SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

HABITAT PROTECTION AND ECOSYSTEM-BASED MANAGEMENT COMMITTEE

Marina Inn at Grande Dunes
Myrtle Beach, SC

September 12, 2016

SUMMARY MINUTES

Habitat Protection and Ecosystem-Based Management Committee:

Doug Haymans, Co-Chair
Dr. Wilson Laney, Co-Chair
Mel Bell
Chester Brewer
Jessica McCawley
Charlie Phillips
LTJG Amy Hockenberry

Council Members:

Dr. Michelle Duval
Anna Beckwith
Zack Bowen
Mark Brown
Chris Conklin
Tim Griner
Ben Hartig

Council Staff:

Gregg Waugh
John Carmichael
Dr. Brian Cheuvront
Myra Brouwer
Chip Collier
Mike Collins
Dr. Mike Errigo
John Hadley
Kim Iverson
Dr. Kari MacLauchlin
Julie O'Dell
Roger Pugliese
Amber Von Harten

Observers/Participants:

Erika Burgess
Nik Mehta
Rick DeVictor
Dr. Jack McGovern
Jocelyn D'Ambrosio
Monica Smit-Brunello
Dr. Marcel Reichert
Dewey Hemilright

Other observers attached

The Habitat Protection and Ecosystem-Based Management Committee of the South Atlantic Fishery Management Council convened at the Mariana Inn at Grande Dunes, Myrtle Beach, South Carolina, Monday afternoon, September 12, 2016, and was called to order by Chairman Doug Haymans.

MR. HAYMANS: We will call the Habitat Protection and Ecosystem-Based Management Committee to order. A reminder of the committee members, it's myself, Wilson Laney as Co-Chair of this, Mel Bell, Chester Brewer, Tim Griner, Jessica McCawley, Charlie Phillips, Lieutenant Hockenberry, and Robert is not here.

The first order of business is Approval of the Agenda. I have one addition under Other Business, and that's a Lenfest Update. Are there any other additions to the agenda? Seeing none, any objection? Seeing none, the agenda is approved. Secondly is the Approval of the Minutes that were provided to you in your meeting materials. I assume that everyone had the luxury of time to read through them all, and are there any corrections to the minutes?

DR. LANEY: I won't bother to put them on the record. They're just minor editorial corrections, and I will provide those to whomever I need to provide them to. To Mike? Got it.

MR. HAYMANS: Thank you, Wilson. With those minor editorial comments provided, is there any additional comments or discussion on the minutes? Any objection? Seeing none, the minutes are approved. With that, we will turn it over to Roger.

MR. PUGLIESE: Our agenda item following addresses the May 2016 Habitat and Ecosystem Advisory Panel meeting that was held, and I just wanted to run through the highlights for the committee, the material you had provided. I provided a summary, plus I also provided all the links to presentations and supporting material that was provided at the meeting, a fairly extensive meeting. There were a lot of things reviewed and a lot of background information that will be useful for future policy development, et cetera.

The first part of the meeting had to do with an Update on the Fishery Ecosystem Plan Activities. Brett Boston with Group Solutions provided an overview of the continued development of sections, the use of Basecamp, the operations, and support for even additional things, such as the policy statements, as well as activities working with the Southeast Center and Region on the climate strategies and activities.

Following this, we went into some very specific section reviews and section development statuses with the Co-Chair, Lora Clarke, providing an overview of the Climate Variability and Fisheries Section and George Sedberry providing the summary of the Food Web and Connectivity for Tracey Smart, who is the co-chair of that subsection. They provided those materials and supporting activities and discussions to support, again, movement toward a policy statement development by the advisory panel itself.

One of the other significant topics that was covered at this meeting was follow-up and support for background information for the council on a position relative to renewable energies. Brian Hooker was able to provide a summary of the North Carolina Task Force that had just happened in advance of this meeting and identifying the areas that were in proposal, and he provided key information, which is now support actual lease sales that are about ready to advance forward in the North Carolina wind areas.

The other aspect of energy that was addressed in this meeting is we were able to provide a review of the Discovery of Sound in the Sea Acoustics Webinar for the meeting. We coordinated with that group, and they were able to provide us links and have that held during the lunch session, which was excellent background. The linkages are still available online to provide detailed information. We had brought in Aaron Rice with Cornell and David Zeddies with JASCO to provide more detailed information, specifically on the impacts of fish and habitats. He reviewed the comprehensive understanding of what the implications are and the whole broad picture of sound. It helped, I think, provide us some of the information. We followed up with comments to NOAA on their more recent sound and fish policy activities or recommendations.

In addition to the activities on seismic testing and sound, we also reviewed the status of the latest Landscape Conservative Cooperative Blueprint activities, refinement of the blueprint, integration of marine information, corridors, and other different types of capabilities that are linked very closely to our essential fish habitat information and other supporting information going into that.

They provided access to and some hands-on review of how the system actually is moving forward, and a footnote for that is that is also going to be supported by future modeling efforts. The ecosystem modeling, I will touch on that in the later report on tools, but that is advancing, and that will hopefully inform that entire process as well as provide the council tools to advance on ecosystem-based management.

In addition to that, Pat Halpin with Duke provided a review of modeling activities in the region and tool development through the Duke system. They support a lot of the activities in the Mid-Atlantic region, and there was a presentation of the comprehensive data and analysis for the MARCO system that is developed in the Mid-Atlantic, and potentially we can collaborate with them to maybe expand some of our fish information and review in the South Atlantic, now that he has completed most of those activities and their bases, he's completed that.

In addition, we had a presentation by Scott Chappell on some of the more recent Navy research activities and reviewing a number of different activities that supported more detailed habitat characterization, fish utilization, some of the work they did on a shoal oyster sanctuary in Pamlico. In addition, some of the newer applications of the use of sound systems, the ARIS and PAM, to evaluate behavior of fish relative to pile driving and noise activities.

In addition, we were provided a report by Pace Wilber with the Habitat Conservation Division on a key activity that they've been engaged in for a long period of time on the Miami Harbor deepening project and the impacts on coral and coral areas and their continuing, ongoing process of trying to support reduction of impacts on essential fish habitat and those resources for our region.

We had an update on the Climate Science Strategy, and I mentioned before that that's one of the things that we've tried to collaborate, both with our review team that's working on the Climate Science Strategy in addition to the Southeast Regional Office, which is tasked to accomplish the strategy for the South Atlantic Regional Action Plan.

Finally, we just had an update on continuously advancing on the Artificial Reef Policy Statement, moving forward. One of the newer activities is engaging a member that's already on it with ASMFC and has direct ties to the Artificial Reef Committee at ASMFC and try to collaborate close, with the intent of having this reviewed and discussed at the November advisory panel meeting and then advanced, in addition to the Food Web and the Climate Science, the Climate and

Fisheries Statements, to the December council meeting. With that, that's the report on the advisory panel activities.

MR. HAYMANS: Any questions for Roger on the AP report?

DR. LANEY: Not a question, Mr. Chairman, but a couple of comments. As I was reviewing all of this material in preparation for this meeting, it occurred to me how very fortunate we are, we as a council, to have the staff that we have, not only the council staff, but also the National Marine Fisheries Service staff from the Regional Office and also Bonnie's staff at the Southeast Fisheries Science Center, who is able to, from one meeting to the next, to compile all of this information and to put it in front of us, well in time for us to review, although some of us are a bit tardy in that review, myself chief among them.

I just wanted to express my appreciation on the record to Roger and everybody else is putting that information together and making it fully and totally accessible to us, and that brings me to a second point, which is I think we can more appropriately discuss during the Information & Education Committee meeting, but I just continue to be amazed at those folks who are saying the council isn't letting us know everything that's going on, because, as far as I can tell, the process is pretty much totally transparent, and there is more information out there than anybody could ever possibly digest, or, at least, again, I will speak for myself on that point.

The second thing I wanted to note is there is a new paper out, and I didn't get it in time to get it to the AP, and I can't even remember, at the moment, whether I sent it to Roger or not, but it's a little bit different take on the issue of noise in the marine environment, and I am pulling it up here, and I will send it out to everybody, but this one struck me as very interesting, because this was a paper done in Australia, and these guys looked at noise in the marine environment that had been impacted by nutrient inputs.

Basically, they're finding that there is a whole lot less noise in near-shore systems. They entitled the paper "The Sounds of Silence: Regimes Shifts Impoverish Marine Soundscapes", and I wont go into detail here. I will just send it out to everybody, but the bottom line is that, in those coastal environments where regime shifts have occurred due to nutrient inputs, things get a whole lot quieter, and that is something that should be of concern to us, because so many marine organisms use sound as a key or a clue, if you will, for where they should settle out and what habitats are going to be providing optimal growth to them and so forth and so on, and so that was my third comment. Mr. Chairman, I will get that paper out to everybody later today.

