SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

HABITAT PROTECTION AND ECOSYSTEM-BASED MANAGEMENT COMMITTEE

Webinar

December 8, 2020

TRANSCRIPT

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Additional observers and participants attached.

The Habitat Protection and Ecosystem-Based Management Committee of the South Atlantic Fishery Management Council convened via webinar on Tuesday, December 8, 2020, and was called to order by Chairman Steve Poland.

MR. POLAND: I will call the Habitat Protection and Ecosystem-Based Management Committee to order, and the first item of business is Approval of the Agenda. Looking at our time, I'm going to make a few suggestions to modify the agenda. We have a few items today that we need to take action or is imperative that we provide guidance, and so I want to frontload the agenda with that, and so I'm going to suggest that we move Item 5, the Habitat and Ecosystem Program Blueprint, up and discuss that after we have our discussion on the Ecopath with Ecosim model, and so that will move Item 5 up under 2, and so we'll go through Agenda Items 1, 2, 5, 3, and 4. Is there any objection from the committee for that agenda modification? Just so everyone is clear, Agenda Items 1, 2, 5, 3, and 4, in that order. Carolyn, go ahead.

DR. BELCHER: The hand-raise was just to let you know that I was back. Sorry.

MR. POLAND: Welcome back. Hearing no objections, we'll approve the agenda as modified. The next order of business is approval of -- It's actually the March 2020 committee minutes, and so not the 2019, and so I assume that everyone read the right minutes from actually the last time we met in-person. Are there any additions or deletions or modifications to those minutes? Is there any objection to approval of those minutes? Hearing none, those minutes stand approved.

With that, we're going to receive a presentation from Roger on Coral Amendment 10, as far as the overview of the scoping document, as well as input received from our Habitat, Coral, and Deepwater Shrimp APs. Whenever you're ready, Roger, take it away.

MR. PUGLIESE: Okay. What I would like to do is walk through the scoping document draft options that was prepared for Coral Amendment 10, and that is Attachment 1 of your briefing materials. The Oculina Bank Habitat Area of Particular Concern is what the item is to be addressed in this amendment, and it's to consider establishing a shrimp fishery access area along the northern extension of the Oculina Bank HAPC.

The Oculina Bank HAPC was originally established back in the original Coral FMP of 1982, and, subsequently, it was adjusted and amended and expanded, through Amendments 3 and 4 and then, ultimately, through the most recent coral amendment, with the most significant expansion, to the north and to the west of the entire area.

In addition, it allowed transit through the Oculina HAPC, because of the unique condition of the fishing occurring on the eastern side of the bank area, which, on the southern portion only, fishing occurs on the western side of the Oculina area, and so, during development of Coral Amendment 8, the council worked with the advisors, the coral and habitat and deepwater shrimp advisors, to both protect the habitats as well as allow fishing to operate on that eastern side of the HAPC to the north.

While developing the amendment, we went through multiple iterations that provided boundary refinement, through at least two, and really the third was actually a proposal by the fishermen also, and, going into that, once finally approved, there was still some adjustments that were identified as potentially possible in the northern extension, and that's what, essentially, this amendment is

trying to address, is going back to look at that additional input that was provided by fishermen at then, right after approval and submission, to consider some of the historic grounds on that eastern corner.

What you have is an options/scoping document that provides the translation of those recommendations into potentially two different shrimp fishery access areas. To support additional information on this, after it was identified that the council would be moving forward with review of this, there was actually direct coordination with the researchers, and subsequently mapping, and they provided priority mapping of areas, and they mapped right in the area that we had requested, along that eastern edge, to characterize some of the habitats within that area.

However, it was multibeam mapping, and not really any validation. The one thing that this document does do though is it reaches back to historic information that was prepared when we did Coral Amendment 8, and the specific detailed information was provided by the 2011 NOAA Pisces cruise, which has two major block areas that show very detailed information on the coral mound areas and the detailed information on species utilization within those areas, and so what you're really looking at is kind of the context of the whole conservation of those zones, and that is getting in some of the high-relief habitats, but also the detailed information that was provided on those cruises, as a backup of the intent of the original HAPC, and really what you're trying to get at, to ensure that the conservation is sustained.

The Deepwater Shrimp AP, in 2018, followed up with a request that the council re-review and advance consideration of allowing this, and we have put in a draft, and now this is just basically staff's -- Frank Helies is the NOAA lead, and we have a couple of draft proposed actions, or purpose of the coral amendment, to increase rock shrimp access in the area along the eastern boundary of the northern extension of the Oculina Bank Coral Habitat Area of Particular Concern, while maintaining protection of the oculina deepwater coral ecosystems. The need of the action, or the need of Coral Amendment 10, is to provide access to historic rock shrimp fishing grounds along the eastern edge of the northern extension of the Oculina HAPC. This was draft for beginning the discussion of the advisory panel, and then we're going to go into the IPT discussions shortly after the first part of the next year.

What you see here is the Oculina Bank Habitat Area of Particular Concern and a focus on how the last two components were added in. The northern extension is in green, and the western extension is in blue, and the original HAPC is the lighter blue southern portion, which created the overall Oculina Bank HAPC, and you can also see, embedded in the Oculina HAPC, is the original MPA, the experimental closed area, in the southern portion of the Oculina Bank.

The rock shrimp fishery has varied over the years, and some historical peaks back in the 1980s and 1990s, and catches have been occasionally higher, but it has had actually some fairly good years in the more recent times, with, in 2017, the catch reaching over 2.7 million pounds and one of the highest values on record of almost $5 million.

Advancing into what the potential options are for consideration, the issue is the rock shrimp fishermen have requested the eastern edge of the northern extension be reviewed to determine if historic trawling areas can be reopened for rock shrimp fishing, and so what we have is that the council, at the September council meeting, directed advancing Amendment 10, on one action, and there was discussion of actions in the future addressing both the deepwater coral HAPCs as well

as the extension area under consideration here, and, in order to expedite and focus this effort, Amendment 10 focuses solely on the potential extension on the eastern side of the northern extension.

With preparing this material, what we did is we were able to provide this to the Habitat and Ecosystem Advisory Panel in October and then a Coral Advisory Panel and Deepwater Shrimp Advisory Panel that occurred in November, to be able to look at this material and discuss some of the issues that have been raised in the past and provide recommendations and comments to the council, which we have the chairs to forward that, as soon as I walk through the basics.

What we have is a no action alternative, the status quo, which would be to not develop action, and then you have an action for Option 2, which is to create a shrimp fishery access area along the eastern edge of the northern extension of the Oculina Bank Habitat Area of Particular Concern. What you have is two alternatives, an alternative based on coordinates provided by industry, and so the first list we see here are the coordinates that were provided in 2014, which was actually a refinement of the alternatives, coordinates, that were provided in 2013, and so what we have is both of these have been provided.

Alternative 2a is about twenty-two square miles, in depth ranges between ninety-two to ninety-five meters, and the outside boundary is about ninety-eight meters, and then Alternative 2 encompasses approximately thirty-two square miles, in depths between eighty-eight and ninety meters, and the outside bound, and, again, that's the existing boundary of the HAPC, is approximately ninety-eight meters.

Most of the fishery occurs basically inside of about 150 meters, and so what we see here is the original coordinates provided by industry in 2014, which was reaffirmed by the Deepwater Shrimp AP when we met, and this is translated to a shrimp fishery access area boundary, and so what it takes is those coordinates, which are east of the existing boundary, and the boundary coordinates and creates the shrimp fishery access area in Table 2, and then Table 3 are the coordinates we were provided in March of 2013, and they're essentially the same thing, where you've taken those coordinates and then the same eastern boundary of the HAPC.

What it provides is these two, and it's pretty hard to see this, but it's intended to show that it is that narrow band along the edge, and those are the two overlapping, with the shrimp fishery access area Alternative 2a being slightly revised offshore, to address some areas of habitat that were identified after the discussion and the original 2013 alternative that was presented.

Now, in order to draw on information that we had in the past, to at least touch back on this, when this was first discussed, we did a look back at some of the rock shrimp VMS analysis provided, and, looking at the analysis that was provided, what we looked at was the fishing activity that occurred between 2003 and 2014, which was the VMS information available at that time, and, originally, when the amendment went through, it was partial 2014, and we followed up with a subsequent review that provided more information, through the entire year, and, on the overall, that entire timeframe, there's about 1.76 percent of the fishing effort that occurred within the HAPC area.

The point though that was made is that, in 2014, with the update of the information, we did find out, and industry had concurred, that there had been fishing closer to the edge, and about 8.5

percent of that fishing activity, points that were identified as fishing -- In this analysis, what it meant was vessels, or point operations, that were between two and four knots, is the standard tow component that defined fishing for rock shrimp in this area.

In that timeframe though, it did show a higher point. Now, it was one of the lowest years of effort, and, if you remember -- Let me go back, real quickly, to the catch levels in 2014, and there was only 380,000 pounds of shrimp landed that year, and so it was one of the lowest points within that area, but it does also show that that was the area that they essentially relied on a little bit more, and so that provided at least some context of the request from industry, and this shows, again, the area of consideration as well as the actual table showing some of the catch levels.

Now, what we see here is the combination of the information we have on habitat mapping as well as the actual proposals, and this is Alternative 2a, and it shows -- The yellow area along that area is the mapping effort that was conducted during the 2017 cruise. Essentially, it's showing between eighty and maybe ninety-five meters, predominantly, during that cruise, and it's fairly low-relief habitat.

Then, if you look at the original 2017, in the northern area, this one section does show you the significant distribution of the coral mounds in the area, and those correspond really closely with the historic bathymetric maps that were provided when we were originally doing this amendment in the past, back in Coral Amendment 8, and so it does validate and verify the distribution of those areas, and we do see that they are along the edge of the existing boundary and are related to the existing proposal.

That is the northern part of what would be Alternative 2a, and this is the southern part of what would be 2b, and this, again, shows you -- The lighter blue is pretty much the distribution of those pinnacle systems, and then the mapped area is, again, along about an eighty to ninety-five-meter contour, in fairly low-relief habitats. Then, if you look at Alternative 2b, it does show that the line comes a lot further inshore at a couple of different points in this area relative to the pinnacles in that area, and, as I mentioned, industry actually had gone in and created that second alternative, because of some of these types of implications, and, if you look to the south, again, like the first one, Alternative 2b, again, does come closer to inshore and moves inshore even closer to some of these systems.

Given all of that, timing, potential timing, that the committee needs to discuss on how to advance, and, right now, we have the direction to advance options for scoping for discussion with the advisory panels, and the advisory panel for Habitat and Ecosystem met in October, and Deepwater Shrimp and Coral met in November and provided the inputs that you're going to receive today. Then the council will review the AP input and potentially approve the amendment for scoping today.

I think the discussion was to have scoping in March of 2021 and provide alternatives to advance for consideration for an amendment and for public hearings that would occur after June, and then hearings in the summer, and then approval in September of 2021, and at least this is a tentative schedule for discussion today.

What I did want to do is one last thing, and that was to be able to show that, within the appendix, what it does do is that, in those deepwater coral distribution areas, there were specific what are

called SEADESC reports that were prepared for those habitats, which describe the location, the sites, and even the species, and some of the environmental conditions of the area, and these were done through the Daytona and the Titusville areas that were presented. Just for perspective on some of the ones that were specific to the high-relief habitats, those are available in the appendix for consideration, and let me get back to the actions.

With that, we'll go back later on to action and discussion for the committee, and I will send this back to Mr. Chair for the advisory panel input into this. What we have is the first up, I think is -- Let me get back to the agenda. We have Anne Deaton, who will be providing the input from our Habitat and Ecosystem advisors, who were able to meet first, and they met in October of this year. Anne.

MS. DEATON: The advisory panel did discuss this, and I would say there was a lot of concern about modifying the boundary, because of how close it appears on a map, but, you know, they just wanted to have, I think, a buffer between where the fishing activity could occur and where the corals with the relief -- Where the live coral is. I am just looking at my notes here.

Several people did not -- A few others said, if there is a way we could allow a route through there, to avoid the coral, that they were okay with that. Looking also possibly at how much effort there was, or if they could look at the tracking, the VMS data, to see where the vessels are occurring most and how they could try and find a compromise, but there was definitely a concern that these are very unique structures, and they didn't want them impacted. I don't think they had a vote on that, or a motion on that.

MR. PUGLIESE: No, you didn't have any specific motions.

MS. DEATON: No, and so that's all I had.

MR. PUGLIESE: Okay. The report is actually under Attachment 7, and it has some of the notes specific to this.

MS. DEATON: One other thing I will add is that, during that discussion, they did state that the new information we have about the deepwater corals needs to be taken into consideration and look at it maybe holistically and see if other conservation measures are needed, but, regarding this specific area, it's been mapped, and we kind of know what's there.

MR. PUGLIESE: I guess are there any questions for Anne? Okay. Seeing none, let me move on to --

MR. POLAND: Hold on one second, Roger. We have Chester's hand up. Go ahead, Chester.

MR. BREWER: Thank you, sir. When you're talking about the new areas, I guess you're talking about the new discovered areas, and are they talking about this stuff -- I've read a little bit about it, that they found some really tall coral, that even I think it was described as being, quote, as tall as the Statue of Liberty, and is that the area that they were concerned about, or at least taking a look at?

MS. DEATON: No, and, Roger, you can answer that better than I can.

MR. PUGLIESE: We've got a number of different things, and a lot of that really exploratory work was all the area that's done off in the deepwater coral HAPCs to the north, on the Blake Plateau, and those are the areas that the council will consider into the future for conservation, and, yes, there's some pretty amazing extensions of existing information, et cetera, in those areas. This is really focused on areas within the HAPC as it exists now, and the only thing we have is the more recent mapping, which is actually the low-relief habitat areas.

