

TABLE OF CONTENTS

Table of Contents	1
<u>Table of Motions</u>	<u>2</u>
<u>Call to Order and Roll Call</u>	<u>3</u>
<u>Adoption of the Agenda</u>	<u>7</u>
<u>Review of Minutes from Virtual Meeting (August 3-4, 2020)</u>	<u>9</u>
<u>Update on Ecosystem-Based Efforts: What is Going On</u>	<u>9</u>
<u>Lenfest</u>	<u>9</u>
<u>Stakeholders Meetings</u>	<u>25</u>
<u>Outreach and Education Efforts</u>	<u>29</u>
<u>Status of the Ecosystem (ESR)</u>	<u>32</u>
<u>SSC Report</u>	<u>47</u>
<u>Marine Protected Areas</u>	<u>56</u>
<u>DAP CMs</u>	<u>62</u>
<u>Other Efforts: MBON USVI, MBON Mesophotic Data</u>	<u>68</u>
<u>Relationship and Synergy Among All Points and IBFMPs</u>	<u>72</u>
<u>Development of the Fishery Ecosystem Plan</u>	<u>79</u>
<u>Purpose and Need/Goals and Objectives</u>	<u>80</u>
<u>Management/Legal Background Update</u>	<u>82</u>
<u>Island-Based Considerations Update</u>	<u>83</u>
<u>Discussion of Risk Assessment</u>	<u>96</u>
<u>EBFM TAP Information on GIS</u>	<u>110</u>
<u>Recommendations to the CFMC</u>	<u>123</u>
<u>Other Business</u>	<u>137</u>
<u>Adjournment</u>	<u>138</u>

- - -

TABLE OF MOTIONS

PAGE 78: Motion to create a sub-group to analyze database storage, in the long term. [The motion carried on page 79.](#)

PAGE 135: Motion to send the recommendations to the council. [The motion carried on page 135.](#)

- - -

**CARIBBEAN FISHERY MANAGEMENT COUNCIL
EBFM TAP MEETING
WEBINAR**

February 4-5, 2021

The EBFM TAP of the Caribbean Fishery Management Council convened on Thursday morning, February 4, 2021, and was called to order at 10:00 o'clock a.m. by Chairman Sennai Habtes.

**CALL TO ORDER
ROLL CALL**

SENNAI HABTES: Why don't we go ahead and get started? The first thing, I would like to welcome everybody to the first of our two-day meeting for the Ecosystem-Based Fisheries Management Technical Advisory Panel virtual meeting. The meeting will be held today and tomorrow, from 10:00 to 5:00 and then tomorrow from 9:00 to 12:00 p.m., both Atlantic Standard Time.

With that being said, I think the first thing on the agenda is a roll call, and so what I would like to do, before we do that, is go ahead and give everybody a couple of rules of the road. First, if you have not done this already, and are able, I would appreciate if you can go into your participant settings on Zoom and change your name, and so you will, on the right-hand side, once you click the participants tab on the bottom, you can go to More, and I will allow you to rename yourself, and what I would like for everyone to do is to rename themselves with the name they prefer to be called and their affiliation. If you look at mine, I am doing it now, and I am clicking "Rename", and it has "Sennai Habtes", and I am putting "-UVI", which is my affiliation.

In addition, the way we'll run the meeting today is I would like for us, when we're having presentations, for it to be open to questions, and so, if something is missed, or inclusive, or if you have questions, you can bring it up during the presentation. However, if we are running low on time, what I will do is I will politely ask for everyone to hold their questions until the end of the presentation.

When we get to a question-and-answer portion of the meeting, what I would ask is that you either put a request to ask a question into the chat, or raise your hand, and I will make note of the timing and when people have done that, and I will call on you, in order to ask questions. If you are unable to do that, what I would say is to wait for a good break in the conversation

and politely introduce yourself and ask to have a turn for a question.

We will be recording this presentation, and transcripts of this virtual meeting will be available afterwards. To aid in our wonderful CFMC staff's ability to make transcripts, when you make a comment or ask a question, I will ask for you to announce yourself with your name, prior to doing so, so they can keep track of what is being said and by whom. Any questions on those or concerns or things that people want to bring up regarding rules of the road for the meeting today and tomorrow? Okay.

If not, I will go ahead and call this meeting to order, and this is the February 4 meeting of the Ecosystem-Based Fishery Management Technical Advisory Panel. I will go ahead and do the roll call. What I will ask is I will call your name in order, as it appears on the participants list. When I call your name, I will ask that you introduce yourself with your name, your affiliation, and list whether you are a Technical Advisory Panel member, a CFMC staff member, a NOAA affiliate, or a public person in the meeting, and, if you are a public person, just go ahead and list your affiliation, so we know who you are.

I will go ahead and get started. Good morning, everyone. This is Sennai Habtes, and I am the Chair of the EBFM Technical Advisory Panel, and I am also a Research Assistant Professor at the University of the Virgin Islands. Next on my list, I have Liajay.

LIAJAY RIVERA: Buenos dias. Liajay Rivera, Caribbean Fishery Management Council, working for the EBFM TAP as a technical assistant.

SENNAI HABTES: Thank you, Liajay. Graciela.

GRACIELA GARCIA-MOLINER: Buenos dias. Graciela Garcia-Moliner, Caribbean Fishery Management Council staff, working in this and other things. Good morning.

SENNAI HABTES: Good morning. Thank you, Graciela. Stacey Williams.

STACEY WILLIAMS: Good morning. This is Stacey Williams from -- (Part of Ms. Williams's comment is not audible on the recording.)

SENNAI HABTES: Thank you, Stacey. Alida Ortiz.

ALIDA ORTIZ: Good morning. I am the Chair of the Outreach and Education Advisory Panel for the Caribbean Fishery Management Council.

SENNAI HABTES: Thank you, Alida. Edwin Cruz-Rivera.

EDWIN CRUZ-RIVERA: Buenos dias. Edwin Cruz-Rivera, Associate Professor at the University of the Virgin Islands and a member of the Technical Advisory Panel.

SENNAI HABTES: Thank you, Edwin. I have a participant listed as Hard Nose 1123. Just introduce yourself.

GRACIELA GARCIA-MOLINER: Julian, can you hear us?

JULIAN MAGRAS: Julian Magras, DAP Chair, St. Thomas/St. John.

SENNAI HABTES: Thanks, Julian. Do you mind if they change your participant name to your name on there? I think Liajay or Graciela, who are the co-hosts, can do that.

LIAJAY RIVERA: I just changed it.

SENNAI HABTES: Okay. Thank you so much. All right. J.J. Cruz.

JUAN CRUZ-MOTTA: Good morning. J.J. Cruz, TAP member, and I'm also an Associate Professor at the Department of Marine Sciences at -- (Part of Dr. Cruz-Motta's comment is not audible on the recording.)

SENNAI HABTES: Thank you, J.J. Jocelyn D'Ambrosio.

JOCELYN D'AMBROSIO: This is Jocelyn D'Ambrosio, and I am with the NOAA Office of General Counsel.

SENNAI HABTES: Thank you, Jocelyn. Kelly Montenero.

KELLY MONTENERO: Good morning, everyone. I am Kelly Montenero, and I'm a NOAA affiliate from the Southeast Fisheries Science Center. Thanks for having me today.

SENNAI HABTES: Thank you, Kelly. Iris Oliveras.

IRIS OLIVERAS: Iris Oliveras, council staff.

SENNAI HABTES: Thank you, Iris. Kevin McCarthy.

KEVIN MCCARTHY: Good morning. Kevin McCarthy, Southeast Fisheries Science Center and EBFM TAP member.

SENNAI HABTES: Thank you, Kevin. Marcos Hanke.

MARCOS HANKE: Marcos Hanke, present, Caribbean Council Chairman. Good morning, everyone.

SENNAI HABTES: Thank you, Marcos. Maria Lopez.

MARIA LOPEZ: Good morning. This is Maria Lopez with the Caribbean Operations Branch of NOAA Fisheries, and we are providing support to the TAP.

SENNAI HABTES: Thank you, Maria. Michelle Duval.

MICHELLE DUVAL: Good morning. Michelle Duval, and I'm a consultant working with the council on the development of its strategic plan and also doing some work with the Pew Charitable Trusts. Thanks.

SENNAI HABTES: Thank you, Michelle. Miguel G. Figuerola.

MIGUEL FIGUEROLA: Good morning, everybody. Miguel Figuerola, coral reef specialist with CARICOOS and the Puerto Rico DNER.

SENNAI HABTES: Thank you, Miguel. Nelson Crespo.

NELSON CRESPO: Good morning, everyone. Nelson Crespo, DAP Chair, Puerto Rico.

SENNAI HABTES: Thank you, Nelson. Orian Tzadik.

ORIAN TZADIK: Good morning, everyone. Orian Tzadik, Pew Charitable Trusts, EBFM TAP member.

SENNAI HABTES: Thank you, Ori. Richard Appeldoorn.

RICHARD APPELDOORN: Rich Appeldoorn, SSC Chair.

SENNAI HABTES: Thank you, Rich. Sarah Stephenson.

SARAH STEPHENSON: Good morning. Sarah Stephenson, NOAA Fisheries, Southeast Regional Office and TAP support.

SENNAI HABTES: Thank you, Sarah. Tarsila Seara.

TARSILA SEARA: Good morning. Tarsila Seara, Assistant

Professor at the University of New Haven and EBFM TAP member.

SENNAI HABTES: Thank you, Tarsila. Tauna Rankin.

TAUNA RANKIN: Good morning. Tauna Rankin, NOAA Fisheries Office of Habitat Conservation, also supporting the TAP.

SENNAI HABTES: Okay. Thank you, everyone. I believe that is everyone that is listed on the participants list. Is there anyone that is on that I may have missed or did not call on? Please go ahead and announce yourself now. Okay.

Hearing none, I think we should move on to the next portion, which is the Adoption of the Agenda. As you guys can see on the screen, there is a tentative agenda that is before you, listed out, and are there any amendments that people want to make a motion to add? If not, I would like for someone to make a motion to keep the agenda, or to accept the agenda, as it stands.

ADOPTION OF AGENDA

GRACIELA GARCIA-MOLINER: Mr. Chair, if I may?

SENNAI HABTES: Yes, Graciela. Go ahead.

GRACIELA GARCIA-MOLINER: So a couple of things. One, we have a backlog of transcriptions from the meetings, and so we don't have the minutes from the August meeting, and we are really that far back, in terms of all the other meetings that we have held, even during the COVID period, and so they should be coming out shortly, but we don't have them for today, number one, and so you will not be looking at any official transcripts from the last meeting.

Number two, the items from new considerations of amendments down to management to regional and global considerations, these are -- What you are seeing on the screen are basically the items that are listed in the fishery ecosystem plan outline, and so, other than a briefing on the island-based FMPs and the potential amendments to the island-based FMPs, we don't have anything new, unless someone has anything on Caribbean Basin considerations or regional and global considerations, and so that section -- Basically, we'll have that much time, because you do have quite a number of reports, and so, even if these reports are short, they merit quite a bit of discussion and consideration on how they're going to be incorporated into the ECMS and the development of the FEP, and so that's what I have in terms of

changes to the agenda.

SENNAI HABTES: Great. Thank you, Graciela. I feel like we can go ahead and play it by ear, if the presentations get pushed back until our afternoon session, after the lunch break, or we can shift it. If they run over, we can have the discussion about the development of the FEP plan from 1:30 to 2:00 and then move some of those back into after the updates.

GRACIELA GARCIA-MOLINER: Correct, because the Federal Register states that, other than the starting time, which are we doing on time, everything else is at the discretion of the chair, in terms of moving the items in the agenda and the presentations, et cetera, and so thank you.

SENNAI HABTES: I do have two things that I want to put in, which I think we can leave in after the new considerations of amendments, and one is, in speaking with Tauna, I asked her to provide us with kind of a little bit of information for discussion on using the risk assessment tool developed through Lenfest, to help us manage and understand how we can make decisions on taking stuff from the conceptual models and putting them into an FEP, and so I think we should have that in there.

Then, also, I think we can have some time for discussion on creating a timeline for tasks, and so, if there's not enough time in the meeting today, we can leave that for the end of the meeting tomorrow.

GRACIELA GARCIA-MOLINER: So you would like to include it right after --

SENNAI HABTES: New considerations.

GRACIELA GARCIA-MOLINER: So, Liajay, if you can just edit that. Thank you.

SENNAI HABTES: So let's say down after research needs, because those are all new considerations of amendments. Let's just add Tauna's discussion point there and then leave the timeline/game plan for the meeting tomorrow, and so, obviously, that's my motion, I guess, and we do need to accept that and have discussion on it. Is there any discussion about the proposed change to the agenda? Hearing none, I will -- I motion that we accept the agenda as it stands, with the amendment to have the discussion about risk assessment tools. Do I have a second?

TAP MEMBER: I will second that motion.

SENNAI HABTES: Okay. I guess can we have a vote, and what I would ask is that all in agreement remain quiet. If there's any opposed, please say aye. If there's any abstentions, please just say abstain. Hearing none, the motion was approved unanimously, and we are going to accept the tentative agenda as it stands and move on.

As Graciela had mentioned, we do not have a review of minutes from the virtual meeting. Graciela, just correct me, and do we need to vote on saying it's okay that we're not reviewing the minutes?

REVIEW OF MINUTES FROM VIRTUAL MEETING (AUGUST 3-4, 2020)

GRACIELA GARCIA-MOLINER: I don't think so. I mean, we will bring them to you as soon as we have them, and I think that just by what I stated, and you corroborating that we don't have them, that should be enough.

SENNAI HABTES: All right. Moving on then, let's go ahead and start with our slate of presentations and updates for the day, and that will be beginning with the update on Lenfest from J.J., Tarsila, and Stacey. Are you guys ready to do that?

JUAN CRUZ-MOTTA: Yes, we are. Thank you.

SENNAI HABTES: With that, I will turn it over to you guys.

GRACIELA GARCIA-MOLINER: Should we make you the presenter, J.J., or Tarsila? Who is presenting?

UPDATE - ECOSYSTEM-BASED EFFORTS: WHAT IS GOING ON? LENFEST

JUAN CRUZ-MOTTA: We don't have a presentation, per se, and I just want to start with the Lenfest loop, for two reasons. It is to conceptualize our project and, second, to tie it up to what we talked yesterday in the joint meeting between the SSC and the TAP, and so I would like to share my screen, and not to share a presentation, per se, but to show the Lenfest loop.

The objective of our -- Well, it's not a presentation, but it's just an update of where we are with this project, and I want to mention that, out of these five steps that we are following to build up the FEP for the Caribbean, the objective of the Lenfest project is to answer this question, the first one, of where are we now?

In particular, we were tasked, or the main objective, is to develop our conceptual model, which is the foundational stone of everything that comes after, and, actually, in addition, that conceptual model can feed into other initiatives that we will hear from them today.

For the Lenfest project, in addition to developing these conceptual models, we proposed that we will test those conceptual models, using a quantitative model, and, actually, more than testing, and we propose that we will use these conceptual models to identify elements in the different perceptions, or the different conceptual models, that, one are equivalent among stakeholders, and so that will help to create a consensus model, and, second, let's suppose that different conceptual models identify different aspects, and the quantitative model would help us to bring those different elements together in a single quantitative model.

In addition to what this loop proposes, which is doing the conceptual model, in the Lenfest project, we are doing the quantitative model, and I am saying this second thing, and, today, we won't be talking about this quantitative model. However, to run those quantitative models, a very important part is the compilation and getting the necessary data to run those models, and so this is just a brief introduction to say that we will give you an update on what we have been doing, what has been our progress, what has been the challenges during COVID, regarding the stakeholder meetings that we need to do to develop these conceptual models, and then Tarsila and Stacey will be talking about that.

Also, we will give you an update on the status of the data that we have been compiling, and Stacey will let us know about that. Tarsila and Stacey, I don't know if I am forgetting something for this general introduction, but, if not, I will leave the mic for you both to talk about this and what we have been doing with the conceptual models, and also on the aspect of data compilation. Thank you.

TARSILA SEARA: J.J., I think you covered everything. Stacey, do you have anything to add to this part?

STACEY WILLIAMS: No, and I think he did a good job.

TARSILA SEARA: Yes, and so, just in terms of updating on the development of the conceptual models, or that part of the project, I mean, one of the things that I will say is,

unfortunately, things have been delayed, because of COVID, and we expected that, at this point, we would have pretty much all of our conceptual models completed, and we had plans, over this past summer, to do all of our workshops, and, of course, we couldn't do that, and, initially, we had a plan of doing all of the workshops to develop these conceptual models with the stakeholders in-person.

One of the things that I think will be discussed, as we go along with the updates, is that we had conversations with the other groups who are also developing conceptual models, and so Pew and Alida, as part of the council efforts, are also working on these, and so we had conversations to figure out what stakeholders we would be sort of reaching out to and which ones they would be reaching out to, so that there's no overlap.

Once that was established, we also determined that we should begin to do some of these conceptual models virtually, as much as possible, and so we have been having conversations about would be the best way to go about doing that in a way that we use consistent methodology and that the data is as comparable as possible, so that it becomes -- It doesn't jeopardize the methodology that we're using, and so we have been having conversations about that, and so I think that's something that we'll be talking about as a group.

As far as the conceptual models that we are supposed to develop, we, and, Stacey, correct me if I'm wrong, but we are going to reach out to experts, the academia, and non-governmental organizations, and is that correct?

STACEY WILLIAMS: Government organizations and any other entities that haven't really been covered with the Pew group and the council group, but we're going to be focusing on the experts in government and fisheries.

TARSILA SEARA: Right, and so I was just thinking in terms of the virtual ones, and those are the ones that we're hoping to do as soon as possible, really, once we have all agreed on a methodology, and we intend to start reaching out to the stakeholders, so that we can begin the virtual workshops.

Then we are also tasked with doing the conceptual models with the fishers, and so this is an idea of sort of expanding the input of the fishers into this, because we know that we already have input from fishers from the DAP models, but we would like to expand that and do more workshops with fishers, so that we can incorporate more of their input into the process, and so we

would like to do these in-person, and so we're hoping that we'll be able to run these workshops in the summer, and that's our plan, and hopefully we'll be able to do that, pandemic permitting, and so that's as far as developing the conceptual models and sort of doing our workshops, and that's pretty much the update that we have right now. Stacey, have I missed anything?

STACEY WILLIAMS: No, and I think you pretty much covered it. We've been working closely with Ori and Michelle, and we've come up with a stakeholder list, and I will share that in Google Drive, to try to not overlap any of the like reaching out to any of the participants, and so hopefully we get a wide range of stakeholders that we can incorporate into these conceptual models.

TARSILA SEARA: I don't know if Ori and Michelle are going to talk a little bit about this, but we also had -- I think I mentioned this, but we also had meetings to talk about the methodology, and we have -- They have developed some materials based off of those meetings, which I think will be really great, to keep everything consistent. I think, on the conceptual models, that's pretty much where we are.

As far as the data, I guess, Stacey, you have a better understanding of where we're at with the ecological and biological data, and I just quickly will talk about the compilation of the socioeconomic data, and I am just waiting on a couple of datasets, but I've gotten most of them, and I'm just waiting on updates on the census data for Puerto Rico.

We're making progress with getting some of the landings data, and I am also working on developing, together with social scientists at the Southeast Regional Office, I am working on developing the community social vulnerability indicators for fisheries engagement and reliance, and so that's something that I finally got the data, and we've been working together to develop those indicators, and so that's pretty exciting.

Those are indicators that we have for all other regions in the United States, and they have been used consistently, and the Caribbean is the only region right now that does not have those indicators, and so that's, for me particularly, pretty exciting that we are going to finally develop and calculate those and have those for the Caribbean. On the socioeconomic side, that's it. Stacey, take it away.

STACEY WILLIAMS: Thank you, Tarsila. With this project, we

have ecological data, biological data, also physical and environmental data, as Tarsila mentioned, socioeconomic data. We, so far, have collected most of the biological data, and, J.J., correct me if I'm wrong, but there is some data that is still missing from SEAMAP, but everything from like the Puerto Rico Coral Reef Monitoring Program has been organized into a format that we can start analyzing through the models.

We have worked with a consultant, Eliana Joliette, and she extracted most of our environment variables, and we, so far, have twenty-six of these variables, and these are mostly through satellite imagery, and they range from like current speeds at specific sites to rainfall or turbidity to velocity at a site or to an MPA, and so all of this data we are now -- We have it organized, and it's been in a format where we can look at the variation between spatial and temporal coverage of these datasets, and so that is somewhat completed.

We're missing two, the landings, so we could calculate distance from port or landing site, and also we are working with -- We're supposed to calculate current speed, but, due to COVID, the students are stuck in China, and so we are extracting current speed from a different source, while we wait for Miguel's data, and so hopefully we have that soon, and so we're almost complete with the environmental data for this project. I would imagine that we would have that probably within the next month, so we could start doing that.

We also -- I have started organizing some of the mesophotic group, some recent surveys around Puerto Rico, and so we have mesophotic data that hopefully we can use in these models, and I think that is about it, and, J.J., maybe you want to expand on the biological data.

JUAN CRUZ-MOTTA: Sure, and you have covered everything, pretty much, but I just want to add that we also are chasing down the landings data, but, I mean, this is -- That should be coming in a few days.

TARSILA SEARA: J.J., if I may, I have an update on that.

JUAN CRUZ-MOTTA: Okay.

TARSILA SEARA: Just yesterday, I actually got the data for Puerto Rico.

JUAN CRUZ-MOTTA: That's great.

TARSILA SEARA: But we're having a little bit of a problem, because the dataset is too large, but we are -- We are fixing that problem, and so we're making progress.

JUAN CRUZ-MOTTA: That's excellent news, Tarsila, and thanks a lot. Actually, I would like to thank Kevin, because he actually -- I know he was chasing down, at the Science Center, the status of this, but that's great news.

Thank you, Tarsila, and the other thing is, when this report came up, the port survey that -- The other dataset that now came up that is possibly, and I don't know if that data will be publicly available or if there is some embargo on it, but, if it's available, and if we can get it, it will be amazing if we can also get all of the data that Todd produced for the survey in Puerto Rico, but that was not part of the original plan, but, if we can get that one as well, that will be great, but, if not, we will go ahead as originally proposed, but that will be the only two things that I wanted to state, Stacey. Thank you very much.

SENNAI HABTES: Okay. If that's it for the updates, I believe there are a couple of people with questions, and so the first hand up that I had was Kevin McCarthy, and so, Kevin, I'm going to open it up to you for questions.

KEVIN MCCARTHY: Okay. Thanks, Sennai. It's really more of a comment and sort of an update for the Lenfest group, and so, J.J., in response to that MER data, those data do not belong to the Science Center, and so you would have to contact the MER consultants directly to request those data, and those aren't the Science Center's to distribute, and nor is the MER report, and so we can chat about more of this offline, if you like, but that's sort of the quick answer to that question. Thanks.

JUAN CRUZ-MOTTA: Thank you, Kevin. I really appreciate that information. Thank you.

SENNAI HABTES: Okay. Graciela.

GRACIELA GARCIA-MOLINER: I have a number of questions, and I will start with the data. We will help in trying to get the data from the consultant in the pilot project. Now, you mentioned that you have the landings data for Puerto Rico. How about the USVI? Where are we at with that?

TARSILA SEARA: They are working on it, and I don't know if Kevin has maybe something more detailed, and you can jump in if

you do, any updates on the USVI, but the last I heard was that they were working on it.

KEVIN MCCARTHY: Yes, Tarsila, and so I -- Well, I didn't set it up, but we have a meeting, a working meeting, set up, and I think it's on Friday, and I think it's sometime this week, and my calendar is a little busy, and so I am going to work with the folks who received that data request, to help try and push it along, and, yes, and so the Virgin Islands is the next step, and so hopefully we will not run into any hurdles, and we'll get that sorted out, and I know it's been a long wait, but hopefully I will be able to move it along.

TARSILA SEARA: Thank you, Kevin.

GRACIELA GARCIA-MOLINER: Mr. Chair, can I continue with the questions regarding the data?

SENNAI HABTES: Yes, that's fine. There is no one else at the moment, and so continue with all your questions, Graciela.

GRACIELA GARCIA-MOLINER: Okay. How about the missing SEAMAP data? I know that we have an update later on, and, J.J., should I wait until we hear from you about SEAMAP?