MR. PUGLIESE: I appreciate that, Wilson. One of the things is just a quick follow-up to that. I think, as the sound issue continues to advance and more work is being done, hopefully there is going to be species-specific information provided into the future, and one of the most important things, I think, after what we went through at that AP meeting, was really understanding that we really need to know the sound footprints of our managed areas and different things, to know what the baselines are, and so that's going to be part of, I think, the habitat characterization in the future, is understanding what the baseline is and then how that may change and what that may affect, and then you get into those issues such as reduction or impact on settlement or migration, et cetera.

MR. HAYMANS: I think it's too late for a baseline. Anything else for Roger before moving to the next topic? Okay, Roger, we'll move on.

MR. PUGLIESE: We're going to move forward with the next issue at hand. As I said, at the AP meeting, we addressed advances on the sections on Food Webs and Connectivity and Climate and

Fisheries, and what we have is a summary. You all were provided both a summary, executive summary, as well as some policy recommendations for each of these different sections, and I wanted to walk through the food web and connectivity section.

The writing team identified -- It was a fairly cross-sectional group, with everybody from our state partners and our NGO partners, as well as even the landscape conservation cooperatives and NOAA, at a number of different levels, et cetera. We have a fairly extensive -- As well as the researcher involved directly in our ecosystem modeling activities. It's a very comprehensive team that has effectively built a fairly comprehensive, but concise, section on food webs and connectivity.

The timeline was initiation of the real core components last year, and really working into the lion's share of the materials in advance of this meeting, and now it's going to essentially be going back and forth to some of the existing groups, to have additional refinement to make it all connect together, in terms of the fishery ecosystem plan itself.

The purpose and guiding principles for this entire section, the document was, right from the get-go, designed for managers. The intent is to provide an overview of the food webs, the context of the food webs, and try to keep it fairly concise, the implications for use in management, and the connections of the food web to other fishery ecosystem plan elements, and some of that connection and discussion I think will be enhanced with the next stage of the refinement or the finalization of that section. There will be emphasis on species interactions, highlighting the state of knowledge and specific needs for additional research.

Themes addressed in basically the outline of the overall section is providing what food webs are in the South Atlantic, the oceanic, near-shore, and estuarine systems, the energy pathways, connectivity among food webs, and that was highlighting benthic/pelagic coupling, inshore/offshore connections, latitudinal, and migratory patterns in our region.

The impacts on food webs, we highlighted environmental climate change, contaminants, bioaccumulation, disease, invasive species, human activities, fisheries habitat alteration, and combined impacts. It looked at available food web models as case studies, to highlight what has been done and how potentially those could be applied, and this is a conceptual model, laying out the different zones, depths, habitat type, and looking at what some of the potential implications are for impacts.

You are looking at the development of food web indicators and then, ultimately, management applications that would inform stock assessment, evaluate policy options, projections, and spatial management, and then, ultimately, the overall section provides a summary of recommendations. I am going to go through both of the core body sections of the two sections, and then we'll go back to the policy considerations for both.

The second section that you had in the executive summary and the policy considerations paper provided was for the South Atlantic Climate Variability and Fisheries Section. Again, the writing team is a fairly comprehensive group with, again, NGOs and agency organizations and research organizations and state departments of natural resources, our LCC partners, research universities, private oceanographic components, and it is chaired by Ruoying He with North Carolina State and Lora Clarke with Pew, and that was intentional, to try to bring together some of the modeling expertise with guidance on ecosystem activities and then climate impacts.

Again, the timeline was last year was really getting into the weeds of trying to provide the information in an in-person meeting and advancing and tasking and multiple webinars that happened through the spring and through May, completing the assignments, and then a final review of the chapter. Again, this is the next stage for some connectivity between multiple sections.

The outline for this document provides an introduction of the role of climate considerations in ecosystem-based fisheries management; historical and current conditions and characterization; predicted future changes; climate impacts on fish, fish habitat, and fisheries; knowledge and gaps related to management needs; research priorities; links to South Atlantic Council management decisions and ecosystem-based fisheries management; and recommendations and conclusions.

The climate impacts address habitat, distribution, productivity, spawning and recruit, connectivity and interspecies interactions, invasive species, catchability, and fishery operations. The knowledge gaps that were highlighted related to management specifically have to do with climate indicators, observation gaps, time and space, regional scenarios for future changes, mechanistic understanding, species and habitat vulnerability, and social impacts and fishery responses. With those section reviews, were there any comments or questions on just the bodies or the core of the different sections?

MR. HARTIG: I am not going to go through them, Roger. I have got some suggestions, and they basically deal with mentioning a couple of things that are really important in our area. The current dynamics in the Gulf Stream and eddy formation, I mean, while it is implicit in some of the discussion, I think, to highlight some of these things that are really important for our area. I mean, we have the same species in the Gulf as we do in the South Atlantic, but very, very different ecosystem considerations and migratory patterns, extensive migrations of amberjack, gag grouper, and king mackerel for spawning, and it ties into spawning and then it ties into recruitment. I've got several suggestions of where we could add those in and make that really specific for our area, because I think it's critical, going forward, to make sure that we take those into consideration.

DR. DUVAL: I am not on the committee, but just -- I apologize if I might have missed this, Roger, but just, in the timeline for each of these, it says like final draft available or final review of chapters in June of 2016, and so is that -- Is that where we are, in terms of both of these chapters? Has there been a final review, or is the chapter out for final review?

MR. PUGLIESE: It's out for review, external, and then among the different groups. This is where we are going to get the input on crossing between the other sections and this section, and so it's going to be the reducing duplication and making sure they track, and so it's trying to get it all to sync together at this time, and so the lion's share of the work to get the body of the documents is done, and so that's the biggest thing that I think is important, but it's going to take a little bit of time to do this next step and make sure that the rest of the sections are all working together.

MS. MCCAWLEY: Are you taking comments on the climate part and the forage fish part? I have a comment. I see it first in Attachment 2, but it's kind of sprinkled throughout a couple of these attachments, and so, Attachment 2, the Executive Summary of South Atlantic Food Web and Connectivity FEP II. On page 5 of that document, there is a statement in there. I am going to read part of that statement: Prior to any opening of new directed fisheries or expansion of current fisheries for forage fish species, essential science and monitoring information must be obtained and management plans developed that explicitly account for the dietary needs of predators when establishing management goals and fisheries rules.

I just wanted to note that FWC does not support that statement. We have had some discussions about this at our commission meeting, and we have actually adopted a resolution, but we did not agree that prior to the opening of any new directed fisheries that there would be all of this additional monitoring and all of these other pieces and parts that would have to happen before those things could occur.

The reason that I say that is because, yes, we would love to have more data, but we weren't sure that we would have all of that additional information, and it would be difficult to collect, and it seems like, unless there was a new funding source, that there were going to have to be tradeoffs between gathering data for forage fish species and gathering data on some other priority species, such as Gulf and Atlantic red snapper, and so I just want to point out that I do see that, in Attachment what used to be 4a and now it's just 4, there are some points from the writing team. I don't see anything quite that specific in those points from the writing team, but I just wanted to bring that up, that if something like that ends up in the policy statement that I can't support that policy.

MR. PUGLIESE: Yes, and I didn't get a chance to highlight those policies. I just did the sections, and so you're right. That was the next step, is to address those, and that's exactly what we're here for, is to advance what is provided on policy considerations. That's why they're put in as policy considerations at this stage, because we want to advance what the committee and council wants to provide to the advisory panel to refine that into the policy statement.

MS. MCCAWLEY: On Attachment 5, the one that's about policy considerations, and this one has to do with the climate variability and fisheries policy, and so the third paragraph talks about changing ocean conditions and gives an example about sea cucumber landings and changes that the FWC made to management.

There is something about this paragraph that leads me to believe that changing ocean conditions is what led the FWC to act on sea cucumber, and that's not exactly what happened, and so if you want to get with me a little bit more about the motivations for the FWC to take action on sea cucumber, we can certainly talk about that further, but I think it's a little bit misrepresented here.

MR. HAYMANS: I thought that was eye-opening, that you had a fishery for sea cucumbers.

MS. MCCAWLEY: Watch it.

MR. HAYMANS: I'm not going to argue. We've got one for jellyfish, for jellyballs.

