SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

HABITAT PROTECTION AND ECOSYSTEM-BASED MANAGEMENT ADVISORY PANEL

Webinar

April 22, 2020

HABITAT AND ECOSYSTEM AP MEMBERS

Anne Deaton, Chair
David Webb
Dr. John Galvez
Paul Medders
David Glenn
Patricia Murphey
James Geiger
Bob Martone
Lisa Havel
Dr. Wilson Laney

Cindy Cooksey, Vice-Chair
Dr. Rene Baumstark
Jeff Hartzler
Thomas Jones
Rita Merritt
Shane Staples
Paula Keener
Dr. Laurent Cherubin
Brian Hooker
Dr. Steve Ross

COUNCIL MEMBERS

Mel Bell
David Whitaker

Steve Poland

COUNCIL STAFF

John Hadley
Cindy Chaya
Kelly Klasnick
Cameron Rhodes
Suzanna Thomas

Dr. Brian Cheuvront
Myra Brouwer
Dr. Chip Collier
Kim Iverson
Christina Wiegand

Other observers and participants attached.

The Habitat Protection and Ecosystem-Based Management Advisory Panel of the South Atlantic Fishery Management Council convened via webinar on April 22, 2020 and was called to order by Anne Deaton.

MR. PUGLIESE: We're going to go ahead and get started, and the revised agenda was provided afterwards, and we open it up with Approval of the Agenda, and we'll approve the October minutes, which were in Attachment 1 of the materials online, and I will open that up. Anne, if you would like to kind of open it up.

MS. DEATON: Sure. If anybody has any changes to the agenda, go ahead and raise your hand. If we see none, we'll just assume that, by consensus, everybody is good with the agenda, and the same with the minutes. I don't see any hands, and so we'll just say those were approved by consensus.

I also want to welcome everybody. It's our first meeting for 2020, and it's a little unusual, and I also want to thank you for being indoors on Earth Day, even though we're doing something here for the Earth, and so, as you saw from the agenda, it's a shorter agenda than usual, and so we have two two-hour sessions, 9:00 to 11:00 this morning and, in the afternoon, 1:00 to 3:00.

This morning, we're going to have Todd Kellison give a presentation on the status of the state EBFM activities that they've been working on, followed by a presentation on more of the mapping in the deep-sea and Blake Plateau, and that sounds like a very interesting wrap-up on some of the other work we've been hearing about from Erik Cortes. Then Steve Poland is going to give us an update on the bullet and frigate mackerel issue for the dolphin wahoo fishery. With that, I think we will just turn it over to the presenters.

MR. PUGLIESE: Okay. Todd, I'm going to go ahead and make you a presenter.

DR. KELLISON: Thanks, Roger, and thanks, Anne, and good morning, everyone. I'm Todd Kellison, and Mike Burton is also on the line, and Kevin Craig, and we're all at the NMFS Southeast Fisheries Science Center Laboratory in Beaufort, and thanks for having us virtually this morning. Like Anne said, Happy Earth Day greetings to everyone.

My objective this morning is to talk about and give a brief update on two activities that are ongoing that are being led by staff at our Beaufort Lab, and one is development of a South Atlantic Ecosystem Status Report, and a second one is development of a South Atlantic Climate Vulnerability Assessment. I will just note, briefly, that these are both listed as priorities under the National Marine Fisheries Service's South Atlantic Ecosystem-Based Fishery Management Regional Implementation Plan.

I will talk about these sequentially. First will be the ecosystem status report and then the climate vulnerability assessment, and, Roger and Anne, I will defer to you on how to handle questions, whether I should stop after the ecosystem status report section and answer questions on it or just go ahead to the end.

MR. PUGLIESE: I think you should just go through the presentations, and then we'll deal with all the discussion, et cetera, at the end of all of this, if that's okay, Anne.

MS. DEATON: I agree.

DR. KELLISON: Okay. Will do. We're starting with the ecosystem status report, and so what are those? The ecosystem status reports are described, or assigned, under our agency's Ecosystem-Based Fishery Management Policy and the associated roadmap, and they've been developed for multiple U.S. regions, which are shown here. These gray regions show areas for which ecosystem status reports have been completed. In a number of these regions, they're issuing updated reports, or often they're called ecosystem report cards, on an annual basis, and communicating those to the respective councils and other management bodies.

The ecosystem status report hasn't been completed for the South Atlantic, although, as I'll convey today, we're pretty far along in completing the first one, and it's just getting started for the Caribbean. The ecosystem status reports are intended for use by predominantly fishery management councils, but also other management bodies, and, for us, that would be ASMFC and the states, and they're also meant to be updated periodically.

As I mentioned, some regions, particularly regions with devoted staff, are trying to update these on an annual basis, but, more typically, they're updated every three to five years, and the South Atlantic ecosystem status report that we're working on is generally focused on the region managed by the South Atlantic Council, shown there in the figure on the bottom-right. It's led by staff in Beaufort, and it's a big effort, and it has contributors from a number of agencies and institutions, which are listed there at the bottom of the slide.

Ecosystem reports are really just meant to convey trends over time and multiple ecosystem components, which also get called indicators, and those ecosystem components are typically focused on the regional spatial scale, and they have a monthly to annual time scale, and ecosystem status reports also try to address a question of how ecosystem components -- Not only how each individual component has changed over time, but where there are inner-relationships between ecosystem components, and so there's typically like a synthesis section in each of the ecosystem status reports.

I have shown it previously in updates to this group, but this is just an example for the Atlantic Multidecadal Oscillation, and it's an index for the AMO, and this figure shows -- It standardizes it, and so the mean of the time series is set to zero, and it's this dashed line, and the solid lines are plus or minus one standard deviation, and the greens and reds are when the time series exceeds or goes below those plus or minus one standard deviations, and then this arrow just shows the trend of the time series, if there is a trend, over the last five years of the time series, which is this gray area, and this is a general format that's used for indices across all the ecosystem status reports, and it will be the general format for indices in the South Atlantic report.

Typically, ecosystem status reports contain ecosystem components or indicators in a range of categories, and, typically, those categories include the ones listed here, and that's the case for the South Atlantic as well, and so my plan for today -- In past updates that we've given to this group, we've shown some examples of indices that we were developing for inclusion in the report, but my plan here is just to walk through each of these categories and show you all the indices for all the ecosystem components that we're planning to include.

I will do this sequentially here, and so starting with climate drivers, and, just to orient you to what I'll be showing in the next few slides, these numbers you can kind of ignore, but that's where they will end up in the report, and so climate drivers will be Chapter 4 of the report, and then Section 4.1 will be based on the AMO, 4.2 on the NAO, and so on. These are the climate drivers, or climate components, that we anticipate including, the AMO, the NAO, El Nino, the North Atlantic Tripole, and the Atlantic Warm Pool. Then the text in parentheses just indicates who the lead is on developing the index and the text, and all the text here is in black, and you'll see it's in different colors in the coming slides, and so this just indicates that these are all done. The black indicates that we have the index developed and the text completed for the report.

For physical and chemical pressures, and I'm not going to read through all of these, and I will pause in a moment and allow you to do so, but here you will note that some of the text is in red, and those are ecosystem components for which we haven't completed the index, or we have the index and we haven't completed the text, and so most of these are done, but we're still working on a few others, and I will stop just for a second, just to give you a little more time to look through those.

Moving to the next actually two categories, habitat state and lower trophic levels, here you see, again, another color of text, the purple, and those indicate ecosystem components that we would have liked to have included, but either the data don't exist, and they're kind of a regional-scale time series, which is the case for zooplankton biomass, or the data probably exist, but they don't exist in like a single dataset, and so they could be compiled, but we haven't been able to do so, or we're not going to be able to do so for at least the first ecosystem status report for the South Atlantic, and that's the case for estuarine habitats, and so that's an important category.

For example, it would be nice to be able to track like overall areas of seagrass, for example, or oyster reefs, or saltmarsh habitat within the South Atlantic, but there is no just general regional-scale dataset, and so, typically, the states or other groups have monitoring, and it would take some detective work to pull that all together.

Upper trophic levels, you can see that we've got most of these completed, and so the two that are in red, the Florida reef fish diversity and abundance, those indices are completed, and we're just finalizing the text, and Samantha Binion-Rock is working on the new trophic levels, and I think that index is nearly completed, and so those are close to being done. I will stop for a second there.

Then a category that we're calling ecosystem indicators, which is predominantly fish-based, or fish-oriented, but it also includes ecosystem components on birds, marine mammal strandings, and sea turtle nest counts, and those are all completed. Then, finally, human dimensions, which are nearly completed, and we're just finalizing that last one.

Then, lastly, and so those are the ecosystem components that we planned to include in the report, and there will also be a synthesis section, which just tries to look at potential inter-relationships between all the ecosystem components that are included, and so this figure is an example from the Gulf of Mexico ecosystem status report, and it shows, in the small text on the right, that all of these are the ecosystem components that were included in the report, and these are things like dissolved oxygen and sea surface temperature, and we'll see these as states, like overfished and overfishing, and then some more response-oriented variables, such as like species-specific abundances. The X-axis year, and, for each value, these are just scaled to the overall time series, and so the warmer

colors are years where the time series had lower values, and the cooler colors are where time series had relatively higher values, and you can see where sort of groups of ecosystem components peaked together.

Then you can also look at the sort of overall response or analyses, such as the principal components analysis, and this is also -- This figure shows the results from the Gulf, and they did this PCA, and they presented it here for sort of each of the major categories of climate, physical pressures, upper trophic level and lower trophic level, and so on.

In each of these figures, the numbers are years, and so this is sort of a rolling time series, and this approach allows inferences to be made about sort of breaks in time in how the system was behaving, and so you can see, in a number of these, sort of in the mid-1990s, there appeared to be -- You can sort of divide the figures in the mid-1990s, and it turns out, in the Gulf, that that is consistent with a broad change in the Atlantic Multidecadal Oscillation, AMO, signal, which led to some inferences that that was a pretty strong overall like climate driver in the Gulf of Mexico, and so that's a synthesis part of the report, and so we haven't gotten there yet for the South Atlantic.

Then, also, the ecosystem status reports tend to include these research recommendations section, which, for the South Atlantic, will definitely include things that we would have liked to have included in the report, but we didn't have the bandwidth to pull together, at least for the initial report.

In previous presentations to the group, I think I have reported that we were hoping to finish by the end of last year, and that didn't happen, but we are working on it hard now, and with a bigger commitment, and I think we told the council, at the March meeting, that we would have it completed by the end of July, and I'm having weekly meetings with Kevin Craig, who, again, couldn't be here this morning, but he's the point lead on the ecosystem status report, and I think we're pretty comfortable to have a completed draft by the end of July, and so that's our goal.

Once we do that, then we're going to -- We'll put the document through internal review, both with our Center and with key partners, which will include the council and the SSC, after which we'll finalize the report and continue coordinating with the council and the SSC, and so I think that's my last ecosystem status report slide, and so I will transition to the climate vulnerability assessment, which is another ongoing activity based out of the Beaufort Lab.

What are climate vulnerability assessments, or CVAs? Well, they are tools to determine the likelihood that species abundance, productivity, or distribution will be affected by a changing climate. CVAs are a priority under the NFMS National Climate Science Strategy and the South Atlantic Climate Science Regional Action Plan and the South Atlantic EBFM Implementation Plan.

There's a recipe for completing these CVAs, and I've shown the cover page to the NOAA tech memo that basically has that recipe in it, and it's Morrison et al. 2015, and these have been completed or are underway for all of our agency regions, and I should note that there is a person, Mark Nelson, who is based out of agency's Office of Science and Technology, who is sort of helping to lead, or has helped to lead, all of the regional CVAs, and so that ensures that there is consistency in approach and methodology across all the CVAs, and so March is working closely

with us on completing the South Atlantic CVA, and I mentioned Mike Burton, who is on this call now, is the lead on the South Atlantic CVA.

The CVAs have sort of two major components, and one is determining the species sensitivity to climate change, and that's done across twelve life history characteristics that are shown here, and it's a little fuzzy here, but they will come back on another slide, and so I will go over those again in just a little bit, and so one is to determine the species sensitivity to climate change, and then the second part is determining the exposure to climate change, and so some species might be very sensitive to climate change, but they may actually not experience very much of it in their region or sub-region, and so determining both the sensitivity and exposure are critical components, and the exposure factors, and those are the ones listed here, are ones that are typically used, but these vary, or can vary across regions, and so these tend to be region-specific, and these sensitivity attributes are consistent across all the CVAs.

