SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

HABITAT ADVISORY PANEL MEETING

FWRI Office
St. Petersburg, Florida

November 5-7, 2013

Summary Minutes

Habitat AP:

Pace Wilber, Chair
Dr. Christopher Elkins
Terry Pratt
Carter Watterson
Mark Carter
Jenkins Mikell
Anne Deaton
Alice Lawrence
John Ellis
Dr. John Galvez
Melissa Yuen
Terry Gibson
Steve Trowell
Dr. Amber Whittle
Priscilla Wendt
Susan Hilfer
Bill Parker
Thomas Jones
Bill Kelly
Pat Geer
Dr. Todd Kellison

Council Members:

Dr. Wilson Laney

Council Staff:

Roger Pugliese
Julie O'Dell

Observers/Participants:

Dr. Marcel Reichert
Mitch Roffer
Tina Udouj
Barbara Muhling

Additional Attendees Attached

The Habitat and Environmental Protection Advisory Panel of the South Atlantic Fishery Management Council convened in the FWRI Office, St. Petersburg, Florida, Tuesday morning, November 5, 2013, and was called to order at 9:00 o'clock a.m. by Chairman Pace Wilber.

MR. WILBER: Welcome to the Habitat and Environmental Advisory Panel meeting. The agenda for today and tomorrow is roughly today is focused on sort of report out the statuses on the various policy statements that we've been updating for the past meeting or so. Some are like 99 percent done if not 100 percent done. Others are kind of still coming along the way. Tomorrow we're going to get lots of show and tell on the various databases and tools and wizards and stuff like that that have been developed by Roger in cooperation with Tina in the past few years. I think that is going to be a pretty exciting time for me.

I'm kind of liking the technology and information you provide on the management side of all this, and this should be pretty exciting. Do you want to do the introductions first? We'll start with our introductions.

MS. YUEN: I am Melissa Yuen with the Atlantic States Marine Fisheries Commission. I am a fishery management planning coordinator and also with habitats and artificial reef.

MR. GEER: I'm Pat Geer, Georgia Department of Natural Resources.

MR. JONES: Tom Jones; the Georgia Sports Fishermen representative.

DR. KELLISON: Todd Kellison; NOAA Fisheries, Beaufort, North Carolina.

MR. WATTERSON: Carter Watterson; Navy.

MS. DEATON: Anne Deaton; North Carolina Division of Marine Fisheries.

DR. ELKINS: Chris Elkins; recreational seat, North Carolina.

MR. CARTER: Mark Carter; recreational fishing from Florida.

MR. PARKER: Captain Bill Parker, charter fisherman, Hilton Head Island, South Carolina.

MR. KELLY: Bill Kelly; representing Florida Keys Commercial Fishermen.

MS. UDOUJ: I'm Tina Udouj; I work here at FWRI.

MR. PUGLIESE: I'm Roger Pugliese; South Atlantic council staff, responsible for our habitat and ecosystem activities.

MR. WILBER: Pace Wilber; NOAA Fisheries, Charleston, South Carolina.

MS. WHITTLE: Amber Whittle from Florida.

DR. GALVEZ: John Galvez; U.S. Fish and Wildlife Service, Southeast Florida Fisheries Office.

MR. PRATT: Terry Pratt; North Carolina.

MS. LAWRENCE: Alice Lawrence; U.S. Fish and Wildlife Service, Athens, Georgia.

MR. ELLIS: John Ellis; U.S. Fish and Wildlife Service, Raleigh, North Carolina.

DR. LANEY: Wilson Laney, U.S. Fish and Wildlife Service. I also am on the council and I'm here in my neutral hat as an observer.

MS. HILFER: I'm Susan Hilfer; I'm from Beaufort, South Carolina.

DR. REICHERT: Marcel Reichert.

MR. WILBER: As usual to kick off these meetings, we have some administrative chores to do. The first chore is to accept the meeting minutes from the previous meeting. We need a motion from the floor to accept the meeting minutes. Just to make it interesting, the motion is going to come from one side of the table and the second is going to come from the other side of the table. Whoever wants to –

MR. MIKELL: I so move.

MR. WILBER: Okay. Jenks there we go, thank you. All in favor of adopting the minutes from the previous meeting say aye; any opposed? The meeting minutes are adopted. Roger, opening comments.

MR. PUGLIESE: I wanted to thank everyone for attending and especially we have new members of our advisory panel. Since we have such a close group, we also have invited our presenters to the table today. They are going to be participating with us and be able to at least to see where we're going with these. Then we have some presentations.

I would like to highlight at the end of the day when we get through some of our policy discussions, some of the more interesting movement we're doing on modeling with the oceanographic; Connecting Oceanographic and Species by Barbara Muhling and Mitch Roffer. That will set the stage for tomorrow's bigger discussions on the move toward expansion of ecosystem management, the development of ecosystem plan, and the tool capabilities.

But given that, I think there has been a lot of progress. I really do appreciate all the members' efforts that really focused and got a lot of these, as Pace identified, the policy statements in the form they are. They are moved forward. They really have set the stage of some policy core for the evolution into the next generation of our further ecosystem plan, which we will have an opportunity to begin discussing tomorrow.

I think we also have the benefit of really drawing on a number of other partnerships and collaborations in the room to really tap in on that and to really enhance what comes down the road. The Habitat AP, as before, will play a major role in seeing this evolution of not only the fishery ecosystem plan, but the refinement of the essential fish habitat, expansion of the vision of conservation and habitat or conservation of the entire ecosystem, the opportunity to really get into things such as the idea of climate issues within that next generation; the ideas of what we

really do know in regard to fish and oceanography; our understanding of the connection of ecosystems and the species across all of the not only council-managed areas, but across the entire prey and predator throughout our region.

I think the intent and the direction of this entire meeting will really build on what has been done to date and then really take us and springboard us into next year, and going into some detail about some of what is anticipated in terms of going further. Given how we were to get some things again this year; I think in order to really see that all unfold, we're really looking at two additional advisory panels next year, also.

In conjunction with those, there are usually workshops to enhance very specifically the fishery ecosystem components. With that, again, I would like to thank everyone and lead us into our discussion. What we're looking at in the beginning is just kind of getting an overview of where we are with a couple core policy statements that as we've indicated have had a lot of work and set the stage for us to get to the other ones.

Some of those are also very critical and very timely to get work done on, especially energy and some of the other statements that we would like to see. With that, I'll turn it over to Pace and listen from a council perspective what you envisioned

(Dr. Laney's remarks were not transcribed due to static in the recording.)

MR. WILBER: Okay, let's try to help us remember that, too. Roger, are we ready to move on. All right, probably the star child of the policy redevelopment has been aquaculture. We are grateful to Dr. Elkins, so please go ahead and give us an update on where we are.

DR. ELKINS: Well, as you know I was volunteered for this and fortunately I have some friends in aquaculture who are really world experts and I was able to recruit them. I take no credit other than being an agent to recruit them. You have all received this document, 99 and 100 percent done. To give credit I will have to read a few things.

I sent you this e-mail from Ken Riley. Basically the policy was developed with contributions from NOAA, James Morris and staff in Beaufort; the NCC Grant; Pace's group at National Marine Fisheries Service had contribution; and also Todd here helped as well from the Ecosystems Branch; then also NMFS Office of Aquaculture, Mike Rubino and staff. There is a whole list of other people that were involved as well.

As an overview, all recommendations and revisions were incorporated from the last advisory panel meeting in May and additional comments were also solicited. The policy is comprehensive to include all aquaculture activities in the coastal zone that would interact with EFH.

The policy is organized into four sections, intro, overview of marine aquaculture and essential fish habitat interactions, location of specific interactions and the South Atlantic Policy. There are extensive appendices included. The timing was perfect for this group to do this. They had just completed an exhaustive review of aquaculture worldwide, so they were all tuned up. That was already in the final form when we came to them.

It wasn't a big deal for them and everything seemed okay. Some of the major changes were removal of the section on the use of fishmeal and fish oil in marine aquaculture piece, of which that type of feed has rapidly changed since the last revision to move to more plants and stuff, aquaculture feeds and so forth. You can read the details in that e-mail. I am now open to take any suggestions. I'll relay it on to the people we were talking about.

MR. WILBER: I have a question. You may not know the answer; but do you recall the specific nature of the comments you got from Jess Beck?

DR. ELKINS: No.

MR. WILBER: Jess Beck is the Southeast Region Aquaculture Coordinator. In the NOAA side she is probably going to be the most important reviewer of this to report up the chain, so I was just curious. Roger, I do have a question. This one is done. The others are kind of lagging. Is it possible for us to put these – these have to go through the council, correct?

MR. PUGLIESE: Yes.

MR. WILBER: Is it possible to kind of put them through the council in a couple of groups rather than forcing all of them to go through in one lump?

MR. PUGLIESE: That is I think why it is kind of structured the way we have. You have the latitude to bring forward the more mature and developed policies to the council. Yes, the latitude to really kind of finalize some and to bring back and do some more work and expand and it is definitely built into the way it is structured. So, yes, that is true and you are correct.

MR. WILBER: Does that mean this goes through the Wilmington Council Meeting in December or is it for the one going on in 2014?

MR. PUGLIESE: As far as this is along, I think what we want to do is just double-check some of the content. But I think that can be – how much work can be done in this can then be brought to the council if that's the desire of the advisory panel at this time.

These are not under time crunches. We should originally try to get as much forward as we can to set the stage to have policies developed so some of the plan revisions and all that can move forward. The more we get done the better off we are in timing for other things that we have to do. We have a fairly short timeframe at the December council meeting, so that is a consideration.

(Could only transcribe portions of morning session due to static or no microphone.)

MR. PUGLIESE: Yes, and to that point, I think that is going to be something we really need to – at the last council meeting they actually did vote to send a letter very specifically with regard to the Lake Okeechobee withdrawals and the impact that is having on the Indian River System. I think it is very much a timely issue that we have the opportunity to have this discussion in here, especially with the concern that you have already seen with some of the significant impacts on species under council management or prey on those species.

AP MEMBER: I just wanted to clarify it is not withdrawals.

MR. PUGLIESE: Discharges, yes. You're having major seagrass die-offs, et cetera, as a result of discharges.

MR. WILBER: Alice, in the introduction we just have a section that describes dredging methods and disposal and stuff like that; but I don't recall seeing any dredging-related policy recommendations. I mean the relationship of those last four bullets to dredging into a typical dredging project.

My question is would be best to maybe take dredging material out of the policy statement but still leave those four bullets in as the recommendations, but kind of reword them a little bit to the extent of some kind of more tied to a typical riverine type of project like any dredging or construction that is part of constructing all water intake; treating the dredging more as incidental as opposed to project.

In the beginning when you're talking about ocean disposal and things like that, you're kind of conjuring up a dredging kind of vision there, which is really not what this is about. Before I had a real concrete recommendation, I would go back and have to equate that idea in my mind. I think if we were just to leave the dredging section as only the page, really, you know, on Page 4 and 5, and then see if some minor tweaking to the bullets needs to be done.

My feeling is that would be all that needs to be done. Are there any comments or questions about the In-Stream Flow Policy? It looks really good. As someone who does review the permit applications for 404 and other activities that are better related to water intakes, there is a lot of useful stuff in here. Wilson.

MR. PUGLIESE: Not really. I mean, what we're drawing on is trying – you know, you're dredging from the bays and technical information that is in the ecosystem plan; and then with the newest information that is actually the policy. We have to build like a supporting document for these.

One thing, to go from there, we have the opportunity with the ecosystem plan that's generated maybe to have a total, more focused section on in-stream flow. The reason I think that may be even more appropriate is that there is the opportunity to collaborate with some of the regions. As you know, the Landscape Conservation Cooperative in cooperation with the Southeast Area Regional Partnership has been looking at in-stream flow on a regional basis and building information systems that they are looking at with the idea to come up with tools and capabilities to look at the entire systems.

They just had a workshop specific to the Gulf of Mexico where they got down into the weeds on where there may be species that are impacted by flow and using those survivors to see how they impact different systems. There is some opportunity to build the policy statement to maybe even a broader view.

One of the things that come out of the original building from that type plan into an ecosystem plan was actually a formal discussion about ultimately would be good to come up with flow regimes for the entire South Atlantic Region's water, so this big picture of what – and it is very

specific to focus on how those would support and maintain the habitat that is essential. So, there is that opportunity to use this as a core and then build on it.

I think the detailed focus is that is the method to do that in even a grander way instead of just maybe kind of a snapshot. I was actually going to touch on that when I got into some of the opportunities for collaboration, because I think the timing is really good and we can build on a lot of work that is already done and then collaborate with the states and further.

MR. WILBER: Just a question about that. The front end of I think all the policy statements discusses essential fish habitat, HAPCs and how those designations relate to the topic of the policy statement. Does more than an administrative record – is more than an administrative record needed in those front ends?

MR. PUGLIESE: Well, I think the idea is that you're supposed to be building – the deliberations on creating these are the administrative record. The idea is that we've got the work that has gone in, the review of the information and the AP's deliberations and the council to a great degree is deferring to that; plus the information in the associated documents like the ecosystem plan and the habitat plan and then any other ones that get cited, because a lot of these now are site-specific locations of the research or technology or information that is looked on.

I mean, this is a call on – well, I think where we're going is would you have a technical support document that is kind of concise and support documents, something with what they've done with ASMFC, where they have like a technical document and then maybe a policy. It has been more of the broader sense where the administrative work is done by the council and defers to the AP with the expertise to build that into the system and with that refinement. I mean, it is a call of the council on it and your thoughts and the AP if they would like to have something even more. I think that brings it down to a useful tool is one of the things that Pace was trying to do; so whatever makes that happen is going to be important, too.

(Dr. Laney not recorded)

MR. PUGLIESE: I think it is going to be important to look closely at it because maybe there are enough – because a lot of the ones that we're talking about that are integrated within the document. We do have some of the detailed description to the technical support information that provided the foundation – the most recent information that is provided, whether it is research in the front end or referencing back end. What is in the body of the document; that may be something that we can work within that. We can discuss it further if there are other thoughts that the AP members have also.

AP MEMBER: I know the SAV Policy does have references throughout and we updated those. We kind of followed the existing format. I don't know the detailed in-stream flow. I don't think we need addresses but just a policy statement and you have got to be careful. I almost wondered if some of these are too broad and less policy. A lot of it had extra factual information. Another comment I have is look for consistency in the format and I think they vary, and I think it may be better to do some tweaking to just make them consistent.

(Remarks not recorded.)

MR. WILBER: But I think speaking to what I understood to be sort of the genesis of you point; you're looking for some sort of technical report that documents the need and spawns the policy statement. I think the next version of the FEP would be a good opportunity to do that, so that we kind of try and tighten the link the FEP sections, the content in the policy statement and then we'll kind of have that relationship between the technical information and the policy statements themselves.

My other point, too, is we kind of briefly hit on it a little bit in the questions; but there is a difference between in-stream flows and freshwater in-flows. I mean, those are like two completely different sets of literature and things like that. The content of the in-stream flow policy statement is very good on what I would call typical in-stream flows, but it really doesn't address freshwater inflow stuff, nor should it address freshwater inflow stuff. It might be important to kind of do sort of a little tweaking of this to make it clear that this is not a freshwater inflow kind of report. If there is a need to have a council policy statement on freshwater inflows, then that would have to be ginned up.

MR. PUGLIESE: Well, if you're not going to try to connect these, then that would be potentially a standalone, so that can be something – especially with some of the concerns and deliberations with what is going on in the state of Florida and with the council already putting this on radar as an important issue to be addressed, that can be under our discussions about other state agencies. I think given those two things, that is going to be important enough to begin having some coalescing of information to be discuss.

