, I think, of where at least my understanding of what Doug and what you're trying to capture is the best available science is going to be providing what your recommended alternative -- The other alternatives are essentially outdated and they're not based on the best available science.

However, getting back to the NEPA side of things, they should be evaluated in that context that the council deliberates in putting management actions into the comprehensive amendment. You have two facets, where the one is what the preferred is. It's based on the best available science, the recommendation coming from this group. The other ones fall short of that, but still would be evaluated.

Dr. Rader: Maybe the problem is in the word "considered" and so maybe what we should say is should be proposed for adoption and is that okay, Miles?

Mr. Croom: That's fine. Again, I think all the alternatives, as they were proposed, were considered based on the best available information. It's just that now we've got better information than we had two or three years ago.

Dr. Rader: Let's move on down. What it says now is: The panels reiterate the previous recommendation that all alternatives taken to public review and considered by the council should include all well-documented deepwater coral ecosystem sites and be designated as a whole. While the degree of ecological connectivity among sites remains inadequately known, geological, ecological, and genetic evidence makes clear that all sites are valuable and many are unique. Only those alternatives that are consistent with the best available science should be proposed for adoption. Examples of scientifically inappropriate alternatives include 1) the now outdated six-compartment and 2) any alternative based on subsets of these sites.

Dr. Ross: I guess we're obliged to pick this thing apart. The original proposal wasn't, and is still not, scientifically inappropriate. It's just different. We weren't -- We're going about this process currently -- What are you looking at me like that for?

Dr. Rader: I think we could go around this particular bush forever.

Dr. Ross: That's what I was wondering. Do you want a correct wording and wordsmith it to death or not? That wording is incorrect, in my mind.

Dr. Rader: How about the examples of now outdated alternatives? Is that okay?

Dr. Ross: Yes. What we were asked to do originally was to, in mine and John's best estimation,

put boxes around where the predominant habitats were and we were asked to be conservative about that. We were never asked to present multiple alternatives for discussion.

Then, as we decided to be more expansive and less conservative, there was a reason to connect those boxes into a simpler and larger framework, but we never discussed all the possible alternatives until now, when it's coming up.

Dr. Rader: This wording isn't intended to be critical of any of that and I've got to say I'm a little surprised about that. What it was intended to do is to judge the different configurations that you have seen that have been presented in the past against the currently available information and determine whether or not they adequately contain, as we have been asked to design, the documented, relatively well documented, deepwater coral ecosystem sites.

The answer to that -- In my view, the answer to that now is that the six-compartment model, good as it was at the time, at this point no longer reflects our knowledge of where those sites are as completely as it should.

Dr. Reed: For the last two sentences, perhaps we could -- I think we all kind of agree on the basic proposal that we want the entire known coral area and the proposed boundaries to be accepted by the full council. Perhaps we could wordsmith it to say this joint panel or the panel strongly recommends that the proposed C-HAPC be accepted in its entirety, based on the best available research at this time or something like that. Then say the panel at this time does not recommend splitting the HAPCs up into six compartments or any subsets or something like that.

Dr. Rader: I had a specific point though in affirmatively citing the best available science and it has to do with the way that the advisory panels and this council are configured versus the Magnuson-Stevens Act obligation. I really continue to believe that the SSC does not have on that panel adequate representation of ecological scientists with habitat expertise that could make that judgment and yet they are seen under the law currently as arbiters of best available science. I think it's important that we insert ourselves in that way.

Mr. Carlson: I think the language there "while the degree of the ecological connectivity among sites remain inadequately known" kind of defeats the purpose of the sentence. What I would suggest is that you move the back of the sentence to the front and say "All the available geological, ecological, and genetic evidence suggests a high degree of connectivity between sites and so they should be preserved in toto."

Ms. Brooke: Since we're being picky and splitting hairs, I have a little bit of an issue with "considered by the council should include all well-documented deepwater and coral ecosystems". They do include the well-documented ones, but they are by far in the minority. Most of these suspected sites are potential sites.

I would suggest maybe saying the council should include all documented and potential deepwater blah, blah, blah. I don't know if that leaves it too vague, but they're not well documented by any means.

Dr. Rader: I think "potential" is too broad. We need to show that it's based on some scientific intuition, at least. The truth is we've looked at bathymetry and other things and have a pattern and record now of such sites turning out, in fact, to be coral ecosystem components. We were actually not charged by the council with including all potential sites, but all probable sites.

If we said -- I think what I'm inclined to do is, given the potential for wordsmithing this all day, is to propose deleting this entire thing and saying the panel strongly supports the designation of the complete C-HAPC as proposed below, and we'll decide what that is, as supported by the best available science, and does not support any subset thereof. Is "subsetting" a verb?

Mr. Blair: It is now.

Dr. Rader: Steve proposes "any subsetting thereof" and that's something that I would do. Is there any opposition to dumping all the rhetoric above? When you see that much wordsmithing, you know that there are concerns and it's easier to cut to the chase. Once, twice, it's going to be dumped. Okay, dump it.

What that recommendation now says, and we may need to go back and re-wordsmith a little bit, with your permission, the above, to make sure it's now logically consistent, is: The panel strongly supports the designation of the entire C-HAPC as proposed below and as supported by the best available science and does not support any subsetting thereof. Are there other comments?

Mr. Croom: I think the panel can do better than "subsetting thereof". I'm not exactly sure, but I think we could say something like "does not support designating portions of the recommended whole" or something like that.

Dr. Rader: Okay, and does not support designating portions of the whole. Let me read it together one more time: The panel strongly supports the designation of the entire C-HAPC as proposed below and as supported by the best available science and does not support designating portions of the whole.

Dr. Reed: This is the last I'm going to talk about it, but I think that's the number one key of this whole thing and it should go to the front, to the top, of the whole list there.

Dr. Rader: We may want to restate what's up there and that's why I was looking for permission to sort of make sure that the recommendations integrate. Why don't you put in parentheses "move to the front" and we'll come back and make sure that that point is the number one point made. Are there other comments on this?

I guess what we need to do is to move directly into resolving the issue about what the geographic proposal actually is and if we can get that resolved, then we can make all the rest of it match. What is your pleasure? I guess as a strawman that I'll throw out as a preferred alternative the --

The way I wrote it before the discussion of the methane seep live bottom occurred today was to have the likely preferred outcome to be the previous preferred alternative, meaning the four-

segment mosaic, meaning two off North Carolina, the large Stetson/Savannah/Miami Complex, as previously designating, meaning the purple boundaries, plus a new small C-HAPC containing the methane seep site as a strawman.

The other alternatives to that include just the status quo, the preferred alternative, in quotes, since it's not being labeled "preferred" yet by the council, but what I mean by that is the four-compartment mosaic. That's one alternative.

Another is some slightly amended alternative and that really is B or C or some version of that and unless somebody proposes something specific, we won't have anything to consider and so we won't go that route. Just as something considered previously and basically rejected is all waters deeper than some particular depth, just to show where we've been, but I haven't heard anything to support going in that direction.

Dr. Reed: I'm not sure where that name came up, that Stetson/Savannah/Miami Complex. I wonder if -- I don't know if Steve and Sandra -- It might be better just to consider the whole thing as the Carolina/Georgia/Florida Complex or something. The map shows it as one thing. The map shows a Stetson/Savannah/Florida Lithoherms, which is really incorrect. It's not all lithoherms. Probably a better designation would be Carolina/Georgia/Florida Lophelia Banks or something like that. I don't know, but the Miami Complex, I don't know where that came from.

Dr. Rader: I did it, just by aggregating the names that previously existed. In the six-segment piece, we had those names and so I just used them. I don't know what to call it, because it's Blake Plateau plus, or Blake plus. We can actually avoid naming it anything and I can work around it, depending on what your decision is.

Dr. Reed: Secondly, do we really have to list these alternatives at all here?

Dr. Rader: No, we don't. I wasn't trying to. I was trying to do what we were asked to do yesterday, which was to create something for you to consider. If you don't feel like you need anything to consider, we can dump all of this and simply make a decision.

Unless somebody proposes something specific to expand it, and I'm not arguing for that, then what we're going to consider, I believe, are actually two possibilities for our recommendation of the preferred, our recommendation to the council. That would be status quo, meaning the four-compartment purple-line mosaic, or that plus the methane seep. Is there a proposal?

Dr. Ross: I think I ought to comment on the naming thing again. I haven't said much about that, but actually none of these are names that are on a map and they're names that a variety of us have used for research convenience, either verbal delivery or publication. It's a little bit confusing to use these names and then have somebody try to figure out what it is we're talking about. Technically, if you wanted to revisit that, this complex covers most of the Blake Plateau and then you could add south Florida to it. That would be geographically and in a naming sense correct.

Dr. Rader: If you said Blake/Miami Terrace?

Dr. Ross: Or Blake/South Florida, because it's more than the Miami Terrace, too.

Dr. Rader: South Florida how far south? South Florida goes literally to Key West.

Dr. Ross: It's the places that are designated that are on the map are in the south Florida area. The problem is you can't use just Blake Plateau, because although its south and north boundaries are vague, it doesn't go that far south.

Dr. Rader: I know, but the Pourtales Terrace also is in south Florida.

Dr. Ross: I guess my point is that the Pourtales Terrace is a named feature and the Blake Plateau is a named feature and stick with names that are currently accepted. Whatever else you use besides Blake Plateau, I don't care.

Dr. Rader: What we're actually going to do is not use any of these names, because we're going to agree on an outcome and then we're going to have a map that shows it. These are actually just shorthand for you to use today in deciding.

Dr. Ross: I didn't realize that.

Dr. Rader: Although, truthfully, we do need a name, so that people -- If we had a name, it would be great. Is there a -- I don't see the problem with using Blake/Miami Terrace, since --

Dr. Reed: As far as the Florida portion, the Straits of Florida -- The Blake Plateau kind of comes in to northern Florida and then you kind of drop into the Straits of Florida, which covers the east Florida lophelia reefs, which are down in the valley of the Straits of Florida, as well as the Miami Terrace, as well as Pourtales Terrace. Those all are in the northern and southern Straits of Florida.

Dr. Rader: In terms of naming, what we have is the Miami Terrace feature is contiguous and part of this large central site the way we have configured it and the Pourtales Terrace is isolated and so it really sort of segmented that sort of natural ecological unity by doing it that way. I don't really care. You guys are the experts.

What we could simply do is avoid it in terms of the recommendation and create a sub-panel to come up with a name for these sites, so that when we present it to the council -- We have to have some shorthand and so some shorthand would be nice, if you can figure out a geologically, ecologically appropriate shorthand.

The important point is that for now you know geographically what we are talking about, right? The question is whether anybody wants to propose any additions or expansions to the previous preferred alternative, meaning, for clarity, the two North Carolina sites, the large central site, and the Pourtales Terrace, as outlined in the purple lines that you've seen a bunch of times.

Ms. Karazsia: I think that it matters on how you present it to the council, because if it's going to

be called a preferred alternative to somebody who has a strong NEPA background and hasn't been involved in this process, they may not realize what that means. They would automatically assume that a detailed alternatives analysis has been conducted and so if it's called a recommended alternative, then this exercise may not be needed, but it just depends on how it's going to be presented to the council.

Dr. Rader: I think that's right, Jocelyn. We're actually going to drop that language completely and what we'll actually say in the recommendation is we recommend the following be adopted and so what is that? Let's deal with it. There's two issues. Number one is if anyone wants to propose an expansion and I don't hear anything burning. Then the second thing was we're going to deal with these in turn and expeditiously. One is the boundaries, aside from the methane seep, and two is the methane seep.

Dr. Reed: If Roger could pull up the boundary showing that separation of Pourtales and Miami with the background bathymetry and if we could just kind of zoom in on that and take a look for a few minutes, because it's very obvious to me that the reefs just don't end at the end of the Miami Terrace box and pick up down there.

It's just that we haven't worked in there that much and can you show the blue that NOAA -- That bathymetry background? There's like the real dark blue. It's almost like a multibeam version. Just kind of pan up to the north, to show the south end of the Miami Terrace part.

There's basically in the southern end, off of Miami, two different hard bottom live bottom habitats. You have the Miami Terrace, which is the rocky feature, and then at the base of the terrace and into the Straits of Florida and to the valley there and right up the EEZ are the lophelia mounds and banks and pretty much everywhere that I have dived along the EEZ, between the Florida and Bahamas waters, has been the highest relief of the lophelia tract, going all the way along that Florida EEZ line.

It's just that we have limited data between Pourtales Terrace and Miami Terrace and so one consideration would be just to bring them together and I think it would be highly likely that we will find corals in that zone and certainly from the museum records that we pulled up, even though the museum records, as Steve Ross pointed out yesterday, are not exact, they're based on trawl records and so forth, it's very likely that those lophelia reefs would connect in that open area, even though the terraces do not connect.

The Miami Terrace ends and then the Pourtales Terrace picks up down there and those absolutely are distinct, but in the deeper water, I think there's very likely potential of lophelia out to the EEZ. I don't have a lot of hard data and so whether we want to support that now or later, I really do not have a strong opinion.

Dr. Rader: Are there opinions about that, other opinions? Remember John's recommendation yesterday was that we develop this and address it later, basically. In other words, that we recognize, as I tried to in the narrative, that there is significant potential, given the bathymetry and what we know about what has been found out there, but no direct evidence as of now. That was your recommendation and so what's your pleasure? What we could do -- It sounds like we

are headed towards revisiting this and we could, having identified it as a high-priority zone, basically save that for next time.

Mr. McFall: I don't think it's any mistake that you see these sites where you see these sites and I don't think it's so big a stretch of the imagination to do exactly what John is discussing and proposing and I don't know why we're even really considering four different sites now instead of the six that were originally proposed.

Something between 300 meters out to the EEZ and what you've proposed right now might be, as John suggests, a connection of all the ones that we see right now, based on our understanding of where they occur, given the bathymetry.

Dr. Rader: Are you proposing that?

Mr. McFall: I'm proposing that.

Dr. Rader: What's your pleasure? In other words, we could configure an alternative, supported by preliminary information, but with strong scientific intuition, based on bathymetry and explorations made to date that would -- Actually, I don't know quite what it would do, because it would be non-contiguous in the shallow waters, but would be contiguous in the deep waters.

What it probably would do is run due south from the southwest tip of the purple lines, as seen now, right along the edge of the escarpment there and then along the deep waters to the edge of the -- Something like that. Then it would run to where, John or Greg? Like that or on the bottom edge, maybe?

Dr. Reed: If you can find that other bathymetry, it shows a lot of hard bottom to a point where I'm going to show you in a second, kind of northwest of that hump region. The other bathymetric chart shows a lot of this hump region, high relief lithoherms, extending out here even further. At a minimum, I think that would be reasonable.

You can see the Miami Terrace coming down -- You can see the Terrace truncating down, but you still have fairly sharp relief right along here, which is likely hard bottom and possibly even down through here. I think it would be reasonable to follow this down to here, at least to that corner, and just follow this around to the EEZ, where it touches the southern part of that proposed area.

A lot of our new dive sites this year were out in this area, were higher relief lithoherm type stuff, as well as a whole slew of sinkholes further south, like to here and there and the east edge down. I think that would be reasonable.

Mr. Shepard: While you're deliberating, a quick question for John and Greg. Do we have any multibeam mapping in that area right now that you know of?

Mr. McFall: I'm not aware of any, but I think that if you look at the dots that Steve was showing earlier about where all of the sites are that we've seen these things and you look at the

bathymetry -- If you look at the figure that we're playing with and -- Not that we're playing with, but if you look at the figure in Attachment 13 of the proposed deep coral HAPCs and I'll ask a rhetorical question, how was that western boundary defined? It was defined based on the identified sites that we've already seen and following a contour bathymetry.

We have a good scientific presumption that they exist in that area. We've documented them in many areas along those lines. I'm just saying that I don't see it being a far stretch of the imagination to be able to connect the four boxes that we have right now to make a continuous border from Pourtales all the way up to the sites off of North Carolina along that line of bathymetry.

The eastern margin might be a little bit more difficult, but certainly I don't think you have to go all the way out to the EEZ, but we should define it based on the sites that have been documented along the eastern boundary.

Dr. Rader: While we're doing this, John, would you advise us on the sort of west or southwest of the Pourtales -- What I think we're doing is creating an additional alternative that we might not support, but will help under gird those areas where the sort of second recommendation, where new evidence suggests or what we know about the systems means is likely to contain those pieces. Even if we don't accept it as what we actually recommend, it will delineate the areas and I think for the record that's a good thing to do where we believe things may be found in the future.

Ms. Stiles: I had just a friendly administrative suggestion. Perhaps John and Roger could work on drawing something for us to discuss and we could take the break that you had suggested for 10:30 for people to check out. I don't know if others feel the same way, but I don't feel like I have a lot to contribute and it seems like our time is limited and so maybe you could use the break for that purpose.

Dr. Rader: That's a good idea. Maybe Steve will help us. Is there a similar small area on the northeast edge, between the north side of the large central piece and North Carolina that may have a similar likelihood of future discoveries?

Dr. Ross: Not that I'm aware of.

Dr. Rader: Okay.

Dr. Ross: The answer is maybe, but I --

Dr. Rader: It's just in your presentation you said you thought it was likely that the structures extended out of the box on the northeast to some distance.

Dr. Ross: It's likely, but I have less information about that area than we have in this area to the south. We just don't know where those mounds start to taper out into the sand. They could easily go beyond the boundary.

Dr. Rader: I'm not pushing you. That's fine. I think we should take Margo's suggestion.

Mr. Croom: I would just like to I guess offer for the panel's consideration whether -- Just qualitatively, I'm hearing that we're straying into areas of information that are less certain than what we've been hearing before and I'm wondering now if we're talking more about an EFH type of designation, perhaps, based on the quality of information, than an HAPC.

Dr. Rader: I suspect that's true, although remember that under the snapper grouper plan, although there is admittedly a fishery management unit problem, where many of these species aren't yet in that unit, all those hard grounds are EFH of one sort or another already, but the question was -- What I think we would be trying to do and my intuition is by identifying areas almost in a second tier not recommended for HAPC designation at this point, but identifying areas that we believe are likely to contain features that could or might be designated as such in the future, helping to steer the development of potential new uses in the EEZ between now and the time that happens.

We're trying to give fair notice, I think, of almost a second tier of where places are likely to show up and I don't think -- I'll be sort of surprised if this alternative, expanded alternative, based on the uncertainty involved, would be our preferred alternative, but I do think it's very useful to have on the record a geographic depiction of those zones where we expect that as information improves these features will be found.

I think we're creating that and I do think Margo's suggestion is a good one for John especially and other people who feel like they have something to contribute about configuring that secondary zone of higher likelihood that Greg is suggesting we identify, how that will be configured, we'll have the proposal for you when you come back.

Because there's a check-out involved, do you want to go all the way to eleven o'clock? That's thirty-five minutes and is that adequate? Is it too much? We will reconvene at quarter of. We are going into recess now and if John and others will help us draw on the west side of Pourtales, then we'll have an alternative for you to consider when you come back.

(Whereupon, a brief recess was taken.)

Dr. Rader: We are reconvened. We haven't 100 percent completed this, but we wanted to show you -- I think the sense of the panel, and if anybody disagrees, then please feel free to voice that disagreement, is to recommend the four-compartment mosaic as it currently exists, and we'll come back to the methane seep site in a second, as the recommendation to go ahead as a coral HAPC at this time and then in addition, we are going to geographically portray the area where we expect, based on the best available science at this time, future discoveries are likely to occur that would require, at some point, as that information becomes available, expansion or extension of the coral HAPC.

In other words, we'll have a recommendation and then also a geographic quantification, if you will, of the areas where that HAPC is likely, ultimately, to prove inadequate. In that sense, we're giving notice of where habitats are likely to be discovered, so that people would recognize that,

and the consensus of the expert scientists that we've consulted is that that second tier area exists really throughout this region, but on the northern side occurs from the 300-meter isobath up to about seven or eight miles northeast of the northern end of the northern of the two North Carolina sites and out to about 800 meters down.