JUAN CRUZ-MOTTA: Either way, and, I mean, there is not much to -- Unfortunately, there is not much to report, and, I mean, we have all the SEAMAP-C data for Puerto Rico, but we are missing a big chunk from the USVI. I mean, the good luck we had in Puerto Rico is that the same person that has been involved with the project from the beginning, Aida Rosario, and that historic memory was really, really helpful to get every single year of data, chasing down the people that might have -- We even got some of the data on paper, but that's fine, and, I mean, we got the data.

In the USVI, the project has been handed to different persons, through time, and, also, they have been, at the Department of Natural Resources up there, they have been moved, as I understand, from different offices, and sometimes the computers where the data was were left behind in that old office, and then the new people didn't -- For different reasons, due to different people handling the -- We haven't been able to get the complete dataset.

We are -- Every week, I have a contact with the person in charge of the project, Nicole Angeli, and she has been really, really helpful, and, I mean, she is always happy to help. I mean, they

are taking -- She is responsible for this office about a year ago, and so she has a lot of things to deal with, and then not much time to go through their files and through all the hard drives they've got there and the hard copies they might have, and so that has been a slow process.

We offered to send people there, to actually have like hands-on people that could actually do the searching for them, but, due to the travel restrictions, that has not been possible, and so, basically, there is a willingness to look for that data, but the thing is that they don't have, humanly possible, the time to do so, and so that's more or less the status of the SEAMAP-C data for the Caribbean.

The only thing I would say is we can scratch this update later down in the list, if you want, unless you want me to repeat that, but I don't know, Graciela, if you have specific questions on what I just said.

GRACIELA GARCIA-MOLINER: No, and I was just trying to figure out where we were in terms of searching for the missing data, and just to make everyone aware that, if they know anything about the SEAMAP data from the Virgin Islands, that we're searching for that, and we have contacted some of the old people, or, well, some of the people who used to work at the DPNR, and it's not necessarily that they are old, and so we are trying to help in tracking that data.

JUAN CRUZ-MOTTA: Graciela, that was very helpful, and we were able to -- Through that networking you did, we were able to get two years' worth of data, and the only thing tricky here that I want to mention is that, for us to do some -- To do the QA/QC to this data, one of the steps involves looking at the actual report that was produced with that data, and so that enables us to pick up inconsistencies and try to track down what was the source of that inconsistency, and so the other issue we have is we have only eight years of data for the USVI, but, out of those eight, we have reports only for four.

Even though we got the data for eight, we can conduct the QA/QC only for four, and then an interesting pattern here, Graciela, is that like, for example, when Francisco say, look, I've got these data, and I had this data in my drive, and then could you send me some data as well, and then Aida Rosario said to me, look, I have this, and then Walter sent me some, Walter Ingram, and he's with NMFS, and it was the same data.

Everybody that said, okay, I can help, for one reason or

another, they had the same -- Those eight years, and that's interesting, and, I mean, I don't know why that is.

SENNAI HABTES: J.J., if you can just send me an email describing the data, and I am not familiar with this particular program, and I work with Nicole on a couple of things, and so just to update everyone, and Nicole is the director for Fish and Wildlife, right, and they are currently trying to staff the department to the point where it's able to manage all of their programs, but they are currently very understaffed.

She is the director of both the Fish and Wildlife programs, and she's been kind of stepping in and working with the bureau chief in each, which is why a lot of these things have fallen through the cracks, because a lot of the support staff have recently left the department. If you can describe it to me, tell me what you're looking for, I can try and go in and work with Nicole to get the data for you, if it's available.

JUAN CRUZ-MOTTA: Thank you very much, Sennai, and, actually, we have prepared an Excel file where it says exactly what years we're missing and when we have data and we don't have the report, or perhaps we have the report, but we don't have the data, and so I will send you that as soon as possible, and I will send you that. Thank you, Sennai, for helping out with that.

SENNAI HABTES: No problem. Send me a list of the people that you have as contacts that were working on it as well, so I can reach out to all of them and Nicole, and I will try and get the data, because I'm on-island, and so it will probably be a little bit easier.

JUAN CRUZ-MOTTA: That will be great, and I really appreciate that. Because Graciela has been the one doing the networking, can you send Sennai, please, the list of people you contacted?

GRACIELA GARCIA-MOLINER: Certainly.

JUAN CRUZ-MOTTA: Thank you, both. That's great. Thank you.

SENNAI HABTES: No problem. Also, I know you guys had said -- Tarsila, you had said you were -- Graciela, do you mind if I jump in there with some follow-ups?

GRACIELA GARCIA-MOLINER: No, and go ahead.

SENNAI HABTES: I guess, Tarsila, you had said you guys were

trying to get, or was it Stacey that had mentioned current velocity data that you were working with Miguel on, and I assume it was you're trying to get outputs of his model data?

STACEY WILLIAMS: Yes, I believe so. I would have to check his emails.

SENNAI HABTES: I have a post doc, and we've developed a ROMS model that has updated current velocity and sea surface temperature that we're using for our rigs to reef project, and so, if you have -- If you're fine with the resolution of the data that you're getting for current velocity, use that. If you wanted -- I think our resolution, right now, is one kilometer for the parent grid, which would be the deeper open ocean, which is globally forced, then we have a 300-meter nested grid around the mesophotic reef and some nearshore reefs.

We're still testing the sub-grid, but the one-kilometer data has good quality, and so, if you want access to that, and you can send me an email with the data points and description of years, I can put you in touch with my post doc, who is kind of doing that for another project, but I'm sure he would be happy to set you up with our model output data.

STACEY WILLIAMS: Awesome, and, yes, we were doing it in grids, because we had so many data points around the island that we made a grid system to extract all those different environmental data.

SENNAI HABTES: If you send him the grid system, with the corner points for the larger parent grid, I'm sure he can -- He did a Z model grid, and so I'm sure he could fit it to his grid and send you the data for those same grids, and just send him as much of the information on your grid setup and what kind of information you want, or send it to me, and I will put you in touch with him, who can help with it for you.

STACEY WILLIAMS: Perfect. Thank you very much.

GRACIELA GARCIA-MOLINER: Sennai, can I follow-up on your information on the availability of data, because I think that that brings in the Southeast Fisheries Science Center larvae cruises that you have had in the Virgin Islands since 2002, or 2007.

SENNAI HABTES: I think 2005. No, 2003 is the first year, and then they missed -- It's on and off between like 2003 and current, and so I think we have a total of ten years of data,

but there are big gaps, and we've missed the last two years, because of COVID and then mechanical problems with the Foster.

GRACIELA GARCIA-MOLINER: But the reason why I bring it in is because of the -- I mean, they have the fluorometer and the chlorophyll data and salinity and depth and larvae collections at different depths, et cetera, and so it's a very nice dataset, even if it's gappy.

SENNAI HABTES: Right, and we can get that. The problem is I think they only have the shipboard flow-through data and our CTD data updated through 2010, and I can ask Ryan. I have been working on getting just the biological side, which they still have four years of QA/QC data to do. They're also understaffed, but I am pretty sure that I can get it pre-QA/QC, and we can work on that together, and I can ask them, and so, if you would like me to work on that, I can -- You want both the biological and shipboard and CTD data, correct?

GRACIELA GARCIA-MOLINER: That's correct, and the reason why I'm saying that is because the council is collaborating with the Science Center in the identification of some of the larvae, to not only the family level, which they have done already, but also the at least genus and species level.

SENNAI HABTES: Okay. Who is doing that?

GRACIELA GARCIA-MOLINER: That is Audi Rodriguez and a student who will be doing her master's also on that data, and so I am just trying to bring together all these datasets that will give us a really nice view of what is happening in the U.S. Caribbean and all the efforts that are taking place that have collected data. Even if gappy, it is data that you can look at basic information, at least in a snapshot type of approach.

SENNAI HABTES: Yes. If you want to mention to Audi that we have -- I have all the data that we collected for those spawning runs, and we've gone through them, but I haven't been able to identify past genus, and we really didn't find any of the mutton or yellowfin grouper that we were looking for, but I do have all of that data here, the samples, and so, if they're interested in them, there is a likelihood that I could find a way to get them over to her to ID, because I'm certainly -- I don't have the facilities anymore, or the time, to do that kind of analysis.

GRACIELA GARCIA-MOLINER: Okay. Perfect. Can I continue with my Lenfest datasets that they are tracking down, to make sure that they follow the lead and everything that we have in the

list?

SENNAI HABTES: Absolutely.

GRACIELA GARCIA-MOLINER: J.J., Stacey, and Tarsila, how about the recreational MRIP data, that, although it's only available for Puerto Rico, it dates from 2000 to 2016, and do you have -- Do you intend to use that data, also?

JUAN CRUZ-MOTTA: Not at the moment, Graciela. To be honest, the first time that I looked at it, I thought that it was so patchy, in terms of places we got it and the times that we got it -- I mean, we could still work on it, but the time needed to tailor -- I am using the word "tailor", but to organize that data, so we can run these general models -- It will take too much time.

We didn't offer this to Lenfest, but one of the side projects with students in the lab is to run like small models, and I mean small models in space, and like, for example, here in Parguera, we've got amazing data, historic data, on fish and coral cover and environmental conditions and water quality, et cetera, et cetera.

You could run like very specific models for very specific areas, and then, in those cases, perhaps that dataset will be useful, but, if that is of interest to the council, I will have a look at it again, but the short answer is, no, we're not planning to use that data for the Lenfest project.

GRACIELA GARCIA-MOLINER: Okay, and so then I will turn the question to Mandy or Kelly, regarding the ESR, to see if this one of the datasets that they will be looking at, and so the recreational data is at the Southeast Fisheries Science Center, and Vivian Matter was in charge, and I don't know if she's still at the Science Center, but I was wondering if anyone else is looking at this dataset.

KELLY MONTENERO: Thanks for the question, Graciela, and we also had listed recreational fishing on one of our proposed indicators, but, as I will show more in our presentation, it didn't rank at the top for our key indicators for the ESR, partially because the data availability for the full region was in question, because it wasn't available for the USVI, and we knew it was somewhat patchy, and, again, I will talk about it more in my presentation, but the experts did not score that as a top indicator, but, of course, we are aware that the MRIP data does exist for Puerto Rico.

GRACIELA GARCIA-MOLINER: Thank you. One final question, Mr. Chair, if I may, and this is for Tarsila. Tarsila, can you tell us a little bit more about the community vulnerability indicators and the datasets that are being used, or how is this being developed?

TARSILA SEARA: Sure, and so these are the -- I think we talked, and they are in the -- What is the report that I am -- I can visualize it, but I can't think of it, but it's the report that was the basis for a lot of the things that -- I will remember, but, anyway, we have some of the community social vulnerability indicators already calculated for the Caribbean, and so these were indicators that were developed by Lisa Colburn and Michael Jepson, initially for the Northeast, and then, subsequently, I think were concurrently for the Southeast.

These indicators, they include some social indicators, and also some fishery indicators, and so they are mostly calculated -- The social indicators are mostly calculated with census data, and these have already been calculated for the Caribbean, and they are included in this report that I can't think of exactly what it was, but we have those already calculated for both Puerto Rico and the USVI, and so I already have that data, but the fishery indicator components were never really calculated, because it's a little bit tricky, with the way that the data is.

In other regions, in the United States, we use dealer data and some other information on permits and dealers that are not available for the Caribbean, and we had to develop a little bit of a different methodology, and this was something that I wasn't involved in the initial development of this, this potential methodology, but this was something that they were doing at the Southeast Regional Office.

I got in touch with them about potentially being able to calculate the fishery -- There are two fishery indicators, and one is the fishery reliance indicator and the other one is the fishery engagement indicator, and so we had conversations about different ways that we could use data that we already have that could be used for calculating these indicators, using slightly different data, because the data that is used in other regions is not available.

I think we finally were able to get the data that we need, and so we'll be able to hopefully calculate these indicators, once the -- Right now, what we're doing is organizing the datasets to calculate that, and so we'll have, hopefully, these two

indicators that complement the community social vulnerability indicators that are used, like I said, in all other regions of the U.S. for the Caribbean with the fishery reliance and fishery engagement.

These are at the community level, and so, in the case of the USVI, we used the subdivisions, and, in Puerto Rico, the municipalities, and so they're calculated for the -- That would be the level that we would calculate these indicators, and what they do for the fishery reliance and engagement is essentially give you a sense for, at the community level, what is the level of engagement in fisheries and what's the level of reliance of these communities on fisheries, and so those are indicators that we can use to sort of, I guess, in terms of what we're doing, look at them at the community level in relationship to some of our other variables and see, in terms of reliance and engagement, how potentially vulnerable these communities could be to certain changes, and these could be environmental changes or managerial changes, et cetera, and so it's essentially an indicator of vulnerability that can be used for these communities, if that makes sense.

GRACIELA GARCIA-MOLINER: Thank you.

STACEY WILLIAMS: Tarsila, are you thinking about the --

TARSILA SEARA: Stacey, I can't really hear you very well. Can you repeat that?

STACEY WILLIAMS: Were you thinking of the Jepson and Colburn report? Is that what you were thinking of?

TARSILA SEARA: Yes, that is one of them, but the one that uses the Caribbean indicators, that's the one that I can't think of, but I will -- At some point it will come back to me.

GRACIELA GARCIA-MOLINER: If you just write it up in the chat, we'll pass it around.

TARSILA SEARA: I will do that.

GRACIELA GARCIA-MOLINER: Okay, and so I think that that's it for me. Thank you, Mr. Chair.

SENNAI HABTES: No problem. I did have just two quick questions for J.J., Stacey, and Tarsila. One is I wanted to just get clarity on what conceptual models you guys are going to be using through Lenfest to include in the quantitative comparisons, and

is that going to include the conceptual model developed by the SSC as well as the other models, the three models developed by the DAPs, or are these only separate models developed through the Lenfest stakeholder engagement work?

Then the second question is if you guys have developed an updated timeline for outcomes for the project, and if you could share that with myself and Ori, so we can update the drives for the TAP, and that would be much appreciated.

JUAN CRUZ-MOTTA: The idea with the relationship between the conceptual models and the quantitative approach is twofold. One is to run a quantitative model on each conceptual model independently, and so this is a way of testing whether many of the traditions, or the view of the stakeholders, actually hold when the data is used. This approach of independently looking at each one of the different conceptual models will allow us to identify data gaps. That's one thing.

Then we are hoping that the results of this first round of analysis will allow us to identify important elements in these independent runs, and, when I talk about an element, it could be, for example, the effect of coral diversity into fish assemblage diversity, and this is used as a generic example.

It will allow us to identify important elements in the different runs and then come up with -- Combine those and then come up with a proposed consensus model, which could be used then to feed back the stakeholders and then create a consensus conceptual model for the Caribbean. It could be used like if you wished to give information back to the stakeholders so that it can inform their discussion on doing the consensus conceptual model.

Please note that one of the objectives, specific objectives, of this, I believe, and, if not, any other member of this panel please correct me, but it's to guide the process of creating this consensus conceptual model, like stacking all the different conceptual models that we are creating and come up with a single conceptual model for the Caribbean, and so, for that process, we could use the result of these independent runs to help us to direct that -- To achieve that specific objective.

Then the second round is, okay, now that we have this consensus conceptual model, we can then run again this quantitative model to test the different elements of that conceptual model, and so that's for the first question, Sennai, and I don't know if that answers your question.

SENNAI HABTES: Yes, but I just wanted to clarify, to make sure that, in the stakeholder input, you're including the input from the SSC as well as the DAPs into the testing process.

JUAN CRUZ-MOTTA: Yes, definitely. Definitely. It's a must that everybody's -- Also, that all the other conceptual models being developed by Pew, for example, and they must be included, definitely.

SENNAI HABTES: All right. That was all the clarity that I needed. Thank you.

JUAN CRUZ-MOTTA: Sorry for the long answer.

SENNAI HABTES: No, that's okay, and I like long answers. You learn other things in the process.

JUAN CRUZ-MOTTA: The second question I forgot.

SENNAI HABTES: That was just an updated timeline, given the delays due to COVID, if you guys have sketched that out and have dates associated with when now you think you will have say the stakeholder engagement completed and then beginning the iterative testing of the model.

JUAN CRUZ-MOTTA: I don't know. Stacey, can you help me with that, please, with especially the stakeholder engagement, the virtual ones?

TARSILA SEARA: Maybe I can -- Could you repeat the question? The audio was breaking up a little bit for me.

SENNAI HABTES: Sure, and I was just asking if you guys have created kind of an updated timeline for outcomes with Lenfest, due to the delays with COVID, meaning do you have new end dates for when you will complete stakeholder engagement and when you will complete the models and when you will get to the consensus conceptual model, et cetera?

TARSILA SEARA: So, I mean, it's a little bit open, just because -- The virtual workshops, we hope to get these started and done as soon as possible, and we've been coordinating with the Pew efforts, just to make sure that -- Again, like I mentioned, we're trying to make sure that we're using the same materials, or similar materials, to sort of maintain consistency, and so we're coordinating things, and so we want to make sure that, when we are ready to do it, that all of this is coordinated, but

as soon as possible, and I think that's probably happening pretty soon.

We'll do these in the next couple of months, and we're hoping to do the in-person workshops, and it would be with the fishers, this summer, and, again, I keep saying hoping, and that's not necessarily on us, and it just depends on the pandemic situation, but we're also thinking of alternatives, if for some reason travel is not permitted, or it's difficult to do even small gatherings, and we were coming up with some alternatives for that.

By the end of the summer, we should absolutely have all of our conceptual models, and then it would be -- I mean, that doesn't get in the way of us starting some of the analysis process with the models that we already have, and that's something that we discussed already, and so it's not like we have to wait until we have absolutely everything to, at the very least, start developing our methodology for how we're going to analyze this.

Then, as far as a timeline for having the consensus model and all of that, we don't have a specific deadline, but it would be as soon as we have everything, as soon as possible, I should say, when we would have that, but that's pretty much where we're at right now.

SENNAI HABTES: Thanks, Tarsila. I would ask maybe if -- I know you guys do this, and you're in touch with Ori quite frequently, and he's been helping me with the organization on all of our information for the TAP, and, as you get set dates, where you think you will have completed outputs by, I would ask that you communicate it with him, so we can kind of update the internal timeline that we're trying to keep for the work of the TAP.

TARSILA SEARA: Yes, that sounds good. Like you said, we've been coordinating things, and so that shouldn't be a problem at all.

SENNAI HABTES: Great. Okay. Are there any other questions or concerns for the Lenfest updates? Seeing none, I will move on to the update from Ori Tzadik on stakeholder meetings. Ori, do you want to go ahead?

STAKEHOLDER MEETINGS

ORIAN TZADIK: Sounds good. Thanks, Sennai. That was actually a great transition, right, and some of the early stuff that both J.J. and Tarsila went through really set up nicely for what I'm

about to talk about.

I don't have a presentation, but I do want to reiterate a few of the themes that were brought up by J.J. early, which is that -- Well, let me just start by saying the plan, what's going on right now, is that J.J. and Tarsila had mentioned, or Stacey maybe had mentioned, the four different conceptual model user groups that are still under development at this point.

We have the DAP's conceptual model, and Liajay and Graciela have been doing some very interesting stuff with that, and they're going to show us that in a little bit. We now, as of a couple of days ago, have the SSC model, which has been completed, and now we have four additional models that we want to complete, and, actually, it's twelve, because it's one per island platform, and so, as the Lenfest team mentioned before, those four groups are going to be -- The two that they're concentrating on are what they're calling the experts groups, and so that's academics and government officials, and the underrepresented fishermen, or not underrepresented, but the ones that are not represented by the DAP members.

In addition, we're looking to get two other user groups, namely coastal business and eNGOs, and so those conceptual models and stakeholder meetings will be conducted before the Lenfest meetings, and we're aiming for April to start those, and they will be done all virtually, with the help of Michelle Duval, who you guys might know from the five-year strategic planning.

The idea is to run these conceptual models, to get these conceptual models with these different stakeholder groups, and our big challenge is that we're going to have a half-day to do them, and they're going to be virtual platforms. The Lenfest team is going to sit in on our meetings, and hopefully, like we were talking about, try and keep methodology as consistent as possible.

That's the update on what is actually going on, but I wanted to add on to what J.J. was saying earlier, in that we're in a unique position, here in the Caribbean and with this process, to, first of all, really undertake an FEP process with a real clear blueprint, which is not what's been done in other regions, and it shows.

Other regions, you can look at their FEPs, and it looks like a coffee table book of all the work that's ever been done in the region, and it doesn't necessarily inform management, but rather, you know -- It doesn't matter, and we don't need to talk

about other FEPs, and let's talk about ours, but in that I'm just saying that we have a really nice opportunity to follow this blueprint that's been laid out by experts and that we've all agreed upon, and we're starting in the right way, which is great.

The other thing is that these conceptual models, as J.J. was pointing out, have the ability to inform so many other parts of this process, and, as I said yesterday to the SSC, in the Caribbean, expert opinion sometimes is a big part of what you have to go on, or stakeholder input, and so these conceptual models that were derived by some of the best scientists in the region, in one example, and some of the most experienced fishermen, in another example, and these are going to be incredibly valuable to our process.

I am interested to hear what Tauna has to say later about the risk assessment, because I think the conceptual models can also inform the risk assessment. Now, with regard to the melded model, or what we're calling the consensus model on this --

SENNAI HABTES: Ori, can I stop you for a second? Alida has a question that I believe is pertinent to what you were just talking about.

ORIAN TZADIK: Okay.

SENNAI HABTES: Alida.

ALIDA ORTIZ: Thank you so much. Orian, I was looking at the list for stakeholders, and, at least in Puerto Rico, the municipalities, some of them, that have fishing villages have some sort of local legislator, whatever you call it, that deals with the fishermen and with the fishing industry, and do you have them on the list?

ORIAN TZADIK: I would have to turn that over to Tarsila and Stacey. I think that they're the ones organizing that list.

SENNAI HABTES: If I can make a recommendation, Alida, and why don't you either put that information in the chat or directly send it to Ori, Tarsila, and Stacey, and they can follow-up, later in the meeting, to make sure that those people are included in the stakeholder engagement meetings.

ALIDA ORTIZ: Okay. I will do that. I am also mentioning it in my presentation, when I have stakeholders.

SENNAI HABTES: That sounds perfect.

ORIAN TZADIK: That's great. Thank you, Alida.

SENNAI HABTES: Go ahead, Ori.

ORIAN TZADIK: As I was saying, with the melded model, we're going to be able to use what -- We're going to have six conceptual models for each island, assuming the SSC we use for all three islands, and that should be a pretty powerful message, with the melded model, even with the differences in the methodology.

It's going to become very clear what stakeholders think are the most important themes, and so, at that thirty-thousand-foot level, we're going to have a really nice picture of what's going on, in terms of stakeholder viewpoints, but then, in addition, I think, again, we have this opportunity here where we have the DAPs, who differ slightly, but basically took about two to three days each to finish their models.

We have the SSC that, if somebody was keeping count, maybe they could help me, but it was over a dozen days that they devoted to their model, and then we're going to have each one of these other six, or, sorry, each one of these other four, that are going to be done in about a half a day.

Again, from the thirty-thousand-foot view, we meld those all, and we get a nice picture of kind of the major interests of stakeholders in the region, but then we're going to be able -- Particularly through the Lenfest work, we're going to get a real nice picture through those other models, the DAP and the SSC, which are a little bit more detailed.

I think that this group should have further conversation as to how we want to treat the separate models, because the plan has always been to meld them, and that's fine, and that's definitely something we should do, but I also think that we have an opportunity to be using some of these other models in some of the other capacities that are listed in our blueprint, and so, for instance, the derivation of ecosystem indicators, and, again, components of the risk assessment.

I think that it's on this group, and I think we should devote some time to discussing -- Maybe not at this meeting, but keep it in our minds that we do have these resources at our disposal and that we should try to use them. That's a summary of what's going on right now and where I see this process going, and I'm

happy to take any questions, or we can continue on with Alida.

SENNAI HABTES: I have one question from J.J. J.J., go ahead.

JUAN CRUZ-MOTTA: Thank you. Ori, just to what you just said and mention that -- I think I showed this at one of the SSC meetings, but we will be able to get the six models, and so whatever number of models we come up with, and then we will be able to see what are the coincidences and then where they coincide, and I see that that will be a strong suggestion that that should be considered as an indicator, right?

ORIAN TZADIK: Correct.

JUAN CRUZ-MOTTA: Also, we show that aspects that diverge, and then that will allow us to explore that model individually, conceptual model individually, and see what's what the strength of that thing that deferred from the other, and so I am just mentioning this because I totally agree with you that there is not only a strength in looking at the coincidences, but it will be also very informative to see what are the divergences, and you could use that to inform the other steps. Thank you.