MR. BREWER: Okay. Thank you. Well, you see my ignorance on this, and, Steve, I will ask -- Not in any kind of official form, but I understand the AP has had one or more presentations with regard to each, quote, new discovery, and I think it would be really nice if the council could also have a presentation on them, because it sounds like some really impressive stuff that is within our area of jurisdiction, and I would like to learn more about it.

MR. POLAND: Thank you for that, Chester. Certainly, and we can consider that later on, when we get to our timing and tasks motion, but I know the AP meetings that I have attended, where they have presented updates from the ROV work and the deepwater mapping and that kind of stuff, it's been very fascinating just to realize how much life is down there, and so I certainly don't think it would be -- Roger can speak to this, but I don't think it would be too much of an ask to get somebody to come and kind of present the state of deepwater coral mapping up to this point. Mel, you have your hand up? Go ahead, Roger, to that point.

MR. PUGLIESE: I was just going to say, to that, just quickly, is that we actually had the Director of OER slated, at one time, to be able to present on this, and the last presentations to the Habitat and Ecosystem Advisory Panel really did provide kind of a springboard for that exactly, because it was broader, comprehensive reviews, which are intended to be the next step to the council, to see, again, a very focused effort on how much has actually occurred since Coral Amendment 8.

MR. POLAND: Thanks, Roger. Mel, go ahead.

MR. BELL: To Chester's question, that's something we would, obviously, want to learn about in the future and be briefed on, and, like you said, we'll have to deal with that in scheduling, but, in the meantime, I would recommend -- There are things that you can access, any of us can access, online, and the SC DNR did a webinar a couple of weeks ago covering some of this work off of the Carolinas up here, and so you can access those things any time you would like and learn quite a bit, and it was pretty fascinating.

MR. PUGLIESE: Yes, and I can send the links back out to our original presentations, as well as maybe some of the specific lives, especially from OER and SC DNR's links, and there's a lot of online information and detail.

MR. POLAND: Thanks, Roger. Myra, go ahead.

MS. BROUWER: Thank you, Steve. I just want to get something out before it leaves my brain. It occurred to me that this deepwater coral presentation could be handled as a special webinar, like we did for dolphin recently, and that was very well received, and it would allow more time for researchers to present and questions, and so I'm just putting that out there as an option.

MR. PUGLIESE: Actually, Myra, real quick, that was one of the proposals when I first had talked to OER, just to make sure that we had enough time to be able to do this, because it's pretty tough to schedule, as is obvious from being able to work with it now, because that was one idea, given the webinar world, and everybody is getting pretty refined, and we have the capability, and a focused effort for the council may be good, and you could actually bring in other representatives too, and so that's something that has been discussed, and, if the council wants to do that, we can pursue coordinating that.

MR. POLAND: Thanks for that, Myra. I think that's a good idea, and it will allow us to devote our full attention to it and still get us maximum flexibility for our regular council meeting scheduling and that kind of stuff, and it almost sounds like we need to have like a monthly or quarterly kind of lunchtime seminar series for the council. Go ahead, Chip.

DR. COLLIER: I just wanted to make sure that you guys were -- Like you had mentioned, it was going to be more of the seminar style, as opposed to like the recreational meeting that you guys had, the recreational topics meeting that you had.

MR. PUGLIESE: I think the idea was that it would be a seminar.

DR. COLLIER: Okay.

MR. POLAND: All right. Are there any more questions for Anne, as far as the Habitat and Ecosystem AP report? If not, I think Roger is going to give us a quick overview of the Coral and Deepwater Shrimp AP report.

MR. PUGLIESE: Okay. I think we have Jocelyn Karazsia online.

MS. KARAZSIA: Good afternoon, everyone. Thank you for inviting me to your meeting today. My name is Jocelyn Karazsia, and I'm with NOAA Fisheries Southeast Region's Habitat Conservation Division, and I'm the current Chair of the Coral AP. I just wanted to start off with saying the Coral AP really appreciated having the opportunity to meet with Mike Merrifield and the Deepwater Shrimp AP back in November, and we definitely benefit from hearing from the rock shrimpers directly and all the local knowledge they bring to the table.

We also appreciate the considerable amount of work that went into establishing the boundaries for the Oculina HAPC, in particularly this northern extension. We acknowledge that the boundaries were carefully determined, to help ensure the protection of the Oculina coral mounds, and of concern is one of the alternatives that we reviewed, 2a, would allow for fishing within approximately fifty meters of known or suspected coral habitat.

We think the existing HAPC boundary provides a protective buffer around those coral mounds, and, during our meeting back in November, one of our AP members raised a concern regarding the location of the fishing vessel, versus the fishing gear or rig that could interact with the bottom. For example, if you consider a ratio of scope to depth being somewhere between three to 4.3, the horizonal distance between the fishing vessel and the rig could be over 500 meters, which could mean, under certain conditions, the fishing vessel is outside of the HAPC boundaries, but the rig could be inside the HAPC boundary.

We also think the existing HAPC boundary provides a protective buffer surrounding low-relief hardbottom that provide essential fish habitat for deepwater species managed under the Snapper Grouper FMP, and these low-relief hardbottom habitats are likely present in greater abundance, but they have not been mapped, due to the resolution of the multibeam mapping that has been done in this area, and, finally, we think the existing HAPC boundary provides a protective boundary between any sediment plumes that could result from fishing gear interacting with the bottom.

For these reasons, and a few others, the Coral AP developed a motion, at the November meeting, to recommend the council adopt Option 1, or the status quo alternative, and, again, I just want to thank you for the opportunity to share these comments today.

MR. POLAND: Thank you, Jocelyn. Are there any questions from the committee? All right. I am not seeing any. Thanks again for that report. Next, we have a report from the Deepwater Shrimp AP. Roger, are you giving that?

MR. PUGLIESE: No, and we have the chair of the advisory panel, Mike Merrifield, online. Mike, if you're ready to go, you should be unmuted.

MR. MERRIFIELD: Thank you. Hello, everyone. My name is Mike Merrifield, and I'm the Chair of the Deepwater Shrimp AP, and, basically, our conversation was really around just this small little area that's the southern half of basically the eastern boundary of the northern Oculina HAPC expansion created out of Coral Amendment 8.

This area was historically rock shrimp fishing bottom, as is evidenced by the dense number of VMS points that exist in that area, and I think Roger has some charts that actually show the VMS points on them, so that you can see that there was actually fishing activity that occurred in those areas.

As far as an insignificant number of points in one year versus another year, as anyone knows, from year to year, there are significant changes, and it can make all the difference in the world from one year to the next. Every potential productive area becomes critical, particularly when some areas become non-productive for extensive periods of time, for example south of the original experimental box, and we've lost productivity in a number of years, due to Okeechobee runoffs and some south Florida outfalls and things like that have just damaged the bottom down there, and so these other areas become even that much more important.

There were concerns raised by the Coral AP regarding gear deployment, and the Deepwater Shrimp AP members made several points, in an effort to satisfy those concerns, and the lesser-experienced captains do not trawl the offshore side of the Oculina HAPC, because of the depth and the speed of the Gulf Stream. Gear is deployed typically in open areas away from the boundary, to ensure that the gear deploys property before moving in closer. Once the gear is deployed, they begin following plotted tracks that have been used year after year that they know have been productive in the past. They know where their gear is, and it's directly behind them, when they are trawling along the boundary, and they are very careful and very respectful of the boundary.

The gear has been tuned for the least contact with the bottom as possible, to minimize wear on the trawl doors, the shoes, the nets, the bags, and gear is hauled back at the end of the trawl, into an open area, so as not to drift into the HAPC.

The HAPC extends from about Fort Pierce to St. Augustine, and this northern part is probably about straight off of Cape Canaveral north, in basically a southeast to northwest orientation. The Gulf Stream current runs north, at about three to almost six knots, depending on weather, and the current pushes them inshore or offshore of the Oculina Bank. Most of the time, the stream runs five knots or better on the offshore side of the bank, and it would seem to reason that the plumes, if a plume is generated by the trawl, would drift north, which would be kind of away from the Oculina structures, and it would have minimal sedimentation effect on the coral.

The Deepwater Shrimp AP members expressed concern for the Oculina HAPC and its wellbeing. Rock shrimp trawlers have no interest in interacting with the structures or the limestone hardbottom, as this could have severe detrimental impact on their gear, vessel, and crew. We would like to continue to access the loose substrate bottom, where the rock shrimp are historically harvested.

I guess, at this point, we're just looking at creating a fishery access area, as opposed to making any boundary changes, so that there's -- That's really kind of been determined already, and so that's basically what our comment is. Any questions?

MR. POLAND: Thank you for that, sir. Are there any questions? Wiley Sinkus, go ahead.

MR. SINKUS: Sorry about that. That was a mistake raised hand.

MR. POLAND: All right. Next, we have Chester. Go ahead.

MR. BREWER: I was interested that you made mention of the outfall from Lake Okeechobee causing damage on the shrimping grounds up around -- I guess closer to Titusville, and is there any -- Let me just say that, in another life, I am very interested and concerned and involved in that, and is there any evidence that in fact there is damage occurring from the outfall from Lake Okeechobee on the shrimping grounds for the deepwater shrimp?

MR. MERRIFIELD: Absolutely. I mean, I don't know if anybody else has input on that, but I can just tell you, from our experience, that a very productive area for rock shrimp starts down around Fort Pierce and works its way up, and then it goes to the -- You have to go to the inshore side of the Oculina Bank, until you get up to right around Titusville or so, where not the northern extension is, and then you can do the offshore and the inshore side, but, after the -- We had a lot of outfall, runoff, that came out one year when we had a north wind, which pushed a lot of that water further out, and then, as it hit the Gulf Stream, it went straight up the stream, and that bottom, for about five -- I mean, it's just now becoming somewhat productive, and that was probably five years ago. The first couple of years after that occurred, when there were trawls made in that area, the nets would just fill up with some form of a brown algae that was there.

MR. BREWER: I am sorry to hear you say that, and, unfortunately -- You know, I think most of that gets out into the ocean, through the Stuart Inlet, and it makes sense that we do have this thing

called the Gulf Stream, and it would be pushing that algae up into these areas, and it's a shame. It's just a damn shame.

MR. MERRIFIELD: Agreed.

MR. POLAND: Thanks, Chester. Mel, go ahead.

MR. BELL: This might be a question for Mike, I guess, because I am having trouble just visualizing this, and my Dollar Tree 2X readers are not helping me, and so the area that you are interested in acquiring, or reacquiring, access to, how wide is that? I can't really tell from the charts. They're kind of hard to read, but how wide, in terms of yards or whatever? Do you know?

MR. PUGLIESE: Real quickly, in some areas, it's about 1,500, or over that, meters, and some are narrowed down, depending on which option you were looking at, because, under the 2013, there are areas that are very, very narrow, less than probably 300 meters, or 200 meters.

MR. BELL: Okay, and so 1,500 meters is sort of the maximum width?

MR. PUGLIESE: Yes, and it's probably -- In the furthest southern area, in the furthest southern portion, probably within those areas here, and it's maybe 1,500, and then it's going all way down, when you go into some of these areas up here, and it could be a hundred meters, at the most.

MR. BELL: Okay.

MR. PUGLIESE: This is probably the predominant, this and north, and Mike can verify that, but the predominant -- Let me open one thing real quickly. This is the historic VMS chart that I had that shows -- This is all the points, and so it's not just the fishing points, but it does show you -- The area we're talking about right now is this southern portion right here, along here, and --

MR. MERRIFIELD: That looks like the chart from the half of year of 2014 as well.

MR. PUGLIESE: Yes, and this goes all the way through -- I think this was a partial we did, and they may not have had all the points at that point, but it's all the points within there, and so there was a portion of these, probably 10 percent of those, that are actually fishing points that you're seeing along this edge, and so the focus, in those two mapped areas, one to the south here and one to the north there, and in between, are some of the most significant -- Really, north of that one area, while it goes up further into here, there was almost -- None of these were really actually fishing points in that northern area, and so it's literally -- One area is thirty-two miles, I think, total, and the other one is twenty-two square miles, and so with narrow bounds between 1,500 and maybe a hundred meters, total, and so it's a fairly narrow band along there, but, in certain times, there was effort right along that boundary edge that was where the fishery has historically fished, and so that's right along some of this, and then right here, this whole area in here.

MR. MERRIFIELD: Can I add something about the fishery for a second?

MR. PUGLIESE: Yes.

MR. MERRIFIELD: So it's somewhat of a fishing strategy that occurs along there, and so the strategy is that, once you've set your gear, the strategy is to go as close as you can to the boundary, and then work your way out, and it's somewhat of a herding strategy, if that makes sense.

MR. BELL: In terms of what the animals are doing, you mean?

MR. MERRIFIELD: Yes, and so you're kind of pushing them, and so your first trawl would be in shallower waters, and then you would work your way out, and it kind of pushes them out. It pushes them away from the bank.

MR. BELL: Okay. Well, you all answered the question, and that's great. I just couldn't tell, from looking at the charts, the actual dimensions. Thanks.

MR. MERRIFIELD: It's hard to explain the significance of such a small area.

MR. POLAND: Roger, is that figure with the VMS points -- Is that provided anywhere in the previous briefing materials or the AP materials or anything like that?

MR. PUGLIESE: Actually, I had that as -- It's in the appendix, the Coral Amendment 8 appendices, that I have had in a number of different ones, and we can pull that back out and incorporate it into the document. The one that shows the actual occurrence was the one that I had provided, but it doesn't have the points in it, the one that's integrated in the document, and it has the analysis and the tables, but it didn't actually show the points, and so that corresponds with this, but we can include that.

MR. POLAND: I was just curious, because I didn't come across that in any of my preparations.

MR. PUGLIESE: Yes, and I had just pulled it back out, because it was in the appendix. I had it in the appendix document that has literally all of -- Let's see, quickly. Just quickly, this is where it comes from, these analyses that were done back when we did the original amendment, and, actually, that was a follow-up one that included 2014.

MR. POLAND: Okay.