The species sensitivity and species exposure combine to allow us to make inferences about the overall species vulnerability, and so steps in the CVA are, first, is determining what species to include, and so we did that I guess more than a year ago, but then, when we went out and gave updates to groups like this one, we got feedback, and so thank you for that, and also from ASMFC, and that caused us to revise our species list a little bit, expand it, and it now includes species from all these groups listed in the bullets here, and so that's done.

After that was done, we set about determining the species-specific sensitivity to those life history attributes, and I mentioned there are twelve that are consistent across all CVAs, and those are listed here, and so, for example, species with high habitat specificity or high prey specificity or low adult mobility would more likely be more vulnerable to changing climate than species with the opposite of those, low habitat specificity or prey specificity or high adult mobility.

For each species, its sensitivity across each of these twelve attributes is determined, and we did that last year, and that culminated in a workshop that was held at our Beaufort Laboratory, and we had people with expertise in all of the species that we're including that participated in this scoring, I think, and I'm not sure who on this group, and I know Wilson Laney was one of the contributors, and there were probably multiple contributors from this group, but we reached out for expertise all across our region, and you can see there the affiliations of the people that participated, and they're listed here, and that allows us to generate the -- To determine the sensitivity of each of these species to climate change across those twelve attributes. That was done last September on the sensitivity side.

On the exposure side, we have to determine, for the region, what physical and biological drivers, or exposure factors, will be important, and the ones listed in the bullets there are ones that are typically included, and so we ended up selecting essentially seven, but it says N equals twelve at the top because, for five of them, we are including both the mean and the variance, and so that counts as two each, and so the exposure factors that we selected for the South Atlantic CVA are surface temperature, air temperature, surface salinity, precipitation, surface pH, and then there are two qualitative factors of currents/upwelling and sea level rise.

The exposure factor process starts with generating a species distribution map for each of the species included, and so the figure on the right shows one for scamp grouper, and so it's kind of rough, determining where the line of the species distribution is, but the important part of this is

determining which of these red dots gets included in the species distribution, because the red dots are used to generate essentially the -- They are used to determine the exposure to climate change that the species will have.

For each of these exposure factors, or, actually, the ones here, we'll use a range of climate models, global climate models, but selected their output, but only for this area indicated here, and it will determine what the anticipated changes in these exposure factors are, looking forward, and so that's how the exposure to changing climate is determined, and so each species will have its own species distribution map, and, therefore, it can generate the exposure data for those species.

That gives us this left part of the figure. Coupled with the sensitivity that we generated last September, that allows us to perform analyses that can allow us to make inferences about species vulnerability and generate outcomes like this, which I have shown to this group before, and this is -- This and the following figure are from the Northeast Fisheries Science Center, the Northeast Climate Vulnerability Assessment, but this just shows, on the Y-axis, scaling from low to high, the sensitivity of a species to climate change, and the X-axis is the exposure to climate change, and so species that have a high sensitivity and high exposure are the ones that are most vulnerable under the CVAs.

Then the CVAs will also allow us to make inferences about the potential for our distribution shifts for species that are very tied to specific habitats or have low mobility, and they would have low potential for distribution shifts, and the more mobile species, or habitat generalists, would have a higher potential for distributions.

Where are we in our process? This is sort of an updated timeline, and so we're doing this for seventy-one species, and, again, we added a number, which included flyingfish, wahoo, snook, and a herring species, maybe blueback herring, as a result of partner input, and so these are all the sort of steps in the process.

The underlined shows what we've completed, which is a good bit of it, but a lot of progress is being made right now, and so Mike and I were talking yesterday, and I think we feel pretty comfortable by saying, mid to late June, that these factors will also be done, which will just leave us with the data analysis, interpretation, and report writing, and so I think that we're going to be in good shape to at least have a report completed, and I think there will probably be a related manuscript that we publish, but we should at least have a report completed by the end of the calendar year. Hopefully we'll have something by the fall meeting of this group, if you're interested in the update, and that we will have some slides, some results, like this, but for the South Atlantic to present. With that, I will stop and say thanks, and Mike and I can try to address any questions.

MR. PUGLIESE: We have some questions. The first one I think Debra actually sent separately on asking Todd why is the sea level rise a qualitative versus quantitative exposure factor.

DR. KELLISON: That's a good question, and I guess I'm not so familiar with the sea level rise data, but I think that we just pulled -- There are like available data, like predictions, for specific areas, but not over regional scales, and I am not sure -- Actually, I am not sure that the available data -- I am not sure if it's projected, and so I'm not going to be able to do a very good job of

answering the question, but I think the short answer is because we couldn't easily generate a time series that ranged from historical to projected at the regional scale.

MS. DEATON: I don't see any other questions.

MR. PUGLIESE: I've got a hand raised by Paula Keener.

MS. KEENER: Todd, thank you very much for your presentation, and so I have a question regarding the ecosystem report card, and so I think this is on your third-to-the-last slide in the first presentation, and did you mention that you were not able to include the state partner landings as indicators? The 7.4, you were not able to include that data?

DR. KELLISON: If I said that, I didn't intend to say that, and we anticipate including the -- Compiling the state-specific blue crab landings and including that, and the same for the penaeid shrimp.

MS. KEENER: Okay. Great. Thank you. Then my other question is are there any huge data gaps that would affect the overall synthesis that you're trying to pull forward in this report, and, if so, what are they?

DR. KELLISON: That is a great question. I don't have a good answer, but I'm sure that we're missing some important information, and I guess the zooplankton one that's shown on the slide right now -- We don't have a broad ichthyoplankton or plankton survey, like they have in the Gulf, which would be a nice signal, and probably the two that are listed on this slide, and so metrics of estuarine habitat are going to be important ones, and I think the estuarine habitats, and I have sort of referenced this before, but I think that's one that we could tackle, but a challenge for us is developing this ecosystem status report hasn't -- It's not anyone's day job, and like Kevin Craig is the lead on it, but he's a stock assessment scientist, and so his main role is doing stock assessments, and so this is something that we have found time to do, but that's why we focused mainly on data that were sort of readily available that people were willing to generate and provide.

I think that we could generate indices of, for example, seagrass, and probably oyster reefs and saltmarsh, and those would be important ones to include, but it would just take a good bit of time and effort, which we just weren't able to make that lift for this first report, and so those are the ones that come immediately to mind, but that is a great question, and I mentioned that there's a research recommendations section, and this is not really research, but one of the things that we talked about doing is clarifying like what we've missed with this report, what we need to have or what would be great to have and what we haven't, and so I haven't given you a thoughtful answer really, but it's something that we will have a thoughtful response to in the report.

Since these reports are meant to be updated regularly, we're constantly going to be asking for feedback on what we should be including, and so, if you look at the Gulf of Mexico ecosystem status report, the first one was from 2013, and there was an update in 2017, and the 2017 one looks a lot different than the 2013 one, and there was a lot of feedback, and they learned what we could do better between the two, and so that was a long answer, but a great question. Thank you.

MS. KEENER: Thank you for the response, and I think there's some great opportunities for graduate student research here. Thank you.

DR. KELLISON: Yes. Great point. Absolutely.

MR. HOOKER: Actually, since we're on that same slide, can you scroll down to the human dimensions ones? I guess how do we -- How do you guys determine what the scope of human dimensions is? I think I read the Northeast Shelf status report, and there is just so much going on, both from coastal influences and pressure in the ocean, and how do you -- How is this determined? Obviously, there is all types of use in the ocean environment and the pressure on the coastal side, and how do you get to these pieces?

DR. KELLISON: That's another great question, and neither Kevin nor I nor Mike -- Our work focuses on human dimensions, and so, really, I think we've turned to people in our region who are doing that work and asked them what is appropriate to include, and so the names listed here are like Matt McPherson's group with our Southeast Fisheries Science Center based out of Miami, but we have coordinated with them pretty closely about what to include, and Grant Murray has had a lot of input as well, but I think the short answer is that we have looked to others, and so it's certainly possible that we're missing some important metrics. I don't know if there's something that, at this stage, that we could still include, and possibly we could, but I'm happy to take any feedback now or afterwards, if any of you are interested in following up.

MR. HOOKER: I guess my question is, if there were comments, is that, and maybe this is a question more for Roger, but is that something that the advisory panel would recommend that the council request additional metrics or indicators or measures to be considered in the status report? It was just in general, and I'm not focused just on the South Atlantic, but on these ecosystem status reports in general, if there is a process there.

MR. PUGLIESE: I was just going to respond, because I think that's the whole idea of having input, is to provide some guidance on, as these evolve, because this is an evolving process, the first cut at it, and so hopefully it can give better guidance on other metrics to use and different information that can be drawn on.

DR. KELLISON: I agree totally, Roger, and my response was going to be that our objective is to make these reports as useful as possible, and so we want to do all that we can to include what we need to include, and so we definitely want to get feedback, and whether that comes from the advisory panel or from the council, but initiated by the advisory panel or directly from each of you, and I would say it's all going to get considered.

MR. HOOKER: I think that concludes my question, and, Roger, there might be some overlap between this and some of the stuff that you guys have done on the landscape indicators as well.

MR. PUGLIESE: Yes, and I think that's something that we need to investigate further, because, yes, I think the opportunity to draw on some of that and bring it into here I think is a real opportunity, and it's just, as I said, an evolving process, to make sure that we get as much as is there, and the members are going to help provide that context, I think, to evolve this into the future. Thanks a lot. Moving on, I think we've got Laurent that had a question. We've got a couple more questions.

DR. KELLISON: Roger, can I quickly jump in? Sorry, Laurent. I mentioned earlier, just to you, Roger, that -- These are sort of new times that we're dealing with, and my wife is at work right now, and I have to get my daughter on a Zoom for her school at 10:00, which is in just a couple of minutes, and so, with big apologies, I might need to step away, but, Laurent, do you want to go ahead with your question?

DR. CHERUBIN: I'm going to be quick, and so, on one of your slides, you showed the PCA analysis for the indicators, and I was reviewing the climate change one, and you were showing how there was a divide between the 1990s and then after the 1990s, and I just wanted to know what the two PCAs that you show here indicate.

DR. KELLISON: I don't know, and do you mean like what the --

DR. CHERUBIN: What sort of parameters, what are they?

DR. KELLISON: I mean, I'm not the right person to answer that question, I think, because I wasn't involved in the Gulf of Mexico ecosystem status report, which this is pulled from, but I can figure that out, and Kevin Craig was a big part of that, and he might have led this analysis, and, unfortunately, he's not on right now, but I can talk to Kevin and follow back up, Laurent.

DR. CHERUBIN: Sounds good. Thanks, Todd.

DR. KELLISON: I will do that. I'm making a note right now.

MR. PUGLIESE: Then we had two last questions, one from Anne and then one from Steve.

MS. DEATON: Todd, I'm a little bit concerned that estuarine habitat won't be included in the ecosystem status reports, and, to me, that's a big hole, and I wonder how can this be an accurate -- How can this be an accurate ecosystem assessment without that information? Also, I did notice you have wetland coverage included, and I just wondered what the source of that was.

DR. KELLISON: I mean, it took it into concern, and so we looked into it, and I spent a good bit of time trying to figure out what the sea bass data sources were, for example, and there are many, ranging from state level to NGO level, and so, like for sea bass, I think it would take a lot of work to put together the time series, and so it took -- It's a big gap, and it's just one that we couldn't easily solve for this, and so I guess the options would be to delay putting together a report while we try to piece together some of those data sources, but that could take some time, or to proceed and to know that that's something that we need to include in future reports. I forgot the metric that you said, and is it wetland coverage?

MS. DEATON: Yes.

DR. KELLISON: I'm not sure what the database was. I think that that's an index that Seann Regan with National Ocean Service put together, and Kevin Craig was working with him on that, and so there is a dataset that was utilized to generate that ecosystem component, and I'm just not sure exactly what it is, but I could find out and follow up, and so I share the same concern, Anne, but it just wasn't something that we felt we could tackle in the near-term.

MS. DEATON: Okay. Thanks.

DR. ROSS: Just real quick, I think you said the draft report would be available mid-summer or so, and will that draft be circulated to us, to this panel?

DR. KELLISON: Yes, I think so, Steve. I am pausing a little bit because we haven't done this before, at least for the South Atlantic side, and so we're going to need to work with our agency to figure out how they want us to distribute it, but it will go through some internal review, but I would envision that would be pretty quick, and, because our intent is to -- This is for our partners, and we went to get feedback from our partners, and so I am not positive, but I would anticipate that yes.

DR. ROSS: Okay. Good. Thanks.