There will be a tail of sort of a higher-probability zone, a zone for exploration, if you will, that will then come back down along the 800-meter isobath on the eastern side and then as it gets towards the large central area, go down to perhaps as deep as 1,200 meters and then we'll follow the 1,200-meter isobath down to there and then due west in order to identify all of the likely hard grounds at appropriate depths that have been identified so far by reconnaissance in the field.

Those are areas not that we would propose for designation now, unless you want to, not to propose now, but to delineate that area where the best available science suggests future discoveries are more likely than not to occur.

In other words, we're not claiming that there is any science to support the existence, right now, of these communities in those depths, but that's where discoveries are likely and then in the middle zone -- We'll clean up the figure obviously, but in the middle zone, the consensus of our experts is that these discoveries are likely to occur, if and when they occur, in the zone delineated by Roger from the 300-meter isobath, nearly along the 300-meter isobath -- Actually, we'll figure that out, but on the west side to incorporate the sinkhole features that John talked about and similar bathymetric roughness that is likely to turn out to be corals.

There is a large zone out to the edge of the EEZ there and that's the area where John suggested the larger relief lophelia stands are likely to extend along the eastern edge of the EEZ towards the Bahamas bank and so down in the Florida Straits and the channel itself.

Then to the southwest of the Pourtales Terrace box, we didn't quite get the exact delineation right, but what we would propose to you is to consult with John to include a similarly expanded area in that zone to capture the places where discoveries are likely to occur, more likely than not to occur.

In other words, we're not trying to go beyond the data, but we're trying to interpret the roughness that exits, the bathymetric roughness that exists, and the pattern of discoveries that has been occurring to help people understand that there are likely to be habitat-related exposures in terms of envisioning alternative uses for these zones.

Dr. Reed: If I could just very, very briefly just show you some of the sites that we have dove on in that region. This site here is the Pourtales Terrace, which goes down to about Key West. These are all the potential sites that I put together for my cruise this summer. We had two cruises out there, a NOAA OE cruise that got pretty much blown away and we only had about four dives out of twelve and then I had another Harbor Branch cruise that was pretty successful with the University of Miami.

These are all potential targets, but we have dove in the past here, here, here, and here, through all of these and through these. The current HAPC is about like that and so what's left out of the

HAPC is up here. This is low-relief hard ground, Karst topography. It definitely has corals and gorgonians, hard and soft corals and sponges, all in that relief there.

It's the same over here. We dove these sites. This is, again, low relief, one to two meters, rocky bottom and hard bottom, but live bottom. These are a whole series of sinkholes, all these brown circles. We've now dove on all of them and they're quite variable, but most of them are hard and rocky with sponges, corals, gorgonians, fish.

Over towards the west, towards the Tortugas, you see here's the Pourtales Terrace further to the west and here's the Tortugas, Dry Tortugas. I think the end of the South Atlantic Council is right off the Tortugas. It's kind of our boundary between that and the Gulf of Mexico. I believe it is. Anyway, if you see these linear features here, this is called the Agassiz Valleys and Tortugas Valleys.

There's only been two sub dives there. One was made by the Alvin in the 1970s. Right up here, where you have a tight contour, we dove on that. It was a sheer 500-foot rock wall. It was really awesome, but these are like old, I don't know, old drainage patterns coming out of the Gulf of Mexico, these big like fingers and canyons. They're primarily mud, but the upper head region was rocky, like right in here. That was all rocky. Anyway, there's a lot of habitat in there that we can look at in the future.

Mr. Blair: John, just to make sure, you're suggesting that the area for future consideration to identify at this point would pretty much follow say the northern portion of the Pourtales extension out to the western edge of the South Atlantic Fishery Management Council's border and down to the EEZ line?

Dr. Reed: Yes, that's correct. Also, from the dredge records and from museum samples, they're all scattered right down to the EEZ and down to Cuba and then the northern border would be some isobath, I guess, kind of follow the contour of Pourtales Terrace, and consider those other valleys. I'm not sure about that. It's mostly muddy out there, except for the valleys themselves.

Dr. Rader: John, on the southern edge, what do you think is out there at depth in the Florida straits? In other words, if you go in through there, is that --

Dr. Reed: That's called the Pourtales Terrace Escarpment. It's where the terrace drops off into the depths of the Florida Straits. It goes -- Most of that depth is about 3,000 feet. Some of it goes to 3,500 and so it's deeper than our sub can dive. The dredge records showed coral, lophelia, enallopsammia dredged from there.

Dr. Rader: Okay, so there is some affirmative evidence out in those depths. We will draw an area out there, with John's assistance, but based on the oral description he just gave us for a similar area that's likely to contain new discoveries in the future. What's your pleasure?

Mr. Blair: Just to make sure that we all kind of have a recap of this and make sure that we're thinking of this correctly, essentially it sounds as though we are going to be making an additional recommendation and that the recommendation going forward will be the four-site HAPC with an

additional recommendation that, based on emerging evidence, that specific regions need to be given high priority for further characterization and exploration to determine the need for future modification of these areas, as information would suggest these high-priority habitats exist there.

Dr. Rader: I think that's right. What we would do for now is to reword the second recommendation that previously said new research has identified additional deepwater coral habitats of potential high value and then a colon and then a list.

Instead, what that one would say is research suggests potential for additional deepwater coral habitats in the following areas and then we would present that geographically, visually, to include the new purple lines that Roger -- It's too bad it's the same color, because that's confusing with the old purple lines. We'll change the colors.

The areas that we've shown you, meaning, just for clarity, the northeastern tail up to a point about seven miles northeast of the north of the northern North Carolina sites. Is that enough "north" for you? Expanding down roughly along the 800 and then 1,200-meter isobath to the edge of the EEZ and along the edge of the EEZ south of the hard ground complex there and then due west and intersecting with the middle complex.

A similar connection at those approximate depths in the midrange, but extending out to the edge of the EEZ between the southern end of the Miami Terrace and the northern end of the Pourtales Terrace and intersecting with the Pourtales Terrace HAPC site down at is southeastern end and then a western tail, southwestern tail, that John is going to help us design, based on dives that have been made out there. There would be a geographic representation of that zone of increased likelihood of discovery, of which we would be giving due notice.

That would be adjunct to the second recommendation. In other words, the area based on our best professional judgment that future discoveries are likely to occur. You can think of it as a zone of exploration, a zone of somewhat enhanced probability, so that if activities are proposed in that area, there would be some additional burden to look for deepwater coral ecosystem compartments. That's the way I think of it. What we're doing is presenting that geographically and I do believe that's in the spirit of Greg's previous recommendation and if you're happy with that, then we'll think of it that way.

Mr. McFall: I don't have any problem with that. My intent was not to kind of derail the process, but just to give the council the information that likely areas do exist and to give them bounds in which they might exist. That meets everything I wanted.

Dr. Rader: Is there any discussion about proceeding in that way, but reserving the methane seep question for just a minute? Thanks, Paul. Is there further discussion about proceeding in that way and, again, reserving the methane seep question for now?

Mr. Street: I think the verbal description is reasonable, but as soon as we can, I would hope that a map with the appropriate designations and colors and whatever would be provided to all of us for review and comment.

Dr. Rader: In fact, we'll get that to you over lunch today, just so if there's any reservation about it. I think I would prefer that we don't delay making a decision and then you can come back and review that after the fact and if there's a need, we'll recreate it afterwards and the reason is that Chairman Blair has got to leave about one o'clock and I would prefer that he be here for that decision.

I'm not trying to minimize your concerns at all. We will get you a geographic representation today to look at and if there's any concern, we will resurrect it for further discussion at that time, but absent any concern, we are going to forward with that graphic, or maybe a slightly more refined version of it, because we're flying by the seat of our pants here technologically, in order to present that to the council, but the substantive decision we want to go ahead and make and get on to the next thing.

Is there any other comment or discussion about that two-part geographic recommendation and in other words, for clarity, our recommendation is, holding the methane seep question in abeyance for now, that we recommend the four-compartment C-HAPC, as previously configured, as our recommended action to the South Atlantic Council, based on the best available science, and that we identify and represent geographically, based on the best available science, zones where we believe future discoveries are likely, based on the bathymetry and the weight of scientific information, and we present that to the council, so that they're aware of the up-to-date understanding of the way these systems work. Is there any concern about that?

Seeing none, that recommendation is adopted by the joint panels for presentation to the council. Now let's come back and revisit the question of the methane seep as an outstanding issue. I have a personal opinion about it, but I would love to hear opinions from the panel.

Dr. Elkins: Mike encouraged me to make this statement and so if you don't like what I have to say, you can blame him. Although I hold a recreational seat here, for a paid job I'm a microbiologist and immunologist and molecular biologist at UNC Chapel Hill, where I run a research lab.

I'm not a coral biologist and my comment has to do with a rationale for the methane seep protection. I think most of you know what PCR, preliminary chain reaction, is. If you don't, you probably watch CSI and then send a sample to the DNA lab. PCR is made possible by a thermal enzyme that's heat stable that came from a thermophile from a deep-sea vent.

In my field, PCR has revolutionized everything. It won a Nobel Prize and it may be the most important discovery in my field. It's revolutionized molecular genetics and diagnostics, such as medical, forensic, and even coliform diagnosis when we close shellfish beds. You can get an answer in thirty or forty minutes.

They use it to identify bioterrorism threats. They have a little machine smaller than our laptop and you pop it in and it tells you what bug is there, what toxin and protein biochemistry. This is just one example of an enzyme that came from a thermophile from a deep-sea vent. There are many other examples of people looking at these deep-sea vents for products, medicinal products such as John spoke about, and doing high-throughput screening for compounds.

In this particular case, we have a deep-sea vent that is geographically isolated from other deep-sea vents, apparently. We don't know of others yet and I would speculate that unique microbes exist at that site and probably other organisms. Maybe it's not a unique site, but until proven different, I strongly feel that we ought to err on the side of protection for this site and it is a relatively small site and I think justification for this is there. That's my take on that.

Dr. Rader: Thanks, Dr. Elkins. I actually agree with that, as a personally matter and not as your chair. There is some counterview, perhaps, and so are there other comments or thoughts? Is there a sense of the panel?

Dr. Reed: I would like to support what he just said, especially since this site is so isolated from all of the sites in the Gulf of Mexico. It very well likely harbors new and different species, especially microbial, and the work that we've done in our biomedical research division at Harbor Branch, the microbial discoveries are happening every day.

I'm not sure if this actually is a methane -- This is a hydrate, right, frozen methane, which is very unique -- Not unique, but very interesting in itself. Just a few years ago we discovered in our submersible a new species of polychaete worm that actually lived on the frozen methane. It crawls around on it and lives there that nobody knew about, just a few years ago. It is a unique site for now, that we know about, and I feel that we should protect it.

Dr. Rader: Just for a bit of levity, remember that those are all managed organisms and in other words, in the coral, coral reef, live bottom and hard bottom plan. For now, they're not being tracked for purposes of fishery management, but I see a day when an MSST and rebuilding plans are necessary for bacteria. That was a joke. Miles doesn't think it's all that funny, do you?

Anyway, I would support the recommendation. Is there a formal recommendation from one of you? I hear that. I will assume that those statements in support constitute a recommendation to add a site of appropriate size, perhaps a couple of square miles or something, in that area. Is there opposition to that?

There's clearly some -- If you have concerns, please state them. I don't hear any opposition stated for the record and so we will expand that four-site mosaic to include a new small, meaning on the order of one to two -- I'll just make an administrative decision and say two, just to provide some buffer at that depth. Is that big of you, those of you that are on the ocean?

Mr. Shepard: The known bed is on the order of 300-by-400 meters, somewhere around there. That's what bed is right now and so a couple kilometers would be plenty, square kilometers.

Dr. Rader: We'll create a two-square-mile box centered on the center to make sure that it includes the documented site.

Mr. Shepard: Geographically, it's called the Blake Ridge Diapir is what they refer to it as.

Dr. Rader: On the Blake Ridge Diapir, as Dr. Shepard suggests. That's the recommendation on

geographic extent. Are there any further comments about that issue? We will provide for you, by the end of lunch, a geographic representation of, for lack of another term, the second tier, the areas where we think the weight of science suggests that new discoveries will be made. You can look at that and we value your opinions about it. If you don't like it when we get back, we'll revisit it.

Let's move on to the -- I also will now go back and reword the second bullet. In fact, why don't you pull it up, Roger, and let's just edit it so we have it right. It's the one that starts with "New research has identified". It is: Research suggests potential for additional deepwater coral habitats in the following areas. We'll just go ahead and leave that narrative and then provide a geographic representation for it. I don't need the "potential high value", because that prejudges what we find. We'll get rid of the "exist" and then we'll insert the image there. Are there other concerns about the bullets, the recommendations, as we have presented them?

Mr. Gregg: The bullet just above that characterizes some of the information that Steve Ross and John Reed have presented. A concern that I have in the last sentence "additional coral features and related habitats continue to be found within areas previously identified, including pinnacles, ridges and escarpments up to 500 feet tall" and one of the things in reviewing projects for the State of Florida that were done in the Gulf of Mexico indicated a bias towards high-relief features and a dismissive attitude towards lower relief important communities.

I think some of what John presented yesterday indicated that because of scales of resolution of sampling equipment or actually occurrences of coral resources on flatter bathymetric areas, it would be important to acknowledge those potential habitats in a statement like this.

Dr. Rader: That's a good point. Why don't we insert the words "additional important coral features continue to be found within the areas previously identified" and we could simply put a period there or affirmatively mention ridges, ledges, and lower relief features -- Which way do you want to say it? Do you want to put a period or do you want to add "low relief features"?

Mr. Gregg: I think making it explicit and adding lower relief features in the statement would be a good idea.

Dr. Rader: It wouldn't go there. It would be after "including". It would say "including low relief features" and it probably really should say "ridges, pinnacles, and escarpments" or something like that. Is that okay? Are there other comments like that? That bullet now says, in its second sentence, the first being the same as previously read: Additional important coral features and related habitats continue to be found within the areas previously identified, including low relief features, ridges, pinnacles, and escarpments up to 500 feet tall. The "up to 500 feet tall" is a general descriptor of any of the previous features and not tied to escarpments. Are there other comments?

Dr. Reed: You might add sinkholes, if we want to list all the possibilities out there.

Dr. Rader: I actually would have thrown my hands up at that, but having seen your photographs of the unbelievable diversity on the walls of those sinkholes, I think that's a good idea. Are there

other comments? Do you want to scroll down now, Roger, so they can look again at the other recommendations? We'll insert the name of the Blake Ridge Diapir. We'll insert that name and so that's a modification to that bullet.

It now reads: Only one synthetic (methane seep) live bottom community has been documented in the U.S. Southeast EEZ northeast of the boundary of the -- We're going to change the name to -- We'll find some appropriate name. It should be a comma after "complex" and after the Blake Ridge Diapir. It should be protected as a separate C-HAPC.

What we're going to do is at this point we're going to delete all these other alternatives, because they're no longer alternatives. We're clear on what we're recommending and the fact that we considered those other things is clear in the record and anyone that wants to extract it for NEPA purposes can do so. We'll just delete all of this from our recommendation.

That concludes actions on that first part. The second part has to do with regulations there and let me read, for the record, the way I have attempted to capture the sense of the panel from yesterday. I don't think there's any substantive change in here, but I've been wrong before.

The panels recommend that the following management actions be taken inside the C-HAPCs. Recommended management measures in all the deepwater coral HAPC sites include the following: 1) compile, characterize, and track threats to deepwater coral ecosystems in the region; 2) as far as possible, limit damage from both fishing and non-fishing threats, using all available administrative tools; 3) prohibit all bottom-disturbing fishing gears; 4) prohibit harvest of corals, all taxa, including gorgonians and other soft corals, except as allowed through appropriately protective research protocols and procedures; 5) prohibit anchoring, grapples and chain; and 6) fully implement the deepwater coral research and evaluation plans.

What you'll see is I've added a third section that is a call for resources and so this -- I've added Number 6 here. It was not there before and I think the rest of them though were things that were in the draft as we left it at the end of the day yesterday. I've reorganized them a little bit. Is there concern about this language or recommendations for modifications or other things that should be considered by the panel?

Mr. Croom: I have a suggestion for a seventh recommendation that would say something like to clarify the types of allowable fishing activities, for example passage through the coral habitat areas of particular concern that would be permitted.

Dr. Rader: That's a great idea. Roger, scroll down to the narrative below, because I should have read that too, because there was significant language about the intent of this and we do -- I also rewrote this a little bit, reorganized it. I don't think it says anything different, except the only thing that's different is that -- Let me just read it.

The intent of these recommendations is to eliminate any commercial harvest that might be presently permitted under the coral plan and in other words, not the harvest of other things, but harvest of corals and other animals permitted under the coral plan, meaning targeting of gorgonians and things like that in any deepwater coral HAPC, but to allow controlled collection

for research purposes, consistent with the council's deepwater coral research plan, i.e., as allowed by the Secretary. That's attempting to capture the idea from yesterday that it would use existing protocols to manage research there.

In addition, more work is needed to characterize potential damage associated with other bottom-impinging gears, for example damage that might occur with use of weighted longlines, planers, and cannonball weights. Non-fishing impacts would be fully covered in the fishery ecosystem plan and in future habitat policy statements, from Miles's comment yesterday.

What we could do, Miles, is move your seventh recommendation down as a sentence between those last two that would say, if you're agreeable with this, that would say -- It would put it after the gears right here. It would put it in right there. It would say that: The council should clarify the types of allowable fishing activities, including passage -- How do you want to say it, Miles? Do you have any recommendations?

Mr. Croom: You could say transit through the HAPC.

Dr. Rader: Including transit through the C-HAPC. Other comments?

Ms. Brouwer: If you could scroll up to Number 6, I assume that means the council's deepwater research and monitoring plan and so we should state that.

Dr. Rader: Yes, that's right. We'll get the exact terminology right. Are there other comments or thoughts?

Dr. Reed: I don't know how Steve or Sandra feel about it, but I don't know if we should define, or better define, corals here or is it defined better elsewhere in the document, corals meaning --

Dr. Rader: Do you mean in Number 4?

Dr. Reed: Yes, Number 4, corals meaning hydrocoral, black coral, gorgonians, blah, blah, blah. Somewhere in the document we have that spelled out and it's not really -- All taxa is kind of pretty vague.

Dr. Rader: Yes, it's actually a -- Right. What we probably should do is get the language exactly right based on the coral plan as it exists. We'll go back to the plan and they can capture exactly what the plan says. It's not just the corals, right? In other words, basically currently all the harvest of all the other organisms in the fishery management unit are precluded except for allowable harvest of certain soft corals. Isn't that the way it's said?

Ms. Brooke: As to specifically what you said, I forget the question, but I'm agreeing with John and I think I brought this up yesterday, that we tend to use "corals" as an all-encompassing umbrella and according to the fishery management plan, you may know what it means, but when we say corals, people assume that we're talking about scleractinians and it doesn't. It covers a whole slew of other things and sponges, which are also an integral part of the ecosystem. I think somewhere I agree with John, that it should be absolutely defined what organisms we're talking

about.

Dr. Rader: Of course, the other way to do it is to recommend prohibition of harvest of all organisms addressed through the plan, right, except those allowed.

Mr. Blair: I think I would go towards referencing back to the description of the managed species within the plan and corals as defined within the authorization of the plan and not necessarily saying all species. I think that gets into a whole different ball of wax.

Dr. Rader: The only thing that's authorized though is octocorals south of where? Does anybody remember? What we're trying to do is to constrain the allowable harvest from the locations and the only harvest that's allowable is octocorals south of wherever it is. Cape Canaveral, is that right? We'll get the exact language right.

Mr. Blair: The intent, again, is to define corals and not harvest in this aspect, when we're talking about it. I think that the concern is "corals may be taken" is too restrictive of an identifier, where the plan is much more broad in its encompassing of the term "corals" as far as the management.

Dr. Rader: Why don't we simply say "organisms except as allowed"? Actually, that potentially raises the question of secretarial plans and things like that and in other words, from the pelagic waters above and that's not what we're trying to do.