MS. MCCAWLEY: Equal rights for inverts.

MR. PUGLIESE: We need to address all of those. I appreciate that. That was exactly why we were raising them. Let me backpedal, and I will go right to the policy consideration lists that you are addressing already, and then we can see if there are any additional comments. What we've got is the presentation is just a summary, and then you have two documents that are provided, that are provided by the teams, that are the summary recommendations or considerations.

First of all, I will start with food webs, and the team provided these are core policy considerations, and these are the ones that have been advanced from the team. On managing forage fish, it identifies that the managers should consider forage fish stock abundance and dynamics as well as impacts and predators when setting catch limits for forage species, to promote ecosystem sustainability.

To do so, managers must invest in essential research, scientific research, and monitoring to improve our understanding of the role of forage fish in the ecosystem, in order to develop environmentally-sound harvest strategies. Invasive species, invasive species most notably lionfish, may be having negative effects on ecologically and economically important reef fish species, and those effects should be accounted for in management actions.

Food web connectivity, separate food webs exist in the South Atlantic, for example, inshore/offshore, north/south, and benthic/pelagic, and they are connected by species that migrate between them, such that the loss of connectivity could have impacts on other components of the ecosystem that would otherwise appear unrelated.

On energy pathways, managers should aim to understand how fisheries production is driven either by bottom-up or top-down forcing, in an attempt to maintain diverse energy pathways to promote overall food web stability. On food web models, food web models can provide useful information to inform stock assessments, screen policy options for unintended consequences, examine ecological and economic tradeoffs, and evaluate performance for management actions under alternative ecosystem states.

Under contaminants, bioaccumulation of contaminants in food webs may have a sub-lethal effect on marine fish, mammals, and birds, and is also a concern for human seafood consumption. On food web indicators, food web indicators have been employed to summarize the state of the knowledge of an ecosystem or food web and could serve as an ecological benchmark to inform future actions, and so those are the more core policy recommendations or considerations that have been advanced by the team itself. Are there any concerns over those specific components or recommendations?

DR. DUVAL: Again, I'm not on the committee, but the very first one about under managing forage fisheries, and I guess I'm looking at Attachment 4, but the statement that managers must invest in essential scientific research and monitoring, it kind of raised my hackles a little bit, and not because I don't think that investment in scientific research and monitoring is not valuable or that we don't need it, but it's really, in most instances, we're not the ones who are able to actual do the investing.

We are supporting those kinds of investments, and we are making recommendations to NOAA Fisheries or to other agencies to make those types of investments, so that we can actually use the information that might come out of that. We are generally not the ones with the ability to make those investments, I guess is my bottom line, and so I think I would prefer that that be rephrased somehow to capture that.

MR. PUGLIESE: Okay.

MR. HAYMANS: I will say that I thought you stated that quite well in your letter back to NMFS regarding funding.

DR. LANEY: I was just going to echo Michelle's comment on that and say maybe we can change that language to say managers should -- Instead of "invest", just should "endorse" or "encourage" or some other affirmative verb that we could use there to indicate that we really need that information and we support any efforts by the appropriate entities and university folks, federal agency staff folks, and I would include in that the Climate Science Center folks and USGS, who are basically now the R&D arm, for the Fish and Wildlife Service anyway, because they are doing

some work in these arenas, and so however we can make that as positive as we can, that would be a good thing, I think.

MR. PUGLIESE: I think the message is clear about the council is not doing the work. What we do is we would support research and supporting information that would enhance our understanding of this and then better management, and so I think that's something that we can bring forward in how this gets adjusted for recommendation back to the advisory panel, especially Number 1 of the food web and connectivity summary.

MS. MCCAWLEY: I was just going to say that what Michelle said was a piece of the point that I was trying to make about having to have this information and it was a requirement, and so this was a piece of what I was trying to say.

MR. BREWER: Ditto.

MR. PHILLIPS: Roger, I'm not sure where it would fit in, but we're seeing what looks like could be the effects of ocean acidification, as far as getting shellfish seed, and, if that's so, and the problem seems to be once they put them in the open water instead of their hatcheries, and so we may want to try to at least note in there somewhere that ocean acidification could significantly change the food web, even though we can't necessarily manage it from where we are.

MR. PUGLIESE: We will add that in and then provide that in the overall recommendations to the advisory panel.

MR. HARTIG: I've got a gee-whiz question. On Number 4, bottom-up or top-down forcings, what does that mean? I don't think I understand what "forcings" means. Can you explain that in a simplified term?

DR. LANEY: Ben, I will take shot, and then Roger can fix it. Basically, when we're talking about bottom-up or top-down, it refers to the energy pathways that things are following, and, a lot of times, when somebody refers to something being a top-down control, they're talking about the big predators in the system, the top carnivores. If it's bottom-up, then usually we're talking about nutrients and the things at the base of the food chain, the diatoms and the algae and things like that, and how they influence then everything above them, which cascades through the whole ecosystem, in terms of the filter feeders that are then fed upon by the mid-level and upper-level carnivores, I think. Did I catch that, Roger?

MR. PUGLIESE: Yes, and it's the pathways, either from the higher trophic levels down or really if it's being driven by the lower trophic levels up.

DR. LANEY: Just going back to -- I want to endorse Charlie's comment, too. The ocean acidification thing is really scary, and I don't know quite how we tackle that, except to note that it's an issue and that it could have tremendous consequences for the food pathways, if we think about all the different critters out there that are consumed by other critters or that provide habitat for critters that depend on calcium metabolism of some sort, and so, no, we're not just talking about mollusks, which I know are of great concern to Charlie, but we're also talking about diatoms and corals, of course, both soft and hard, I guess, and lots of other things that depend on having an appropriate pH in the water column for them to do business and to maintain their lifestyles and to remain sustainable, and so good point, Charlie, and, yes, we definitely need to capture that.

Then the other thing that I am thinking about here is some of the issues that we're dealing with already, Roger, and I don't know whether -- They probably fit more into the climate change end of things, but they certainly have some food web implications when we have whole populations that are shifting their distribution, maybe primarily in response to climate change, but then that certainly has food web implications, and I am thinking, Michelle, of striped bass, for example, being one that we've seen shift northward for the last four or five years, to the extent that North Carolina hasn't landed one from the ocean in a good long period of time.

Those fish, the eating machine, that I like to refer to them as, shifts northward, and consumption rates then of species, which maybe they didn't necessarily consume as much, like American lobster, goes way up, and so there is not necessarily a big impact on the South Atlantic Council's food web and maybe on some other council's food web that takes a hit.

We're seeing other species, like snowy grouper, I guess, that comes to mind, and some of the tilefish species, maybe some of these other folks that are shifting their distribution northward, and what does that do to our food web down here if the center of distribution of that particular stock shifts north? Are there models that are going to enable us to look at the spatial component? I think the answer is yes, and Roger may want to elaborate on that, and that would allow us then to take a look and say, okay, do some what-if sorts of things.

Just to pick one totally out of the air, if blueline tilefish were to shift way northward and we have a whole lot less of them in the South Atlantic, what happens then? Are we going to be able to see that from some of the models that we have available to us?

MR. PUGLIESE: I think you picked one species we probably have the most limited, in terms of life history, information, and so that's probably going to be really tough to do that. However, the concept, I think that's one of the reasons that we're spending some extra time, and I will touch again on the modeling efforts, is to engage the latest generation of Ecospace. We're advancing an Ecopath/Ecosim with Ecospace, and the newest Ecospace modeling efforts are beginning to integrate environmental models and integrate habitat distribution and species distribution, and it's really at a very -- Nobody else is doing it, and so there's going to be an interesting evolution to see how far we really can go with this, and we have been coordinating directly with the developers in the consortium, which is now housed in Spain, to get the most cutting edge Ecospace, but it might take some resources to get them into our modeling group.

The idea with that is to begin to really look at the spatial issues that begin to arise with these, and of which one would be how distributions would change, and even if you have a model that has a footprint, what you could do is just have less exposure of that species in the footprint. What that does is it has then less exposure of that species consumption, of all those different species in the food web, and, if it works out right, you might be able to actually see who are going to be the winners and losers within those types of things, but I think we're trying to get as far as we can with some of those modeling efforts, and it's going to be interesting. As I said, you picked one species that we probably have the least amount of information on really life history that we would be able to really understand, and to what degree we have really the diet composition work done to date, the most recent, is a question too on where we are.