DR. KELLISON: Thanks, Steve. Also, it's good to talk to you. I hate to do this, but it is right at 10:00, and I do need to go, and I can come back for questions, Roger, or Anne, if you would like.

MR. PUGLIESE: I think there may be only one last question from Paula, and that's it. Is she there? I think that's it for now. I appreciate it, Todd, and this is the beginning, I think, of this process, and I look forward to getting -- I think the panel is going to play a pretty critical role in helping guide it as it evolves into the future, for both the status report as well as some of the climate vulnerability work, and so thank you.

DR. KELLISON: Thanks, Anne, and thanks, Roger, and thanks everyone for the great questions and feedback, and, Laurent, I have a note to follow-up with you after I talk with Kevin.

MS. DEATON: All right. Bye. Thank you.

DR. KELLISON: Thank you.

MR. PUGLIESE: Okay. I think we're going to move on to the next presentation, but, before we open it, I think I'm just going to have -- Heather Coleman has been involved with the panel for a good while, in guiding a lot of the -- Providing the information on research mapping, et cetera, over time, and maybe a couple of opening words before we get into Eric's presentation. Heather, if you want to make some comments, and I'm going to go ahead and make Eric a presenter, and we'll go from there.

MS. COLEMAN: Thank you, guys, so much for having us back on, and we spoke with you last time, I think, in either October or November, and so NOAA's Deep-Sea Coral Research Technology Program and the Office of Ocean Exploration Research have presented a few times recently to the AP, and I think we'll be presenting one more time in the future, when data from our recent initiatives are more fully analyzed, but we wanted to make sure that you get to hear about the other exciting research that's been going on in recent years too in your region, and so I would like to introduce Erik Cortes, who has studied the ecology of the deep-sea for over twenty-five years, collectively spanning over a year at sea on thirty-two research cruises, fourteen as chief scientist, and making forty-six dives in the manned submersibles Alvin and the Johnson Sea Link.

His work is centered around the ability of organisms to shape their environment and to increase habitat heterogeneity, but it has increasingly become focused on the ability for humans to impact these processes in the deep-sea, and my favorite quote that I found online from Erik is "My favorite part of the job is to visit parts of our planet that no one has ever seen", and I think we can all relate to that. Eric and Amanda Demopoulos are the co-principal investigators of Deep Search, and that stands for Deep-Sea Exploration to Advance Research on Coral/Canyon/Cold-Seep Habitats.

Deep Search is an interagency partnership study led by BOEM, USGS, and the NOAA Office of Ocean Exploration and Research, and you've heard from us before with Kasey Cantwell and Caitlin Adams, to explore and characterize sensitive deep-sea habitats in the U.S. Mid and South Atlantic. It's sponsored by the National Oceanographic Partnership Program, and the study has brought together scientists from six U.S. academic institution and five USGS Science Centers for a multiyear research program. Erik is a professor at Temple University, and, with that introduction, I would love to hear what he has to say. Thank you.

DR. CORDES: Thanks, Heather, for the introduction, and thanks, everybody, for the invitation to present to you today some of the results of the Deep Search Program. This is, as Heather said, this is a big, multiagency project, and I'm the lead of the BOEM contractors on the project, and Amanda Demopoulos is also here, and she leads the USGS side of things, and the ship time for this big project is funded by NOAA OER, and we've had some support and a lot of interactions and input and good dialogue with the Deep-Sea Coral Research and Technology Program.

I think you guys are probably familiar with this, and the partnership with OER has been really important, and this is just an image of the mapping that they have accomplished around the Blake Plateau and in our study area over just the last couple of years as part of this project, and so this has been just an amazing improvement on what we can see and how we can choose sites in the area.

Just to go back in time, this is what our maps of the area looked like, and this is -- I just love this figure from Stetson's original description in 1962, and this is single-beam passes, and he printed out the chart paper and wrapped it around according to the position, so they could get a three-dimensional view of the area. Obviously, our view of the region has improved over the last fifty-something years, but, even still, in this region that we're talking about, even as of ten or fifteen years ago, there were about 200 coral mounds that were described from the area, and so this the region that we're focused on, and this is kind of in the middle of that figure that I showed you a minute ago, and it's off of Charleston, South Carolina, if you go almost due southwest, and this is the feature that we were really excited about.

Just in this one multibeam image, based on some algorithms for picking out mounds, there are about 3,000 coral mounds in this image, as opposed to the 200 that were described from the region, and so we picked a number of different places on this mound to survey, and there are a bunch of different sort of geomorphologies, and so we had a couple of dives up here, dives here, and dives on some of these features down here, and then the original Okeanos dive was on some of the ridge features here, and so really tried to look at all of the different types here.

Historically, there were one or two dives on the very top here in the Johnson Sea Link, with John Reed, and there were a couple of dives down here in this area, but the vast majority of the work in the Stetson Banks area has been up here and further to the west of this site, and so there's really

only a handful of observations from the area, and, as I said, this improved multibeam picture has really changed our concept of what this area looks like.

One of the major things is that these reefs are deeper than a lot of the reefs to the west that are more inshore that most of the research in this area has focused on, and the base of the reef is here, and, as you go up, it's about at 900 meters depth, and then the very tops of the mounds here is at about 700 meters. This is what they looked like on a couple of the dives in Alvin in 2018. There's extremely high coral cover in a lot of places, mostly lophelia pertusa, but this is madrepora oculata, the orangish coral in the foreground here, and this is just some really fantastic coral habitats, and every one of the dives that we did in the area, every one of the surveys, looked like this.

This is the first dive, and you can see the detritus raining down, and this is a swordfish that buzzed the sub when I was on that first dive in Alvin, and our pilot was actually clever enough to give it a little tap on the side there, to scare him off, since Alvin and he had actually been attacked by swordfish in the past, and so this is what our view of the oceanography looks like in some of these areas, and this is probably familiar to a lot of you, and all of you are more familiar with this region than I am, but this really straight decline in temperature, and no real thermocline until we get down here, to the intersection of two different water masses that occur right over the reef, and this is western North Atlantic central water up here, and it's shallower, and then western Atlantic subarctic intermediate water that's right below that.

I am going to show you a little more of the time series, the temperature, in a second, and this is our dissolved organic nitrogen, dissolved organic carbon, and this isn't really that different than other measurements, and, every once in a while, you have these points here that are quite a bit higher in dissolved organic carbon, and that's probably just from mucus release from the coral reefs that is applying some carbon down there.

This is the one that was really pretty surprising, are these nitrate values. These are higher than any recorded values that I could find in the Gulf Stream, even at depth, and it just speaks to the degree of nutrient recycling that's happening on the reefs and the nitrogen that's coming back in re-mineralized and coming into the water column that could then be advected, mostly through eddies, eddy circulation, up to the shallower waters and to help fuel some of the productivity on the surface, and so a lot of interactions back and forth.

This is a lander that we had down over the reef, and it was kind of right smack in the middle of it, where we were looking at some of the changes over time, and you can see the very rapid temperature excursions here as you go back and forth between those water masses, and we could see -- On the seafloor, you could see shimmering water, and you could actually see this interface between the two water masses, and, here, we're going from eleven degrees down to below -- Like 4.3 was the lowest measurement down here, which is actually one of the lowest temperatures recorded for lophelia in the world, comparable to some of the temperatures that they measured off of Greenland in a couple of reefs that they found recently, and there's just really fast changes in temperature that go along with the fast changes in current speeds, and we measured currents up to a meter per second on the seafloor.

This is just a comparison between the values that we found over the Richardson Reef Complex and some of the other lophelia reefs in the North Atlantic, and most of them fall in the middle, but this current speed is higher than almost anything that's ever been recorded, and this is the typical

range, and this is not including that Greenland point, which is a little bit lower than that, down to four, but the rapid excursions are really interesting, that really deep thermocline. There's really low pH values here, lower than we've seen at most of the reefs in the North Atlantic, including the ones in the Gulf of Mexico. We never measured anything as low as that.

This is the aragonite saturation state, which is actually a little higher than has been recorded, and higher than it is in the Gulf, and there's elevated alkalinity out here, and then here's that DOC, the dissolved organic carbon, and this nitrate value, which is really pretty exceptional, and there's lots of different invertebrates and fishes in a fairly limited number of surveys, nothing approaching what Steve has measured, recorded, at a bunch of the other reefs more inshore, but a good diversity of fishes, and a lot of mesopelagic fishes that were coming up that Tracey Sutton, who is working with us, typically finds much deeper in this region.

These observations are all up here, and this white dot is the -- This is just the bathymetry that was acquired by the Okeanos this part year, and so they were trying to map a little bit further up to the Northeast, to see how far that complex went, but this is where it is, and you guys obviously recognize this shape, and this is the boundaries of the HAPC, and so we took what we learned from this and picked a bunch of spots here, to increase the mapping coverage first, and then a series of dives on the Okeanos Explorer that are outside the boundaries and are kind of in the middle of the Blake Plateau, which, for the most part -- There are some isolated coral mounds recorded from out here, but, for the most part, as you guys know, it's pretty flat.

This is what it looks like, and we found these over and over again out on the plateau, these kind of isolated mounds, but they're a couple of kilometers across, in a lot of cases, and this is what they look like when you dive on them. It's just really almost constant coral coverage, and they were calling this the coral highway. This went on for hundreds of meters in one direction, and it just -- The improved mapping up there is showing that these features are really all over the place out in the central Blake Plateau and areas that we really hadn't looked at before.

I was trying to keep this short, and so I'm just going to stop there, and we can kind of discuss some of these implications, and I'll take any questions that you guys have, and I thought -- I just kind of threw this in as we were talking, but these are some of the fishes that were observed in a bunch of our dives, just so you can see what we were coming up with, and these are the most common ones, and a lot of them, obviously, haven't been fully identified, but this is mostly just from video, and Tracey Sutton and Andrea Quattrini are looking over this stuff. With that, again, I'm just trying to keep it short, and I'm happy to answer any questions that you have.

MR. PUGLIESE: Are there any questions?

DR. LANEY: Thanks, Erik. Great presentation. Do you all anticipate having a map, a comprehensive map, assembled anytime in the near future that combines all of the work that's been done by you and all the other folks that have been working out there?

DR. CORDES: What kind of a map are you referring to?

DR. LANEY: I guess a map that shows the three-dimensional structure of the bottom, something similar to, well, a bathymetric map, I guess, that would cover all the areas that you all feel have been surveyed at a high enough resolution to, for example, maybe enable Todd and the group

working on the ecosystem status report to actually estimate the coverage of different habitat types that are out there.

DR. CORDES: Yes, absolutely. All these data are actually already in the NCEI, and we're working with a bunch of folks up at the NOAA Coastal Mapping Center up at UNH, who are putting a lot of this together from the Okeanos side, and they have pulled in all the historical data, and Jason Chaytor, at USGS, who is at Woods Hole, is also the mapping lead for USGS, and they're all working together. We've got the maps put together, and they will be coming out, and the data are all publicly available right now.

In keeping this short, I didn't -- I was going to not go into the models too much, but we do have -- We have been working on some predictive habitat models for the region, and I think you guys have seen a lot of this before, but this is just the change in our predictions for where corals would be before and after these surveys, and you can see some of the dive tracks here for the surveys that we've done, just in the last couple of years, and so that bright green area is everything that's appearing as suitable habitat, as compared to what the models looked like with all the data in the deep-sea coral database by NOAA prior to 2018.

Then this is what it looks like for the whole region, and so you can see that it's changing a lot of what we think is really suitable and moving -- These are bigger boundaries, and a lot of them are moving a little further offshore than was predicted before, and so there are some big areas that are kind of lighting up here, and this is in a paper that's been submitted, and so this will all be public at some point, and these are the mound features that I was talking about. These are the ones -- This is one of the surveys that I was just showing you the video, and this is another one here.

The light blue are the areas where we did not observe corals, and then the black are areas where we did observe corals, and so all these models overpredict where corals are going to be, but this one is working out pretty well. This is an ensemble model of a whole bunch of different modeling methods and then picking basically the consensus, and so a lot of these -- This is what a lot of those features look like at a larger scale, and a lot of them are really low-lying little mounds that are probably dead coral and not living, and this is a prediction for just live coral and not accumulations of dead skeleton, which are probably all over the place, but these are the live coral spots that are showing up, and so they have to have a certain elevation above the seafloor for them to be living in the modern day, but there is coral skeleton all over the place.

You can see the little moats around these that form, that are really typical for the coral mounds, and we're working with the Okeanos, and they're supposed to get back out there and do some more mapping this year, and this is also a big focus area for the Seabed 2030 Project, and there will be an effort in the coming years to have the whole Blake Plateau mapped, and so we're working with all those folks to try and make sure that we fill in all these gaps and get it out in the public as soon as possible.