Let's say "of coral-associated organisms" and say "protect harvest of coral-associated organisms" and get rid of the parenthetical. No, let's leave the parenthetical, but except as allowed. That's okay, right? Any comments? Actually, the truth is the agency and the council are going to get this issue right and so I think this is fine like it is. Are there other comments?

Ms. Brooke: Just to be picky, you still haven't defined "corals" and I mean corals fall into -- They're benthic organisms is the phylum cnidaria and that's what we're talking about. There's other organisms in the phylum cnidaria that we're not so concerned about, but --

Dr. Rader: Let's say coral, coral reef, live bottom and hard bottom, in order to tie it directly to the plan, and let the plan define them. Is that okay?

Mr. Shepard: That is a good plan, because if you look at the list that's listed in the plan, it includes -- It's pretty comprehensive. It includes hydrozoans and corals and -- That would be the way to go. What they've defined as coral, coral reefs, and live/hard bottom habitat. There's a definition of that and then it includes hydrozoans, anthozoans, Hexacorallia and so on and so forth.

Dr. Rader: I think we should leave it, because that's the allowable harvest within the plan.

Dr. Ross: One way to deal with this, potentially, would be to use an existing list, if the list were appropriate. In the chapter that we wrote for the status of corals report, we have a list of all the known coral-like organisms that were covered by that chapter and that's one place you could start. We could go look at that list and see if it's appropriate.

Dr. Rader: Although it's a list, a long list, right?

Dr. Ross: Yes, 113 species.

Dr. Rader: I would prefer to simply tie it to the plan here and let the plan makers worry about it. I would put the word "organisms" back in there and let the plan rule, because that's really what does rule. Okay? Other comments on this topic or other topics? Otherwise, we'll be ready to move on. It's almost lunchtime and we haven't broken.

Ms. Stiles: There's an additional recommendation after the -- There's regulations that you just talked about and then there's resources for implementation.

Dr. Rader: Yes, I was going to come back to that in a minute.

Ms. Stiles: We're moving on there and not moving on to like energy, right?

Dr. Rader: I'm sorry?

Ms. Stiles: We're not moving on to energy, but we're just moving on down our list?

Dr. Rader: Right. Okay? If there's no exception to this recommendation, then it's adopted. Seeing none, so ruled by the co-chairs. The final recommendation in this section pertains to resources for implementation and this is new relative to the list you've seen before. I think it's worth stating, in this way or similar way, because it is a resonant theme of not only this meeting, but the previous meetings on this topic, including the outstanding research meeting on this topic that was convened a couple of years ago.

I think we should say something like this and, again, if you want to wordsmith it, we can, but what it says now is resources for implementation and I'm trying to grab all the potential problems with implementation, including research and monitoring, outreach and education, and enforcement, the five principle components of effective management.

What I said, subject to your editing, is: Despite the growing evidence that deepwater coral ecosystems of the region constitute a world-class resource -- As an aside, you can see the -- Not hyperbole, but the marketing value I'm trying to imbue this with.

Despite the growing evidence that deepwater coral ecosystems of the region constitute a world-class resource, funds continue to be scarce for all aspects of management of these natural treasures. The panels recommend that all possible sources be explored to obtain necessary funding for research and monitoring, outreach and education, and enforcement, once the C-HAPCs are in place. Is there a sense of the panel to support something like this, first? Seeing no objection, we'll go forward. Is there recommendations for wording that could make this more powerful or clearer?

Mr. Alexander: I would just like to see some wording in there that also recommends that

funding go towards high-resolution identification of these areas, because the map one isn't explicitly discussed there.

Dr. Rader: Good point and we should probably tie it, loosely at least, to the identified areas we have already targeted.

Mr. Blair: I would like to recommend we add a statement relative to the peril of these habitats as well.

Dr. Rader: Good point. How about a phrase "constitute a world-class resource under rising threat" or something like that? Let's modify it. Let's add an additional sentence, based on what Roger has already written, that says: Funding must be found for high-resolution mapping, especially in areas of high probability or something like that. That ties it back before. Are there other comments or thoughts about that? Any objection to asking for money? Seeing no objection, we'll adopt that recommendation as currently written.

The last thing to think about, again, is the connection back to the Fishery Ecosystem Plan and implementing the Comprehensive Ecosystem Amendment that associates it with it. Remember we have recommended in the past that the allowable gear zone concept be tied to this and now we're changing that a little bit, just to try to get this moving now.

We did think it was important for you, and before we break for lunch, to be re-exposed to the other initiatives that are going forward under the Fishery Ecosystem Plan and the Comprehensive Ecosystem Amendment. Roger, do you want to say something about what's in there now?

Mr. Pugliese: The council had the opportunity to build on what the advisory panel had recommended and to focus all the effort on the comprehensive amendment toward coral conservation. In doing so, what was brought in as management measures for consideration were the establishment of the corals HAPCs as provided by and recommended by the advisory panel, in addition to the previous one as one of the other alternatives, the six areas.

Also, at the previous council meeting, the council had discussed the opportunity of moving forward with allowable gear areas, specifically for deepwater trawls, to be essentially an additional back-up for conservation of the deep coral areas.

Proposals were included to look at establishment of allowable gear areas for rock shrimp areas, as well as royal red shrimp areas, and in addition, there were provisions specifically to establish a VMS requirement to tie with the opportunity for the golden crab fishery to possibly operate in the HAPC where they were not impacting habitat.

Those were the major provisions that were identified as moving forward an amendment, the first comprehensive amendment. The council had severed out, with the recommendations that they had on the table from before, a number of the different other provisions, such as the sargassum and octocorals and other provisions, to be put into Comprehensive Amendment 2.

That is already identified as going to be included in the next amendment, but right now, the focus

is totally on the establishment of the deepwater coral conservation suite and at this time, we did not have any of the vessel monitoring information to make any assessment of the interactions between some of the areas and as it really turns out, some of the provisions really almost don't influence the rock shrimp fishery. It actually doesn't occur anywhere close to these areas. It's inshore of the areas.

All those were provided. Additional things that came up is that in moving forward in looking at these, royal red is in the plan, but is not a managed species yet and so therefore, you would have to establish Sustainable Fishery Act provisions for that overfishing and overfished and all the other mechanisms and targets that the council has to use in addressing a managed species. Those were recommended as being added in.

In addition, there was the discussion of breaking out, for NEPA purposes, all the individual areas as additional separate alternatives, which you've been discussing, and there's questions about the justification, I think, and it's fairly clear from this panel, but that's where the council stands.

We are also going to have the Deepwater Shrimp and the Golden Crab APs meet in advance of this meeting and the timing wasn't there to do it. They were going to be meeting in January, with the ability to look at the proposals that are being provided by the panel and the council, at the March meeting, was going to look at the entire package.

The document, as the last stands, still has in allowable gear areas and has some of these other provisions and has dropped out these other ones for inclusion into Comprehensive Amendment 2. That's where we are.

Dr. Rader: Just for clarity, we will reconvene prior to the draft for Amendment 2 being developed in the fall and so we would time our September/October meeting, whenever it is, in order to consider the measures that would go into that amendment. Is that right?

Mr. Pugliese: Just to that point quickly, it's not as if we're going to stop everything on those. I think what we can do is we can build a lot of that information in the background as we're going through this year, so that we'll be at a stage to proceed further with the second amendment, at least a lot of the information that's going to support the next level of the amendment.

Dr. Rader: Your second amendment rights, brought to you by the South Atlantic Council. Are there recommendations in this arena? We'll obviously edit this to reflect what we've already said above, about going forward with the coral HAPCs. Are there concerns about that segmentation delay? Are there other issues you would like to see put on the table for elaboration over the coming year, so that we do have them ripe for potential recommendation in the fall?

Ms. Stiles: Thank you, Roger, for that presentation. I'm looking at the list that we have on our recommendations and I would agree that we should keep in, just at this very general level, sargassum and octocorals and the other things.

I would add to that list to establish allowable gear zones for deepwater trawling, just to reflect that what's currently on the board for Amendment 2 are things that we think are a good idea,

without getting into the details of what they're going to look like prematurely.

Dr. Rader: Just for continuity sake, I would, if you're agreeable, omit the last three words, because we really want that throughout the zone of impingement of gears onto the bottom. In terms of -- For purposes of deepwater ecosystems, that's absolutely right, but in terms of the purview of the panels, actually both of them, we also want to make sure that allowable gear zones are appropriately designed for all habitat types and all coral types, right?

Ms. Stiles: Is this statement just referring to Amendment 2 or is it saying more generally future amendments? If it's just Amendment 2, I would specify the trawls, because that's what is in the document. I'm sorry, it's not all trawls, but only deepwater trawls, but if it's generally speaking about future amendments, then I don't know what else is on that longer list.

Mr. Pugliese: Let me jump back to what this was. This was the list that was what recommendations are there for the comprehensive amendment and so in the original request, it was the broad sense of what else do we need to do relative. This was built on the broader sense and so in that aspect, establishment of allowable gear areas, where the information was available, and what the intent and the record, I think, shows is the only place we've really had some of that was with regard to areas where we had VMS information and so it's led to the ability to do at least the first proposal as being tied to that.

The intent here, I think you were clear that also if there are other provisions that we want to see in the comprehensive amendment, whether it be Number 2 or in the future, we really should be saying -- Especially if we wanted to see it begin to develop and be available later this year. It needs to be addressed so that we can initiate that process here. This encompasses both the deepwater trawl areas and then if any other ones are possible to be accomplished, but that's the prerogative of what the panel needs.

Dr. Rader: I guess my other reason for wanting to limit it not to trawls is that there are other bottom-impinging gears, as currently configured, that potentially damage deepwater habitats, including certainly potentially -- Potentially or certainly golden crab traps in sets that move significantly on the bottom that require some degree of consideration.

Also, the question was raised yesterday, and maybe today too, about the weights that are on longlines for wreckfish and so there are a number of other gear issues that we want to see elaborated and we would like to see come back to us. That's why I was trying to expand it beyond just deepwater trawling.

Ms. Stiles: Could we expand it, but not completely, so that we expand it, but make clear that we're referring to the amendment that would be considered in the fall, to provide support for the council pursuing that?

Dr. Rader: You would put a "2". Margo wants to add "in the deep waters" and is that okay? Is it clear that all of those measures will be limited to deep waters in Amendment 2?

Mr. Pugliese: What was going forward was based on what we have with VMS.

Ms. Stiles: Currently, as Roger was saying, it's just the vessels that have VMS, the rock shrimp and royal red.

Dr. Rader: I would leave it out, but I don't really care.

Ms. Stiles: You could say for deepwater trawls and any other gears as is reasonable or if possible or as data are available. I'm okay with the spirit of what you're saying, Doug, and so if you have a proposal to improve it, then that's fine with me.

Dr. Rader: Just say "as data allow". Are there other thoughts? Is there anything not here that's a burning issue that's developed since the last time we talked about this that really needs to be considered? We've been sort of in the weeds on the other things and so step back for just a minute, because this is your chance to sort of influence where considerations go over the coming year.

We have VMS requirements and observers. I don't see anything. If there are no objections, we'll adopt this recommendation as currently written. I see no objections and so that recommendation is adopted by both panels.

Is there anything else anybody wants to bring up about the fishery ecosystem plan process? If not, what we're going to do is break for lunch and when we come back; we still have really three things to do. We're going to break for a limited amount of time, probably one hour, into state sub-panels to consider possible additional EFH and EFH HAPC and coral HAPC measures that you would like to propose from the state level, just to use this as an opportunity for the state sub-panels to get together.

We'll then convene back as a committee of the whole to look at the energy policy statement revision related to protection of the essential fish habitat in the South Atlantic region. We have three reports to us on the status of that process and we'll consider where to go on that from here and then we have a presentation by George on Gray's Reef.

That will conclude the day and so that's the intent, is to get done today, no later than five o'clock. I think we're on track to do that. Are there any other comments before we recess? No. Is an hour long enough for lunch, based on your experience yesterday? We will reconvene at 1:15 Eastern Standard Time. We are in recess.

The Joint Meeting of the Habitat and Environmental Protection Advisory Panel and Coral Advisory Panel of the South Atlantic Fishery Management Council reconvened in the Topaz Room of the Charleston Marriott Hotel, Charleston, South Carolina, Thursday afternoon, November 8, 2007, and was called to order at 1:30 o'clock p.m. by Chairman Doug Rader.

Dr. Rader: We are reconvened. Dr. Andy Shepard is -- I gave you a promotion. Twenty-five-cents and it's yours. Andy is taking Steve's place as chair, interim chair, temporary chair, appointed representative, vice chair -- Let's put it this way, Vice Steve Blair, for the rest of this meeting, since Steve was called away.

We are going to project to you the map that Roger put together with input from John and Steve and others in the four compartments that constitute the second tier that we talked about, the areas where new discoveries seem inevitable. I'm pontificating into the dead air until this gets up.

I'll tell you what I'll do. Let me go ahead and set up the next section while we're waiting for the image to be displayed. Recall that one of the major duties of both of our advisory panels is to advise the council on the protection of essential fish habitat, EFH in the shorthand, established by Congress and the agency.

Remember that essential fish habitat is identified ecologically narratively, but also spatially, as those areas that are important for the continued health of populations of managed species or their prey. There is opportunity to identify, characterize, and document waters and types of habitat that support any life history stage or prey organism for any managed species and in the South Atlantic, that gives us wide latitude indeed in identifying and protecting ecologically important pieces of the watery world in the U.S. exclusive economic zone and waters managed by the state.

While we have been prevented from identifying designating EFH in international waters, by the General Counsel, there is no such prohibition in the state waters and even onto state lands where there are habitats that in fact provide those ecological values to the animals that are managed under the council's representation.

Now, the implementation programs are quite different for fishing and non-fishing activities and for areas that are purely in the EEZ, meaning from the state water boundary out to the 200-mile or alternative EEZ demarcation, but they still can be designated that way and obviously managed increasing collaboratively as you move into inshore waters.

The charge has been levied that EFH covers the universe and thus means little. I personally don't subscribe to that, because whether or not a particular piece of water is identified as EFH in and of itself doesn't mean much. What means a lot is whether a proposed activity or proposed government action or proposed permitting action or proposed expenditure of funds threatens, either by itself or as a category of activities, a function or value that sustains the ecosystem.

In that sense, it provides a framework for consultation for agency engagement with proposed activities and other government actions and funding activities. It's pretty important to document not just where important places are, but how they work, in order to protect them effectively.

The part of the argument that is right, however, is the differential habitat value that different places provide and the essential fish habitat doctrine allows the elevation and the identification and formal designation of places that provide even more important habitat values as habitat areas of particular concern under the EFH program.

The reason we've gotten into this sort of disparity between C-HAPCs and EFH HAPCs is that EFH has to be tied to managed species and as we get into very deep water, the only managed species, meaning within a fishery management plan, fishery management unit, and identified for management that occur in those waters are the corals themselves, plus wreckfish in some places

and golden crab in some places and royal red shrimp in some places and tilefish in some places and snowy grouper in some places.

We have gotten around that or the council has gotten around that by identifying corals themselves as managed species and thus, we can identify coral HAPCs at any depth where corals or live bottom or hard bottom exists. The challenge for the next hour is going to be to take advantage of your professional expertise and experience, building from the 1998 habitat plan and the subsequent designations of essential fish habitat and essential fish habitat HAPCs or coral HAPCs, and identifying and then protecting those areas that are most important to protect against either fishing or non-fishing threats.

We are looking, most importantly at this stage, for the HAPC category, whether we call it EFH HAPC or coral HAPCs, that in your view are inadequately covered by the current suite of HAPCs and there are criteria that have to do with and must be documented in the final EFH rule, based on the relatively value, rareness, whatever else -- What else? Help me, Miles or Roger or Myra or somebody. They're pretty intuitive.

Anyway, there are a set of criteria which you would innately inherently agree with that identify the kinds of dimensions along which we must document relative value, so that areas in fact qualify as HAPCs.

Task one, when we break into subgroups -- Task one, truthfully, is to break into subgroups and the first part of that is for Coral AP people that are not already structured to be associated with a state to choose one you like the most -- No, to choose one that you believe your professional expertise is most relevant to, perhaps allocate yourselves if there is an over-allocation in one state or another, and help us use your expertise to identify high-value compartments.

I'll just throw a couple on the table. One that could be addressed is tilefish EFH and HAPCs, which are not adequately, reflected in the EFH provisions in the snapper grouper plan. Tilefish meaning golden tilefish, but also the other species too, are part of the snapper grouper complex and so we could do that and inshore waters, particularly spawning and nursery habitats, the disproportionately aggregate values for multiple species, whether they're mangrove swamps or seagrass beds or other places that not as a category of places, because they're already protected as EFH in the general comprehensive plan, but specific such places that you think would benefit from an additional level of protection could be identified.

One that's dear to Dr. Laney's heart that we've gone back and forth on four or five -- Probably Mike's heart too that we've been back and forth on three or four times are areas that are spawning and nursery grounds for diadromous fishes.

Just for purposes of background, we attempted, the council attempted, to have known spawning nursery habitats for diadromous fishes designated as EFH HAPCs in the past and we were rebuked by the General Counsel to NOAA, but because all those species are also important prey, prey for managed species, we can nonetheless identify and propose that the council identify and designate those areas as key prey spawning and nursery habitats this time around in the fishery ecosystem plan. Those are just examples. Each of you will come up with different examples.

What we're looking for is for a chair, if not designated, to be designated and adopted by each of these groups. There are sort of tentative -- It depends on the state. Some states have sitting chairs and some don't and then someone else to help take notes for the listing of things that are identified or proposed as prospective candidates for HAPCs or for that matter essential fish habitats, if you believe they're not currently covered.

That's a huge document and I don't think any of us really carries it around in our head, but any of those things at all and then a process within your state panel, aggregate joint panel, to take that list and massage it and document it and work with staff to translate it into candidates for HAPC designation for the council to consider in the upcoming FEP process and comprehensive amendments that will implement the FEP as it moves forward. Is that fairly clear with what we're doing?

Just logistically, because we are in this room, we're going to need to break up spatially within the room and I suggest that we split those chairs in the back and have two states there and there and two states here and here, just to achieve maximum spread, and we'll just go North Carolina and South Carolina and Georgia and Florida that way, if that's okay.

Ms. Stiles: I swore I wasn't going to talk after lunch, but I was just going to ask if you know if there are HAPCs, a lot of them, designated? I'm not familiar.

Dr. Rader: There are, but not a lot. The spatial -- When this happened in 1998 and then I guess the implementing amendment was that year and what year was that? Yes, it was 1998. There were a fair number of these places identified by name when the interim essential fish habitat rule was holding sway and now that it's final, it requires a spatial identification of those HAPCs and that's a process that we're doing right now.

A lot of the named places, Charleston Bump just for instance, is an EFH HAPC under the snapper grouper and coastal migratory pelagics and sargassum, three or four plans like that. Lets err on the side of inclusiveness and why don't you make your lists to include places that you think might be and then if they already are, we still may need some additional characterization work, but don't feel like you're starting from scratch, because most of the obvious things probably already are EFH and some of the obvious things are already HAPCs.

We're going to take only one hour from the time we break and that will be nowhere near enough time and so most importantly are getting in place, number one, a process that you are comfortable going forward with and I'll give you an example in a minute.

Number two is a starting list of potential high-value candidate HAPC sites and any other recommendations you want to make about resource gaps or anything else is also fair game, but the things we really need from you is as complete a list as you can make of the highest value habitats in your state waters that might not be adequately protected as HAPCs.

Mr. McFall: A point of clarification. If an area has already been identified as EFH HAPC for a specific plan, is it afforded any additional protection like say if it's both a snapper grouper and

coral?

Dr. Rader: It can be. It's not automatically as designated, but it's just that -- Maybe Miles would have an opinion, but watching the agency, they do an awfully good job of looking at these values and working with them in terms of reacting to development projects of all types. In fact, this region has, I think, the highest documented rate of implementing those findings into the final design of projects of any region in the country.

What it does is it gives an elevated level of interest and concern. Is that fair, Miles? Yes. In that sense, it's pretty important, but, again, just because it's designated, it doesn't mean any particular outcome. What we have to do is give evidence of what the functions or values are that support that designation and that might be potentially interfered with by some kinds of activities.