DR. LANEY: Thank you for that, and then I've got one more. I think invasive species is Number 3 or 2 up there somewhere, and so one other one, or maybe a couple of other ones, that we need to think about are those species that are estuarine or even riverine in nature, with regard to those diadromous species that do spend time in the South Atlantic.

Maybe some of them spend more time in the North Atlantic than they do in the South Atlantic, and I don't know that we know a whole lot about what American shad and hickory shad and the two river herring species do while they're at sea in the South Atlantic, but certainly, at some point, they are important forage for some of the South Atlantic species, and the efforts that the states and ASMFC, in particular, are making to restore those species in inland riverine ecosystems are being impacted by species such as flathead catfish and blue catfish and, to the extent that those impact the numbers of those species that are recruiting to the near-shore environment, and even offshore environment, then that may affect council species as well.

I know, when I did some literature work on that a while back, the only one I could find, the only species I could find, that was eating those species was king mackerel, and that was in gray literature, Ben, that came from actually I think the Southeast Fisheries Science Center, from some work that they had done. That just brings to mind, again, the fact that we need more information on food habits and who is eating whom, in order to build those models that Roger was talking about that, to an extent, will enable us to even begin to think about using them for management advice and to do those kind of what-if scenarios that I think everybody sitting around this table would be very much interested in.

MR. PUGLIESE: Just as a follow-up specifically to that point, one of the benefits of what we're doing with the latest Ecopath modeling efforts is the iteration that was advanced more recently and had to do with forage species, specifically looking at potentially climate impacts and how the structure and the base of it is going to be significantly revised and tailored to the South Atlantic, but the benefit of all the work that had been done, in terms of at least compiling the most recent information for all the anadromous, catadromous, diadromous species and other forage-based species at least will be integrated into the next generation, and so at least we've got as much as we can do with that to begin to advance.

Now, of course, as you know, one of the most distressing things, as part of our fishery-independent surveys, are the things that are getting cut out are the things such as early life history or food and diet composition work, because of the limited budget, and so I would qualify that comment.

MR. HAYMANS: I look at it, Wilson, as there are lots of comments throughout these documents that talk about how we incorporate it into our management processes, and, although I agree, and we certainly need to be working to that direction, we are so far away from actually being able to incorporate any of these models into actual day-to-day fisheries management. I think it's worth us certainly keeping that top of mind, but, as far as actually incorporating it in, we've got more information on economics of the fisheries, and we can't incorporate it into a model, and so let's move on.

MR. HARTIG: I'm not on your committee, but, to your point, yes, from an ecosystem standpoint, it's going to be tough, but there will pieces and parts that can be introduced into the modeling that we will be able to see, like Miami is trying to do with king mackerel and the temperature changes and the Gulf Stream eddies and the changes in that. They're working really hard on that, and eventually we'll be able to incorporate it into an assessment, at least part of it.

MR. PUGLIESE: Yes, and I think that's the key, is there are all different levels of incorporation into this, into single species assessments and the multispecies into a true food web and multispecies analysis into the future, and that's something that is one of the great things about what we're trying to do right now with all of that activity.

We've got our former chair and chair of the SSC directly involved, and so whatever we're going to be looking at is going to be tailored to try to come up with something productive for their review in council management into the future, and so that's a big plus, I think, on how we're advancing that, but, if there are any other comments on specifically the food web, it would be basically Attachment 4 or the summary that I provided.

DR. LANEY: Just one last one. To Ben's point, I think it's incumbent upon us, as we produce FEP II, to give consideration to those sorts of research items that are really critical. If we could even prioritize those in the document and basically make them very user-friendly to those academic folks or agency folks who are looking for funding to get things done, I think that greatly then facilitates their preparation of proposals in response to different RFPs for different pots of funding. To the extent we can do that, I would encourage us to do that.

MR. PUGLIESE: Okay. Let me move on to the policy considerations under the Climate Variability and Fisheries. As I said, what we've got are the policy recommendations that were identified in the presentation and then the document. I think there's been a number of comments already on the document itself that was provided for input, and some of those we can either readdress or -- We already know what we've done.

Under the general policy recommendations that were provided by the panel, that included the following, changing ocean conditions necessitating managing for a higher level of uncertainty, which includes providing adequate buffers that foster ecological resilience when determining OY. As species expand or shift their distribution due to changing ocean conditions and/or market demands, careful scientific management evaluation must be undertaken prior to initiation of new fisheries, and that gets directly to the comment already made previously. Top climate indicators should be developed that track ecological, social, and economic status and trends, and the council should request annual updates and indicators of changing ocean conditions in the South Atlantic ecosystem.

Then the other document that we had already raised before was the draft policy consideration document, and those concerns that were raised previously about that we're limiting the development of fisheries based on information, essentially that last statement I had earlier on in climate, as species expand and shift, that's something that we will drop out of this, as any of the recommendations that move forward.

We can look at this additional list that was provided. As species expand or shift their ranges -- Now, these are just basically reiterations of the statements made previously, but actually in the context of policy considerations. As you have that change in the ocean conditions, market demands, or distribution, the council proactively work with state agencies, other councils, and NOAA Fisheries to manage the species that span multiple jurisdictions. The council proactively work with the Landscape Conservation Cooperative, NOAA's RISAs, which are the equivalent to the Climate Science Centers of the USGS, which is the next one, the Southeast Climate Center, and other multi-organizational partnerships to understand and respond to climate variability. Careful scientific and management evaluation must be undertaken, and this is, again, the one that was to be dropped, Number c.

Under Number 2, a priority list of climate indicators should be developed or selected that track ecological, social, and economic status and trends. The council requests annual updates on these indicators and changing ocean conditions in the South Atlantic ecosystem. Number 3 is that climate change will lead to both winners and losers. Changing ocean conditions necessitate

responses, ranging from increasing buffers due to a higher level of uncertainty to adjusting quotas upward to account for predicted increases in productivity.

Number 4 is, given the uncertainty of climate impacts, the precautionary principle should be invoked as much as possible for future management decisions on issues that can be influenced by climate change. Are there other considerations or requests with regard to those recommendations that need to be either modified or removed?

DR. DUVAL: Again, I'm not on the committee, and just a couple of comments that I had on this document, and I apologize, Roger, because I am backing up to the first page, the second paragraph, where the third-to-last sentence in the second paragraph talks about black sea bass, and it says that historically this fish was most abundant off the coast of North Carolina, but today they are caught as far north as the Gulf of Maine.

I think we just need to keep in mind that there's two populations of black sea bass. There is a dividing line at Hatteras, and so, yes, they're being caught up as far as Maine, but they're also being caught in quite large amounts off the coast of Florida as well, and so it's a two-population thing that I think folks need to --

MR. PUGLIESE: That was lost in there. You're right.

DR. DUVAL: Yes, that was lost, and then, just the other thing, certainly managing for a higher level of uncertainty -- I was just going to be flippant and say I'm not really sure how we get more uncertain than we already are with some of our stuff, and I think, just to put a finer point on the specific recommendation c under Number 1, with regard to initiation of new fisheries, I think, in many cases, certain species become an important component of the fishery that are already legal to harvest before we have the opportunity to actually recognize and kind of catch up with that.

I think that is like maybe a third piece of what Jessica was getting to earlier with her comments, is sometimes that is not always within our control. Now, we do have quite a few species, I think, within the snapper grouper complex particularly, where everything is under a bag limit, but not everything is necessarily under a commercial trip limit, and so I think there are -- For species that don't have trip limits, one of the ways that we could sort of get at that is to possibly consider an aggregate trip limit for different species complexes where there is not currently a trip limit. This has come up with a couple of our species groupings, and so I think there are other ways to try to manage for effort prior to it maybe exceeding our control, and I will just leave it at that.

DR. LANEY: I was going to ask Jessica, with regard to 1c, after rereading it again, don't we already do that? It says careful scientific and management evaluation must be undertaken prior to the initiation of new fisheries, including consideration of how to avoid harmful impacts on critical habitat. I thought we already basically do that, and was that the part that you read to us, Jessica, that you had concerns about?

MS. MCCAWLEY: No, the part that I read to you was way more specific. It basically says that you can't open any new directed fisheries or expand current fisheries for forage species without this type of information.

DR. LANEY: So what I'm hearing you say is you don't necessarily have an objection to 1c, but it was that more specific language that you were referencing.

MS. MCCAWLEY: Well, I'm not sure. I still come back to what Michelle and I were talking about earlier about where is this information going to come from.

DR. DUVAL: Wilson, that actually was the other document actually, Attachment A2, which was the food web and connectivity executive summary. That's where Jessica was reading that sentence from that she referenced at the beginning of the committee meeting.