DR. LANEY: Thanks, Erik. That's terrific. You guys are just doing wonderful work out there, and I think it won't be nearly as long as I had anticipated, early in my career, before we have a really good bathymetric map of the whole system and we're able to start looking at habitat production relationships, and that's great. Thank you.

DR. CORDES: Yes, absolutely. I mean, that's the next step. Once we can see what the seafloor actually looks like and start making a couple of these predictions and doing some ground-truthing, which we've started, and there's a lot of work left to be done, and the next step would be making those links to the overlying water column, and that's a big focus of what we're doing. Mandy Joy is doing a lot of the biogeochemistry, the microbial work, and then Tracey Sutton and Andrea Quattrini are looking at the fish overlying these mounds and the differences on and off the mounds and a lot of those interactions, and so a lot more to come, and really some really interesting stuff.

MR. PUGLIESE: Thank you, Erik. Any other questions? I don't see any more hands right now. I do appreciate the focus on the frontend of the mapped and characterized areas, because I think that was -- So much has been done, and it's really good to see how much is the foundation then for taking the next step to look at combining it with predictive mapping and modeling efforts, and I think it all will be extremely useful as we look at potential future conservation efforts beyond what the existing areas are, and I think that was one of the biggest things that came up before about the distributions, and they're so much more extensive, not only within the areas protected, but even beyond now, and so that will all feed into the council's deliberations and the AP's deliberations on how you advance even further conservation in the deep ecosystems. Thank you.

DR. CORDES: You're welcome.

MR. PUGLIESE: Anne, did you have a question?

MS. DEATON: Thanks, Roger. Erik, I guess my question is has the council ever been presented, or recently, because this is changing so fast, but been presented information showing where it has been mapped with the surveys, like on that picture that's on the screen right now, and the extent of the lophelia mounds and the bathymetry? Do you know? Maybe that's for Roger or Steve.

MR. PUGLIESE: I think the last -- We've been building up, with all the different cruises over the last couple of years, about the work from the Okeanos and from the Ron Brown and from all the different vessels to provide the mapping and characterization information that's been combined, and we were actually building to the idea of having a more comprehensive review, and I think the analysis is still being done, and it would have been looked at, to some degree, at this meeting, but, in advance, we talked about timing it for the June council meeting, but I think it's going to be into the future, where there will be even a more comprehensive -- We had talked about having the director actually come in and give the big picture of everything that's been done to-date in this system, and I think that's where we're kind of pointing to. Heather may want to chime in on that, but that's kind of been one of the things down the road that will be the foundation then for really understanding everything that's been done, in combination with even some of the predictive work, too.

MS. COLEMAN: We were talking about June, and we are still analyzing data from the region, from the cruises, but that sounds great, to overlay mapping with coral mounds, and I had been thinking of it more as all the coral dots that we have, but the mounds are something special, and so that's a great suggestion, and we'll try to make that happen for I guess the fall presentation that we schedule.

MR. PUGLIESE: Yes, that would be great.

DR. CORDES: Just quickly, like I said, we're working really closely with Heather and Tom and their group and helping to put this stuff together and get it in there, and we have been compiling -- We're not working in a vacuum, and we're well aware of everything that's been going on. Sandra Brooke is on the study, and she's been helping to provide a lot of that perspective, and we have maps now of all of the coral locations from the entire region, and putting that together with all the new high-resolution bathymetry is a big synthesis project, or a component of synthesis of this project, which is running for another almost two years, but we'll have stuff together about a year from now, and we'll be pulling together our final report for review, and, like I said, we'll be working pretty closely with the deep-sea coral team at NOAA and making sure that this all becomes available to you guys as soon as possible.

MR. PUGLIESE: That would be great. Keep moving forward, and one thing that I think is really important, and Heather knows this, and others know this, is that these areas have been -- They really are truly being managed as deepwater ecosystems, deepwater coral ecosystems, and the understanding of the complexity of multiple habitats within it, and not just coral distributions. Hard live bottoms, sponges, everything within the system is going to be critical, to get the most comprehensive characterization of the areas that really, again, will provide that foundation for longer-term conservation of the entire area.

DR. CORDES: Yes, and the coral distribution was kind of our focus for what we were looking at, because BOEM's goal for this is really looking for sensitive habitats that can be avoided in the event of energy leasing of some form in the future, but we are working towards a more integrated habitat map of all the different habitats in the region, for sure.

DR. CHERUBIN: This is a very interesting presentation, and there are great discoveries, actually. I had a question, and I may have missed some information, but are there other parts of the world where this habitat also exists, around the U.S., but also as well in the world, outside the U.S. boundaries?

DR. CORDES: I only caught part of that, and from around the world, but what was the --

DR. CHERUBIN: Are there other regions or sites around the world that are similar to the one that we have on the Blake Plateau? I know you made a comparison to other reefs, but I didn't know where they were.

DR. CORDES: Sure. The most extensive areas are around the U.K., to the northwest up there in the Porcupine Basin and in that vicinity. There are some really large reefs, and those are mostly big, thick coral mounds, and like a lot of the areas off of Florida are pretty similar to that. The sort of reef complex kind of structure that we saw here, there are a lot of those off of the coast of Norway, as shallow as sixty meters in the fjords, but then, offshore, there are almost what you would consider barrier reef that go for twenty or thirty kilometers.

There is a big coral mound complex off of Mauritania and off of Africa, and there are some mounds off of Brazil, and there are some -- I would say they're more isolated, patchy sort of habitats in the Gulf of Mexico and in the Mediterranean, although the mounds that Steve worked on in the West Florida Slope are also very extensive, stretching pretty much as far as the coral mounds on this side of Florida.

DR. CHERUBIN: You mean the West Florida Slope or the West Florida Shelf?

DR. CORDES: The shelf. Yes. Sorry. There are a lot of similar habitats over there. I mean, the coral themselves, there are structures like this that are world-wide, but the lophelia mounds, a similar kind of ecosystem that we're talking about here, we're kind of confining our direct comparisons to what is in the Atlantic, and primarily the North Atlantic.

DR. CHERUBIN: That's really cool, and do you guys do any genetic analysis, to see if those populations are connected all the way from the Gulf of Mexico to the U.K. and Norway? Is there anything like that?

DR. CORDES: Yes, and Cheryl Morrison has done a lot of that work, from USGS, in collaboration with Steve's group and our group in the past, and a bunch of the Europeans that we have active partnerships with, and there are breaks between all those different regions that I mentioned. The northern Gulf is one population, and the populations, actually on either side of Florida, show pretty good connectivity, and then there are some weird, isolated populations within both of those, but most of them show pretty good connectivity, and then, when you get across, there is some connectivity, but it's more limited, when you get across to the U.K.

There are probably isolated habitats along the way, and we know lophelia extends north, up into the canyons, and there's some in the Mid-Atlantic ridge, and, as I've said, there is a little reef in Greenland, and so there are more isolated populations along the way that are sort of stepping stones, but there is connectivity all the way up to the North Atlantic, and then from there to the Mediterranean, and so you can see population structure, but they're not entirely isolated.

DR. CHERUBIN: Interesting, and so what about the Mid-Atlantic ridge? Is there anything over there that's similar to what we see on our shelf?

DR. CORDES: Not as extensive. Lophelia is present, and it's been observed as deep as 1,500 meters, and there are some deeper observations that actually are probably mistaken sort of artifacts, but they are pretty deep, and they are present, but it's just really patchy, and you don't have these kind of mounds and reefs that we see out here.

DR. CHERUBIN: All right. Thank you.

DR. CORDES: Sure.

MS. KEENER: Just a quick point. Based on the interest in this presentation, it might be a good idea if OER would, if they haven't already, provide the advisory panel, and maybe the Full Council, with a link to the office's oceanography supplement for last year and the most current oceanography supplement for this year. Those are wonderful overviews of the work that the office has done, just in all aspects of the program, and I know that this particular aspect of the office's work has been covered in the supplement as well, and so, if you haven't already seen it, Caitlyn and those from the office that are here, Erik, et cetera, and so you might want to provide those links. Thanks.

MR. PUGLIESE: Okay. Are there any other questions? If not, thank you, Erik, and thank you, Heather, and thank all the members for participating, and this is an ongoing, evolving process with

the cutting-edge research and technology that we really have been very fortunate in the Southeast to get a very large lion's share of work done on multiple vessels in our region, to be able to really enhance longer-term conservation efforts in the deep systems. With that, I think we'll move on to the next item.

MS. DEATON: That would be Steve Poland.

MR. PUGLIESE: Yes, and Steve will be addressing the bullet and frigate mackerel.

MR. POLAND: Good morning. I will just give a brief update on where the council stands on Amendment 12. As everyone knows, this is something that we've been working on now for at least a year-and-a-half, and the genesis of this issue came from a request from the Mid-Atlantic Council, I think in March of 2018, and they sent a letter to the South Atlantic Council, requesting that we consider ecosystem component designation for bullet and frigate mackerel in our dolphin wahoo plan.

This is because they had just established their forage fish management in the Mid-Atlantic, through their omnibus forage fish management plan, and, in the final rule, the agency decided to pull bullet and frigate mackerel out, citing issues with the National Standards, specifically National Standard 2, and there was no scientific evidence to directly link bullet and frigate mackerel to any of the Mid-Atlantic managed species, but it's pretty well known that wahoo especially prey on bullet and frigate mackerel, and so I presented some work that I had done, as well as a synthesis of some of the diet work done in the region up to the point of seeing you guys back in I think it was September or October of 2018, and then I presented the same information to the council.

We initiated an amendment to the Dolphin Wahoo FMP to add bullet and frigate mackerel, but, through the development of that, a lot of questions were raised, as far as what the South Atlantic Council's jurisdiction is for bullet and frigate mackerel outside of the South Atlantic region and the questions around the need for conservation and management, and so, through all those discussions, not only at council meetings, but internally within the IPTs, the council, back in I think it was September of 2019, passed a motion to ask the agency for some clarification on a couple of issues that were raised, specifically what is the jurisdiction, and do we have jurisdiction to extend management through the Mid-Atlantic for forage fish. There were questions on ecosystem component species and what type of regulatory actions can we pursue, and there were specific questions on allowable gears, again extending outside of the South Atlantic.

NMFS provided a response to that for our March 2020 meeting, and they basically said that, yes, we could designate bullet and frigate mackerel as an ecosystem component species in the dolphin and wahoo fishery. However, the jurisdiction would not extend outside of the South Atlantic Council region. This was because, through a secretarial designation years and years ago, we did receive authority to manage dolphin and wahoo throughout the Mid-Atlantic and New England, but that is only for dolphin and wahoo, and that doesn't extend to any species, such as EC species, added to the plan, and, if we wanted to manage those species throughout the region, we would have to make a request to the Secretary again.

Also, as far as regulatory measures applied to bullet and frigate mackerel, they would only apply to the dolphin and wahoo fishery, and so some of the Mid-Atlantic trawl fisheries, like the mid-water trawl fishery that interacts with these species, still wouldn't be covered, and we already have

-- We do not include trawl gear on the list of gear for the dolphin wahoo fishery, and so that gear is already not allowed, but, again, dolphin and wahoo aren't targeted by that type of gear, and so, any landings outside of the dolphin wahoo fishery, we wouldn't have appropriate regulatory authority under the dolphin wahoo plan to control harvest on that.

What the council decided to move forward with was to designate bullet and frigate mackerel as ecosystem component species in the dolphin and wahoo plan and leave it at that, and the Mid-Atlantic Council liaisons were at the March meeting, and they indicated on the record that they were comfortable with this, because they felt like the South Atlantic Council at least making the designation of ecosystem component species for bullet and frigate mackerel would provide them enough justification to go back to their council and potentially add bullet and frigate mackerel to their forage fish plan, citing the actions of the South Atlantic Council, and so that's where that stands with the request from the Mid-Atlantic.

As far as Amendment 12, we selected a preferred alternative under Action 1 to designate bullet and frigate mackerel as ecosystem component species and modified the purpose and need to reflect that, reflect the ecological importance that those forage species have to wahoo. We're going to look at this amendment again, hopefully, in the June meeting, as long as COVID-19 does not force us to pare down our agenda for any of our committees, and hopefully we'll have an in-person meeting in Key West in June, but that's still to be determined.

We'll look at it again in June, and there is the potential that we might go ahead and take final action, and there was some discussion at the March meeting around the need to have another round of hearings for this amendment. Recall that we had scoping hearings for this amendment last fall, and we received numerous, numerous comments, and I think we received more comments on forage fish management for bullet and frigate mackerel, as a whole, than we did on really any of our snapper grouper plans in the last year or so, even some of our hot-button issues, like red snapper.