The better the documentation is, the stronger the effect will be on implementing it and that means identifying types of threats, types of conditions that post a threat, specific activities and all that.

I think, as Miles correctly observed before, the real power here is then to interface the designation, the spatial designation, with the policy statements that say for this activity, working around these kinds of EFH or EFH HAPC or coral HAPC sites, these kinds of things are threats that have to be avoided, where possible, minimized, and then mitigated, if a mitigation system exists.

I can imagine a mitigation system in the future that would actually count habitat value and say to sustain fully rebuilt populations of all these things, taking their life histories into account that you need this much of this kind of habitat and here's, in effect, a cap, a target amount, and for negative impacts you have to offset them, if those exist. That doesn't exist right now.

Right now, it just helps steer the debate about how you constrain different kinds of activities so that they're consistent, to the maximum extent practicable, with supporting the ecosystems we're charged with helping the council manage. Is that clear? The edges are all fuzzy, but if you feel strongly about a place, because it's important ecologically, this is the time to let us know, so that we can build out the case, the administrative record, for getting it designated and then once it's designated, for having enough justification in the record so that the agency can help use it to implement it. Is that all fair, Miles? You're the guy.

Mr. Croom: Yes, that's exactly right, Doug. The designation as HAPC does not in and of itself confer any additional regulatory ability to control use or prohibit activities or anything like that. It is a way to recognize areas that are particular rare or unique or have special ecological values or that are particularly threatened by human activities and that really, as you said, rests upon having a good documentation, a good record, for speaking to the ecosystem values and functions and to the imminence of the threat of the human activity and the severity of the impact of that activity on those habitat functions.

That's what gives us the power, really, to make the case in looking at a project of what kinds of mitigation activities might be required and why an activity should perhaps not be allowed in that

area to begin with.

Dr. Rader: Great and, of course, the reason that it's even more important right now is the fact that the activity suite is in the process of changing. Agencies and private sector entrepreneurs are looking at the EEZ not just as a place for fishing anymore and so there is the potential for significant alternative energy development, significant mariculture, significant -- All kinds of other uses that I can't even begin to imagine right now. This is an awfully good time to identify the sweet spots in this region and make sure that they're justified and identified for future protection. Do we have the criteria? Here it is.

The criteria for identification and designation of HAPCs are: 1) importance of the ecological function provided by the habitat; 2) the sensitivity to degradation, based on human activities; 3) the likelihood that development activities are or will stress the habitat and then its rarity and so, again, the things that you would expect.

I actually think this program is more powerful than people sometimes think and, again, don't be constrained by the disparity between fishing and non-fishing impacts. They're simply different programs or the disparity between federal waters and non-federal waters. They're just different in terms of how they work. Is everybody happy with this?

Before we break, can you put up the map? We will distribute this electronically. The idea is we're not going to have time for a full report out. In other words, we're not going to do a round robin when we come back together, just because it would take more time than we have today and we really need to get into the energy policy presentations and discussion and then leave time for George to wow us with Gray's Reef, but what we will do is have a -- We could get a quick statement by each chair on what the process is from here, so that we all understand where we're headed.

What Roger did, working with the pertinent researchers that you've heard from before, is identify and demarcate in yellow on this map the four areas, two pairs of areas, because they're contiguous, that are likely higher probability sites, regions or zones.

These are sort of our second tier sites, up in the northeast tail there, the areas down to the south of the middle zone, whatever we formally call it, that have the right kind of depth and habitat, bathymetry, and perhaps underline geology, those two, the area between the terraces right there and then the area that John described west of the terrace.

Does anybody have any immediate heartburn with this? You'll see it as a draft and if you get any, let us know after the fact and we can talk about tweaking it, but to me, this reflects the best available science for the second tier. Are there any comments or questions or concerns?

Mr. Mikell: A question to John. John, is it easier to get funding inside of the box or outside of the box?

Dr. Reed: Right now, funding every year gets more and more difficult. Funding to do my research in general or what?

Mr. Mikell: Yours and Steve's dives.

Dr. Reed: I suppose -- Basically, I don't think either of us have received -- I certainly have not received funding from like NOAA Fisheries or significant funding from the South Atlantic Council, not that I don't certainly enjoy the limited funding that I have received. It's primarily to work up the data that we've already collected, but for the big funding to rent the ship, the sub, it's really, really tough to get.

I don't think it's a factor whether it was inside or outside of the box. Basically, funding for this type of exploratory research has been primarily through NOAA OE and they seem to be going off on their own tangent for next year, since they have a new ship. Minerals Management Service and a lot of that funding has been in the Gulf of Mexico. For me, inside or outside of the box, the funding really didn't matter. It didn't make it easier to get funding because I planned to work inside the box or try to find new areas outside the box.

Dr. Reed: I love the analogy and I'm not sure if it's mixed or not.

Mr. Mikell: I understand it doesn't make any difference.

Dr. Rader: I guess up to this point, but I guess my intention in recommending to you, and being grateful for your agreement to put the third recommendation in there about funding, is that the truth is that this region hasn't gotten its fair share of available resources, given the importance of this resource and so it's time to make that change, whatever it takes, to -- I can't help but believe that all of these designations make a difference.

I don't know if Kimberly has an opinion about that or not, but it seems to me that recognition by an agency charged with recognizing relatively important values would impose an additional opportunity to get this area addressed. I'm hoping we can make a difference together.

Dr. Reed: I just want to follow up. Certainly for the Oculina, since that had been established for a long time, that did allow additional funding, primarily through Andy Shepard and NOAA NURP. It was very significant to allow additional funding that was specifically for the Oculina HAPC and so perhaps down the road, once this is a deepwater coral HAPC, that we may see similar type of funding to address specific questions and concerns within this new HAPC.

Mr. Mikell: I'm definitely in favor of enlarging the boxes, but I just wanted to make sure that it didn't make any difference whether the funding came in the box or out of the box.

Dr. Rader: I hope what it will do is serve to focus attention on areas where attention is needed, both inside the core areas we're recommending as HAPCs and then also for exploration in these other areas that we feel, based on the best available science, the high-value habitats are likely to exist, but it's going to require us, in each of our private roles, to figure out a way to make this wheel squeakier.

Mr. Pugliese: I guess just the fact that, at least from what we're hearing, there's more emphasis

through NOAA and through other programs, such as the broader coral program, to fund things that are supporting management activities in the future. A direct example is the opportunity we had in collaboration with Gray's Reef.

We targeted very specifically within the HAPC areas to get the information and hopefully with an adopted and approved research plan and research and monitoring plan, we'll be able to highlight that to a greater degree, once it's actually designated, so that more work can be done. I think that's the whole intent of that, that if significant dollars get laid on the table or new collaborations come down, that we will be postured and positioned that all the people that are doing research can then embrace that and identify that in their proposals, et cetera, and then it becomes hopefully a higher level of opportunity to get it funded, because it's supporting long-term management and conservation under a federal plan, ecosystem plan, and everything else.

Dr. Rader: Let's go ahead and break for one hour exactly. We'll turn the mic back on here, with you in your seats, exactly at three o'clock and we'll go forward from there. Again, North Carolina in this area, South Carolina in that area.

Ms. Hilfer: A few of us were talking on the South Carolina sub-panel and in looking over the coral membership; we would welcome any input on South Carolina, because we're underrepresented on the coral panel.

Dr. Rader: I think that's probably true.

Ms. Hilfer: If anybody has any particular concerns on the South Carolina coast, please come and give us your input.

Dr. Rader: Actually, if you want -- Wilson, you're going to chair the North Carolina panel? Roger and I will both float and Priscilla. If you have specific questions about specific species HAPCs that have been designated, Roger is the guy and we'll be able to project any of it or have it on the screen here. We want a list and how we're going to get the list documented and expanded after the meeting today. Thank you.

(Whereupon, the committees broke into sub-panels.)

Dr. Rader: We are reconvened. In floating around the various groups, Roger and I heard some really interesting, important discussions underway and so I think we made some important progress. It's also pretty clear that no one of the panels really got all the way done, although I guess Florida seemed closer than the rest of us.

I think rather than actually formally reporting out, given that it is 3:15 and we're really going to try to get done by 5:00 and we've got a couple of important things left to get done, let's just make sure about where we're going as a group in terms of follow-up, with both APs working jointly on this as the essential fish habitat part of the fishery ecosystem plan goes forward.

Number one is the lists you made, we want to capture and distribute. Those of you that made electronic copies are going to email them to Roger. Those of you that didn't, rather than

translating them yourself and emailing them, if you want to, if you feel comfortable doing so, if your handwriting is legible enough, you can simply give the hard copies of your lists to Roger and he and the staff will translate them and send them back to you to make sure that he captured your hard copy writing.

Then the other thing we want to do is we'll actually distribute each of the groups' lists to all of the other groups, because I think there probably is more synergy among and between the groups than we each think and we should take advantage of that. It also may stimulate your thinking about things we each forgot and so we will follow up making the lists and reviewing the lists electronically.

Hopefully your follow-up process involves a personal commitment of each of you to see and respond interactively to those documents and hopefully among yourselves and so we'll rely on the group leaders to do that, unless you have some other idea in mind, and that's cool, too.

Where we're going with this is then to identify those ideas that came up today that really have some potential traction and potential value in terms of shaping the EFH process. The staff will take those documents and develop them with you into the draft that will become the next version of the EFH document. We're going to have to rely on electronic follow-up processes to do that, but there will be some selection involved.

The other thing that became apparent to me was that we have a significant challenge among our groups in translating the existing narrative HAPC designations into adequately supported geospatial boundaries and in other words, where an oyster reef or shallow-water rock ledge or shallow-water coral reef exists in the real world as an HAPC.

Roger and other staff have been working on that with Tina and others for quite a while and I guess the main thing to figure out is how we go about that systematically in a way that is supported by the best available science. It doesn't go beyond it, but it also sustains the intent of the original designation, which is to protect all such important spots against different kinds of threats. Do you have any thoughts about that, Roger, except to say that -- Tell us a bit about how that process will unfold and when people should expect to see things.

Mr. Pugliese: Kind of the back-end of the process right now is that we want to make sure that we've got the acknowledgment within the comprehensive amendment that the designations spatially are presented in the IMS system. I think that's the way we're deferring and showing that you can access all the EFH and HAPC designations in a spatial format.

Most all of this has been building in the development of the IMS from its inception in the process of -- Many of the designations already can be applied to multiple species, whether it's habitat types or -- It goes across a number of different species.

We're in the process of getting those all shored up and available through the IMS and they will be acknowledged and incorporated in the FEP as we move to bring the entire documents to public hearing, both the FEP and the comprehensive amendment, in March. One of the things is as soon as we can get anything related to the specifics that individuals are proposing now, that

would also be good, to make sure that we right in the front end -- If you have some concept or have -- Some of it, I think, is specific in the way you've already laid out these proposals existing but if there is more and actual GIS that may be available, also send those as soon as possible and we can integrate that into the next stages of incorporation of new proposals.

Dr. Rader: Then the other thing we sort of left hanging is the discussion on the Fishery Ecosystem Plan. We didn't give you time to react to that draft. Obviously it's a monster and none of us have fully assimilated it and so we are going to take advantage of electronic capacity for you to provide any further comments that you have on that draft on things that are in it that shouldn't be or things that should be in it that aren't or whatever. Get those comments back to Myra and Roger on what kind of timeframe?

Ms. Brouwer: One thing that is particularly critical at this point and one that I haven't tackled yet is the invasive species sections of the FEP. We have a very detailed section on lionfish that was put together by a writing team composed of Paula Whitfield up at Beaufort and several other folks and they did a really thorough job in providing that to us and that's the only invasive species that we have included in the FEP.

I wanted to just sort of put this out on the table to request your guidance and your comments on how we should approach this, because it could potentially be a very lengthy part of the FEP if we choose to include all the invasives that are in the fresh water, if we choose to include all the plants and then all the marine species. It could be a whole other volume and so I was looking for some guidance on that, any suggestions that you might have as far as what to include and where to find that information.

Mr. Banks: We have a number of exotic species in the -- Whether they're invasive or not is another question and how do we define "invasive" or do we want to list exotics and see what happens?

Dr. Rader: There's another issue we've mentioned in the past that I'll bring up, because it's a pretty interesting one, and that is even recognizing what is exotic and what is invasive in the context of changing climate systems. I know the Albemarle-Pamlico Natural Estuary Program, in its effort to recast its comprehensive conservation management plan, has identified this conundrum of controlling invasive exotics, but also recognizing them as systems change.

In that particular case, there's a potential for a state shift from water that is now -- waters to much saltier waters as barrier island morphology changes with storms and rising seas. Change is coming and we should all recognize that, but controlling new species, even if they are the dominance of the future, gets more complicated that way.

I guess I would suggest if you have specific ideas, either about how to leverage other people's lists or other programs, materials related to these species as they impact the broader South Atlantic marine and estuarine ecosystem, please get those tips to Myra personally. She would love to receive them. Is that good enough or have you got other things?

Mr. Croom: Before we get too far away from the EFH and mapping exercises, I just want to

remind people of a detail that's sort of technical, but really important, which is that the EFH regulations as they're written now require that the textual description of EFH be determinative and that's important for us as we look at projects and impacts and where they actually occur.

The GIS tool is a great way to depict that information, but it's not always the same thing and so as folks think about adding or talking about EFH, keep in mind that it's really important to be able to put those boundaries down in text that's as clear as possible.

Dr. Rader: Great point, Miles. Thanks. Are there other comments about either of those two things, meaning where we're headed on your work as sub-panels and together on EFH and EFH HAPCs or more generally with the fishery ecosystem plan?

Mr. Banks: It's a little hard to hear now, for some reason, but did you give us a timeline on when you wanted this information?

Mr. Pugliese: I would say we need to get it as soon as possible, but I would say we would like to have it, at least the initial comments, by maybe December 10th, to at least get this initial round, so that we can compile this subsequent to the council meeting.

Then we can have this next iteration and materials and then if there are other things that need to be shored up and -- The other point I would like to make is that I'll be looking at trying to also work with Myra and the rest of the staff to identify other participants and holes that may still need to be done, even when we get beyond that and so I may try to engage -- If you have other people that you see could provide additional input or refinement of this, please feel free to contact us and let us know about that.

Dr. Rader: Besides Homo sapiens as exotic species.

Mr. Banks: Were you talking about this HAPC that we're doing by region or were you talking about another document?

Dr. Rader: What will happen is you will see the list come back out hopefully within a few days and when you get that list, we'll give you a deadline that is no more than probably a week or ten days beyond to get preliminary comments back to us, because it will be an interactive process between now and March to build that record and actually develop those alternatives so that we can enough to take to the council in March, preliminary. You'll get an electronic prompt with what we've done to date with it soon. Is that clear? Okay.

Let's move into the next-to-last discussion. The last piece will be, again, a presentation by George. Let me give you fifteen seconds of background on the energy policy. Most of you have been there and done that and so you know where we've been, but the council did a pretty good job with the essential fish habitat policy programs way back in 1998 with addressing different uses and threats to essential fish habitat as they existed at that time, including energy.

The staff put together some really great stuff, but the thing is that the energy -- The nature of the energy threat and, again, I use that not in a pejorative term, but in the sense of the essential fish

habitat provisions of the law, which you identify those activities that have the potential to challenge the ecological value of different ecosystem compartments and thus, EFH.

That's changed really dramatically and they have specifically asked us to review the extent to which that policy, the energy policy for the protection of essential fish habitat, and so we're not commenting on energy security and other things directly, is adequate in the face of a changing ocean energy mosaic and particularly with respect to wind energy, hydrokinetic energy, LNG pipelines, the new face of energy in the ocean.

We have three presentations. Jocelyn, do you have yours organized as two separate pieces or -- Okay. She'll give us two important updates on where things stand and then Roger is going to brief us on the Minerals Management Service and their relatively new mandate from Congress to address alternative uses of the EEZ, including energy, and then we are going to identify issues that need to be beefed up subsequent to this meeting in order to be able to take a revised policy statement to the council either for the December meeting, and I personally think that's ambitious, given the mail-out date, or more likely in March.

Ms. Karazsia: Roger asked me to put together a few slides on a few of the EFH consultations that we have been involved in on two general types of energy projects in Florida and so I'm going to talk a little bit about the Calypso Liquefied Natural Gas Facility and go over the status of the draft environmental impact statement, hard bottom resources and port siting, and talk about the ichthyoplankton sampling program and then I'm also going to talk about hydrokinetics specifically, some pilot proposals that we've seen in Florida for ocean turbines.

With respect to LNG facilities, I included this slide to provide the national perspective of where most of the activities are located. You can see in the southeast region that we have relatively few LNG terminals compared to the Gulf of Mexico or the Northeast and what you see off the coast of Georgia is known as Elba Island and the blue dot off the coast of Florida is the LNG deepwater port facility.

One of the orange dots is the actual pipeline that would connect to the facility and the other one is another pipeline known as the AES Ocean Express Pipeline, which was authorized to be constructed out to the EEZ, but hasn't been constructed yet.

On Friday of last week, the Coast Guard published the notice of availability for the draft environmental statement in the Federal Register. The two lead federal agencies are the Coast Guard and Department of Transportation Maritime Administration. National Marine Fisheries Service is a cooperating agency in the development of the EIS and U.S. EPA, I believe, is also a cooperating agency.

Our role in the draft EIS is we get to review sections earlier, actually before it's an actual draft document, before it goes out for public review, and to provide our comments and recommendations upfront. It's sort of a mechanism for us to address controversial issues up front before the document goes out to the public.

At the last AP meeting, I talked a little bit about the Deepwater Port Act and the statutory time

clock associated with that and so with this EIS, we are now within the 330-day review period and comments on the draft environmental impact statement are due to the Coast Guard on December 17th.

This is just a general picture of the deepwater port and what you see is the pipeline on the bottom and then there's tie-in system that connects a buoy, which is what the actual vessels will tie up to, and the buoys are anchored and you see kind of an anchoring array and there are three different types of vessels in that picture.

There is an LNG carrier at the upper right and there's a storage regasification ship that can regasify the LNG, in addition to store it, and then there is a transport regasification vessel. This is just a general picture of what the submerged buoy would look like and here's a picture of a representative suction pile that would be associated with the project in the seafloor impacts.

We had some concerns about the project upfront with the deepwater coral habitat areas of particular concern going through the designation process and the area that was originally identified for study was actually -- After a geohazard survey, they observed a lot of high-relief hard bottom in that area and so in the upper right picture -- It's kind of difficult to see, but the study area shifted further to the south and Calypso contracted John Reed and Sandra and Chuck to do the deepwater habitat characterization work and as a result, we got some really good scientific products from that study and John has already presented some of the findings from that work to the council.

In general, they identified six different habitat types that range from high-relief hard bottom to low-relief hard bottom to sand to tilefish burrows. This is a picture of the study area with the area that's inside. The study area that's shaded in gray are the hard bottom locations and then here is the Calypso Deepwater Port -- This is their preferred alternative that they identified in their draft environmental impact statement.

Through the process, National Marine Fisheries Service had several opportunities to comment on the application and early on, we had recommended and we also put together a memo with Andy and UNC-W. We had some NURC support to put together a memo recommending that they site the project some place other than so close to the Miami Terrace and escarpment.

It doesn't appear that that recommendation is being considered, but we certainly have maintained that recommendation along, but what you can see from this picture is that in general they have largely avoided the hard bottom impacts and the hard bottom, again, is that area in red.

However, there are 142 acres of soft-bottom impact which could be utilized by golden crab or royal red, but probably are likely utilized by tilefish and even in the ROV surveys that were conducted, I think you identified seven to ten burrows that were actually within the ROV transect line and so tilefish impacts are certainly -- The impacts to tilefish habitat are being evaluated. This is just a table from the EIS that describes the different impacts to the different habitat types.

Then, in looking at a review of the alternatives, this is the preferred alternative. The one that I had just showed you is in 800 -- It's Alternative Location Number 4 and it's in 800 to 932 feet of

water and there's a 564-foot buffer to the nearest hard bottom.