DR. LANEY: Yes, and I thought that was my understanding, and so I guess what I'm asking is it sounds to me like the concern that Jessica raised has to do with that other language more so than what's here in 1c, Roger, but I would look to Jessica for clarification on that point, but it seems to me, just reading it at face value, I think we already do 1c.

MS. MCCAWLEY: I would have to see the language written up after the team works on this, but I still have concerns about where is the data going to come from, number one, and the very restricted language that says that we can't open any new directed fishery or expand any current fishery without all of this data.

MR. PUGLIESE: Right, and I think that's a clear message. I think I understand exactly what we need to bring forward, and I would expect that you're probably going to get some of that same response if this got to the AP members too, because this is going to get crafted and built into a policy statement. Okay. I think that's fairly clear on that.

MR. HARTIG: I'm not on the committee, but the winners and losers is a little bit -- That's not really true of what's really happening, from what I see. I mean, if you take blueline tilefish, and I talked to the people in the Keys. There is as many blueline tilefish there as they've ever seen, and yet, we do see an expanding population to the north.

In that case, it looks like there is going to be winners and maybe not losers, and so if you look at the temperature and things in our area, they're going to be able to withstand the little bit of temperature that we're looking at in the foreseeable future, and so I don't know how many wholesale migrations we're going to have out of the South Atlantic. I think we'll probably see some winners up the line, but I don't think we'll be losers for a lot of our species.

MR. BELL: Just to that point, when I was thinking of the winners and losers things, and I was talking about this recently at a forum up here in Myrtle Beach, but it's not just -- It can be temperature or it can be salinity and climate variability and all kinds of things, but, within the shrimp fishery for instance, we see years with warmer winters and good crops and years with colder winters and not so good crops, and so there's a lot of variability there. Sometimes, depending on how the temperature changes, it can be good for one thing and bad for another, or it might be good for one fishery and not so good for another, and so I think it just depends on the specific variable you're talking about.

One of the things that struck me when I was getting ready to make this presentation is I think I scared myself to death. I was looking out my office on the day that we were having one of these king tides combined with a little bit of wind, and I don't remember, going back thirty years ago, when I was learning navigation and the term "king tide", and I don't know where that came from, but it has appeared now on the NOAA tide tables and things, but I am watching the water outside my window now, and it was, golly gosh, it's a lot higher than it used to be.

Then I started thinking about if you have a long-term change in mean sea level and sea level rises, as sea level has been rising for 10,000 years or so along our coast. If you go back 10,000 years,

the beach was ten or twenty miles that way, and so it has risen. As it has risen all these years, we have retreated, and there are times where people in South Carolina just retreated, and so the thing that scared me to death was the concept of sea level rising to some point where there was perhaps the habitats that we're interested in, the salt marsh or the oyster reef habitats, needed to retreat, but we said, no, we're not going to retreat. We have the title or the deed to that property and we're not moving. Then what happens?

That is kind of a legal question there, but that, I guess, scared me to death, was this concept of the natural system needing to move and modern man saying, no, we're not going to move, and then you have that dynamic, which brings, again, the lawyers and everybody else involved in that, and that could take obviously years and years and years, long after we're gone, but I think, in just kind of thinking through this whole impacts of climate variability on fisheries, when you start talking about things that could happen with essential fish habitats, I scared myself to death, I guess, a little bit.

MR. BOWEN: I am also not on the committee, but, as these conversations go around the table, when we're discussing climate and forage fish, I can tell you, from a fisherman's standpoint, that something is going on. I have been a leading advocate of saying that scamp are in trouble, scamp are in trouble, and, well, they are off of my coast. They're not there, but doggone if I didn't go and come into South Carolina in the last couple of months and start targeting scamps, and there they are.

They're definitely moving north. I don't think we fished them out of Georgia. I don't think we have that much effort, but I can see a trend with the scamp moving north. I can see a trend with their bait. The cigar minnow is moving north. It seems like the cobia are moving north, and so, again, I'm not on your committee, but I wanted to mention that, from a fisherman's perspective, since something is definitely going on. Thank you.

MR. HAYMANS: Wilson and then let's move on in the agenda.

DR. LANEY: Thanks for that, Zack, and thanks also to Ben for all of the observational information that he brings to the council as well. Somehow, it's important for us, Roger, and I hope we're trying to capture it in writing in the FEP, that it strikes me as very important for us to try and capture this kind of observational information.

It somehow maybe syncs up with our citizen science effort, and maybe there is a way that we could and, again, it's something we can talk about in the Information & Education Committee, but provide some sort of a portal on the website to capture those kinds of observations and make sure that they get written down and then considered by the SSC or our committees or APs or whoever needs to consider them, because, frequently, those folks who spend so much more time on the water than those of us who spend a whole lot more time sitting at our desks in front of computer screens, are often the first to observe changes in biological phenomena, changes in ecosystems, and those observations then can frequently lead to statistically-designed studies to try and document what caused those sorts of changes, and so that's another thing that I hadn't even thought about until Zack mentioned it and Ben a little bit. That, to me, is important information for us to try and capture somehow.

MR. BREWER: Echoing what Zack said, there's no question there is something going on. Bluefin tuna are a perfect example of it. They've been moving north. Whether man is causing it or not, I'm not here to argue that, but it's happening. I think it's very important that we try to figure out some way to incorporate those facts into our efforts. Also, following up on what Wilson said, it is

the people on the water that will notice these changes first, and so their information, people like Ben and others who are out there on the water, they're the ones that see it.

I was just going to say that I actually got involved in fisheries, quote, management because I was out there on the water and I saw what was happening to forage fish, and here I'm talking about mullet. That's what got me involved in it, and I kind of got the fire in my belly, and I've been at it ever since, but I think that you would find great interest in the folks that are out there on the water in supplying the information that would be necessary to feed into the different models, or at least give you your first indicators that something is going on and this needs to be looked at, and so I really do support the efforts and the comments of both Wilson and Zack.

DR. DUVAL: Just bringing this back to the point that Ben made initially, there is a difference between a shift in distribution of a species and a range expansion, and it may be very nuanced at times, but I think it's important to make that clear.

MR. HAYMANS: I will just add that sometimes we don't know whether it's an expansion or a shift, and it takes several years to even begin to determine that, and sometimes I think we want to be a little quick to react, which I guess is a good thing, but sometimes I wonder if we're a little too quick. Roger, let's move on.

MR. PUGLIESE: One third consideration is just the expansion back to its existing range. I think of something like red drum that had a fishery all the way through New Jersey in its previous history, and so there is a variety of different components that need to be considered whenever we talk about this.

With that, I think we've got pretty good guidance on how to advance these to the Habitat Advisory Panel for further consideration and development of policy statements for council consideration, and so that moves us on to I wanted to highlight some activities on habitat and ecosystem tools. This gets to some of the discussions we had about other partners and collaborations and where we can ultimately go to be able to get some of this information, and a lot has been ongoing and newly initiated, and so I wanted to at least highlight some of these.

The council has been briefed a number of times on our continually developing and evolving habitat and ecosystem atlas and digital dashboard and also the ecospecies online system information, which, in this specific case, is going to play even a more significant role as a connection to the fishery ecosystem plan.

Our managed species team is not only compiling the information for the species, but looking at populating the components for the online system, so there would be more detailed information actually provided in an interactive online system, species-based, everything from fishery operations to life history to habitat, kind of a FishBase on steroids for the South Atlantic specifically and tied directly to our fishery ecosystem plan, which I think is going to be a real powerful tool. That's one of the tools, in terms of the evolution, that we're talking about.

Those systems also provide baseline information and support any of our commenting activities. More recently, when we were talking about the sound policy activities that NOAA was involved in, we were able to compile the information, update it, and even incorporate the more recent information on the proposed spawning special management zones and the types of areas to consider in dealing with any of the sound issues in the Southeast.

Also, the system will be an interactive way of providing advancing how we look at mapping activities in the system. The last managed species group we had actually looked at a lot of different ways of partitioning out the habitats, and we have developed a layering of different habitats for offshore to support ultimately a mapping strategy, and the idea is that we'll create the mapping strategy, but it will also have an online living component, so that you could look at what is mapped and then begin to build the priorities within those depth contours of both the existing managed areas, but also areas that either connect those or are associated with those, so we can advance those online.

Also, it supports our fishery-independent survey information. All of the spatial information from that is going to be available through this system and also create things such as species distributions. A lot of those, we're hoping, can be integrated directly into say the Ecospace system as background layers that will provide that and also potentially even provide some guidance on catch relative to areas that are at the rough levels. We may be able to use some of the life history polygons that we're creating to maybe more accurately distribute catch within areas and provide those.