Overwhelmingly, all the comments were in support of designating bullet and frigate mackerel as ecosystem component species, and so, since we've already received numerous comments, the committee might decide not to hold another round of public hearings and just move forward with final action, but all of that will be determined the next time the council talks about this issue, and so that's where that stands, and I will try to answer any questions.

MR. WEBB: I have a question, and it's kind of an open-ended question for you, and, if you're not comfortable answering it, that's fine, and then I have an observation for Roger. What was the -- Did you have to approach the Secretary for further authorization to move the bullet and frigate mackerel, and could you sense what the mood of the council was, whether they were considering doing that or -- Could you provide us some insights about public comment?

MR. POLAND: Thanks, David. To be frank, as far as the mood on the council, that would probably be a heavy lift, and I didn't get a sense that a lot of the council was really interested in getting too much more bogged down in this issue, because another concern with making that request to the Secretary is that would probably leave the door open for a more thorough discussion on the need for conservation and management, because, if we feel like we need to extend our authority for that forage species throughout the other council range, then that could also be perceived as we feel like the species is in need of some type of conservation and management

measures, and that would probably force our hand to add bullet and frigate mackerel as a managed species, a full-fledged managed species, and then that adds in all those other sustainable fishery requirements that need to be -- And a full plan developed, which would take considerably more time, and so I think, right now, the council was leaning more towards just taking kind of a -- I don't want to call it a baby-step approach, but just taking the low-hanging fruit right now, what's attainable, and moving forward with that and seeing how that shakes out and really seeing what the Mid-Atlantic Council decides to do with this, because, like I said, the liaison that was at the meeting was very vocal in support of adding these species, or making the case to their council at least for adding these species, into their forage fish plan. Now, by us taking this action, they feel like there's a little bit more justification to be made towards the agency and to the Secretary.

MR. WEBB: Thanks, Steve. Based on that, I was going to ask -- I would defer to Steve's comments right there, but it's a huge step forward -- I think it is a good step in the right direction, and so thank you, Steve, and I will withhold my other comments right now.

MR. POLAND: No problem. Thanks, David.

MR. PUGLIESE: Any other questions? I don't see any other hands right now. Thanks, Steve. With that, I think that actually wraps up the morning session. Anne.

MS. DEATON: Yes, and so we're right on schedule, and we're actually a few minutes early, and so we're scheduled to meet back at 1:00, from 1:00 to 3:00, and so if everybody could just call back in like they did, connect on their computers, a little bit before 1:00, that would be greatly appreciated, to stay on time.

In the afternoon, we'll have presentations on the Kitty Hawk Offshore Wind Project and the presentation from Debra Hernandez on the latest on SECOORA, and Roger is going to give us an update on EFH consultation and a regional innovations workshop. With that, we'll talk to you soon.

MR. PUGLIESE: Okay. Thank you, all. We'll see you in a little while.

(Whereupon, a recess was taken.)

MR. PUGLIESE: Good afternoon. What I am going to do is go ahead and unmute everyone, and you all go ahead and re-mute yourselves. We're going to go ahead and open up the afternoon session, and I am going to make Rick Robbins our afternoon presenter. Anne, did you want to make a comment or anything before we start?

MS. DEATON: I will just say that we're glad to have Rick here and giving us an update. It's off of my state, and so I'm interested in seeing how this progresses, but I will leave it at that and just let him talk.

MR. ROBBINS: Thank you, Roger and Madam Chair. I am Rick Robbins, and I serve as the Fisheries Liaison Officer for the Kitty Hawk Offshore Wind Project, and I'm located in Virginia Beach, Virginia, and, Roger, I really appreciate the invitation to participate in today's discussion, and this project has been presented a couple of times over the last couple of years to the full South Atlantic Council, and we recently had an opportunity to present and brief the staff on our fisheries

communication plan, and we appreciate the opportunities, and, as we go through this, it's great to get feedback and specific questions that we call follow-up on, but we appreciate the opportunity to day to present this to your committee, and, with that, I will go ahead and get started.

Avangrid Renewables has $32 billion in asset, with a presence in twenty-seven states in the U.S. They are a major player in the renewables energy industry, and they're the third-largest wind operator in the United States, with greater than six gigawatts of wind and solar power in operation. As you can see, they're spread throughout the United States, and the company is headquartered in Orange, Connecticut.

Avangrid is part of a larger network of power developers, through companies like Scottish Power Renewables, which is a significant player in the U.K., and also with Iberdrola Renewables in Europe, and, here in the U.S., there are two projects that Avangrid has an interest in. Exclusively, they have an interest in Kitty Hawk, and then they're also a partner in the Vineyard Wind Project in the Northeast.

I am the fisheries liaison, but these projects are quite fascinating, and I think, from a council perspective, we've been watching this process now for a number of years, as the offshore wind industry has scaled up, but I will just say, having gotten involved in this project, that they are quite complex in their planning and permitting and all the engineering that goes into these, but the basic arrangement, of course, includes an array of offshore wind turbine generators with foundations that are installed offshore, and those are typically installed with jackup vessels that go out and place the foundations in a grid array.

They then install the turbines and the cells atop the foundations, and those are then collected, in terms of their output, through cables into an offshore substation, and that substation then transits the power ashore, through what we refer to as an export cable, and I will show you on a chart later what we're talking about, but, right now, that's proposed to make landfall at the north end of Sandbridge Beach, which is just a little bit above the Virginia/North Carolina line, and tie into the electrical grid there.

With that onshore, it ties into the power grid, and you can just see some of the anatomy of that laid out there, and there are extensive considerations that go into this. They are multifactorial, in terms of all the considerations that have to go into the planning and design and engineering process, and there are also a lot of specific health and safety risks and requirements operating in the offshore environment. If you look at the European examples, you will see they have quite substantially evolved in the safety requirements, and, as the industry gets underway here, a lot of those best practices will be incorporated here in the U.S.

There is a massive scale of operations to this, and that all factors into the amount of time that it takes to develop these projects, and so a lot of the key planning and technological decisions take place a number of years before they are actually implemented, and that's why, again, I think it's great to have these opportunities to consider fisheries and ecological inputs on the frontend of the process.

This is just to give you a quick sense of where the project is located, and it's twenty-four miles offshore of Corolla, North Carolina, and it's roughly thirty-six nautical miles to the northwest

corner of the project from Rudy Inlet, and it's sighted in approximately fifteen to twenty-one fathoms of water, and I will show you that on the chart.

I love looking at this NOAA chart, because this is the type of chart that we historically have fished with, and this is about as fine-scale as it got, in terms of the charting that we used to use for fishing, and, as you can see, the project is sighted in an area that's in about fourteen to twenty fathoms of water, and it's located offshore of a lot of our inshore fisheries and inshore of a lot of our more intensive offshore fisheries, and so, from a fisheries standpoint, I think it's relatively well sighted, and I'm going to show you a little bit more of those details here in a minute, but, as you can see, it's located just northeast of the 38 Tower, and that's the A Navy tower, and it's thirty-eight degrees from the Oregon Inlet sea buoy.

This is a heat map of fishing effort around the project area, and I really like this image, because it pretty quickly gives us a sense of where the project stands relative to our regional fisheries, and so this is based on the exposure analysis that was done by the Northeast Fisheries Science Center, and this takes into account VTR records, and so, when the commercial boats are fishing out of the respective ports here in Virginia and North Carolina, and also some of the fisheries that operate on a more regional scale, when they're fishing offshore for squid, they are filling out VTR reports, and that data is reflected here in this heat map.

What you see east of the project are the relatively intensive squid fisheries that tend to operate out there on the edge, and those are long-standing fisheries, and now, historically, there were some trawl fisheries that also operated with modest intensity in the project area, and around the project area, and some of those has faded in their effort over time, and so, as you look at these more recent data in modern history, you don't see quite as much fishing activity in the project area. There is some drop-netting that occurs by the fleet that operates out of Oregon Inlet, and they will fish typically along the eastern periphery of the area, drop-netting for croakers and bluefish and ribbonfish and species like that.

As you look northwest of the project area, up off of Virginia Beach, this area here, you will see a fair amount of effort, and a lot of that is gillnetting for spiny dogfish, and that's a fairly intensive fishery that's prosecuted in the fourth and first quarters of the year out of Virginia Beach, and, as you come back down towards Oregon Inlet, there is clearly a lot of effort, but, again, this is sighted relatively well, in terms of being in between areas of significant importance for fisheries.

I will run through the planning horizon for the project. In 2018, the project kicked off with planning and assessment and stakeholder outreach, and a lot of that continued over the course of the last year, and the last year included aerial surveys of the wind energy area, and that included avian and marine mammals and sea turtles and fish surveys that are aerial, and those are conducted on a monthly basis over the area. It also included the marine geophysical and geotechnical and benthic reconnaissance surveys and, finally, the SAP submittal, and so the site assessment plan was submitted, and that was just approved earlier this month.

I want to just take a minute and run through what some of these surveys entail, because the geophysical surveys, I think, will be of interest to the committee, and they are quite comprehensive. When the survey vessel is on site, they pull multibeam sonars, side-scan sonars, shallow-bottom profilers, magnetometers, and they also stop and take benthic grab samples, and, last year, during

the 2019 survey campaign, they took about forty-nine benthic grab samples, and that allows us to look at the sediment type and also the benthic infauna that would be present in those areas.

This year, there will be an additional 200 benthic grab samples conducted in the area, and all of these come together to produce bathymetric maps to derive seabed elevations and result in classification of seabed sediments and benthic habitats and then a mapping of geomorphological features on the seabed, and all of these also contribute to the identification and mapping of the sub-bottom geological layers. In 2020, the offshore survey work is continuing, and that's underway now, and that will continue throughout the rest of the year, and so they're looking more intensively, with finer-scale data, as they do the bathymetric mapping in the wind energy area and also in the export cable route.

Another major development for this year is the approval of the SAP and a deployment of a lidar buoy, and I will show you pictures of the buoy in a minute, but the buoy will be deployed in the northwest corner of the wind energy area, and that will allow for the collection of environmental data that are relevant to the design of the project. Then, looking forward, in terms of what's planned potentially for the next few years, 2021 to 2022, we include additional planning and outreach, the project permitting, and culminating in onshore construction in 2023 and projected offshore construction beginning in 2024.

This is a quick overview of the fisheries outreach that they're doing, and so the communications plan includes a network of communication nodes, and this site is somewhat unique, in that there are a lot of transits by the recreational fishing fleet, because it's sighted inshore of the areas where there is a lot of marline fishing in the fall and tuna fisheries and swordfishing and a mix of offshore fisheries that operate through there out of Virginia Beach and out of Oregon Inlet, and so the HMS tournaments and marina operators are important nodes in our communication network.

We also communicate through the regional councils, the state agencies, National Marine Fisheries Service, HMS, and most of the boats that fish out there have to have an HMS permit, and so we'll communicate through the HMS listserv with those permit holders. We also communicate directly with the commercial fleet, owners and operators, and then commercial fisheries associations and the Regional Offices of National Marine Fisheries Service.

One of the interesting things that comes out of this, for me, and I think the committee may have interest in this, is I've been doing a lot of oral history interviews directly with fishermen that have fished in that area historically, and I use the standardized format when I do the interviews, but part of what I am getting at in those is trying to get an accurate assessment, from their perspectives, about the historical fisheries within the WEA and project area more broadly and then collecting information about seasonality and how they fish, the operational details about that fishing activity, so that we can try to take that into account in the planning process, but one of the things that I think is most interesting is, when I asked them about the ecological changes in the WEA and then hear that from their perspective, and it's really quite fascinating, because I think we're all familiar with how a lot of stocks have shifted over time, things like summer flounder, which were important in that area historically and inshore of there, also.

They have shifted quite significantly, and that raises a lot of management issues in the Mid-Atlantic and Northeast, but, just hearing from their perspective about how the mix of species compositions have changed, and getting that historical perspective has been really quite remarkable.

When I was researching one of the shipwrecks that's on the eastern periphery of the sites, the Fishing Vessel Snoopy is one of those, and it just underscores that historical change, because that fishing vessel went down in 1965, and, reading through the account of that sinking, at the time they sank, in July of 1965, there were forty scallop boats near the Snoopy, and there's no active scallop fishery there now, and I think it's just remarkable to think about just how much the fisheries have changed, and that was one of the examples that underscored that.