In addition to the hard-bottom impacts, National Marine Fisheries Service, in addition to Florida Fish and Wildlife Conservation Commission and FWRI, we were concerned about impacts to ichthyoplankton from engine-cooling activities and I think it's important to note that the Calypso team has all along, from day one, committed to constructing the port with a closed loop technology for the regasification process.

Many of the facilities that exist in the Gulf of Mexico that have either recently been authorized or are in operation are open loop facilities and use on the order of a hundred-million gallons of seawater per day for engine cooling purposes and the impacts to ichthyoplankton in those areas are much greater than what we're seeing with this particular project.

However, since we didn't have sufficient data, ichthyoplankton data, in this area, we wanted to at least try to characterize the ichthyoplankton resources within this area and try to estimate what the effects to those resources would be and so Calypso agreed to start an ichthyoplankton sampling plan and here are their five stations relative to their preferred port alternative.

We worked with the South Atlantic Fishery Management Council and with FWC and with FWRI to compile a list of target species that we felt would be most important for identification through the ichthyoplankton sampling program and here's a list of some of those species. Calypso has completed sampling events in February, March, June, July and November. For the purposes of the EIS, we have the February and March data and we're anticipating that the July and possibly the November data could be provided in the final EIS.

In general, the abundances were relatively low. However, that wasn't necessarily unexpected for February and March sampling time periods. The sampling is useful, but we needed to try to determine what's the best way to figure out how many resources would be impacted from the water intake and the Calypso project would take in about forty-two million gallons of water a day and that is a conservative estimate, based on the picture I showed earlier with the three vessels.

That would be in the case that those three vessels would be tied up to the port twenty-four hours a day. The water is for engine cooling purposes and not for the actual regasification and so although it's forty-two million gallons of seawater a day, that assumption was based on the fact that all three vessels would be tied up to the port twenty-four hours a day, which is not necessarily a likely scenario, but those are the estimates that we're using.

In order to try to quantify the level of the effect to the ichthyoplankton resources, they've adopted a model called the Empirical Transport Model, which was originally developed for application in the Hudson River and was modified for use in California and has been modified again for use for this particular project.

It clearly has disadvantages. The biggest problem that we have is there's not an opportunity to input biological data into the actual model, because the species that we are looking for, we don't have complete life history information for. However, with that said, we could not come up with

a better model for trying to assess the impacts and so we're still looking into are there other models available, but this is definitely the best that we were able to come up with. At the bottom of the slide, you can see an example application for skipjack tuna.

Here are the other species that were looked at that had similar losses projected. Like I said, the abundances were generally low in the target species that we had looked at. However, that's not necessarily -- That wasn't unexpected, especially when we reviewed some data from some similar sites.

This is a study done by Bob Cowen and Joe Lopez to the south of our study area and they certainly found reef fish abundances to be higher in September/October/November and generally low in March and April and the same for scombrids.

Calypso has committed to continuing the sampling to -- Assuming that the project is authorized and constructed, they have certainly committed to continuing the sampling program and we are working to build up some adaptive management into the process, in the case that information that we review at a later date shows that there are some significant impacts to specific species or species groups that we have the opportunity for some adaptive management protocols to be built into the decision making process.

We are also working with Coast Guard and MARAD to develop a protocol for coordinating the agency review process that would be associated with the port's decommissioning and then we are also considering what are the compensatory mitigation actions that would be associated with this type of project.

There's certainly some effect to soft-bottom resources and ichthyoplankton resources and we are trying to determine what that level of effect is and if some type of compensatory action could be developed to offset the losses to those fishery resources and their respective habitats and we're certainly looking for ideas from the council and advisory panels on that particular issue. Roger had also asked me to put together a few slides on hydrokinetics and we are aware of -- Are there any questions on the LNG part of the presentation?

Dr. Laney: Jocelyn, it's not a question, but -- I'll seek input from Jesse on this, but the ASMFC, in the not too distant past, was empowered a -- I think it was a subcommittee of the Management and Science Committee that was looking into the possibility of using power plant entrainment data to estimate impacts or possibly look at their use in stock assessments and while the effort ultimately proved unsuccessful, they did generate a new model, which I believe they published, Jesse, did they not? Do you remember this? It may have been right as you were coming onboard.

Anyway, I'll commit to getting that reference to you. I don't know whether that model could be applied to this particular application or not, but they did do the work and the only thing they spun out of it was the model. They weren't successful in figuring out how to use the data, because it turned out the data were insufficient, but to the extent that that may have some application, I'll get that reference to you.

Dr. Rader: Was there any discussion about, and I hadn't really, to tell you the truth, thought about the ships being there all the time, or some part of them, about more traditional oil and gas and grease discharges and impacts on the surface microlayer and impacts through that on ichthyoplankton and other things.

Ms. Karazsia: It's a part of the application process. It's a requirement by the licensing agencies through I think it's called a spill response emergency plan or something to that nature, which would outline the procedures if there were some sort of a spill or discharge, emergency procedures.

Dr. Rader: I guess I was thinking about more sort of routine -- It's impossible to operate a ship like that without routine low-level emissions and obviously the hydrophobic things spread out and make layers and things on the microlayer, which is pretty important for a lot of these little things. I have no idea how to quantify that or how to feed it into a loss model like that, which is pretty interesting. I have no ideas about that, but I just wondered if it came up, in terms of sort of routine operations.

Mr. Croom: I don't know about this particular project, but the other LNG in the Gulf had to get an NPDES permit and so EPA looked at a lot of those kinds of questions. I don't know if that's the case here or not.

Ms. Karazsia: I was talking to Roland Ferry about that, because in the case that the project is licensed, they will be issuing an NPDES permit and I don't know -- Is there anything you want to add to that?

Mr. Ferry: The only thing that's just going to be complicated with this particular case is this is all done with vessels, where the others in the Gulf of Mexico had platforms and part of the NPDES permit would include things like deck drainage and things like that. The EPA, actually we're dealing with a court order to change that, but right now, a lot of these types of discharges off of vessels are currently exempt from NPDES regulation and that's going to be worked out in the near future, about how EPA will handle these sorts of things for vessels in the future.

Mr. Gregg: One area to look toward is the floating production storage and offloading, which are, again, vessels or vessel-like structures that are moored for a long time and how discharges from those are currently managed and use that to maybe guide how this one moves forward.

Ms. Karazsia: Thanks for that suggestion. Moving on to hydrokinetics, for decades it's been recognized that ocean current, thermal wave, and tidal-based energy sources could potentially be harnessed for the development of renewable power sources and we are now seeing a future applications for some small-scale pilot type projects in the South Atlantic.

I just grabbed a few slides from the Florida Atlantic University site and it's my understanding that they are interested in deploying some instrumentation for us to study the area and then, as a follow-up, possibly deploying a pilot-scale project, primarily to evaluate the effects on the environment and to also see if this type of activity can be scaled up to a commercial sized venture.

We are involved in one essential fish habitat consultation for a project in the Florida Keys and this slide might be misleading, because that's not the actual project we reviewed. This is the slide from the FAU site, but this is just a small project in the Keys that is looking to deploy a turbine for a set period.

It's a sixty-day period of time to test some equipment and to test the effects on wildlife and so we are working with them to develop a monitoring program that would help us evaluate the effects on fishery resources, including any impingement or entrainment issues and in addition to that, for this specific project, they were looking at putting some mesh screens around the turbine and we had made some recommendations to test different types of mesh screens, in order to better understand the effects of mesh size on fishery resources and the deployment of a downstream sampling net that could collect any injured fishery resources and possibly an underwater camera, so that they could collect information on the effects of the turbines to fish. There's actually a pretty good animation on the FAU site that we were maybe going to show if we had time.

Dr. Rader: In terms of context, two important pieces of information. Number one, many of you may have seen that Governor Crist in Florida is interested in replacing traditional capacity, coal or diesel plant capacity, with ocean energy, to the extent that that's doable. As you saw from Jocelyn's first graphic, it's clear that Florida is one of the places in the world where a large population center and large load demand exists in close proximity to one of the strongest and most reliable currents in the world.

I'll just observe that the other side of that current is Cuba and having worked down there myself, the Cubans are also interested in doing the same thing and extracting some part of that energy from that current. The numbers are pretty impressive if you look at extracting just a couple of percent of the energy from the current. It provides a huge amount of capacity.

The question, in my view, is two parts. One, how do you make sure that the pilots, when they're put in place, fairly appraise the kinds of impacts that are likely to occur at that scale, but second, how do you come close to predicting the aggregate effects of a major reallocation of these offshore waters, the energy production, at a scale to produce a couple of gigawatts, or maybe ten gigawatts, in the Florida current and then at what point do you begin to have aggregate effects on the strength of the current or on the energy in the system or on trophodynamics or all kinds of other things that go far beyond what you could assess in terms of local impacts on habitats that we know well.

I do think that's a serious challenge as we move forward. It's also interesting that this is a bandwagon that Congress is jumping on really rapidly and is very interested in providing subsidies of various types, incentives of various types, to get these things in the water and some of them are in the water, in Neah Bay in Washington and off Oregon and California and other places, where a bunch of other companies are actually testing these things out.

It will be very interesting to watch what happens in Florida, but it puts a bigger point on the opportunity we have on the front-end of that development to make sure that both of those points,

the sort of siting question and then the question of large-scale deployment and how those get addressed and do you have anything you want to say about that or does it speak for itself?

I hope the various industry advisory panels are seeing this, because this really is a major potential reallocation of public waters to other uses. I don't know how you run a fishing boat right through that part of waters. Are there any comments or questions for Jocelyn before Roger goes?

Ms. Brooke: This is probably all in the document that I didn't get around to reading and so I apologize for my ignorance, Jocelyn, but could you give us some more details about how deep this is going to be and how much of a network this is? It says it's going to rotate, at least in this model, at fifty revolutions per minute, but I presume that it's being driven by the stream and so that would be variable and could you just give us a little bit more about the details of how they expect to deploy this system?

Ms. Karazsia: I wish I could, but we haven't seen an application yet. We've just been directed to the website and invited to participate in some general public scoping activities and so I don't have any details at this point, but as they do -- As we receive more details on these types of projects, we'll be sure to notify people that are interested, like yourself and the council.

Mr. Shepard: The person who is in charge of this for FAU is a fellow named Rick Driscoll. He's at the SeaTech campus and so if you have any questions, he's pretty open about talking about this thing and will be happy to provide you with documents, too.

Dr. Rader: My main question would be where the reef is in the animation. It looks like all sand. Any other questions for Jocelyn?

Dr. Laney: Again, not a question, but a comment. That is the ASMFC Habitat Committee has been very interested in tracking impacts of alternative energy. Jesse may want to speak for a moment to the source document that was under development, but has sort of morphed a little bit as a result of a recent review by the Management and Science Committee, but one thing that is happening is that there is a pilot tidal turbine, I guess, in place in the East River in New York and there's some monitoring associated with that.

New York DEC has been doing that work and so we may want to get in touch with Karen Chytalo, who is currently the chair of the ASMFC Habitat Committee, because I think she could provide some information on that.

I guess I have wondered what the potential for that might be in other areas throughout the southeast, in particular, and what I've been telling folks is any place where there's a significantly high tidal range in relatively restricted channels there would possibly be the potential for similar small-scale tidal turbine units like the one they're testing in the East River.

I don't know whether the rest of you feel that that's the case or not, but I've suggested, at least to the one person who asked me, that perhaps the area from the Cape Fear River Estuary in North Carolina through kind of the St. Mary's in Florida in the Southeast might have potential for these

sorts of small-scale tidal turbines, I don't know.

It seems to me that most other places might -- For example, further north, in North Carolina, you just don't have the tidal range and the current speeds, unless you go way inland up the rivers, to a place where you would have constant current velocities that would be high enough to generate -- Particularly during a drought it's not much of an issue, but I would just make that comment for the record.

Dr. Rader: The other technology that has gathered a lot of technology everywhere the slopes are steep is ocean thermal energy conversion, which takes advantage of a gradient in anything, from temperature to halinity to salinity, it doesn't matter, anything at all, to be able to like evaporate ammonia or something and turn a turbine and be re-condensed.

There's actually quite a bit on interest on that. It's a technology from the late 1970s and early 1980s that's been retread and it may have a lot of potential where the slopes are steep. A question I had for people is whether or not any of you have been affiliated or know anything about the Georgia Tech pilot project that's being developed. I don't know much about it and just wonder who does.

Mr. Geer: I know a little bit about it. They came to our agency several times and talked to us about it. They were considering doing something off of Tybee Island and I haven't heard anything from them recently. We had suggested they maybe do something off of Jekyll Island, because they were trying to bring the power right to a location and then they could power Jekyll Island completely, but I haven't heard anything from them in about a year.

Mr. Alexander: Georgia Tech had been given one year of money from Georgia Power to sort of look into the feasibility of putting a pilot study offshore and at the end of that year, they found that there was like a two-year wait for a turbine and that there were other ways to get cheaper green energy in their portfolio and so they pretty much put the project on hold, but yes, they were looking at either off Tybee or off Jekyll when they were looking at offshore sites.

Dr. Rader: Roger, if there are no other questions, do you want to brief on where things stand related to -- Sorry, Margo, I didn't see your hand.

Ms. Stiles: Andy, you mentioned Rick Driscoll at SeaTech and what is SeaTech?

Mr. Shepard: The SeaTech campus is at Dania Beach and it's one of the FAU campuses. That's just the name they give it. It's Dr. Fred Driscoll, but he calls himself Rick.

Dr. Reed: The Florida Atlantic University SeaTech is their ocean engineering group that actually we'll be working with. Harbor Branch will be merged with them pretty soon. Just in regard to these LNG pipelines and ports, when we did the survey, the hard bottom survey, for both the proposed pipeline and the proposed port for these, we did the video photographic survey to try to map out where there was potential hard bottom coral bottom.

When I wrote my portion of the report, one of the conclusions or questions I had to the pipeline

company, or the energy company, was the potential impacts of this pipe laid across the continental shelf, presumably from 600 or 800 feet all the way to shore on top of the sediment, and how that would affect, potentially affect, benthic organisms that are migrating, especially like spiny lobster, which migrate north and south. I don't know if that got into the EIS or if it will be.

Ms. Karazsia: I haven't had a chance to review the EIS yet, but I know that the pipeline out to I believe it's 120 or 150 feet of water, the part that is exposed that's not going to be tunneled underneath the reef, would be covered with an articulated concrete mat and so perhaps it wouldn't cause such a barrier for those types of migrations. In deeper waters, that's something we'll certainly have to consider when we're reviewing the EIS.

In addition to that, the pipe is supposed to be thirty-six inches in diameter and so at this point, I don't think the Coast Guard characterized it as an impact to those types of resources, but I'll have to review the EIS and look into that part.

Mr. Gregg: I had asked a similar question early in the process for the Calypso natural gas pipeline proposal from the Bahamas and the AES Ocean Express when we were doing the State of Florida's coastal consistency review. I coordinated with John Hunt, the FWC lobster specialist down in the Keys, and he indicated that the lobsters would have no problem overcoming a barrier on the order of a thirty-six pipe, plus the concrete coating on the outside, which I think -- Is that six-inch coating that they were using? They were looking at a pipe less than four feet in diameter total and he said that the lobsters wouldn't have any problem getting over that.

Dr. Rader: If there are no other questions, let's turn it to Roger. He's going to brief us on the Minerals Management Service -- I'm sorry, Jesse.

Ms. Thomas: I just wanted to follow up on what Wilson had said about the commission. I'm the energy contact at the moment for the Atlantic States Marine Fisheries Commission and the commission is in the process of trying to figure out whether we should be involved in this alternative energy arena in some way and what useful role we could serve, I guess.

One of the things that we're in the process of doing is developing an alternative energy source document to help the state managers in dealing with this whole process of permitting and regulation in these types of projects.

We have developed an outline for that document which has become overwhelming and as a result, we're in the process of figuring out what specific topics would be of most use to state managers and the whole permitting, monitoring process with regard to these types of alternative energy uses. If anyone has any suggestions with regard to that, particularly state folks, on what information or sort of guidance would be useful to you, as you have to review these permits and things, we would appreciate that.

Dr. Rader: Go ahead, Roger.

Mr. Pugliese: I wanted to make sure that we did have an opportunity to be exposed to a report that was prepared for MMS as part of their process in response to the legislation initiating the move toward alternative energies. The report was prepared by the Research Planning Institute for MMS.

A Worldwide Synthesis of Environmental Impacts of Alternative Energy Development was provided in your briefing materials in total, just one of the general things that did actually a fairly good job of capturing a lot of the concerns or information systems that the South Atlantic Council and management responsibilities of the South Atlantic Council and some of the connectivity of what is moving forward on alternative energies relative to that in this document.

What I would like to do is at least highlight some of the information that is presented in that and with the consideration that they be baseline materials that can be incorporated into a revised energy policy statement.

As I indicated, this is based on the legislation, the Energy Policy Act of 2005, and Section 388 amended the OCS Land Act and gave the Department of the Interior the authority, basically, to regulate OCS alternative energy uses and delegated that authority specifically to MMS. It was made very clear that it didn't supersede or modify the existing federal authority, that it didn't authorize any areas in the moratorium for oil and gas. It was specific to alternative energies and also it would not apply to areas that had been designated as national marine sanctuaries, parks, national wildlife refuges, or national monuments.

Alternative energies that were discussed and presented and have been considered in different areas were everything from wind, wave, ocean current, solar, and hydrogen. The considerations that have been built to date on this have to do with safety, protection of the environment, coordination with state and local governments, return for OCS lands, or at least this is focus of the way MMS has been packaging this, and equitable shares of the revenues with the states.

The programmatic EIS is now out. The draft document was prepared in the spring of 2007. There was a number of public hearings held throughout the country and in summer, an open draft was provided.

The final programmatic EIS is now out, as Jocelyn indicated, but just like recently and so we really haven't had a chance to even digest what the changes are from the original and the published record of decision, all the information supporting both the comments and responses and everything else, is included. The intent of MMS is to publish a final rule in the winter of 2007 and hold additional public workshops.

In getting into the actual synthesis report, this was built to begin the process of, I guess to some degree, taking a different tack on trying to address information upfront on understanding of what is known on the potential impacts, or the information needs to document the potential impacts and environmental impacts, with various alternative energy activities.

This was built and then supported a workshop that was held afterwards, from which to take the information and begin to look at potential prioritization, which has not happened yet, but at least

this sets the stage for a number of things. The document examines a summary of existing literature, potential impacts and data gaps, prioritized research studies. It focuses on physical processes, tides, currents, waves, benthic and fish resources, flying animals, birds, bats, and insects, marine mammals and sea turtles, aesthetics and space use conflicts.

The document has a greater availability of information on impacts from wind development versus some of the other ones, wave and tidal current. Studies of existing offshore wind parks are informative, but the results may be difficult to transfer. Most of the studies have been done outside the U.S.

The biggest push in other parts of the world, with large wind farms being proposed, is in England, in various areas where they have major mandates on transferring to alternative energies, because of some of the potential cutoffs they had of other oil resources. There have been very big directives and they have initiated a lot of other activities and so the information that's available is really from some other regions.

Many studies are using predictive assessment and there's a strong need for long-term monitoring, to get empirical data. Again, the objective of the study is to identify, collect, evaluate, and synthesize existing information on offshore alternative energy activities, current offshore energy technologies and future trends, looking at what the public acceptance of existing or non-acceptance of existing projects and how that unfolded, the potential environmental impacts, previously used mitigation measures that could avoid, minimize, rectify, eliminate or compensate environmental impacts, current physical and numerical models designed to determine environmental impacts and information needs to address gaps in current understanding of the environmental impacts.

As I said, the results of this material, or this document, was brought to a workshop that was held in June of this year, with the intent of having a very broad sector and shareholder discussion about how you take that information and begin to prioritize needs.

The previous current primary economic and technical feasibility determinacy that affects say specifically the offshore wind park areas, availability of constant wind resources, the depths. Most of the targeting has been identified as needing to be shallower than thirty meters, a proximity to area of high electricity consumption, distance to shore, a water depth, limitations of technology, and economic considerations also with that and the concerns associated with distance from shore and length of electrical cable.