(Remarks not recorded.)

MR. WILBER: Yes; not pointing to anyone in particular, there is almost no science behind in-stream flows and also salinity of freshwater inflow, so it literally means to do a parallel kind of coverage. It is an important topic and we need to do it. Are we ready to move on to the next one? Alice feels she has got sufficient direction.

(Remarks not recorded.)

MR. WILBER: Are there any other thoughts on that? I see a couple of heads nodding down in the dark part of the corner and that seems to represent the state of Georgia. My personal feeling is I think this is pretty far along and with some tweaking, we could have this on the same March schedule. Okay, we will move on to the next policy statement, submerged aquatic vegetation, seagrass, weeds, whatever you want to call it.

MS. DEATON: I worked on this with Amber; and like I said this was an existing policy, so we just tried to be conservative and stay within the format as much as possible. Unlike the last group that was on the policy activity, this is about an essential fish habitat so it is a little different.

It starts out with a description and the first thing, as you were mentioning, is it says what is SAV is essential fish habitat for, just so you know, penaeid shrimp, spiny lobster, snapper grouper and cobia. It is an HAPC for snapper grouper species as well. It has just one paragraph for why SAV is important for those species. I apologize because I don't have a PowerPoint.

The next section should take us over what the threats and status are; but again it doesn't go into a lengthy listing of those. There are a lot of activities that impact SAVs directly and indirectly. Those include natural events, human activities and climate change. Then it has another paragraph about the status of what we know and some of the management.

Then it goes right into the policy, and so we tried to sort of broaden out the policy to address all the categories that are probably needed for managing SAVs. The first general area is monitoring and research. Do you want me to go through what the actual policy statements are or just the bulleted items in the document?

MR. WILBER: Yes, I think it would be helpful.

MS. DEATON: Okay, it was sort of worded as the South Atlantic Council supports as to – I don't know, but I guess it would be appropriate to say it – to develop and standardize imagery acquisition and mapping protocols; modifying them regionally so that there is consistency; to develop and maintain a GIS Database that includes SAV and use that information for assessing trends. We don't have a lot of trends information.

We've got lots of different mapping information; but what happens is technology changes and then you get a better way of doing it, so it is really nice to say specifically we're gaining and losing. Another action is to research an document the causes and effects of SAV losses, including cumulative impacts, watershed runoff, shoreline development, shading from piers and docks, invasive species and extreme weather conditions like drought, tropical storms and algal blooms; so thinking of the blooms in Florida.

We know that the drought which has actually kind of benefited SAV in North Carolina by reducing runoff and then storms can do the opposite and will increase turbidity for a while and cause a loss of SAV. Also, encourage states to minimize impacts to SAV by developing better design criteria for docks and piers, which minimize those light impacts.

To investigate better restoration techniques, including ecological function and cost benefit; to research potential effect of climate change on SAV; and to evaluate water quality criteria that is needed to support SAV survival and growth and support policy-making to manage quality and quantity of runoff. I know a lot has been done on water quality criteria in general, but you really need it regionally to tie that into your water quality standards as to what nutrient concentrations should we impose that will be adequate with water clarity.

The second is the component of planning and basically watershed planning to incorporate SAV as an integral part of a healthy ecosystem and to use that as your indicator at producing satisfactory at a watershed level to address SAV are not declining. To support the regulatory definition of SAV habitat as shallow water habitat where you have appropriate sediment, depth, light penetration and wave energy, including areas that don't currently have SAV.

That is really our goal, that if you have suitable habitat, then you'll have – that is something in North Carolina we try to do but we did say that you also have to have documentation that it occurred within like the past ten years. You couldn't say just it is out there; it has got bright substrate. It has got to have more connection that it was an area that supported SAV. We might want to tone that down a little bit; I'm not sure.

Comprehensive planning initiatives as well as interagency coordination, partnerships and planning to protect SAV habitat and increase awareness; to establish standardized SAV survey protocols; so, for example, when you're doing applicant interviews, we're following consistent methods and include – you know, we could have in this policy said what the windows were and what methods to use, but it is going to be very recently so we didn't have those specifics.

The last one the Habitat Advisory Panel members should actively seek to involve the South Atlantic Council in the review of projects that will impact directly or indirectly SAV habitat resources; especially at the time I think for water projects that are going to be large impacts to get that additional support from the council would be helpful.

Then the third major component is management and usually it is management based on what your research and monitoring information shows and what your planning is. The council statements in this section are the council supports reviewing and modifying state and federal rules to ensure protection of SAV from impacts such as dredging, marina and pier construction and bottom-disturbing activity; to review the state water quality standards and rules to determine if changes are needed to protect and enhance SAV; and then to develop SAV restoration guidelines to accelerate successful cost-effective SAV restoration.

The last segment is education and enforcement; design of education programs to heighten the public's awareness of the importance of SAV. An informed public will provide the firm foundation of support for protection and restoration efforts. I think we definitely need broad support to get management actions.

Review of existing regulations and enforcement to determine whether they are effective; coordinate with state resource and regulatory agencies to ensure that existing regulations are being enforced; develop economic analyses on the economic benefits of protecting and enhancing SAV habitat; so those are all the policy statements.

The rest of the documents are appendices and we kind of applied those and updated them. The first appendix goes over in more detail what the ecosystems services are; that SAV provides specific examples and how would fit in. Appendix 2 is more on how the distribution of SAV had changed over time. Then the last one is past management efforts, what has been done. Amber and I included a table that kind of summarizes what the different rules are currently in different states to sort of help us see if there are gaps we need to work on. That's it. Are there any comments?

(Remarks not recorded.)

MS. DEATON: Plus I think what Wilson is saying is beyond the research section of management and that we should be taking that into consideration more than they're doing now.

(Remarks not recorded.)

MS. DEATON: There was some research done in North Carolina, but they did that in one river system and then they asked like, no, that river is specific so that is problematic to do that.

MR. WATTERSON: One more quick question up in the front of the document under description and function where you list the different species that have SAV as either EFH or HAPC; do we want limit that to just South Atlantic Management Council species or do we want to include those species from other councils as well.

For instance, the Mid-Atlantic Council has designed SAV as HAPC for summer flounder along the entire coastline, including the South Atlantic Region all the way through Florida; so do we want to include that in the document as well?

MR. PUGLIESE: Yes, we may be able to do it because I think actually if I think back to some of the other policy statements, we had identified some of the other species that were in another jurisdiction that were either designated EFH and it may be appropriate to add them in. I know the spatial orientation we were trying to include as much of any of the EFH designations.

Pace may have a comment on it. The thing that we run into on these is dealing with the EFH designation from other regions, the deliberations through the Northeast Regional Office on their managed species. But, it doesn't preclude working here in the South Atlantic Council as well as other discussions.

MR. WILBER: Well, it deserves at least a footnote simply to make sure it balances with all the other documents.

MR. PUGLIESE: And to that I think the Mid-Atlantic would be really appreciative to work closure on some other issues. When we get into some of the climate discussions tomorrow, I'm going to highlight some deliberations we're having as kind of the vision into the future on climate and EFH.

AP MEMBER: I appreciate your evaluation system for seagrass. I wonder if you should put in what ecosystem services are other than fisheries' production like carbon sequestration and sediments and sea level rise if we're looking to gather more support for seagrass protection. Why don't we put the kitchen sink in there versus just focus on fish? I am just looking at the description and function it seems to be sort of generally referenced. I don't see carbon sequestration or sediment sequestration or any of the others. Those are parts of the value.

AP MEMBER: Yes, we were sticking to the fisheries aspect of it.

MR. WILBER: If we can do it without expanding the text a lot, I think it's good to include it. It is up to the authors. The thing about Carter's comment about the Mid-Atlantic Council, the disconnect I have from a terminology standpoint is that there are a whole lot of brackish and freshwater plants that are common, especially in North Carolina, that are linked not only to federally managed species but the state-managed species.

Those same species of plants occur in Florida but not quite as much of a tie I think. In the Ecosystem Plan and its precursor the Habitat Plan those freshwater brackish species can involve submersible rooted vegetation and actually some of the EFH designations refer back to this SRV terminology. So we get a little tongue-tied sometimes in permit reviews and trying to stick to the actual language of the document.

I have not heard the term "SRV" until I read this document. I guess for now it might be nice if the "SRV" and "SAV" that we kind of know what the description is. If you just want to simply say "SAV" is to broadly include also the estuarine and the freshwater species such as and so on; that would good.

MS. DEATON: We can do that, and it is all about how your water bodies are configured. In Florida you have all the SAVs in ocean waters, really, but in North Carolina it is kind of the brackish SRV. It is the same fish and sometimes the SAV is mixed in with the SRV; so it is confusing me. I would rather they all be called the same.

DR. WHITTLE: In Florida, we have to so little SRVs, so to me for Florida that would make it really cool in our knowledge of SRVs.

MS. YUEN: ASMFC actually does have an aquatic vegetation policy. It was written quite a while ago, in 1997, so they just use SAV to include seagrasses in saline regions and freshwater angiosperms.

MR. WILBER: Yes, so whoever gets tasked with the next generation of the Fishery Ecosystem Plan and writing the SAV section to remember to kind of clean up this SRV and SAV terminology. Wilson.

(Remarks not recorded.)

MR. WILBER: Okay, the two sort of policy questions that caught my eye; you indicated the importance of dock height in protecting seagrass or SAV from the dock. There is a very good body of literature on that and some comparative studies that show of all the dock parameters, dock height is the most important one to deal with.

But, I'm looking at North Carolina and Georgia, to some degree, but I know Florida has a policy on dock height, but I don't think the other states in the region do. The other states have policies on dock materials and dock width and the sizes of terminal ends to these docks, whether they're covered, but there is really no parameter on dock height. I'm looking to you guys as representatives of the state agencies as something that can be dealt with.

MS. DEATON: Well, I'll tell you in North Carolina that the Coastal Commission recently, a few years ago revised their modules. They started out in system considerations through their standards and it was progressive; so you if you were higher, you could be wider; and if you got lower, you could be narrower. They had a maximum square footage. In the end the commissioners nixed all that; they didn't like it; and it's not that way. It was tried though and that was at a better time. I think it is a good thing to try to do the next time.

DR. ELKINS: The majority of the docks in North Carolina are not in the areas of seagrass. Are there other benefits for having high and narrow docks in those areas?

MS. DEATON: There are some that are over seagrass.

DR. ELKINS: Yes, but very few relative to the ones that – so perhaps in developing the new standards, it could be incorporated that if there is a history of seagrass or seagrasses present, it should be more strict.

MS. DEATON: Yes, you're right.

DR. ELKINS: So I think the likelihood of implementing that would be greater and affect less people and might have some benefit.

MR. WILBER: The way I believe it works in Florida is that if the dock traverses a known seagrass habitat, then it meets a certain criteria. They're not forcing everybody to do it. The trend in the permitting process is that the federal government is doing basically everything it can to get out of the business of permitting single-family docks and piers and deferring all that down to the state level and creating sort of administrative paperwork to make that happen.

If it is really important to specify the design of the dock and to protect SAVs, my point is it is a state issue. On the federal side we very seldom get an opportunity really to comment on docks and piers. The other question that you asked for some input on is what constitutes SAV habitat and is it necessary to have documented SAV at a location in order to call it SAV habitat; and if you have documented SAV long ago or how recent does the SAV have to have been there in order to be called SAV habitat. This is really a very contentious issue in both North Carolina and Georgia.

MR. PUGLIESE: I guess that is the opportunity you have from a regional perspective on how this is connected to these managed species.

MR. WILBER: Are there any other advisory panel members that have an opinion on this? Half of us don't have SAVs, so it is hard to get too motivated. Wilson.

(Remarks not recorded.)

AP MEMBER: Do you have rules that specifically address SAV?

(Remarks not recorded.)

MR. GEER: No, I don't think so; only with eight-foot tides, daily tides.
(Remarks not recorded.)

MR. WILBER: All right, so we've gone from he has seen it to a very lush event. I'll just throw it out there. We tend to argue that if it has the right physical conditions for SAV, that it's SAV habitat; and if there is documentation showing SAV present, that's even better. Sometimes the documentation is much older than ten years that it still passes the straight-face test that SAV used to be there.

It is like looking at the shadow line of a ridge across an SAV bed and it's a perfectly straight line on either side, but you may have never had a map that showed SAV underneath a location of a ridge today or that map is 50 years or 20 years old. I mean, it is usually kind of a straight-faced kind of test, but it is big issue right now with the Port Everglades Project.

AP MEMBER: I guess we need to address restoration because I would have to say something a little opposite, which is if it was under there before, why wouldn't it be there if you restore it? I would say you would have to have documentation in recent history.

MS. DEATON: I guess the policy is striving for the highest is what we're striving for even though we know realistically it might not be – like North Carolina we have revised our definition and we have that, there is not a lot of confidence that if have tested in much of an area that had SAVs years ago, we would be able to say that's an SAV impacting – we strive for that and it's our definition and so I'm fine with leaving that in if Florida is fine with leaving it in and maybe we could tweak the wording.

MR. WILBER: Then we should go back nationwide permit for under the Corps of Engineers actually defines – you see, it is the only place I know that the Corps defines SAV habitat and it defines it to be based on the physical conditions and not the actual presence.

MS. DEATON: And that's probably due to the wetlands. I mean, wetlands are identified by a combination including methodology.

(Remarks not recorded.)

MR. WILBER: And you don't need all three for it to be wetlands. Okay, we're a little bit behind schedule. The SAV Policy Statement also looks to be in pretty good shape. I am going to ask the authors do you think we can get that ready to go by March? Oh, of course, yes. All right, Priscilla, Invasive Species.

(Remarks not recorded.)

MR. WILBER: Can you remind me there is a companion marine invasive species statement; is that correct?

(Remarks not recorded.)

MS. DEATON: Well, that was my question is it estuarine and not both estuarine and marine?

(Remarks not recorded.)

MR. PUGLIESE: That's one of the reasons that we've had this change is because originally any time it was dealt with, and that is why they first exclusively dealt with in the marine and the issue came up and we had to focus on the species, but we did have a number that were estuarine specific. Now this is catching up with the species.

DR. GALVEZ: And actually in Florida we have been finding lionfish on the rivers like to the Loxahatchee River and also a lot on the Indian River Lagoon. It is not only a marine fish anymore.

(Remarks not recorded.)

MR. PUGLIESE: I think there was a desire to connect to be able to connect and have them focus offshore and inshore.

(Remarks not recorded.)

MR. PUGLIESE: Well, with the fact that you get the lionfish thing. It deals with the entire invasive species, especially now that you do have that connection between the two.

MR. GEER: Also with eels, Anguilla crassus, it doesn't affect it when it is inshore. It affects its ability to migrate back to Sargasso Sea to spawn. I would rather see just one policy unless we go back to it's getting too lengthy.

(Remarks not recorded.)

DR. KELLISON: Pace, I'm not sure if it is a question to you or Roger, but is this policy redeveloping recommendations for the council just on invasive species or are we developing secondary things on invasive species as they pertain to habitat?

MR. WILBER: In my opinion it is doing the latter. Wilson.

(Remarks not recorded.)

DR. KELLISON: That is a great question, Wilson, and I was sort of struggling with that, too. I mean, I started thinking about this when lionfish came up in the discussion. Lionfish do alter function of the habitat; so if lionfish are present, the habitat might be a nursery habitat for a species and might not be a good nursery habitat anymore because of all the juveniles.

It is a different way of affecting the habitat, but they are affecting the ecological function of the habitat. Then with the American eel parasites, it is a little difficult for me to tie them back to habitats unless there are certain habitats where parasites are more prevalent, for example.