MR. PUGLIESE: But, again, that one only had the total areas, and so you're seeing these adjustments through multiple iterations that are identified in Coral Amendment 8, and I was trying to balance on how much we included this time.

MR. POLAND: All right. Thank you. Mike, I see you have your hand up. Go ahead.

MR. MERRIFIELD: I would just recommend that those be included in this, because I do think they're very helpful, to see how we -- This is the reason we have the VMS data, to show where the shrimping occurs, and so I think there is value in using that data and illustrating it.

MR. PUGLIESE: Yes, and we can easily include those, the different alternatives that were reviewed in the past that had information on the specific use of that area.

MR. POLAND: All right. Thank you. Are there any more questions for Mike on the Deepwater Shrimp Advisory Panel report? I am not seeing any. All right, Roger. Are we going back to the document? Okay. I will open it up to the committee for discussion on the options paper, and it looks like Roger has a draft motion there, but I feel like we need to discuss this a little bit, and then, hopefully, by the end of this discussion, decide whether we're going to send this out to scoping or not. Are there any questions or any comments from the committee? Jessica, go ahead.

MS. MCCAWLEY: I just wanted to thank Roger for putting this document together and meeting the two APs. I feel like this is something that's kind of been hanging out there for a while, and it's been on our list, and I am certainly ready to move forward with this, and, when you're ready, I would actually offer a preferred option, whenever you're ready.

MR. POLAND: All right. Is there any more discussion from the committee? If not, I will entertain the motion, Jessica.

MS. MCCAWLEY: All right. **I move that we choose Option 2, Alternative 2a, as the preferred.**

MR. POLAND: All right. Thank you. There is a motion on the table. Is there a second?

MR. BREWER: I will second.

MR. POLAND: It's seconded by Chester. Is there discussion? Go ahead, Art.

MR. SAPP: I was just looking to second.

MR. POLAND: All right. Thank you. Mel, go ahead.

MR. BELL: Same. I was seconding, and I just hit the wrong red button.

MR. POLAND: All right. Monica, go ahead.

MS. SMIT-BRUNELLO: I think it might be useful to have some discussion about why, Jessica, that you're -- I'm sure you will, but just tell us why you're picking that preferred alternative, when this is -- I know this idea has been hanging out there for a while, but there's really no analysis of what kind of effects is this going to have. I mean, we've had some discussion, and we don't really have too much analysis in the document, and there's been no IPT meeting and that kind of thing, and you're just going to scope it in March, and so why choose an alternative now? On what basis? Thanks.

MR. POLAND: Jessica, to that point?

MS. MCCAWLEY: Thanks, Monica. To that point, I feel like we have had discussion about this in the past, and it's my understanding that this particular option is the one that we were discussing back when we finalized this amendment to modify the boundaries of this area in the first place, and so I don't know if you guys remember, but I felt like we worked on this thing for multiple years, and you guys sent FWC folks over there to talk to Mike and the other fishermen in their area, and we did look at the VMS tracks, and Mike brought them to the council meeting.

I feel like we had considerable discussion during the fishermen roundtable, as well as during public comment before we passed this, and it just seemed like it was going to be more difficult to stop and go back and look at this little sliver of an area, and I feel that we made a commitment to these fishermen that we would pass this amendment, and we said please let us finalize this, and then let us go back and look at this particular area.

I had already seen the VMS tracks, and I just felt like we had made a commitment to these guys. It doesn't appear, to me, based on everything that I can see -- It still seems like there's a buffer there, even with this area, and, even though this area is relatively small, in certain years, this particular area and the economic information that was provided by the rock shrimp fishermen, back when we were looking at this, was that it was a very valuable area for a handful of these fishermen, and so those are my rationale.

I feel like this is something that we have been trying to work on for some time, and maybe should have actually been fixed before we took final action to close the area in the first place, and so I just feel like I'm following through on, I believe, the council's intent back when we closed this area and promised to go back and look at this very lucrative little sliver area.

MR. POLAND: All right. Thank you for that input, Jessica. Mel, I see you have your hand up. Go ahead.

MR. BELL: Thanks, Steve. I can remember, and I swear it was June of 2014 or so, but we had been at this for quite a while, and the particular option that Jessica has selected as preferred -- I think that most closely resembles what the folks that were working with us were trying to regain access to, and, obviously, FWC was much more involved in this, but this has been going on for quite a while, and I think the area that we could potentially select as preferred just most closely resembles what it was they asked us about originally, years ago, and that is why that -- That's why I asked about the width and all.

I mean, 1,500 meters is not that huge of an area, in terms of width, but, if it would really help them substantially, as Mike discussed how they actually fish it and all, and it may seem like a small area to some, but I think it's a big deal to the industry and the fishery, in terms of how they prosecute the fishery, and so that's why I am fine with that particular option.

MR. PUGLIESE: Steve, just real quick, the coordinates that are provided and included here are the exact coordinates that were proposed when they looked at the information and worked with FWRI and others and looked at their VMS and then adjusted even -- The 2014 option was the one that -- Those points had been reaffirmed for I think two, and then this latest advisory panel discussion and recommendation.

One very consolidated point is that the shrimp fishery access area option very much focuses on allowing that access without interrupting the integrity of the HAPC, and so you have the ability, when you have that timing that it's good to do that, but you also still have the protection afforded by the overall HAPC from other gears or from other non-fishing activities, and so that provides a very focused action to address the concern.

MR. POLAND: All right. Thank you, Roger. Any more discussion from the committee? Again, there is a motion on the table. All right. I am not seeing any hands raised, and so we'll dispense with this motion. **Is there any opposition to the motion? Hearing none, the motion stands approved.** I think we still need to make a motion to send this out for scoping, if the committee wants to. Do I have anybody willing to make that motion? Mel, go ahead.

MR. BELL: Thank you, Mr. Chair. **I would move that we approve Coral Amendment 10 for scoping at the March 2021 council meeting.**

MR. POLAND: Thank you, sir. Jessica.

MS. MCCAWLEY: Second.

MR. POLAND: Thank you, ma'am. Any discussion? I am not hearing any. **Is there any opposition to the motion? Hearing none, the motion stands approved.** Roger, is that everything that you need from the committee on this item?

MR. PUGLIESE: Yes. We have the timing, but I guess that could be adjusted with the Executive Committee, in terms of the actual process beyond the scoping, but that's all we needed to do for this session on Coral Amendment 10.

MR. POLAND: All right. Thank you, sir. All right. When you're ready, Roger, we can move on to the Ecopath with Ecosim model discussion.

MR. PUGLIESE: Okay. Just a quick introduction, but what's going to occur today is that we have presentations by Luke McEachron with FWRI, who is going to focus on what the model provides, some of the context for members who may not have the details of what the model actually does or is, and then how it's applied, how different portions of Ecopath and Ecosim and then Ecospace can be applied.

That will move directly into -- I will touch on some historical connections, and then Lauren Gentry will provide a review of the actual South Atlantic model and then, again, components and how parts of those are -- Activities within the model activity are already being used for other issues, but also how that sets the stage for then the input and presentation by Genny with the SSC on the review of the Ecopath with Ecosim model by the SSC workgroup and then by the full SSC and recommendations on proceeding.

The intent here is to set the stage for the committee to discuss focus on application and advancing this and identification of species or the types of future analysis to charge some of the efforts with the modeling team and with the recently proposed standing ecosystem model committee, and, with that, I can pass this directly over to Luke McEachron, and we can get started.

MR. MCEACHRON: Today, I just wanted to give like a high-level view of the ecosystem model and how I used different components, because it can be a little confusing, and there might be new members, as Roger mentioned, that are unfamiliar with the model. Hopefully, by the end of this talk, you will be clear how and when we use each component, and, in this context, we will also talk generally about where the South Atlantic model is.

The ecosystem model we use is called Ecopath with Ecosim and Ecospace, or EwE, and it's the most common marine ecosystem model in the world, and so this map shows where different models have been developed and applied, and it generally consists of these three components, which we'll go into in detail. In Ecopath, we're looking at a snapshot of the trophic dynamics. In Ecosim, we look at these trophic dynamics over time, and, in Ecospace, we look at trophic dynamics simultaneously over time and space.

In this first component, we're just constructing a mass-balance model, to represent a moment in time, usually a year, and, when we say mass-balance, we mean that prey mortality is predator consumption, and, therefore, these trophic groups are linked in the model, via their diets, and we're simply defining the groups and the diets and putting growth and the fisheries data, and we're getting out an ecosystem snapshot.

We can visualize that as a traditional food web, like this, and, if we just stop here, like many people do, we could get a sense of the key groups in the system, and we could produce a variety of ecosystem indicators that describe the system, and, in fact, there's a series of best practices and established ranges of some of these quantities that help us determine if the model is reasonable, but, importantly, it serves as the foundation for Ecosim and Ecospace.

In Ecosim, we convert the Ecopath master equations to differential equations, and so model biomass over time for each trophic group, and so, conceptually, we say that we assume that these predator-prey interactions are not random, and, in fact, they are currently states, or arenas, where prey are either vulnerable to predators or available for predator consumption, and, specifically, we use time series observations, these points, to tune a vulnerability parameter that defines the relationship between prey mortality and predator density and calibrates the model, which you can think of as this line.

A high vulnerability parameter estimate -- They may help us predict underlying patterns in observed biomass over time, and you can see, when the parameter is a little higher, there is more of a linear relationship between prey mortality and predator density, and, when we tune these parameters, we get a calibrated model for each trophic group, and we get a baseline understanding of the time dynamics in the system, and so what's a good example of how you might use this model?

I think, in the documents, there is this Chagaris, Dave Chagaris, lionfish paper, and so they used Ecosim to look at the effects of lionfish on reef fish in the West Florida Shelf, and they evaluated different lionfish and reef fish harvest strategies to indicate possible effects, but how exactly do they do this in this framework?

First, they took an existing Ecopath model and they modified it, and so, in Ecopath, they added a lionfish group, added lionfish growth information, and created an artificially high fishing mortality, to make sure that adding lionfish didn't disrupt their initial model balance. This also made it easier for them to modify harvest strategies in Ecosim, and so they modified fishing effort in Ecosim to assess different mortality rates, not just on lionfish, but on different reef fish as well, and then they had a series of alternative runs that they could compare to a baseline run.

This is what it looks like when you compare multiple runs, and so, here, they have plotted predicted lionfish biomass under different reef fish fishing mortality rates, and so this is showing that the model predicts lionfish biomass will increase if you increase fishing mortality on other reef fish.

Alternatively, you can see that, if you don't harvest lionfish at all, the model predicts the decline in biomass for nearly all the other reef fish groups in the system, but the crustacean groups might increase in biomass, and so this might be because the predation pressure on the crustaceans is reduced when these other reef fish predators decline.

Let's talk about this last component, Ecospace, and, here, you are basically applying an ecosystem model in spatially-explicit cell, as in a raster map, and biomass can move between these cells in different time steps, and then the result is a series of biomass and catch distribution maps for every group in the study area.

The distribution of biomass is governed by several things, and so, first, you have to define environmental preference functions that determine if a raster cell contains environmental conditions favorable to a group. For example, in a specific location in a map, there will be a depth value, a distance to shore value, a temperature value, and then these curves define if those values are preferable to a species or not, and the product of these values becomes a habitat capacity value, and biomass in the model will gravitate towards cells with high habitat capacity.

How quickly biomass moves to higher habitat capacity areas in monthly time steps depends on a dispersal value, and, also, there is fishing effort in the model, which is distributed by a gravity model that considers distance from ports and species that are targeted in different fleets.

Now we have the full picture of Ecopath, Ecosim, and Ecospace, and, in Ecospace, we inherit the Ecosim model. We then define environmental preference functions from the raster layers of depth and other imagery, and this other imagery might be satellite imagery, like surface temperature, or a model derived product, like surface height, and we also define the port locations, to inform the distribution of fishing effort, and we get the catch and biomass maps out. Ecospace doesn't replace Ecosim, and Ecosim doesn't replace Ecopath. Each component is just used for different questions.

How can we use Ecospace? Well, in the Gulf of Mexico, there is this great Kim de Mutsert paper, and she wanted to look at the effects of hypoxia on the ecosystem, to ask questions like should we restrict effort during hypoxic events off of Louisiana, and so Kim used the model-derived raster data to represent nutrient enrichment and hypoxia, and she ran different Ecospace simulations to look at what happens to biomass when you include these environmental effects.

She found that, when you include nutrient enrichment and hypoxia in the model, the model predicts that there is increasing biomass and catch, rather than a decrease, and so they then recommended that effort didn't necessarily need to be restricted during these events.

So where are we generally with the South Atlantic model? Well, we're here. We're approaching the calibrated Ecosim model, and we're looking at time series data to identify those vulnerability parameters, and, simultaneously, we're looking at the available spatial data and spatial relationships, in anticipation of moving into Ecospace.

Where can we go? Well, over the last few months, we've heard some general, but interesting, questions about recruitment and changes in discards or climate change impacts, and, like many models, there's many approaches you could take, and so, for example, if we wanted to run Ecospace in the future, to look at different climate change scenarios and associated changes in distributions or in trophic impacts, we could include different IPCC scenarios here, as imagery, and define habitat capacity around that, to evaluate different Ecospace scenarios.

At the end of the day, we've established a framework for looking at different types of questions, and the core strength of the approach is really having the ability to predict indirect effects on different species and complex food webs that otherwise you would be hard-pressed to predict on your own, and, in some cases, as we saw in those examples, these indirect effects of management decisions, or environmental perturbations, might predict change, and sometimes they don't, but the key takeaway here is that, if I come in here and tweak one parameter, I don't have to rebuild the entire model. In most cases, when we're looking at different simulations, we're not rebuilding this model from scratch.

This concludes this talk, and, if you haven't had a chance to look at those examples, and you want to learn more details about the model, please take a look at them when you can, and, with that, I think I will pass it off to Lauren. Thank you.

MR. PUGLIESE: Thank you, Luke, and these are actually in the support material for the Ecopath with Ecosim attachment. Let me get Lauren in the queue. Okay.