ORIAN TZADIK: Absolutely, J.J., and, just to follow up, one final step, and I know we mentioned this at the SSC meeting, and Rich brought this point up, but that's also why I am not terribly concerned that the SSC didn't -- That they did one model instead of three, because the components of each island that are going to come forward -- If they don't come forward with the other five conceptual models, then we didn't need the SSC to bring them forward, and so I think that absolutely it's going to be critical to kind of examine these ones that are done in more detail a little further.

SENNAI HABTES: Great. Thank you, Ori. I believe Graciela has another question.

GRACIELA GARCIA-MOLINER: Thank you, Mr. Chair. I do have a question regarding the government experts, and can you expand a little bit more on that, and the reason for my asking is because, specifically, the DAP from St. Thomas had requested that we hold a special meeting for the regulatory agencies, and so are those regulatory agencies, both local and federal, included in the government stakeholder meeting, and, if not, who are the people who are going to be attending that meeting?

ORIAN TZADIK: I am going to let Stacey answer that question.

STACEY WILLIAMS: We haven't contacted any of the government officials yet, and we just have a list, and so mostly they're from -- I would have to get that for you specifically, and I could share this list with you, to see if you have additional contacts that you would like to add to it, but, so far, we haven't contacted anybody. The experts are government officials, and so I can share that list with you.

GRACIELA GARCIA-MOLINER: Okay, and I will do the same. I will share the information that the DAP from St. Thomas had provided to the council and to the meetings during the DAPs, so that you will see who the people and what were the offices that were involved in their request.

STACEY WILLIAMS: Okay. Great. I will send that list to you today. Thanks.

SENNAI HABTES: Okay. I see that Stacey and Alida are in contact about the municipalities, and so I assume, Alida, you had nothing else to add on that here, and we can discuss it more during your presentation. Okay. Any other questions or concerns before we move on? Hearing none, thank you, Ori, for the update, and we will go ahead and move on to Alida's update, which will be on outreach and education efforts for the ECM. Alida, I will turn it over to you.

OUTREACH AND EDUCATION EFFORTS ON ECM

ALIDA ORTIZ: Thank you so much, and I sent Graciela just a note that I took for this presentation, and I don't have a PowerPoint, but I can follow everything. From outreach and education, in the council, this is probably one of the most important areas of work, and I don't want to call it education to the fishers, because they do have education, and probably what we are doing is probably reaching the knowledge and seeing how we can also use the knowledge that they have to with other people, with the consumers in general.

As of now, and this is not just for the fishery ecosystem plan, but we have developed quite a few short videos that are on the CFMC media, social media, Facebook and YouTube, and most are on essential fish habitats and also on the habitat areas of particular concern, and the idea is that all the people, from the mountain to the sea, know things about the marine ecosystem and that we, as part of the biodiversity of the world, we are part of that cycle that is in the marine fisheries.

We also have produced a book on the marine fishery ecosystem of

Puerto Rico and the U.S. Virgin Islands, and these materials are not just on the council website, and many of them are distributed to the fishers and distributed to the teachers and whoever wants to have them, and they can either access them in the website, or, if we still have paper copies, we can get them.

There are three liaisons that help us a lot with this outreach and education, one liaison from Puerto Rico, Wilson Santiago, one liaison for St. Thomas, and that is Nicole Greaux, and another liaison for St. Croix, and it's also Nicole, but I have forgotten her last name now, but they all help get in contact with the fishers and getting this information of outreach and education to them.

We also have fact sheets and a calendar that also displays what we know about those essential fish habitats, and, just for sustainability, we are working on a recipe book that is not just how to cook or what to cook, but it is identifying the species that you eat, whether they are underutilized, and learning where they inhabit and the importance that they have in the entire cycle. It has more than just recipes, and it has a lot of information on the marine fishery ecosystem and the ecosystem approach for management.

We identified the municipalities that have fishing villages and fish markets, and we are going to get the contacts. We had an election, and many of these governments, these local governments, changed, but we are going to get in contact with them, and so, when we identify the person that is dealing with the fishers, we will send that to Stacey Williams.

Also, I think it is very important to identify all the state agencies and the federal agencies, because, many times, we think that, because they are doing other things, they don't have anything to do with the fishing, but, from the Corps of Engineers to the fish habitat specialists to EPA to everything, it has to do with the marine fisheries.

It is important that, in all these islands, we have been described as giving our back to the sea, and we look at the mountains, and we learn a lot about the rivers, and we learn a lot about what's going on there, but, when that material gets to the water and the marine environment, that's another world, and that's why we want to have people learn and increase the knowledge and reach the knowledge about what's happening there.

As I hear the Lenfest project, and as I hear the stakeholders approach, we want to let you know that, from the Outreach and

Education Advisory Panel, we have people there that also come from these spaces, different areas, in the USVI and in Puerto Rico, and so they can be contacts to us to identify those stakeholders and to contact them, and, also, that much of the technical information that is being developed for these conceptual models, maps from the SSC and from the Lenfest, we can translate that into something for the vocabulary and with the approach that these fishers and these communities can understand, and then they will ask more questions, and then will understand more, especially this idea of a conceptual model.

That's something that we have seen in the classrooms, and probably in some of the courses, and so what does it mean for the people that are going to be impacted by this information and by those models?

When you approach that stakeholder, and they don't have this information, they are very -- They stay away from speaking to the scientists, and they stay away from speaking to the people from the government, because they don't know what information they want to get, and so please take into account that we can support all the strategies that you have for developing these conceptual models, and I think that's all that we have been doing, and, if there are any questions, I will be glad to answer.

SENNAI HABTES: Excellent. Thank you for the update, Alida, and, as always, thank you for all of your excellent efforts in this area for the CFMC. I will open up the floor for any questions, and, first, I see Tauna has a question. Go ahead, Tauna.

TAUNA RANKIN: Thanks. Alida, sorry if I missed this, but could you tell me how to find the videos on EFH and HAPCs?

ALIDA ORTIZ: They are on the Facebook page of the council, the Caribbean Fishery Management Council. They are in Spanish, and they have translations in English, and then we also made a shorter one-shot videos on habitat of particular concern, because we have put very much importance beyond the 200 miles, but those fish have to come, when they are young, to the mangroves and to the seagrass beds and to the sandy bottoms, and that's where we have those habitats of particular concern, and so you can get there, but I will send you the link.

TAUNA RANKIN: I appreciate it. I would like to see if my office can amplify those.

ALIDA ORTIZ: Great.

SENNAI HABTES: Liajay, I want to ask if you could just add two things into the transcripts, or the notes, if they're being taken for this, and the first is, in the chat, Tarsila sent a link to the report that she had mentioned, and so to add that in, and then, Alida, if you don't mind sending the link that you were just talking about to the videos to Graciela and Liajay, so they can add that to the official transcripts for this, when they're available.

LIAJAY RIVERA: Okay.

SENNAI HABTES: All right. Thank you. Graciela, you're up next with a question or comment.

GRACIELA GARCIA-MOLINER: Alida, we also had the -- Just to add to what Alida was saying, Christina Olan, who is in charge of the CFMC social media aspects, also has -- We also have a YouTube, and we have an Instagram and Facebook, and the channel in YouTube actually also provides for connections to the podcasts that the local governments have provided, et cetera, and so we'll include that all that, Tauna, and we'll send the information over to you. Actually, we should send it to everyone, and so we will make a list and make sure that everyone knows where to find those.

SENNAI HABTES: Great. Thanks, Graciela. Does anyone have any other questions or comments for Alida? Okay. Seeing none, I think we can go ahead and move on. Again, thank you, Alida, for that great update. Next on our agenda is status of the ecosystem updates from Kelly Montenero at the Southeast Fisheries Science Center, and so, Kelly, I will go ahead and turn it over to you.

STATUS OF THE ECOSYSTEM (ESR)

KELLY MONTENERO: Good morning, everybody. I am going to share my screen, and I've just got a brief update for you all on our status of the ecosystem report. Thank you so much for having us today, everyone, and my name is Kelly Montenero, and I'm a NOAA affiliate with the Southeast Fisheries Science Center in Miami, Florida, and I just wanted to give you an update on our Caribbean ecosystem status report work.

The last time I gave an update was from May of 2020, and I just wanted to make sure that everyone was getting an update on where this project is so far. I am just reminding us all of what an

ecosystem status report is, and this is a product that provides information on past and hopefully future conditions of marine ecosystems, and the main thing is that it's based on a selected and vetted suite of indicators, hoping to provide context for a range of decisions and providing best information and support to an ecosystem approach to resource management.

I wanted to note that ESRs, for short, are routinely used in the U.S. among fishery management regions, as well as for other purposes, for example the National Marine Sanctuary system, and other efforts internationally.

Here is a quick schematic for our process for developing this ecosystem status report, and the highlighted yellow-orange boxes, depending on your screen, are the step that we're on now, which is exciting, calculating indicators, and so, just walking you through this a little bit, the process was guided by the fishery management plan objectives.

By compiling these objectives, we then considered whether these mapped directly to either a single indicator pulled from some of the draft conceptual model work that's been happening, and, if they didn't map directly, we held a virtual expert's model working group meeting to qualitatively talk through these proposed indicators, and the proposed indicators were a very long list, again pulled from all this excellent conceptual model work that's been going on in the region.

Due to COVID, of course, and to the project itself's time constraints, these expert working group meetings were held virtually, unfortunately, which, ideally, it would have been in-person, but it was great to get everyone's input, either virtually in the meeting, or, if people couldn't make that schedule, we corresponded via email.

Again, qualitatively talking through the proposed indicators and referencing the conceptual models and other efforts in the region to create that proposed candidate list of indicators. Once we had that huge long list of proposed candidate indicators, we sent it back to our identified experts for scoring for best agreement with our selected criteria, including the FMP objectives, to select top indicators.

From that, we have a draft suite of key indicators per component, and we're now calculating the status, in that calculate indicators step, as data becomes available and identified.

I talked about our indicator suite development criteria, and I just wanted to show that list to you guys, and, of course, to be able to use an indicator, we need data that is available and representative and long-term, so that we can show changes over time, and we need data that is measurable, and so not just a snapshot, but something that can show changes as well, something that is sensitive to changes in the environment, indicators that are specific and not overly generalized, something that is scalable spatially and temporally, and then again referencing the specific FMP objectives.

Then, finally, indicators that could potentially be responsive to management actions, with the larger goal that this report can provide the best science information to a number of resource management actions and decisions and, again, just provide a reference.

Without further ado, here is our draft, of course, indicator suite, after an expert vetting process, and, again, this is just draft, and it's still pending some input from some experts that weren't able to participate in the small group calls, and these are also -- Especially the ones with an asterisk are pending deliberation of no suitable defined indicator, via data available and input from other efforts, et cetera.

You can see that we've got them separated into components, and the components are biological/ecological key indicators, socioeconomic indicators, physical/environmental indicators, and then also making sure that we're considering disturbance events.

I will give you a minute to look at this, and I know it's a lot of text on the screen, and I was hoping that I might be able to get some input from everyone for ideas for some of these indicators that are requiring further definition. I am going to start out by requesting, either now or in an email later, as you think about it, any ideas on information on estimated bycatch and waste in the fishery, perhaps. If you don't want to talk right now, if you are thinking about it, I would absolutely welcome input via email, and I've got my email in two slides from now.

SENNAI HABTES: We have a comment, or a question, from Edwin Cruz-Rivera. Go ahead, Edwin.

EDWIN CRUZ-RIVERA: Thank you. One, I am trying to go as fast as I can on this table, but the one thing that kind of jumped at me is there is nothing about invasive species.

KELLY MONTENERO: We did have that as a proposed indicator, and it did not rise to the top, but I can definitely take a look at available data sources and, again, the examples from other efforts, to make sure that we have considered it and that there's data available and see how it's been used in other efforts as well, and thanks for bringing that up.

EDWIN CRUZ-RIVERA: For the seagrass at least, that's an important one, because we have *Halophila* basically eating up the Caribbean.

KELLY MONTENERO: Yes, that would be a great place to incorporate that. I am making a note of that right now. Thank you. I will make sure that I am looking at data that could contribute to that.

SENNAI HABTES: We have another comment, or question, from Stacey Williams. Stacey, go ahead.

STACEY WILLIAMS: I am just wondering, and you have diversity of coral species, but, now that we have stony coral tissue loss disease, maybe another biological, or ecological, indicator would be like the species that are at sites that are more vulnerable to this disease, because it's really based on coral composition, and so way of incorporating that into the indicator sheet, and, also, I don't see anything -- Edwin mentioned invasive species, but --, and we don't know if it's an invasive, and people don't think it's an invasive, but abundance I would think would be a really good indicator for the biological or ecological category.

KELLY MONTENERO: Thank you. Yes, I definitely like both of those ideas, and I am making a note of that as well, and I think that's a great point to obviously consider coral species that are more susceptible to the spread of coral disease. Absolutely.

STACEY WILLIAMS: Specifically for the stony coral tissue loss disease, since this is such an aggressive disease, and I think that it's changing a lot of the ecosystem of the reef, specifically, on the east coast and the USVI.

KELLY MONTENERO: Absolutely, and we're hoping that, since we're looking for that long-term data, that those changes should be reflected in the diversity of coral species changes itself, but, yes, it's definitely worth parsing out and breaking up, making sure that we're able to look at changes due to stony coral tissue loss disease.

STACEY WILLIAMS: I have just another quick question, and may I ask it?

SENNAI HABTES: Yes, and go ahead, Stacey.

STACEY WILLIAMS: Thanks, and so, the data that you're using, the biological data, is it just the NCRMP data, or did you also incorporate the long-term monitoring data from the USVI and Puerto Rico?

KELLY MONTENERO: We're still identifying the best data for a number of these indicators, to make sure that we're meeting those criteria that we talked about, and, of course, getting as comprehensive data as possible, and so I welcome -- Maybe you and I could chat offline and make sure that we can compare notes about the best data available on some of these.

Right now, I can tell you, off the top of my head, that we're considering NCRMP data, as well as specific data per island group, and historical datasets as well, and some of those are fractured, and so we would have to create a number of plots to make sure that we're considering the different methodologies used by those surveys, and so that's still under deliberation, and we haven't completed all the time series plots yet, but, if you don't mind, I would love to talk to you more about that.

STACEY WILLIAMS: Yes, and you can contact me anytime.

KELLY MONTENERO: Thank you.

SENNAI HABTES: Great. Just so everyone knows, I am taking note of everyone, in the order they have appeared in questions, and I am just going in order of whose hand or chat request came up, and so next on the list is Tarsila.

TARSILA SEARA: Kelly, I just have a quick question. When you were talking about landings, are you considering only pounds, or are you also considering value?

KELLY MONTENERO: That was a consideration as well, and, so far, in looking at the data, it seems like the most robust metric to look at would be pounds, though we did consider value as well, but, again, in looking at the data available, it seemed like pounds was most robust, especially using expert input and what kind of data is available out there, but, like I said, we did consider value as well, and the input from experts was that landings, straight per pound, was the clearest way of getting at

that.

TARSILA SEARA: Just another quick question. When you talk about changes in top targeted species, is there a way of taking into consideration what could be potentially causing those changes that may not necessarily be due to changes in abundance?

KELLY MONTENERO: That will probably be the next step after the report, and the report itself is first just looking through the changes and identifying changes that may be occurring, but we do have that as one of our spin-off project ideas, after the information is compiled, first off, and comparing what might be causing these changes, obviously, is super interesting.

TARSILA SEARA: Yes, because I'm thinking there could be a number of other socioeconomic reasons for these changes that may not necessarily be related to abundance, and so that's just a comment.

KELLY MONTENERO: Right.

TARSILA SEARA: Thank you.

KELLY MONTENERO: Thank you so much. I'm making a note of that as well.

SENNAI HABTES: Okay. Next up is Ori. Go ahead, Ori.

ORIAN TZADIK: Hi, Kelly. Thanks for the presentation. A couple of quick questions and a comment, and so, with this list of indicators that we're looking at here, does the ESA evaluate how trackable these indicators are?

KELLY MONTENERO: Do you mean in the future?

ORIAN TZADIK: Well, you're talking about like changes in benthic cover, for example, and the question is are you evaluating whether you actually have access to benthic maps over time that would show those sort of changes, for example?

KELLY MONTENERO: I think I -- Correct me if I'm not understanding this properly, but it seems like you're asking if these indicators were selected based on whether they are trackable, and is that another way of saying what you're asking?

ORIAN TZADIK: Not whether they were selected based on that, but just whether you're making note of it.

KELLY MONTENERO: I think I might still be misunderstanding, and so let me see what I think you're asking. You're asking whether these indicators are all the indicators that we considered on whether they are trackable or not?

ORIAN TZADIK: Yes.

KELLY MONTENERO: Okay. Sorry. Thanks. I just wanted to make sure that I was on the same page. Yes, absolutely, and so we had our large list of proposed indicators that our small groups considered, and they scored it via a decision matrix, which I believe I shared in my last presentation, but I would be happy to send that to the group or send that to you directly, Ori, if you're interested, and, since we scored on data availability and quality of data, we do have numbers.

ORIAN TZADIK: That's exactly what I was asking.

KELLY MONTENERO: Okay. Great. I would be happy to share that with you, if you want. That, in itself, is nice, in that we can go to that and reference what data might be available, what data would be indicated as super useful, but maybe -- Sorry. What indicators might have scored highly as super useful against our other criteria but scored low on data availability, meaning that there's a data gap there, and that we would love to use it, but can't at this time. Then, if there is an update to the ESR, if that data is then available, then we could change our list of top key indicators.

ORIAN TZADIK: Okay. Great. The second question I had is what's the timeframe on the ESR?

KELLY MONTENERO: Thank you for asking. So far, this project has been funded for two years, starting in January of 2020, and our timeline got a little slowed down, because, obviously, we were hoping to have in-person meetings and in-person workshops and in-person report-outs and feedback with various groups, since that's all virtual right now, but the project timeline is the same. This will be ending in January of 2022, and so that's why we've had to kind of adapt and be flexible in our different steps of our action plan.

ORIAN TZADIK: Okay, and then the last one is a comment, based on the question that you posed, and I would defer to both Nelson and Julian, who are on this call, with regard to this, but my understanding, with regard to bycatch and discards, is that bycatch and discards are much less in this region than in other regions. In certain spots in the USVI, where they use the trap

fishery, fish are selected based on mesh size, and basically everything else is used, and fish tend to be selected via gear, and therefore not so much discarded, nor bycatch, but, again, I would defer to the fishermen on the call, but that's my understanding.

KELLY MONTENERO: Thank you. I definitely made a note of that, and, if anyone has more input on that, on the amount of bycatch and the selection via gear, I would love to hear it.

SENNAI HABTES: Great. Thanks for the comment and question, Ori. Rich Appeldoorn has a question. Go ahead, Rich.

RICHARD APPELDOORN: Thank you. I am just looking at the first box there, which is the status of the coral reef benthic habitat condition, which is going to be based on NCRMP, to be decided, and I was just wondering whether you had reached out to the EPA people who are working on biocriteria for water quality based, again, on the NCRMP data, both for the benthic habitat and for the fish assemblages.

KELLY MONTENERO: I have not corresponded with the EPA biocriteria, and I knew that they were working on a report, but, at this time, the proposed indicator that was put in was making sure that we were referencing all the good work that was done by the NCRMP status reports for Puerto Rico and the Virgin Islands, but I will definitely take another look at that. Thank you.

RICHARD APPELDOORN: The fish group actually has a publication out on their work recently.

KELLY MONTENERO: Great.

RICHARD APPELDOORN: I'm on that one, and I don't know what's going on with the benthic group in that effort.

KELLY MONTENERO: Would you be willing to share with me that publication from the fish group?

RICHARD APPELDOORN: Yes, I can do that.

KELLY MONTENERO: Thank you.

SENNAI HABTES: Rich, if you could, if you have a link to it, if you could put it in the chat, so that it could be recorded for the transcripts, or send it to Graciela and Liajay afterwards.

RICHARD APPELDOORN: I think I can just send a copy to Graciela

and Liajay.

SENNAI HABTES: That's perfect. Thank you. Okay. J.J. is recognized.

JUAN CRUZ-MOTTA: Thank you. Great presentation, and I have a short question, and that is what is the temporal extent of the data that you are going to look at? I mean, like how far back in time are you going to look at these indicators?

KELLY MONTENERO: I'm glad that you're thinking about that, because I'm sure you're thinking about the same thing, and sourcing data for your models, J.J., and we're looking as far back as data is available for the different indicators, and so some of these have different temporal extents.

That being said, if there's different methodology influencing the data, for a temporal extent, we're trying to, when reasonable, box in that temporal extent to the same methodology, but, for example, in looking at the number of major earthquakes in the region per year, there is data going way back, but it wasn't recorded with the same frequency, or the same criteria, and so, for example, that one will probably go back to 1970, and so it's still a fifty-year time set for that, and that was a consistent methodology, but these are different per indicator, and I will show you an example of other ESRs and how they used temporal extent in the report, because, again, this is more of an overview of status and trend plots and an overview of changes in condition, rather than modeling, like you, but I'm glad that you're thinking about it, too.

JUAN CRUZ-MOTTA: Thank you, Kelly, and the second question is the spatial extent, and these indicators are going to be calculated, or estimated, for the whole island, the region, per site, or --

KELLY MONTENERO: Thank you for that question too, and this will be for the whole region and pulling from data in a box around the region, including Puerto Rico and the USVI waters.

JUAN CRUZ-MOTTA: Thank you, Kelly.

KELLY MONTENERO: Thank you.

SENNAI HABTES: The Chair recognizes Graciela.

GRACIELA GARCIA-MOLINER: One question that I actually had from before is one thing that I don't see in here are the HMS

species, because there has been recent concern with specifically the sharks in the area, and is anyone including any of the datasets from the HMS group?

KELLY MONTENERO: We did consider HMS as well, but the concern was that it wouldn't be -- The concern, in the qualitative review of the potential indicators at least, was that the data would not necessarily be representative of the region specifically, and it wouldn't -- It might misrepresent things, and I know that those were our concerns, based on data available and applicability and scalability, and, again, when it came to scoring with the proposed indicators, to get this draft list of key indicators, it did not rise to the top, but I'm glad that you're thinking about that, too.

SENNAI HABTES: Excellent. Thanks for the question, Graciela. Edwin, you have another question?

EDWIN CRUZ-RIVERA: Yes. Thank you, Mr. Chairman. Could you please explain a little bit more the difference between the two columns, and here is where I am coming from. It says physical environment and disturbance events, and I see that hurricanes are in one column, which is physical, and then sargassum is in the other column. I see days of market/store closure under disturbance events, but that could easily relate to anything from storm to the pandemic right now, and so I guess, if you could please tell me what the differences between those two columns are, it would make it easier for me to make suggestions about it.

KELLY MONTENERO: Thank you, Edwin, and I'm glad that you brought that up as well. These components are not exclusive, in that, of course, there is connections between different components and indicators, like you said. Just because one is listed in one category, it doesn't mean that it wasn't -- That it can't be listed in the other, and this is just a way to compile our indicators.

More specifically, the reason that we used this component approach as well was to not overtask our small group conversations, and so, rather than considering everything, everything, even though I have a list of all proposed indicators, we had the small groups just discuss the components that their expertise was best suited in, and so, like you said, for example, the number of named storms could absolutely be considered a disturbance event, and sargassum, obviously, is a biological/ecological and physical/environmental component as well, or aspect, I guess.

Market/store closures including not only hurricanes and earthquakes, but also social events and pandemic response as well, and, for that specific indicator, we want to make sure that we were considering all those aspects of what might be causing market or store closures, and so those would all be included.

Sorry for the long answer, but the short answer is that it might seem weird how these are assigned, but they're not exclusive, and so it's just a way of making sure that our small groups didn't have too much on their plates for what they were considering and then scoring for figuring out which indicators were best suited to this ESR effort in a larger manner. Does that answer your question?

EDWIN CRUZ-RIVERA: Yes. Thank you.

KELLY MONTENERO: Thank you.

SENNAI HABTES: Thanks, Edwin. Tauna, you have a question?

TAUNA RANKIN: Yes, and I had a couple, actually. My first is I was wondering why there aren't any fish-community-related indicators.

KELLY MONTENERO: Sorry, and I was just making a note of that. Thank you, Tauna. That, again, was listed in our proposed indicators, and it did not score rising to the top, and I would be happy to share those scores with you, if you are interested.