MR. GEER: I think in eels it is really not a habitat issue, but lionfish, the spawning fish are displacing, are out-competing a naturally occurring species in that species habitat in that regard, but in eels I see your point.

MR. WILBER: I'm going to disagree a little bit, I think. The value to these policy statements to me personally and the recommendations that are coming from them that really are attracting my interest and I see value in them are the ones that speak to management actions that a typical habitat program can take like telling people to build your docks in a certain way or telling a hydropower company to start a certain – or how to orient a water intake or something like that or about an aquaculture pen that is proposed for a certain location and these are the kinds of things that you need to worry about.

So, those are the kinds of recommendations that I think are the best things that come out of this policy statement exercise. If there are habitat recommendations that really need to be dealt with through something bigger and more powerful than a typical habitat program like eradicate lionfish from the area, it might be worth it to make those, but I wouldn't dwell or put a lot of effort into making those recommendations.

They need to be made because you need to check that box, but we're not really expecting a typical habitat program to kind of deal with that. Now, for like eels, we get faced with that question all the time about why you're depriving eels to go upstream into an area that currently has no parasites, so that is a habitat issue that we actually kind of deal with.

Again, coming back to like what is the purpose of this, you know, to make recommendations that the typical habitat program, it is the state government or at the federal level can actually begin to implement and make things occur is really the purpose of it.

AP MEMBER: What about things like monitoring that don't protect habitat but protect species and so you make a recommendation to take out every lionfish and we don't have count for them and to me those are important for my agency because that is something that we can point to that says this is also supported by the South Atlantic Fisheries.

MR. WILBER: I think we should make that recommendation. The question is are we making it forcefully enough in the invasive species policy statement in order for you to take that ball and run with it. That is basically my thought.

MR. PUGLIESE: To this whole discussion, I think what we have here is we have a little bit of a morphing of issues, both the habitat directive and the vehicle and the avenue that the council traditionally has used to bring policy statements forward with that consideration of lionfish being laid on the table and it is kind of the question as to how the council is going to be addressing that issue.

I think in its origin there is that combined directive on the review because there was a session about the council developing fishery management plans, this and that, and developing the policy on invasives was to try to integrate into this context of how we've been traditionally looking at habitat because of the issue of lionfish so it does get a little muddled in terms of that being there and maybe not the strongest direction, but it is laying for the council's position on this as well as the habitat and ecosystem considerations of habitat. But I think it is there and there may be other avenues – if the council gets further down the road, there may be other things that they want to do or address some new information.

MR. WILBER: But the point is laying out the council's position on unsolvable problems really isn't that useful; so laying out the council's position on the problems that can be solved, especially that can be solved in the existing programs and management frameworks is a really useful thing to do.

If there is something that is just outside of that area that just requires a slightly new program or slightly new at looking at things, which may be what Florida has in mind for lionfish, that is not that much of a stretch to cause a problem. To me the value is to focus on what can actually be done. Wilson.

(Remarks not recorded.)

MR. PUGLIESE: But if you remember the way we have been addressing habitat, especially with the designation, it includes the physical dynamics of the water column. It includes the

broadest scope; and if you take it to something we actually haven't used – and this is a specific biological component – that there is this issue of designating prey as EFH.

We haven't gone down that road in the past in the South Atlantic because one of the things you need to do is maybe something that we can begin to discuss is you need to begin to identify what the distribution of those species are relative to the managed species and that intersection of concentration of those species as we can so it can be designated as essential fish habitat, so that is a very specific biological thing.

We have not done that because basically we didn't have kind of that combination of distributional or managed and prey species as well as we could do that. As we go down the roads on the spatial development of information, we can begin to look at some of these types of things.

You have got to remember this group is the Habitat and Environmental Protection Advisory Panel so it is broader than just the EFH as the only thing that they tasked; and given that, obviously it does open it to any of the aspects and the idea is fostering the move toward ecosystem-based management. It does reinforce the broader definition of that.

MR. WILBER: We're a little bit behind schedule so let's a break.

(Whereupon, a recess was taken.)

MR. WILBER: The digestion from the morning is we feel that the discussion this morning provided enough input to the authors of aquaculture, SAV and in-stream flows policy statements so that they can run with it and that we probably don't need to have breakout groups this morning and focus on those three.

Our goal is to provide those three policy statements to the council as FYI to the December council meeting with the idea of bubbling them up for actual approval for the March council meeting. The invasive species; the consensus seemed to be to combine the estuarine and the marine invasive species policy statements, and we will kick that back through the AP the next time we all get together along with some of the other policy statements that are out there still lingering.

With that sort of emerging kind of plan, we have about 40 minutes or so before we break for lunch, and we don't have the need to have the breakout group as scheduled for this morning. It doesn't really seem at this point to be a wise thing to start tinkering dramatically with the afternoon agenda.

What we're proposing to do now is to deal with the new business stuff or other business stuff that Wilson brought up earlier. Before I turn it over to Wilson to do a summary of the Atlantic States Commission Meeting that he attended last week, Bill Kelly has raised his hand.

(Remarks of Mr. Kelly and Dr. Laney not transcribed due to static in the recording.)

MR. WILBER: I was going to ask Melissa is there anything about the meetings last week you wanted to add to Wilson's summary?

MS. YUEN: I think he covered everything.

MR. WILBER: Are there any questions from the group about what has transpired at the Atlantic States Commission meeting? How many that are in the room today are on one of the Atlantic States Commission committees; just raise your hand. Now, how many of you that are in the room today either supervise someone or run into someone at least once a week in your home office who serves on one of those committees.

So there is a fair amount of overlap between these two groups in terms of membership, and there is also a fair amount of overlap in terms of habitats that they focus on and products that they develop; and, coincidentally we both seem to be working on aquaculture policy statements at this particular moment in time.

Each group works on riverine stuff, estuarine stuff and marine stuff; although if you kind of did a little pie diagram, slices of those pies might differ a little bit, but we all work on estuarine, riverine and marine type things. Some of the technical experts that come in and make presentations to the Habitat AP also give the exact same presentations to the Habitat Committee at the Atlantic States Commission.

The idea to at least occasionally have a joint meeting seems like an obvious thing to do, and the joint meeting doesn't mean we have to constantly meet. It could be set up in such a way so that we meet at the same time at the same hotel and for some period of the one- or two-day meeting we meet as one big group just to review with the Coral Advisory Panel and then we break out into separate meetings and stuff like that.

The other last little point I just wanted to mention is that just sort of the vagaries of scheduling and stuff, these two groups, the Habitat Committee and Habitat Advisory Panel which used to meet like diametrically opposed parts of the calendar, are now all kind of coalescing so we actually now are pretty much on the same schedule.

The Habitat Committee met last week in St. Simons, Georgia. There seems to be a lot of forces kind of sort of bringing us together, so we're kind of looking to the advisory panel here to see what they would think about the value of meeting with their counterpart from the Atlantic States Commission; and that I'm just kind of throwing out. Anybody who has input on this, we would love to hear it.

MR. GEER: I think it's a real good idea. In Georgia we're really small so we need all the people that work with me, and they're all in my workgroup, so I think it would be a good idea. I see things being done. Yes, I would fully support it. I think the organization would as well. They typically meet in Alexandria.

MR. WILBER: Yes, the venue and the timing would have to be worked out, and that has obviously budget implications. We would have to work out those details. The other nuance to this is once you go down this road and start talking about a joint meeting between the Atlantic States Habitat Committee and the South Atlantic Council's Habitat Advisory Panel, it then opens the door to, well, why not include the Mid-Atlantic Council's Habitat Advisory Panel as well?

We have already brought up in the conversation today that some of their EFH designations extend into South Atlantic waters and some of the South Atlantic EFH designations extend into Mid-Atlantic waters. We have in the past years discussed some MOUs between the councils to talk about the management of marine habitats and sea coral habitats in particular.

There is that whole avenue of opportunity as well. Now, the only question I have is the Mid-Atlantic Council is kind of like a mysterious box. I don't really know how it operates; so the feasibility of meeting with that council as well I don't really know.

MR. PUGLIESE: With regard to specifically the Mid-Atlantic Council, they just don't have essentially the same kind of structure we do. They're really starting to move toward ecosystem, but almost at a committee level to a great deal. We're just kind of opening up to say let's do it to try to get essentially something similar to what we have got in the southeast and the collaboration.

I think it would be very obvious when we were discussing some issues on upcoming collaboration with all the councils and ASMFC on potential climate and governance work. The collaborations we've got in the regional, they're not really building the connections of the inshore systems with the offshore systems and the different organizational – they have not made many of those types of inroads.

There are maybe some opportunities, but I'm not sure it would be at the same level in terms of how the connection – I'm not sure what types of advisory components they have and I would have to look into that further. I think it makes more sense, when we talk about – right now I was directly involved in the MOU discussions, really, and the way the MOU came out is we were going to basically provide advice and guidance and provide the content of how the council is managing in our region.

It did not really go into how they were going to be defining specific things in their region. It was very specific on they were still going to be managing in their areas. When it gets to our opportunity for collaboration, one issue that does come up is the resources we traditionally get in Charleston – (too much static to transcribe)

MR. WILBER: I just wanted to add from what Roger said is very consistent with everything that I have heard that the Mid-Atlantic Council is not as far along as the South Atlantic Council in terms of developing this collaborative kind of partnership for addressing habitat issues and bringing them up for council attention.

The one thing I would say in favor of the Mid-Atlantic Council is they are much more intertwined with the Northeast Fisheries Science Center of NOAA Fisheries than the habitat component of the South Atlantic Council is intertwined with the Southeast Fisheries Science Center.

As far as one thing that we could learn from them is how they developed that close tie with the science center and how that science center regularly produces products that feed into the actual construction and execution of their habitat program, which is something that folks have wondered about here in the South Atlantic. It is going to be for them to learn from us and for us to learn from them.

And then what Wilson brought up, too, with river herring, I mean if we want to go down this road and talking about prey and anadromous species and whether they should have essential fish habitat, well, we can talk with the councils that have already gone down that road or a least a few steps ahead of us in terms of going down that road. There is a lot of opportunity for exchange; and if there is an opportunity for this exchange, I'm sure with meeting schedules and priorities we can kind of make it happen. We have got some support from Georgia. Are the other states interested in making this collaborative effort?

MR. GEER: When Melissa looks down her list of who is on the commission's Habitat Committee and then you look at the Mid-Atlantic Habitat Committee and the New England Habitat Committee, you may find out there is some overlap. I don't know to what extent, but I would assume there would be some overlap.

(Dr. Laney's remarks not transcribed due to static in the recording.)

MR. WILBER: Okay, should we include the Mid-Atlantic Council in that first meeting or should it just be between the commission and the South Atlantic Council?

(Dr. Laney's remarks not transcribed due to static in the recording.)

MR. WILBER: I would suggest we inform the Mid-Atlantic Council that the meeting is occurring; and if they wish to attend or simply to have heard rather than participate, that would be their option.

MR. GEER: What about inviting the chairman?

MR. PUGLIESE: The chairman of the council or the chairman of habitat?

MR. GEER: No, of their Habitat Committee; whoever is in charge of their Habitat Committee or some representation of that committee instead of having the whole committee there.

MR. WILBER: I think that makes sense. We can tell them the purpose of the meeting is to explore the options for a joint meeting between the councils and the commission; and if they have no interest, then they don't need to come to the meeting. It makes sense to me to throw it out there and see if they're interested.

MR. PUGLIESE: I had very specific discussions with Chris Moore the other day. There is a willingness to learn from what we have done and try to integrate that into their program. There definitely is a desire from the Mid-Atlantic Council to begin to go down the roads in a little more comprehensive way.

I think it definitely makes the most sense to set the meeting up, but we may also look an opportunity to share the habitat information between the three and have that discussion in general just for council opportunities and council connections, because I think they're at different stages. As you said, one the things that we maybe can learn is how they've been able to give habitat a high priority and maybe we can encourage to give Todd some more – to give that as a priority for his office. I mean what it comes down to is it becomes directly from the regional office down

to the center or the center director has that as a priority. Given all that, I think there are opportunities for both of these.

MS. DEATON: I was just going to add that I would support doing that joint meeting for North Carolina. I agree with the idea of at least offering it to the Mid-Atlantic especially for North Carolina because half of our state is in the South Atlantic and the other half is in the – well, a portion of it is in the Mid-Atlantic. It is just more efficient if we know what other documents and activities are going on to build our programs.

MS. YUEN: During our Habitat Committee meeting last week, we talked about having a conference call just to like discuss the possibility of doing it next year. We can definitely do that with the chairs of these other APs to gauge their interest.

MR. WILBER: And we were going to try and have that call next week, right?

MS. YUEN: Yes, I'll set that up.

MR. WILBER: We actually were pretty optimistic about this last week. Is there any other new business or anymore comments on this one? Wilson.

(Dr. Laney's remarks not transcribed due to static in the recording.)

MR. WILBER: Well, I was just going to say that effort that Wilson referred sprang from the National Habitat Assessment Workshop that NOAA Fisheries had in Seattle a year ago September, with the idea of trying to develop a model and the data to support the model that would draw this inshore/offshore linkages between various species.

There was a lot of interest in doing it in the Mid-Atlantic so they're open to the species that are selected. They ended up picking flounder because their EFH extends into the South Atlantic waters, so that was a way to kind of check off the South Atlantic box as well. Given the data they had on hand and the meager budget needed to start this whole modeling project, I think they've done a lot more work in the one year than I expected would be done. That actually would be a really good presentation to have at a joint meeting if we were going to kind of pull it off. Roger, you said you had something?

MR. PUGLIESE: One of the things I think given that we haven't had some of these types of activities, what we have been doing is trying to build some of these types of information with our partners and we are going to get specifically into a presentation after lunch on the inroads we have made to tap into our collaboration with SECOORA in terms of trying to begin to look at – the one thing that frustrates me with like building that model and everything is that the councils are not invited to go that national workshop. We do not have input into what goes on with the NOAA Fisheries, so we didn't have any type of ability to kind of influence direction on some of those different things, which I think is somewhat of a shame, but that is the way NOAA Fisheries operates, and it is kind of in-house.

MR. WILBER: Well, let's clarify that. The meeting a year ago September was – let's remember that we're in the height of all of the problems related to our colleagues at GSA, of whatever the agency was, that they had all – so in order for us to move forward with the meeting last

September in Seattle, to avoid certain levels of congressional review, they had to do a NOAA Fisheries only meeting.

The reason other folks weren't there is because it would have triggered a level of review that we couldn't pull off. The only previous workshop was here in St. Pete a couple of years before that, and that was open to a lot of people. It was coincident with the early days of Deep Water Horizon and there were many presentations on the initial days of coming into the Deep Water Horizon Event. There was huge public participation.

Okay, we will move forward with this conference call that we're hoping to maybe pull off next week and we'll report back to the group and then start of kind of seeing what the opportunities are for a venue or location and agenda and just kind of see where this goes.

MR. PUGLIESE: And as far as the logistics, we'll be discussing this in a report to the council. The committee and council do have to look at this relative to what the schedule is for next year, resources, et cetera.

MR. WILBER: We're hoping that the councils as well as the Atlantic States Commission all have budgets to support everyone's travel to the meeting site. Given the overlap there is between these, we're hoping there is actually going to be some savings and cost if you aggregate it up to a certain level. All right, is there any other new business to discuss? We will break for lunch.

MR. PUGLIESE: Welcome, everybody, back to the afternoon session of the Habitat Advisory Panel. For somewhat of a change of pace, but in line with what we were discussing; this afternoon what we are going to have the opportunity to hear was a presentation on habitat modeling for fishery-independent trap surveys.