Again, it's potentially input parameters for some of the modeling activity, and so those systems continue to evolve. As I mentioned, the ecosystem species system, with life history, the EFH, very specifically. It has all the EFH, and, more recently, down to life history, life stage, that is being put together for us as part of the five-year review finalization.

This gets specifically to some of the collaborations with our partners, with the Landscape Conservation Cooperative. We are going to continue to build linkages between the regional conservation and blueprint version 2.1 and the fishery ecosystem plan and, as noted before, the Landscape Conservation Cooperative is the group that is supporting building the next generation of ecosystem models supporting the ecosystem, the Ecopath and Ecospace system, but also what we were talking before about connectivity models, models such as Peter Sheng is working on estuarine systems, so that we can connect the estuary models with the offshore models and connect the circulation, Ruoying He's group with North Carolina State and the circulation models.

As you mentioned, the Gulf Stream, the overall circulation capabilities and understanding how those connect into our system, and so those partners are building, and hopefully we will be able to integrate those as we evolve those efforts.

Also, the LCC is providing inputs for FEP section development on food webs and others. One of the key ones that I have mentioned from the beginning, when it comes to climate, is they're an avenue that's a direct link to our Climate Science Centers, the USGS's Climate Science Centers, and, more recently, they're also supporting the Southeast Conservation Adaptation Strategy, and so we've inserted ourselves or are connected directly into a conservation avenue that's looking at everything from the marine system to the estuarine system and even to the land system and being able to leverage some of those capabilities to truly get a footprint and understanding of what climate change is going to mean for our region, how the fisheries are connected, how the land and sea is connected, with their support. I think that's one of the big things. Where we haven't been able to get resources in other areas, we're reaching out and being able to begin to build some of those connections through those partnerships.

Also, some of the other funded activities are refining some of the offshore and inshore and near-shore habitat layers, and we're going to refine those and take those to another level, and what you see here is the latest generation of the conservation blueprint that has shared priorities, and one thing that was added into this system was building corridors from inshore to offshore areas on key sections of the system. The modeling effort is going to further refine the footprint, especially for

the marine system, as well as indicators that are driving these systems for the marine system too and the connectivity into the rivers and the flows, et cetera.

Other partnerships, and it gets to, I think, some of the concerns or important components that need to be addressed, but it has to do with our partnership with the Ocean Observing Association, SECOORA, and our IOOS partners, such as North Carolina State and others. We're building comprehensive regional systems and integrating habitat, so that, in their build-out systems, they're addressing managed areas and species information, and we can advance that with getting the oceanographic information.

As part of the special management zones, North Carolina State provided us actually footprints over time of temperature and salinities for each one of the proposals that we were looking at as those special management zones, spawning areas, were advancing. Also refinement and characterization of those specific essential habitats, the Gulf Stream, the Florida Current, and other components, oceanographic components, that need to be refined and with the benefit of some of the modeling efforts that those partners are -- Hopefully we can get those and then, ultimately, integrate those into spatial information as well as into potentially considerations in assessment or other activities.

In addition, refining observing collection of fish and fishery information, ultimately. One of the things that was attempting to be directed is, to the degree possible, is be able to place resources and materials and fixed sites within any of the council's managed areas. Ultimately, one thing I have pushed for a long time is to also have potentially deployable assets with our partners in the region, and I think that's going to be part of our mapping strategy, is to understand who has different types of capabilities, and then say we have some way of getting an understanding of a pre-spawning event leading to a spawning condition and be able to deploy AUVs and ROVs and multiple assets that the partners may have to characterize say an entire spawning event from beginning to end, map it and characterize it, et cetera. That would take deploying assets of our partners in the region.

Again, building the oceanographic and linking those models, which we're involved in right now. An even further connection between the ocean observing information and the council's atlas is something that we're going to continue to expand, and, again, expansion and connection with those systems with the information from those modeling efforts and characterizations for assessment in the long term, and look further at potentially what ArcGIS may advance, maybe the connection between all of these different partners in our region.

The ecosystem modeling, one of the advancements is we continue to move forward with an Ecopath/Ecosim/Ecospace, but it actually is going to be even a broader scope for the longer term, looking at an ecosystem modeling suite, so we're enhancing and integrating the circulation models and integrating the estuarine models. The idea is to really understand the entire connection with the system, and so this has been funded for two years, with the intent of it maybe even being a broader scope of how this really does provide tools and capabilities to the SSC and to the council. It builds that connectivity that can inform both our fishery ecosystem plan as well as the conservation blueprint by the Landscape Conservation Cooperative.

As I mentioned earlier, one of the key things about this effort is that we've got both Marcel Reichert and Luiz Barbieri, our Chair and Former Chair of the SSC, directly involved in the continued development of the system.

One of the last things that I wanted to touch on was, at the last council meeting, we had presentations from a number of different technology vendors, and one of the groups, Ocean Aero,

presented the Submaran, and we were able to not accomplish as much as we wanted to, but Marcel Reichert coordinated directly with Ken Childress with Ocean Aero, and they were able to deploy in Charleston Harbor and be able to at least show some of the demonstration and just have some discussion about different capabilities.

The most important thing was kind of keeping the foot in the door with the partnership with them, because the next step would be potentially getting that on a cruise, where they could actually deploy it during the entire cruise, and provide it to map and characterize and bring it back and then do a test bed, from which then we could look at potentially purchasing or potentially having a lease for multiple years, over time, for SEAMAP and MARMAP and multiple research activities. I think this is a real opportunity to take some new technology and advance this system. This is the solar and wind-capable system that could potentially have a whole lot more added benefit for our existing fishery-dependent surveys without changing or affecting their operations.

We were going to try to get it offshore. Palmetto had just hit the water, with the new refit that the state had put in it, and they were still welding it while we were watching this thing, and so it was going on its real true maiden cruise, literally, the day after this, and so we tried to get more, but I think the commitment is to go further, but we did what we could, and the biggest thing was keeping the dialogue and a lot more interest, especially with the focus of so many of the independent survey activities coming out of one area. They could provide a lot to the system that would expand the information gathering for our region.

One of the other things I did want to touch on is, again, back in South Carolina and tying to some of the activities under artificial reefs, is that, as part of the upcoming harbor deepening project, they're going to have, I think, approximately potentially 233 acres of rock being able to be available to build near-shore reefs about nine miles out. There is a big collaboration to provide those as part of the process they're going through in both the mitigation reefs as well as a number of direct-use reefs, and there is even discussion about potentially advancing those to have some type of level of protection, and I was in dialogue about potentially identifying those as either special management zones, with the state having potential access or permitting with those, and then, if they want to, in their mitigation ones, even go further, that's something that they were even discussing.

The interesting side of that is that would provide a link between those offshore habitats and the near-shore, which would be the settlement zone for like gag and whatever, that would be really good, because they're mandated to do long-term research on these different areas, and so I wanted to at least highlight that there is a real opportunity to advance and use beneficial activities of a lot of structure in a lot of area. Mel may want to touch on that further, but I thought it was worthwhile to at least highlight that that's going to be a pretty significant effort, and there is a lot of commitment to make it happen.

With that, those were at least the things that I wanted to highlight about ongoing activities and tools and capabilities and how we're advancing with our partners. That's the key, I think, with the message of this. We're advancing because of some of the resources that are being provided by the states and by other partners.

MR. HAYMANS: Thank you. On your last one, I find that interesting, and I'm going to throw one out there in left field, and, Mel, we probably should talk about this offline, but this is a harbor deepening project that has to happen during the wintertime, such that it excludes turtles, but have you had any feedback from the Corps about when you can deploy material offshore, because of right whales? How are they going to work that one out?

MR. BELL: I don't know if we want to get into that here, but we've actually -- We were asking how you all were dealing with that before us, but, yes, it has come up, and we've been told we're going to have to deal with that.

MR. HAYMANS: I'll tell you how we're going to deal with it.

DR. DUVAL: Roger, in terms of the products that SECOORA is working on, I saw in the presentation like a ten-year build-out plan, but I wasn't sure if that applied to the products that they were working on specifically that are looking to integrate like the oceanographic data with the fisheries data. Your first bullet had something referencing a ten-year build-out, and I wasn't sure if that applied to all of their products that they're working on or just a couple of them, because it seems to me, given some of the previous conversation that occurred around the table, that integrating those oceanographic characteristics with fisheries data is something that we would like to see sooner rather than later, and I just am curious what the timeframe is on that.