TAUNA RANKIN: Yes, and that was actually one of my questions, if we could see the list of potential indicators, because I feel like there might be a few that there is data available that aren't here, and so to understand why they weren't prioritized, maybe, would be helpful.

KELLY MONTENERO: Okay. I would be happy to share that with Graciela, who could maybe share that with the group, if you're okay with that, Graciela. That being said, remember that we had a number of criteria, and data availability was not the only one, and so, again, here is our criteria, and all of these criteria were what the proposed indicators were scored against by our small groups, and so it was not just data availability, but also all of these others and looking at all of these in relevance to FMP objectives as well.

TAUNA RANKIN: That's why this makes it all the more curious,

since, obviously, fish are being managed by the council, and they are part of the ecosystem, but --

KELLY MONTENERO: We do have the reef fish commercial landings, as well as lobster and conch commercial landings, broken out in the socioeconomic column, as well as landings in total, and I can tell you, right now, that looking at economically-important species of fish via fisheries-independent surveys was the next-highest-scored indicator in this column, and imagine that there was another box right here, and so we are actually looking at whether we would want to add that to our draft indicator suite, because there is no hard-and-fast rule on how many we can include, but just our capacity in considering the time constraints of the project.

TAUNA RANKIN: Okay. That's helpful, and I was wondering sort of what the outstanding question is with the first biological indicator, the status rating of coral reef benthic habitat condition.

KELLY MONTENERO: That's just pending conversations with NCRMP data managers, NCRMP status report authors, and NCRMP data providers, to make sure that I am best considering and dovetailing their efforts with this report, and I just want to make sure that I am thinking about the best way that I can represent that work within this report.

TAUNA RANKIN: Okay. Yes, that's great, and they may have additional thoughts on indicators, if it's not too late for that.

KELLY MONTENERO: I was shooting emails back and forth with them this morning, actually, and so, yes, this is just a draft list, and I love all this input, and this definitely may change in the future.

TAUNA RANKIN: I would love to talk to you offline later, because I see so many intersections with risk assessment here, but my last question was just what's the dataset for shoreline erosion?

KELLY MONTENERO: That one we are defining more precisely, and hold on just a second, and I am going to stop sharing, since so I can get to this without looking too crazy on my computer, but I'm glad that you were looking at those specific data sources.

Shoreline erosion, we are looking at -- There's a science-based catalog that has data on it, and we're also in communication

with the NOAA Caribbean restoration folks to identify the best data for that one.

TAUNA RANKIN: Okay. Interesting. Thanks.

KELLY MONTENERO: Do you have more feedback on where I should be looking for that?

TAUNA RANKIN: Not really, and it was more curiosity, actually.

KELLY MONTENERO: I'm just making a note of that, and I would love to talk offline, because I agree that there is probably a lot of intersections with the risk assessment, which would be great.

TAUNA RANKIN: All right. Thanks. I think that's enough questions for now.

KELLY MONTENERO: Thank you.

SENNAI HABTES: The Chair recognizes Graciela.

GRACIELA GARCIA-MOLINER: Anything that you send us, we will distribute to the group. The other thing is that, for shoreline erosion, there is some work done in the Virgin Islands and locally in Puerto Rico, and Maritza Barreto from the University of Puerto Rico would be the person to contact and, of course, Sea Grant, who also has had work done on shoreline erosion.

Now, the one question that I have has to do with the total landings and then the distribution of the lobster only, conch only, reef fish only, and, going back to the fish community as an indicator, I think that that needs to be really looked at, because I think that those changes in the fish community, those carried out by the fishers, number one, and number two by the fishery-independent surveys, would probably come up to the top of the list, because of specifically the multispecies and multi-gear nature of the coral-based tropical fisheries that we have in Puerto Rico and the Virgin Islands.

Somehow, that is -- I don't know exactly how to phrase that, but I think that we talked about that in the SSC, and we've talked about that here, and so focusing this towards the fish community and those changes, rather than separating the landings into lobster only and conch only and that kind of thing.

KELLY MONTENERO: Thank you. That's very, very helpful, and thank you for providing that insight, and, like I said, this is

just preliminary indicators, and so I really appreciate that input, and that absolutely makes sense, and thank you so much for those ideas on data on shoreline erosion as well, and I made a note about the fish community changes and how that would be especially useful in being included, especially looking at multispecies and multi-gear, versus breaking up the commercial landings.

As a follow-up to that point, Graciela, do you think it would be most useful to include landings total, as well as the breaking up of the commercial landings, as well as looking at fishery-independent surveys as well, or would you rather just see landings total and then fishery-independent split-up?

GRACIELA GARCIA-MOLINER: I don't know really how to answer that, and I probably would like to see if there is any correlation, and that would be one way of looking at it, from the commercial and the fishery-independent surveys, and it's just that the fishery-independent surveys are different.

One is the SEAMAP, that it's actually fishing for the same species that the commercial and the recreational fishers are targeting, and the other is the surveys of the whole fish community, and so I don't know exactly, and maybe J.J. -- I think that he might have stepped out, and so Richard is commenting, and Mandy is also commenting, and so maybe we should read those before I say anything else.

KELLY MONTENERO: Okay. Thank you, Graciela.

SENNAI HABTES: I think that's it for input and comments, if you want to continue on, Kelly.

GRACIELA GARCIA-MOLINER: Let me read the chat for a second, please. Mandy comments on the fish community indicators, and we could calculate some indicators like changes in the size spectrum, if that is of interest. Richard answered that size spectrum would be very valuable, and so she is thanking Rich, and you will look into it.

KELLY MONTENERO: Yes, absolutely. Thank you so much for mentioning that, Mandy, and thank you for reaffirming that that would be valuable to look at, Rich, and we could absolutely look at that, and I've got a couple of ideas on where we look into that right now, and it shouldn't be too hard to access that data, and so thank you so much for that, that feedback. I don't have the chat open on my screen, and so please let me know if there's any other questions in the chat that I have not

addressed.

GRACIELA GARCIA-MOLINER: No, and that's it.

KELLY MONTENERO: Thank you so much. This has been very useful, and I really appreciate everyone's thoughts and questions and feedback on what would be most useful in this indicator suite, and, again, please reach out to me if you think of more feedback, especially on data sources, but other things that you would like to see in there.

Just moving on, this is an overall idea of how we envision this ESR possibly being used, and we're hoping that it will help managers understand whether objectives are being met and to better understand and define the FMP objectives and goals in general and provide the best information to these FMP objectives.

We're hoping that this is giving a broader ecosystem context, especially with making sure that we have a wide range of indicators across these different components available for decision-making in general. We're hoping that this ESR will help better understand the impacts of acute stressors, and we said coral bleaching and, like we also talked about just now, coral disease events, hurricanes, COVID-19, other social aspects as well.

I wanted to, again, open this up to questions and other application ideas, and, following this, I do have examples of other regions and ESRs and links, so you can learn more about that, if you're curious. If you think of things later on, of course, I will be here for the rest of the meeting, and I would love feedback, or we could have individual discussions via email or setting up separate calls too, if you've got other ideas for how an ESR could be used and what you would find most useful in this ESR.

With that, I will move on, and so, like I said, I just wanted to make sure that we had links available for other regions' ESR examples, and the Gulf of Mexico key indicators and full report is available at this link, with interactive key indicators, but the entire full report is downloadable from there. Then examples of ESRs from the California Current region are available at this link, and then, finally, the Northeast annual ESRs for New England and the Mid-Atlantic Fishery Management Councils are available at this link.

With that, I wanted to thank everyone so much for their

continued support of the work on this project, and thank you for letting me give an update today, and thank you so much for your comments, direction, and questions today.

SENNAI HABTES: Great. Thanks so much, Kelly. I see Rich has a comment. Do you want to go ahead, Rich?

RICHARD APPELDOORN: Apparently I misspoke a little prematurely, and the paper I mentioned does not look like it has been accepted for press yet, although it's been quite some time since it was responded to reviews, and so I have checked on the status of that, and, if there is something to report, I will get it to the group.

KELLY MONTENERO: Thank you so much.

SENNAI HABTES: Okay. Thank you again, Kelly, for the really informative update. I encourage anyone that has more information, or comments, to stay in touch with Kelly and Mandy, as they're working on the ESR. Any other questions or comments before we move on to the next update? Okay.

Seeing none, I think we should move forward. I am also -- Seeing as we're coming up against the lunchbreak barrier, I was going to ask that we go ahead, and I think we might be able to get through two more updates. After Rich was Liajay and Graciela, but, given that they're with us for the whole afternoon, I thought we could move Diana Beltran's up after Rich's, in case she is not able to stay with us until later, when we can continue these updates. If there is no --

DIANA BELTRAN: Yes. No problem.

SENNAI HABTES: Okay. All right. That sounds good, and so then why don't we go ahead with Rich now, and so, Liajay, if you want to give Rich co-host ability, so he can share his screen, and so Rich is going to give us an SSC report, as he is the chair for the SSC for the CFMC, and then, after Rich's, we'll move on to Diana's, and hopefully get through both of those before lunch.

SSC REPORT

RICHARD APPELDOORN: Thank you, everybody. This is up-to-date, in the sense that we just concluded our work on this on Tuesday, and so this is kind of where we are, and a little bit of how we got there, and we have a single generic model that the SSC produced.

It was pretty much kind of an evolved process, as we were initially tasked to produce three models, one for each island group, and one of the things that played a lot in this was the complexity of what we were dealing with, and this reflects the diverse expertise and experience in the SSC, which is how the SSC is structured, by design, and so we had a lot of expertise to bring, and in various areas, both biologically and socioeconomically, into this.

In terms of experience though, a lot of our experience was more with the situation in Puerto Rico, with just being an order of magnitude more people and a much larger land mass, and we have rivers, which the Virgin Islands don't have, and the complexity of Puerto Rico kind of also drove some of what we were going to.

We had also spent a substantial amount of time doing this, and this was one model, and even to kind of rescore that model to the individual islands, to get three models, would have -- I'm not sure it would have tripled the time, but it would have taken a long time.

There was also concern about our producing a product that was independent of what the DAPs were doing, because, to really get into the details of the individual islands, we would have had to rely heavily on their local expertise, and then, basically, we were concerned about developing models that the DAPs had already done, and so we kept ours as a generic model, and we think that that generic model, however, is suitable for the comparison purposes that others want to use, this committee and the Lenfest people, for example.

We did start off with something simple, and we have eight sub-components, or sub-models, in that, and they were equally divided between the natural dimensions and the human dimensions, and you can see that we drew -- This was a very early conception, and not even all the lines that were potentially drawn between these components are there, but we started off with something that we thought was fairly simple, and things got out of hand fairly quickly.

This is what it looks like now, just from the connections between sub-components in the -- Between components in the different sub-models, and this does not have all the arrows that show connections between components within the various sub-models, and so you can see there's already a large jumble of lines.

Looking at this in more detail, as I said, we had eight

sub-models, and they had a variable number of components, and the sub-models were marine ecosystem components, competing uses of resources, socioeconomic and cultural drivers, land-based uses, fishing, water quality, habitat, and abiotic factors, and the numbers next to each one of those is the number of components within each sub-model, and so, over the whole model, there are over 64,000 potential connections that we needed, potentially, to deal with.

What we did initially is we went through each sub-model, and that's what you see along the diagonal here, and I know you can't read any of the fine print, and that's not really the point, but you can see the sub-model categories along the top, and they're the same going down the side, and so the diagonal is representative of the connections within sub-models, and, where you see that kind of peachy coral color, that's where the committee identified a connection within each of the sub-models between components.

When doing this, we actually went through every potential connection, and so it's fairly complete, and you can see that, just within the model, some have a lot of connections, like habitat, and there is actually one component there that isn't linked to everything else, but we also have others that don't necessarily have a lot of linkages within them, but they will end up having a lot of linkages across other sub-models, and so this is the first thing that we had done.

Then that whole other space is kind of what we were then facing, and the green boxes there are things that we thought, from very early discussions, might be connections between components within sub-models, and they may or may not have survived the subsequent process that we used to look at that, and so there's an overwhelming amount of white space there, and so we decided to do a shortcut there, and that was to try to focus on priority connections between the components within each pair of sub-models.

That was to identify the three most important connections, their direction, and that is to say is it a positive relationship or a negative relationship, or it could go both ways, and the strength of that relationship, high, medium, or low.

Each one of the members of the SSC did their own scoring, and then we brought all of that together, and so this is, if you will, an interim result, in the sense that we didn't go through every possible 64,000 connections, but we did do a lot of them, as you will see, and so we think this is something that we want

to pass on to the council and the TAP at this point, and it also should be useful not only to the SSC in the future, but also the Lenfest project, and this is certainly integral into all of this, and the ecosystem status report work that we just heard about.

Each member was asked to fill out this form, where you identify -- For each group, you would identify a driver and what its target was, and so this is fishing versus socioeconomic drivers and what in fishing affects socioeconomic drivers, the direction of that relationship, and the strengths, and so we would get one of these filled out for each SSC member, and they had to fill out all of them, and I think there is fifty-six connections, minus the diagonal.

Just an example of what this might look like, and this is not something that came out of it, and this is just an example that I had for informing the group, and we might say that three most important connections between the socioeconomic and cultural drivers sub-model affecting fishing could be seafood imports and exports affecting commercial catch, market demand affecting commercial fishing catch, and tourism affecting recreational fishing catch. In this case, two of the driver components affected the same target component.

This is just a list of potential components within those two sub-models, and this is what it would look like, and, if we looked at the diagrams of how these would function, this is what they would look like, and you can see that this is just looking at three potentially most important connections here, but there is a lot of other boxes, say in the socioeconomic and cultural driver boxes, that could connect to a lot of the other factors in here, and so we were only asking each one to do three, but, as it turns out, not everybody did the same three.

This is how this would be scored, for this same example, and, in this case, seafood imports and exports, the direction is zero, because imports and exports have opposite relationships in this, and so it could go both ways, and we gave that, or I gave this, as an example, a medium, whereas market demand was high and positive, and tourism was high and positive, and so this was just an example and not an output.

This, on the other hand is output, and so there are fifty-six sets of comparisons, and we have -- This is what the output would look like, and so each one of these is a score from an SSC member, and there were eight of us at that meeting, and we got a mean score, and so these 3's mean high, and the mean was high

from that, and there were seven people that thought that this connection, which is coastal development affecting urban runoff, was one of the most important ones, and the two multiplied together gives us a sum of twenty-one, and so there are three quantitative outputs that we get for any connection that was identified, and, in addition to the mean, you also would get the variance on this, and, in this case, it was zero, but, in some cases, like this one, it's not.

There is quantitative outputs that come with this, and, in this particular case, although we were asked to identify three among the eight members, we identified ten connections that were given priority by SSC members, and those are the ones that are in blue here.

The highest scoring one was this coastal development on urban runoff, which it was high, and seven of the eight members gave it a score and identified it as important, and marina affecting non-point source discharges also got five of the members saying that this was important, but they thought it had a median scale of two, and so this is a set of just one of the pairwise connections that we did when we tried all the pairwise connections.

When we did that, we identified 484 connections between the components across sub-models, and the minimum number of connections, if everybody agreed on the top three, would have been 168, and so we got a 288 percent increase over that minimum, and so we identified a lot of important connections, and there were, obviously, all driven by the various expertise that the members had.

However, I would point out that there was discussion on all of these, and members were allowed to change their scores in light of that discussion, and so these are the results that survived from that.

This is now what it looks like, and now what I have highlighted are the results of that exercise, and now the diagonal, which is the connections within sub-models, is left blank, and we're now looking at the connections that have been identified, and so anything that has red is something that was identified as a component-to-component connection, sub-model-to-sub-model, and, as I said, there's lots of those, and there's over 400.

Just scanning this, you can see that there are places that some things show up as being more prevalent, or more frequent, than others. For example, natural disturbances, things like

hurricanes and bleaching events, had thirty-six locations where they affected another component to one of the other sub-models, as you can see across there.

Two others, and that was the biggest one, and two others had nineteen instances, coastal development and regulatory structure, and both also had a lot of influence across the sub-models, and one can go through this and rank everything, and then you can do the same thing, and you can look at what components were being affected by a lot of different components in other models, and so the top-scoring one was coral reefs, which was in the habitat, and that was affected by twenty-eight other components in other sub-models.

Seagrass beds, also within habitat, was twenty-three connections. Fishing grounds is affected by a lot of factors, and twenty-seven were identified here, and inshore forage fishes was the fourth-most common targeted, or identified targeted, factor here.

Now, remember this came out of the process of identifying the top three from among the diversity of the members, and so it's not the full range of what would come out if we went through this thing box-by-box, but we think we have generated a fair amount of information that will be useful in going forward, and it didn't seem to make sense to go through what would be many, many meetings to look at all these connections, and that might be something that we have to come back to in the future, but, for the purposes that the TAP and other users might have, we thought this was fairly good.

What's the status of our model? As I said, we had 484 connections identified between components across sub-models, and there were 304 connections between components within each sub-model. Therefore, we have 788 total connections included as a whole. Particularly for the 484 between-sub-model components, we have quantitative outputs that reflect the diversity and strength within the SSC. The connections within the sub-models were done by consensus, and so we don't necessarily have those quantitative measures, but we're much more confident that we have fully addressed those.

The compilation is still in process, since we sort of terminated this two days ago, and so there still needs to be a compilation of the written description and definition of each component, as taken from the record, and also from the information and discussion regarding the strength and direction of connections, and so there's a lot of work that council staff and people in

the Science Center, or the Regional Office, are helping the committee with in trying to put those together.

We had some recommendations that will go to the council, and so we feel that we've finalized the generic ecosystem conceptual model for the Caribbean, U.S. Caribbean. We believe this model, in its current state, meets the objectives that the SSC was tasked by the council, following the Caribbean Regional EBFM Roadmap Implementation Plan.

We also feel that the generic model developed should be sufficient and that developing three separate SSC island-based models is not necessary to meet the objectives of the overall process of developing a fishery ecosystem plan and, specifically, the next step of comparison of conceptual models.

We also recognize that the conceptual model will be useful in developing the next steps in the process of developing the fishery ecosystem plan and in addressing other concerns specific to the SSC, such as generating questions to help prioritize management strategies and actually help develop management strategies, quantitative management strategy evaluations, where these are possible.

To generate questions to help prioritize future research, because that's one of the things that SSC is supposed to give input to the council on, is research priorities, and, certainly, part of this identifying data and knowledge gaps, and we can develop hypotheses to test, using available data and quantitative modeling approaches, and so, looking at the data, it was pointed out, and I think this was by J.J., that 28 percent of the identified linkages have any data at all, and that's just presence and absence, and it does not address the condition or extent or quality of that data.

It's a very complex model, and there isn't a lot of data out there to drive it, as yet, and that's certainly one of the things that comes out right away.

Other examples is we can identify key ecosystem linkages, and that will help to focus on risk assessment and developing the indicators for risk assessment, and to explore different visualization and communication tools for effective outreach, and we were given some examples of that by some presentations that others gave, and I think that this is certainly something that needs to be moved forward, so that people can understand this, because, having spent a long time working on this, even I am sort of mind-boggled by magnitude and complexity of it, and

please know that some of these specific issues that we just mentioned as examples would have to deal with questions on the magnitude, variability, and direction of the relationships to realize those next steps.

Kind of jokingly, I've been showing this to our committee and the council, of kind of like this was my expectation of what things would look like. At the end, since it's mostly in blue, and I think maybe this is a better representation, and it's entitled "Lucifer", and these are all Jackson Pollock paintings, and I am hoping that maybe the TAP and the Lenfest group, in their comparisons, will at least cut it down a little bit, to something more tractable, and so that's my report. Thank you.

SENNAI HABTES: Excellent. Thank you, Rich. At this point, I will open it up to any questions or comments. Graciela.

GRACIELA GARCIA-MOLINER: Richard, I am really curious, and do you really think that the last slide that you showed, the last painting, is more tractable?

RICHARD APPELDOORN: Well, it's smaller.

GRACIELA GARCIA-MOLINER: So that's the connection. Okay.

RICHARD APPELDOORN: And it had a much more optimistic title. As you saw the title, he titled that "Sea Change", and that's kind of where we're trying to go.

GRACIELA GARCIA-MOLINER: I really like the fact that you brought that up, because, I mean, it's really trying to -- What the ESR is trying to do, and what the TAP is going to be trying to do, is to actually pull things out of there that we can actually do something about it, and so, within all that confusion, I think that people are pretty much -- They are very knowledgeable about those specific connections, but it's just how to get data to prove it and how to get the powers-that-be to do something about it, and I will talk a little bit more about that with the DAP presentation.

RICHARD APPELDOORN: One point that I wanted to mention, which I didn't, is, when you looked at that, you saw all these direct connections, and you might think, well, that's probably not the most important thing that I would think of, and remember that a lot of those connections -- We were just looking at the direct connections, but those other things link to other things, and so we don't -- I don't have a visualization that would say how important something is to a certain component, not only through

which direct linkages, but through which indirect linkages, and so there's -- The number of indirect linkages in there is a mess.

SENNAI HABTES: Okay. Are there other comments or questions for Rich? Okay. I don't see any, and so I guess we can move on. At this point, I will point out that we have reached past the 12:30 period that we were going to have lunch, and I did want to ask Diana if you are available to come back after 1:30.

DIANA BELTRAN: Yes, I am available.

SENNAI HABTES: Okay, and so, if that's all right with everyone, I would say we push Diana's presentation until when we return at 1:30 and continue on with the rest of those, and why don't we say the 12:40 to 1:40 period is our lunch break, so everyone can get a chance to get some food and refresh, and then we'll continue on after that. Is there any questions or concerns or opposition to that?

MIGUEL FIGUEROLA: If I am going to talk about the MBON update, I will be available after 2:00 p.m., just to mention that, because I will be in a meeting until then.

SENNAI HABTES: Graciela, did we have Miguel on? I am not seeing that on the agenda.

GRACIELA GARCIA-MOLINER: It's where it says, "Other Efforts: MBON USVI, MBON mesophotic data", and so it's just to bring yesterday's presentation into the context of what we're discussing today, and so he'll be available for any questions that we might have from yesterday, and so he's fine if he comes back at 2:00. That should be no problem.

SENNAI HABTES: All right, and so we'll make note of that, and so, Liajay or Graciela, just put in, in parentheses, in that discussion, "after 2:30", and remind me if I move to that one without Miguel present. Okay?

GRACIELA GARCIA-MOLINER: Okay. Mr. Chair, can I ask something? Is everyone seeing that black box in the presentation, on the right-hand side at the top?

SENNAI HABTES: Yes.

GRACIELA GARCIA-MOLINER: Okay, because we've been having that issue, and we were trying to figure out what it was.

LIAJAY RIVERA: Apologies. We are learning.

SENNAI HABTES: It's gone now. Okay. With that, everyone, I will go ahead and adjourn the meeting for our lunchbreak, and let's have everyone return at 1:40 Atlantic Standard Time, and we will resume the meeting at that point, and so everyone enjoy your lunchbreak, and, Miguel, I will see you in that other meeting, at least for the beginning.

(Whereupon, the meeting recessed for lunch on February 4, 2021.)

- - -

FEBRUARY 4, 2021

THURSDAY AFTERNOON SESSION

- - -

The EBFM TAP of the Caribbean Fishery Management Council reconvened on Thursday afternoon, February 4, 2021, and was called to order at 1:40 o'clock p.m. by Chairman Sennai Habtes.

SENNAI HABTES: Good afternoon, everyone. Welcome back, and I hope that everyone had a refreshing and enjoyable lunchbreak. We can -- Liajay, if you can put up the tentative agenda. Thank you. I believe where we left off was we had pushed Diana's presentation up to go before Graciela's DAP presentation, and she is back with us, and so, unless anyone has any questions or concerns or things that they wanted to mention about the agenda as it stands, let's go ahead and get started with Diana's presentation. I don't hear any, and so, Diana, I will turn it over to you. If you're ready, feel free to begin. Diana, are you there?

GRACIELA GARCIA-MOLINER: Give us a second, because there are people coming in, and so hold on a second. Sorry.

SENNAI HABTES: Sure.

MARINE PROTECTED AREAS

DIANA BELTRAN: Good afternoon, everyone. I will give you a brief description of the project that I am working on, and I'm sorry that I just learned this morning about the meeting, but I can do my best.

The project's primary goal is to compile scientific information

about the description and functioning of the marine reserves and national monuments and national parks and fishery closure areas in the U.S. Caribbean, and that means Puerto Rico and the U.S. Virgin Islands.