The origin of this is the opportunity that we need and the effort we need to begin to finally bring together both the fishery stock assessment scientists with an understanding of an oceanographic characterization and what that really means with regard to our managed species. This was a first opportunity to begin this investigation and very specifically do it in a way that it can begin to connect into our Science and Statistical Committee deliberations, our SEDAR Stock Assessment Workshop Process.

With that, I would like to introduce the collaborators on this; Mitch Roffer who runs Roffer's Marine Services, which really has been providing worked-up oceanographic information to fishermen for more years than almost any other organizations have. They have provided fairly effective products to understand the variability in the Gulf of Mexico, the South Atlantic and throughout parts of the world.

He was a very key participant in providing information on the oil activities when we had the spill in the Gulf of Mexico. He serves on the board of directors of the Southeast Coastal Ocean Observing Regional Association. He is really invested in taking the next steps and getting those types of information into the fisheries realm.

Barbara Muhling with RSMAS is doing a lot of the heavy lifting in terms of providing some of the context of how you connect the species and oceanographic information into the model products and habitat and really investigating how you then translated that into something that

actually can get into a fishery stock assessment form that people can begin to make real. With that, I open it up and provide you the opportunity for a presentation.

(Presentations were made but not recorded.)

AP MEMBER: (Recording started here after the presentations.)Is the video data actually video that was in the traps? Is the video data you're talking about video that was in the traps?

(Answer not recorded)

MS. DEATON: All the variables you used were really environmental variables, and I wonder with this dataset, since it is the MARMAP data, how could you get a habitat parameter in there like – well, are all of your traps; they're not all on hard bottom, right? Some are on soft, sandy substrate and maybe that could be considered as a variable in this?

(Answer not recorded)

AP MEMBER: Just to follow up, so beginning in 2010; that was when we started putting cameras on the traps. We've got a short time series of video data. That will be available very soon I think, but that does enable us to characterize the habitat. Essentially we're doing counts on the videos now and from the traps, but we have habitat information that we can use to standardize both of those when we develop the indices for the traps and the videos.

Based on some preliminary analyses, at our lab in Beaufort we had a post doc working on some community analyses from both the trap and the video data for the last couple years. He recently left for another position and we're finishing up some of the analyses that he was doing. He was looking at changes in community structure as a function of some of the variables that, Barb, you and Mitch have been working and looking into. He included habitat information in some of those analyses; and it really was way down the list.

I'm thinking of the slide that you put up that has like 100 – I mean the variable that was the most important; the habitat variables that we were measuring, which were like amount of hard-bottom cover in the area, the relief; those type of variables; the amount of live, like algal or soft coral covers; the amount of variability that those habitat variables explained was almost miniscule relative to the depth, temperature, and latitude.

Maybe part of that is because of what Marcel says that this is a hard-bottom survey, and maybe it is just whether it is hard bottom versus not hard bottom; that is the most important habitat variable; and then the sort of types of hard bottom is of much less importance. While I'm talking, could I ask one other question?

Great presentation, really informative – so you were suggesting there are limitations with some of the modeling, standardization approaches that are used now potentially. I think maybe the process is evolving where more and more modeling approaches are being considered. I know for the video indices that hopefully will be utilized in the red snapper and gray triggerfish assessments in 2014, they will consider not only delta-GLM, but Delta GAMs and zero-inflated and mega binomial models.

My question is I don't have experience with most of those approaches, but like how much of a time investment is – because it seems like you are suggesting that this could be a better approach potentially; and so that means that would be useful probably to try it out. How much is it of a time investment is that as well?

(Answer not recorded)

AP MEMBER: Right, but it certainly seems reasonable that there could be a number of interactions in those explanatory variables. What you're saying is that this approach handles that well, and the approaches that have been being used probably do not handle that as well or at least anthae simplify by Boening and that gets away from some of these.

(Answer not recorded)

AP MEMBER: The slide you showed of the upwelling sources south in Florida; the very southern end of that is right where I live and I dive frequently; and we've been working with Florida State University on a bunch of projects, primarily the Goliath groupers. I've have been just sort of volunteer diving and helping out, nothing formal, but we have taken some surveys of fish around the Goliath groupers.

What we've found is that the speciocity has increased where there are Goliath groupers. It is quite counterintuitive, but they are. They also took temperature readings. I never knew that is why the upwellings occur. Certainly, they were extremely strong this summer. I can tell you just anecdotally from being in the water so much that the second that water is cold, the porkfish and all the tropical fish, they bolt south off of Lake Worth and everything else. The reef looks more like something you would see off South Carolina. Then when the warm water comes back in, you see the tropicals again; but there is a way to groundtruth some of that I bet with Chris Koenig, if you wanted to call him.

DR. ROFFER: It is interesting to us, we've always wondered and now you are helping is what happens to these fish when they get cold? Do they stop eating; do they stop moving? Do they move away from the trap or that zone or do they really do a large-scale migration; what most people won't expect. Your experience suggested these fish will move out of the area. They are not just sitting there waiting and shivering.

AP MEMBER: Definitely; and there are probably some commercial landings data from like Ben Hartig could probably help you with that. You're only talking about a couple of miles back down to warm water. From the Palm Beach Inlet northward, you will get the impacts of the upwelling.

I can count on one hand and thousands of dives how many times I've been cold on the bottom south of the north Lake Worth Inlet or Palm Beach Inlet, as it is known. The commercial lobster guys, they always look for the porkfish to find the lobsters. I don't know if there is an actual relationship or not; but you don't see the porkfish when it is cold, you don't see the triggerfish, you don't see the ones that we consider tropical.

DR. REICHERT: There are similar reports that, for instance, vermilion snapper and red snapper actually move up in the water column rather than moving away from the area. They are just

elsewhere in the water column. If you are sampling, obviously you don't catch them on video or in the traps.

MR. WILBER: With the fish that come into these traps, do you ever do any kind of an analysis to see if behavioral interactions among the fish determine which fish end up in the trap, like some big badass grouper just keeps everybody else from going in?

DR. REICHERT: We have started doing that; both looking at the historical data and looking at what species are being caught together. Don Glasgow, one of our PhD students, is looking at that. Now also we've started doing some limited inside the trap cameras. SEFIS has done some work and we are doing that also and looking at not only interactions within the trap, but also at the sequence of entering the trap; are the big predators following small fish into the trap

When a big predator comes into a trap, I can imagine that another small fish would be out of his mind to follow that. On our last cruise we actually looked at some video where a huge gag inside the trap ate at least three fish that were also inside the trap. There is definitely some trap predation going on also, but we are starting to look at that.

DR. KELLISON: It seems to us that it is a game of musical chairs down there. The traps in there, what moves in and what moves out, what moves in moves out over a period of time, and then you pull the trap up. You are getting just a snapshot of what is playing – when the music stops, so to speak. The video camera will help in terms of doing a larger assessment to be able to count the numbers.

AP MEMBER: Exactly, but the videos that we have now are pointing outside the traps, so it is really most informative when we have videos looking inside the trap. You might expect, like if there is some predator/prey effect, that if there are big grouper inside a trap that you would expect to see a few small, potentially, prey fish in the trap. If you look at trap catches over time, you might expect if there is a predator affect you would expect to see that relationship.

When you have big fish in, you have very few fish in. But on the other hand, if you are a big fish, you might want to go into a trap if there is a bunch of little fish in there. If the trap gets pulled then, then you have a bunch of observations where there is a big fish and a bunch of little fish in the traps.

It is kind of hard to know what to expect, and exactly what Mitch has said, it just kind of depends on when the trap gets pulled. Unless we have the cameras looking inside the trap, it is pretty difficult to get at that sort of species interaction thing. We do have some of that data, but not a tremendous amount.

DR. REICHERT: Yes, we just started getting more of those inside the trap data.

MR. WILBER: Being a benthic ecologist, what I would do is I would pretend those traps are sediment cores. I would just do a clustering thing to see what kind of community associations there are. Has that ever been done? Is there any pattern or any obvious signal from those clusters?

DR. REICHERT: We started doing that. Obviously, the variability is such that we really need to look into what method is best to use in terms of your analysis. But that is again what that PhD student currently is looking at. Then the other thing is the current stock assessments are done on a single-species basis; so when we process the data, that is the type of information that we provide to SEDAR and to the assessment team. With the increasing importance of ecosystem-based fisheries management, that is the type of analysis that we really need.

MR. WILBER: This is a little bit of an off the wall kind of question; but when I go to meetings on the west coast and they are talking about including habitat in stock assessment, the habitat is usually a problematic variable that is diminishing the quality of their stock assessment data. The habitat is this annoyance that they seem to need to kind of handle better. You guys seem to be actually looking at habitat as some kind of positive feature that would be part of a stock assessment. Is that really the case?

DR. ROFFER: It has been a long historical challenge and taking the field biologists observations and data to deal with the population modelers. Part of the challenge has been either the one group doesn't understand how the other person works, but the other challenge and has been a great challenge over the years until now with these classification models, is to be able to quantify those relationships.

When you can actually provide a quantitative number in there to provide inside of an index, that is easy to run, it doesn't make it dirty, it makes it much neater. I think that has been some of the resistance in the past of including habitat data in those models. It is just to be able to quantify it correctly. We're starting to gain more and more acceptance around the country with this, not just us but other people are doing similar types of work with GLMs.

DR. MUHLING: Yes; the stock assessment models like the VPAs and whatnot aren't really built to take environmental habitat. They are sort of built to take catches, age structures, mortality, and environment. It not how your average fisheries stock assessment biologist is taught. You get taught about maximum sustainable yield and all these other things; and when we say environment, that just causes some noise around this area.

DR. ROFFER: The ones that get serious about this realize that this noise is really creating problems. The variability and the variances are creating a lot of problems in trying to narrow that cone of is the stock increasing or decreasing and to be able to narrow that confidence limit is what they are looking for now. Bringing in the habitat aspects is helping that.

DR. REICHERT: I think where it is good news is if it can reduce the uncertainty in your model. Where it is bad news is if you include those variables and it actually increases uncertainty in your model. It is kind of a Catch-22 there.

MR. PUGLIESE: To that, I think the key here is that this is going to be the first opportunity to really kind of begin to lay it on the table, to start with the data workshop and gray triggerfish with the shuffling around. At least we had the species under review and in this first loop. Marcel may have some thoughts – and actually I was hoping Luiz – well, he is going to be here tomorrow, and some other discussion specifically on the fishery-independent surveys. He'll probably have some specific comments to that, too.

MR. REICHERT: I think that would be good, because I think it may be good to have some further thought in how this could potentially be used prior to the data workshop, especially this data workshop because red snapper is involved. I think it would be good to have some discussion with the important players involved – and I'm thinking in particular the assessment team – to see how that potentially could get included and if it can be included in the current catch-at-age stock assessment models.

MR. PUGLIESE: I think that is going to be pretty key for us to keep on, because this is the real first opportunity to get to that level. I think some of the other aspects are – I would be interested from individuals' perspectives on how important is it to begin to understand this type of information for fisheries, and the message you need to send to the council on this.

One of the challenges in the Ocean Observing Association is to raise this even to a higher level so that additional funding to do some of the more detailed work; integration of the video information, habitat information, and expansion to the entire suite of surveys conducted under SEAMAP, MARMAP and SEFIS to make this even a more significant effort and how important that is going to be into the future. I think that is something that you all weigh in on the importance of continuing this process and maybe expanding it.

Once we open it up, there is so much else is done in terms of other modeling efforts in the oceanographic community; that it will at least get the individuals together that can begin to see the entire array, not only this specifically, but then the entire ray of capabilities and other types of variables that actually we have in some cases fairly significant information and begin to understand how that really fits into the broader South Atlantic Ecosystem.

AP MEMBER: I'm rarely at a conference that people request my microphone, but I understand we're outside. How does that process work from – this committee makes recommendations to the overall management council or how does it work to gain momentum for that?

MR PUGLIESE: What is going to happen is there is going to be a report to the council on the deliberations of the advisory panel at this meeting with specific recommendations; for example, our policy drafts and the process, the timing, what is going on, additional areas of importance that the council needs to address or recommendations.

Given the discussion we're having here, that is kind of what I was leaning toward is that those kinds of comments are going to be important to raise in that first review. Now, some of it is kind of set in motion with our already having integrated fisheries oceanography into the original ecosystem plan; with what we're going to talk about a little bit further tomorrow on climate and some of the other possibilities for collaborations on doing models, and other capabilities; expanding the work on this with SECOORA.

Those are kind of already setting the stage to do that. The quick answer is that the initial would be the report out from this advisory panel meeting; and fisheries oceanography issues have been on the table and are pretty significant already. I think that is going to be our first stage, but then we've got some fairly significant opportunities.

It is going to be our challenges – both you and I sit on the board of SECOORA – to highlight how important this is coming from this group; so in the next funding round, that fishery gets a

higher level and we get additional resources to expand our work in the region, this and maybe other types of characterization that really needs to be done. That is kind of the long answer to a short question.

MR. WILBER: I just want to follow up on one of the questions. Latitude, longitude, depth all made some kind of an appearance in that model; but those were really proxies for other things that were on the bottom. It wasn't really like latitude itself was the cause of a certain distribution.

DR. MUHLING: For sure; when you put latitude and longitude in a model, you are really just trying to in some ways account for some of the spatial order correlations. No fish sits there and goes, hmm; I'm at 80 west or something like that. It is a combination of temperature, of depth, of habitat and a whole bunch of things.

MR. WILBER: You have temperature and you have depth, but you really don't have a whole lot of habitat information?

DR. MUHLING: For sure.

MR. WILBER: If there was an opportunity to sort of do like detailed bottom maps centered around each of the chevron trap locations; are we talking like a hectare with the trap in the middle or are we talking a 10 hectare area around each spot? Are we kind of starting to get to the scale where perhaps somebody from the navy who happens to be on the advisory panel might know about some information that is available?

AP MEMBER: I don't mean to answer your question, but a problem in determining the answer to that is that we don't know at what spatial scale fish respond to habitat variables, right. Currently, now that we have the video cameras, we do assess habitat immediately adjacent to the traps from those videos.

There is some capability of doing that from the still cameras that were mounted before the video survey started. From some preliminary analyses, those variables that we're assessing don't appear to be very important. The important things tend to be temperature, depth, latitude, longitude, still.

Those things explain most of the variability in the trap or the video catches. Then there is the question of are we measuring habitat at the right scale. That probably depends on like if you're a sea bass, you probably don't move around that much; and so measuring habitat 15 feet from where you caught a sea bass might be appropriate.

If you're an amberjack you move around probably hundreds of kilometers, maybe. As an amberjack, what aspects of the habitat is the amberjack responding to? We could take steps to try to get at that question and the answer is probably species specific. The way that you would do that I think – and we've actually started to do this – is to deploy traps and video, for example, or do diver surveys, do some type of surveys to assess what is in certain spots and then look at habitat characteristics at multiple spatial scales around that. If you do that enough, if you replicate that enough, you can start to determine I think the appropriate spatial scales at which you should measure habitat, if that makes any sense.

MR. WILBER: It does, but just before I turn it over to Carter to follow up, but what spatial scales are you looking at?

AP MEMBER: Right now it is at the 10 meter or less. It is what the water visibility is and what we can see with our video cameras. In some places we have mapped areas. We'll talk about this a little bit tomorrow. In some places, maybe now we're up to about 8 or 9 percent of the South Atlantic we have acoustic data for the bottoms. We might call that mapping.

A very small percentage of that has been further characterized by getting split into habitat classes and things like that. In some cases we have a little bit more detailed information from multibeam, basically, that we can gain some inferences on. But mostly it is just what we can see in the video cameras or previously the still cameras. Does that answer your question?