Future trends, development of technology of sites will have the following goals: increase energy output and efficiency, address environmental impacts identified by monitoring results and operating sites, decreased impacts to users and allow economic feasibility for siting in deeper offshore waters.

Within the document, there is very specifically one point that I thought was critical enough to highlight is an identified baseline studies. The most critical need for evaluation of impacts of wind parks on fishes is site-specific information on fish communities and habitats. This was a message that I think rang very clear in that entire workshop. Mapping needs were one of the

biggest recommendations that was coming out of the discussions across virtually all partners or all individuals involved in the process.

Specific needs and studies that were identified are region-specific knowledge of the consequences of an introduction of hard substrates on fishery resources, the understanding of how individual foundations interact with each other, as well as the fish communities in context. Techniques for pre and post-construction monitoring of fish communities and fishing activities must be statistically rigorous and based upon characteristics of the fish community on the site and models and methods to evaluate management alternatives, offshore energy park sites as fishery resource enhancement areas, require development and testing.

Potential impacts of the offshore -- Moving to current energy, potential impacts relative to that on benthic resources in this document relative to, first, construction were identified as bottom disturbances from installation of foundations, anchoring systems, anchoring construction and maintenance vessels, sediment disturbance suspended during installation and foundations or anchoring of systems, sound during all the pile driving, drilling, and other direct activities, habitat loss from foundation and units attached to the seafloor to gather power and feed up to the transmission cables ashore, habitat disturbance during cable laying, introduction of hard substrates, as well as habitat disturbance resulting from scour.

Relative to operation, other impacts that have potential were identified as operational sound and vibration, introduction of contaminants from use of antifouling coatings and cleaning of marine fouling and introduction of different communities from fouling growth on monopiles and scour protection around the foundation of the anchoring systems.

With regard to potential impacts on ocean current installations, construction activities that were identified as possible concerns were habitat disturbance from loss from foundations, mooring anchors, cable laying, sound associated with pile driving and drilling.

The operational activities were introduction of artificial hard substrate, scour impacts to benthic habitats, the electromagnetic field effects on any of the sensitive species within the areas, collisions with moving parts, as well as changes in water flow and pressures.

Now moving to potential impacts from fishery resources from wave installations, the document identified a number of different areas, anchoring of the component on hard bottom, a more sensitive habitat than the substrates and it could affect the essential habitats or areas of particular concern. Transmission cables cannot be buried in the hard bottom areas and therefore, the concern about possible, again, electromagnetic field sensitivities.

Antifouling agents, things such as tributyl tin have toxic effects on many marine and estuarine organisms and specifically different life stages of fishes and some of the devices that are used use overtopping as part of their process and it might entrain fish, primarily embryos and larvae that live in the surface of the ocean area.

Those areas really specific address the fishery resources and their associated habitats. The document also very specifically, as I indicated earlier, lays out somewhat similar types of

potential impacts for marine mammals, as well as turtles. Those are all other parts. I just got into the fisheries side of this, but those are also laid out, so that it at least gives you a compendium of what is known at this time relative to those types of effects.

As a final component of the document, it identifies major areas of environmental -- It's five major areas that it's looking at. Finer grade data on distribution and life history for key species in each regional ecosystem, that's something that also rang clear at this workshop, was there is somewhat of a revelation by MMS to really begin to regionally focus a lot of the discussions work with groups such as the council in understanding the habitats, understanding the fishery operation areas, working with the states.

It was a very different perspective on what I had been exposed to on that and so this rippled into their working in regional ecosystems. Environmental assessments for specific projects, we need more detailed data on benthic habitats. Again, mapping needs were another major area and multiyear studies of seasonal abundance and distribution of key species of each resource.

Development of better field data collection methods for baseline studies and post-construction monitoring surveys to improve the confidence of impact detection, studies of highly-mobile species in offshore areas. That's particularly difficult and it's going to approach new approaches and technologies to be able to address some of those species.

Focused laboratory studies to determine thresholds for potential effects resulting from exposure to levels of sound and electromagnetic fields likely to be generated by different types of alternative energy devices as it goes into full-scale installations.

In addition, development of protocols for field studies on potential effects from exposure to sound, electromagnetic fields, and obstructions on behavior and survival of key species of each resource of concern. These are applying to all the fisheries and all the other components.

Development of guidelines to set acceptable limits of direct, indirect, and cumulative impacts resulting from the installation and operation of offshore alternative energy projects. Guidelines are needed for all types of potential impacts, such as changes to the hydrodynamic climate, erosion of adjacent shorelines, habitat loss and alteration, avoidance and attraction behavior, mortality, aesthetics, and loss of use.

That is, in context, what is included in the document. That has been prepared through the MMS process through this attempt to begin to move towards a consideration for testing and with the intent to begin to bring players to the table and figure out how to actually do exactly what it's saying, identify what the environmental information needs are to truly assess the long-term and short-term impacts of the move toward use and development of alternative energies.

Again, I think they did a fairly good job with the group, to bring together a lot of the known information at this time. In some cases, it's a lot more than I realized that they actually were able to get a hold of, but also to be able to acknowledge some of the information systems, such as the council's IMS system and the roles and the mandates of other responsible agencies and organizations, states, federal, and regional. We do have this from which to begin to work and

expand and use for consideration under the policy revision.

Dr. Rader: Are there questions for Roger? I personally see the potential for wholesale pilferage to supplement what's already been done, sited carefully of course. It does seem to me to address a lot of the issues that we would care about. Ones I'm not sure if they're adequate or not, but it came to mind that number one is thinking about quantifying impacts in a way that could feed to mitigation programs in areas where the quantization of these kinds of effects is poorly documented and so in that sense, pilot projects could really help us figure out how much of X, Y, and Z is lost and what the potential is for offsetting it in the future and building a tighter coupling between that.

In that sense, what I guess you might call information mitigation, that sort of holes in knowledge that projects and proposed activities can help us fill and I do think that John's engagement with the pipelines is a pretty good example of learning a lot more from proposals coming about than we would have otherwise known and so that's sort of one question.

Another has to do with interdiction of existing uses and the implication of the changing use patterns of the EEZ for things we care about. If this gets quoted somewhere, it will drive me crazy, because I'm not proposing it, but one thing that might happen, just as an adjunct of changing use, is a fair number of de facto MPAs in all depths, which could -- We see it as negative, but it also could end up producing some kinds of changes one way or the other in living marine resources. It's just something to think about.

My immediate reaction is goodness knows here comes another negative impact on systems, but it's hard to see. It could go each way. For sure there's a -- In this area, there's a major exposure on hazard mitigation in terms of putting infrastructure in harm's way in hurricane alley and so finding mechanisms to assure that we're not looking at lots and lots and lots of pieces of metal at all depths, interdicting fisheries and damaging systems, and that there are systems of assuring performance and maybe bonding for those events when they happen.

I didn't see a lot of that in there. That seems like a place where it could be ramped up some and then the other one is the major challenge in cumulative impacts, particularly going to scale beyond individual sites on the front-end of a process. Any -- I guess what we're looking for is issues that, given what you've heard from these three presentations, we ought to make sure to try to build into the next iteration of the energy policy document as it goes forward? Those are my biases and do other people want to jump in?

Mr. Croom: One of the -- This is really interesting and it's almost like déjà vu from the experience we had with LNG in the Gulf, specifically the discussion about the need for better site-specific information for a number of fishery-related features, including habitat, benthic communities.

Eggs and larvae was one of the critically deficient areas of data that hampered our ability to evaluate what the impacts were going to be and what the consequences of those impacts were in terms of fisheries management and kind of a twist on all of this that I think ought to be highlighted is the fact that these facilities really cause an additional source of fish mortality and

that at some level that mortality needs to be factored into stock assessments and fishery management actions and allocation decisions. I think that's worth keeping in mind as we go forward.

Dr. Rader: Excellent point. Are there other things, ideas, reactions, things we should make sure we cover?

Ms. Karazsia: The only thing that has come to mind recently is when you mentioned the hazard mitigation. It would also be making sure that there are funds available, either through like a bond to the actual entity that's constructing the facility, that there's some sort of financial assurance that the facility will be removed of if there is hurricane impacts that if there's any impacts associated with debris that those are appropriately mitigated.

Dr. Rader: A related issue that you mentioned is decommissioning, where all of a sudden Rigs to Reefs programs are popping up in California and the Gulf and a lot of other places, as very expensive, heavy, bulky infrastructure that's no longer needed for its original purpose is in place somewhere in the ocean and people are looking for alternative uses that may or may not be positive or may be positive and negative. It's hard to guess. We can anticipate as this goes forward that we'll get the same kind of pressure, both in response to events and also to senescence. Are there other ideas?

Ms. Brooke: It's not an idea, but it's a question. Do you know what is the expected life span of all or any of these alternative energy sources?

Dr. Rader: I haven't even heard it mentioned. Does anybody have an idea?

Ms. Karazsia: The Calypso facility, I believe it's anticipated for use for thirty years. Does that sound right?

Dr. Rader: I guess I have the impression on hydrokinetic energy that it would be like anything else. The technology would improve through time and the individual units would be replaced and so you would basically have a rededication of an area that would see improving, hopefully improving, technology through time.

In some ways, if it works, it works economically, it could end up being a permanent reallocation of the bottom, but in terms of the individual -- I just don't know what the planning horizon would be. Are there any other ideas? I would have guessed thirty to fifty years, but I don't know.

Ms. Karazsia: In regards to collecting site-specific information, we were really fortunate with the Calypso proposal. We aren't in a position to recommend specific contractors, but they did find the best available contractors available to do the work and I know that it was important to John and Sandra that they were able to present the data, ultimately, to the South Atlantic Council and to make sure that they could provide data to other data management sources. That might be outside the scope of the energy policy statement, but I know that it certainly helped contribute to us better understanding some of the resources out along the Miami Terrace.

Mr. Pugliese: Jocelyn, I really appreciate that comment, because I think that's one of the things that made the collaborations so beneficial, is that you're effectively able to identify who are the most appropriate people that could provide the best information and the capabilities that would give you the types of information you needed.

John was very effective at making sure that it was going to be provided to all groups without any modification, really giving the science to all parties at one time. That was probably one of the most successful operations to do that.

Dr. Rader: We should probably brag on you a bit about that, John. Insisting upon scientific independence in going in, that's an admirable step and we appreciate it.

Ms. Stiles: Were there specific recommendations from that study or was it a more descriptive assessment, the study that Sandra and John did?

Dr. Reed: Yes, there were specific -- I think the question was did we have specific recommendations and is that what you said?

Ms. Stiles: I'm sorry I didn't articulate that clearly. I was wondering actually if you made specific recommendations other than to take it off the Miami Terrace and if you felt like those were accommodated, because I know Jocelyn mentioned briefly that perhaps some recommendations were not accommodated.

Dr. Reed: I think for specifically for the Calypso that we did make recommendations during the process and during the report writing to move to their alternative site. Their primary site initially was right on extensive hard bottom and as we did the survey, we recommended various other sites that would be totally off of the hard bottom, or very minimal impact to the hard bottom.

We didn't have the opportunity beforehand to recommend sites, alternative sites, like totally off the Miami Terrace or when they were proposing a pipeline route from the Bahamas to Florida. Their proposed route, again, was right over the Miami Terrace. If they would have come to me beforehand, I would have said move it ten miles to the north and you would have avoided all of this hard bottom, but they already had their sights on going from Point A to Point B with very little wobble room available.

Dr. Rader: It sounds to me like the next step, Roger, is to take the materials that you can glean from the MMS reports and integrate them directly into the draft and I sense a hunger in this group to do that, to better answer the council's challenge to us, particularly on wind/wave hydrokinetic energy sources, and is that right?

Mr. Pugliese: Yes, what I envisioned, if this is the desire of the panels, is to basically take these types of recommendations that are built into here and information on potential impacts and integrate it into the next iteration of the energy policy and work closely with Miles, in agreement with Jocelyn, to shore up a subsequent draft to send out to the advisory panel, both advisory panels, for consideration and further refinement.

Dr. Rader: We would do that electronically over the winter and is that right? Is that plan acceptable to you? If you have any other ideas, get them to us, to Myra, Roger, me, Jocelyn, Miles, as soon as you can, particularly with documentation, if you have that.

Mr. Croom: I'm happy to accept Roger's kind invitation, subject to the standard disclaimer of staffing constraints and workload issues.

Dr. Rader: If my boss says no, the answer is no. I understand that, more and more.

Ms. Stiles: Without dwelling further on the specific of Calypso, I wonder if, because that's our sort of recent experience with this kind of challenge to fisheries, if there are any kind of general statements to be gleaned from that example, it would be good to include them, such as a strong statement about consultation with appropriate scientists early on in the project. It would be nice to have some really general language like that, or anything else that you know, the people that have been working on this, would be able to generalize from their experience.

Dr. Rader: In some ways -- Margo, I agree. In some ways, it has to do with the difference between lessons from siting processes versus broader planning initiatives. For instance, I can imagine finding an optimal spot for one facility and then how you look at the prospect of having ten or fifteen or twenty or a hundred in the EEZ and what the difference is in planning for those kinds of things. I think that's right. We do have the final report from John and his team. Is it on this CD or --

Mr. Pugliese: Yes, it's on the CD in one of the attachments. We did include that.

Dr. Rader: I think you're right, Margo. Some general language to that effect and if John has any other lessons, please let us know, so we can make sure they're adequately reflected. Are there other comments or thoughts? Seeing none, we'll move to the last item and not least important item of the day and that's George Sedberry.

As a long-time colleague of ours, we should probably first give him a round of applause for his appointment as superintendent of Gray's Reef, if that's okay. Now that he's wearing that hat and shirt, in fact, and I hear underwear, but I don't know that personally, we'll turn it over to him to brief us on recent happenings at Gray's Reef.

Dr. Sedberry: I'm going to be really brief and we'll have a lot more details on the things I'm going to talk about at next month's full council meeting up in North Carolina. If you're going to be at that, we'll fill you in more on this, but there's two things that are going on in the sanctuaries program. One is happening at Gray's Reef and one is happening in the Gulf of Mexico and I just wanted to briefly let you know what's going on at Gray's Reef and then talk a little bit about what's happening in the Gulf of Mexico.

Basically, what we're trying to do at Gray's Reef is set aside part of the sanctuary as a control area or a research area where we limit the kinds of activities that go on there so that we can look at what's happening in the fish and invertebrate assemblages and what happens to the reef in the

absence of some human activities, primarily fishing.

I'm not going to go into all the gory details, but I will let you know kind of how we're going about this. Just in case you don't know, this is where Gray's Reef is and it's off the coast of Georgia. It's got a mixed temperate and subtropical fauna and so it's kind of a juncture of a couple of zoogeographic zones and so it's very diverse and really a unique area, which is why it's a National Marine Sanctuary.

As part of the sanctuaries program, of course, we're trying to do research there and to facilitate research there and to facilitate compatible use, being able to use the sanctuary, plus have some resource protection there. We need research to facilitate this and we need a control area within the sanctuary to facilitate the research.

Some of the things that go on in Gray's Reef include fishing and diving, primarily recreational fishing, and there's a large amount of historical research and so as we started to look at an area at Gray's Reef that we might close to certain kinds of activities, we wanted to look at areas that we knew what the habitat was like. You've seen this map already. I think Greg showed this yesterday, this habitat map of Gray's Reef, and what kinds of activities are going on in the sanctuary and then where we had some historical research data that we could use to continue into what might end up being a closed area.

This came out of our management plan review, which was completed recently. The management plan concluded that there's no naturally-occurring live bottom sites within the sanctuary or within the region, for that matter, established exclusively for research and so the sanctuary plan that was implemented directed a working group, established by the Sanctuary Advisory Council, to study the idea of a research only area within the sanctuary.

We assembled a huge number of scientists and managers and users to look at the concept and to try and decide what kinds of questions could be answered by a research-only area. There's a lot of research questions that can be addressed in Gray's Reef, but we wanted to look at those kinds of questions that could really only be answered by having a control area that was un-impacted by fishing and so there's a lot of different kinds of questions that can be asked.

Again, I'm just touching on these really briefly. We prioritized the kinds of questions that can be asked, the kinds of interactions between human activities and the environment. Again, they mostly had to do with fishing. Fishing became the highest priority interactions that we wanted to deal with.

When we look at the interaction between a proposed research area and the kinds of human activities, we looked at the intersection of those two areas to determine what part of the reef or what size area in the reef we might want to look at and so we came up with a series of recommendations that the research area working group passed on to the Sanctuary Advisory Council, which are now being considered.

The Recommendation Number 1 was establishing a control or research area through a public review process and that's what we're in the middle of right now and that's why I'm here just

kind of really briefing you on where we are, just so you as part of the council process and part of the public process know where we are in establishing this research area at Gray's Reef.

Again, we took all the existing available data and developed criteria that we thought were important in establishing a research area. Again, we needed an area that had some historical research that we could compare future research to. We wanted to avoid fishing and so we plotted areas where we knew fishing occurred within the sanctuary, or the frequency of fishing. We want to displace fishermen as little as possible.

Habitat types, of course, are important to any kind of research and so we mapped the habitat types and then the kinds of user interactions that might happen, users being fishermen and divers and scientists. Would they accept this area and how much would it cost and how could it be enforced and what were the kinds of science applications that we could do in the research area?

We looked at different sizes. We started this whole process back in 2004. In 2005, we started looking at size options for -- You need kind of a big enough research area to run your experiments or to see a difference between a fished and unfished area. You need something big enough to enforce and we started looking at those kinds of options as well.

Recommendation Number 2 was the working group, the research area working group, recommended that a GIS-based evaluation tool developed by Matt Kendall would be used to evaluate habitats and uses in the sanctuary to design a research area and that high-relief habitat, the ledges where the high biodiversity is, would be important areas that we would want to include and that previous research sites, where we had some historical data, would be important as well.

Recommendation Number 3 from the research area working group to the Sanctuary Advisory Council was that we wanted to minimize impact on fishermen with trolling gear being allowed. We're beginning to rethink that as well. Again, this is just the beginning of this process and it's very dynamic and it's ongoing now and so we're actually thinking right now that there may be no fishing allowed, because it's such a shallow depth that trolling does in fact impinge the bottom.

Anyway, we're gathering data on where fishermen fish, where divers go, where the reef is actually utilized, and trying to avoid or minimize the displacement of other kinds of activities within the sanctuary. The Sanctuary Advisory Council made a decision on these recommendations. They received the recommendations and made a decision to move forward with this process, which is where we are now. We're just now starting the public process, the NEPA process, to get this in place.

We're beginning this now and it will probably take a couple of years to run through scoping and workshops and public hearings and getting the public input on this concept before we make any decisions on where such a research area might go.

The GIS tool that Matt Kendall developed has been a tremendous help to us in taking potential sites to the public. We're working on that right now. We're using the tool to look at historical

research, historical use, and habitats to come up with alternatives that we can take to public hearing to have the public's input on where we might site a research area within the sanctuary.

The available data that we had that went into the GIS included twenty-five variables on habitat use and user groups and eleven datasets. The data, again, included the kinds of ledges, the kinds of activities, going on in the site. We wanted -- Again, we're trying to avoid the primary fishing area and then also the data buoy, which is up in this region, is very attractive to fishermen. They kind of like to fish around that buoy and so we kind of wanted to avoid that too, but there's many other variables that went into this.

The tool that Matt developed for us essentially allows us to draw a box somewhere on the sanctuary and drag that box around the sanctuary and look at the existing data that we have that shows a number of fishing boats that have been seen in that block, the number of ledge habitats in that block, the amount of research that's been done so we can minimize fishing impacts, or impacts on fishermen.

We can maximize the historical research database and we can maximize or minimize the number of ledges we want to include. Whatever criteria we think are important, we can include by using this GIS tool. As you pick an area and slide it around the reef using this GIS tool, you can see how many different areas are encompassed that include ledges or number of historical research sites or concentrations of fishing boats.