While all those marine protected areas will be considered, this project will focus only on those that are in the Exclusive Economic Zone, and that is Abrir la Sierra, Tourmaline Bank, Bajo de Sico, Grammanik Bank, the Mutton Snapper Closure, Red Hind Closure at Lang Bank, and the Hind Bank Marine Conservation District.

This project output will generate a report of the status of these marine protected areas, and the things that we are doing is we are interested in putting in the report the history and description of each reserve, what are the marine ecosystems present in each reserve, what are the condition of the marine ecosystem within each reserve, what other changes have occurred through the time, what are the reported species in each reserve, and the scientific studies that have or are taking place within each reserve and their findings.

Also, we will -- If we have all the information, we can recognize the gaps in knowledge in the marine reserve effectiveness and species protections and what other studies or actions are needed to ensure the long-term sustainability of those marine reserves and what are the best approaches to address these scientific gaps.

So far, I am in the middle of all the projects, and so I am collating all the data. So far, we have most of the references, and so I am reading and collating the information.

Another aspect that the Caribbean Fisheries Management is interested in is to do some analysis, or maps, on the species distribution and abundance and the change of the population through time, and so, just two weeks ago, I started contacting the researchers that are working in those areas, to see if they have any new information and if they have some of the data that we collaborate to do some of those analyses. Ultimately, I am depending on the data to have these analyses in the report, and this is the things that I can tell you, and this is the last status of the project.

SENNAI HABTES: Great. Thank you, Diana. Can you maybe blow up the chart a little bit, so we can see it a little better? I'm having a hard time.

DIANA BELTRAN: Okay. I can share this one.

SENNAI HABTES: Yes, that would be great, if you don't mind, if you could send that to Graciela.

DIANA BELTRAN: This one that I have here right now, I am working on creating most of the documents, and I have some others that I have to add to this table, and, actually, I am writing part of the report, and so I am in the middle of this.

GRACIELA GARCIA-MOLINER: Can you change the view to the slide projection complete slide, so that we can take a better look at what is in there, or if you can just mention the people that you have already contacted, et cetera, and is that what you wanted, Sennai?

SENNAI HABTES: Yes, and that's exactly it.

DIANA BELTRAN: The people that -- I am contacting Rick Nemeth and Tyler Smith, to see if I can get like an appointment to talk with them, and, right now, this is the things that I am doing.

SENNAI HABTES: Okay. Diana, I work with both Tyler and Rick, and so, if you want to send me an email with a little more information on what type of data you want, regarding their work in the Grammanik and Hind Bank, I can reach out to them. There is sometimes some hesitance about -- We get a lot of emails, and so sometimes it takes a while for people to respond, and so, if you forward me the emails that you sent to them, and, if you don't have my email address, you can get it from Graciela, or, actually, what I will do is I will just send it to you as a direct message here, so that you have it, and I will try and reach out directly to them and get your more information.

DIANA BELTRAN: Thank you very much.

SENNAI HABTES: Not a problem. I see that Rich posted, in the chat, that, Diana, he wanted to know what the timeline is for the project.

DIANA BELTRAN: The timeline is the end of the project will be March 30, but the timeline of the literature review that I am doing is the last ten years.

GRACIELA GARCIA-MOLINER: Could you repeat that?

DIANA BELTRAN: Excuse me?

SENNAI HABTES: Can you repeat what you said? We didn't catch the last part of your statement.

DIANA BELTRAN: I will finish the project on March 30, and, in the literature review, the timeframe is the last ten years.

SENNAI HABTES: So, just to repeat for everyone, the timeframe of your literature review is over the last ten years, and you want to have all of this information compiled by March 30 of this year.

DIANA BELTRAN: Yes. Perfect.

SENNAI HABTES: Okay. All right. I am going to open it up for other questions, but, before I get to that, Kelly had one in the chat, where she asks, Diana, could you share the presentation with the call, please, and then she also would love to be in communication regarding this work, and so if you could provide us with your email address.

DIANA BELTRAN: Of course. Okay.

SENNAI HABTES: I would recommend, Diana, just putting your email address in the chat. That way, everyone will have it and can contact you directly.

DIANA BELTRAN: Okay. Perfect. Sounds great.

SENNAI HABTES: All right, and so I'm going to open it up to other questions. Alida, you were first on my list, and so go ahead.

ALIDA ORTIZ: I just want to know if the references are going to be saved in the Caribbean Council website or on a special site where we can go back to those references for other things that we need.

DIANA BELTRAN: Right now, I have a Google drive, and so, at any time, I can share this information.

ALIDA ORTIZ: Okay. Great. Thank you so much.

DIANA BELTRAN: Okay. Thank you.

SENNAI HABTES: Diana, if you can share the location of the Google drive, possibly, with Graciela, so they can put it into -- At least for the references, I would say, and I wouldn't say your entire Google drive, but the references, so that they can

put it in the transcripts from the meeting.

DIANA BELTRAN: No problem.

SENNAI HABTES: Okay. Thanks. Next is Tarsila.

TARSILA SEARA: Hi, Diana. I just have a question that -- I understand this could be perhaps outside of the scope of your project, but I am curious to know if you are looking at this or if you know of any other efforts or if you have looked at something in the literature, and so, where MPAs intersect with fisheries, and you had that in one of your tables there, are you looking at anything related to the impacts of displacement, impacts of MPAs on displacement, or changes in the landscape, and so anything that could potentially impact income or loss of fishing grounds or increased conflict or anything like that?

One of the reasons why I ask this is because there is a lot of lack of data on this, and, right now, we're working on a project in the Northeast, and we're looking at offshore windfarms, and the only literature that we have on potential displacement is MPA-related, but we don't have a great deal, and so I was wondering if you have looked at this and if that's something that you're considering or if you have any information on that.

DIANA BELTRAN: Actually, I am looking, first of all, in the biological information, because I want to know more the list of species and the history that it can be a good thing to have, but already I didn't look for that information that you mentioned.

TARSILA SEARA: Okay. That's fine, and, I mean, I figured it was a little bit outside of the scope, but, since you had fisheries there, I was wondering if that was one of the things that you had considered, and so thank you.

SENNAI HABTES: Graciela, did you have a question?

GRACIELA GARCIA-MOLINER: A question and a statement, and so one of the things that Diana said at the beginning had to do with the other jurisdictions, agencies, et cetera, that have either closed areas, prohibition on fishing, et cetera, and so I think that the first or the second part in the fishery ecosystem plan outline deals specifically with that, and this is addressing a question that the DAPs and the fishers have brought up a number of times, because you close an area that is, in the case of the monuments, for example, is huge. In St. John, it's all the way from the shoreline to the three-nautical mile border, plus the MCD, plus the Grammanik Bank, plus all the other smaller closed

areas that you have around St. Thomas/St. John, and so it adds up to a lot.

One of the things is that -- The idea is to bring in all the information that there is on the size of these areas and the prohibition that they have, and, basically, I mean, you are protecting so many other species, and the population of the ones that are commercially important, that that really needs to be looked at.

This addresses issues that the commercial fishers have brought up quite a number of times, and, Diana, correct me if -- We begin with the ones that are under the purview of the council, correct?

DIANA BELTRAN: Yes, correct.

GRACIELA GARCIA-MOLINER: But the idea is that -- Then we call out to anyone who is on this call, and we have been addressing that issue also, but call out to the other agencies that deal with protected resources and protected areas, et cetera, because they do have, in some cases, long-term datasets that could be very useful in this ecosystem approach to fisheries.

The next thing that really comes to mind is all of the monuments that have a complete prohibition on any take within those areas, and that's St. Croix and St. John, and they do have the USGS and National Parks Service that have been dealing with monitoring for such a long time, and those are datasets that I see as really, really have to be brought into this effort. Diana, do we have any idea if we're going to be working with that in the near future, or we haven't talked about that yet?

DIANA BELTRAN: We haven't talked about it yet.

GRACIELA GARCIA-MOLINER: Okay. If I may, Mr. Chairman, one of the things that we might be thinking about, in terms of the TAP, would be to make recommendations to the council to expand invitations to these other jurisdictions, and, in the case of the Virgin Islands, I am specifically talking about the National Parks Service and the USGS and the Department of the Interior, really, to bring forth the data from their areas. We don't have -- We cannot force them, but see if we can extend the invitations or somehow get all that data.

SENNAI HABTES: Yes, I completely agree, and we can -- I can, obviously, start in trying to reach out to people that I work with in those organizations that have access to that data, and I

think it would be helpful to have a letter from the council to also invite -- They have been hesitant, at times, I think, because it's not within their mandate, in a lot of ways, in terms of joining committees like this, but it doesn't -- It never hurts to try again.

With that, are there any more questions for Diana? Tauna, I see your hand up, and was that from before, or did you have another question?

TAUNA RANKIN: I just wanted to suggest to Diana that, if she hasn't already, to maybe contact Chris Taylor with NOAA's National Center for Coastal Ocean Science. I know he's done some acoustic work in and around some of these MPAs, and I don't know to the extent it's been published. I will put his information in the chat.

DIANA BELTRAN: Okay. Thank you very much.

TAUNA RANKIN: Sure thing.

GRACIELA GARCIA-MOLINER: If I may, Diana, we had a paper from Michelle Scharer that had looked at the MPAs, and do we have that available?

DIANA BELTRAN: Yes, we have that.

GRACIELA GARCIA-MOLINER: Because that was a review to 2004?

DIANA BELTRAN: Yes, and I have -- Most of the Puerto Rican studies, I have the information, and I need more help with the U.S. Virgin Island side.

SENNAI HABTES: Great. Well, like I said, send me that email, Diana, and I will reach out to -- I know we have a host of publications from Rick and Sean on their fisheries work in the closed areas and then from Tyler's group, and they've been doing mesophotic reef studies out there for a while, and I know some of that work they have put up on their TCRMP website, but I know they have lists of the publications, and so I will talk to them, once I get your request, and see if I can get them to give me a list.

DIANA BELTRAN: Okay. Thank you very much. That will be nice.

SENNAI HABTES: Yes. My pleasure. Okay. I don't see any more questions, and so I want to thank Diana for that presentation and for reaching out, and then I think we can go ahead, and I

would recommend -- Diana, feel free to reach out to any of the other council members who you feel can be helpful in this regard, and, if you're not getting answers to things that you need, please feel free to contact me. With that said, I think we can move on to the next update, which is Liajay and Graciela, who are going to be giving us some updates from the DAPs and the CMs.

DAPs CMs

GRACIELA GARCIA-MOLINER: I am just going to give you a quick review that Liajay has put together, and the DAP chairs have contributed along the way, and this is just a little timetable on how things began, and so this dates back to 2016, with the EBFM roadmap, and to 2019, with the release of the ecosystem-based fishery management in the U.S. Caribbean region, and so this is the roadmap to the implementation plan.

A lot of this has to do with what J.J. was talking about this morning, the actual Lenfest diagram that basically shows what needs to be done, and so this roadmap for the implementation plan -- If you don't have it, you should have it, but, if not, it shows, via specific tasks, where we are in the process.

We are definitely a little bit behind schedule, due to many reasons and not only the 2017 issues that are still carrying on in Puerto Rico and the Virgin Islands, but also the earthquakes and the COVID situation that we all know about.

We have prepared a timetable, and we have it available for the SSC, and I didn't count the number of days, but definitely it was less meetings than we had talked about in the SSC the last time, but the first is to join -- The effort to develop the conceptual model with the DAPs and the SSC during a joint meeting.

The SSC, at the time, was tasked with the risk assessment process, but we soon realized that we should go back and start with the conceptual models, and so the DAPs -- We followed the same basic process for Puerto Rico and St. Thomas/St. John and St. Croix at the beginning. We all dealt with -- As you can see, everyone was putting down things that they considered that were affecting their ecosystem and how it was being considered and how it affected the ecosystem and what part of the ecosystem was impacted.

The DAPs have quite a bit of expertise among themselves, and they do have commercial and recreational fishers, and they have

people that deal with the aquarium trade, and they have charter operators, NGOs, divers, and so it's a mix of people that started out to do this.

Now, the first difference that I have to mention is that we divided up the effort and separated each of the TAPs, and the people that were in charge of dealing with the structure of the meeting, et cetera, and, of course, we all of our different way of dealing with things. In Puerto Rico, we had to deal with doing everything in Spanish, and, in St. Thomas and St. Croix, everything in English.

The way that people understand their ecosystem is also different, and so all those issues had to be resolved as we were moving through the process. The first dates, March 26 to the 28 of 2019, we actually had a very specific task, and so basically it was to identify the most influential ecosystem components, and that was what we asked everyone to do.

At that time, we stated our goal as being to form a conceptual model that served as a guide for developing an ecosystem-based approach to managing U.S. Caribbean fisheries and the habitats upon which those fishery resources depend. That is really based all on the EBFM guidelines.

Each of the DAPs provided their information, and they presented that to the council, and we also had a follow-up meeting that same year, in July, to keep addressing all of the priorities that they saw from all the components that they had brought to the table.

They have been presenting this to the council and discussing those issues that are most important to the DAPs, and this is something that has to do with integrating the local agencies, the regulatory agencies, and looking at the MPAs, what Diana just described, and seeing how that contributes to the overall effort that the fishers have put into the compliance of the fishery regulations.

We have been updating the council and the DAPs as we've moved along in the efforts that are taking place, and, as you have seen from this morning, I mean, there are quite a number of efforts ongoing, as of right now.

2020 comes along, and we all turn to virtual meetings, and it was a learning process, definitely, at the beginning, but we did manage to have the number of meetings that are dealing with ecosystem components, and, finally, in August 24 of this part

year, that's when we had the last meeting with the DAPs, and we were trying to identify those unknowns that were still open in what they had developed.

A little bit to backtrack, in terms of the process, and, by the time that July of 2019 came around, we also had differences in the way that we approached the different groups, and so, in Puerto Rico, for example, we asked them, each of the DAP members, to individually fill out the forms that describe the driving component, what it was affecting, and what strength -- How strong that connection was and whether it was a positive relationship or a negative relationship.

We did this for each individual that came to the meeting, and that was not the case in St. Croix and in St. Thomas. They have been working throughout by consensus, and, eventually, in Puerto Rico, after looking at all of the information in the August 27 meeting, we stated that everything that was left over and what they were working with then became their consensus conceptual model.

Basically, we have many driving components, many affecting components, and they are not as -- We don't have them organized as the SSC had done previously, and so they are just describing what they have given us, and we haven't changed anything from the terms that they were using, and there is a small glossary that has been prepared to deal with the specifics of each DAP.

Having said that, in the August 27 meeting, we completed all of the work that needed to be done, in terms of the connections, and we developed a score giving us the direction and the strength of that relationship, as seen by the members of the DAPs. They will see the final model in the next meeting that they are hosting, and I think it's the end of March or April, and that they will then present to the council.

That is what the Puerto Rico conceptual model looks like, and, as you can see, there are differences in the color, brown being negative and blue being positive, and there is also differences in the strength of the connections that they have suggested. Of course, this can be better organized, but just to give you a sense of the way that they see the connections. As you can see, right smack in the center of this one is the fish stock health, because that's really what they are interested in maintaining.

Let's see, and I am trying to see -- I don't think we have many left of the question-marks in Puerto Rico. Liajay, if you see any, let me know.

LIAJAY RIVERA: Just one. There was just one left, and it was pending, the forage fish availability to target species catchability, and it's right on top of fish stock health. That was the only connection pending.

GRACIELA GARCIA-MOLINER: Okay, and so they have pretty much finished everything, and that's one of the things that we are very grateful for, and so this one is a little bit different than the SSC, and the SSC has the connections, but the scoring doesn't have -- It was all absolute values. We do have, however, the scores that the SSC had provided also, in terms of the direction and the magnitude, and so we have that in the background.

The St. Croix group, they started the same way, with all the little pieces of paper, and they developed the same driving and affected component relationship and looked at the positive and negative on a consensus basis, and that then was given a score, and it's presented in the conceptual model that you see on the screen. Again, all the brown connections are the negative connections, and the width of the arrows are the strength, and the blues are the positive connections, and also the strength of the arrow is given by the width of that.

We do have the scores for everything that they provided us with, and we are in conversations regarding what to do next, in terms of the analysis of this data.

Finally, the St. Thomas/St. John, they had done things a little bit differently, because, right at the beginning, after they had done their conceptual model and specifically dealt with a fisheries-related model, they were very much concerned about the effect of the regulatory structure on their fisheries, and that led us to try to figure out a way of having a meeting with the local agencies, the local lawmakers, to establish the relationship between that regulatory agency and fisheries, but, for the most part, and so everything that we still need, like, for example, ballast water and essential fish habitat, is in red and has a question-mark.

These are things that deal specifically with the regulatory infrastructure, and this is regulation, in terms of ballast water, and there are regulations that need to be applied and complied with, and they definitely have an impact on essential fish habitat, and so, for the most part, they have completed their exercise in terms of the conceptual model, again with the direction and the strength of the connection, and we have given

them a score, and, in the Mental Modeler, and this is the software that we're using for visualizing the conceptual models, you have the product of the St. Thomas/St. John DAP.

You can see that these thin arrows that have a question-mark -- Most of them are related to that part of the regulation that we really need to deal with, and that specifically has to do with this net slide that looks at the harvest prohibitions, seasonal closures, area closures, and the impact on their fisheries, along with quite a number of other issues, for example the gears or tourism, but these are the people that the DAP had identified that needed to come to the table to talk about the impact that the drivers have on their fisheries. That's where we stand, in terms of the St. Thomas DAP.

It was really good to hear that the government agencies are going to be pulled into a stakeholder meeting, and so that's something that we need to discuss further, in terms of specifically the St. Thomas/St. John fisheries and their interest in having that information brought to the table.

Just as a way of comparing what people are doing, or what groups are doing, in terms of their conceptual models, we just pulled out one, and Richard had mentioned that one of the most significant scorings had to do with the coral reefs and the habitats specifically as they deal with competing uses of resources, and, in terms of the St. Thomas DAP, one of the most significant drivers were hurricanes, and, as you can see, it impacts coral reef, commercial fisheries, oil spills, et cetera, and I didn't count them, and, sorry, Richard, but these are the ones that they had mentioned in their conceptual model.

For Puerto Rico, sargassum coastal abundance and presence and frequency was also very significant affecting this number of components here, and especially bait availability was one that they talked about, bait accessibility, and the changes to the water quality in the areas where the sargassum gets stuck, and, in St. Thomas/St. John, the closed areas was one that was highly significant and how it impacts by displacing effort into inshore reefs, problems with the lagoons, and those are areas that are closed within the state waters of St. Thomas.

Again, displacing effort, for example, to the offshore reefs and the impact of those closed areas, in terms of more or less habitat, regarding seagrass beds, and then the mix of closed areas plus seasonal closures and the other regulations on managed species. This is just one of the significant connections that came out of the three DAP conceptual models.

Finally, the SSC is on the right-hand side, and the SSC components, the way that they have done their sub-models, and we just pulled out, from the scoring that had been looked at, the top components for each of the DAPs, and so they are in order of ranking, and so one of the things that we still need to do is to compare them across-the-board, but you can see, for example, that here is regulatory agencies in Puerto Rico, here is management bias in St. Croix, and the need for education and outreach, and here is the need for enforcement, at the top of the list, in St. Thomas/St. John.

We do have a little bit of comparison among the three areas, but they differ in the priority, or the ranking priority, that is given by each of the DAPs.

As I said, we have to finalize this and bring it to the DAPs for their final consensus, in terms of what their model is going to be, and be presented to the council, and we have already passed along some of the information on the scorings that are being used, so that we can start thinking about how we are going to analyze the data, but the one thing that has really come out of the DAP's conceptual models has been that the council is already addressing it, and it's putting efforts into addressing the issues that are of concern to the DAPs.

Case in point is what Diana described in terms of the MPAs and the evaluation of these MPAs, because it's not only that they are there to manage one species, but that they are in fact protecting so many other species, and that's something that they are very concerned about, because there are enough regulations, from their standpoint, but they just need to be enforced, and people have to comply with many of these regulations, and that's one of the main points that came out throughout the development of these conceptual models. With that, I think that we can take any questions, if there are any. Thank you, Mr. Chair.

SENNAI HABTES: Thank you, Graciela. With that, we'll open up to discussion, questions, or comments. As always, if you can, raise your hand, using the reactions tab at the bottom of your Zoom screen. If you're unable to do that, place it in the chat, and I will recognize you to speak as I see them. I am not seeing any questions and so I think we can move on. Thank you for the updates, Graciela, and I would say it does -- The difference, in terms of how components are ranked are pretty interesting across the different areas, and it gives us some interesting things to think about in moving forward with the development of the ecosystem-based management plans. Going

forward, I believe, next up, we had the updates on other efforts, and do we have Miguel back on?

MIGUEL FIGUEROLA: Yes, and just this very second I joined through the phone line with you.

SENNAI HABTES: Great. Did you want to go ahead and give us some updates, based on the presentation?

OTHER EFFORTS: MBON USVI, MBON MESOPHOTIC DATA

MIGUEL FIGUEROLA: Yes, and that was good timing. If you recall from yesterday's presentation, at the end, in the next steps slide, I mentioned that there were several datasets that have been identified as potential contributions to the MBON data portal, and so --

SENNAI HABTES: Before you continue, just so you know, a lot of the people who were on yesterday are here, but we do have some new people that may not have heard your presentation yesterday, and so if you could give a quick overview of what you're working on, so they have an idea, and then continue on with the merging for the two things.

MIGUEL FIGUEROLA: Okay. Thanks a lot, Mr. Chairman, and so, yes, yesterday, I had the opportunity to present my work with the Marine Biodiversity Observation Network, and my name is Miguel Figuerola, and I am working as a contractor, a coral reef specialist, with CARICOOS and with the Puerto Rico Department of Environmental and Natural Resources.

The goal of this project is to target biodiversity datasets that are important to stakeholders in the Caribbean, stakeholders meaning people in the scientific and managerial community, to target these datasets to integrate them into global repositories following a standardize format known as the Darwin Core Standard.

From there, digesting this data into a web-mapping application, which is available in the MBON data portal that NOAA IOOS has been developing with Axiom Data Science, which is a company that provides data and web development services to NOAA IOOS, and so we translated one data --

GRACIELA GARCIA-MOLINER: Did we lose him?

ALIDA ORTIZ: I think we lost him.

SENNAI HABTES: I don't see him -- You lost your sound, Miguel.

GRACIELA GARCIA-MOLINER: I wonder if he is driving around. I just sent him a text.

SENNAI HABTES: Why don't we give it about thirty seconds here, to see if he comes back on, and, if not, we can move on to the next update and return to Miguel when he comes back.

GRACIELA GARCIA-MOLINER: We see him connecting. Is that you?

MIGUEL FIGUEROLA: Yes, and my call dropped. Sorry.

GRACIELA GARCIA-MOLINER: Okay, and so you're on.

MIGUEL FIGUEROLA: Okay, and so where was I? I was talking about the project, and so the status right now is -- Did you hear the part about the web mapping application?

GRACIELA GARCIA-MOLINER: No, and I think that's where you dropped off.

MIGUEL FIGUEROLA: Okay, and so NOAA IOOS is the U.S. node for the Marine Biodiversity Observation Network, and they are kind of managing the network within the U.S., and they have developed a website to make available different datasets that are relevant for the different MBON regions, and so we are trying to develop the Caribbean MBON, and we started by integrating a long-term coral reef monitoring dataset from the Puerto Rico Coral Reef Monitoring Program implemented by Dr. Reni Garcia and Stacey Williams, and so the data is now available to the MBON portal, and you can visualize it through the web mapping application that they built.

That's what yesterday was mostly about, and then we discussed about next steps, and so we're trying to identify additional datasets that are relevant for stakeholders in the Caribbean region, and we have identified a few potential, and so, right now, we are working with the USVI territorial Coral Reef Monitoring Program, so we can expand to the Virgin Islands the biodiversity observations, and so the first step is to translate the original database to this Darwin Core format, and the second step is to make sure that it is approved and uploaded to the global repository, and this will be the global biodiversity information facility.

They kind of put the green check on the database, which follows the Darwin core, and, from there, the data can be accessible to

developers who actually ingest the data into this web-mapping application, and, in the case of the U.S. MBON, it is Axiom Data Science, the company, who is actually doing that, and so, with the PCRMP data, we are working on the translation to Darwin core, and we're about 60 to 70 percent done with that translation, and we will be submitting it.

Our timeline is hopefully by the end of March that we have submitted the first PCRMP Darwin core sampling database there, and, once it's there, it should be available to the public. After that, we will start the process with action to make the data also available in MBON.