MR. WATTERSON: I was just going to say the Navy has been involved with doing this exact same thing for about the past eight years but with marine mammals and sea turtles. We've been treating these large predictive models, trying to determine what parameters drive where these species are found.

One of the problems with including habitat in there is that you can include an initial model to try to determine its importance, but in terms of doing the predictive modeling; then like the maps you showed where you have your hot spots throughout the southeast; the habitat data is just not there to be able to do it. We don't have the hard bottom versus soft bottom knowledge to be able to produce those predicted models. At this point I'm not sure we're ready to try to put habitat in there in that respect.

DR. MUHLING: Yes, I mean where we come from is pelagic species habitat models, so habitat by definition is pelagic and it moves, so it is easy. With benthic reef fish it is sort of habitat.

MR. REICHERT: But at least the habitat isn't moving.

DR. MUHLING: It's true. But yet we do need a consideration of what is the actual benthic habitat where we're looking at, and doing that in terms of looking at spatial statistics on that is not trivial.

MR. WATTERSON: Yes, right now we have little detailed pockets here and there for what the bottom habitats are like; and other than that it is pretty much the large-scale SEAMAP data, where if you refine that down it is pretty much a little line here and a little line there that they expand that out in a grid. It wouldn't be useful for this kind of predictive modeling to try to use that type of data, because it is pretty much what we looked for; hard bottom here and it was here. But it can't say anything about areas where you haven't looked for it.

DR. ROFFER: The habitat information clearly is important, but one advantage of doing a fishery-independent assessment over a long period of time by putting the traps down in the same spots is you are getting that measure of abundance over that specific bottom over a long period of time; so changes in abundance will appear as a result of the data.

AP MEMBER: I was curious, with the shape of the study area you had, which was pretty interesting; did you have much edge affects with your modeling?

DR. MUHLING: With the data I was using it is difficult to tell. Like I said, I am sort of applying techniques that we used in fairly continuous habitat to moving species to things that say stay still. There are a bunch of other things I need to consider, definitely.

MS. DEATON: I was just going to say what I seem to hear is that maybe the trap data is not the best way to get the hard-bottom information that you need for this type of model because of its nature you need more like sidescan the whole area and drop camera to get some composition.

DR. MUHLING: If you had to actually get the habitat of the whole area, then, yes, you need to do that. But I guess the question is –

MS DEATON: I mean, that's almost what you need.

DR. MUHLING: But I guess the question is how much is the distribution of these fish that we're looking at actually driven by those little small-scale changes in the habitat?

MR. WILBER: Well, that gets back to my question is like if you need to do sidescan or multibeam or something else, are we talking a bunch of hectare size areas or are we talking a bunch of 10 hectare size areas? The level of resources needed to do those two are vastly different. If it would help improve the model to know what the bottom is on the scale of a hectare; that may not be terribly difficult to pull off; but if it is 10 hectares, then it gets too difficult to do, maybe.

DR. MUHLING: I think it also depends on what your objective is of doing the habitat modeling. The way we came at it is to try and see if it could contribute to a stock assessment index. If your aim is to actually define bottom habitat on a pretty fine scale for a particular species, then, yes, you are going to have to go get maps with the bottom mapping. It depends what your objective is by looking at habitat.

MR. PUGLIESE: Yes, and to that, that is a whole 'nother effort that I think we're actually going to be – so we're hitting it from all sides. That is some deliberations we're going to have at one group that we collaborate – the SEAMAP Bottom Mapping and Species Characterization Workgroup is looking at what we have in terms of bottom habitat and looking at the next generation of where it is going to be moving forward.

We're looking at having a meeting of that group. We already had one earlier this year to set the stage for those discussions and then take it to the next step. One of the things I want to propose on there is to begin discussing a mapping strategy for the South Atlantic Region tied to the species and habitats we need to understand.

It takes what we know and then goes further. That is one of the things you'll see and we're trying to compile everything we have on all multibeam, all that in one system. That is what is being presented when you go into the Atlas and different things, so that we can begin to have those discussions and then figure out how do we go to the next stages for different uses? That is a different use than; as Barbara said, what was being used here for stock assessment.

DR. REICHERT: I think I've mentioned before in addition to the efforts that Todd and his group are putting into the bottom mapping; our vessel as well as the Savannah is traveling up and

down the region every summer to go to our sampling sites, so you've got your platform there. I know it is easier said than done to tow fish; but that may be I think a relatively cost-effective way of getting more information than we currently have in terms of the bottom habitat. I just wanted to reiterate that.

MR. PUGLIESE: That is absolutely critical; that is something as chair of the committee I have pushed for a long time. Coming off of this year's Ocean 2013 and seeing some of the newest technologies, the newest tow fishes, the newest ROVs; I mean some of these things the costs are coming down. The ability to use them is a lot more user friendly, and some of the newer participants are willing to be test beds for some of this.

I think this is something that we really need to pursue, because why waste those vessels' opportunities and times, where given some of those newer capabilities you're not – at least before when you had larger equipment, different things; you are either eating into the survey or complicating it by having to carry additional persons, additional equipment; things that would affect or alter.

Now I think we're getting to the point where some of those – if there is some, it is not going to be enough to not justify having the ability to take – like you said take the additional track line and start adding to the knowledge base. And especially since you're going down some of the key areas of the habitat distributions; you can very effectively focus in on very key areas as you're building this. And with our partners; with the Navy, as SEFIS is working on it, I think it is just a real opportunity to try to maximize the opportunity and take advantage of the new technologies.

MR. REICHERT: I would say in talking with the industry representatives at council meetings and at stock assessment meetings, I think there is an interest in that sector also to collaborate on that. Again, you have vessels out there that may be able to collect some information as part of a collaborative effort and maybe some of the representatives of that sector can address that.

MR. PUGLIESE: I would think it is both. A lot of times we traditionally talked about commercial vessels. I think we really need to engage both the commercial and maybe the larger recreational charter/headboats or whatever to be able to – some of them are probably willing to bring some of this technology with them or provide some of the observations in the forum.

Given the limitations of what we've got coming down the line and the needs are even greater; here is an opportunity to really kind of engage a fleet that we could never fund to do this to provide even more information and really get to that more unified view of what we have out there.

I think people understand it now and will be a whole lot more willing to step forward and say, yes, I would like to contribute; I would like to be able to be part of it. I think it goes on the other side of the industry, the ones that are producing theirs with bluefin robotics, with sea bots. If we do it right, I think we can figure out ways to, if nothing else, begin to do test beds with them and then figure out how to fund a sustained activity.

With our partners at SECOORA there is a ten-year build-out plan which is specifically talking about some of these things. There are opportunities to, if nothing else, to either purchase

equipment that we can figure out how to then get the collaborations or whatever; so we need to make sure that is a priority as we move forward with this and these opportunities.

Okay, are there any other questions or comments to Mitch or Barbara? I really appreciate yours and Marcel's and everybody that has contributed to getting this effort to the level we have. I envision this moving into the discussions at the assessment meeting and workshops into the future into 2014. I will do everything I can from my end to try to see if we can add resources to expand this kind of capability.

Hopefully, our partners, we can talk about how do we take some of these things and build on it, especially with work that has been done that either is comparable or has gone down the road, some of the limitations, some of the benefits. I know exactly when you were talking about some of that; it is amazing some of the levels of work they have done on marine mammals. We needed to have some of that done on the fish side of the world.

MR. WATTERSON: Well; if they become endangered, then we have the funding and the Navy will be happy to step in and help.

MR. PUGLIESE: Or we have some oil show up over there.

DR. ROFFER: We thank you for the opportunity for hearing us. Thanks.

MR. PUGLIESE: Let's go ahead and take a 15- or 20-minute break and we can have a wrap up session on the future policy discussions, where we go with some of the other ones that we still have; pretty significant ones to deal with as we go into 2014.

(Whereupon, a recess was taken.)

MR. WILBER: Okay, the remaining item on the agenda for this afternoon is to go through the four policy statements that are listed at the top of Page 2, get a status check on where they are from the person who was nominally put in charge of their development one or two meetings ago and get any input that needs to be had. Then we'll figure out some way to kind of move forward with those policy statements.

Since we've made a lot of progress this morning on the main four policy statements, we can recoup the benefits from that. The first policy statement that is up for the status check is Wilson Laney, Energy Policy Statement.

DR. LANEY: I told Susan I could swear I started on that; but I can't find it on my hard drive anywhere, despite having looked in three or four different relevant files. Having recently scanned it over here, like within the last ten minutes; I think a lot of it looks like it can still be used pretty much as is.

The big focus on it when we wrote it – this was in June of 2005 – was, of course, oil and gas and hydropower, and I would solicit input from the AP. It seems to me we need to add offshore wind into it, for sure, and we have the benefit – what?

MR. PUGLIESE: I was just going to say all of the alternative offshore energy.

DR. LANEY: Yes, any kind of offshore energy, hydrokinetics, as well as offshore wind. I recently saw some information on floating offshore wind, which was new to me. I didn't know they were considering floating facilities as opposed to pylon-based facilities; but apparently there is at least some indication that that is being considered.

Then the other big thing I think needs to be added to it – and again I'm willing to undertake that working with those of you who are the energy contacts in your respective agencies – the other big thing Roger and I were talking about a little bit is noise. There are noise effects clearly from seismic exploration, I guess we would call it, associated with locating oil and gas deposits.

That is something I am not sure we covered real well in this particular policy; but again I am more than willing to work on that and try and get a draft cranked out as quickly as I can. It was something I was supposed to do last year while I was detailed to ES from fisheries, because energy certainly was part of my responsibilities. If any of you have any comments – if you've looked at it recently, if you have any other thoughts about what we need to do to it in the way of revisions, please let me know.

MR. PUGLIESE: Just to pick up on your sound comment – Carter was going to jump in, because we were just discussing this – I think it is going to be really important. Everybody has traditionally in the past, really almost totally focused on marine mammals and sound. There was some really good work done, coordination and a workshop held about a year and a half ago by BOEM on sound and fish. I think it is going to be really important to integrate a lot of what began. That whole point there was to say what we know and what we don't know and what types of research needed to be accomplished. There were a number of presentations; a lot of things that we can look to, to draw on.

I think Carter was going to touch on the fact that they routinely are looking at this in some of the deliberations. I think we have the makings of some fairly significant things to add in, because I think that is way under-looked at by many of these different things, not only the significant like sonic testing, the seismic testing, but also persistent background sounds.

There are some things that could be very insidious in terms of preventing settlement of fish on reef systems, coral settlement; a lot of things that people don't put sound in that context. I think it is going to be important. I think I took some of the wind out of Carter's sail.

DR. KELLISON: Just following up on that; it might not be emerging anymore, but there is growing documentation of people showing that sound is important, particularly in coral reef environments for the settlement of fish. Previously people have shown that there are chemical cues emanating from certain habitats, maybe estuarine habitats that help guide settlement.

More recently people have been showing that sound is important. I just saw a paper in the Journal Plus One – the most recent suite of papers came out last night. Dave Eggleston is at NC State University. He and one of his students published a paper for the estuaries in North Carolina showing that sound is important for oyster settlement.

They can record sounds by oyster reefs versus barren habitat versus no sound at all. In the laboratory they can affect where larvae go in the water column based on playing a sound. I was

just following up on your comment. There is probably a ton that we don't know about how important sound is for different species in our region and in marine systems worldwide.

MR. WILBER: The question then is sound by itself a big enough issue to warrant its own policy statement or are we going to stuff it into a policy statement on energy where it could potentially get hidden or buried? All the examples that Todd just brought up are important examples that don't have anything to do with energy.

MR. PUGLIESE: I guess it could depending on if you are talking about nearshore turbines, nearshore wind farms and different things; but there are other considerations, vessel traffic and a number of things.

One of the things I was talking to Carter about that I think might be an opportunity is to begin to see if you can establish maybe what the sound system and the natural systems are; so you can know kind of what something that does not have either the background sounds or seismic testing or something, so you can know what that sound characteristic is.

That would be potentially important to do. To your point about whether it – you know, most of the contacts I've seen and at least the information I've seen has been in context of the alternative energy. It probably should be part, but it's significant enough it may be more expanded if you're covering all the way inshore and what the implications are inshore, because we definitely have not talked about what that is.

MR. WILBER: I'll put the question to Wilson; can you add and do justice to a section on sound inside the energy policy statement?

DR. LANEY: To that question, the only thing I was thinking of considering including in that would be sound issues related to alternative energy. I hadn't thought about the scope of what you just raised and that is certainly an important question. The example Todd gave us, like you said, is not related to energy. It is just related to noise in general.

I could envision a council policy that seeks to minimize noise in the estuarine or marine ecosystem, certainly within the council's jurisdiction. I am wondering if we know enough to begin to even draft that. As Roger said, we need some sort of an idea of what the natural baseline is.

Clearly, acoustic communication is important to a lot of estuarine and marine organisms. Any of us who have ever done any diving at all can attest to the fact that there are lots of natural noise going on down there from pistol shrimps and manta shrimps and all the sciaenids and all sorts of things.

But, yes, Mr. Chairman, I hadn't gotten beyond thinking about the impacts of exploration. Noise is generated by energy exploration. Now, clearly, when we start talking about some of the other policy statements – well, I guess we don't have one on transportation corridors, per se, but certainly one big one that came up in North Carolina that I know John is well aware of and Carter is probably aware of, too, is the new U.S. 17 bypass bridge.

You are well aware of that one, too, where we thought we had a project lined up to investigate the impacts of pile driving in that case, I think it was, on fishes like American shad. Parenthetically I'll just note that American shad is one of the most sensitive species we think as far as noise goes, because there is some indication that their lateral line system was designed to alert them to sonar emanations from dolphins, which are one of their principal predators.

It is speculated that may be why they are so sensitive to sound is to enable them to avoid predation. In that case I guess it would be real important for them to not have a lot of interfering noise out there so they can hear dolphin pings and get away from them; I don't know. I was not thinking of something that broad for this one, but I'll do whatever the AP thinks we ought to do on that one, because I think you make a good point.

MR. WILBER: I always vote for keeping it narrow.

AP MEMBER: I think there is enough new literature coming out and a lot more information every day that it probably warrants its own policy, separate from the energy. There are a lot of different noise issues that aren't related to energy that probably need to be tied up in it at well.

MR. WILBER: We would include things like pile driving and blasting, because it is really pressure waves not sound, per se, right?

AP MEMBER: It depends on the species; it can be both.

MS. DEATON: Also military activities; you know the bombing and the seismic work.

MR. WILBER: In my experience all the sound stuff that I've dealt with, which is more than five projects in the last couple of years, none of them were alternative energy projects. It was all some other generator of the sound.

AP MEMBER: And there is actually a study that just came out recently that links multibeam use to potential marine mammal stranding, so that is even coming under fire. At what level do you distinguish that from fish finders?

MR. WILBER: Well, the Office of Coast Survey has to do an EFH assessment for their survey work for that reason.

MS. HILFER: I just wondered what floating winds are. You mentioned floating winds.

DR. LANEY: The information that I saw on that was talking about using floating platforms for wind turbines. Now how that exactly would work, I'm not sure. I didn't go in and read the stuff. I just shot it off to the person who is now the regional energy coordinator and not me. Yes, how that would work, I'm not sure. I can pull that out, Susan, and shoot it around to the AP.

MS. HILFER: I was just curious whether it was the effect of the wind.