We're working now to develop a fisheries baseline, and that includes characterizing fisheries transits, and we're also making fisheries data requests for fisheries-dependent and fisheries-independent information. This year, the buoy deployment is getting ready to occur, as soon as the installation vessel can get out there and do their work, and the offshore survey work continues.

This is an image of the met buoy that will be deployed very shortly, and it's a twenty-foot-long buoy, and it's similar in size and shape to a center console fishing boat, but this is a Navy design, and it's a time-tested buoy, and it will be anchored in the project area, and this will include a lidar arrangement, and so it's a floating lidar buoy. It will measure wind speeds up to about 800 or 900 feet above the surface of the water, and so it gives an image of what that wind profile looks like, and that's an important consideration for the designers and engineers, as they go into the planning process. It will also collect a lot of environmental data, like wave height and water temperature and similar types of information.

This is an image of the benthic grab sampling. As I mentioned, last year, they did about forty-nine grab samples, and, this year, there will be about 200 conducted throughout the wind energy area, and this gives us important information about the sediment and how compacted it is, and I think one of the interesting things about what's going to happen in there this year with the sonar work also is, over the last year, in 2019, they did a comprehensive mapping with the multibeam sonar and covered 130 percent of the area, with significant overlap, and, this year, they will conduct the same process, and that will allow us to look at how much seabed mobility there is in within the project area, and that's going to be an important consideration, from a habitat standpoint and from a planning and designing standpoint, but one of the things that the grab sampling does is it gives us a sense of what the sediment type is.

One of the areas of interest is going to be in seabed mobility, but it also lets us look at the benthic infauna, and, if you see it down there, there's a list of the species that show up in that, and I mentioned scallops earlier, and you do see juvenile scallops in that area, and they typically don't survive, because of the water temperatures, but you also see some juvenile surf clams.

Just thinking back to the NOAA chart and what a relatively coarse image of the area that was, I think it's fascinating to see these actual high-resolution bathymetric images, and these represent multiple data layers, and so these include base layers that are common base layers, and those are among the sources that are cited there, but this also includes some of the high-resolution overlays, and, if you look there to the left, you will see the whole area, and you see a series of troughs and non-troughs, just relatively gradual changes in the bottom.

The area is generally relatively homogenous, but for those trough and non-trough bottom types, but it's generally a sand area. I highlighted this one area, just because the imagery is so detailed, but that gives you a sense of the quality of the data that comes out of the multibeam sonar work,

and I think it's fascinating to see it, when all we saw before was the relatively coarse charts that we've operated with historically.

The project has a new website, and it's available at kittyhawkoffshore.com, and, if you go to that, you will find links to our fisheries notices that we post for the benefit of the fishing community and notices to mariners and the fisheries communication plan related to documents, and so, whenever there are significant project updates, those will be available at the website, and we'll make those available directly to the council as well.

Here is the contact information for the project team, and Craig Poff is the Director of Development, and Brian Benito is the Permitting Manager. I serve as Fisheries Liaison, and we're very fortunate the have Dewey Hemilright as a fisheries representative for the project, and he's there in Kitty Hawk, North Carolina, and, Roger, with that, again, I appreciate the opportunity to present the project to you all today and provide an overview, and I look forward to any questions that you may have.

MR. PUGLIESE: Thank you, Rick. Do we have any questions for Rick today?

MS. KEENER: Rick, thank you for that presentation, and so, the multibeam imagery that you just showed, what was the collected with, please?

MR. ROBBINS: That is the multibeam data that was collected last year during the initial campaign of offshore survey work.

MS. KEENER: Do you know what instrument that was collected with?

MR. ROBBINS: I will have to check with the GIS person and get back to you on that. I think it's multibeam sonar, but I will check and see if --

MS. KEENER: I didn't know if it was the EM 60 or something else, and so thank you. The other question that I had is in the report that I read, and there was mention of an offshore science alliance group that I believe had been established for the northeastern project, and it mentioned that that was a partnership, I believe, between BOEM, Massachusetts, and Rhode Island, or it was sponsored or supported by that group, and can you talk a little bit more about that and what that is?

MR. ROBBINS: Well, if that's between the states, I am not as familiar with it. I am familiar with ROSA, which is an offshoot of RODA, and so, if you followed the Responsible Offshore Development Association, it created a scientific affiliated group called the Responsible Offshore Science Association, and I think some of the states are trying to cooperate on the science side as well, and so I will be glad to track that down and follow-up with the committee on that.

MS. KEENER: Okay. Thank you.

MR. WEBB: Just an operational question, and you may not have the information for us, but, looking at the met buoy that's going to be placed out there, and my guess it's a pretty high value, and what kind of security, or have you had vandalism issues in the past, or how do you protect that asset?

MR. ROBBINS: Well, this is the first one that we've put out there, and it does have a security camera system on it that operates 24/7, and so that is in play.

MR. WEBB: Thank you.

MR. MARTORE: I just had a question. What is the actual footprint of each of the foundations of those towers?

MR. ROBBINS: The foundations have not yet been designed or selected, and so that will be informed by the substrate and that underlying hydrology of the area, but it will also be informed by the selection of the turbines, and turbine technology is evolving significantly in this industry. If you've looked back over the history of it, you will see some of the earlier European arrays had relatively small, like three or smaller, megawatt turbines, and turbines are getting larger and larger, and, as they get larger, they get significantly more efficient, in terms of being able to deliver power, but they will also have different considerations for foundation design, and so that will be an ongoing consideration in the design process, but part of that will be informed by the actual substrate.

MR. MARTORE: Okay. Thank you.

MR. HOOKER: When did you say that you thought the buoy deployment would occur, or is that already in play? I can't recall where we are with it.

MR. ROBBINS: It's in process. It has not yet been deployed, but we expect it to be deployed very soon, and I think the crew is waiting on operational considerations. The SAP, as you know, was approved earlier this month, and we're standing by for the operational update from the contractor that is deploying it, I think, to make that determination.

MR. HOOKER: Thanks, Rick. The COVID-19 pandemic has affected pretty much every facet of operations, and so I just wanted to check in on that. Also, I can speak a little bit to the question regarding the equipment that was in your survey plan, and it was the Reson T20-P I think was what was proposed for the multibeam echosounder, with a Klein 3900 side-scan sonar as well as an INNOMAR shallow sub-bottom profiler, and so I hope that helps with that question.

Also, maybe taking a real quick opportunity to mention ROSA, the Responsible Offshore Science Alliance, and they did just name an Executive Director, and so they're still in the process of like forming committees and stuff, and so there's really not a whole lot of -- There is a lot of developers, I think including Avangrid, that have supported the development of ROSA, but we're still working toward -- It's only within the past couple of months that they've had an Executive Director identified, and they're working with the Responsible Offshore Science board to stand up ROSA, and then, at the same time, RODA also has a joint industry taskforce that they've been working with some high-priority projects, through that joint industry taskforce that RODA is leading, and so a large focus has been a little bit further north than this site, but that doesn't mean that, once some things get settled on the further-north sites, that you won't see some involvement with this project.

MR. ROBBINS: Brian, I appreciate that, and I just wanted to say, on the equipment, I appreciate you highlighting those instruments that were used, and I'm going to follow-up with the GIS staff and find out exactly which were integrated in this data layer, but I appreciate that.

MR. HOOKER: No problem.

MR. PUGLIESE: Are there any other questions? I am going to make Debra a presenter, and hopefully we can sort out the connection issue here.

MR. ROBBINS: Again, Roger, I really appreciate the opportunity to introduce this project to the committee, and, if you all have follow-up questions afterwards, I would be happy to run those to ground for you, and so thanks again for the opportunity.

MR. PUGLIESE: Okay. Let me read Debra's question. My question is about data availability, and are the plans -- Are there plans to make any of the data public?

MR. ROBBINS: I think that's a great question. I think some of the data will have a life cycle that goes along with the regulatory application process, and so, when the data are initially collected, they will be reviewed by the design team and engineering team, et cetera, and then they will feed into the regulatory process, and I think, as soon as it's appropriate in that process, as much data that can be made available publicly will be made available publicly. I know there is broad interest in it, and, I mean, there's interest in it from the fisheries perspective, among others, and so I think the project team is aware of that, but I do expect that, at the appropriate point in time, the data that can be made publicly available out of the survey work and other data collection efforts here will be made public.

MR. HOOKER: Thank you for that, and, again, I just wanted to -- One of the questions was the plans, and the site assessment plan is posted on BOEM's website, and so, if you want to see some of the data that went into just where the buoy location was and so forth, that is available. You can click on North Carolina and then go to the Avangrid Kitty Hawk lease, and you will be able to find that plan, and similar to any data that's submitted in support of a future EIS for a construction and operations plans, and those products will be made available in those. I think there is a larger issue of when does like raw data or what level of site characterization data be made available to folks, and I think that is a larger issue, and BOEM does have some requirements about how long that can be retained before public release, due to the fact that it is proprietary.

MR. ROBBINS: Thanks, Brian. Roger, are there any further questions?

MR. PUGLIESE: David Glenn has a question.

MR. GLENN: I appreciate the update, and I think I asked this question back in the fall, at the meeting down in St. Pete, but would any of this data be available through some sort of secure website for folks like us at the National Weather Service, or maybe folks within NOS, because I could see this being not only valuable for day-to-day operations, because you obviously understand how few buoys there are around the world, but this could be something that could be valuable information to relay to the Coast Guard if there are any search and rescue operations, and so I just wondered if it would be available to any other more sophisticated users, and maybe in a protected way. Thanks.

MR. ROBBINS: David, are you thinking of the data coming off the met buoy?

MR. GLENN: Yes, just that data, the wind and wave data.

MR. ROBBINS: I will have to track that down through the project team. I am not sure what the data frequency is, in terms of how that's uploaded off the platform, and so I'm not sure yet if that's available in real time or not, but let me track that down, and we'll follow-up on that.

MR. GLENN: Okay. Great. I appreciate it.

MR. PUGLIESE: Thanks, Rick. I really appreciate the update. This is an ongoing effort, and we really appreciate the beginnings -- Our dealings with Avangrid was from the beginning, when they purchased the lease, and so it's been an excellent opportunity, and I think it's very different than some of the problems you've had in the Northeast, with the pushback, for a lot of other reasons, and we don't have some of the big commercial fisheries, and we don't have trawl fisheries, and we don't have a bunch of things that are really causing a lot more issues up in the Northeast, and I think there's a lot of support from all the state directors and reef individuals and fishermen, because there is opportunities, and hopefully there is going to be a willingness to even look at, as this develops into the future, design layout that may maximize opportunity for trolling alleys or whatever, but a number of different things that might be really pretty innovative and forward-looking for how this integrates into the fishing community.

MR. ROBBINS: Roger, I appreciate that. As I had mentioned at the frontend of this, I think -- I have looked at a lot of these projects along the way, from the council perspective, and I think this one is really well sighted, and it puts the project, I think, in a very good position to get started, but we look forward to continuing dialogue with your committee, and, like I said, if there are follow-up questions, I would be glad to try to track down the answers for you, and so thank you, Roger.

MR. PUGLIESE: That's great. Thanks. Rick, thank you. I appreciate it, and it will be ongoing, and we'll forward any specific comments or questions that come as a follow-up from this meeting and beyond, and we look forward to -- We do have a fall meeting, and so we can already talk about what maybe the appropriate updates may be at that point in time.

MR. ROBBINS: Sounds good, Roger.

MR. PUGLIESE: Great. Thank you. Okay. I think we're going to move on. With that, I will turn it over to Debra Hernandez, the Executive Director of the Southeast Coastal Ocean Observing Regional Association, SECOORA.

MS. HERNANDEZ: Thanks, Roger and Anne and the rest of the committee. I appreciate you all inviting me back today. I'm going to just skip most of the background on SECOORA, and so, if there's somebody new on the line that doesn't know about that, just ask a question when I'm done, and I will be glad to clarify any of that background.

We do operate in the same domain as the South Atlantic Fishery Management Council, and we are part of a federally-mandated program, and so we cover the Southeast and include the West Florida

Shelf, and so that's the only difference between SECOORA's domain and the management council.

I wanted to start by updating you on our plan, and so we have a five-year plan that -- I got ahead of myself. First, I want to talk about one of the priority things that SECOORA does, which is data management, which prompted my question about the data availability from what was just discussed. We spend a lot of time finding folks that are collecting data on the ocean and coast and making it generally available, and we're certified by NOAA that our data management systems comply with all the federal standards, and so, as part of some of that work, we've been partnering with the SEAMAP program, Marcel Reichert and Tracey Smart and others on that team, and that provides a lot of data that the council relies on, and I just wanted to give a quick update on where that project is.