We've also got another dataset that Graciela brought to my knowledge, which is the mesophotic coral reef data that Dr. Reni Garcia has been collecting in Puerto Rico and the USVI, which I think would be really nice to visualize, and there are a couple of years of that data, Graciela?

GRACIELA GARCIA-MOLINER: We have since 2004 or 2005 for about six sites, six mesophotic areas, and two times when they have been able to compare sites, and so we have a bit of data.

MIGUEL FIGUEROLA: Reni already sent me the metrics with the data, and I haven't had a chance to look at that and check on the status, but it seems it's already compiled, and that's a huge advantage in making the data publicly accessible, but the -- In the USVI, they did a great job compiling that data, and it's very nice, and it's already pretty much standardized, and everything looks pretty clean, and there's just a couple of things that I am doing in the QA/QC process, and it should be --

We should be submitted the data in the coming months, one or two months, and it's great, because some students from the University of the Virgin Islands learned about this effort, and they have been integrated into the QA/QC process, and they also are formulating research questions, to give more relevance to these datasets, and they will be doing their own data analysis and try to use the visualization tool in MBON to -- Well, exactly that, to visualize the results of the analysis spatially, and so we are excited that we are integrating a new generation of researchers into this program.

In the long term, as I mentioned, we will have developed what will be the Caribbean MBON, which, right now, it's not really -- But I think we will have started on the right path with these coral reef datasets, which are really important for biodiversity, obviously, given the number of species, and we are

interested in the SEAMAP data for the Caribbean, and I know that the council -- I learned today that there has been a big compilation effort led by Dr. J.J. Motta, and I really would like to further discuss if there is any plans to make that data accessible and put it through some translation process and maybe map it in the future, so that we could better align objectives and identify if there is any support from CARICOOS that can be given, and so that would be my update. Any questions?

SENNAI HABTES: Great. Thank you, Miguel. I see that Graciela has her hand raised, and so, Graciela, you are recognized. Go ahead.

GRACIELA GARCIA-MOLINER: Miguel, you remember that first workshop that we hosted, and did we have anyone from the Department of the Interior or the National Parks Service or the U.S. Geological Service, any that you can remember?

MIGUEL FIGUEROLA: I think there were from the NPS in the USVI, and I think there were some representatives of the parks, yes.

GRACIELA GARCIA-MOLINER: But you haven't had any specific connection with them?

MIGUEL FIGUEROLA: No, and nobody has approached me so far, and I am aware that the National Parks Service has their own data collection programs, and there should be some data available, and, actually, this week, I was in a meeting with the national MBON network, and, in the discussions, it came up, like what about the National Parks Service, and we know there are several important monitoring programs going on in there, but they don't have like a clear path forward of sharing their data, and maybe the MBON network could take advantage of that and provide a way to do that.

I haven't got any approach yet, but some of the data in the -- I know it comes from Buck Island and the MPA network, and but, yes, I mean, your question obviously comes from that intent, that there is data from these agencies that may be around.

SENNAI HABTES: Does anyone -- Does the National Parks Service, for those of you who are with NOAA, do you guys know if they put their data into like the CORIS system, like through the regional portals for the USVI for that?

GRACIELA GARCIA-MOLINER: Mr. Chair, I really don't know, but one of the things is also that the Department of Interior's Coral Reef Task Force is co-hosted with the Department of

Commerce, and so I will write down the question and find out if there is any way of us tracking the information that way.

SENNAI HABTES: I mean, I know they put the reports in there, and I don't know -- They have a lot of graphical data, but I don't think the metadata and the actual abundance for fish or corals from their sites are in there, but they do have long-term monitoring, and so those would be good questions to find out, and, if they are putting it into that system, it's likely in a similar format to what TCRMP has that you've been working on, Miguel.

MIGUEL FIGUEROLA: Okay. Great. I can also write to Jeff Miller from the National Parks Service in the Buck Island area, and maybe he can direct me toward any archives.

Also, I wanted to mention that we understand that there are many, many datasets around that have not been through a rigorous QA/QC or compilation process, and that is really common, and that's way, way more common than I thought, and so, if there is any data management support that you need, please let me know, because we could identify resources to do that and help in the compilation of datasets that are just lying around.

I know this is a very important thing for the Caribbean Fishery Council, as you guys plan for ecosystem-based management of fisheries, and so, if there is any help we can do in that realm, then let me know.

SENNAI HABTES: Great. Thank you, Miguel. If there are -- Does anyone have any further questions or comments for Miguel? I do not see any hands raised. Thank you, Kelly. I see that she says that I don't believe so, but NPS is a different department, and they're DOI and not DOC, like NOAA, and so, with that, I think we can move on to the last update, and, Graciela, correct me if I'm wrong, but this was a discussion point, rather than an update?

RELATIONSHIP AND SYNERGY AMONG ALL POINTS ABOVE AND IBFMPs

GRACIELA GARCIA-MOLINER: That's correct, and, after we've looked at all these updates and all these efforts that are ongoing, where are we going with all of these efforts, with all of these datasets, with all these issues that we have raised during the day?

SENNAI HABTES: With that, I guess I will open up the floor for comments. Again, what I would ask is that people raise their

hands, or type in the chat, and, obviously, if you have a point that you want to bring up directly related to something that someone just said, feel free to comment on that, but, if it is for longer questions or comments, please use the hand-raising and reactions or in the chat structure. With that, let's open the floor for a discussion on the relationship and synergy among all points above and the island-based fishery management plans. Can we do twenty minutes on that, at the most, Graciela, so we can try and move on to the other aspects?

GRACIELA GARCIA-MOLINER: Yes. As you see fit.

SENNAI HABTES: Okay, and so the floor is open for comments, concerns, questions. Graciela.

GRACIELA GARCIA-MOLINER: I will begin. I mean, one of the main issues, and this is something that J.J. brought up, and I can't remember if it was yesterday or this morning, and it's been a long week already, but we need to also talk about where are we going to host all these datasets and how are we going to put them in a place that is accessible to people, and, not only that, but to curate the data as they come in and as they improve and as they change.

I have no idea, because I am not a data management person, and I think that we need something like storage, and we need to come up with a place where we're going to host all of this that is going to be needed for the EBFM, and that's a concern that I have, because it's going to be -- I mean, right now, everything is still under control -- Each one has control of the datasets and everything else, but I am thinking in terms of when everything comes rushing in, and how are we going to store it, and how are we going to deal with that?

SENNAI HABTES: Kevin, you have your hand up, and is that in response to Graciela's question?

KEVIN MCCARTHY: I am not suggesting that the Science Center be the repository for these data, but what I would say is that there is an entire Fisheries Statistics Division, and this is one of the things they do, and they deal with large datasets, and they deal with databases, and they deal with database development, and I would suggest that you could talk to some of those folks to help inform you of the scope of the problem and so that you have a real handle on the kinds of things that are involved in the enterprise that you're going to start up, this data warehousing effort.

I think going in with a bit of knowledge will be very helpful for you, as you try and identify ways and means to store all these data, because I am like you, Graciela, and I am not a database manager, and I have -- I have picked up a little bit through diffusion, just by being in that division, but in no way, shape, or form am I database guy.

My connection there is just pulling the data out of the databases, and I am involved in another project that's building a database, and that's a single sort of data, a much smaller project than what you're talking about, and it's been a really big undertaking, and we didn't know what we were getting into when we walked into this, and so I would recommend maybe talking to some of the Science Center folks, and I can give you contact names, if you like, and just have a conversation, or a series of conversations, with them, and that might really help you understand the scope of the problem in some real, meaningful way, rather than just, hey, we want to do this thing, and we don't know where to go from here, and they might be able to give you some instruction.

SENNAI HABTES: Thanks, Kevin. Did anyone have direct follow-up to that? If not, I am going to move on to Tarsila, who had another question.

TARSILA SEARA: I think J.J. had his hand up before me. J.J., do you want to go first?

JUAN CRUZ-MOTTA: Thank you, Tarsila. You are always so kind. Actually, it's related to what Kevin was saying, and that is I totally agree with Kevin on the fact that we need expert advice on this, and database management is a whole discipline in itself, and we really need guidance from the experts.

Another thing that I want to add to that, and, actually, I think Kevin's recommendation is great, to go to the people at the Science Center that know specifically about that, and the second thing that I want to reiterate, from something that I said yesterday, is whenever -- I don't know how to start this discussion, but one thing that I will insist is that, whenever we decide where we're going to put this data, one of the main criteria should be a place that will ensure long-term accessibility and a place that we know that will receive the necessary funds to curate these data for at least ten years, and, having said this, also, other criteria will be that that place can be very flexible in getting -- Once they have got the initial lump of data, then be open to keep receiving more data, constantly, because, ideally, it's not like, okay, we compile

all this data, and that's it.

The idea is, once we compile that data, that future data that is produced by the different projects keep going to that place and that the place is keen to keep receiving that data, and those are the two comments that I wanted to say. Thank you.

SENNAI HABTES: Thank you, J.J. Tarsila.

TARSILA SEARA: Just sort of following up on this data conversation, for the Lenfest project, for instance, we are compiling a number of data, and they're socioeconomic, and all of these datasets that we're dealing with are confidential, right, and so I know that there are ways that we can remove confidential data and make datasets available, but, aside from the obvious sort of identifiers, like names and things like that, I know that there are other criteria that would make a dataset confidential.

I was wondering if anybody knows if there are guidelines, or any sort of help, to sort of deal with this issue of confidentiality and if we would be able to make these datasets available in this, wherever it is that we decide to put these datasets, so that the socioeconomic data is well represented, and so that's more of a general question, if anyone has any input on that.

SENNAI HABTES: Tauna, did you have an answer to that question, or did you want to ask another question?

TAUNA RANKIN: Not really. I mean, from the little I know, I think, within NOAA, they often try to aggregate the data to accomplish that, but I am not the best to talk to, but I could potentially come up with some names, because you definitely come across this in NOAA a lot.

SENNAI HABTES: I assume you have another question, and so I'll have you hold on.

TAUNA RANKIN: Sure.

SENNAI HABTES: Then I will come back to you. Kevin, do you have an answer, or is it a separate line of questions?

KEVIN MCCARTHY: Well, it gets to Tarsila's confidentiality issue, and so I am certainly not an expert in this either, but, generally, the rule that we use in the Science Center, the Science Center in the Southeast, is that -- They call it the rule of three, and so, if you had data from a port, landings

data from a port, those data have to come from more than three individuals, whether it's three fish houses or three fishers or whatever it is, but the lowest common denominator has got to be three or more identifiable entities.

There are people in the agency who know a heck of a lot more about this than I do, because that's sort of, again, the rule of thumb, and it's pretty straightforward, but there are weird exceptions and all kinds of other things, because there is data that, if it came out of a survey, there is slightly different rules for that than if it came out of logbook reports and that kind of thing, and so we could, again, have those conversations with people in the agency that are the experts.

I would also say that, if the data originated from NOAA, and it is considered confidential, those rules continue to apply forever, and so there would have to be some conversations with the agency if, for example, some of the landings data that are going to be supplied ended up on some kind of system where other people have access to it, other people being the person beyond which it was originally given who fell under a non-disclosure agreement, because of the confidentiality of the data, and so Tarsila is sort of -- It's important, but it's sort of a whole other realm in which you all will have to start considering things, and, again, there are people in the agency that are much more expert than I am, but, yes, it will be important to have these conversations as you move forward with constructing this database system. Thanks.

SENNAI HABTES: J.J., is it a follow-up or a new question?

JUAN CRUZ-MOTTA: Sorry. I forgot to lower my hand. My apologies.

SENNAI HABTES: Okay. Tauna, before we get to yours, I just have a couple of comments. I think, one, it seems to me that, if we're going in this direction where we're going to be warehousing all this data, it would be useful to create maybe a sub-committee within the TAP to deal with this particular issue.

My recommendation is that, if it is biological data, there are existing warehousing and database structures, such as the MBON data portal that we were just discussing with Miguel, whom we could probably reach out to and ask them if they would be willing to help us host data.

With biophysical data, or physical or oceanographic data, we have an IOOS RFA, or regional association, here in CARICOOS,

whom I'm sure we can find ways to work with, in terms of helping us host the data, if it goes through their data management and condition protocols, or their DMAX, and they are always interested in finding other ways to host the data.

In terms of human subjects data, you have to -- Anytime it's shared beyond that researcher agreement that is made where you're hosting the data, anything that is what is considered human identifiable information has to be removed, and so, with things like landings data, positions, which could be used to link to particular fishermen or boats, has to be removed, which is why it's often only shared in aggregate.

If we are going to be using this data amongst the researchers, to be put into things like the conceptual models, that is one thing. If it's going to be shared in any other output beyond model aggregation, then we have to create data management protocols and plans that allow it to be shared in aggregate and remove any identifiable information, and so, if there's where we're going, my recommendation would be that we set up a sub-committee to develop the policies for that and work with existing data hosting platforms, rather than reinventing the wheel. Are there other comments relating to that point? If not, I am going to move on to Tauna, who has been patient.

TAUNA RANKIN: No problem. I guess I am mostly echoing Kevin's point about consulting some folks at NOAA, and I recognize that a lot of the long-term datasets that are at NOAA have to be archived at the National Data Center, and projects, research projects, monitoring projects, that are also funded by NOAA Grants, hypothetically, could also be archived there, and so a great deal of the data could reside in NOAA, and then maybe it's more about having a tool that takes the data from the archive and translates it into a useable format, and so that's another option.

It's not maybe completely comprehensive, because I don't know how much other data is out there that is needed, but my last point, I guess, is just to bring the ecosystem status report into the discussion, because, ideally, if you could set up that database to pull data for that ecosystem status report, that will improve chances of being able to have regular updates on that report. I think that's about it.

SENNAI HABTES: Okay. Any other comments or questions or concerns? I mean, I feel like it's been a fruitful discussion, but I'm not sure where we ended up on it though. I think, particularly for me, I think it would be helpful, maybe, to get

an idea from Lenfest what the needs are going to -- Your final needs regarding the databases to be used in the model, meaning what format they need to be in for that, as well as what type of access you're going to need, and, similarly, for the ecosystem status report, as Tauna was mentioning, what type of access and information is going to be needed from these datasets, and, also, what datasets.

GRACIELA GARCIA-MOLINER: If I could, Mr. Chair, you could submit it as part of a motion, or a recommendation, to the council to set up a sub-committee look at these policy issues with the databases, et cetera, and, that way, you can -- I don't know exactly how we would go about this, and probably someone from each of the groups that are leading the efforts, and so it would be Lenfest for the ESR, us for the FEP, the MBON, to get together and everyone bring to the table what is needed, in terms of space and in terms of long-term monitoring of the data and curating it, and so probably a recommendation to the council that it looks like there is a lot of effort going into doing this datamining and cleaning up all these databases that could be used for a number of different analyses, and have the council create this little sub-group from the different advisory panels that it has and see where we go from there.

I think it would -- Probably Miguel Figuerola would be the best person to lead an effort like this, because he's already been through that with MBON, and so we can -- If you make a recommendation as such, then we can just get together and do it.

SENNAI HABTES: Okay. Should we put that to a vote? **Hearing no objections, I move that we send a request to the committee, or to the council, to develop a sub-group on data archiving, assimilation, and management.** Is there a second for the motion?

ALIDA ORTIZ: Second.

SENNAI HABTES: Thank you, Alida. It's seconded. Let's have a voice vote. **Any in opposition, or any abstentions? Please say aye or I abstain.**

EDWIN CRUZ-RIVERA: A point of order.

SENNAI HABTES: Go ahead, Edwin.

EDWIN CRUZ-RIVERA: Is it possible for you to present the motion, being the Chair at the same time?

GRACIELA GARCIA-MOLINER: Yes, I think you have to pass on the

baton.

SENNAI HABTES: Good point. Thank you, Edwin. Can someone please motion that we create a sub-group?

EDWIN CRUZ-RIVERA: I've got your back. I would like to present a motion to create a sub-group to analyze database storage, in the long term.

SENNAI HABTES: Thank you, Edwin. Alida, do you still second?

ALIDA ORTIZ: Yes, I still second it.

SENNAI HABTES: All right. Thank you, and so let's go ahead. Do we need any further discussion on the matter? Hearing none, I say we put it to a vote. We'll hold off for all in favor and, instead, anyone who is in opposition, please say nay, or, if you feel like abstaining from the vote, please say abstain. Hearing none in opposition, or any abstentions, the vote passes with unanimous approval from the TAP. I guess, Graciela, you and I can work on writing it up as a request of the council.

GRACIELA GARCIA-MOLINER: Yes.

SENNAI HABTES: Okay. Thank you. With that, I think we can close that discussion point and move on to the next part of the agenda, unless anyone has anything else they wanted to bring up. All right. Hearing none, let's go ahead and move on to Development of the Fishery Ecosystem Plan Update as well as -- Are these all one, Graciela, or these are separate people presenting, in terms of the updates?

GRACIELA GARCIA-MOLINER: The update for the island-based -- Let's see. Where are we at?

SENNAI HABTES: We had, from 1:30 to 3:00 p.m., Fishery Ecosystem Plan Update, Purpose and Need, Goals, and Objectives and the Management and Legal Background Update.

GRACIELA GARCIA-MOLINER: I can address that very quickly, but I thought that we had also talked about bringing in the timeline, and so I don't know if you want to wait for that until the end. We can go ahead and discuss it now.

SENNAI HABTES: We can discuss it now, and I think that's --

DEVELOPMENT OF THE FISHERY ECOSYSTEM PLAN

GRACIELA GARCIA-MOLINER: Okay, and so you already -- The TAP had already looked at the goals and objectives for the FEP and developed the actual outline for the FEP, and we are trying to fill in the blanks in that outline, but we haven't -- We don't have specific changes or issues with the goals and objectives that the council has presented to the TAP.

Basically, I mean, the update is that we are working with the FEP, as we had looked at it last time, and what's available in the Google drive, that we had created a set of the need and goals, the goals and objectives, for the fishery ecosystem plan, but we haven't received any further guidance, I should say, regarding these topics.

I don't know if anyone from the TAP has had any change of heart from the last time that we talked about this or if there are new ideas that need to come up, one of them being that usually, from what J.J. said this morning, and following the schedule of the Lenfest, usually your goals and objectives come after you have done a little bit of work, but i think that the goals and objectives are pretty straightforward, and, I mean, it's nothing out of the ordinary.

That's kind of the update. Do you want to see what -- You all should have received a copy of the goals and objectives and the outline. We can bring it up, if you want.

PURPOSE AND NEED/GOALS AND OBJECTIVES

SENNAI HABTES: J.J. has his hand up, and so let's go ahead and have J.J. speak. While he's doing that, Liajay and Graciela, if you could bring up the goals and objectives that we all agreed on, in case there are amendments or updates that people wanted to make. J.J., you're recognized. Go ahead.

JUAN CRUZ-MOTTA: Thank you. I always had that question, and I always thought that we had to finish the conceptual models and define indicators and threats and then we will work on the objectives, but that was the first thing we did, as a group, and then it's a question, and it's not a concern, but, I mean, did we do okay, or should we work on those objectives again, after we go through the steps that I just mentioned, or are we okay with these objectives and goals? As I said before, it's a question, and I am not sure if we can revisit that after we finish the conceptual model and identifying indicators and threats, and so it's an open question to anybody that has an idea on that. Thank you.

SENNAI HABTES: To my knowledge, J.J., we can update them and represent them to the council. At present, from my last presentation to the council, we are still waiting for them to give us recommendations or edits or changes that they feel necessary, as we haven't heard back on that particular thing, and correct me if I'm wrong on that, Graciela, but I don't believe they have given us any more guidance on the goals or updates that we've proposed.

GRACIELA GARCIA-MOLINER: That's correct.

SENNAI HABTES: So I think, for now, they are acting as placeholders, to have some sort of guiding document for things that we can work on in the interim, and I think that's fine.

JUAN CRUZ-MOTTA: Thank you. That answers my question. Basically, we can revisit them, if necessary.

SENNAI HABTES: We can. That's correct.

JUAN CRUZ-MOTTA: Thank you.

SENNAI HABTES: Okay, and so I'm not sure who was first, Ori or Tarsila.

ORIAN TZADIK: You can let Tarsila go first.

SENNAI HABTES: All right, and so, Tarsila, you are recognized.

TARSILA SEARA: I will be very brief, and I just really wanted to reiterate what J.J. said about following that methodology in the Lenfest cycle and just express my opinion that I think we should revisit the goals after we have had a chance to analyze the conceptual models.

I think it's not a matter of the goals aren't good, or that we should throw them out, and, as you just mentioned, it is possible for us to revisit, but I just wanted to sort of express my opinion that I think that would be a very good approach.

SENNAI HABTES: Thank you, Tarsila. Ori.

ORIAN TZADIK: For the record, I definitely agree with J.J. and Tarsila, and I think we should definitely revisit these goals and objectives once we've moved along in the process a little bit, and that's definitely a good idea.

I also just wanted to point out though that these goals are

pretty high-level stuff, and they're pretty broad, which I think is fine, and I am wondering, whether now or later, we should include some goals that speak to the language of kind of -- Also still pretty general, but things like -- Including things like from the National Standards, for example, and is it our place, when we're talking about ecosystem-based fishery management, to put in a goal like National Standard 1, which is to prevent overfishing, and ecosystem overfishing, or is that more suited toward the IBFMPs?

That's an open question, and I wonder if -- I mean, there are some good, general guidance documents, such as the National Standards and things like the NOAA EBM policy guiding principles, that I wonder if we borrow some of that language and include it in our own goals, and, again, that's an open-ended question.

JUAN CRUZ-MOTTA: Thank you, Tarsila and Ori.

GRACIELA GARCIA-MOLINER: Mr. Chair, what you have on the screen is the draft recommendations to the council that you had worked on, and, again, it's achieve optimum yield and things like that that are borrowed from the MSA.

One other thing that we've been working on is that we're trying to look at the different goals and objectives from the different projects that are ongoing, to see where things intermingle, et cetera, and so we're keeping track of those, but the ones that you presented to the council are these, the ones that you're seeing on the screen now.

SENNAI HABTES: Thanks, Graciela. J.J. and Ori, you both still have your hands up? Did you have other comments to make?

JUAN CRUZ-MOTTA: No. Thank you.

SENNAI HABTES: Does anyone have amendments that they would like to propose, changes or edits, towards the draft goals that we currently have? Hearing none, I feel like we're at a place where we can leave this as-is, until we get more information coming in from the Lenfest and the ESR projects that are ongoing that can help better inform the goals and sub-goals, or until we get more feedback from the council.

With that, I will close discussion on this particular aspect and move on to the next, unless there are things that people wanted to bring up, and I believe that was the Management/Legal Background Update, and I guess that's you, Jocelyn?

MANAGEMENT/LEGAL BACKGROUND UPDATE

JOCELYN D'AMBROSIO: I don't have anything else to add.

SENNAI HABTES: Okay. I think we can then move on to the Island-Based Considerations Update, which is Maria Lopez from SERO. Maria, are you still on and available?

MARIA LOPEZ: Yes, I am here. Actually, I had just raised my hand, because I had questions related to the FEP and a little bit about the timeline, because, given that this FEP is going to be used as a tool for guiding management actions in the island-based FMPs, I was kind of wondering what is the idea of the TAP, in terms of timing for completion of the FEP, because, I mean, obviously, there are a lot of activities going on right now that are still going to take some time, but this one of the activities that included in the roadmap for implementation.

Then my other question was about writing assignments, and, once the FEP is starting to take some form, and, I mean, there is already some outlines out there, and who is going to be writing the FEP? Have you guys talked about that? What is going to be the role of the TAP in the writing process?

SENNAI HABTES: Thank you, Maria, and those are two great questions. I think, for the first one, this might be a good time to bring up the draft timeline that myself and Ori had kind of worked on for general discussion within the group, and so, Ori, if you have that handy, would you maybe share it on the screen, so that everyone can see?

ORIAN TZADIK: Give me a second, and I will find it.

SENNAI HABTES: Sure.

GRACIELA GARCIA-MOLINER: Mr. Chair, if I may, just as he's getting that, one question is Maria can give us a little update on the timing of the island-based FMPs, because that's really ongoing right now, and so if we can just address the actual where are we at in the island-based FMP rulemaking process.

SENNAI HABTES: Sure. Let's do that first then, Maria, if you want to go ahead and give us the -- Then we will move on to your questions after that.

ISLAND-BASED CONSIDERATIONS UPDATE

MARIA LOPEZ: Thank you. As you know, we have those three new island-based FMPs that were prepared for the fishery resources in the Exclusive Economic Zones of each of St. Thomas/St. John, St. Croix, and Puerto Rico, and these plans were developed by the council and were approved by the Secretary of Commerce in September of 2020.