We used this and we slid these various shapes all over the sanctuary to characterize each potential site and to come up with a list of sites that we can take to public hearing. We also looked at different configurations in terms of size and shape and not just where in the sanctuary these things would go, but what might be an ideal size and shape. We looked at three shapes and four sizes. We looked at rectangles and squares, or squares and rectangles, hexagons.

We looked at different rotations of the quadrangles. We looked at them not only from the viewpoint of what kinds of habitats and activities were included, but how easy some of these shapes would be to enforce.

By doing that, we came up with fifty variables and over 30,000 options that could be chosen and that's a lot of options, but we're able to take those 30,000 options and narrow them down by how much of an impact we want to have on the fishery, how much of the prime habitat, or the habitat the scientists consider the best to do research, how much of that we want to include. It gives us a lot of options.

Just to show a few examples, this is Scenario Number 1, which would be the preferred scientific option that includes all the ledge types, all the habitats of large enough size, four-by-four kilometers, to include enough area to do replicate sampling and when we did this, we ended up with six centroids here in this part of the sanctuary and there's one four-by-four kilometer option drawn around that, but you could draw six other boxes. The demonstration here just shows one of them.

That's the idea, is to pick points on the reef where we can have the criteria that we want to use

and then make different size boxes around those and see what is incorporated, what kinds of habitat and what kinds of activities.

The ideal scientific option, from a scientist's point of view, would give us six options. If we want to have representative habitats, we ended up with sixty-five options, these sixty-five centroids here, with boxes drawn around a few of them, just to show examples. We can minimize fishing displacement. Again, most of the fishing activity takes place up here along the ledge and around the data buoy, because fishermen kind of home in on the data buoy, and if we minimize fishing displacement, then that kind of displaces our research area to the south.

Then we also just looked at taking a quadrate of the reef, the southeast quadrate in this case, and seeing how much habitat was available in there and how well it was used by fishermen and all the criteria that we're using to site this.

We have a lot of different ways to look at this and the next step, when we go to public scoping and public hearing, is to present to the public why we think there's a need for a research area within the sanctuary, what the criteria are for establishing a research area, the tool that we used, and all these possible options that scientists would feel comfortable with as a research area within the sanctuary and then getting public input on which of these red boxes that they would be most comfortable with.

That's kind of where we stand now. We're going to have another meeting of the research area working group in a couple of weeks to come up with a research plan. We will actually take it to the public and say this is the kind of research we will actually do in this area to look at possible sources of funding and then take the idea to the public. That's what is happening in Gray's Reef.

The other thing that's happening in the National Marine Sanctuaries Program that you may have heard about is an Islands in the Stream concept for the Gulf of Mexico. It's being floated around mainly within NOAA right now to expand the boundaries of the existing Flower Garden Banks National Marine Sanctuary in the Gulf of Mexico to include other sites that would be connected hydrographically in this Islands in the Stream concept for the Gulf of Mexico.

It would be a connected network of marine protected areas within the Gulf and right now, there's some interest by the administration in looking at additional locations within the Gulf of Mexico, following on the success of the Papahanaumokuakea National Monument that was established in Hawaii.

The Northwest Hawaiian Islands Monument has been very successful and the administration has taken a lot of credit for that and they're interested in looking at other areas where they might establish similar networks of marine protected areas and they're looking at this one in the Gulf, but there's been no formal proposal developed or acted upon.

However, if the administration calls for the establishment of this network, NOAA will work towards that end, with the stakeholder input throughout the process. This will not be an executive order. It will go through the regular sanctuaries process, with public input at every step along the way.

The reason this is out there right now, there's a four-page document that's been circulated, is that the sanctuaries program is beginning -- We're trying to get dialogue going on the concept. It's just a concept right now and so the word is out there and apparently it got out in the Gulf of Mexico prior to the Gulf Fishery Management Council being properly informed about the details of it and so what we're trying to do now is make sure that everybody understands what's going on here and right now, again, it's just the beginning of the dialogue about this concept.

The National Marine Sanctuary Program has begun educating other NOAA offices and this slide here is part of that education process and we're trying to engage more stakeholders to discuss the concept and to seek input for stakeholder involvement.

Those are the two things that are going on in the sanctuaries program that I thought you all would be interested in. Of course, the proximal one is what's happening at Gray's Reef, closing off part of the sanctuary to certain kinds of activities so that we'll have a research area to look at the effects of fishing and other kinds of human activities, and then this concept that's being circulated around about an idea for a network of MPAs in the Gulf of Mexico.

Dr. Rader: Are there questions?

Mr. Harris: Thanks, George. Have you given any thought as to how you would designate, on the surface that closed area? Would it be with buoys or would you put a fence around it?

Dr. Sedberry: We have given a lot of thought to that. There was a lot of discussion about buoys and again, we don't have a size or a location. We have a shape picked out, because squares just tend to work easier, but right now it's still -- We don't have the area picked out, but we certainly have discussed how to mark it and how to enforce it.

We have enforcement people on the research area working group that have given us their input, enforcement officers from Georgia DNR, and there's advantages to using the existing borders of the sanctuary as two of the sides, which makes enforcement easier and people know about those borders. There's advantages to putting buoys out there to mark it so that people know where the borders are.

There's disadvantages to putting buoys out there, because they attract bait and attract fishermen and the buoys themselves influence what's happening on the bottom and so we're still -- Again, this kind of a new thing. We're just at the beginning here and so we've thought about it, but we haven't come up with any decisions on that yet. We're waiting for public input on that.

Dr. Rader: As a former Sanctuary Advisory Council member and working group, I've never seen the -- Are there other comments or questions?

Mr. Street: Just a question. It's been about forty years since I was on Gray's Reef and how big is the sanctuary?

Dr. Sedberry: The sanctuary I think is seventeen-and-a-half square miles. The sanctuary itself is

small and the research area will be even smaller, but it's been shown in the Caribbean and other places that these small sanctuaries do have an effect and that small research areas -- You can answer these kinds of questions that we're trying to ask even in a small closed area.

Dr. Rader: There was a real noticeable increase in fish populations around even the sanctuary preservation areas, which are all similarly sized or smaller, down in the Keys.

Mr. Pugliese: I think one thing is that we've had real good collaboration with Gray's Reef and I'm glad to see George step to the front, because I think there's some real opportunities of taking a lot of the information that's being developed to support these activities and apply it regionally. That's some of the most detailed habitat description in those types of depths that exist in the entire regional area.

The opportunity to use that to build characterization of various habitats and apply it with additional mapping and throughout at least a bound very similar to those habitats, I think that we could really be able to expand our understanding and at least refinement of those characterized habitats that are EFH and species use information for a larger area in the southeast. I think we have some real opportunities to work with you very closely and benefit greatly, regionally, with that information.

Dr. Sedberry: You're right. I went through that really briefly. I didn't want to hold any people here past five o'clock, but at the council meeting next month, I'll go into more detail about how we came up with the habitat map and because we do have this very detailed habitat map of Gray's Reef Sanctuary and we have a lot of data on the use of the sanctuary, it makes a nice kind of experimental site to do these kinds of studies and a lot of things can be done there because we know so much about it.

Dr. Rader: Other questions or comments?

Mr. Croom: Just one, George. How is this going over with the fishing community, the proposal for the research area, and are they pretty forthcoming in talking about their fishing habits and places they go and that sort of thing?

Dr. Sedberry: We have a hard time getting a lot of fishermen to come to our public meetings, our Sanctuary Advisory Council meetings and the research area working group meetings, but the meetings we're going to have in the future, we're going to have them in the evening and try and get more of them there.

So far, it's been surprisingly supportive and we've gotten a lot of input from them about what parts of the sanctuary they use and what parts of the sanctuary they don't use and so we're taking all that into account. We're working with them as best we can, even though it's only a few of them so far that are cooperating, or showing up to the meetings anyway.

I think they're not opposed to the concept. Of course, they want to see where it's going to go and I think once lines are drawn on maps, as what usually happens, a lot more of them will speak up, but right now, the few that are coming to the meetings and working with us are supportive of

the concept and they see the value in it.

Dr. Rader: Other comments? Thanks very much, George. We look forward to working with you on that. The agenda is done now. I think we have had a fantastic meeting. I will comment in closing for myself and for Steve in his absence and for Andy as vice-Steve. I do think we came a very long way.

I'm personally delighted with the outcome on the deepwater coral HAPC discussion. I think we ended up in exactly the right place and I think we have extremely strong support for what we're recommending for the council to do. I think that's exactly right. I'm also excited with the progress we've made on pieces that will add up to, and perhaps towards, the FEP.

We need to dig in and make sure that that happens over the remainder of the fall, so that the document that we take to the council reflects the same kind of careful thought and strong science. I don't really -- I don't have anything else to say. Roger, have you got any closing comments?

Mr. Pugliese: One thing I would like to do, and you may have been getting ready to do it after this, is I would like to acknowledge Mike Street. I think this is going to be his last meeting as a formal advisory panel and his long-term commitment from day one on habitat conservation and his involvement in the beginnings of all of our essential fish habitat and fostering the CHIPS activity in North Carolina and the involvement now kind of full circle back and providing most of that to shore up and really build all the information for North Carolina into this process. His commitment to conservation and habitat conservation and fisheries management and fisheries conservation has been amazing and I would like to pass it to the chairman.

Dr. Rader: Mr. Chairman, would you like a closing word?

Mr. Harris: I would and just to let you all know, Mike Street started in Georgia before I got there and so we know how long he's been around, but on behalf of the entire South Atlantic Fishery Management Council, and I know I speak for Chairman Geiger as well, these advisory panels are so important to this process that we're all about.

I can't thank the chairman and the two co-chairs enough for the job they've done and the job that each and every one of you have done the last couple of days as we've gone through this process. It will be tremendously helpful as we move forward in developing these coral habitat areas of particular concern and our fishery ecosystem plan and so thank you all very much.

Dr. Rader: With one minute after five, I declare this meeting adjourned.

(Whereupon, the meeting adjourned at 5:01 o'clock p.m., November 8, 2007.)

Certified By: _____ Date: _____

Transcribed by:
Graham Transcription
February, 2008

JOINT HABITAT AND CORAL AP FINDINGS AND RECOMMENDATIONS

Proposed Deepwater Coral HAPCs

- The proposed deepwater coral HAPCs (C-HAPCs) should be adopted and implemented as soon as possible. Growing pressure for new and more intensive uses of the EEZ, including potential energy development, mariculture and emerging deepwater fisheries, requires rapid designation. Given the technical and other complexities that have arisen associated with the allowable gear areas and SFA parameters for deepwater species, the Panels recommend shifting those measures into FEP Comprehensive Amendment 2 in order to proceed with the C-HAPCs.

- New information compiled for the Council and presented to the Panels by John Reed and Steve Ross and others constitutes the best available science, and continues to strengthen the case for protection of this world-class deepwater coral ecosystem. Additional coral features and related habitats continue to be found within the areas previously identified, including pinnacles, ridges and escarpments up to 500' tall.

- New research has identified additional deepwater coral habitats of potential high value: 1) some distance north of the current boundary of the Stetson/Savannah/Miami Complex, 2) between the Miami Terrace and the Pourtales Terrace, and 3) to the southwest of the Pourtales Terrace. The Panel recommends additional characterization work on these sites, to be factored into future habitat protection amendments.

- Only one chemosynthetic ("methane seep") live-bottom community has so far been documented in the US South Atlantic EEZ, northeast of the boundary of the Stetson/Savannah/Miami Complex. It should be protected as a separate C-HAPC.

- The Panels reiterate the previous request to the Council to interact with the US and Bahamian governments to find ways to collaborate on research as well as protection measures for shared deepwater coral ecosystems. The Council could communicate with the Bahamian government directly or through the U.S. Departments of Commerce and Department of State.

- The Panels reiterate the previous recommendation that all alternatives taken to public review and considered by the Council should include all well-documented deepwater coral ecosystem sites, and be designated as a whole. While the degree of ecological connectivity among sites remains inadequately known, geologic, ecological and genetic evidence makes clear that all sites are valuable; many are unique. No alternative should be allowed to be evaluated that is inconsistent with the best science currently available. Examples of scientifically inappropriate alternatives include: 1) the now-outdated "six compartment" proposal, and 2) any alternative based on subsets of these sites.

The Panels recommend the following as the preferred alternative: the previously selected "preferred alternative" (i.e. four segments: two in the north, the large Stetson/Savannah/Miami Complex, plus the Pourtales Terrace), plus a new small C-HAPC surrounding the only known methane seep live-bottom area.

Other Alternatives considered but not recommended include:

a) the previously selected "preferred alternative."

b) a new alternative expanded slightly to the north from the Stetson/Savannah/Miami Complex, and expanded to the southwest of the Pourtales Terrace.

c) a new alternative expanded as above, plus also connecting the north edge of the Pourtales Terrace to the Miami Terrace.

d) all waters deeper than 400m in the EEZ (300m south of XXX?).

Regulations in the proposed deepwater Coral HAPCs:

The Panels recommend that the following management actions be taken inside the C-HAPCs:

Recommended management measures in all the deepwater coral HAPC sites include the following: 1) compile, characterize and track threats to deepwater coral ecosystems in the region; 2) as far as possible, limit damage from both fishing and non-fishing threats, using all available administrative tools; 3) prohibit all bottom-disturbing fishing gears;4) prohibit harvest of corals (all taxa, including gorgonians and other soft corals) except as allowed through appropriately protective research protocols and procedures; 5) prohibit anchoring, grapples and chain, and 6) fully implement the deepwater coral research and evaluation plans.

The intent of these recommendations is to eliminate any commercial harvest that might be presently permitted under the coral plan in any deepwater coral HAPC, but to allow controlled collection for research purposes consistent with the Council's Deepwater Coral Research Plan (i.e. as allowed by the Secretary). In addition, more work is needed to characterize potential damage associated with other bottom-impinging gears (e.g. damage that might occur with the use of weighted long-lines, planers and cannonball weights). Non-fishing impacts would be fully covered in the Fishery Ecosystem Plan and in future habitat policy statements.

Resources for Implementation

Despite the growing evidence that the deepwater coral ecosystems of the region constitute a world-class resource, funds continue to be scarce for all aspects of management of these natural treasures. The Panels recommend that all possible sources

be explored to obtain necessary funding for research and monitoring, outreach and education, and enforcement, once the C-HAPCs are emplaced.

JOINT HABITAT AND CORAL AP CONCENSUS RECOMMENDATIONS:
Panel members were requested to provide comments on the potential list of actions for consideration in a developing Comprehensive Ecosystem Amendment. Discussions revolved around the existing list of proposed measures for the Amendment and the following recommended modifications are:
Comprehensive Amendment measures should:

- Establish and protect expanded deepwater Coral HAPCs;

- Establish a zero harvest for Sargassum;
- Address octocorals harvest and quota level while considering octocorals as EFH;
- Establish provisions to allow for the discovery of new octocorals species and new compounds (biomedical products), but not for mass exploitation and harvesting of species; and
- Consider invasive species highlighting lionfish in FEP and proposed or future Ecosystem Amendment.


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Proposed Deepwater Coral HAPCs
South Atlantic States
Prepared by Roger Pugliese, SAFMC (6/20/06)

JOINT HABITAT AND CORAL AP RECOMMENDATIONS

The Advisory Panels strongly endorse continuing movement toward ecosystem based management through the development of the FEP.

The Fishery Ecosystem Plan should:

- Cover the tremendous transition that is taking place as small fishing villages are being destroyed by development. The Council has charged the Social Science subcommittee with developing the data that we need to address the threats and challenges to working waterfronts and a workshop to address this is coming up;
- Include a good economic evaluation;
- Quantify ecosystem services;
- Provide a link to each existing ESA Recovery Plan;
- Accurately characterize fisheries (e.g., Atlantic Menhaden purse seine fishery no longer exists in North Carolina.);
- Provide information on how offshore shoals provide EFH. Applications for alteration of offshore shoals have been submitted and a workshop on how they provide EFH is scheduled in several weeks. Such areas off North Carolina are important during the wintertime for striped bass, Atlantic sturgeon and other species. In addition, offshore soft substrates are import habitat for polychaetes and other species. Federal agency partners are working on the passage through FERC-licensed facilities, but there are many others that aren't federally-licensed, and use the state priority lists for dam removal, where they exist, in the FEP to recommend some priorities.
- Update, revise and include the Council's water flow policy, written in 2004, especially to address the Roanoke and Savannah Rivers.

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Joint Habitat and Coral Advisory Panel Meeting
North Charleston, SC
Friday, November 9, 2007

NAME & ORGANIZATION	AREA CODE & PHONE NUMBER	P.O. BOX/STREET CITY, STATE & ZIP
Steve Rass	910 - 395-3905	UNC - Wilmington
Kimberly Puglise NOAA	301-734-1007	Silver Spring, MD
Jessie Thomas ASMFC	202-289-6400	Washington, DC
Margot Stiles Oceana	202 8333900	Washington DC
George Selberry NOAA	912 598 2439	10 Ocean Science Circle Sav 31411
Tina Udouj FWC	727-896-8626	318 E. Dickson, Fayetteville AR 72701
Aydrea Miller	843 367-7012	N. Chas. SC 2940
Lynnette Spence	843-953-2078	COSEE-SE / Charleston SC
Richard Venditti	912-222-8796	815 Union St. Brunswick GA 31520
Craig Matin	301 713 2897	1305 E West Highway, Silver Spring MD 20910
Sandra Brooke	727 415 0032	2630 12th St SW Vero Beach FL 32968
Roder		

ED EVOALY USFWS

South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405
843-571-4366 or Toll Free 866/SAFMC-10

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Joint Habitat and Coral Advisory Panel Meeting
North Charleston, SC
Thursday, November 8, 2007

NAME & ORGANIZATION	AREA CODE & PHONE NUMBER	P.O. BOX/STREET CITY, STATE & ZIP
John Reed, Harbor Branch Oceanography		jreed@hboi.edu
Steve Blair Miami-Dade DERM	305 372 6853	701 NW 1st Ct, Miami, 33136
Kurtis Gregg South Florida Water Mgmt District	561-682-6367	Kgregg@SFWMD.gov
Cameron Sebastian, Little River Fishing Fleet	843-450-6013	1901 Hwy 17S N Myrtle Beach
Miles Croom NMFS	727-551-5739	263 13th Ave S. St. Pete FL 33701
Roland Ferry USEPA/R4	404 562-9387	61 Forsyth St Atlanta, GA 30303
Chris Elkins	919 843 5521	2216 Ridgewood Rd Chapel Hill NC 27516
Susan Huff	843 525-6100	126 Dolphin Pt Pl. Beaufort SC 29907
Jocelyn Karazsia Palm Harbor	561-616-8880 x207 843-953-7200	440 N. Congress Ave # 120 WPB, FL 33401 NOAA Fisheries 219 Fort Johnson Rd, Charleston
Paul Carlson	727-896-8626	FL Fish

South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405
843-571-4366 or Toll Free 866/SAFMC-10

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Joint Habitat and Coral Advisory Panel Meeting
North Charleston, SC
Wednesday, November 7, 2007

NAME & ORGANIZATION	AREA CODE & PHONE NUMBER	P.O. BOX/STREET CITY, STATE & ZIP
ANDY SHEPARD NNEW/NWRT	910-962-2446	
Michael Callahan FWC	(727) 896-8626	100 8th Ave SE, St Petersburg FL, 33703
Mike Street (NCDMF)	252-726-7021	POBox 769 Morehead City, NC 28557
WENKS MIKELL	247-72-2092	P.O. Box 486 Edisto 29438
David Gilliam NCRI NSUOC	954 262-3034	8000 N. Ocean Dr. Davia FL 33004
Clark Alexander	912-598-2329	Skidaway Institute, 10 Ocean Science Circle, Savannah, GA 31411
Ken Banks, Broward EPD	954 519 1207	1 N Univ Dr Plantation, FL 33324
Priscilla Wendt	843 953-9305	SCDNR, PO Box 12559, Chas SC 29422
Sarah Fangman	912-598-2328	10 Ocean Sci Circle, Sav. GA 31411
	912 598 2416	"
Greg McFall		"
Patrick Geer	912 262 3121	GADNR one Conservation Way Brunswick, GA, 31520
KAY DAVY, NMFS	(843) 953-7202	219 Ft. Johnson Rd. Charleston 29412