DR. LANEY: No, it was novel to me or news to me that they were considering floating platforms versus the traditional pylon; yes, fixed platform attached to the bottom. I didn't know you could do it. It seems like that kind of system would be rather inherently unstable if you have

a tall turbine up there on a floating platform. It looks like it would fall over every time the wind starts blowing.

MR. PUGLIESE: Just quickly to that; that is not a proposal, but they have actually created floating platforms in other countries. The issue is that by putting them on floating platforms, they can get into areas – before when they were talking alternative energy, they were talking about maybe 15 miles offshore.

When you look at floating platforms, they can go all the way in to the edge of the Gulf Stream and off into deep water. It expands the range of the capability, and the technology is already there in the international realm. Some of this stuff I have been trying to accumulate as we've been considering the energy policy, because it continues to change. The technologies are being pushed out, and a lot of other ones that have other sound capabilities.

MS. HILFER: They still have to anchor a float, right? That's a hell of an anchor.

MR. PUGLIESE: Oh, yes, and there are significant anchor systems.

MR. WILBER: Actually I think there is one already built in Maine. Almost everything wind-wise is happening first in Maine and then trickling down. It hits that magic border between Virginia and North Carolina where everything stops. All right, any further discussion on the energy policy statement? We'll look forward to a draft.

DR. LANEY: Right; and so did I hear we are going to go in and consider a separate one on this noise?

MR. WILBER: I think what the vibe is that you can cover noise in the energy policy statement to the extent it makes sense for energy policy but not apt to wander into other issues.

MR. PUGLIESE: That doesn't preclude us from including that type of information very specifically in the fishery ecosystem plan. I think what we need to do is to begin to pull together what is known and start to build that information up. Then once we begin to look at it, that may be enough to say, yes, we do.

While it is going to be dealt with under energy to cover everything from alternative to oil and gas; given all these other types of things that are impacting habitats and impacting species inshore, this may be enough to push it forward, to move into a full-blown policy at that point. That seems like that might be kind of an investigative track that you can take.

MR. WILBER: Okay, next up, Priscilla, with what has a very long title, but basically boils down to beach nourishment.

MS. WENDT: Roger, I just sent you an e-mail with the version that we revised at the last AP meeting, just for reference. I don't think that was on the flash drive you sent out.

MR. PUGLIESE: I think that is the original one I sent out.

MS. WENDT: You sent out the original one, yes, so just to show folks where we were with that. Yes, this policy statement, the original one preceded my tenure one on this AP. Apparently there was some consensus that we not use the term "beach nourishment" or beach "renourishment"; maybe because it sounded too benign or even beneficial?

I'm not sure what the problem was with using that terminology, but essentially that is pretty much all this policy statement addresses is beach nourishment and renourishment. When we looked at it last time we jumped right to the recommendations' section, and we went through that. We had it up on the screen, and we were just going through it. Everybody was making suggestions about how to modify the recommendations. You can see where we were with that if you can find it.

Roger, it is also called Attachment 7, but it says "Revised 1" at the end of the title of the document. I think there was also a question about whether this dredge-and-fill policy statement should be expanded to include other large coastal engineering activities like seawalls and groins and jetties and things of that nature or alternatively to go in a different direction and also include other kinds of dredging activities.

That occurred to me when Alice was making a presentation this morning on the in-stream flow policy statement; that there was a lot of information in there on dredging that is maybe more appropriately put in a separate policy statement. I think Pace made that comment that some of the dredging stuff was not that closely related to in-stream flow. It occurred to me that maybe we could incorporate it into this.

MR. WILBER: Again, I think if we expand these things too much, then the coverage becomes either too superficial to be of any value or the size of the document becomes too big to even produce or be that useful. It makes sense to me to keep it focused just on beach nourishment. Just sort of off the top of my brain here; of all the controversial dredging projects in the South Atlantic, after you take away the port expansions, the biggest piece that is left is the beach nourishment one. If we did an adequate job on beach nourishment, we will have accomplished something.

DR. LANEY: I wanted to speak to Priscilla's earlier comment about changing our terminology here. I've always hated that term, because the only thing that's nourished there is the tourist trade probably. The biological community is certainly not nourished. I've always called it beach fill, which I thought was more appropriate, but there may be a better term out there somewhere.

MR. PUGLIESE: Well, specifically, Wilson, that is why it is stated as beach dredging. It was one of these this is what it is, and there was a very strong opinion of changing it from nourishment to specifically this to make it clear that this is a dredging operation and filling operation, especially since it was a habitat-based policy. You can adjust as you see fit, but its origin really was kind of in line with what Wilson is saying.

MS. WENDT: Well, I don't object to that. I mean that makes sense, but I think most people are familiar with it as beach nourishment, beach renourishment; not as dredge and fill. I think in a way it just serves to confuse people. You can certainly explain that beach nourishment involves dredging and filling. But I don't know, I think there is some value, but I don't want to open a can of worms if has already been resolved.

MR. WILBER: I think if we called it beach dredging and filling, we certainly would be perceived at the outset as a group who has an axe to grind on the issue.

MR. GIBSON: This is the problem; it is an advertising term. Let me put it in the context of my charter business this year. They came to Martin County Beaches and St. Lucie County Beaches, they basically dredged and filled 23 miles of beaches in the springtime right at a turtle nesting season. They didn't put sand on the beach; they put mud on the beach.

I lost my entire spring for probably the rest of my charter fishing career I won't be able to site fish for cobia, tarpon and jacks; and God knows what the environmental issues are with that. I've seen this happen in many other stretches of the beach. Then they opened the Lake Okeechobee Locks on us from May a few days ago; meanwhile the seagrass in the northern part of the Indian River Lagoon complex collapses.

Nobody talks about this in terms of cumulative impacts of all these different stressors. It is time we need to call a spade a spade. If you are getting pressure from the people you report to, I can put twice as much pressure right back from many of my friends in South Carolina who will say the same thing.

We've talked about this. This is my third tenure on this AP. We've talked about this and talked about this and talked about this. There is no other intellectually honest way to describe this God awful practice better than a large-scale dredge-and-fill operation. That is my two cents. I feel better.

MR. WILBER: One of the recommendations of the policy statement would be to do a cumulative impact study of beach nourishment. Personally I think that would be a great research project to do. There has been somewhat of one done in Florida focusing on hard-bottom impacts. But for the areas outside of where hard-bottom impacts are typically associated with beach nourishment, there really hasn't been much of a cumulative study.

The Atlantic States Commission published the Green Report from, what, 2002. A lot has happened since them. It is still right now the best review of beach nourishment impacts, but it is 12 years later. It is time to update it. It would be nice to see what we can do to encourage that to happen.

MS. WENDT: That's fine; I'm not being pressured by anybody. It is just terminology that I just thought people were familiar with, but I understand where you're coming from, and that's fine. I don't know, Pace, you're on this, too; shall we just go through the recommendations again?

MR. WILBER: I think that might be useful. One of the things that – I mean I'm on the hook for some of this as well. I did engage folks who regularly review beach nourishment projects and came up with sort of a pretty exhaustive and slightly different way of listing all the impacts that are typically associated with a beach nourishment project. What we hadn't done was gone to the next step to talk about how to deal with those impacts, but just coming up with a list of things that need to be reviewed. That is some of the meat that would precede this recommendations' section.

MR. PUGLIESE: What if I put them in so you can read them, and then you can see what changes have been made or whatever. This way you'll have them clean.

MS. WENDT: Well, you all can read them; avoid impacts to SAV, hard bottom, corals and coral reef habitat that are shown to be avoidable through the alternative analysis and minimize those impacts that are not avoidable. That is the language that we incorporated. That just differed some from what was in there before in that we just said generally EFH and EFH-HAPCs. We were just a little more specific there about the kinds of habitats.

MR. WILBER: I have a question that I think the authors of this policy statement, including me, need some guidance from the AP on is that in this recommendation as well as the ones that follow; is all hard bottom treated equally? The situation we get all the time in Southeast Florida is that the hard bottom that is there now is there because erosion has uncovered it.

Therefore, it is perfectly reasonable to cover it up without avoidance minimization or mitigation. Particularly going back to the SAV discussion, they can produce a map that shows me that it became uncovered in the last ten years without any question.

MR. PUGLIESE: Pace, to that, I think this is an issue – that is a very specific issue relative to some of our habitats, but it is an issue that really changes a little bit of the perspective of some of the hard bottoms. We're working in a system that has ephemeral habitat; so what is the difference of that erosion creating that exposure and allowing settlement to the natural movement of thin-based sand, and you actually have a different moving footprint.

It is something that we really haven't done the investigation. We need to merge what we know about sand regimes and hard-bottom systems to come up with what really probably would be a more functional habitat, say, over 20, 30, 50 years. Because then it gives you that variation that within this area of shallow sand and hard-bottom system, this is going to be hard bottom. The functional footprint is really that. It gets in that same context of SAV.

I think what we can do to begin to open that discussion changes kind of the perspective of really the nature of what hard bottom is in the southeast is an ephemeral habitat that moves. It is significant where it is, but the footprint may be a lot larger with that thin, narrow sand area. I think what we can do to figure out how to focus that; and maybe some of the information systems – and truthfully some of the sand surveys, if we can begin to pull those together with our hard-bottom information, might be able to give us what that halo area may be.

MR. GIBSON: Sorry, if it seems like I've lost my objectivity on this, I'm so upset about this, but I've helped a lot of researchers and written a lot on this issue and been involved in a lot of litigation around it. To Roger's point and to Pace's point about the erosion exposing hard bottom, well, that is how the system is supposed to function.

We get big nor'easters in the spring; it uncovers hard-bottom habitat. Then we get a slug of larvae from God knows where in the Caribbean, and it has a place to settle. It is called the Disturbance Ecology 101. There is plenty of literature about that. The second thing about them pulling out maps and saying, well, the erosion is causing the hard bottom, well, Florida has been in violation of its own statutes that require sand bypassing at the inlets for over 40 years.

I could file a lawsuit tomorrow for them. They've never – there are only two inlets that have actually done what they are supposed to do. They never kept up the net transport and they are supposed to, so it is their own fault. Third, what is wrong with having more habitat? Fifth, fourth or fifth, wherever I am; the Indian River Lagoon and the Lake Worth Lagoon and Biscayne Bay; what did they look like 100 years ago?

They are thinking in linear ways when things have changed. Lake Worth Lagoon in 1878 or whatever was a freshwater body that occasionally got penetrated by waves. That argument is so shallow and superficial, it is typical of the farcical arguments that the Beach Dredge Lobby uses. I think we should proceed valiantly, so understanding more and identifying cumulative impacts and not focusing on how this stuff came to be, but finding out why it is important and how it functions, laying it out.

MS. DEATON: I was just going to add in North Carolina, especially the southern Long Bay area, it has a lot of the same type of thing, a very thin veneer of sand over hard bottom, and it becomes exposed and unexposed naturally and not because of erosion. Nobody has even brought that up; just storm events and stuff.

I think you have to consider all hard bottom of equal importance. But then if you were having some internal prioritization, I think you would say something that is higher relief and permanently exposed might have a higher priority for fish, because it can be used and accessed for fish and other services more.

But in terms of a policy here, I think all hard bottom should be you just say flat-out important. What you need to get is like that information. I think that is an information gap of like how valuable is hard bottom. How much is it used for different functions when it is intermittently exposed? It probably depends on what is colonized on it. I don't know; I don't think anything like that has been looked at.

MR. WILBER: There has been a review paper in southeast Florida that did its best to look at that. It might have even included some collection of new information, but it was largely trying to bring order to the chaotic nature of anecdotal information and reports. It makes a recommendation that this is a research area that needs to be further flushed out.

Basically what I'm kind of hearing, as one of the authors of this, is that the recommendation – I mean these recommendations to treat all hard bottom equally; those go back at least to the Green Report from the Atlantic States Commission. There seems to be every sentiment in this room, anyway, to continue to perpetuate that.

We won't talk about the EFH designations for hard bottom and the 55 different ways it says hard bottom. All right, that is the input. For those of you that are involved in the permitting side of the world, you know especially in southeast Florida this is a huge issue. We're ready to stand tall as Colleague Gibson has asked us to do.

MR. PUGLIESE: There is a comment I would like to make with regard to that change from where it was. One fact is we don't have our benthic ecologist on the AP anymore. I think one of the reasons you saw EFH in more generic terms was the fact that some of these – the benthic habitats beyond the hard structural habitats do serve as EFH for managed species.

I know why we had some of that in there. It was very specific to our former chairman and the fact that we do have a number of those and how important those may be in the nearshore zone and areas; so keeping it broader provided kind of the broadest context. These are probably the most significant that can be impacted, especially when you talk about a functional permitting activity. That is where you are really going to be looking at.

MR. GIBSON: How did that work, though, because like for shrimp and snapper grouper; unconsolidated sediments were EFH. How can you relate that to dredging and say avoid those areas? That is what they're dredging. I think you need some level of specificity here.

MR. PUGLIESE: Well, I think that was part of the problem was that the amount of information of understanding the use and probably more the use of the actual – from the fill side of it is where a lot of this discussion came up was the use of the nearshore bottoms and them getting covered up; not knowing what species are feeding, moving through those areas; surf zone species, prey species, migratory species, but definitely not nearly as quantifiable as these very specific structural habitats. I think there was that desire to kind of keep it broader on it. It does cause exactly that complication.

MR. ELLIS: Yes, and I guess that is what I had been sitting here wrestling with is do we stay broad like this or are there certain things that we could all agree could neck down on if we were specific; such as he was talking about the sand quality. He got mud on his beach. Other places in south Florida I think I saw recently, they were looking at bringing in some sort of glass sand or something; yes, various different sediment criteria that we need to be close to native sands that are on the beaches. We run into it all up and down the coast of it is more important to have something on the beach than to have something similar to what was on the beach before we started nourishing, whether that needs to really be brought out.

MR. GIBSON: To underscore that; they use this thing called the Dean Overfill Quotient after this fellow named Bob Dean, who is the godfather of all this dredging. His logic, and I use that term very loosely, is that, oh. it is not nearly as dense or as hard or as heavy or the same shape as what is on the beach; just put that amount more down and it will last that amount longer.

What happens is that the stuff just washes right off, remains suspended so a lot of it is really soft and fragile. He might have sieved it the right size, but the second it gets put and how long – one the University of Miami proved this – the second it hits the waves it explodes in the carbonate mud, and that is why I can't see my fish.

There was a recent paper out that Mickey Lacombe did in the context of the Indian River Lagoon about eyesight of the mangrove snappers and snook and trout, I think it was, and how important it is for those young animals to be able to see to actually be able to feed to survive. We're talking about pouring hundreds of millions of yards of mud into prime settling areas. I just want to thank you, John, for bringing that up. The state of Florida recently gutted all its, quote, sand rules in their infinite wisdom, because we kept winning lawsuits over it.

MS. WENDT: That brings up another issue that I don't think is specifically addressed here is what are beach compatible sands. South Carolina has some guidance. I forget whether it is 85 or 90 percent coarse sand or something. I don't know whether this policy statement should specifically address compatibility of sediments.

MR. WILBER: There is the general statement that every beach nourishment review says, which is compatible sands have less impact to non-compatible sands. But when you start trying to determine exactly what compatibility means, you get to the point where you have no clue, really, as to what the answer is.

Because, if you start looking at the mineralogy of the sediments, if you look at the grain size distribution, if you look at the math that is behind characterizing grain-size distributions, then that math always assumes a normal distribution and you never have a normal distribution of grain-size sediments.

You get into the colors, you get into hardness, and you get into a whole suite of issues. What you end up with is ten differences between the fill material and the beach material. You have really no clue as to whether any of those differences and physical properties mean anything for the kinds of animals that will live in the sediment and the kinds of fish that will feed on those animals. The concept is there and some of the math; thankful to Professor Dean is there, but when you kind of look at it any deeper than that, the whole thing kind of just turns into a chaotic mess, and without enough research really to kind of start to tease apart all those little variables.