Because the management shifted from that Caribbean-wide focus to that island-specific focus, and, as you know, we have the four species-based FMPs that we fish, the queen conch, spiny lobster, and the corals and invertebrates, which we are currently still operating under, until those new FMPs are in place.

The regulations that are going to be implementing those plans, they need to be substantially changed to incorporate this new management regime, and so we're talking about a very extensive codified text that is still under review.

At this time, we are making progress to have the proposed rule published, and keeping in mind that right now we have some regulatory freezes and other delays that may be taking place, because of the transition in the new administration, but this is still ongoing, but our goal is to have the plans fully implemented in the summer, and so this is where we are aiming from, and we're going to do all that we can to get that done, and so that's our update with the island-based FMPs.

However, in the meantime, because, obviously, we don't have any time to waste, the council has been already discussing several topics for potential amendments by island, and the staff has been working on draft amendments to those island-based FMPs, even if they are not implemented yet, so that, by the time that they are implemented, we already have a lot of work done, because, as you know, this regulatory process takes a long time.

Among some of these amendments are the update to the spiny lobster reference points, based on the stock assessment that was recently conducted, and also an amendment to the three plans to allow for the use of specific buoy gear that is traditionally used to fish for deepwater snapper in Puerto Rico and the USVI.

Other actions that the council will be working, which is also related to gears, to the gear types, is an amendment that would evaluate the use of gear types by certain fishers, and this is particularly important, because we have new species, such as coastal pelagics, that are included now for management, and there would have to be a revision, and also because the use of gears have not been evaluated in a while, and we want to make

sure that our regulations reflect the reality of the fisheries that are occurring in Puerto Rico and the U.S. Virgin Islands.

Another very important action that is the priority of the council, and we just heard about that there is some efforts going on, is that evaluation of the closures and areas and also the compatibility of regulations between federal and territorial waters.

We're expecting that council members will bring up many other topics for the council to consider and to bring to their SSCs and to advisory panels, so that they could evaluate them, and that could potentially result in amendments to the island-based FMPs.

Once the information has been compiled and analyzed, through all the efforts that we have been discussing today, as well as the availability of this fishery ecosystem plan for the U.S. Caribbean, we were expecting that this will support the FMPs and help us make informed management decisions. The bottom line is that we're aiming for the summer, but, in the meantime, we're working on many other things. That is my update.

SENNAI HABTES: Great. Thank you, Maria. Are there questions or concerns or things that anyone wants to bring up to discuss in relation to Maria's update? All right. I guess, with that, why don't we go ahead and bring up the checklist? Ori, if you want to go ahead and just give a quick overview of activities and dates, and then we can have some discussion on that, or proposed amendments to that, and, if everyone accepts that, or is fine with those, we can ratify that as our checklist, development checklist, moving forward.

ORIAN TZADIK: Thanks, Sennai. Just to point out that these are all loose completion dates, obviously, and that's why it says, "expected date of completion", and they're all just the months of the council meetings, and so that's kind of why the breakdown is like it is.

If everybody wants to just take a minute or two to kind of read through it, and I'm not going to just read the table here, but this generally follows the blueprint that we've all identified and agreed with, moving forward, and it kind of mirrors some of the stuff we had in the early meetings, before this was the EBFM TAP, and we were known as the FEP Working Group, I believe, or something like that, and it's just kind of finally putting it all in one place. I offer it to you all to take a look and maybe have a discussion from here.

SENNAI HABTES: Ori, for those people that may not be in front of their computers, it might be just a good idea to run through the list.

ORIAN TZADIK: Fair enough. We had to revise and draft the EBFM TAP goals and objectives, and that was presented to the council in December of 2020 by Sennai. By the next council meeting, April of 2021, we want to have a draft FEP goals and objectives, which, again, I believe we have already, and then to continue to collect and analyze existing datasets, and this was -- Expected products of this would be the centralized repository of data, summary analyses of pertinent datasets, and potentially peer-reviewed publications, of which we do have one from this group already.

Then, by August of 2021, we want to complete all the conceptual models, and, again, that's loose. I know that the Lenfest folks are looking right around that time to target their finishing date, and so, obviously, if that goes past that, that's fine. By December, we would like to meld all the conceptual models to create island-specific models, and then, by April of 2022, use the conceptual models, and this is, again, loose, because I know that Tauna has different ideas of how she's going to -- Of the risk assessment that she's going to present tomorrow, and so the idea is that, by April of 2022, we'll have some sort of risk assessment in a draft form.

By August of 2022, we would identify the ecosystem indicators, and, again, on this checklist here, it says using the conceptual models and Lenfest products, but it should probably include Kelly's and Mandy's work, for example, and so, again, the important part there is the ecosystem indicators by August of 2022.

By December of 2022, we want to develop strategic objectives, prioritize the objectives, and then outline the vision for the FEP in the CFMC process, and so I think that this is the point where, down the road a little bit, that we don't say that we're going to continue to modify the goals and the objectives and the outline and stuff. It sounds like, at that point, we've got it all kind of ironed out.

Then, again, just creating these operational objectives with concrete action items, and then, by April of 2023, we want to develop performance measures and draft a management strategy that can be used situationally during CFMC decision-making, and, again, this is all just following that blueprint and ideas of

how we can kind of put this stuff into action, and, also, by April of 2023, develop a feedback mechanism for adaptive management, and that's key here. We haven't spoken too much about that, but I think everybody agrees. August of 2023, we'll have a draft of the FEP, and then, by December of 2023, we submit the FEP for final council approval.

SENNAI HABTES: Thank you, Ori. I think, at this point, we can open it up to discussion. Does anyone have questions or concerns or amendments? First up is Stacey.

STACEY WILLIAMS: Can I just make a suggestion? I know that these dates are kind of tentative dates, but, for Activity Number 3, April of 2021, maybe push that date back, because we are still collecting data and analyzing it, and I don't know if these dates are -- If we're going to be held to these dates in some manner, and so I would suggest maybe extending from like April of 2021 to maybe August of 2021, to give us a little bit more time.

ORIAN TZADIK: How does that look, Stacey?

STACEY WILLIAMS: That's good. Thank you.

ORIAN TZADIK: It's put on there as continue to collect, and so I don't think -- It was written that way on purpose, and I don't think it was meant to be a hard stop at April.

STACEY WILLIAMS: Yes.

SENNAI HABTES: Okay. Apologies, guys. I missed the order of the hands, and I think J.J. was next.

JUAN CRUZ-MOTTA: Thank you, but no problem at all, because Stacey just made the point that I was going to raise, but now I will take advantage of asking one question. Have these dates been reviewed after COVID, or were those the dates that we set up about a year ago?

ORIAN TZADIK: Thanks, J.J. A little bit more background, and I apologize for not giving this earlier, but this is -- These steps were discussed a long time ago, pre-COVID and everything, but the dates -- We never had any dates, and so I got together with Sennai, I don't know, maybe two or three weeks ago, or maybe before that, and just to kind of -- I had put some suggested dates on these and modified the activities slightly, and then, with Sennai, we looked at it, and we discussed the dates, and we changed the dates around a little bit, and then

with the idea of bringing it forth to the committee right now, like we're doing.

JUAN CRUZ-MOTTA: Thank you, Ori.

SENNAI HABTES: Graciela.

GRACIELA GARCIA-MOLINER: Ori, since you are typing in, can you type in, in Number 7, the ESR, if they're okay with that? Where would we put the -- I am just documenting this, because I think this is great, but the MBON data products, and so I even would push back the data collection to December of 2021, and the reason for that is because things are getting really, really behind schedule, with the situation.

Where do we put -- I just want to make sure that we have all the players that have come forth during this meeting in this, and so MBON needs to be included, probably, in the data collection, maybe, or, actually, right there, the MBON, et cetera.

ORIAN TZADIK: Lenfest and --

GRACIELA GARCIA-MOLINER: Et cetera, and so we can look that up, and so I just wanted to make sure, and I think that's what I have. The other thing is look at where we have the goals and objectives, and we just talked about moving that back, because then we'll need to -- In April, we can present them to the council as they are, but J.J. just said it would be best to have data looked at, et cetera, before we review them, and so April of 2021 and then August of 2021.

JUAN CRUZ-MOTTA: Graciela, I think that is covered in Point Number 8, if I understood well what Ori said before, and is that right, Ori?

GRACIELA GARCIA-MOLINER: The overall things that we have and then tweak them in Number 8?

JUAN CRUZ-MOTTA: Yes, and that's what I understood, unless I got the wrong idea.

GRACIELA GARCIA-MOLINER: Okay.

ORIAN TZADIK: That's correct, and, I mean, Point 2, 1 and 2, are draft, and then, by 8 and 9, the idea is that we've got -- That's why these strong adjectives are in there, like "concrete action items", but, yes, absolutely, J.J.

JUAN CRUZ-MOTTA: One question, Graciela, and Point Number 3 wouldn't be MBON, and it would be more like the platform to house and visualize the data, rather than -- I didn't understand there, because the projects will provide the data, and then we will put in MBON.

GRACIELA GARCIA-MOLINER: Okay, and so it would be under the centralized repository of data, and that would also include the conversation that we had about creating a sub-committee to deal with the --

JUAN CRUZ-MOTTA: Yes, and perhaps put like, examples of MBON and CARICOOS and all the things that we have mentioned here, and put an "e.g.", because the final decision will be up to the committee, right?

GRACIELA GARCIA-MOLINER: Yes.

JUAN CRUZ-MOTTA: Thank you.

GRACIELA GARCIA-MOLINER: Thank you.

SENNAI HABTES: Okay. Is that it from you, Graciela?

GRACIELA GARCIA-MOLINER: Yes.

SENNAI HABTES: Okay. Jocelyn has her hand raised. Jocelyn, did you want to make a question or a comment?

JOCELYN D'AMBROSIO: Yes, thank you, and I just had a question. One was about 3, which we've just been talking about, and so these edits really help, but I just wanted to confirm and ask, and just also clarify, what tasks that this committee was doing versus what others might be doing, and so I was just wondering if this committee was thinking about making a repository of data, in reference to that sub-group, and then these edits saying these are other examples, and I think that's the case, but that's my first question, and then I have a second question after that.

SENNAI HABTES: Okay. Let's deal with the first one. My understanding is that, right now, we're trying to develop a sub-group that would work on identifying what the best course of action is. As part of the TAP, we have associated groups that are working on getting datasets to use in the conceptual models that we can use to develop the ecosystem-based fishery plans, but the sub-group would be developed to create a better understanding of what the best outcome would be for what we're

doing with all of this data, whether it be to go ahead and develop our own data repository, or portal, or is it to work with other groups, either within NOAA or other organizations, that are hosting these existing datasets and finding a better way for us to work with them, so that we don't have to pull resources that are already in existence. If anyone has updates or edits to what I just said, please feel free.

GRACIELA GARCIA-MOLINER: I wanted to read what Mandy had put in the chat earlier, that the ESR data are always made available online, and she gave an example of the -- I believe this is the Gulf of Mexico, and so I will repost the website, so that everyone can see it.

SENNAI HABTES: I think the clarification, for our group within the TAP, is having them in formats that make them available to go directly into an EBFM model, meaning there is a lot of existing datasets, like TCRMP, the Puerto Rico Coral Reef Monitoring Program, oceanographic data, and all of those are already often freely available, but they're not currently in a format where we can plug them into the existing processes that Lenfest is using to develop these models.

I think the question becomes, and a central question for this sub-group, is, is there a way to either create a process where we are linked to these existing sources, where the data is already archived, that it can go through a process and easily be used by our group, or the council, to make management decisions, or do we need to create a new data repository that pulls the data from those places and puts the into that type of format, so that it can then be used for this process, as opposed to the warehousing and archiving that it's already being used for. Tauna, I see your hand up. Did you want to make an additional comment on this?

TAUNA RANKIN: You kind of made the comment for me. I mean, that was the point that I was trying to get across earlier, that, while a lot of this data can and is being archived with NOAA, and, I mean, even TCRMP data is funded by NOAA grant, and it could be archived with NOAA, but having that tool, whatever it is, that pulls the data from the archive and puts it in that usable format is what I think would be useful and would save time, in the future, for rerunning models and reproducing the ESR, et cetera.

SENNAI HABTES: Thank you, Tauna. J.J.

JUAN CRUZ-MOTTA: Thank you. I am just wondering, and this is

due to my ignorance on the topic, whether you can house that, or archive that, in whatever place we decide we're doing to archive, but have access to that through different portals, or through different systems, or the user can arrange the data, or have it in the format that is best for them, and is that something that's feasible?

I mean, I just thinking, for example, that the format for the Lenfest project would need -- The format needed for the data for the Lenfest project will be very, very different from, for example, the Darwin system that is used in MBON. I don't know, and it's a question

SENNAI HABTES: I think the key, for our group on the TAP, is to develop a way to get this data into a format that's usable for Lenfest and the TAP's goals of creating a tool for ecosystem-based fisheries management within the U.S. Caribbean. We can work with these additional groups to provide -- Since we're already accessing and QA/QC'ing a lot of this data, I think it's possible to work with other groups, like MBON, that also wants access to the data, where they can then host the data in a platform that makes it very easy for novice users to work with the data.

I think our focus needs to be based on what we were tasked with by the council, which would be getting this data into a format that is usable for the EBFM goals associated with Lenfest or ESR or the ecosystem-based fisheries management plans.

JUAN CRUZ-MOTTA: That makes sense. Thank you.

SENNAI HABTES: Jocelyn, did that answer your first question?

JOCELYN D'AMBROSIO: Yes, it did, and, as we've discussed before, I am just trying to make sure that this group is not delegating a council function to something outside, but, if it's as you described it, I don't see it that way. You're trying to create a repository that others can use, or see if that's necessary, because maybe someone else has already built it, and so that was very helpful. Is it all right if I ask my second question?

SENNAI HABTES: I think so. Tauna, I believe your hand was up from before, or do you have another point to make?

TAUNA RANKIN: It's another, and I'm all right.

SENNAI HABTES: No worries. Go ahead, Jocelyn.

JOCELYN D'AMBROSIO: Okay. Thank you. It's sort of a similar question, and so just about Number 6. I just was, again, wondering if this body is going to be doing the risk assessment or if it's going to be relying on the work of others, and, the way I'm reading it, it suggests that this body would be doing the risk assessment, but I just wanted to make sure that I am understanding correctly.

SENNAI HABTES: That is something that I'm not sure we've gotten to yet, and I believe we are currently tasked with developing the plans, and risk assessment, in my opinion, does need to be a part of that, but I believe that other groups, like Lenfest, and I think this is something that Tauna can talk about a little bit later today, or tomorrow, and it will help us develop a protocol for how we can do that.

Obviously, I think all of this, Jocelyn, when we develop the protocols for how things like the risk assessment can be used within information coming out of the conceptual models, we will pass that on to the council, for them to make a decision or make adjustments to it, and we can't, I believe, and correct me if I'm wrong on this, but we cannot mandate that to the council, but we can recommend that this is the process that we have developed, based on all available knowledge, and allow them to decide on how or whether it is used in that capacity for making management decisions. I believe that Graciela has a comment on this, and so I will open it to her.

GRACIELA GARCIA-MOLINER: Yes, and so, originally, way back in March of 2019, the original idea was for the SSC to go directly into the risk assessment and use the DAPs for the conceptual models, and, as you remember, Tauna, that's when you brought the Excel file, and we started working on that, and so the SSC will eventually have its teeth sunk into the risk assessment, and so probably the way it's -- Well, I can't say for sure, but probably the SSC will take a look at that and then bring it back to the TAP, and then we'll bring it back to the SSC, and the SSC is the advisory board for science to the council, and so they will bless the risk assessment that the TAP has contributed to.

That is, I think, the way I see it, but I think that bringing it in, as Tauna so graciously accepted to do, to start talking about it again, it's a necessary part of the fishery ecosystem plan.

SENNAI HABTES: Great. Thank you for the clarification, Graciela. I think that sounds like a good working example for

how it can go through, and so perhaps then Ori and I should come up with a timeline associated with that process, but I believe we can do that offline and add that to this checklist and bring it back up for review at our next meeting.

GRACIELA GARCIA-MOLINER: Furthermore, I would suggest that we include the SSC Chair in the discussion, so that he will be aware of when to bring this into the SSC.

SENNAI HABTES: Thank you, Graciela. Absolutely we will include Rich in the decision-making process for that, who I don't believe is on at the moment, and so we will work on that and send it out for review, once that's done. Jocelyn, does that answer the question for you?

JOCELYN D'AMBROSIO: Yes, thank you, and that's very helpful. I think it makes a lot of sense to leverage and rely on the work of others and then bring it back into the TAP process and have these public meetings, and that's just where I am coming from, is just trying to make sure that the work that's going into this FEP is done following all those legal processes and having public meetings, et cetera, and so thank you. It's very helpful just to understand where you're trying to rely on the work of others, versus what you're trying to accomplish yourself, and so thank you.

SENNAI HABTES: Great. Are there other concerns or questions that people want to address regarding the checklist, as proposed? Hearing or seeing none -- Sarah Stephenson, do you have a question?

SARAH STEPHENSON: Hi. Yes, thank you, and I just kind of wanted to circle back to Maria's question about writing responsibilities, if you guys had thought about that at all.

SENNAI HABTES: Graciela, I think maybe you have a better handle on that than I do, and I don't think we had gotten to specific writing responsibilities, but I do believe it is meant to be a collaborative process between the CFMC staff and the volunteers on the TAP.

GRACIELA GARCIA-MOLINER: If I may, that's one thing, and the other thing is that, if you look at this outline, we are relying on quite a number of other projects that are ongoing, and, most likely, a lot of the bulk of the writing should come from those sources that are going to be cited into the FEP.

The writing assignments, it will depend on how much time anyone

has, and we have the FEP outline, and so we are slowly pulling information into that, and, for example, Diana's work on the MPAs will merge right into the FEP section on jurisdictions and MPAs, et cetera, and so my question to the TAP members then is how much time would be available for helping in writing this up?

For example, Ori has collaborated in a number of projects and writeup sections and papers, et cetera, and so it will really depend on how much time you have available. Otherwise, we are taking on -- Your support staff will take on the directive that you give us, and so the other thing would be, from the FEP outline, to work with priorities, in terms of where should we start filling in the blanks, and we started with the jurisdictions, because that's one of my babies, because I think that there is a lot of fishing grounds that are off limits to fishers, and that really needs to be accounted for, and so we are already working on that, and so you tell me.

I mean, I think that everyone is going to be very involved, because this is really something that I think everyone is looking forward to having, and it's really basically a source document, and so we'll be including everything and anything that we can find to come in here, but the main part of it will be the analysis of the conceptual models, and that's really going to be the heavy-duty part of the FEP, the way I see it, and so that really comes in once all these other efforts have taken place. Does that answer your question? Not specifically to the writing assignments, but -- So I have a question for Maria and Sarah. Would there be an IPT coming out of the -- With members from the Regional Office and the Science Center?

MARIA LOPEZ: I don't know, and this is something that we can probably talk about, and this is not a regular action, just like an amendment or something that has -- It's not going to be a regulatory action, and it's just a source document, and so we can definitely talk about it, how the process is going to go and what are going to be the collaborations and the process of reviews, and so we'll get back to you on that. Thanks for asking.

SENNAI HABTES: So I guess this is a question that I have for the rest of the TAP. Do you think it's beneficial for us to start developing writing groups associated with the outline, or is that a bit premature?

ORIAN TZADIK: Sennai, if I may, and I don't know how to raise my hand, because I'm sharing the screen.

SENNAI HABTES: That's fine. Go ahead, Ori. You are recognized.

ORIAN TZADIK: I suggest we revisit the topic once we've moved along a little bit. The first five, or six, really, or, well, seven even, and there's no real writing involved, on this timeline, until next year, and so I think maybe we kind of wait a little bit, a meeting or two, to kind of start divvying that up.

SENNAI HABTES: Okay. Does anyone -- Do we all agree on that? Is there concerns? J.J., I see your hand is up. Go ahead.

JUAN CRUZ-MOTTA: I totally agree with Ori, and, actually, I feel that, these last two days, we have, at least for me, have clarified a lot of things that I didn't -- They were not clear for me before, but, despite that, I don't feel that, at least me, I am ready to start writing up, and so I would totally agree with Ori's suggestion to wait at least one or two meetings before we start writing up. Thank you.

SENNAI HABTES: Thank you, J.J. Graciela.

GRACIELA GARCIA-MOLINER: Okay, and so let me just share -- Let's see if I can do this. I will share my screen, and this should be in the Google drive. You do have the FEP outline, and it's pretty much everything and anything that I think you want, and so one idea might be for everyone to look at this again and edit, as necessary, and see if we're missing anything, et cetera. That way, we can all collaborate in making sure that the FEP has everything that we need, and then we can start filling it out after we're done with 1 through 8. Does that sound doable?

This is the FEP that you have looked at and presented to the council, and so I will email the FEP and the goals and objectives to all of the TAP members, and everyone who wants to see it, and so, in terms of making sure that this covers everything that we would like to see in the FEP.

SENNAI HABTES: Great. Thank you, Graciela. J.J.

JUAN CRUZ-MOTTA: Thank you. I can see that some of the work that the different projects will do will fit nicely in -- A lot in some of those sections that you showed before, Graciela, and so you have convinced me to wait a couple of meetings, and we will have material to fill out that. Thank you.

GRACIELA GARCIA-MOLINER: Thank you.

SENNAI HABTES: Okay, and so do we need to put that to a vote, or can we just leave it at consensus that we're going to hold off until the next meeting to decide on writing assignments and tasks?

GRACIELA GARCIA-MOLINER: Can we bring up, or maybe it's me again, but can I bring up what Ori was showing before?

SENNAI HABTES: Ori, can you share your screen again?

GRACIELA GARCIA-MOLINER: Then we will share also -- We will send the FEP outline, the goals and objectives, and the FEP development checklist.

SENNAI HABTES: That sounds good, and so, TAP members, I would recommend, as you're reviewing that, think about your time commitments, based on the development checklist, which I will upload to the Google drive, unless, Ori, you've already done that, and just send me this updated one, after the meeting, Ori, and I will also send it to -- Actually, Ori, just send it to both me and Graciela, so she can add it to the list of things she's sending out to the TAP.

ORIAN TZADIK: Perfect. No problem.

SENNAI HABTES: Okay, and so I believe, unless there are other concerns or amendments related to the development checklist here, I think we can close the book on that, at least for now, and I think we're all in consensus about holding off until the next meeting to wait for writing assignments, but I would ask that all TAP members, as you review these, look at the timeline and have an idea of your time commitments when we are going to start doing and divvying up the writing, so that we can all have a good understanding of what we can all contribute to that process when we are starting to organize the writing assignments.

If there are no other questions or concerns, I think we can move on to the next part of the agenda, and so, Graciela, I do need a little clarification on that. The island-based considerations update, that is all of the things listed under it, correct, and we're not having a separate update for --

GRACIELA GARCIA-MOLINER: That's correct, and so Maria gave you all the information on the already ongoing amendments to the island-based FMPs, and so that's all covered.

SENNAI HABTES: Okay, and so that completes the agenda for today, and we do have the opportunity to hear a little bit from Tauna about risk assessment and how it can be included in our decision-making process, either today or tomorrow, and then I think, on the agenda tomorrow, it really was the continuation of discussions from today, until about 10:45, and then from 10:45 to 12:00 was for us to outline our recommendations to the council and Other Business.

We can decide now whether we want to continue on for the last hour with an update from Tauna or if we wanted to save that for tomorrow, if Tauna is still available tomorrow, which I believe you are. Is that right, Tauna?

TAUNA RANKIN: Today is more ideal. I was uncertain about my availability tomorrow, but --

SENNAI HABTES: If that's the case, why don't we go ahead and have you discuss now?

DISCUSSION OF RISK ASSESSMENT

TAUNA RANKIN: Okay. Yes, if that's okay, and I will try to make it quick. I would like to provide a little bit of a history, since I know there's a few members that weren't around when the risk assessment was originally being developed.

I mean, this predates the TAP. Before the TAP was formally approved by the council, Bill Arnold has this informal group that was working on the early stages of developing the fishery ecosystem plan. Even then, the group seemed to be coalescing around the Lenfest framework, which has building a conceptual model as the first step, and I approached Bill about doing a detail in SERO, and he brought up working on the conceptual model, but, as we explored that idea, the group came to agreement that that's a tool that is most useful when it's built with stakeholders, where you're talking through all the interactions of interest and building a common understanding.