MS. GENTRY: Would you like to start with the historical context?

MR. PUGLIESE: Yes, and just jump to the one -- Just quickly. All I was going to do is touch on the fact that we've had almost every snapper grouper and other expert involved at some aspect, through the evolution of the process of building the South Atlantic model. This all started with the work and the opportunistic desire to look at where you could begin to start looking at ecosystem modeling for our area, and they were building, through the Sea Around Us Project, Ecopath and Ecosim models for essentially the entire world.

We happened to be at the time and work with Tom Okey, and we built the first iteration of a strawman forty-eight model, back in 2001. That advanced, with more focus and more effort, to try to focus around council needs at that point, in 2004. We actually looked at packaging it based on when the council was discussing groups, functional groups, for snapper grouper populations. We actually integrated those and coordinated with ACCSP for the efforts to be able to populate it, and things shifted, and our modeler actually got tasked into a different area, and so weren't able to follow-up beyond just building the first iteration of that generation of a ninety-eight-group model, but we had advanced and engaged a lot of other expertise to get it that far.

Then what happened was the steps beyond that actually advanced to deliberation by one of our partners in the region, Pew, and Tom Okey and others coordinated, and we worked together on a model to actually look at forage-base questions, to look at potentially things such as environmental large reductions in individual species and its potential effects on some of the individual managed species, and now that was -- The problem with some of that was that was actually still based on the structures that had been evolving from the beginning.

There was a desire to advance it even further, but it was not done in that iteration, and so it gave a gauge, because a lot of the species that were prey for council-managed species really were not included in that 2014, which brings us to the coordination with the South Atlantic Landscape Conservation Cooperation and funding the next generation of the model, which fully integrated the recreational information and the commercial information and really advanced building the most complex model that moved forward, and that came to advancing to the 143-box model that tried to capture as much of all the assessed managed species and many of the prey that was integrated, both from the forage-base model and going beyond that, to capture the other species that may not have been covered for snapper grouper.

Then what that did is we went to the next stage beyond that, because there was no additional funding for Tom to advance, and he reached out to a number of different places, and none of the partners were really providing that, and so we had actually built on our cooperation and collaboration with FWRI and advanced and connected to our Ecospecies activity, and we were able to get Lauren Gentry.

The first step was to build the most comprehensive diet composition of any Ecopath model that I know, and then advance this as the long-term work with both Luke and Lauren, to have FWRI as a repository for the model, as well as having Ecospecies as being the area to include all the inputs and outputs, and that has brought us to where we are now, with the 140-box and 700-species model that Lauren will get into the details of, and the intent is to advance this to application. That said, it's all yours, Lauren.

MS. GENTRY: Hi, everybody. I will just go ahead and start right here, and so, as Roger said, we are currently in that last box at the bottom, and so the only difference that was made from the last time Tom Okey gave this update, which is that blue slide, and that's a legacy slide from him, was that we grouped together a few data-poor species to end up with 140 boxes, aka groups, and, if anybody wants -- If you're curious as to what those groups are, they're in the appendix at the end of the slide show. If you want to see the 700 species, you have to email me for that one.

To start with, the diet matrix has made a huge amount of progress to get where it is today. We went from seventy diets to 258 diets, and we removed all of the proxies, and so using a diet from a similar species, and no more best-guess data in there, and, right now, the only diets left over from the West Florida Shelf model are for invertebrates, because a worm is a worm, regardless of where it lives.

Primarily, these diets came from gut content studies from SEAMAP, NOAA, published literature, and our own gut lab here at FWRI, and these images demonstrate how we would start with a publication, copy the stomach contents, along with percent weight, or percent volume, into Excel, and then determine which of our 140 groups each prey item belonged to. Then we would add it all together and get a final diet record with a list of every prey group and the proportion of the diet each group contributed.

On top of that, individual prey items were added, to flesh out the details of the diets, and those came from places like videos and photo catalogs, like BBC and Okeanos, and a lot of thought also went into capturing the full breadth of each predator's diet, and that meant adding juvenile-specific prey items or taking into account habitat changes, like a little tunny going from coastal to pelagic seasonally.

Finally, to keep track of the data quality of everything that we were putting in there, we also created a metadata organization scheme, seen here, and we don't need to go into the specifics, but, just generally, having a score for each diet source in each of these categories gives us a standardized way of finding which groups need better data and for what reasons, and so we can do a deeper literature dive, and, if nothing was there, then we made a research recommendation, and so that's how those recommendations were made. We also wanted to find out how do we get the most bang for our buck with those recommendations, and maybe we don't know what shallow gobies eat, but maybe that's okay.

EwE gives us this, a sensitivity analysis that's built into the software which adjusts the prey proportions up and down within the matrix to work towards reducing the sum of squares, and this gives a list of which group's diets have the most uncertainty, or which ones were adjusted the most, and some of this is inevitable. Experts and commercial spear fishermen confirmed that we're unlikely to get deep groupers to the surface with their stomachs intact, and so they will likely stay data poor, and menhaden and herring both lean heavily on just a handful of prey groups, because that's all that fits in their mouths, and they're small fish, and so that's fine, but some things stuck out, like Auxis mackerels, and that's your bullet and frigate tuna, and blue runner.

Those have a large impact as both predators and as prey, but we don't have very much information about their feeding habits, and so those were highlighted as high-impact research recommendations.

Now, we can even dig into individual interactions that are outliers in that sensitivity analysis, and some of these just showed us where we needed to add context, or add more data, like halfbeaks eating 10 percent seagrass, and that was incidental ingestion, and red snapper eating 19 percent black sea bass was likely net feeding from a single study, which balanced out when I added more red snapper diets, but some interactions stuck out as interesting and coming from reliable data sources.

Coastal bottlenose dolphins really do eat 30 percent weakfish, but I guess you would too if you were hunting in muddy estuaries and lunch was as loud as weakfish are, and we have two sources saying that Auxis mackerels are over 50 percent of the diet of blue marlin, and so, obviously, that's pretty important, and that had to stay where it was, and, overall, we have this kind of granularity for just about every input in the model, and so we can find and explore interactions like this throughout EwE.

Now, that was a lot of diet detail, and, just to give you an idea of how the data collection process generally went, but we can speed it up now, and so the biomass inputs came from primarily stock assessments, but FWRI staff and the modeling team calculated others using the FWC manatee survey, aerial seagrass surveys, and lots of GIS data, like this screenshot here of the process we used to get the biomass for cetaceans from Duke's cetacean density maps, and so we ended up with sixty-one groups with input biomass and allowed Ecopath to estimate the rest, which we checked, and we'll recheck, and do recheck with each new change, to ensure that those estimates are reasonable.

This is another point at which we can modify an input and see which groups' biomasses have the biggest impact and would thus benefit from better estimates. For us, it's generally forage fish, and we can always use better forage fish data.

Now for landings. The commercial landings came from ACCSP, and, together, with them, we identified 1,100 species, plus higher taxon groups, like records that are only at the genus level, and we looked into ninety-million pounds of unknown landings, and it was actually seaweed and invertebrates. ACCSP was also kind enough to track down some suspicious outliers, back to their original records, and like someone in Georgia in the 1990s, who actually did catch a 200-pound bull shark by hand, and we thought that was a typo, and it turned out it was real.

Then we did the same thing with recreational and headboat landings from the Southeast Regional Headboat Survey and MRIP, and, yes, after the big recalculation. We re-queried everything after that, and, with that expanded MRIP species list, we got up to 153 total time series for absolute biomass and landings and catch and everything, and then the SSC's Wilson Laney -- He helped us chase down some MRIP data outliers and tracked them back to instances like when one fisherman caught thirteen cownose rays in one year, for bait purposes, and somehow that got extrapolated out to 130,000 individual rays. There is a similar situation with scamp, and, obviously, those outlier points were then removed.

Some other relevant inputs and steps are all listed here, and so discarded alive numbers were obtained from MRIP and elsewhere, and each fleet and gear type is assigned its own discard mortality rate, which we got from a list used for stock assessments, along with a number of updated rates from brand-new research being done up in North Carolina.

Luke, who you just heard from, also added a monthly satellite-derived Chlorophyll-A environmental forcing series from NASA, and we made a huge pedigree to rank all of the inputs, both for our sake and our organization and for EwE to actually use. You put the pedigree into the model, and it helps direct and constrain calculations, and all of these model inputs and outputs were checked against those best practices and rules of thumb that Luke mentioned that everyone is supposed to be using. That brings us to today, where we're ready to tune those final vulnerability parameters, as soon as we get you all's guidance.

We also want to discuss what's been learned by doing this building process and what certain pieces of the model have already been used for and can be used right now. First, we have a giant diet matrix now, and it has already played an important role in the climate change vulnerability assessment workshop last year, plus all this data is going into, and some of it actually came from, the SAFMC Ecospecies database, which is positioned to serve as a long-term, easy-to-access repository for all the inputs and outputs for this model.

Further, the model provides a quick, comprehensive prey list for any time that kind of thing is needed, and this is where the diets came from for that discussion that you just had on the possible new ecosystem component species, and, as you all have already seen, the process helps us find potentially valuable interactions, and like another one is that shortfin mako really does eat 80 percent bluefish and those marlin eating their Auxis mackerels. Finally, some of this is also ready to use already, to address parts of the FEP II, and Ecospace can help with that in the future.

Now, as we wrap this up, I wanted to show you a little scenario testing, similar to what Luke was showing you with the different colored lines being alternate runs, and we did this just to see how the model was behaving, and so a recent paper out of NCSU showed reduced discard mortality of black sea bass if they were descended or vented, and we decided to run a scenario to see what the hypothetical effect would have been if those devices had been used all along, and so if you changed it back at the beginning.

To do this, we reduced the recreational discard mortality, which was already very low, and it like 14 percent, down to 9 percent and then compared the predicted annual biomass between the two scenarios, and the model did just what it was supposed to do, and it found those indirect effects, and there were winners and losers with this new lower mortality.

Now, interestingly, all the groups you see listed in those two boxes are prey of black sea bass, but, due to trophic cascades and those interconnected diets, planktivores and squid and bivalves -- They ended up on top, and they actually gained some biomass, likely because they are prey of prey, or they have some other indirect interaction with black sea bass, other than just being eaten by them. This was a nice hypothetical test, to see that the model is behaving the way it's supposed to, even when the change is just a little 5 percent drop in recreational discard mortality.

Finally, here's another valuable function of EwE that we really like, and it's a quantification of who eats the same food and in what proportion, and so this prey overlap function lets me create a matrix of species, and I picked the ones that we've all been talking about recently, and look at whose diet is overlapping who, and so red snapper and red porgy have a 41 percent overlap, which red porgy and red lionfish only have a 17 percent diet being common. Now, I should add the context that the average overlap of all of the fish predators is around 20 percent, which you would sort of expect, and so, while black sea bass and red lionfish have about an average amount of their diet in common, black sea bass and red grouper have an above-average diet overlap.

Then, on the bottom, in the bottom half of this, we can also look at each predator individually and list out the top species that share prey items with them, and so some of this is a little inevitable. Like, for invertivores, like red porgy and spiny lobster, there are just only so many invertebrate groups in the model, and so, if, like them, you like crabs and shrimp and oysters, then there is going to be a lot of diet overlap, of course, but this is a neat place to start with a lot of those shared resource questions, and, from here, we can then dig down and look into the diets individually, to see what's actually going on.

That brings us to our timeline for moving forward. During the October SSC meeting, the modeling team -- We were asked to rank those potential management application questions in order of feasibility, and this is the ranked order that we came up with. After today's discussion and feedback, we'll be able to start those specific tweaks, or tuning those final vulnerability parameters, and have a final Ecosim fit, or the fits, ready for review by a workgroup by mid-January-ish. With their approval, we can start addressing the first three questions on that list, and those only need Ecopath and Ecosim to answer.

At the same time, we'll be continuing to build an initial Ecospace model for review by the workgroup, probably around late February, and, once that's approved, we can start exploring those climate change impacts that everyone wants to know about. As always, a huge thank you to our data contributors and consultants. We couldn't have done this without everybody's help, and now

I believe I had this off to Genny for the SSC's report, unless anybody has any questions, specifically.

MR. POLAND: Thank you for that, Lauren. I might suggest that we pause right here, if there's any quick questions for you and Luke on kind of the model development and the model structure and model parameterization, before we hear from Genny, but, again, are there just questions, in general, on the model that Luke and Lauren provided and a couple of examples of how it can be applied to answer certain questions? Does anyone on the committee have any clarifying questions for Luke and Lauren at this time?

DR. ERRIGO: Art has his hand up.

MR. POLAND: Go ahead, Art.

MR. SAPP: It's not really a question so much as I thoroughly enjoyed the presentation, and I love the research that you all are doing. It's extremely interesting, but I did notice that there was mention of a shared food source for red porgy and red snapper. Therefore, I've got to believe that there's quite a bit of interaction that we were discussing earlier, and a potential red porgy food source for red snappers, and that's just a thought.

MR. POLAND: Thank you, Art. Can you go back one slide, Lauren? I know one of the potential questions to address, and it's really kind of looking at red snapper and red porgy, and kind of in a broader context, is kind of trying to see if there's any explanation in the model to explain some of that poor recruitment that we're seeing in red porgy, and certainly we had plenty of discussion, earlier in the day, on red snapper and red porgy interactions, and we all know well our continued issues with red porgy, and so that's certainly something that this model might be able to provide some advice on, or at least start pointing in the right direction, as far as what those interactions are and if they're significant and if there are any management changes that the council could consider to address those issues. I mean, we're not there yet, but that has certainly risen up as some potential questions to ask of this model, and so thank you for pointing that out, Art.

DR. ERRIGO: Mel has his hand up.

MR. POLAND: Go ahead, Mel.