MR. PUGLIESE: Yes, and it's been a message for a long time with them and partnering with them. I think the most realistic aspect is the fact that we have Ruoying He as co-chair of both our food web and connectivity group, but also as one of the key players in the modeling effort. The intent is to integrate those directly into the ecosystem models and provide that information directly into it, so it's a circulation of the oceanographic models and a number of those different things.

There is a move to try to expand some of the capability, such as building a glider array system for the Southeast, and the idea is potentially to add in acoustic capabilities, and so there may be an ongoing glider array, of which we keep on saying if you're going to do that then have the capabilities of getting sound, so that we can expand. I think there are pieces and parts of these that are being integrated either directly through some of the funding activities or as the next five-year -- That's not the build-out, but the build-out plan is a reference very specifically to they were giving a target for a number of years that said, if you want to expand this further, what would you do, and it integrated everything, from putting buoys in each one of the marine protected areas to -- I mean, I was involved directly in some of those types of things, and so it was somewhat of a pie-in-the-sky type of thing at that level, but I think some of those are actually potentially going to become real with, like I said, they're working directly with us on the modeling efforts and their connection directly into providing some of those -- Like a glider array.

One of the more recent things that Charlie, I know, has probably has been involved in is discussions on the ocean acidification network that's being built for the Southeast Region. There are a lot of things that are happening at different facets, funded different ways, that I think are all going to feed directly in the types of things that we want to see sooner rather than later, and so we're trying to do as much as we can to get those further. The other aspect, I started saying, is, under the five-year funding cycle, there is another aspect that really got directly to that, working again with Ruoying He and North Carolina State University, and so I think that hopefully what we've got set up now is going to go even further, in terms of getting those types of models and other things connected directly into fisheries information, and so it's in the works, and it's going further than it has in the past, and some resources to make it happen, too.

MR. HAYMANS: Any other questions for Roger? Okay. That brings us to basically Other Business. Michelle, you had something on Lenfest?

DR. DUVAL: Yes, and thank you, Mr. Chairman. I think most folks sitting around the table know that I've been involved as a member of the advisory panel for the Lenfest Ecosystem-Based

Fisheries Management Task Force, and that's been ongoing for the past couple of years. I just wanted to let everyone know that that's finally coming to completion. The task force is completing its report, and it's actually going to printing, and so one of the major goals of the task force was to provide tools for helping to operationalize fishery ecosystem plans.

That's something that we may want to keep an eye on as we're completing our own fishery ecosystem plan, and I know that I think the launch is scheduled for mid-November, and I think it's the intent of the task force co-chairs, which we got an update last December from Dr. Phil Levin, who is one of the task force co-chairs, that they're looking to provide some outreach to the council, and I think possibly a briefing of that at some point, and so, Roger, you might expect some outreach from those folks to you and possibly Gregg.

MR. HAYMANS: Thank you, Michelle. Roger, I also wanted to mention Attachment 7, which is a letter from Michelle on the ocean policy.

MR. PUGLIESE: Yes, and I just wanted to touch quickly on -- There was an ecosystem-based fishery management roadmap that we had responded back in July. It was provided at the CCC meeting, a council version, for response, and we provided input on that. There has been a public, which I think is Attachment 7, public version that has been distributed. What I did is I looked at the response letter in the published version, and it looks as if they have, to a great degree, have responded to areas that we had identified for concern. Some of the funding questions and different things that we have highlighted are still in the air in terms of are resources really going to be able to be available to accomplish some of these different things that are longer term.

One thing I will say is that I know, and this is also a follow-up from kind of the bigger picture, because the road map is probably being driven, to a great degree, by the NOAA Headquarters, with Jason Link. Jason is going to be, I think, coming down to the Beaufort Lab. I just got a note that we're going to be sitting down and having a discussion with him in October, and so one of the things we want to do is advance what our needs are, where we're going, what can be done.

I also want to get him maybe to be involved directly in looking at the systems, what we've got on both food webs and climate, because he's right in the middle of it all, so we can mobilize, to the degree we can, if they're committed to advancing this or are there additional resources there or how do we go further, and then maybe give additional guidance on how those connect in with some of the perspectives from either the roadmap or the policy or other activities that Jason has been involved directly in.

DR. MCGOVERN: I just want to mention that I think the comment period on that roadmap was extended through the middle of October. I don't remember what the date is.

MR. PUGLIESE: Right, and I think it's October 17. These were provided, and if there are any additional comments that need to be provided, if individuals want to look at this and provide those back to us. I think, like I said, it was pretty extensive in the response we had before, and a lot of those were very specifically addressed, but, if there are other ones in this newer version that need to be addressed, if individuals want to look at that and then provide it back to the council, we can talk with Michelle and see about what we need to do, in terms of supplemental comments, if anybody actually has additional ones.

MR. HARTIG: The comments were very good. They were very to the points that needed to be made, and just here we are again, after going through the reauthorization, and now we're going through this. The regional aspects of the data that we have to be able to do this aren't being

recognized, and it's full speed ahead with NOAA to go through this ecosystem-based fishery management without knowing the shortfalls that we have, and our fishermen are scared to death. They really are. They look at the uncertainties in our data now and what it's costing them, and it's costing them plenty. If we go forward with this, with the same data we're using to manage our fisheries now, it's just going to be a mess.

MR. PUGLIESE: As a follow-up, Ben, I think, being involved as a SEAMAP Chair for years and years, the idea that we're at a point where we're actually at a wall on each one of the surveys, where it's either remove collection of diet or life history or drop sea days, that is ludicrous at this point that we're at that stage, because those are the pieces that we really need to advance this.

The other thing I will say is that there has been disproportionate providing of focus in some of the other regions. They have built integrated ecosystem assessments. I still have mixed feelings on where that's going. However, that's becoming a directive on how we advance vulnerability analyses. I think they're going to be ramped up, in terms of some of the work we do with partnership with the Region and the Center on the Climate Action Plan.

However, to this date, they haven't provided those types of resources to our region to be able to advance that or to NOAA Fisheries in our region to be able to advance that for the council, and so, yes, I mean I think the issue of that -- That's, again, why I highlight the activities on the partners and everything else, because all those different things we talked about previously have been primarily because of the partners' engagement in providing at least a foundation from which to move forward. Hopefully we can push the issue a little further with NOAA, in terms of their supporting our region, the council, the region, and at the Center.

MR. HARTIG: I looked at the research that's being funded, and none of it is in the Southeast. It's all being done elsewhere, and there is a lot of money going into ecosystem-based fishery management other than our region, and that's a real slap in the face for us, for what we've had to work with over the years.

DR. DUVAL: We are scheduled to have an informal Q&A tomorrow evening with Mr. Sam Rauch, and so perhaps some of these questions would be useful fodder for discussion.

MR. HAYMANS: A friendly reminder to everybody to prepare your questions for tomorrow night. Anything else to come before this committee? Roger, thank you for efficiency, and that concludes the business of the committee.

(Whereupon, the meeting adjourned on September 12, 2016.)

Certified By:_____ Date: _____

Transcribed By:
Amanda Thomas
October 2016

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

2016 COMMITTEES

ADVISORY PANEL SELECTION
Chester Brewer, Chair
Mark Brown, Vice-Chair
Zack Bowen
Michelle Duval
Ben Hartig
Doug Haymans
Staff contact: Kim Iverson

CATCH SHARES
Doug Haymans, Vice-Chair
Zack Bowen
Chester Brewer
Chris Conklin
Ben Hartig
Robert Beal, ASMFC Representative
Staff contact:
Kari MacLauchlin /John Hadley

DATA COLLECTION
Mel Bell, Chair
Doug Haymans, Vice-Chair
Anna Beckwith
Zack Bowen
Mark Brown
Chris Conklin
Wilson Laney
Charlie Phillips
Robert Beal, ASMFC Representative
Staff contact: John Carmichael

DOLPHIN WAHOO
Anna Beckwith, Chair
Zack Bowen, Vice-Chair
Chester Brewer
Chris Conklin
Roy Crabtree
Doug Haymans
Jessica McCawley
Mid-Atlantic Liaison, Tony DiLernia/Dewey Hemilright
New England Liaison, Frank Blount
Staff contact: John Hadley

EXECUTIVE/FINANCE
Michelle Duval, Chair
Charlie Phillips, Vice Chair
Mel Bell
Ben Hartig
Jessica McCawley
Staff contact: Gregg Waugh

GOLDEN CRAB
Ben Hartig, Chair
Charlie Phillips, Vice-Chair
Chris Conklin
Jessica McCawley
Staff contact: Brian Cheuvront