MR. GIBSON: We're writing policy here; we're not rulemaking. Could we just say that the mineralogy – just run through the laundry list of things that go through should have plausible similarities to the native beach sand; the grain size, the hardness, the level of fines and that sort of thing? Can we just list those?

MR. WILBER: Yes, I think we can definitely list them. What I don't think we can do is go the next step and say how far a departure there is about those, but we can definitely list them.

MR. PUGLIESE: I'll pick that up and we can add that as a very specific recommendation, if that seems a problem. That is kind of getting to exactly your concern and some of the issues without taking it to the step beyond that you're concerned with. The way you stated it kind of is very concise. That will get to the point and we can integrate it.

DR. LANEY: Relative to literature that gets to the continued functionality of sediments deposited in association with a beach-filling project, Bob Dolan at the University of Virginia and Dennis Stewart, who is our refuge biologist at Alligator River have published I think about four or five papers now on the impacts of long-term projects that are conducted on Pea Island by NCDOT in association with maintaining the terminal groin at Oregon Inlet.

They've published a fair number of papers of methods for deposition that reduce the impacts on the in fauna, anyway, at least on amrita and donax, so maybe that is literature that we can cite. It has been a while since I reviewed those papers, so I don't know whether they address the kind of criteria that you were talking about in terms of matching sediments or not or whether they just looked at the way you place the material on the beach, trying to mimic the natural cuspate development of the shoreline and so forth and so on. But it might be worthwhile for us to pull those papers and send them around to everybody and let them take a look at them.

MR. WILBER: Anything more to cover on this one?

MS. WENDT: No, I don't think so. I don't have any other suggestions for that particular one. South Carolina has done long-term studies on beach nourishment in terms of the benthic fauna from the high intertidal zone down in to the squash zone and looking at the colonization rates. That is probably some literature.

A lot of it is old, but there are still ongoing studies that we're engaged in, not me personally but the South Carolina DNR; looking at recovery of benthic infauna in the borrow sites off Hilton Head and on the beach at Hilton Head as well. Yes, anymore recent references that people think should be included to provide background information or guidance on sediment compatibility or anything along those lines would be appreciated. You can just send literature citations to me or Pace. That would be helpful.

DR. LANEY: Priscilla, Dr. Pete Peterson at Institute of Marine Sciences at Chapel Hill has done a lot of work, too, on Bogue Banks. John where else besides; just Bogue Banks mostly?

MR. ELLIS: Topsail.

DR. LANEY: Yes, and some on Topsail Island, too. We'll try and get that. Some of that is in Gray Lit, but we'll try and get that to you.

MS. WENDT: That would be great. Any of the Gray Literature that we don't likely have access to very easily, it would be helpful if you could actually send those.

MS. DEATON: Priscilla, I can get you a lot of that from – we've compiled that for the CHIP. But I think the important thing is to know, you want to be compatible but you don't want too much fines or coarse; and that is one thing North Carolina implemented in sediment criteria, so both ends as well as the other factors you mentioned.

MS. WENDT: I really like that matrix that you did showing the different states and what their policies were with respect to SAV. I wonder if something like that might not be useful to include for these beach dredge-and-fill operations, too. If they're specific policies that the states follow, it would be helpful to have that.

All right, so the second recommendation; project should require the preparation of an environmental assessment that provides a full range of alternatives along with assessments of the relative impacts of each alternative on SAV, hard bottom, corals, coral reef habitat; using ecologically conservative assumptions including worse case scenarios.

That was changed. Initially it said projects requiring expanded EFH consultation should provide detailed analyses of possible impacts on each type of EFH. Essentially I think we just replaced that language with the preparation of an environmental assessment. Does anybody have any comment on that particular policy statement?

MR. WILBER: I like it; it is much more informative than expanded EFH consultation.

AP MEMBER: I would change "should" to "shall".

MR. WILBER: When we write EFH conservation recommendations, we do use shall instead of should. That is when you are talking to the person who is going to do the action. In this kind of a policy recommendation, the audience of the policy is not really the person taking the action; so getting in your face with a "shall" may not be the right thing to do here.

MS. WENDT: The third one; projects should avoid and minimize impacts to the maximum extent practicable. Compensatory mitigation should include compensation for all reasonably predictable direct, indirect and cumulative impacts to SAV, blah, blah, blah; taking into account uncertainty about these effects.

Mitigation should be local, up front and in kind and should be adequately monitored. I'm trying to see what we changed there. I think we just added more language regarding avoidance and minimization. The original policy statement said the project should be conditioned on the avoidance as if it is a permit condition. These projects aren't always permitted in the usual regulatory sense of the word.

MR. WILBER: The question, just to poll the group's thoughts, but where we talk about in-kind mitigation, the issue with that is low-relief hard bottom versus something that has more relief than you would call low-relief hard bottom. There is mounting evidence that low-relief hard bottom has different ecological function than more permanent hard bottom with a relief of a meter or more depth along the beach.

When you tell folks they need to mitigate for the impact to low-relief hard bottom and usually some discussion of the ephemeral nature of that habitat has been involved; you are eventually being told you're telling people to build a mitigation reef that is going to be covered with sand for some large period of time in the coming decades; and is that a good use of taxpayer dollars to build a reef that will be covered with sand, when instead you can go another 1,000 or 2,000 feet offshore into deeper water with less sediment moving around and build a structure that has more relief and have an artificial reef that if it is maintained properly is not going to be covered with sand. But now you're providing for a different set of ecological functions, a different kind of habitat. Does anybody have any thoughts on that dilemma;, and speak slowly so I can write it all down for my next comment letter?

MS. DEATON: I mean, mitigation is supposed to maintain the function; but if you go out of kind – well, first of all, so a higher relief hard bottom is out of kind or you could say hard bottom is hard bottom and it is all in kind. But if you are going to go to a different function, you can get more of it, higher ratio.

DR. LANEY: Well, the thought occurs to me what do we do when we're talking wetland mitigation? We require post construction monitoring and replanting. If you defined here up front the area of low-relief hard bottom that you anticipate would be covered up by the project; what would be wrong with requiring mitigation, but instead of mitigation being limited temporally, requiring some sort of post-mitigation construction monitoring this as if it is covered up within a certain period of time, you have to re-establish it.

I don't know, maybe that is a concept. I like the concept of post-construction mitigation monitoring for wetland areas. Why couldn't we apply that same sort of thing to these shallow hard-bottom areas? I don't know, maybe would that work or not?

MR. WILBER: Well, they already do that. Most of the artificial reefs that have been put out for mitigation have been monitored for some period of time and some conclusion is drawn from that. The argument you'll get with reefs is that they are going to focus on the low percent cover of animals on the nearshore low-relief hard bottom.

They are going to focus on the much higher percent cover with reef organisms on the offshore high-relief mitigation reef. They are going to say, yes, it is out of kind; we're actually replacing this low-quality habitat with a much better quality habitat; and so rather than a ratio that is greater than one-to-one, it is a ratio of less than one-to-one.

The bottom line is the more information that talks about the unique fishery value of low-relief hard bottoms is what we really need to kind of stick this. This is where I'm looking at my colleague from the Science Center like whatever we can do to help foster those kinds of research projects that focus on the unique nature of these low-relief hard bottom communities would be a good recommendation to have.

MR. PUGLIESE: It is pretty key, because when we start talking about some of those nearshore low-relief areas, you're talking about some of the areas that are stepping stones for the emigration of some of our snapper grouper species. There actually were some proposals to begin to look at that in detail that I don't think ever got funded.

But I think we really have to have that type of information, so that you can see, hey, that is the settlement where gag may be moving offshore or black sea bass as it's coming through or in south Florida some of the snapper species are using that. That is really what drove a lot of our discussions and policy on this was a lot of that really significant.

The work that Ken Lindeman did on snappers is probably the most detailed work on the importance of those nearshore to snappers and grunts I guess that were really key components. The other regions we don't have nearly that to show those species that they're moving offshore, but that is pretty critical.

MS. WENDT: I guess my question would be does any of that change the recommendation or is it adequate the way it is?

MR. WILBER: I think it is adequate the way it is. It might speak to a sub-bullet or an additional recommendation to encourage filling the research gap.

MR. ELLIS: Pace, going back to the previous question and talking about mitigation in contact mitigation for hard bottoms; have we been missing – as you move further north in Florida and not doing more for the swash zone; I guess there has been a little bit of work in growing coccinea or mole crabs and that sort of thing and trying to maybe stock those I guess to offset the short-term loss or the immediate losses. But I don't know; is there other things that we could be doing or should we be pushing more of that, do you think?

MR. WILBER: What John is referring to for those of you not from North Carolina is that they've actually had a couple of beach nourishment projects where part of the mitigation was to grow mole crabs and coccinea clams inside a hatchery-type kind of environment and then throw

them out there on the beach to kind of seed the new fill material with these large mackerel invertebrates that are maybe the engineer species or keystone species within that community.

To my knowledge it is the only place in the world that does stuff like that. Now the value of these efforts, I don't know – I know there has been monitoring of these efforts. Maybe if I dig deeper into the files in Beaufort, I'll actually find those monitoring reports.

MR. ELLIS: I can't really say; I haven't looked at them. It is just the frequency of occurrences. You might have the Corps come in and do it, but they can get FEMA money from then on, because some beaches are getting hit every year, it seems like. There is no ability of these things to really recolonize or repopulate.

MR. WILBER: It is a pretty interesting idea. I think I would love to go through those monitoring reports and see what they found, because I think some of those studies are like more than five years running. They weren't one-shot deals. They did this annually for a good number of years.

AP MEMBER: Do you know what the driver for that was; was it state driven?

MS. DEATON: I think it was a permit condition by a reviewer that they do mitigation. Then there was a guy that was doing it as research anyhow, Skip Kemp. He is the one that has been doing it, so I think he had already figured out how to do it. It got suggested and it is being done.

MR. GEER: Did they stock annually or just the one time and they just tracked it? No one knows?

MR. WILBER: All I know is they did it annually for several years.

MR. ELLIS: I don't think they had that great a production is my understanding in the hatchery, but who knows.

MS. DEATON: One of the other ideas that came up I think at the North Topsail Beach Nourishment Project was to just go in there and remove them from the beach that is going to get nourished and take those and hold them temporarily and then put them back out, just to sort of speed up the recovery.

DR. KELLISON: Many, many, many years ago, when I was in graduate school; I'm wondering if these were the studies that you are referring to, Priscilla. There was a graduate student who worked with Fred Holland named Austin, and I can't remember his last name, but he was looking at like recovery, like recolonization after dredge and fill.

MS. WENDT: There have been a number of people at South Carolina DNR over the years and Fred Holland was among them.

DR. KELLISON: My recollection of seeing some of his presentations was that it was like pretty dramatically fast in terms of the replacement.

MS. WENDT: The re-colonization by benthic?

DR. KELLISON: Yes.

MS. WENDT: I think you're right; I think that is pretty much what –

DR. KELLISON: Like in a scale of one to two weeks, I seem to remember for a lot of species, which seems –

MS. WENDT: As I recall the bigger, more longer-lasting impacts were actually in the borrow areas. That was highly dependent on how deep they dredged the sand. I think Denise Sanger, who worked with Fred Holland as well on this – and 20 years ago I was working with Bob Van Dolah on beach renourishment studies up in Myrtle Beach and other places in the Grand Strand.

Yes, I think our informal recommendation has been to not dredge any deeper than like ten feet or something like that. Unfortunately, the shallower you dredge, the more area you have to dredge. What we found is that if you dredge too deeply, these borrow areas just fill in with soft sediments and never really recover. It just changes the habitat type. Yes, in the intertidal zone and the nearshore zone; my recollection is that the benthic organisms recolonize pretty quickly. Your mitigation might be better spent somewhere else.

MS. DEATON: Also, I think it depends on the timing of when you do the nourishment greatly affects how fast they come back and recolonize and also how long the beach is that you renourish and then how often you renourish. Last year they did something they have never done before; they allowed a big nourishment project in the middle of the summer. That would be the worst scenario for recovery. That would increase your time. I think with the increasing pressure on nourishment projects; in North Carolina I think somebody else mentioned the sediment criteria are under pressure, too. I think it is a good idea to have some kind of placeholder about mitigation where necessary.

MS. WENDT: Well, mitigation is mentioned here, but do you think it needs to be more specific than that? I don't know, but, yes, definitely something about mitigation should be in there. Moving on to the next one; is that Number 4? The project should include baseline and project-related monitoring adequate to document pre-project conditions and impacts of the projects on benthic in fauna, SAV, hard-bottom corals and coral reef habitat assessments.

The recovery should be based on comparisons of abundance, biomass and species diversity in project and reference areas before and after dredge-and-fill operations. All assessments should be based upon the best available science. That is just a lot of language that was meant to be more specific than what was already in there.

There were no recommendations regarding what monitoring should include. I think there was some thought that this would form the basic outline of the kind of monitoring that would be required and the kind of metrics that would need to be evaluated. Are there any comments on that one?

DR. LANEY: Not so much a comment on this one specifically, but it occurs to me as we're talking about mitigation in the previous one and now we're sort of addressing it again here; to the extent possible, if we could have – and I think we do in some of the other statements we've looked at.

If we could have a concise statement of what we perceive the ecosystem functions are for each one of these affected systems and then how those should be mitigated; maybe that is something that we can try and keep in mind as we go through each one of these statements. If we achieve that, I think we would have done a lot.

If we can provide research to document the necessity for the mitigation requirements and how successful they are, we also might be able to rank them in terms of priority, i.e. is it better to let the beach recover naturally? Is it better to try and stock it with either salvaged organisms or aquacultured organisms or what? I know we probably don't know enough to do that in this particular system, but maybe if we keep that in mind as a general concept that would be useful.

MR. MIKELL: I want to go back to the last point also on the mitigation should be local. First off, would you define local?

MR. GEER: It is typically by county, I think.

MS. WENDT: Or watershed or ecological system. I think it can mean different things in different context. I don't know, as close as possible I think was the idea.

MR. WILBER: I mean in a practical sense the watershed discussion doesn't apply too much on the coast itself. If you are talking about an estuarine project, yes, it still applies; but like a beach nourishment project, in practical terms it turns into any place in the same county, because usually the county is contributing at least partially the funding for the mitigation project itself, and the county does not want to see its funds spent on an artificial reef or something in somebody else's county. In effect it becomes a political division kind of discussion.

MS. WENDT: Yes, but, for instance, on Folly Beach the municipality is actually contributing a good bit, too. Do you specify – I mean I don't think the folks on Folly Beach would be too happy if you mitigated by putting –

MR. WILBER: All right, so it is a political-driven thing.

MR. PUGLIESE: That was a question I was going to ask is having local or removing it, because I was going to say, well, should we go down and specifically say by county. But if there is a value to keeping this that gives you some flexibility to be finer at the county level, then that is probably still better to keep it this way.

MS. WENDT: I don't know, Jenks; do you feel strongly about that? My feeling is that it is better to allow that flexibility, because it is probably different for different projects.

MR. MIKELL: I'm sure it is, just the word local – and as far as looking at places like Folly Beach in South Carolina or Edisto Island or even Hilton Head; the municipalities are not going to do – they want to make sure that the beach is there so their tourists can come. They could care less about the fish out there or the habitat. Colleton County, which is where Edisto Beach is, that is the least of their concerns. I just think it needs to have a little teeth in it. I don't know where it comes from, and maybe just take the "local" out. It should be up front and in kind.