MR. BELL: This is fascinating. I mean, it's amazing stuff, but I was trying to take the, I guess, eventual application of this and into the real world of the decisions we have to make as a council, and so it seems like gaining a better understanding of all of this on an academic level is fascinating, and it's very useful, but it's kind of more at perhaps a strategic level, a big picture, just kind of understanding how things are wired and that sort of thing, but I am trying to bring it down to, as we have mentioned a couple of times, that we're making real-time, real-world decisions, in the context of the council moving on things, like red porgy or red snapper or black sea bass, in the near future or something.

That's where I'm trying to -- If I wanted to equate this as sort of like in the days of weather modeling and hurricane modeling and understanding those sorts of things, well, hurricane modeling now has a very real-time application related to managing what we do around hurricanes, and so, to this, how do you bring this down -- Or how do we see ourselves bringing this down to

where we can use it to make kind of real-world, real-time decisions that we have to make at just about every meeting, and today we heard discussion about red porgy and what's going on with red porgy and the recruitment issues, and is it red snapper, or is it red lionfish, or what's going on, and so that's what I am just trying to kind of operationalize this in my mind, for us as a council moving forward. I am not sure how we make that step, or that transition.

MR. POLAND: Thanks for that, Mel, and all great points. We're pretty close to that point now as a council, and we're trying to figure out how can we take this and start generating some type of advice that we can incorporate into management decisions, and I feel like some of that will be answered once we receive Genny's report, but, real quick, Luke and Lauren, I don't know if you wanted to respond to Mel's question or points.

MR. MCEACHRON: I can respond. I mean, in terms of the logistics, I mean, you just ask us, and we'll tell you if we think we can do it in the model, and we'll try to do it, and the model, like I had mentioned, is -- It has a lot of users, and so, even if Lauren or I leave or something, potentially anybody can pick up this model, that is trained in it, and run with it.

Your comparison the weather forecasting was interesting, but, for the most part, we're only updating this model with annual data, and so the idea of having like some kind of real-time stream at a fine scale -- I wouldn't be too worried about that, and so usually the types of questions you're asking are about like, if I fish these five things at MSY or something, what's going to happen to -- What do I expect to happen in the next five years to these other maybe non-targeted species, things like that.

MR. POLAND: All right. Thanks, Luke. Mel, did you have a follow-up?

MR. BELL: No, and my only reason for mentioning the weather thing is just that's an example that people understand where we use modeling to make decisions that affect our lives, and so that's all I meant by that, and it's not necessarily that you had to do like in meteorology, where you are actually maintaining things in real time, but it's just how do we apply it in the decisions that we have to make regarding the fisheries that we're trying to manage.

MR. PUGLIESE: Steve, just one quick point is that we do, or will have, Howard Townsend, who served and coordinated with the modeling team, and he has also provided some input directly into the review process, and he is the one that is, for the nation, providing some oversight on ecosystem modeling and application, and so, as you advance to the next stages and discussion of the workgroup, as a member, providing the real-world NOAA applications and the use of Ecopath and Ecosim in other regions and the capabilities. Once we get some identified species, or types of analysis, then the actual real translation can be fostered even further by having that type of input, and Howard is off right now, but he will rejoin us, and he may be able to weigh-in after I think Genny does her presentation.

DR. ERRIGO: John has his hand up.

MR. POLAND: Go ahead.

MR. CARMICHAEL: Thanks, Steve. I just wanted some clarification on the slide. Is this saying that by October of 2021 we could potentially have answers for all four of these questions, because they are all listed as being feasible.

MS. GENTRY: No, and I believe that this is a rank of most feasibility, as in we are pretty sure, or pretty positive, that we could get Number 1 done, and then possibly 2, and then 4 would be the hardest.

MR. CARMICHAEL: So 4 may not be feasible, but you think 1 is fairly likely by October, Question 1?

MS. GENTRY: Yes, and it really depends on how the process goes for getting everything approved, and, when you're answering questions, sometimes this may go quickly, or it may go slowly, but that's our ranking for what we have now and what we know we can get, data-wise, how easy is it going to be to answer those questions.

MR. CARMICHAEL: Just a follow-up, Steve. I was wondering if you guys have any insight into how long something like the Chagaris study that you showed in the reference there -- How long something like that took to put together.

MR. MCEACHRON: The Chagaris study I believe just came out of a week-long workshop that they did, just kind of playing around with these scenarios, and so something like that, where you have an established model, and presumably you already have lionfish in the model, and it doesn't take long at all, and probably a month from when you set up the question and you've kind of checked everything and you run your analysis and write it up, and so it just depends on how much of those little tweaks you have to do.

MR. CARMICHAEL: So do you guys feel that say an approach like that would work for one of these questions, with a group of our SSC or something?

MR. MCEACHRON: Yes, and I would say that that's preferred, because, really, you want to have a group of people that are familiar with the model, because there is multiple ways, and this is kind of like -- You know, when you do something in GIS, there is multiple ways to make a map and get at the same result, and so it's good to have more than just two people saying this is how we're going to do this, but it can be pretty quick.

MR. POLAND: All right. Thanks for that input, and thanks for those questions, John, and I think this timeline is also assuming that -- We'll hear about it once Genny provides the SSC report on this item, but I think this assumes the creation of an SSC workgroup to kind of review and shepherd these questions through the model. All right. Are there any other questions from the committee? If not, we probably need to move on. All right. It looks like next we have Anne Deaton, and she'll provide the Habitat and Ecosystem AP comments on the Ecopath and Ecosim model. Whenever we're ready for Anne, take it away.

MS. DEATON: Thank you, Steve. This is Anne Deaton again, and I don't think I introduced myself last time, but I'm with the North Carolina Division of Marine Fisheries, and I'm on the Habitat Advisory Panel, and I'm serving currently as the Chair. Just real briefly, the Ecopath,

Ecosim, Ecospace has been discussed at multiple advisory panel meetings, and, overall, the advisory panel is very supportive.

They see this as really lending itself to management of both species and habitat. The AP sees a lot of value in being able to explore various habitat scenarios using the model, and that would help manage accordingly. We were asked, at the October 2019 meeting, about what would be important to the advisors, what would be an important application for them, and one comment was from Dr. Baumstark in Florida that managers want to know how red tides affect things such as fishery food webs, and Luke also mentioned, at that time, that you could explore the effect of increasing temperature.

I was thinking, when you were discussing how can we use this, if you knew that -- If you ran the models and you saw that a temperature increase of some amount resulted in a drop in a fish population within an area, that might be of great use for a stock assessment, because then they could attribute a decline not to fishing mortality, but natural mortality. I am not a stock assessment person, but I'm thinking it just provides more information of why and how things are changing, so that you can be a little more proactive in addressing the issue.

I am looking at my notes here. The Habitat Advisory Panel will have the opportunity to discuss management strategy evaluations, we were told, later, probably in 2021, and they were really looking forward to that and just thinking about what scenarios would you want to run, and I think, for that group, they're really thinking about how climate change or other environmental factors would affect the habitats and the fish.

Then, in October, at the October 2020 meeting, this year, Yan Li presented to us the summary from their review of the model, and I won't go into that, since she's going to go over that, but I know that the advisory panel was very pleased that they had a positive perspective on it, and the advisory panel members just asked a lot of questions about the Ecospace component and how the input of the data -- Like how was the depth data collected, and it was explained that there is often interpolation, like there is with the depth, and so that is always something that you have to keep in mind. I think that's it. They're just looking forward to being able to utilize and ask some questions using this model.

MR. POLAND: Thanks, Anne. Did the Habitat AP have any questions that they would like to address, or was it just more in general and asking questions?

MS. DEATON: I think, at this point, it was in general, because they were learning about it, and learning what the input data was and where the gaps might be, and I think the directive was for everybody to be thinking about more specific questions they would like to get out of the models.

MR. POLAND: Okay. Thank you, Anne.

DR. ERRIGO: Clay has his hand raised.

MR. POLAND: Go ahead.

DR. PORCH: Thank you. I appreciate this presentation, and it's great to see the progress that is being made. I did have a question though. It's one thing to fit the model to the data, but there's a

lot of complicated interactions with these sorts of models that we're trying to pick up with basically linked ordinary differential equations, and a lot of places where things can go wrong. I mean, it's basically a stock assessment in hyperdrive, and I know that I have reviewed a couple of places where some of the predictions from the model really didn't pass the red-face test, like one that actually was published that had king mackerel as a major predator of gag grouper, adult gag grouper, which any fisherman would laugh at.

How are we going to make sure that this model is performing appropriately, and, maybe specifically, what ways, what steps, will you take to evaluate its predictive ability? I think Dave Chagaris has done some work along those lines, and we had that recent application with menhaden at Atlantic States, and so I'm just wondering what additional steps you will take to ensure that the model behaves reasonably, in terms of its predicative ability, and then I guess what level of review is being considered for this? You know, stock assessments go through a fairly comprehensive review. If we're going to make management decisions based on this, it should go at least an equally comprehensive review.

MR. POLAND: Clay, thanks for both of those questions. I might ask you to hold on to those until after Genny and Yan have a chance to provide the SSC report on this item, because a lot of those issues were discussed and addressed in that. Are there any other questions for Anne on the habitat report? I can't see the hand-raise list.

DR. ERRIGO: I don't have any hands raised.

MR. POLAND: Thanks, Mike. With that, Genny, whenever you're ready.

DR. NESSLAGE: The SSC was asked to review the EwE model in its current state, and I have to give a lot of credit to the SSC EwE Working Group, which Yan Li led, and they did the lion's share of this work and then brought back an excellent report to us, which I would draw your attention to, and that's Attachment 6, and the details of their very thorough review are provided in that report.

At our October meeting, the SSC spent most of our time allotted for this agenda item kind of revising and refining a few of the working group's responses to some of the TORs. A lot of this is very technical, and I won't go over those details right now, unless you have questions, and they were really meant to guide the modeling team moving forward, but I will tell you that, if you open up our SSC report, and you look at the individual wording changes that we recommended for the TORs, they should match the EwE Working Group report.

What I am going to focus on in this presentation are kind of the overarching conclusions of the review, and so, in general, the SSC felt that the estimates and the products going into the Ecopath model, including things like food web characteristics and diet overlap information are all suitable, at this point, to inform and complement stock assessments and fisheries management, and we felt that the Ecopath portion of the model is very well developed. As a tool, it's ready to be modified to address specific assessment or other management questions.

However, the SSC did bring up the point that there are several diagnostics that would be nice to see and take a look at, either the working group or the SSC as a whole, before the model gets used, and that sounded like that was easy and possible to do, and so hopefully that will be a next step.

Continuing with the overarching conclusions of the SSC, we felt that the base Ecopath model could serve as what the working group very expertly called a living tool that could be used to complement stock assessment and fisheries management. We call it living because we would just bring up to the council's attention that the model performance and the outcomes of the model may change from how it's currently performing when you actually configure it to address a specific assessment or management question.

To address Clay's concern, or question, that he raised before, the SSC recommended that any application of the EwE model that's used to inform a specific assessment, or any of the science to support catch level recommendations, go through the SEDAR process, given the importance of those estimates.

We were asked to comment on the readiness and the applicability of this model for management questions, and the working group, and the overall SSC, felt that the EwE model, and its underlying components, could help in a number of ways, including to evaluate the impact of single-species management goals in the broader ecosystem, to evaluate impacts of various management actions that the council is considering taking, and to inform analysts of stock assessment, stock assessment analysts, of any potential interactions that might be important for them to consider as assessment models are developed for single-species assessments. We did want to provide an overall caution that this is a tool and that it should be used in conjunction with assessment modeling and the overall assessment scientists understanding of both the species and the fisheries involved.

We were also asked to identify, summarize, and discuss uncertainties and limitations of the analysis, and I would point you to the working group report for the very detailed modeling-based response to the actual very detailed modeling aspects, but I would just bring up here, to the broader council, that the SSC noted that the EwE base model development is largely complete, and it's ready to be configured and used for a specific question.

That will involve a lot of fine-tuning, which is going to be an ongoing process, based on whatever question you pose to the model and the modeling team, but note that the SSC really can't review the goodness of fit and the overall performance of the model until the vulnerability parameters are defined for those primary groups of interest, which would be, of course, determined based on the question that you're asking. If you're interested in snapper grouper, then they will set it up to address a snapper grouper question. If you're interested in broader ecosystem climate impacts, they will set it up differently, or if you're interested in or corals or whatever, and so you have to think about what the question is that will be asked, and we'll have to reevaluate at that time.

This is getting at Clay's question as well. Has the performance of the model been tested in the South Atlantic region, and that question was posed to the SSC, and it has not been simulation tested, and, in the sense that kind of like the Chagaris approach that's been done that Clay referenced, and so the SSC discussed that as a very good option that the modeling team should pursue, and we recommended that that kind of a performance evaluation and validation study of the predictability of the model be conducted, and, basically, you are stripping off the last X number of years of data and then seeing how the model is able to predict the last end of the time series, and so that's an approach that could be applied here in the South Atlantic prior to using the model to address a management question.

Then we were asked how can the model be used to influence or inform management action at a very broad level, and the SSC, at this point, was running out of time, but we did note a couple of things that came up in our discussion, as well as in the working group report, and we agreed that, as the working group pointed out, this could be useful in a variety of venues, including management strategy evaluations, and it could be used to inform multispecies management and ecosystem-based management questions, and it could be used to test hypotheses related to trophic interactions, and it could be used to evaluate things like parameter uncertainties at an ecosystem scale.

Then we were also asked how can the model be applied at a more regional level, at a council or commission level, and the same answer that I gave on the previous slide applies here. Again, we were time limited, and we didn't have a lot of time to discuss this. However, we did talk a lot about how the EwE may be useful in helping to address questions about why recruitment failed for a particular species or why a species did not meet its rebuilding target, and I know that red porgy and red snapper are on everyone's mind here, and that could be a useful tool.