HABITAT PROTECTION AND ECOSYSTEM-BASED MANAGEMENT
✓Doug Haymans, Co-Chair
✓Wilson Laney, Co-Chair
✓Mel Bell
✓Chester Brewer
✓Jessica McCawley
✓Charlie Phillips
✓~~LT Tara Pray~~ LTJG Amy Hockenberry
Robert Beal, ASMFC Representative
Staff contact: Roger Pugliese- FEP
Chip Collier - CEBA

HIGHLY MIGRATORY SPECIES
Anna Beckwith, Chair
Zack Bowen
Chester Brewer
Mark Brown
Staff contact: John Hadley

(Continued)

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

2016 COUNCIL MEMBERSHIP

COUNCIL CHAIR
Dr. Michelle Duval
NC Division of Marine Fisheries
3441 Arendell Street
(PO Box 769)
Morehead City, NC 28557
252/808-8011 (ph);
252/726-0254 (f)
michelle.duval@ncdenr.gov

VICE-CHAIR
Charlie Phillips
Phillips Seafood/Sapelo Sea Farms
1418 Sapelo Avenue, N.E.
Townsend, GA 31331
912/832-4423 (ph); 912/832-6228 (f)
Ga_capt@yahoo.com

Robert E. Beal
Executive Director
Atlantic States Marine Fisheries Commission
1050 N. Highland St., Suite 200 A-N
Arlington, VA 20001
703/842-0740 (ph); 703/842-0741 (f)
rbeal@asmfc.org

Anna Beckwith
1907 Paulette Road
Morehead City, NC 28557
252/671-3474 (ph)
AnnaBarriosBeckwith@gmail.com

Mel Bell
S.C. Dept. of Natural Resources
Marine Resources Division
P.O. Box 12559
(217 Ft. Johnson Road)
Charleston, SC 29422-2559
843/953-9007 (ph)
843/953-9159 (fax)
bellm@dnr.sc.gov

Zack Bowen
P.O. Box 30825
Savannah, GA 31410
912/398-3733 (ph)
fishzack@comcast.net

W. Chester Brewer
250 Australian Ave. South
Suite 1400
West Palm Beach, FL 33408
561/655-4777 (ph)
WCBLAW@aol.com

Mark Brown
3642 Pandora Drive
Mt. Pleasant, SC 29466
843/881-9735 (ph); 843/881-4446 (f)
capt.markbrown@comcast.net

Chris Conklin
P.O. Box 972
Murrells Inlet, SC 29576
843/543-3833
conklinsafmc@gmail.com

Dr. Roy Crabtree
Regional Administrator
NOAA Fisheries, Southeast Region
263 13th Avenue South
St. Petersburg, FL 33701
727/824-5301 (ph); 727/824-5320 (f)
roy.crabtree@noaa.gov

Tim Griner
4446 Woodlark Lane
Charlotte, NC 28211
980/722-0918 (ph)
timgrinersafmc@gmail.com

Ben Hartig
9277 Sharon Street
Hobe Sound, FL 33455
772/546-1541 (ph)
mackattackben@att.net

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

2016 COUNCIL MEMBERSHIP (continued)

Doug Haymans
Coastal Resources Division
GA Dept. of Natural Resources
One Conservation Way, Suite 300
Brunswick, GA 31520-8687
912/264-7218 (ph); 912/262-2318 (f)
doughaymans@gmail.com

Dr. Wilson Laney
U.S. Fish and Wildlife Service
South Atlantic Fisheries Coordinator
P.O. Box 33683
Raleigh, NC 27695-7617
(110 Brooks Ave
237 David Clark Laboratories,
NCSU Campus
Raleigh, NC 27695-7617)
919/515-5019 (ph)
919/515-4415 (f)
Wilson_Laney@fws.gov

Jessica McCawley
Florida Fish and Wildlife
Conservation Commission
2590 Executive Center Circle E.,
Suite 201
Tallahassee, FL 32301
850/487-0554 (ph); 850/487-4847(f)
jessica.mccawley@myfwc.com

LT Tara Pray
U.S. Coast Guard
909 SE 1st Ave.
Miami, FL 33131
305/415-6765 (ph)
tara.c.pray@uscg.mil

Deirdre Warner-Kramer
Office of Marine Conservation
OES/OMC
2201 C Street, N.W.
Department of State, Room 5806
Washington, DC 20520
202/647-3228 (ph); 202/736-7350 (f)
Warner-KramerDM@state.gov

ERIKA BURGESS
NIK MEHTA
RICK DEVICTOR
DR. JACK MCGOVERN
JOCELYN D'AMBROSIO
MONICA SMIT-BRUNELLO
DR. MARCEL REICHERT
DEWEY HEMILRIGHT

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

COUNCIL STAFF

Executive Director
Gregg T. Waugh
gregg.waugh@safmc.net

Deputy Director – Science & Statistics
John Carmichael
john.carmichael@safmc.net

Deputy Director - Management
Dr. Brian Cheuvront
brian.cheuvront@safmc.net

Fishery Scientist
Myra Brouwer
myra.brouwer@safmc.net

Financial Secretary
Debra Buscher
deb.buscher@safmc.net

Admin. Secretary /Travel Coordinator
Cindy Chaya
cindy.chaya@safmc.net

Fishery Scientist
Chip Collier
chip.collier@safmc.net

Administrative Officer
Mike Collins
mike.collins@safmc.net

Fishery Biologist
Dr. Mike Errigo
mike.errigo@safmc.net

Fishery Economist
John Hadley
John.hadley@safmc.net

Public Information Officer
Kim Iverson
kim.iverson@safmc.net

Fisheries Social Scientist
Dr. Kari MacLauchlin
kari.maclauchlin@safmc.net

Purchasing & Grants
Julie O'Dell
Julie.Odell@safmc.net

Senior Fishery Biologist
Roger Pugliese
roger.pugliese@safmc.net

Fishery Outreach Specialist
Amber Von Harten
amber.vonharten@safmc.net

SEDAR Coordinators
Dr. Julie Neer - julie.neer@safmc.net
Julia Byrd – julia.byrd@safmc.net

Timestamp	Full Name	Email	Mailing Address (If your address is already on file, just type "on file")	How do you participate in fisheries in the South Atlantic? (Check all that apply)
9/12/2016 7:55:15	Dean Foster	dean@pewtrusts.org	on file	Non-Governmental Organization
9/12/2016 8:24:09	tim griner	tim@charlottefishco.com	file	Commercial Fisherman
9/12/2016 10:50:54	Bill Kelly	fkcfa1@hotmail.com	On file	Commercial Fishing Representative
9/12/2016 12:31:27	LTJG Amy Hockenberry	amy.n.hockenberry@uscg.mil	1050 Register Street, N. Charleston, SC	Coast Guard
9/12/2016 14:40:09	Richen Middleton Brame		on file	Non-Governmental Organization
9/12/2016 15:11:54	Lora Clarke	lclarke@pewtrusts.org	on file	Non-Governmental Organization
9/12/2016 15:16:12	David Bush	davidbush@ncfish.org	on file	NCFA

Monday 9/12/16

Last Name	First Name	Email Address
Abeels	Holly	habeels@ufl.edu
Bailey	Adam	adam.bailey@noaa.gov
Bianchi	Alan	Alan.Bianchi@ncdenr.gov
Brouwer	Myra	myra.brouwer@safmc.net
Clarke	Lora	lclarke@pewtrusts.org
Conley	Mary	mconley@tnc.org
Dale (SERO HCD)	David	david.dale@noaa.gov
Dunmire	Leda	ldunmire@pewtrusts.org
Dutka-Gianelli	Jynessa	jdgianelli@ufl.edu
Erwin	Gwen	gwen.erwin@myfwc.com
Foster	Dean	dfoster@pewtrusts.org
Franco	Dawn	dawn.franco@dnr.ga.gov
Helies	Frank	fchelies@verizon.net
Hemilright	Dewey	fvtarbaby@embarqmail.com
Johnson	Denise	denise.johnson@noaa.gov
Lederhouse	Terra	Terra.lederhouse@noaa.gov
Merrifield	Jeanna	jeannam@wildoceanmarket.com
Raine	Karen	karen.raine@noaa.gov
Shipman	Susan	susanshipman@att.net
Spanik	Kevin	spanikk@dnr.sc.gov
Takade-Heumacher	Helen	htakade@edf.org
c	m	mec181@yahoo.com
sandorf	scott	scott.sandorf@noaa.gov