MS. WENDT: Most of the mitigation I've seen on Folly Beach has less to do with fish habitat than it does with bird habitat. They have to make sure that Bird Key and those other basically sandbars out there, that they are maintained, that they are not washed away.

MR. GEER: Could you solve that by just simply saying mitigation should be local, parentheses, municipality, county, et cetera?

DR. GALVEZ: Actually in Florida we have a sand rule. The state had that rule for all these dredging or renourishment projects; but that rule is also related to marine turtles that are protected as endangered species. I think at the county they have something to say, but at the end the state wanted to make that determination.

Actually, a lot of cases the Fish and Wildlife Service will also give their two cents about the quality of the sand. We have an area that we advocate to do that type of work. I know in Florida in certain cases, actually close to Martin County there were times where the quality of the sand was not the adequate one, because they were bringing in sand from like 40 miles close to Lake Okeechobee; and the Fish and Wildlife Service made them remove that sand and put a new one, or a better quality one.

MR. WILBER: We need to tweak what we mean by "local" in the next draft. Are we ready to move on to the next one, which I believe is Number 5, Roger? We were at four and then we backtracked to three.

MS. WENDT: Right, five is the last one. This is one that addresses cumulative impacts, but it is cumulative impacts of other beach dredge-and-fill projects, not cumulative impacts of every possible insult to the environment. I think that would be a little difficult to evaluate. That is essentially – I think there wasn't much in the way of a change to that recommendation.

MR. WILBER: All right, so we've gotten some feedback. Some folks have said they would send us some literature, particularly some of this Gray literature, maybe access to the CHIP stuff. We'll kind of chew on it and crank out the next version with the hope that its next pass to the AP will be its last pass to the AP, and then it will be headed to the council meeting. That is some time in the spring. Okay, so the next policy statement on the list – and I expect these would be fairly brief updates, at least mine, anyway – the artificial reef policy statement.

MR. GEER: This will be very brief, because I didn't know about this. I didn't know about this until I read the agenda so I was like, oh, okay. Pretty much all I did so far was just go to different states and their websites and figure out what kind of artificial reefs they have, where they are. All of them have programs. Some of them have inshore reefs.

North Carolina has 40 offshore, 7 inshore. South Carolina has 4 inshore and 52 offshore. Georgia has 31 offshore, 15 inshore. Eight of those offshore ones are going to be the Navy Towers that we will soon be the proud owners of once they get dropped that have been decommissioned. Florida is a lot different.

Florida basically considers each individual deployment an artificial reef in itself, so they do it by county, and it is like 832 different deployments; whereas, South Carolina, Georgia and North Carolina, a reef is a defined area with different deployments inside of it. One of our reefs – it is

a 2 by 2 grid – there might be 10 to 15, 20 different deployments in there. All of them have on their websites; they have the maps. Some of them have interactive maps.

They all have a list of materials and what's down there, when it was put down there, coordinates associated with it. Some of them you can download and put it right into your GPS, which is for fishermen. Some of them have their history up there. Management plans; it seems like North Carolina has one from 1988, and I didn't see anything further updated than that. I almost think there was in North Carolina.

MS. DEATON: What was that again?

MR. GEER: A management plan for artificial reefs.

MS. DEATON: We've done this a bunch of different times; that's correct.

MR. GEER: I didn't see a management plan from South Carolina; do you know if there is one that exists?

MS. WENDT: I don't know; I can find out.

MR. GEER: I couldn't find one. Georgia, we don't have one. We've been trying to work on one. We finally got a new habitat biologist, so she'll be working on it. Florida has that plus a strategic plan, which could be a really good guide for developing this, because it already has a set of goals and what to do. There are some people who don't consider these things as habitat, because fish aren't living their whole life cycle on there. There are some people who think that way, so is it essential fish habitat is a major question?

MR. WILBER: It is designated as EFH.

MR. PUGLIESE: It is essential fish habitat and the special management zones, which is the designated areas off of a number of the states, are essential fish habitat-habitat areas of particular concern.

MR. GIBSON: I don't know if you knew this in looking or found out anything about it. When we were doing the work off of Jacksonville, the city of Jacksonville itself has several areas permitted for artificial reef development along the Continental Shelf that are not associated with the state, but are directly permitted to the city of Jacksonville. I didn't know if that would count under what you looked at or not or be covered by it.

MR. GEER: I believe it is. I think in Florida the counties do a lot of the work and FWC contracts out with them. That is how I understand it. Most of the work is done – they have grants and that is how they get most of the work done. In Georgia and South Carolina, a lot of ours are not in the state waters, they are in federal waters.

MR. GIBSON: I just didn't know, because I don't think they are part of the actual state artificial reef program; if they would be covered under those numbers, because they belong to the city of Jacksonville; these permitted areas do where they are developing the artificial reefs.

MR. GEER: Okay, I'll have to look into those. I don't know if there are any other ones in Florida that way.

DR. LANEY: With regard to South Carolina – and, Priscilla, correct me if I misspeak, but I think Mel Bell has been very articulate about the benefits of reefs during the council meetings. I guess South Carolina has actually constructed some sort of on the QT that are not widely publicized that were made more for experimental purposes and to increase production.

Mel has shown us the video from some of those sites, and they do appear to be very productive. One other thing, I mentioned to some of you informally earlier is the term "engineered reef" was introduced to me last week in some e-mail correspondence. I've been mulling over whether or not that might be a better term to use than artificial; because with regard to an artificial reef, I guess the principal thing that is artificial about it is the material used.

Most of the rest of it eventually becomes natural. You could even use natural material to make an artificial reef. I was wondering what the AP thought about using an alternative term there or maybe using both terms, I don't know. But for some reason it resonated with me to hear the term "engineered reef", because most states have a requirement that certainly the site itself be engineered in terms of where you are going to place the material and how much relief it is going to have and so forth and so on. I just mention it because it was new to me.

MR. GEER: Well, Wilson, we'll probably have to refrain from that for the simple fact that we'll have to change all our acronyms and that will take a few years to do. Yes, that is about all I have at this point. We can look at some of the management practices. I think all states have what they call an Area X where they put material down and then they don't publicize it. The fishermen find it eventually, but this way they can go out and do some research projects, look at fouling and look at species diversity.

MR. WILBER: Pat, so the offshore stuff – and I will include inshore, too, if it is within the ocean as opposed to the estuary – my understanding is basically all that stuff is covered under other strategic plans and policy statements for artificial reefs. There are federal guidelines, there are state guidelines, some states have strategic plans; all that stuff is really largely kind of dealt with.

There is some value to basically pulling together a concise summary of all that stuff, but I don't think there is any feeling that any of that stuff is wrong and needs to be fixed. But the one question I do have is I know in Georgia you have an estuarine artificial reef program. We've seen the emergence of one in Florida in the St. Johns River, and there are all kinds of weird things in Albemarle/Pamlico Sound that I think are not necessarily called artificial reefs, but are serving as artificial reefs. I don't think South Carolina has any estuarine artificial reefs.

MS. WENDT: Well, we have those oyster castles. I don't know exactly where they are.

MR. WILBER: Okay, so the oyster castles, which are very new in South Carolina; they have not been around for long; but at least they've got some. But all of those activities are kind of outside the umbrella of what is covered by these broader offshore artificial reef plans, recommendations, whatever you want to call them. My question is, is there value to coming up with

recommendations for these estuarine artificial reefs? If there is a gap out there that needs to be filled, that would be the gap.

DR. LANEY: This may have already been covered, but I know in some cases the materials that have been proposed for some of these estuarine areas were not really very appropriate, such as the one proposed in North Carolina. Anne and John help me out here; there was one proposed that was going to use shredded tire materials; do you remember that one? I think it got denied.

But then there have been a number of them that used tire units in Chesapeake Bay, but they were very different from the tire units used offshore North Carolina, which wound up on the beach for the most part. Those in Chesapeake Bay employed steel pipes and concrete anchors. Is that the kind of thing you were thinking about as recommendations with regard to construction and siting or what?

MR. WILBER: The material stuff is kind of a no-brainer, because you would use the same materials for offshore stuff that would apply to inshore stuff. I think more it is a siting issue. Do you want to make recommendations about appropriate locations to put estuarine artificial reefs?

MR. GEER: I don't think it's a bad idea; because with a lot of the fisheries closures offshore, fuel costs being what they are and aging demographics; a lot of people are not fishing offshore as much, at least in Georgia. Bringing some of those artificial reefs or having more of them closer to shore seems to be in vogue right now. We were on the verge of discontinuing our inshore artificial reef program until about a year ago when we met with the CCA and they brought up those concerns to us so we said, all right, well, if you guys want us to continue we'll go ahead. We haven't put any materials on some of those for 20 years. Some of them look great; some of them have totally subsided. But we are just finishing up the permitting process to get them all re-permitted; so that will give us a lot more options in each county. You can also take material as it becomes available. You don't want to have to track material from Savannah down to St. Mary's because there is a reef down there you want to put it on; but if there is an inshore reef right near there, you can put it right on site. I think it should be included as well.

MR. PUGLIESE: In the vein of some of the discussions we had before about inshore and offshore issues; I think this one really is one of the things that is not included in the initial discussions and it seems the most appropriate to have the entire suite of artificial reefs. Really, what the intent I think here was to really bring all of it forward, the understanding of the value of artificial reefs, their designations, their importance as essential habitat, and their operation research associated; getting to some of how you do have – where it has been done, how you are getting population and expansion.

It even goes further, because the council has artificial reefs in their MPAs of which they've finally got the Charleston Artificial Reef, one of the Deepwater MPAs, it has material is going to be placed in it and research associated would map it and characterize it. Getting that whole gamut of the functionality, the research associated and getting even the estuarine component, considering so many of the habitats we have are connected, I think that seems to be a very logical progression of development of it.

AP MEMBER: I just had a quick question that kind of tied into the whole artificial reef thing. Under essential fish habitat, artificial reefs are defined as those that were intentionally placed

there to function as artificial reefs or essential fish habitat; but different things like shipwrecks are not included as EFH in the South Atlantic.

MR. PUGLIESE: If you take the definition of live rock to its extreme in the southeast and the way the live hard-bottom FMP is, I think almost any structural that has attached organisms can serve as essential fish habitat. If it is, it is probably covered to some degree.

AP MEMBER: The way I remember it from reading those documents is the live hard bottom was more natural hard-bottom areas; whereas when you were talking about artificial substrates, it was really limited to just those materials that were placed there for the specific purpose of being an artificial reef, which excludes like literally the hundreds of shipwrecks off the coast of North Carolina that are functioning for that purpose. None of those would be considered at this time as EFH.

MS. DEATON: I thought that the shipwrecks are considered artificial reefs, because they are marked on the charts.

AP MEMBER: Not according to the language – not according to the essential fish habitat language that the South Atlantic developed.

MR. WILBER: Okay; so if something is put on the bottom as part of an artificial reef program and has gone through some kind of NEPA process related to the placement of that thing on the bottom, it is an artificial reef. If it just happens to be out there because it was placed without a permit by a private individual or God only knows how it got out there, it may be in every other aspect an artificial reef, but it is not considered an artificial reef in the administration of the EFH program.

But that caveat aside, it is most likely that organisms that have colonized that artificial substrate, those organisms themselves are EFH. Like if corals come in and colonize some pile of cinderblocks that was put out there by a private individual without a permit; those corals are an HAPC. The substrate they're attached to is not.

Now, again, I think we're kind of – I mean what is the management relevance of the question? I think we're kind of getting into, yes, these are weird situations where everything is not neat and tidy, but the management relevance is pretty low.

MR. PUGLIESE: But I think it is important for clarification that gets cleared up in it. One of the other avenues is I think maybe the bottom mapping workgroup can specifically do this; because as we're compiling all the information on hard bottom, on artificial reefs and other things, I think we included wreck distributions to some degree.

What we want to make sure of is that we adequately cover this if that is ultimately – and Pace is right, really, when you get any attachment of soft corals and systems over there; you already are pulling those in. If nothing else, the cover on the systems has essential fish habitat. We need to further clarify that I think in the way the wording is.

We have the perfect opportunity with some of the deliberations of that group, plus the move into the next generation of the FEP revisions of those descriptions and characterizations and compiling what we have in terms of the actual distributional information of those.

MR. WILBER: Okay, are we done with this one? All right, the restoration policy statement; I also wasn't aware that I was in charge of this one. I am sure it is just a matter of me forgetting it. Anyway, we have begun kind of compiling how restoration proceeds in each of the four states in the South Atlantic.

Basically in theory there is a federal policy for restoration/mitigation type activities, and it should follow some kind of federal rules. But in practice, each core district follows the practice that is relevant to its individual state. Whether it is done on the strict acre-for-acre kind of basis or whether it is done through some kind of functional assessment kind of basis; that kind of varies as you move from one state to the other, and hence from one core district to the other.

All I've done at this point really is to compile that information and have not really had an opportunity to meet with a group to try and digest it all and find the thread that kind of winds through it. That is probably the policy statement we have made the least progress on. But the general rule that I've seen is that Florida is invested in looking at mitigation/restoration through functional assessments and has gotten even to the point of codifying it in state regulation as to exactly how that would be done.

North Carolina; my perception is still basically that it is kind of an acre-based kind of economy up there. South Carolina and Georgia have these functional assessment methodologies that – well, the one in Georgia I don't' think has actually been approved for its use in the coastal zone, but actually gets used even though it hasn't been officially approved.

In South Carolina we have what everybody calls the SOP to do that kind of functional-based assessment. Hopefully, at the next time we'll have this all kind of laid out in a nice kind of concise tabular kind of format and can compare the pros and cons of each. All right, so we didn't really achieve our goal of getting out really early, but we did get out nine minutes early, so hopefully that will count. Is there anything you want to say before tomorrow, Roger?

MR. PUGLIESE: Yes, tomorrow is going to be a combination of kind of open discussion sessions with very specifically the training sessions. We're going to break up into two groups. The training area can accommodate I think 13 individuals. What we want to do is to have the first group be able to go directly to – we'll all meet here and then we can go from here; but then the actual training has all the computer setups.

Tina is getting that all tweaked and make sure that we're already to run. The idea there is you're going to have access to and be able to preview things such as the Atlas, the digital dashboard and the Cloud-Based Ecospecies System. Tina, Dave Reed and Cathleen O'Keefe; the head of the GIS system, are going to be all involved in that.

While the one group is moving forward, the other group we're going to begin that discussion about the next generation of the FEP. We've already been talking about pieces and parts, and we want to kind of bring the discussion to kind of an initial direction on where we're going, some

timing issues, and then some of the envisioned new components that we really would like to see. I've already touched on some of those.

Then really get into just open discussion about participation, involvement, maybe key individuals that should be involved in subsections, et cetera. It just opens the door and sets the stage for the discussion to move into the future. The first thing, though, will be the election of the Chair. I think Pace has already indicated – I think the idea of working with and rotating through the individual state sub-panel chairs may be a really good functional aspect, because we're going to be working especially with moving forward with some of the policies.

On the move toward the FEP, I think the Chairs in general will probably coordinate directly with me and then specifically the individual that is the overall Chair; we're going to be working closer on some of these. That may be an avenue that is something good to initiate just because of some of the direct connection to the state activities and the council activities.

With that, that is all I've got to say. I really appreciate everybody's patience and input. You provide a lot of input and provide a lot of guidance to move all of these policies forward and set the stage for some really fairly significant new ones that are going to be developed as we move forward. Thank you and see you all in the morning. Pace, anything else? If not, we're adjourned.

(Whereupon, the meeting was recessed at 4:55 o'clock p.m., November 5, 2013.)

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