Then this is the second-to-last question we were asked, and it's a very long question, and I won't read it to you, but just know that basically we were asked, in its current state of development, can the EwE model be used to address this set of questions, and so the four set of questions had to do with poor recruitment in shallow-water groupers, like red porgy, the impact of climate change, the impact of episodic high red snapper recruitment, and other benefits to fish stocks from decreases in discard mortality, and, as Lauren already mentioned, we asked the modeling team, given they are the most familiar with the model development and whether it's ready to go yet or not, what order they would rank the readiness of the model.

Again, we didn't have time to really comment on it, and we just asked them what their feeling was, and, as she already mentioned, the order was really the red snapper question is the most ready, followed by discard mortality, and then the red porgy question really, and then climate change.

When we got to the Ecospace discussion, again, we were running out of time, but we did, in our discussions, bring up a couple of potential applications of Ecospace, once it's fully developed, including the ability to address some of the issues that we're seeing in the distribution shifts for blueline tilefish and black sea bass, as well as some of the additional climate change issues that the council may be interested in.

Then, lastly, we were asked to consider establishing a standing ecosystem model workgroup of the SSC, to continue to consult and reach out to and advise the modeling team, as they go forward with this model, and the SSC agreed that this was a great idea, and we had several volunteers, and we also asked that perhaps some outside experts who might be interested in this model development join the team as well. I think that's it, and I would be happy to answer any questions that you might have.

MR. POLAND: All right. Thank you for that, Genny. Since Clay has two tabled questions, and I know you addressed them in your report, but I will throw it to Clay real quick, in case he had any additional questions or further comment.

DR. PORCH: Thank you. I don't know that I have any additional comments. I mean, the SSC appears to have had the same questions that I did, and I just think this is really important work,

and I definitely want to see it continue, but I always feel like we need to manage expectations a little bit, because these models are extremely data hungry. If you make a strong assumption somewhere, it can have unanticipated strong impacts on the results, and, like I said, I've seen a few cases where it's gone wrong, and I think the cross-validation approach is really, really important, just to make sure that it's performing in a way that you might expect, and I just support the conclusions that the SSC had. Thanks.

MR. POLAND: All right. Thank you, Clay. Are there any more questions from the committee for Genny? Also, know that Yan is on the line, and Yan is the chair of the SSC review for the model. I am not seeing any hands raised. All right. Thank you, Genny, for that report. Now I will open it up to the committee for a general discussion, and there were a few things pointed out by Luke and Lauren that they would like some input on from the council, as well as the recommendation coming out of the SSC for the creation of a standing workgroup to kind of shepherd this model along. Is there general discussion from the committee?

Roger has put the slide up from Lauren's PowerPoint, kind of looking at a potential timeline to address a few of the questions posed to the model team. Does anyone from the committee have any comments on any of the four proposed questions or the potential timeline? Chester, go ahead.

MR. BREWER: I was kind of blown away by this presentation, and I hope I'm not going in with too high expectations, but these four questions seem to me to be really critically important to us right now, and particularly the first three, and so, if they can get one or two of those done by October of 2021, with some certainty, that would just be absolutely incredible.

MR. POLAND: Thanks, Chester. Do you have a preference, or any input, on any of these questions, or any additional questions, that aren't in this list? I think Lauren and Luke said earlier that feasibility is probably -- That they will only be able to answer one in this timeframe, and so do you have any preference or input?

MR. BREWER: Yes, and I think that, right now, probably -- At least in my mind, the most important thing would be Number 2, because we put in a lot of time with our best practices, and we're starting to see people using them, and one of the main reasons we put it in was because of red snapper discards and the effect that that has on the number of fish that we're able to catch, and so I had wondered how in the world that was going to be built into the model, but this looks like a vehicle to do that, and that would be very, very important, and maybe it's low-hanging fruit, and I don't know, but then, after that, I think that 1 and 3 actually are -- They kind of meld together, because, when you say the effect on other species in the snapper grouper complex, you are perhaps then talking about poor recruitment and the shallow-water recruitment, and red porgy in particular, and other species, and so you've got -- The two of them kind of overlap.

Again, it's very, very important, because we're looking at a situation, with red porgy, that we've gone, what, eighteen years, and none of the fishery management plans have really come in and done anything to improve the situation, and so, if I was -- If you say, okay, you pick, then I pick Number 2, but, like I said, I think Number 1 and Number 3 are pretty closely aligned, or are closely aligned, and so thank you.

MR. POLAND: Thanks for that input, Chester. I certainly agree, just given our conversations earlier today during Snapper Grouper, that 1 and 3 would certainly be interesting, but I can also

see the value in investigating Number 2, and, honestly, if we had this model ready to go a year or eighteen months ago, when we were discussing the best fishing practices amendment, I can certainly see how the results from that scenario could have informed our discussions. Mel, I see you have your hand up. Go ahead.

MR. BELL: Sort of choosing from the list, I was trying to figure out which one of those -- If we're trying to prioritize one, if my understanding is that they can get this underway and maybe have something potentially useable by October, and I don't know where that date came from, but which would one of those, and I agree that 1 and 3 are high priority for us right now, in terms of action, but 2 would certainly be -- As Chester said, if you can actually show some of the benefits of the application of the best practices, that would be useful at any point, but, with red snapper, the stock assessment is underway.

We will find ourselves with an amendment, or making decisions and maybe moving forward with a new ABC on red snapper, at some point in the near future, but we're already moving along with red porgy, and so, I mean, if we have to -- I was trying to pick one, I guess. If we have to prioritize this and pick one, I'm not sure which one could actually give us the most help in a decision that we need to make, time-wise.

I guess I would have to look down at -- Kind of look at the timing on red porgy and the timing on red snapper and the decision points and how better understanding something, maybe by October, might benefit one of those over the other, if someone has a clue of which one might be more helpful, if we're trying to pick one right now, I guess, to prioritize. 4 is fine in there as well, but then 4 is kind of more long-term and a big-picture thing, and I see 1 and 3 being potentially the most useful at this point.

MR. POLAND: Go ahead, Chip.

DR. COLLIER: Thank you for the opportunity to speak. I have just been looking at these, and I don't know how much the Ecopath and Ecosim models are going to be helpful in establishing things like ABCs. What they're going to be designed for is maybe looking at potential interactions among species and why certain things are happening, but, no matter what, you guys are going to be held to the ABC that is coming from the SSC, and so something like poor recruitment with shallow-water groupers and red porgy, that could be an explanation on why we're having to have lower ABCs, but not necessarily change the ABC.

MR. BELL: Yes, and I didn't mean, Chip, that we were going to use it with the ABC, and I understand that we'll be given the ABC, but it's sort of like the decision that we would have to make next as we move forward with that, whether it's moving forward with red snapper or red porgy, and which one, time-wise, would be potentially helpful, but, yes, I mean, I get that, that it's not going to affect the ABC we get.

MR. POLAND: Thanks for that, Chip, and certainly, at least from my perspective, I never even envisioned that this model would inform catch level recommendations. I always envisioned that it would be more utilized in kind of an MSE framework, or, at the very least, just included in our effects analysis for considered actions and alternatives, to just give us another piece of information to consider when we're discussing things like seasons and bag limits and size limits and strategies to reduce discard mortality and such. John, go ahead.

MR. CARMICHAEL: Thank you, Steve, and I absolutely agree with you on that, too. I think we're a lot better served by getting a little more away from the assessment-type linkages and using this with MSE, where there's a way to better understand, as you said, why some of these stocks are coming out like they are in the assessments. We often talk about it as we did today, about the relationships between stocks and what might be going on, and this is the tool that helps us get there.

I think, at this point, we should -- I guess I'm going to suggest, Steve, that perhaps we don't need to pick the question today, but the SSC has talked about having a working group, and clearly they're going to be integral in doing this, and we talked earlier about a workshop-type approach, and I think something where maybe we get together with Luke and Lauren and SSC leadership, potentially, and some of the key members that might be on that working group, and then council leadership, and try to figure out -- Just have a conversation first about what's the most likely to be achieved, and actually give us an answer, and that's what we're all hungry for, and it's a great model, and we just need to actually start getting some information out of it that answers these critical questions of the council.

I think getting together and figuring out just what that means and what it would entail and how we can best do that is really the next step, and some folks -- If council members maybe have some more compelling questions on their minds to add to that, that might be helpful, but certainly this is a really good start, and it would be a great step to see one of these addressed, and, if a workshop approach is feasible, and we could have something like that before October for one of these questions, that would be even better.

MR. POLAND: Thank you very much for that, John. I tend to agree, and we certainly have had enough conversation, or plenty of conversation, about the four questions in front of us and how the council feels, as far as prioritization of those questions, but I certainly think that kind of endorsing the SSC workgroup and getting that established and maybe tasking them, along with the model team, to kind of come together and meet and figure out how to get this from not necessarily conceptual, but from a concept to plugging it in to our management advice procedures. Kerry, go ahead.

MS. MARHEFKA: Thanks, Steve. My original comment was going to be on sort of the ranking of importance, but, given John's very helpful comment, I will not make that. I just want to -- Tell me if I'm clear. One of the ways I feel like we could use this, say in the red porgy example, even if we don't -- That's just an example, and I'm not saying we should use it for that, but also as a way to determine how precautionary we should be, and so taking the information we have from the assessment and weighing how precautionary that was and then using this as another sort of input into deciding how much of a buffer and precautionary we should be, and am I on the right track about that?

MR. POLAND: I don't know. That's a very interesting approach, and, I mean, yes. Ideally, certainly, if the model could give us some feedback on, I guess, uncertainty around certain management advice, I could absolutely see how that would be beneficial. I don't know, Luke or Lauren, if you can speak to that.

MR. MCEACHRON: There are certain parameters that you build a confidence bound around and then do some like Monte Carlo simulations to look at the effects of uncertainty, and you can't do that with every parameter, but with some you can.

MR. POLAND: Sounds like a great question to task the workgroup with discussing. All right. Chester, go ahead.

MR. BREWER: I lowered my hand.

MR. POLAND: All right. Yan, go ahead.

DR. LI: Thank you, Steve. This is Yan, and I just wanted to add to John's comment about the model, and I just wanted to make it clear that this model, the version so far, is it's an ongoing process, and it's like still developing and being polished and improved, as more data comes in and as more questions become clear, and so far -- Like the whole purpose of the review, the SSC review, the workgroup, and also the whole purpose of the whole model so far, is, based on my understanding, is to provide a base model.

This base model like provides the basic structure to be specific to the South Atlantic region, which is the model region that we are interested in, and the whole model team has done a great job to try to structure this base model for this particular model region, and, also, as a base model, the next step -- I agree with John that the next step will be we have specific questions, as we see here, and so the model team can prioritize those questions and then start to further modify -- We'll start from the base model and then start to further modify, adjust, this base model to address those specific questions.

Also, I would like to give a shout-out to the model team. Along the way, as they developed this huge model system, they have already done a great job for evaluating the outcomes of the model, to make sure -- They have compared the outcomes, the predicted value, from the model with the observed value or the empirical values, to make sure the model performs in a realistic way, and so they have done that, but they haven't done the cross-validation yet, but they have done this part, and just all the effort is trying to make sure this model is as accurate as possible for this specific model region that we are interested in. The next step will be we have the questions there, the specific questions we are interested in there, and so the model can start from here and then go and move forward.

Another comment would be, as mentioned about the risk assessment, that one of the potential applications -- I feel like -- As Luke said, it's possible to have some risk assessment type of work done, and, also, I would like to bring up another potential application for this model system, and that is, although the model definitely is not providing the ABC levels, or catch level, recommendation, and, no, that's not what the model is for.

However, the model, in terms of management strategy evaluation, the model can provide some aspects, in terms of when you compare different like fishing levels, or fishing strategies, and you can compare -- Like, for example, if we ask the question of, if we increase the fishing level for a certain group of the fish, and what would happen in the long run, and how could that affect the ecosystem, or how could that affect certain groups of species that we're interested in, and then the model can answer something like that.

Also, it can compare that, if you increase the fishing level, and then we can see which level increases how much and which level will be better than -- Sorry. What group of species would benefit from these management changes, or some question like that. That's all. Thank you.

MR. POLAND: Thank you very much, Yan. We certainly thank you and the review team, and I know you all put a lot of time into working with the model team on going through the model, and you provided fantastic feedback to the council and the SSC, and so thank you. Clay, go ahead.

DR. PORCH: Thank you. A lot of great comments, and Yan just made some really important ones. If I could add to that, I would say that, at this stage of the game, one of the most important roles that this model could play is to identify what are likely to be important drivers that we should invest more research into. I mean, if you imagined a panel with a bunch of dials on it, and some dials you turn a lot and almost nothing observable happens, and then another dial you turn a little bit and something big happens, you might want to understand that particular dial a little bit better, and I think these models are really good for helping us figure out how we want to invest our resources.

The other point is to reinforce what some folks have mentioned about management strategy evaluations. I think this could be really useful for helping us to determine harvest strategies that are robust to the kinds of uncertainties that we think exist in the system, things we may never be able to collect enough data on, but nevertheless are likely to be important, and I think this is especially important for the species that are not so data rich, or maybe that we can't get in our surveys so well. Using this to just identify what's the most appropriate way to manage these fairly data-limited species could be huge, and so I hope that the group that works with this will spend a fair amount of effort focusing on those two aspects, and particularly at this stage of the game. Thank you.

MR. POLAND: Thanks for that, Clay. I guess I will turn it to Roger, real quick, and so, as far as moving us forward, it sounds like the committee is in general agreement for endorsing this workgroup of the SSC, to kind of work with the modeling team to start addressing some of these questions, and also addressing some of the comments that we've heard during the discussion of Clay and Yan's comments and John's comments earlier. Is there anything else that the council needs to provide input on at this time?

MR. PUGLIESE: I think we have basically accomplished what we wanted to do, is getting some guidance on next steps. I think, with the fact that you do have the development of the model and the standing workgroup that is going to provide the vehicle to get that completion of Ecosim, and then with the guidance of -- I don't think you necessarily have to say one species or the other, but I think just providing core species, like red snapper and red porgy, and then the different types of analysis, and it gets it into the focus of that workgroup, to look at that as well as look at the data and look at the system and to figure out exactly how to structure some of the next steps.