South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405
843-571-4366 or Toll Free 866/SAFMC-10

South Atlantic Fishery Management Council
Habitat & Environmental Protection Advisory Panel

(Continued)

Dr. Paul Carlson
FL Fish & Wildlife Commission
Fish and Wildlife Research Institute
100 Eighth Avenue, SE
St. Petersburg, FL 33701
727/896-8626 (ph)
Paul.carlson@MyFWC.com
(Marine Fisheries Agency) 4/97*

Marc Epstein
U.S. Fish & Wildlife Service
P.O. Box 6504
Titusville, FL 32782
321/861-2369 (ph); 321/861-1276 (f)
marc_epstein@fws.gov
11/98, 3/00, 6/04*

H. Terry Gibson
2060 NE 23rd Terrace
Jensen Beach, FL 34957
772/219-7400 ext. 101(ph)
Terry.Gibson@primedia.com
(Rec.) 6/04*

James Harvey
7607 Preserve Ct.
West Palm Beach, FL 33412
561/762-7991ph); 561/ 694-0223 (f)
jamesmharvey@earthlink.net
(Environmental)
11/96, 3/01, 12/04*

✓ Janie Thomas
95289 Nassau River Road
Fernandina Beach, FL 32034-9523
904/261-6615 (ph); 904/261-4016(f)
FECSPI@aol.com
(Comm.) 4/95, 6/98, 12/01, 6/04*

✓ MIKE CALLAHAN

✓ TINA ~~[illegible]~~ UDOUJ

SARAH FAN

AT-LARGE:

✓ Miles Croom
Habitat Conservation Division
NOAA Fisheries, Southeast Region
263 13th Avenue South
St. Petersburg, FL 33701
727/824-5317 (ph); 727/824-5300(f)
Miles.Croom@noaa.gov
6/04*
Alternate: Pace Wilber
Habitat Conservation Division
NMFS SERO
P.O. Box 12559
Charleston, SC 29422-2559
843/953-7200 (ph); 843/953-7205(f)
pace.wilber@noaa.gov

Wesley B. Crum
Coastal Section
(Alternate - Dr. Roland Ferry)
U.S.EPA Region IV
61 Forsythe Street, SW
Atlanta, GA 30303
404/562-9352 (ph); 404/562-9343(f)
crum.bo@epa.gov
3/00, 6/04*

Dr. David Johnson
NOAA-NOS, Beaufort Lab
101 Pivers Island Road
Beaufort, NC 28516-9722
252/728-8746 (p); 252/728-8784 (f)
david.johnson@noaa.gov
3/00, 6/04*

Mark Hansen
USGS Center for Coastal &
Watershed Studies
600 Fourth Street South
St. Petersburg, FL 33701
727/803-8747 ext. 3036 (ph)
727-803-2030 (fax)
mhansen@usgs.gov
*09/05

Ken Lindeman
Division of Marine & Env. Systems
FL Institute of Technology
150 W. University Dr.
Melbourne, FL 32901
321/271-7547 (ph)
lindeman@fit.edu
(Cons.) 3/01, 6/04*

Charles S. Manooch, III
2900 Dogwood Lane
Morehead City, NC 28557
252/726-4711 (ph)
cmanooch@starfishnet.com
6/04*

✓ Jessie Thomas
Atlantic States Marine Fisheries
Commission
1444 Eye Street, N.W., 6th Floor
Washington, DC 20005
202/289-6400 ext. 317
(ph) 202/289-6051
jthomas@asmfc.org
3/05*

Thomas J. Smith
USGS Center for Coastal & Watershed
Studies
600 Fourth Street South
St. Petersburg, FL 33701
727/803-8747 ext. 3130 (ph)
727-803-2030 (fax)
Thomas_j_smith@usgs.gov
*09/05

National Marine Sanctuary Appointees

Representative TBD
Gray's Reef Nat'l Marine Sanctuary
10 Ocean Science Circle
Savannah, GA 31411
912/598-2345 (ph); 912/598-2367(f)
Becky.shortland@noaa.gov
9/02*

William B. Goodwin
Sanctuary Resource Manager
Florida Keys Nat'l Marine Sanctuary
P.O. Box 1083 (95230 Overseas Hwy.)
Key Largo, FL 33037
305/852-7717 (ph); 305/853-0877 (f)
bill.goodwin@noaa.gov
9/02*

* Denotes year of appointment

South Atlantic Fishery Management Council
Habitat & Environmental Protection Advisory Panel

NORTH CAROLINA SUB-PANEL:

Dr. Doug Rader, Chairman
N.C. Environmental Defense
2500 Blueridge Road, Suite 330
Raleigh, NC 27607-6454
919/881-2601 (ph); 919/881-2607 (f)
drader@environmentaldefense.org
(Cons.) 4/97, 3/00, 3/03, 3/06*

Dr. Wilson Laney,
Sub-panel Chairman
U.S. Fish & Wildlife Service
N.C. State University, Dept. of Zoology
P.O. Box 33683
(1208 Flex Research Bld.
1575 Varsity Lane)
Raleigh, NC 27636-3683
919/515-5019 (ph); 919/515- 4454(f)
wilson_laney@fws.gov
(US Fish & Wildlife Service)
11/98, 6/04*

Dr. Christopher Elkins
2216 Ridgewood Road
Chapel Hill, NC 27516
919/933-1119 (ph)
chriselk@med.unc.edu
(Rec.) 12/06*

Terry Pratt
1435 NC 45 North
Merry Hill, NC 27957
252/724-0111 (ph); 252/356-2222 (f)
(Comm.) 9/02, 03/06*

Mike Street
N.C. Division of Marine Fisheries
P.O. Box 769
Morehead City, NC 28557-0769
252/726-7021 (ph); 252/727-5127(f)
mike.street@ncmail.net
(Fisheries Agency Rep.) 3/01, 6/04*

Steve Trowell
N.C. DENR, Div. of Coastal Mgmt.
943 Washington Square Mall
Washington, NC 27889
252/946-6481 (ph); 252/948-0478(f)
steve.trowell@ncmail.net
(Coastal Zone Management) 6/98, 6/04*

SOUTH CAROLINA SUB-PANEL:

Ed EuDaly
(Alternate – Mark Caldwell)
Ecological Services Office
U.S. Fish & Wildlife Service
176 Croghan Spur Road, Suite 200
Charleston, SC 29412
843/727-4707 (Ext. 15)
ed_eudaly@fws.gov
(U. S. Fish & Wildlife Service) 3/00*, 6/04*

George Madlinger
DHEC - OCRM
104 Parker Drive
Beaufort, SC 29906
843/846-9400 (ph)
madlingj@dhec.sc.gov
(Coastal Zone Management) 1/95; 6/98*, 6/03*

Susan E. Hilfer
126 Dolphin Point Dr.
Beaufort, SC 29907
843/525-6100 (ph); 843/521-1510(f)
shilfer@islc.net
(Rec.) 6/00, 6/04*

Jenkins Mikell, Jr.
6 Calendar Court
(P.O. Box 61200)
Columbia, SC 29260
803/738-8883 (ph) 803/738-1446 (f)
JMikell955@aol.com
(Cons.) 12/01, 12/04*

Cameron Sebastian
228 Green Lake Drive
Myrtle Beach, SC 29572
843/467-2708 (ph)
Cameron@coastalscuba.com
(Comm./Charter) 12/04*

Priscilla Wendt
(Alternate - Bob VanDolah)
S.C. Dept. of Natural Resources
Marine Resources Center
P.O. Box 12559
Charleston, SC 29422
843/953-9305 (ph); 843/953-9399
wendtp@dnr.sc.gov
(Marine Fisheries Agency)
12/88, 8/96, 3/00, 6/04*

GEORGIA SUB-PANEL:

Dr. Charles Belin
Armstrong Atlantic State University
111935 Abercorn Street
Savannah, GA 31419
912/921-2136 (ph);
912/961-3246 (f)
belincha@mail.armstrong.edu
(Cons.) 9/05*

John Duren
8 Calico Crab Retreat
Savannah, GA 31411
912/598-9362 (ph); 912/598-7966 (f)
jwduren@aol.com
(Rec) 12/01*, 6/04*

Patrick Geer
GA Department of Natural Resources
Ecological Services Section
One Conservation Way STE 300
Brunswick, GA 31520-8687
Pat_Geer@dnr.state.ga.us
912/264-7218 (ph); 912/262-2318 (f)
(GA DNR) 9/02*

Kathi Harrington
400 Dartmouth St.
Brunswick, GA 31520
912/262-0060 (ph)
caprichard1@yahoo.com
(Comm.) 3/01, 6/04*

Alice Lawrence
U.S. Fish & Wildlife Service
Westpark Center, Suite D
105 Westpark Drive
Athens, GA 30606
706/613-9493 Ext. 222
alice_lawrence@fws.gov
6/04*

FLORIDA SUB-PANEL:

Kenneth Banks
Broward County
Dept. Planning & Env. Protection
Marine Resources Programs
115 S. Andrews Avenue, Suite 240
Ft. Lauderdale, FL 33301
954/519-1207 (ph); 954/519-1412 (f)
kbanks@broward.org
3/00*

(Continued next page)

South Atlantic Fishery Management Council
Coral Advisory Panel

Stephen Blair, Chairman
Restoration & Enhancement Section
Miami-Dade Co. DERM
33 SW Second Avenue, Suite 1000
Miami, FL 33130
305/372-6853 (ph) 305/372-6630 (f)
blairs@miamidade.gov
(Miami Dade County DERM)
11/97, 3/01*, 9/05*

Clark Alexander
Skidaway Institute of Oceanography
10 Ocean Science Circle,
Savannah, GA 31411
912/598-2329 (ph)
912/598-2310 (f)
Clark.alexander@skio.usg.edu
(SKIO-Research/Geology) *09/05

Kristen N. Ayers
2501 Cornell Avenue
Charlotte, NC 28211
704/499-8974 (ph); 704/378-2027 (f)
kristenayers@yahoo.com
(Env. Law)
3/03, 9/05*

John Brock
USGS Center for Coastal & Watershed Studies
600 Fourth Street South
St. Petersburg, FL 33701
727/803-8747 ext. 3088 (ph)
727-803-2030 (f)
jbrock@usgs.gov
(USGS – Mapping and Habitat Characterization) *09/05

Sandra Brooke
2630 12th Sq. S.W.
Vero Beach, FL 32968
727/415-0032 (ph)
Sandra.brooke@comcast.net
(Coral reef scientist)

Henry Feddern
156 Dove Avenue
Tavernier, FL 33070
305/852-5459 (ph);
305/852-4335 (f)
hunter@terranova.net
(Marine Life / Octocoral Harvester)
11/97, 3/01, 12/04, 9/05*

Roland Ferry
USEPA REGION 4
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960
404/562-9387 (ph)
ferry.roland@epa.gov
(EPA Region 4) *09/05

TBD
FL Fish & Wildlife Commission
FL Fish and Wildlife Research Institute
100 8th Avenue SE
St. Petersburg, FL 33701
727/896-8626 (ph)
727/ 893-9840 (f)
(Florida FWRI – Coral Reef Scientist)

David Gilliam
Nova Southeastern Univ.
Oceanographic Center
8000 N. Ocean Dr.
Dania Beach, FL 33004
954/ 262-3634(ph); 954/262-4098(f)
gilliam@nova.edu
(Research)
3/03*

Minerals Management Service
381 Elden Street
Herndon, Virginia 22071
(MMS – Geology and Habitat Assessment)
*09/05

Kurtis Gregg
South FL Water Management District
Natural Resource Management Division
3301 Gun Club Road, MSC 4206
West Palm Beach, FL 33406
561/682-6367 (ph)
561/682-6896 (f)
kgregg@sfwmd.gov
(FDEP- Research) *09/05

Patrick N. Halpin
Director, Geospatial Analysis Program
Nicholas School of the Environment and Earth Sciences
Duke University
Durham, NC 27708-0328
919/613-8062 (ph)
919/684-8741 (f)
phalpin@duke.edu
(Duke University, Geospatial Analysis Program) *09/05

Jocelyn Karazsia
NOAA Fisheries
Habitat Conservation Division
400 N. Congress Ave., Suite 120
West Palm Beach, FL 33401
561/616-8880 ext. 207 (ph)
jocelyn.karazsia@noaa.gov
(NOAA Fisheries-Regulatory/Deepwater Coral) *09/05

Greg McFall
Research Coordinator
Grays Reef NMS
10 Ocean Science Circle
Savannah, GA 31411
912/598-2416 (ph); 912/598-2367(f)
greg.mcfall@noaa.gov
(GRNMS – Benthic Habitat Characterization)
12/01, 6/04, 9/05*

Ken Nedimyer
P.O. Box 712
(212 Silver Palm Ave.)
Tavernier, FL 33070
305/852-4955 (ph)
sealife@terranova.net
(Marine Life / Live Rock Aquaculture)
8/93, 8/96, 3/00, 3/03, 9/05*

Kimberly Puglise
Program Officer
NOAA's Undersea Research Program
1315 East-West Highway, R/NURP
Silver Spring, MD 20910
301/713-2427 x199 (ph)
301/713-1967 (f)
kimberly.puglise@noaa.gov
(NOAA's Undersea Research Program)
*09/05

(Continued on next page)

South Atlantic Fishery Management Council
Coral Advisory Panel

John K. Reed
Harbor Branch Oceanographic
Institution
5600 US 1, North
Ft. Pierce, FL 34946
772/465-2400 (ph)
772/461-2221 (fax)
jreed@hboi.edu
(HBOI- Deepwater Coral Research)
03/03, 9/05*

Steve W. Ross
UNC-Wilmington
Center for Marine Science
5600 Marvin Moss Lane
Wilmington, NC 28409
910/395-3905 (ph)
rosss@uncw.edu
(UNCW/USGS Deepwater Research)
*09/05

Andy Shepard
University of NC – Wilmington
National Undersea Research Center
5600 Marvin Moss Lane
Wilmington, NC 28409
910/962-2446 (ph)
sheparda@uncw.edu
(UNCW NURC) *09/05

Margot Stiles
2501 M Street N.W., Suite 300
Washington, D.C. 20037-1311
202/467-1901 (ph); 202/833-2070
mstiles@oceana.org
(NGO/Environmental) 12/06*

Robert Van Dolah
S.C. Dept. of Natural Resources
Marine Resources Division
PO Box 12559
Charleston, SC 29422
843/953-9819 (ph)
vandolahr@dnr.sc.gov
(Research)
8/93, 8/96, 3/00, 3/03, 9/05*

Jennifer Wheaton
FL Fish & Wildlife Commission
Fish and Wildlife Research Institute
100 Eighth Avenue, SE
St. Petersburg, FL 33701
727/896-8626 (ext. 3118) (ph)
Jennifer.Wheaton@MyFWC.com
(FWRI- Ecosystem)
8/93, 8/96, 3/00, 3/03, 9/05*

* Denotes year of appointment

South Atlantic Fishery Management Council
2007- 2008 Council Membership

COUNCIL CHAIRMAN:

George J. Geiger
566 Ponoka Street
Sebastian, FL 32958
772/388-3183 (ph)
chancesarecharters@juno.com

COUNCIL VICE-CHAIRMAN

Charles Duane Harris
105 Demere Retreat Lane
St. Simons Island, GA 31522
912/638-9430 (ph)
seageorg@bellsouth.net

Deirdre Warner-Kramer
Office of Marine Conservation
OES/OMC
2201 C Street, N.W.
Department of State, Room 5806
Washington, DC 20520
202/647-3228 (ph); 202/736-7350 (f)
Warner-KramerDM@state.gov

Robert H. Boyles, Jr.
S.C. Dept. of Natural Resources
Marine Resources Division
P.O. Box 12559
(217 Ft. Johnson Road)
Charleston, SC 29422-2559
843/953-9304 (ph)
843/953-9159 (fax)
boylesr@dnr.sc.gov

Columbus H. Brown
U.S. Fish & Wildlife Service
1875 Century Boulevard, Suite 205
Atlanta, GA 30345
404/679-4143 (ph); 404/679-7194(f)
columbus_brown@fws.gov

Dr. Brian Cheuvront
N.C. Division of Marine Fisheries
P.O. Box 769 (3441 Arendell St.)
Morehead City, NC 28557
252/726-7021 Ext. 8015 (ph)
252/726-3903 (f)
brian.cheuvront@ncmail.net

Dr. Roy Crabtree
Regional Administrator
NOAA Fisheries, Southeast Region
263 13th Avenue South
St. Petersburg, FL 33701
727/824-5301 (ph); 727/824-5320 (f)
roy.crabtree@noaa.gov

David M. Cupka
P.O. Box 12753
Charleston, SC 29422
843/795-8591 (hm)
843/870-5495 (cell)
dkcupka@bellsouth.net

Benjamin M. "Mac" Currin
801 Westwood Drive
Raleigh, NC 27607
919/881-0049 (ph)
mcurrin1@bellsouth.net

Anthony L. Iarocci
236 Guava Avenue
Grassy Key, FL 33050
305/743-7162 (ph); 305/743-2697(f)

Rita G. Merritt
38 Pelican Drive
Wrightsville Beach, NC 28480
910/256-3197 (ph); 910/256-3689 (f)
miridon@ec.rr.com

John V. O'Shea
Executive Director
Atlantic States Marine Fisheries Commission
1444 Eye Street, N.W., 6th Floor
Washington, D.C. 20005
202/289-6400 (ph); 202/289-6051 (f)
voshea@asmfc.org

Lt. Brian Sullivan
U.S. Coast Guard
Brickell Plaza Federal Building
909 S.E. First Avenue
Room 876/ DRE
Miami, FL 33131-3050
305/415-6781 (ph)
305/415-6791 (f)
Brian.A.Sullivan@uscg.mil

Mark Robson
Director, Division of Marine Fisheries
Florida Fish and Wildlife Conservation Commission
620 S. Meridian Street
Tallahassee, FL 32399
850/487-0554 (ph); 850/487-4847(f)
mark.robson@myfwc.com

Susan Shipman
Director, Coastal Resources Division
GA Dept. of Natural Resources
One Conservation Way, Suite 300
Brunswick, GA 31520-8687
912/264-7218 (ph); 912/262-2318 (f)
sshipman@dnr.state.ga.us

Tom Swatzel
P.O. Box 1311
Murrells Inlet, SC 29576
(C/O Capt. Dick's Marina
4123 Hwy 17 Business,
Murrells Inlet, SC 29576)
843/357-1673 (ph)
tom@captdicks.com

John A. Wallace
5 Buddy Beckham Road
P.O. Box 88
Meridian, GA 31319
912/437-6797 (ph); 912/437-3635 (f)
Ga_shrimp@darientel.net

South Atlantic Fishery Management Council
Staff

Executive Director
Robert K. Mahood
robert.mahood@safmc.net

Deputy Executive Director
Gregg T. Waugh
gregg.waugh@safmc.net

Public Information Officer
Kim Iverson
kim.iverson@safmc.net

Senior Fishery Biologist
Roger Pugliese
roger.pugliese@safmc.net

Staff Economist
Kathryn (Kate) Quigley
kate.quigley@safmc.net

Cultural Anthropologist
Open Position

Environmental Impact Scientist
Rick DeVictor
richard.devictor@safmc.net

Science and Statistics Program Manager
John Carmichael
john.carmichael@safmc.net

SEDAR Coordinators
Julie Neer - Julie.Neer@safmc.net
Dale Theiling - Dale.Theiling@safmc.net

Fishery Biologist
Andi Stephens
Andi.Stephens@safmc.net

Coral Reef Biologist
Myra Brouwer
myra.brouwer@safmc.net

Administrative Officer
Mike Collins
mike.collins@safmc.net

Financial Secretary
Debra Buscher
deb.buscher@safmc.net

Admin. Secretary /Travel Coordinator
Cindy Chaya
cindy.chaya@safmc.net

Purchasing/Adm. Assistant
Julie O'Dell
julie.odell@safmc.net

SEDAR/ Staff Administrative Assistant
Rachael Lindsay
rachael.lindsay@safmc.net