We actually have a team call tomorrow, and I will preface this by saying that I am not a data manager or a fisheries expert, but what we've been doing is working on a pilot project which is based on reports generated from the existing South Carolina DNR system, and so it has taken in hydrocast data, fish abundance data, the whole breadth of types of different data, but not all the species, and so, on fish abundance, there is species richness, and that's in the measurement drop-down, even though there are only two species, at this moment, in this data system. We can include other biodiversity indices when we ingest the full database.

The fish specimens layer provides the summary statistics for sampled fish, and, for the fish length distribution layer, when you hover over an event, you get a list of the bins with the counts, and clicking opens up a data window with average lengths, and, at some point, we'll be developing a custom graph to fully show the bin count distribution, and, as I mentioned, the hydrocast data is available on its own platform page, and there are Darwin core metadata examples available in Research Workspace, which is a firewalled area where the data managers can upload and manage all that metadata.

We will finish in July of this year with Phase 2, which will have the new database system up and running, with the existing data, and they will be working on a reporting tool that will allow for filtering and download, and we'll be adding user registration and metrics, and then, at that point, the data will be displayed through the SECOORA portal, once DNR and the fisheries management council are ready to have data release.

Now I want to shift gears just a little bit and talk about our Regional Coastal Ocean Observing System strategic operational plan, and you heard me talk about this a bit the last time I was with you all, and it is available online, and we have three priority focus areas, marine operations, ecosystems, and coastal hazards and climate variability, and we've gotten a lot of great input from folks like Roger and others.

I am going to just quickly talk about the fisheries priorities that are outlined in the plan, and they include highlighting priority geographic areas, which should be familiar to all of you, and they include directly from the fishery management councils, your habitat areas of particular concern, and also other management areas, like artificial reefs.

We currently have a lot of assets in the water, and I talked about these before, the buoys, the coastal stations, the radar that collects surface currents, and I will be talking a little bit more about the

FACT network in a minute, and it's an animal telemetry network, and we also have acoustic receivers on four of our moorings, and two gliders also have receivers on them. We are working to ramp up the amount of biological data that we're collecting, in addition to the physical data, and I've also talked about our glider missions that are still, at the moment, operating in the South Atlantic Bight, and we are collecting additional environmental data, as well as the tag data, from our telemetry partners, and we have some new projects that have put hydrophones in estuarine waters in South Carolina and Florida, and they also have been added to gliders.

Then another project that I think this group would have some interest in is between our data mangers and Georgia DNR, Chris Kalinowski and the work he's doing there with tagged fish, and I will talk a little bit more about that in a moment as well.

As part of this planning process, we have also identified where we want to grow what we see in the next five years as places we need to invest. Better data analysis tools and visualizations that link up the oceanographic, biogeochemical, and fish tag detections is a priority. Also, developing some really specific products, especially related to some of the acoustic data, is something we want to work on, and we also are aware that our data management system, our data portal, can be challenging to navigate and utilize, and so we want to conduct more training on it, and then we also included the need to initiate or involve ourselves more regularly with citizen science projects, because I do believe, as I know the council does, that's sort of the wave of the future with collecting more information.

Here are a few more that have links to fisheries, and I won't read all of them, but a good bit of it is expanding and increasing what we currently do, and it can seem like we've got a lot of stuff in the water, but, when you scale it to the size of the coast and ocean region, there are huge gaps, and so expanding that existing work is part of our future plans as well.

We also are working regularly to write proposals with partners and collaborators, and these are two recent ones that have involved folks with the South Atlantic Fishery Management Council, and one was an IOOS opportunity to add potentially more glider missions, and then the second is a citizen science project, and we talked directly with Roger and folks on the team, Chip and Julia, about that proposal that went into the National Fisheries Service.

Roger also asked me to give a quick update about the FACT Network, and it's really getting huge, the number of tagged animals, species studies, the number of partners, and Joy Young is the data wrangler, and so she's the one who does the heavy lifts, in terms of working with PIs to get their data into the Ocean Telemetry Network data nodes and the node that SECOORA maintains for these folks.

We have also got foundation funding to add some temperature sensors to the acoustic receivers, and so, again, we're coupling environmental data with that biological data, and that project -- Things went in the water last fall, and so we still don't have very much data from that. We hosted a webinar I think two weeks ago now that Dr. Young did for us, and it's recorded, and so, if you want more details about their work, just hop onto our website, follow the link on this slide, and you can listen to her presentation.

This is the project that I mentioned earlier that the data scientists are working with Chris Kalinowski to try to come up with some data analysis and visualization tools, and I think some the

challenge, with particularly acoustic data, is how much of it there is and how much analysis has to be done before you get really good information, and so that project is in process, and so, maybe the next time I talk to you all, I will have some results to talk about. If you would like more details, I can put you in touch with the folks who are working on that, and they would be happy to give a more detailed briefing on it.

One of the issues that is a bit challenging to deal with with acoustic tagging data is that the PIs are very protective of that data and information, and certainly some of it needs to be protected, so that species aren't impacted in some negative way from the data being public. Because Georgia DNR is a state institution, any of their data that they collect is available to the public, and so they've been very open about us creating a visualization system that folks can see on the screen that's publicly available, and that's not true for a lot of folks that are doing animal telemetry work. As part of the process, we'll make sure that no data is released that could compromise the marine species that folks are working to protect, but that's why we ended up doing this pilot with Chris.

We also have an opportunity for a student that's on the street right now, and proposals are due in about a month, and it's almost a $13,000 opportunity to work with the investigators, where we've added those thirty new environmental sensors to existing acoustic sites, and so the funding has been made available through the Curtis and Edith Munson Foundation, as well as InnovaSea and the Ocean Tracking Network. The original deadline was April 8, but, with COVID, we have extended that to May 15, and so, if you have, or if you know of, any students that would be good for this type of work, again, go to the SECOORA website, and you can find all the information to make an application.

We also, as I have mentioned already, fly gliders regularly, and I don't know if you all can see my cursor, but these zig-zagged lines are generally where we are flying the gliders. There is a little more work that is happening in these triangle areas, Gray's Reef, and then up here off of North Carolina, and Catherine Edwards with Skidaway and the University of Georgia leads that effort, and, as you saw in our RCOOS plan, we're hoping to add more glider missions. Right now, they fly three to six missions a year, depending on funding, and they are usually out for between thirty to forty-five days, and so, again, not as much coverage as we would like, but it's a good baseline that we are looking to expand as we move forward.

SECOORA's core funding is through NOAA's Integrated Ocean Observing System, and we're funded via five-year cooperative agreements, and we are in the planning phase right now for writing our next five-year agreement, and that's why we just updated our strategic operational plan, and we currently are in the process of soliciting letters of intent from a broad stakeholder base, and we're going to conduct a two-part review. We have lined up a number of subject matter experts, and we'll do sort of a paper review of the submitted letters of intent, and then the second level is a comprehensive review panel that will take all these reviews, take input from the staff, and recommend who would be included in that five-year proposal.

The announcement is open now, and LOIs are due on May 26, which is a little over a month from now, and we do encourage folks to collaborate, and we're entertaining a broad range of proposals, and the big caveat is that it needs to be aligned with our new strategic operational plan.

Then I want to close with something that I'm sure everybody on the line probably already knows, but some of our operations are beginning to be impacted by the fact that folks can't get in the field,

that they can't get out and maintain equipment, and we have some buoys that are not reporting off the West Florida Shelf, due to failed sensors, and we have a couple other places where data is questionable. We're keeping our eye on it, and some folks, like Catherine Edwards, are still able to get her gliders in the water, but many other folks can't travel, and they certainly can't get on ships, and so we're doing the best we can, as everybody is, and we're hoping for an ability to get back on the water sooner rather than later. That's my last slide. Thank you again for the opportunity, and I'm happy to take questions.

MR. PUGLIESE: Thank you, Debra. We really appreciate the update. It's good to see so much investment that's also aligning directly with some long-term fisheries needs, and the effort to connect in fish information with the oceanographic has been a long time coming, and so seeing that materialize I think has been something that, as the chair of the committee, I have wanted to see forever, and so it's good that's moving along. Do we have questions for Debra?

MR. GLENN: I think you mentioned you were going to have a graduate student looking at temperature and fishing in south Florida, and is that going to be in the Keys or along the east coast or both?

MS. HERNANDEZ: It's both, the Keys and the east coast. If you know somebody who would be good, then I'm happy to provide a little more detail offline, if you would like.

MR. PUGLIESE: Are there any other questions for Debra? Okay. Again, I really appreciate the efforts and the updates. There is a lot aligning and moving forward at the same time, with the planning, and I think there's been some key members of this panel that have contributed activities that maybe can get ramped up in this next round of funding, to expand some of the capabilities for some of the work that I think Laurent had presented to this advisory panel and had intended to present to the council on some ability to look at spawning areas, et cetera, and so, as we move forward, hopefully more and more can be done for our area. Again, thank you, Debra. Thank you for taking the time and being able to get it in, as I mentioned, something that really does focus on a lot of what the council and the representatives are interested in here.

MS. HERNANDEZ: Thanks for having me, Roger.

MR. PUGLIESE: Okay. I don't see any more questions, and so what we'll do is go ahead and move on. I think what we're going to do is go ahead and move on to the last item of the day. This is my opportunity to brief the panel on some efforts that we're going through the Council Coordinating Committee, as the Chair of the Habitat Workgroup for the Council Coordinating Committee. This is a partnership between all of the councils habitat staff and NOAA Fisheries to provide input to that council on various activities.

What had transpired was development and a recommendation on the creation of a workshop that was focusing on EFH consultation and regional innovation, and that was advanced in August of last year, and what we have is a report that was provided as one of the briefing materials for this, and so, as I mentioned, this is all the fishery management council representatives addressing habitat and EFH activities, and the workshop itself was really kind of building on some of the efforts that happened in 2016, and there was a large EFH summit that looked at how all the councils were addressing designations of EFH, policy on EFH, how they were really looking at all the different facets, and it was more of a kind of show of what was going on, and this was a follow-up

beyond that, and the idea was to get into some of the more significant activities, the opportunity to influence the EFH consultation process.

In addition, the sessions during the workshop also addressed goals, policy statement development, offshore planning and regional information coordination, as well as how to engage the regional Science Centers and the development of new tools and technology and obtaining and share data to refine EFH designations.

Now, one quick point I will make is that a lot of these different things -- You have councils at various different stages of development of investment in habitat and EFH consultation and EFH protection, and so there was varied levels of different advances on say policy development to just actual designation, and so this was a real effort to advance collaboratively and learn from all the different councils on processes.

As I mentioned, one of the first things was the consultation process and how the councils and regional offices coordinate and collaborate, and some of the driving goals was to have habitat-based goals and getting to that issue of potentially developing policy statements that articulate the council's standing guidance and clear direction on non-fishing activities that the council wished to engage in. Now this, in our region, has been a focus for many, many years, and it has been refined and advanced. As I mentioned, a number of other councils are in the process of beginning development or have a different variation on the way they address this.

In addition, part of the session had to deal with articulating the goals and assisting in effectively using the authorities, and the whole idea with this was the opportunity to highlight the EFH designations and the EFH information and the need for conservation measures and how those are actually supporting the fisheries and our ocean economies and a better understanding of early coordination and how early coordination can reduce a lot of the impacts and can prioritize restoration, conservation, and encourage grant opportunities to better understand the complex systems that we work with.

One of the sessions, and a pretty significant one, had to do with council policy statements, to provide standing guidance, and this was focused on policy statements that would provide councils an opportunity to provide their standing policies, articulating their concerns about non-fishing activities, and how those affect fish habitats, easily sharable, and there's a lot of real desire to not only create things like this, but make sure that they are able to be used, integrated into the system, and identify the best practices, highlight protection, and operational policies that benefit the council and NOAA Fisheries.

One of the other sessions had to do with how the different partners were dealing with marine planning and regional issues, and this effort was discussed and provided a view of how groups intersect in coordinating on cross-cutting regional-wide issues and what practices may be useful in enhancing councils contributions to the consultation process, directly or indirectly, with limited availability of time, but also resources for all involved.

The session highlighted the need and benefits of coordinated tracking of major activities among the councils and their NOAA Fisheries partners, and, again, this is -- Again, it's different in different areas. Some areas have actually created combined sites, websites, that provide information say on wind information for all the partners in the region.

Our coordination through the Habitat and Ecosystem Advisory Panel advances a lot of this discussion on regional coordination and longer planning when we're looking at all the different aspects as we move forward, and so there was a variety of different avenues to accomplish some of this coordination on broader planning and on regional planning.