This was what we really wanted to get, and we also have our direct connection, as I mentioned before, with Howard, as part of the model team, and myself as part of the model team, to get that core advancing to start the process to go forward, and so I think formalizing and reaching out, and we may actually expand it even further, because we did have good participation in the original review workshop, but then there are other aspects.

Some of the really key things that are happening is opportunities to work directly with the things that will probably inform more of the climate side of this, and that is our connections with the Ocean Observation Associations, SECOORA, and some of the model capabilities that we have. All these things are converging at once.

Right now, we're going to have a system that has all of the fishery-independent data systems aligned directly with and accessible with the ocean observing information, and so it's the ability for that to inform and advance the discussions on climate change that are going to be really critical, and so I think all these things are kind of coming together with the guidance to take the next steps and to operationalize it, by getting the Ecosim fits and guidance on species, to be able to advance this, and then some of these different specific questions to begin to consider, and then it provides the focus for the workgroup to weigh-in and then to advance the model.

How that goes forward -- That October timeframe is really kind of tied to the traditional -- It's the backend of the SSC fall meeting, or something like that, and there's a real possibility that some of these individual questions, as Luke indicated -- If we look at the data, and it aligns fairly quickly, in terms of some of those, it may be sooner than later to be able to start advancing this, but we have to take that next step, and this is what we needed to do, is to get some guidance on species and on some initial potential areas to consider, and then figure out how the best way for the model workgroup to advance, whether you do a number of webinars to get that forward, and so it doesn't necessarily have to be tied with the individual SSC meetings, and then have the material be able to be provided at the SSC meeting.

Then I think we can get everything moving forward, but I think that provides -- Unless Luke or Lauren -- And we do have Howard online now, if there -- He may want to just make some final comments, and I think, as I mentioned before, it's really critical point, because that direct application of this in other regions is going to be really useful, as he has input directly into the further model development, but also then in the workgroup to advance the application.

MR. POLAND: Thanks for that, Roger, and so it sounds like the committee is in agreement with the path forward, and I know it's after five o'clock, and so, unless there are any burning comments or questions from the committee, I am going to suggest that we move on to the next agenda item. I do want to thank everybody, Luke and Lauren and Genny and Yan and Anne, everybody who provided input during this discussion. It was very fruitful. Roger, I guess we will move on to Agenda Item 5, since we modified the agenda at the beginning of the meeting. I will let you get that pulled up. Does anyone need a quick biological break, or are we good to push through? Hearing none, go ahead, Roger.

MR. PUGLIESE: Okay. What we want to do is to -- Steve had talked about this a number of times, at least initiating this process, the discussion on possible development of a habitat and ecosystem blueprint for the South Atlantic region. What I did want to start with was at least bringing some of the discussion and then have the council be able to advance what may be the vision for this type of effort.

One of the foundational components is the congressional mandates that the council does have with regard to essential fish habitats and the requirements that you identify and describe essential fish habitat, and that needs to be updated every five years, and we've got a couple of years, two years,

maybe, at the most, to initiate that process. In the past, we have aligned it directly with the FEP development, to also update those at the same time, and so that may be the way we advance things.

In addition, develop and maintain and refine spatial representations of essential fish habitat and essential fish habitat areas of particular concern, and that is a direction, and we do have the web services that provide that, and that material is accessible and used in things such as EISs and in comments and in accessing, more recently, other activities, such as some of the oil and gas discussions, and we provided material directly on that, as well as in review of additional newer activities into the future, such as wind development, and even further into the future, potentially, aquaculture activities.

More directly, the council is directed to eliminate or reduce impacts of fishing gear on EFH, and the one beauty in the South Atlantic is we haven't had a lot of additional discussion on that, because, over time, from the original discussions, and even pre-mandates, and Amendment 1 to Snapper Grouper eliminated roller rig trawls and impacts on habitats and bycatch of species, or catch of species, like black sea bass and vermilion snapper through trawl activities and what the implications if those hadn't been in place -- It would have been pretty significant in the South Atlantic.

Those have been continuously put in place over time, as the council has addressed individual FMPs, and those are mandated under Magnuson to actually implement, and so there are still some potential discussions on those, but most of the key gear impacts are in regulation in the South Atlantic.

In addition, the council is directed to develop recommendations on eliminating or reducing impacts of non-fishing activities, and the South Atlantic process was to, as issues on habitat type or an activity has come into place, just to develop policies, and to comment as needed, but the key was to have policies, so that those could actually be used by partners and by NOAA Fisheries, and, more recently, this last iteration under the Fishery Ecosystem Plan II, the Habitat Conservation Division, working directly through them, we really refined those for more direct use and accessibility.

In addition, the council has two habitat-based fishery management plans. We manage benthic habitats in the South Atlantic through the FMP for Coral, Coral Reef, and Live/Hardbottom Habitats, and that is the actually -- The council is the steward for those resources. When you are looking at that, it is -- While they do provide habitat and structure for other managed species, snapper grouper and other species, they are being managed to protect those resources as habitats.

In the case of the deepwater systems, they are being managed essentially as an ecosystem, and, with the combination of both essential habitat and regulatory aspects under the Coral FMP, and the council manages pelagic habitats through the FMP for pelagic sargassum, and it's the only known true pelagic habitat, which is providing early life history distribution of species, from red porgy to gag and others throughout the region, and so this is a very critical habitat in our region, as well as throughout the system, even providing, potentially, nutrients to the deep systems, and it's one of the only sources of nutrients dropping to some of the deepest points of the ocean.

In addition, the council is addressing the ecosystem-based fishery management guidelines and facilitating the move to EBFM. They have developed an updated fishery ecosystem plan, and

we're in Fishery Ecosystem Plan II, advancing ecosystem-based management, and some of this is really, to some degree, constrained a little bit by getting some of the systems that are being developed by our partners at NOAA Fisheries with ecosystem status reports.

We are still waiting on getting the first generation, and it's in review at this point, and that's hopefully going to be advancing, and we have not had an integrated ecosystem assessment for the South Atlantic, and it's not been in the queue or a priority nationally for us to get it, and so we have some constraints on some of those, where other councils may have been applying that directly.

Ecosystem model development, the council has invested in, and we've gone through this recently, with the whole thing, and the opportunity for guiding that into the future, and then, of course, climate planning, the more recent coordination and collaboration with our partners on climate scenario planning. Again, getting the climate vulnerabilities for the South Atlantic region really helped advance the information and what we need to know on having some input on species that are the most vulnerable or impacts relative to climate. In addition, impacts of climate on habitat and EFH and some of the things, such as developing the Ecospace into future, will really provide our ability to understand some of these moves or the habitat changes.

For the habitat and ecosystem blueprint, just some general possible focus and components, because what I think was at least initially discussed is members to provide essentially an umbrella strategy, a larger overview, that both highlights comprehensive council EFH conservation, and it addresses the role of habitat and ecosystem advisors and how all of these are guiding, and it's very different than many other regions.

Our habitat and ecosystem advisors are providing the foundation for the designations for essential habitat, their recommendations on conservation of those resources from non-fishing and fishing activities, as well as policy to advance that into the future for council consideration, and so it's a very significant role in our region.

In addition, the roles of the partners, and I think that's one of the things. There are so many different pieces moving right now that this would provide that understanding of how the Ocean Observing Association is providing input or can provide future guidance into the future on everything from circulation inputs and temperature inputs that would go into Ecospace to potentially be in platforms for eDNA and other types of capabilities into the future, as well as how the SEAMAP system and the data systems is connected to all of our information funding, or fueling the conservation under habitat and the larger ecosystem efforts.

In addition, advancing the foundational habitat conservation and ecosystem-based fishery management, to really look at how we look at climate -- I put down in climate-ready fisheries mainly to highlight how we would understand what some of the implications are into the future, as we see some of these changes, and the only way we can do that is to kind of look in advance, starting from the climate vulnerabilities all the way into some of the strategic planning that's going to occur.

To that effect, this was just an initial springboard, and I think our Chair was looking at the possibility of establishing a team to facilitate the development of the vision, goals, and objectives for a climate-ready blueprint. A draft vision, or scope, could be to guide long-term habitat

conservation and ecosystem-based management in the South Atlantic region to support resilient fish stocks, essential fish habitat, fisheries, and fishing communities.

The intent would be that the team, core team, would be able to work to develop the vision statement and then advance goals and objectives and then really look at a number of different things, including how the advisors -- Then all the tools and the capabilities, because the council has been building a lot of the spatial information systems and a lot of the species-based information systems, and the entire dashboard for FEP provides information and links to our state partners and our regional partners and NOAA Fisheries and how that all kind of is connected and interrelates. With that, that's at least the initial discussion and conceptual idea of potentially what an ecosystem blueprint could begin to look at in the South Atlantic region.

MR. POLAND: All right. Thank you, Roger. So this is something that, as a council that we're certainly not new to. I mean, we've done vision projects and blueprint reviews of our snapper grouper fishery, as well as our outreach and education, and I feel like both of those endeavors really created a -- I guess a more clear framework for moving forward, either within the snapper grouper management, more holistic management of that fishery, and for the outreach and education program, the really long-term goals and priorities.

I see how this could be beneficial for our habitat program. You can see Roger did a good job of pointing out all of the different pots, I guess, that our fingers are in with habitat-related issues, as well as all the state and regional and national partners that we work with on habitat issues, and sometimes it's a give-and-take relationship, and sometimes it's a complete give, and we're certainly appreciative of that.

I think kind of stepping back and doing a full kind of blueprint, programmatic review, of our habitat program here at the council would certainly be beneficial, especially as we move into dealing with issues related to climate change and species movement and that kind of stuff, and I certainly see how input from our habitat partners and our habitat advisors would certainly be crucial in that. Really, I guess as Chair, all I'm looking for at this junction is an endorsement by the committee to undertake this blueprint review of the habitat program, and so I will open it up to the committee for any questions or comments. Mel, go ahead.

MR. BELL: Thanks, Steve. I agree with you, and, I mean, I think this is something important, and I think it's important enough, and it's complex enough, that I can see the value in establishing a team to kind of pull all of this together and help guide us down the road with it, and so, I mean, at some point, I would be willing to make a motion, if we need a motion to do that, if that would help.

MR. POLAND: Mel, I am certainly willing to entertain a motion.

MR. BELL: Okay. **Then, just for the sake of moving this along, I would move that the council establish a habitat ecosystem blueprint -- Do you want to call it a development team?** Is that a good term for it?

MR. POLAND: Sure. It's really just semantics.

MR. BELL: Okay. Then, if you needed that fleshed out even more, one of the slides you had up there previously had sort of what the team was going to do, but that just kind of gets you going in the direction of developing a team to do the things we discussed.

MR. POLAND: I think a general endorsement of what was presented. If this motion carries, the team should have an idea of the intent for the committee.

MR. BELL: So I guess you need a second.

MR. POLAND: Do we have a second? Jessica, I see you have your hand up.

MS. MCCAWLEY: I can second it. I certainly support this, and I don't know if I fully understand all the moving pieces in my head, but the concept, as you laid it out, definitely makes sense to me, but I guess I would need to review this PowerPoint that Roger showed us a little bit more, so that I could just understand it a little bit better, but I am certainly supportive.

MR. POLAND: A lot of that too, I think the development team will have to flesh it out. I mean, there certainly are a lot of moving pieces in the habitat program, and I certainly see that as one of the very first steps, is kind of mapping everything out. I kind of envision maybe developing some type of network diagram of all of the different habitat pieces and partners and everything like that, just as a first step. Is there any more discussion? **Seeing none, is there any opposition to the motion on the floor? Hearing none, the motion stands approved.**

Going back to the agenda, if you will remember, we modified the agenda, and so we just took care of Agenda Item 5, and we have Habitat and Ecosystem AP Reports and FEP II Roadmap Update, and it's 5:21. We got started an hour late, and so I will go ahead and move on to Anne, and I will just ask Anne, and then follow-up with Roger, to just cover what you need, and let's be efficient and get through these last two items.

MS. DEATON: Okay. If you want, I can go ahead and start, and I've kind of got this organized so that I don't repeat things. I was asked to give an update on the last three meetings that the Habitat and Ecosystem Advisory Panel has had, and so that's like a year-and-a-half, and we're stretching my memory, but Roger has a good summary, and Wilson Laney helped with that, too.

Anyhow, to start, there are several recurring topics that you will see on the agendas, and it's not that the same information is covered, but they sort of build on one another, and so one of those reoccurring topics has been mapping of the deepwater ecosystem, and usually that's done with an update from somebody at the NOAA staff, and they have underwater video footage of one of their latest explorations and provide information on fish they may have seen, invertebrates, corals, and that kind of thing.

The advisory panel members have asked about some things, and, for example, they are really collecting information and inventorying, and they don't conduct change analysis, but they say that the data they collect is available for any researchers to use and do those analyses, but, right now, that doesn't exist.

Another thing that might be of interest is one of the members asked about the origin of these coral mounds that they're finding, and they are biogenic and thought to be over 1.5 million years. It

was pointed out by panel members that it would be very helpful to look at the hydrodynamics and the currents, to see how and why these mounds formed where they are. It would also help with understanding larval transport and recruitment dynamics that may be important for food webs and connectivity with the South Atlantic fishery species.

Some work is being done, and Dr. Ross at UNCW is working on a paper looking at genetic connectivity, and the NOAA staff, when asked, noted that they have seen anthropogenic debris, plastics, balloons, fishing line, but not extensive damage to the coral themselves, and, last, just to give you an idea, some of the stats that we have heard is that they have now mapped enough that it appears to be a nearly continuous deepwater coral area, ranging at least 6.9 million acres.

At the Million Mounds area, it's in water that is 350 to 900 meters deep, but the coral mounds have -- The maximum relief that they have seen is 160 meters, and there is a relationship between where the occur and the Gulf Stream, and so a lot to learn. They have collected 12,000 to 18,000 coral and sponge records, but they haven't collected that many fish records, because that's not the expertise of the staff that they've had on the cruises, but they do take video, and fish have been identified from the videos. This is now considered the largest area of continuous coral mounds present in the world's oceans.

The advisory panel members noted that they are interested in seeing an ecosystem-based management approach being taken in the management of the newly-discovered habitats, and so, in other words, maybe some additional protections may be needed for those areas.

There was discussion about fiberoptic cables. If you know, there is a lot of cables that go across the bottom of the seafloor, and there was interest in whether they have observed any damage from any intersection of the corals and the cables, but they have not, at least to this point, and so I think it would be really helpful for you guys to just have a presentation from them at some point, just because a picture is worth a thousand words, and they are very helpful, and they say that's part of their job, to reach out, and it's such a vast area to cover that they want to prioritize based on the council's needs, and so, once you see where they have mapped, where they have found the coral, it may give you some idea of where you would like them to focus on in the future, the near future.

Another recurring topic that we've had at our meetings is energy development activities, and so one of the members is with BOEM, Brian Hooker, and he pretty much, either himself or a coworker, gives an update on the wind energy facilities in the South Atlantic and where they're at in their process. You are probably aware that there's a wind energy site now off of coastal Virginia and one off of Kitty Hawk, North Carolina. The Kitty Hawk site is -- It has a lease, but they are not actually up and running, but they have a meteorological turbine there collecting wind data.

He also has noted that they collect hydrographic data as part of the process for determining where cables go, and that information is available, or will be available, if we want some bathymetry data from that, or other areas, as well as sediment -- Bathymetry, sediment type, wind and weather data, and so just something to keep in mind that could help with a lot of these environmental assessments.

Finally, at the last meeting, it was asked what the effect -- About the presidential executive order, and I'm sure you've heard that there was that order to put a ban on lease sales, and that actually -- Everybody thought -- I thought that was natural, oil and gas, but it includes any energy lease

sales, and so it also includes wind energy, and that is a temporary prohibition on new leases, and so anything that exists is okay, and anything -- For example, Kitty Hawk is probably far enough along that it will be up and running, but there is a large area proposed out for I think -- It's an interest for a company for a wind farm off of the South Carolina/North Carolina border, and so like offshore of Myrtle Beach and Brunswick County, North Carolina. That one may, if they can get it done in time, before the order goes into effect, then it could move forward. If not, it will be stuck, unless the executive order is overturned by the new administration.

A lot of our meetings, we discuss the Fishery Ecosystem Plan implementation, and I was actually just going to skip over all of that for the next agenda item, which we might not get to, but we can talk about that later.

Other agenda topics not recurring regularly, we have at least two meetings where we talked about the ecosystem component and the bullet and frigate mackerel possibly being classified as ecosystem components for dolphin and wahoo, and you're very aware of that, and so I'm going to move on.

We also had presentations by staff from the Florida Keys National Marine Sanctuary, because they are updating their management plan, and they have multiple alternatives, options, in their plan, and, after hearing from the staff that gave the presentation, the advisory panel felt very strongly that that system is really stressed, and it's stressed not just by extreme weather, but also anthropogenic influences, such as pollution, but also things that are more easily controlled, like damage from anchoring or lobster traps or marine debris and prop damage.

Because of all the stressors, the coral bleaching, the extensive coral bleaching, the extensive stony coral tissue disease, they felt that the maximum -- The option with the maximum protection was valid, and they sent that letter to the Full Council, as you're aware, and so I'm going through these. Bullet and frigate mackerel, because that came up again at the next meeting in April of 2020, and SECOORA, and we've had a presentation by SECOORA, and that is an interesting group that they now have, and it's collaboration, and they call it SECOORA FACT, and their little slogan is "Fact is Fish Move".

It's a group of agencies and universities working together on acoustic telemetry data, and they have a website, and you can look at that, and so we had a presentation about that, and it helps, because it gets the word out, and they have added new members. I think every state that's in the South Atlantic is associated with that, at least to some extent.

I was going to mention that Roger gave a presentation on the council and NOAA Fisheries EFH consultation meeting, and, basically, they had a meeting, and it was U.S.-wide, and they talked about how NOAA consultations are a key management tool and how the councils and NOAA can work together to improve that process.

Another topic that we've had on the agenda is about efforts by BOEM, as well as fishery agencies, NOAA and universities, to look at sand shoals, not only for their fish habitat value, but also like where there is sand mining potential, and then what would the impact be on fish, and so we had a presentation on that, and they have developed a tool, called ShoalMATE, and, right now, it's an internal tool to help prioritize areas where there would be sand available for dredging.

One thing that came out of that, in the discussion, is that more information is probably needed regarding fish occurrence, distribution at certain times of the year and their life history there, because the data in the ocean is -- It's not as thorough, and it's not as abundant, as we probably need for when you're looking at an individual site to mine sand and how that will impact the fish, and so there's definitely more work that is needed.

EFH policy, we had a presentation on a research project that occurred off of South Carolina looking at the effect of beach nourishment in the summer in South Carolina, and I know, in North Carolina, we are also seeing an increase in that activity, and the whole reason that it was limited to the winter months is because of minimal biological productivity during that time and to minimize impacts to the benthic prey for the surf fish, but their study found minimal impacts to the benthic community, but they attributed that to the very compatible sand that they got then.

Another topic that's been discussed quite a bit is environmental dredge windows, and so, last October, at the October 2020 meeting, Lisa Wickliffe from NOAA Beaufort Lab gave a presentation on a report that she was a co-author on, along with Ken Riley, that looked at time-of-year restrictions for North Carolina and South Carolina, and it's an excellent resource if you are looking at a project, and she pretty much mined all the data that was available from fish sampling programs in North and South Carolina, and it kind of shows where they are when and at what life stage. It also summarizes the impacts and concerns, and so it's a great NOAA reference that can be used.

I think it's especially important now, because we're seeing an increase in requests to not adhere to the traditional environmental dredge windows, and so documenting that fish data is really important, and I would like to thank the council members for their letter to the U.S. Corps of Engineers recently, due to an EA that was requesting to dredge the port channels with no environmental window. In other words, they could do it whenever, because they are having difficulty getting the contract in place with the dredges, but, even though it was North Carolina-specific, we know that the Corps is talking about this elsewhere, and it sets a bad precedent, but that's still ongoing. We don't know the outcome of that yet, but you all, as well as the Atlantic States Marine Fisheries Commission, sent letters in, and that really helps support the states, when they get a letter from an interstate agency like that, and so thank you.

The coral amendment, we already discussed that, and so I will skip that, and then another specific topic we've had is the Southeast Seafloor Mapping Prioritization. Christine Buckel with NOAA in Beaufort gave a presentation, and that is a prioritization effort of where to do offshore mapping in the Southeast, and so they had over twenty-five agencies participate, and a technical report is due next month, and the advisory panel members said that they were very interested in seeing the bathymetric data for those projects to be put together into a seamless coverage, because that doesn't exist now, and so it's really hard to get bathymetry data, which you know can be really important for fish use.

They also emphasized the need for inshore bathymetry, like in the larger sounds, because it is EFH habitat, and the fish are moving in and out from those places, and it's really lacking, and so we'll see when that gets done. That is all I have by not talking about the FEP roadmap update. Thank you for the opportunity, and I will answer any questions, if you have any, or I can go right into the roadmap update.

MR. POLAND: Thanks, Anne. Do we have any questions from the committee? I am not seeing any. I appreciate that, Anne. I know that was three meetings, and almost eighteen months, worth of reports, and a lot was discussed, and so I appreciate that. Mr. Chair, I am going to make the suggestion that we, just looking at time, that we hold off on discussion of FEP II. I don't know if we could really do it justice in twenty or thirty minutes, especially this late in the day, and so, if the committee is fine, I suggest that we just add that to our next committee meeting. I think we have one scheduled for December, but, if need be, we might squeeze one in a little sooner than that. Is that correct, Roger?

MR. PUGLIESE: Actually, you have one scheduled for March, because we're going to be reviewing the scoping and have scoping for Coral 10.

MR. POLAND: Okay, and so we'll push that off for three months, if the committee is fine with that. Is anyone not fine with that?

MS. DEATON: I am fine with that. I will add, just quickly though, that a lot of time spent at the meetings is to hear updates from either an invited participant or AP members themselves, or we do breakouts by the state panel members, and that's where a lot of the information comes from, but it's really hard to gather everything that really pertains to all of the actions in the plan, but we are at the two-year mark, and so the hope is that -- So it was a two-year roadmap, and then, after this, we would be assessing how well -- You know, how much progress has been made and do some things need to be maintained, or other things added, or some things are done and dropped, and so that's kind of where we are in the process, and we have made good -- There's been a lot of work done, especially on the food web and climate change and SAV, I would say, and the dredging.

MR. POLAND: All right. Thanks, Anne. I hate to push it back and not dispense with it now, but I'm just afraid that we're all kind of burned out, and we probably won't have a good, thorough discussion.

MS. DEATON: No problem.

MR. POLAND: Mel, I see you have your hand up. Go ahead.

MR. BELL: I was just going to say that I agree with -- This isn't time critical, and I want to be respectful of all the time and effort that Anne and others have put into getting this ready, and I want to give it our full attention, and so we're just kind of -- I mean, we actually ended up with about the same amount of time we would have had when we got a little bit behind, but it's just that things take a little bit longer, but I don't want to try to cram something into twenty minutes or less, and so, if we could move it, I think that would be better, and, also, again, just being appreciative and respectful of all the effort that they put into this, and, if we can kind of listen to it later, that would be great.

MR. POLAND: Thanks, Mel. Chester.

MR. BREWER: I agree with Mel, and I don't know that I have ever looked at a computer screen this long, and one of the things that is starting to happen is my eyes are not focusing very well, and so I think we would be -- At least doing that report right now, it would be wasted on me.

MR. POLAND: All right. Well, don't jinx us, because we do have two more days of meeting left. All right. With that, is there any other business to come before the Habitat Committee? All right. Hearing none, thanks again to everybody, all the presenters and committee members and staff and everyone for hanging in there, and that concludes the Habitat Committee. Thank you.

(Whereupon, the meeting adjourned on December 8, 2020.)

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Certified By: _____ Date: _____

Transcribed By
Amanda Thomas
February 3, 2021

Attendee Report: SAFMC December Council Meeting (12/07/20 - 12/10/20)

Report Generated:
12/09/2020 07:40 AM EST

Webinar ID	Actual Start Date/Time
705-605-003	12/08/2020 08:00 AM EST

Last Name	First Name
Abeels	Holly
Abrams	Karen
B	A
BYRD	01JULIA
Beckwith	00Anna
Belcher	00Carolyn
Bell	00 Mel
Berry	James “chip”
Bianchi	Alan
Bonura	Vincent
Brame	Richen
Brouwer	01Myra
Bubley	Walter
Burgess	Erika
Carmichael	01John
Chaya	01Cindy
Cherubin	Laurent
Cheuvront	01Brian
Christiansen	00kyle
Clarke	Lora
Conklin	00 THE REAL Chris
Conklin’s Mobile Device	00Chris
Copeland	Robert
Cox	Jack
Dalton Harrison	01BeBe
Darrow	Jamie
DeVictor	Rick
Deaton	Anne
DiLernia	00-Anthony
Diaz	Dale
Dukes	Amy
Errigo	01Mike
Estes	00Jim
Evans	Joseph
Fay	Virginia
Finch	Margaret
Flowers	Jared

Foss	Kristin
Franco	Dawn
Gamboa-Salazar	Keilin
Gentry	Lauren
Gervasi	Carissa
Gore	Karla
Grimes	00Shepherd
Griner	Tim
Gulbrandsen	Michael
Guyas	Martha
Hadley	01John
Hart	Hannah
Hawes	Rachel
Helies	02Frank
Hemilright	Dewey
Hiers	Homer
Howington	Kathleen
Hudson	Rusty
Hull	James
Iberle	01Allie
Iverson	Kim
Jepson	Michael
Johnson	Denise
Karazsia	Jocelyn
Karnauskas	Mandy
Keener	Paula
Klibansky	Nikolai
Kolmos	Kevin
LaVine	Britni
Laks	Ira
Lam	Elliott
Laney	Wilson
Levy	Mara
Li	Yan
Locke	Charlie
Lyons Gromen	Pam
Mahoney	Andrew
Marhefka	00Kerry
McCawley	00-Jessica
McEachron	Luke
McGovern	Jack
Mehta	02Nikhil
Mendez-Ferrer	Natasha
Merrifield	Mike
Murphey	Trish
Murphey	Steve
Neer	Julie

Nesslage	Genny
O'Shaughnessy	Patrick
Peterson	Cassidy
Poholek	Ariel
Porch	00Clay
Prewitt	Brian
Pugliese	01Roger
Pulver	Jeff
Ralston	Kellie
Records	David
Reichert	Marcel
Reynolds	Jon
Rhodes	01Cameron
Salmon	Brandi
Sapp	Art
Schmidtke	01Michael
Sedberry	George
Seward	McLean
Sinkus	Wiley
Smart	Tracey
Smit-Brunello	00Monica
Smith	Duane
Soss	Alison
Spanik	Kevin
Spurgin	Kali
Stemle	Adam
Stephen	Jessica
Strelcheck	Andy
Sweetman	CJ
Townsend	Howard
Travis	Michael
Vara	Mary
Vaughan	Douglas
Walia	Matthew
Walter	John
Waters	James
Whitaker	David
Whitten	Meredith
Wiegand	01Christina
Williams	Erik
Willis	Michelle
Wilson	Scotty
Woodward	00Spud
Wyanski	David
brewer	00chester
burton	michael
collier	01chip

crabtree	00Roy
crosson	scott
moss	david
poland	00steve
sandorf	scott
thomas	01suz
vogelsong	jason
wilber	pace