This session, the next one, dealt with Fisheries Science Center engagement and the EFH consultation and in EFH information. It was looked at, and it identified opportunities to improve that direct work with the NOAA Fisheries Science Centers, to look at some of the short-term things, and it's just beginning to build all the contacts and connections and begin to have briefings between the different organizations and identify experts for any of the councils or regional advisory committees or plan teams.

Also, long-term recommendations are to improve the Science Centers' understanding of EFH consultation and what some of the needs and detailed information for our EFH designations, and that would be regional input on national science initiatives, with regional priorities, and identify regional strategic plans and priorities to feed into work plans and identifying funding opportunities that might be available for the councils.

This is an ongoing -- We have a sub-group that's been created now to specifically address this, and we're going to look at a workshop, where we can focus specifically on how to advance and engage the Science Center further in the EFH information process, and so that's in process as another sub-group of the Habitat Workgroup.

Another session had to do with tools and technology to aid the councils and regional offices in providing access to and use of information, and I pushed a lot on this, and EFH designation needed to be easily found, links to council habitat pages, NOAA Fisheries EFH consultation pages, including council summary documents identifying all the designations. In addition, each council should have a document or single area on its website for materials related to EFH designation. We have an EFH user guide in the Southeast, and we were the first ones to create something, and some of the other councils, I think, are going to advance a similar type of effort.

Again, a lot of these different things that we in the Southeast have advanced a lot of efforts to accomplish some of these, and now we can refine it with some of the expertise or the guidance from other partners throughout the country.

One of the other areas was approaches and best practices for obtaining and sharing data to refine EFH designations, and the focus on this was really getting at challenges in addressing data needs, and there is common themes across the regions. Effective data collection really requires continued partnership from a number of scientific partners, continued robust collection of it, at least a Level 1 or 2, which is presence, absence, and relative abundance data, as a baseline, which is the predominance of what information we have now for most managed species, and describing the potential changes in fish habitat use over time and constructing more complex ecosystem-based spatial models, which is something that our council is further moving on with the efforts on Ecopath and Ecosim and Ecospace, ultimately.

One of the things that was highlighted in the report was a toolkit for EFH coordination, tools for keeping councils informed about types of projects and tools for identifying councils key issues and

major areas of concern, tools for councils to provide comments, and tools councils can use that NOAA Fisheries is not able to use, such as posting on their website information through the EFH areas, and there is a lot more flexibility at the council level to highlight and expand and provide information on EFH through council existing web components. Also, tools to address the constraints of timeliness.

In conclusion, the workshop was extremely productive, and it also resulted in scoped workplans for each of the regions, which laid out either what was going on or what was anticipated to be advanced in EFH consultation and looking at policy and other activities in their region. It set forth kind of realistic steps forward, but this is probably the area that there's going to be more work done in the individual regions to be able to advance and focus even more on efforts into the future, and so, during this year and beyond, the workgroup intends to continue work on these specific initiatives, and with the guidance of the CCC.

As I mentioned, there were two sub-groups, one the Science Center Coordination Workgroup, and that is advancing a coordination to advance the Science Center connection with EFH, and then another specifically to address how we coordinate or some highlighting to national or regional partners, the mandates under essential fish habitats and how important those are, and this is going to be in the context of a letter to the CCC on how to highlight that and advance it, and so that's an effort underway also under the workgroup. With that, I think those are two of the key areas that I had mentioned about trying to advance the coordinated effort beyond here.

That is the first time, other than the 2016 effort, that we had all of the councils discussing essential fish habitat and habitat in general, and so one of the key things about this workshop was that it was all the hands-on representatives, and so what was really useful was being able to work directly with our counterparts throughout the entire country in addressing how the staff -- It was a staff-to-staff level discussion about how some of these are translated directly into what the council uses, council actions, and advancing EFH information systems, the consultation process, the use of the tools and capabilities, and so it was really productive, and I anticipate further action in the future on similar types of efforts. With all that said, are there any questions or --

DR. GEIGER: Roger, I just wanted to mention that that was a very good presentation, and I appreciate that information. Thank you.

MR. PUGLIESE: Thanks.

MR. HOOKER: I thought it was a great presentation as well, and so you mentioned quite a few different products that it looks like are short and long-term, but did I miss -- Is there going to be like a workshop summary document that is going to be a more near-term document, and I might have missed that.

MR. PUGLIESE: That's the briefing document, and you actually have it. The workshop document is the briefing document that came as Attachment 12, I think, of our briefing package.

MR. HOOKER: I guess I will have to read that. More to come.

MR. PUGLIESE: That was the beginning, and it was a lot to get that done. I mean, you think about this, and this is work across all of the councils throughout the entire country, to try to come

up with a common thread of a document, which I think ended up working up really good at the level we worked on, but it sets the stage for even more to be done. As I said, there are things beyond that, and so, yes, that's worth getting into, and there are some really good -- As I said, some of it really does lean towards how much we've done, and it provides some guidance to our other partners on how we've advanced policy statement and development, et cetera, but, also, there are things we can learn about how they have coordinated and other aspects in their regions too, and so it's definitely work looking at.

MS. KEENER: Roger, thank you for that excellent presentation. You know, clearly, working within the NEPA arena and EFH and ESA, there's a lot of moving parts and a lot to navigate there, and so, having said that, it's -- You know this, but it's critically important to make sure that information is communicated up, and I know it will be, through fisheries all the way up to the various parts of NOAA, and NOAA is, as you know, is very serious and committed about NEPA and making sure that all elements of NEPA are adhered to, and it is very confusing, and it's hard to sort it all out and make sure that it's consistent across the board, and so, as these elements are looked at and discussed, it's important, across the lines and within the programs, I think, to make sure that this information, as it is reassessed and looked at, is communicated, all the way down to the individual programs, so that, when they do get grant money out the door and are looking at working through CEs with the different programs and assisting different PIs, that they are doing it in the most effective and efficient way, and so, again, thanks again for the very informative information.

MR. PUGLIESE: Thank you, Paula, and I think it was really important to highlight how -- I think one of the biggest emphases is being proactive on trying to build information that we can use into the future, building policies and working with things that are providing guidance, and it's taking that longer-term view, and the other point I think you were making about across all the different levels, that's one of the reasons there was a lot of focus on how do you further engage the Science Center or how do you connect these different parts, because some are working at different levels, and doing it across the regions was really useful, because seeing how different people interacted was really important, and so it's only going to help all of us, I think. Thank you.

MS. DEATON: That's great, because there is definitely a need for more coordination on this and making it easy to access for all about EFH and what the policies are and what they can do and can't do. I wanted to ask or make this group aware that the South Atlantic Regional Biological Opinion came out recently, and this is a revised opinion, and it focuses on protected species, but it provides guidance on dredging, the timing of dredging, and, because it's focused on protected species and not fisheries, the only actual dredge -- When they want to dredge is when we typically tell them not to dredge, and so November to April 30 is when they -- That's when we would say that it's -- We're concerned that, because already this is being interpreted by the Corps, possibly, to be more than just for -- To be the final say, I guess is what I'm saying.

Even though it says it doesn't negate any other requirements for other federal laws, like Magnuson-Stevens, it seems to be that the Corps is trying to use that in North Carolina, and so they have already submitted a NEPA scoping document to pursue no dredge moratoriums at all in the two rivers, inlet systems, where we have ports, and so I was wondering if other states are seeing that as well and if anybody cared to comment on how that is and how you deal with that kind of inconsistency with the policy that we have.

MR. PUGLIESE: Any specific comments to that? I know Jamie had a question, but any comments directly to Anne about the issue of the inconsistencies and the dredge windows and the problem we have right now?

MS. COOKSEY: We in the Habitat Conservation Division of NMFS have absolutely recognized that that is one of kind of the big issues from our side of it with the SARBO, and so we worked hard, as part of the introductory language, to get some highlighting paragraphs in there, and it did happen, to make sure that users of SARBO understand that SARBO does not fulfill their EFH consultation requirements under Magnuson-Stevens, in order to try to ensure that we can at least engage in those consultations, to try to protect our fisheries resources as much as possible, and so I do hear you, Anne, and we're struggling with it as well.

MR. PUGLIESE: I have a question for both of you. Wasn't a publication recently -- I think I was actually going to try to have it presented or discussed at this meeting, but about specifically timeframes, and I think it's the other way around. It was timeframes for settlement, et cetera, for species, and so you can basically turn that around, in terms of aligning when not to be looking at dredging, et cetera, and that was something that was done not long ago.

DR. LANEY: Yes, that publication came out, and I think Fritz Rhode is one of the co-authors on it, and it covers North and South Carolina, and I'm sure one of us can send that to you, and don't you have it as well, Anne?

MS. DEATON: I do. I have a copy. It's rather large, and it goes into the distribution of fish in the two states by life stage throughout the year. It doesn't have actual recommendations on dredge windows and moratoriums, but it lays out where they are when and what the concerns would be with dredging to those species at those times. I can send it to everybody. I can try. It's big.

MR. PUGLIESE: Get it out, and I will distribute it, or however you want to do it. We can send it to the group, but I think it was important, because it gave you the information that you really are trying to understand what some of the potential impacts would be. Okay. Any other comments to that specifically? Are there any other comments or any questions, any more questions, on the EFH consultation workshop? Any other thoughts or comments on the dredge issue that was just discussed? Okay. Anne, I think we've come to the end of our at least core activities for the day.

I would like to say that I appreciate everybody's willingness to work in this new platform and new era we're in right now, and bear with my webinar not-savviness to get through this, and I will tell you that we do have our fall advisory panel meeting, and it may be scooched up a little more, so that we can make sure that we cover as much as needed at the fall meeting.

MS. DEATON: Thank you, Roger. I think you did a really great job for someone that's not tech savvy, but I guess we'll find out, as everything progresses, whether we'll be meeting in Florida or if it will be changed to Charleston or webinar or whatnot, but I appreciate your efforts here, and I think we got a lot accomplished, and I have some to-do notes here, and so I appreciate everybody's high attendance, and I guess we'll see everyone in the fall.

MR. PUGLIESE: Yes, and we'll keep you posted. As you said, things are somewhat in the air. Right now, it's still scheduled for October in St. Pete, and, as you know, one of the reasons we try to do that is so that we can take advantage of the lab and representatives, and there may be some

real reason to do that, with our Ecopath and Ecosim modeling efforts that will be advanced further by then, and so we'll see. There's a lot in the air right now. Even our June council meeting may be a webinar, and we'll see. Okay. I appreciate everybody's efforts, and thank you. Anne, if you're ready to adjourn, we can call it a day.

MS. DEATON: Meeting adjourned.

(Whereupon, the meeting adjourned on April 22, 2020.)

- - -

Certified By: _____ Date: _____

Transcribed By:
Amanda Thomas
June 16, 2020

Attendee Report: Ecosystem-Based Management

Report Generated:
04/23/2020 08:20 AM EDT

Webinar ID	Actual Start Date/Time
435-551-947	04/22/2020 08:25 AM EDT

Last Name	First Name
Adams	Caitlin
Atran	Steven
BROUWER	MYRA
Baumstark	René
Bell	Melvin
Bianchi	Alan
Bowman	Larry
Brady	Margaret
Burgess	Erika
Chaya	Cindy
Cherubin	Laurent
Cheuvront	Brian
Clarke	Lora
Coleman	Heather
Cooksey	Cindy
Cordes	Erik
Crimian	Robert
Crowe	Stacie
Deaton	Anne
Demopoulos	Amanda
GENTRY	LAUREN
Galvez	John
Geiger	James
Glenn	David
Hadley	John
Hartzler	Jeff
Hartzler	Jeff
Havel	Lisa
Helies	Frank
Hernandez	Debra
Hooker	Brian
Hourigan	Thomas
Howson	Ursula
Iverson	Kim
Keener	Paula
Kellison	Todd
Klasnick	Kelly

Knight	Casey
Laks	Ira
Laney	Wilson
MERRITT	RITA
Martore	Robert
Medders	Paul
Mehta	Nikhil
Melkun	Jessica
Moore	Alex
Mueller	Mark
Murphey	Trish
OKeife	Kathleen
Osgood	Kenric
Poland	Stephen
Rasser	Michael
Reiber	Ellen
Rhodes	Cameron
Robins	Rick
Roskar	Grace
Ross	Steve
Spangler	Sharon
Staples	Shane
Udouj	Tina
WEBB	DAVID
Whitaker	David
Wiegand	Christina
Woodstock	Matt
burton	michael
collier	chip
jones	tom
thomas	suz