We made progress on that, but I also worked on developing a risk assessment framework, which, in the Lenfest process, it has it as like the six sort of actions under the second step, but I found it to be such a flexible tool that it could really be used at any of the steps in the process, and it could even help inform, or groundtruth, the conceptual model.

Actually, for comparison, the Mid-Atlantic Council conducted a

risk assessment as their first step in implementing their ecosystem approaches to fishery management guidance document, and they used the results to focus on summer flounder, which then they developed a conceptual model, which helped identify management questions for a management strategy evaluation for that stock.

One of the big differences between the Mid-Atlantic and the Caribbean is that the Northeast Fisheries Science Center has been producing an ESR that they call state of the ecosystem report for a number of years, and they use that report as the basis for many of the indicators in their risk assessment.

Since we did not have that easily-accessible time series data, I modeled the framework after one that the Australian government uses for all of its fisheries, which, as a starting point, they do a qualitative expert opinion analysis to screen out low-level risks before moving on to more resource-intensive quantitative analyses, and they call it -- What do they call it? Scale intensity and consequence analysis.

Working with the group, we sort of adapted that approach, which the Australians do for all of their stocks. Now, the Caribbean Council basically has something like 168 unique stocks, based on having the three island-based fishery management plans, and so, to make it more manageable and kind of embrace the ecosystem approach, we organized it initially around habitat communities, five habitat communities, of mangrove, seagrass, shallow reefs, deep reefs, and pelagic. Then we agreed that each of those habitats should be analyzed by island platform.

We ultimately came up with eighty-six unique risk elements across seven different categories, and so, once you do the math, that results in over a thousand unique analyses, and so I presented that framework to the SSC, and it was either late 2018 or early 2019, and they worked to further adapt it, and then were going to take up carrying out the risk assessment, but, as Graciela mentioned, made the decision to develop a conceptual model first.

Since then, nothing has really been done with the risk assessment, but there are a lot of different options for how a risk assessment can help this process. One of them is groundtruthing the conceptual models that are being developed, and I think the Lenfest project is also going to be very helpful in that.

The risk assessment can also be helpful, because you can still

assess risk elements that you don't have good quantitative data on and, taking a precautionary approach, you can keep those risk elements that you have a high level of uncertainty about, keep them prioritized as a focus moving forward.

One of the benefits of going forward and doing that is that it could help identify risk elements that may be missing from the conceptual models, but a downside is just the comprehensive nature of the current framework is very time consuming, and so one way to reduce the workload is to find external experts on each of those seven categories and have them provide their expert opinion on just the subset of those risk elements and then have the SSC sort of review the results.

Another option is to use a risk assessment to help refine the conceptual models, and so use the conceptual models as the starting point to structure your risk analyses and then use the results to help inform the strength of those connections, and another use of the risk assessment is to help identify indicators that you may want to track in the future, via the ecosystem status report.

I mean, a big consideration for what goes into the ESR is the availability of appropriate data. Risk assessment can help point to those indicators that you might not have the data for, but should make a case for getting the data, so that it can be included in an ESR in the future, and another option is to wait for the ESR to be produced and use the indicators as the basis of the risk assessment.

I mean, probably we will not have enough data, probably, from the ESR for all of the risk elements of interest, but you could have a mixed quantitative-qualitative approach, which is kind of what the Mid-Atlantic Council did.

One of the things I really like about this option is that, every time the ESR is updated, then the risk assessment could be updated relatively easily as well, and this is what the Mid-Atlantic Council is doing every time -- They, I think, get an annual state of the ecosystem report, and the risk assessment is updated annually as well, and they have since found that actually risks related to summer flounder are going down.

I guess the last thing I will bring up is using risk assessments to just identify issues that are good candidates for management action. The North Pacific Council did a risk assessment for their Aleutian Islands Fishery Ecosystem Plan, and this was their intended use of the information, and they had a much more

simplified qualitative assessment that could also be done much more quickly than the framework that I developed.

They just assessed twenty-two different interactions, and they didn't do it by stock or habitat type, and they scored probability of exposure and then probability of ecological impact and probability of economic impact, and, while they didn't score potential effectiveness of management response, they did document a lot of notes related to that, and that information could be incorporated to further prioritize issues for the council to focus on.

I could have probably come up with half-a-dozen other uses for the risk assessment, but these are ones that I can see meeting in the near-term, based on the steps that Sennai and Ori outlined coming up, and I will go ahead and pause for questions or comments.

SENNAI HABTES: I will open it up now, and just a reminder to use the raise-the-hand or the chat, and I don't see any off the bat, but I do have one, Tauna. My question is, based on that checklist that we kind of went through, where do you envision is the best time, and, based on the process we're already going through, in what ways do you think we can add clear objectives to insert the risk assessment into our process?

TAUNA RANKIN: Could you clarify that a little bit? What do you mean by "add clear objectives"?

SENNAI HABTES: Like so, from your standpoint, what are outcomes related to all of the different groups that we're working with that I can use as like timeline markers for where we can insert risk assessment processes into it, essentially is what I'm asking, and does that make a little more sense?

TAUNA RANKIN: Yes. Well, I would kind of like to get some feedback from the group, and I probably should have said this earlier, on what resonates with them, and it seems like using the risk assessment to help groundtruth and refine the conceptual models is one idea, and that makes sense to me.

I also -- I mean, I feel like it could be carried out now and could be another source of information that helps refine the conceptual models. It could also be informed by the conceptual models, and they're both really valid approaches.

Ultimately, the ultimate use of the information, to me, is to help -- In my mind, it's to help prioritize those risks and

elements of concern for the council to make sure they are addressed somewhere in the fishery ecosystem plan and that sort of a process is laid out for how -- To work on addressing those issues.

SENNAI HABTES: Thanks, Tauna. That's actually exactly what I was looking for you to outline. Graciela has her hand up. Go ahead, Graciela.

GRACIELA GARCIA-MOLINER: It's a follow-up to your question, and so where would we go now? For example, the SSC has completed their ECM, right, and so do you think that we should go back to that original Excel format and what they started doing and cross that over, or groundtruth, the ECM that they already made? How do you see that working? I mean, would this be like the next SSC meeting, or would it be sometime later in the summer, if we were going to do that?

TAUNA RANKIN: Well, an initial step that comes to mind is at least comparing the elements of their conceptual model with the list of risk elements, to see like where the differences are and if there's any notable things missing from either, and that's easy enough, but I would kind of like to get some feedback from the SSC members that are on the call today about whether their preference would be sort of to work on a sort of refined version of the risk assessment, as a body, or to have external experts weigh-in on these and then sort of review a draft product that they would add their expert opinion into.

SENNAI HABTES: We have, I believe, Kevin and J.J., and you're both SSC and TAP, correct, and maybe you guys can --

JUAN CRUZ-MOTTA: If I may.

SENNAI HABTES: Go ahead, J.J.

JUAN CRUZ-MOTTA: Thank you. This is my personal opinion on the matter, and I don't know what Kevin would say, but I think that the second option would be more amenable for the SSC, and I don't know what you think, Kevin.

KEVIN MCCARTHY: Tarsila wears both hats as well, and so she certainly can speak up for herself, but I am just wondering -- You know, it's not our -- We're stepping outside of our responsibilities, or our authority, if we, as SSC members, recommend what the SSC ought to be doing, and I think that's a council call.

I think the council needs to decide, and there are various ways to get at this issue, one, two, three, four, however many options need to be presented in front of the council, and then they will task the SSC, and that's my understanding of how we work, and I am open to alternative interpretations though, but I think it really could be something that the TAP puts together a presentation for the council and says we need -- We recommend getting this work done, and there are a few ways we can do it, because the -- We need to do it, as an SSC, only if the council tells us to, but I think the TAP could recommend to the council that there are a few ways to do this, and maybe rank them.

I suppose, as members of this committee, Tarsila, J.J., and I could comment on which order of ranking we might want to do it, but I don't want to speak as -- It's sort of weird having multiple roles, and J.J. and Tarsila have an even more complicated lineup, because of their involvement in the whole Lenfest project, but I think that that would be one way to go, right, to have the TAP put something together to put forward to the council, and I am happy to weigh-in on how we might, as a TAP, recommend Option 1, Option 2, Option 3, or however many there are. I hope that wasn't too convoluted.

SENNAI HABTES: No, that makes sense, and I think maybe that would be a good discussion for now, and we can list this as one of the recommendations that we move forward to the council in our discussions tomorrow.

TARSILA SEARA: Sennai, can I just follow up?

SENNAI HABTES: Yes. That would be great. Thanks, Tarsila.

TARSILA SEARA: I just wanted to add this to the conversation, because, a few meetings ago, and I don't remember, and I think this was one that we actually had an in-person, and so it was a while ago, but one of the things that we discussed about this process was that one of the reasons why we thought, as the TAP, that we thought that it made sense to work on the conceptual models before we addressed the risk assessment, to sort of follow that methodology, was that because one of the issues that we were having with the risk assessment exercise was there is a little bit of confusion and lack of familiarity, and there were a lot of things there that just weren't flowing for the SSC.

One of the things that we thought would be helpful is that, if we can up with, or revised, a list of risk assessment, based off of the conceptual models, that that list would become much more familiar, and it would be something that the SSC would be

involved from the beginning, in sort of listing the risk assessment factors, and maybe that would make a lot more sense and would be easier to work with.

I just wanted to sort of bring that back to the conversation, because that was one of the things that we discussed, and so maybe that is something that we could consider, and so using the conceptual models as the basis for that would be a good option, for that reason, and so I just wanted to add that.

SENNAI HABTES: Thank you, Tarsila. Other comments or concerns? Perhaps we can have a discussion regarding how we can develop some sort of recommendation to the council regarding this, and I think it seems clear, from that discussion, that perhaps using the risk assessment, now that the model has been developed, to refine is probably the best course, going forward, but I am not sure.

JUAN CRUZ-MOTTA: I totally forgot about that, what Tarsila mentioned, but I believe it will be a very good course of action to have the conceptual models ready so that could help to refine the risk assessment process, and so, yes, I will support that course of action, if everybody agrees.

SENNAI HABTES: Kevin is recognized. Go ahead, Kevin.

KEVIN MCCARTHY: Thanks, Sennai. J.J., I'm like you, and I had forgotten, and so I'm glad that Tarsila brought that up, because that completely had left my mind, and, yes, I think that would be -- For whomever ends up being tasked with the risk assessment, for this committee to really frame that, I agree would be an extremely important step, because I remember -- It's all coming back to me now, what Tarsila mentioned, that we were really, as an SSC, we were really floundering without having some more structure, some more guidance, than what we sort of were trying to operate with.

It was new to everybody, and so we were just having a really tough time, and so I think whatever guidance this committee can get together, and however much work we can do to provide some structure to that risk analysis, or assessment, would be really, really critical to having the process be successful.

SENNAI HABTES: Graciela.

GRACIELA GARCIA-MOLINER: I have a question, a practical question, and so you mentioned the external experts that look at the risk assessment before we use it to compare it to the

conceptual model, and who are these external experts from the other regions? Are they also the SSC, or are they Science Center staff, or do you know, Tauna?

TAUNA RANKIN: No, and they're to be identified, and I would think it would be up to the SSC and/or TAP to sort of select those subject matter experts, and like I'm certainly willing to help prepare a list of potential experts, but it doesn't exist right now. I imagine they would be all of the above, and they would be academia, NGO, federal, state and territorial.

GRACIELA GARCIA-MOLINER: I mean, that's the reason why I am asking, because everyone is already so tasked with so many things in the TAP and the SSC, and there is so much overlap and complications in the area, and so that's what I was just wondering, if it was like the CIEs that do the stock assessment and if there was something like that for risk analysis.

TAUNA RANKIN: When I used the term "external", I was thinking of external to the TAP and the SSC, and so not necessarily external to NOAA or the council or the organizations that people are at, but other people who aren't already working on the elements of the FEP.

SENNAI HABTES: Tauna, can I ask -- Maybe, for the next TAP meeting, would it be possible for you to give us a presentation on perhaps steps to developing -- Just give us like bullet points of what the steps are that we need to take if we're going to follow the second choice, which would be using risk assessment to refine and contextualize the developed models, and so meaning like how we can develop a plan to do that that we can present to the SSC.

TAUNA RANKIN: Yes, absolutely.

SENNAI HABTES: Okay. Great. I think that is it, unless people have other comments or questions or discussion for this aspect of the meeting. Hearing none and seeing none, I would say that I guess I need a motion for us to adjourn for today, unless there is other things that people wanted to discuss.

GRACIELA GARCIA-MOLINER: If I may, remember that, tomorrow, you don't specifically have to run all the way to 12:00, and you can do your recommendations, and so meet back tomorrow at 9:00 a.m., and then you can use the time as you see fit, because I think that you've pretty much covered everything that was in the agenda.

SENNAI HABTES: I believe so too, and I think that, really, all we have to do is identify the recommendations that we need to present to the council, and then if there's other business, but, given that I keep asking for other business, and no one has anything to bring up, I don't think there's going to be much more. Ori, you have your hand raised?

ORIAN TZADIK: Yes, and so, if we're bringing up other business, I just was hoping that I could ask the EBFM TAP -- To give a bit of the background on that GIS that I was telling you about.

SENNAI HABTES: That's a good point. Would you be okay with saving that for tomorrow?

ORIAN TZADIK: What I wanted to do was just put it out there and let people think about it and then come back and discuss tomorrow. Is that okay?

SENNAI HABTES: Yes, and I think that's fine.

ORIAN TZADIK: I was telling Sennai, last week, that it's come to my attention that Pew has some GIS specialists who have, in their workplans, that they have to assist with different projects, and, when they brought that up, I was one of the people that they asked, if there were any specific projects that they could be involved in that would be beneficial to any of the work that the individuals are doing and, in this case, me.

I brought up some of the GIS stuff that we've been doing already with the FEP, the stuff that Mallory and Megan were doing before they left, and those were kind of simple, low-level things, but the point is that we have capacity, with GIS experts, for some projects, if we feel they would be beneficial.

For example, I spoke with Sennai about a few different ideas, but, also, I heard, from Kelly, earlier today, about the shoreline erosion, the movement of the shoreline based on development, and so that could be an interesting analysis. If there are any of these kinds of analyses, and, again, we can discuss it tomorrow, but I just wanted to plant the seed for today, so that maybe people could come with some ideas tomorrow, and then I could then run it by the team at Pew and see how feasible any of it was, but it seems like a really cool opportunity that I wanted to share with you all, and hopefully we could get utility out of it.

SENNAI HABTES: Thanks, Ori. I think that sounds good, and I would encourage all of us to think about ways to engage them on

all of the aspects surrounding the work that we're doing in the TAP. I mean, I can already think that it might be good to try and include them on that sub-working group on the data archiving and management aspects. Perhaps we can start our meeting tomorrow with a discussion of this. Okay. Other questions or concerns or points of discussion or other business that people want to bring up to get us ready to talk about tomorrow?

ORIAN TZADIK: Sennai, just to note that the agenda says we start at 9:00, and is that correct?

SENNAI HABTES: That is correct.

GRACIELA GARCIA-MOLINER: I put in the chat something called CostaVisPR, which is a transformation of the Puerto Rico coastal areas, and so contributing to the idea of GIS and the people who might have already worked on some of the areas around Puerto Rico.

SENNAI HABTES: So these are -- Are these aerial photographs, Graciela?

GRACIELA GARCIA-MOLINER: Yes, and then you guys -- I don't think it's in a GIS format, but the Virgin Islands had all of that erosion work done in the early 2000s, and I want to say ReefFIN, or something like that, but I would have to look it up, and so that shoreline erosion thing, and the other thing is that there is all this LIDAR data for the near shoreline, the near shoreline bathymetry, and that might be able to be used, and so, I mean, in terms of that, I think that there is quite a bit of work that can be done.

The only other thing that I thought about was to get all that information from the Science Center for the larvae that's been collected in the USVI, and I'm pretty sure that it's already in some kind of GIS format, but, if it's not, then that would be another nice dataset to bring on.

JUAN CRUZ-MOTTA: If I may?

SENNAI HABTES: Go ahead, J.J.

JUAN CRUZ-MOTTA: In that same document, I saw that the TNC used salinization to show the benthic map that they did for the Caribbean reef, and that would be nice to have a look at it. Thank you.

GRACIELA GARCIA-MOLINER: Did they just send you an invitation?

That is TNC?

JUAN CRUZ-MOTTA: TNC produced a benthic map, a high-resolution benthic map, for the Caribbean, and they sent an invitation to show it and see how it works, and it looks nice, and so whoever is on the coral list for Puerto Rico should get that. Perhaps I should put the link here. There you go.

STACEY WILLIAMS: I just put the link up.

JUAN CRUZ-MOTTA: Thank you, Stacey.

STACEY WILLIAMS: You can register for the talk on the 18th.

GRACIELA GARCIA-MOLINER: Perfect. The other thing is I want to ask about mangroves, and I think that Roy Armstrong's group at the University of Puerto Rico is doing some mangrove inventory, and, I mean, there is that work from NOS, and so I can try to figure out where that is, but I thought that there was a student who had worked on a thesis recently on the changes of the mangrove areas around Puerto Rico.

SENNAI HABTES: Stacey, did you have a question or a comment?

STACEY WILLIAMS: No, sorry, and I was just going to mention that I put the link in the chat. Sorry that I didn't lower my hand.

SENNAI HABTES: Okay. Great. No worries.

GRACIELA GARCIA-MOLINER: So, for tomorrow, under the recommendations, in the other business, you want to include the GIS Pew Charitable Trusts contributions, or something to that effect, so that we put it in the amended agenda?

SENNAI HABTES: Yes, I think that would be good. I don't think we have discussions to continue from today, and I think we've pretty much closed out everything on the agenda, and so I think just put that EBFM TAP info on GIS right at the beginning. Then, unless there is other business, unless there are other amendments or things people want to change from the previous discussions today, we'll move straight into the recommendations and then other business after that, but I'm sure, after people have had some downtime and are able to think of things, other things will come up for us to discuss in the morning.

With that, unless there is anything else that people wanted to talk about, I think if someone wants to motion that we adjourn

for the day, and someone else seconds it, I think we can close out the business for today and start again tomorrow at 9:00 a.m.

ALIDA ORTIZ: I motion to adjourn.

EDWIN CRUZ-RIVERA: Second.

SENNAI HABTES: All right, and so Alida motions for us to adjourn, and Edwin seconds the motion, and so, with that, I would say have a good night to everyone, and get some rest, and I will see you back tomorrow at 9:00 a.m. for day two of the EBFM Technical Advisory Panel meeting.

(Whereupon, the meeting recessed on February 4, 2021.)

- - -

FEBRUARY 5, 2021

FRIDAY MORNING SESSION

- - -

The EBFM TAP of the Caribbean Fishery Management Council reconvened on Friday morning, February 5, 2021, and was called to order at 9:00 a.m. by Chairman Sennai Habtes.

SENNAI HABTES: I will call the EBFM TAP to order. We will begin with a roll call. What I will do is I will go through the list of participants, and I will call the name as it is presented on the screen, and I would ask that you say your name, your affiliation, and your position in the TAP, whether it be a TAP member, a CFMC council member or personnel, or NOAA affiliate. Going through on the list, first up is Liajay Rivera.

LIAJAY RIVERA: Buenos dias, Liajay Rivera, CFMC staff, EBFM TAP technical assistant.

SENNAI HABTES: Thank you, Liajay. Graciela.

GRACIELA GARCIA-MOLINER: Buenos dias, Graciela Garcia-Moliner, Caribbean Fishery Management Council staff.

SENNAI HABTES: Thank you, Graciela. Alida Ortiz.

ALIDA ORTIZ: Good morning. Alida Ortiz, and I am from the Caribbean Fishery Management Council Outreach and Education

Advisory Panel and a member of the EBFM TAP group.

SENNAI HABTES: Thank you, Alida. Edwin Cruz-Rivera.

EDWIN CRUZ-RIVERA: Buenos dias, Edwin Cruz-Rivera from the University of the Virgin Islands, Associate Professor and member of the Technical Advisory Panel.

SENNAI HABTES: Thank you, Edwin. J.J. Cruz.

JUAN CRUZ-MOTTA: Good morning. Jose Cruz, University of Puerto Rico at Mayaguez, and TAP member. Thank you.

SENNAI HABTES: Thank you, J.J. Jocelyn D'Ambrosio.

JOCELYN D'AMBROSIO: Hello. This is Jocelyn D'Ambrosio, and I'm with the NOAA Office of General Counsel, and I advise the Caribbean Fishery Management Council, including the SSC and the TAP.

SENNAI HABTES: Thank you, Jocelyn. Julian Magras.

JULIAN MAGRAS: Julian Magras, DAP Chair, St. Thomas/St. John. Good morning, everyone.

SENNAI HABTES: Good morning, and thank you, Julian. Kevin McCarthy.

KEVIN MCCARTHY: Good morning. Kevin McCarthy, Southeast Fisheries Science Center Miami and TAP member.

SENNAI HABTES: Thank you, Kevin. Maria Lopez.

MARIA LOPEZ: Good morning. Maria Lopez, NOAA Fisheries SERO, and we provide support for the TAP.

SENNAI HABTES: Thank you, Maria. Nelson Crespo.

NELSON CRESPO: Good morning, everyone. Nelson Crespo, DAP Chair, Puerto Rico.

SENNAI HABTES: Thank you, Nelson. Orian Tzadik.

ORIAN TZADIK: Orian Tzadik, The Pew Charitable Trusts and EBFM TAP member.

SENNAI HABTES: Thank you, Ori. Sarah Stephenson.

SARAH STEPHENSON: Good morning. Sarah Stephenson, NOAA Fisheries SERO and TAP support.

SENNAI HABTES: Thank you, Sarah. Stacey Williams.

STACEY WILLIAMS: Good morning. Stacey Williams from the Institute for Socioecological Research and TAP member.

SENNAI HABTES: Thank you. Last, but not least, Tarsila Seara.

TARSILA SEARA: Good morning. Tarsila Seara, Assistant Professor at the University of New Haven and TAP member.

SENNAI HABTES: Thank you, Tarsila. I believe that is everyone that I have on my participants list. If there is anyone that I did not call on that is a part of the meeting, please go ahead and announce yourself now. Okay. Hearing none, I guess we can go ahead and get started.

In front of us is the tentative agenda. From 9:00 to 10:30, we have discussions from the previous day, and I asked that we put in placeholder to continue the discussion regarding the PEW GIS personnel that Ori had mentioned yesterday, and I hope that everyone had a little time to think about it and discuss.

At this time, I would ask if there -- Let me continue on. That's the only placeholder we have, and I think we can possibly, if there's time, continue our discussion of the risk assessment tools that Tauna brought up. However, I believe that that can also go into the recommendations to the CFMC discussion, as we have discussed creating a recommendation that we would discuss later in the meeting. However, if we want to clarify -- Sorry. Not later in this meeting, but at our next meeting. However, if there are things we wanted to clarify on that process, or that recommendation, we can do it during the continued discussions.

From 10:30 to 10:45, we have a break, and, from 10:45 to 12:00, it will be recommendations to the CFMC, any other business that wants to be brought up, and, after that, we can adjourn. Are there any things that people wanted to bring up as placeholders or things to discuss on the current tentative agenda? Graciela is recognized.

GRACIELA GARCIA-MOLINER: Thank you. Just a housekeeping item. Were you all able to access the PowerPoint presentations that Liajay put in the Google drive yesterday? We just sent it to the TAP members, but we want to make sure that everyone has

access to the FEP outline and the goals and objectives and the checklist that Ori presented yesterday and all of the PowerPoint presentations. Thank you.

ORIAN TZADIK: I have been able to access those, for the record.

ALIDA ORTIZ: I accessed that, too.

GRACIELA GARCIA-MOLINER: Just let us know if anyone has any -- Send us a message in the chat, and we'll take care of you. Thank you.

SENNAI HABTES: Thank you, Graciela. Anything that people wanted to add to the agenda? Hearing none, I think what we need to have is a motion for someone to put in a motion for us to accept the tentative agenda, as it stands.

EDWIN CRUZ-RIVERA: I move to accept the agenda as-is.

SENNAI HABTES: Thank you, Edwin. Do I have a second?

TARSILA SEARA: I second that.

EBFM TAP INFORMATION ON GIS

SENNAI HABTES: Thank you, Tarsila, and so the motion to approve the agenda as it stands by Edwin Cruz-Rivera and seconded by Tarsila Seara, and let's have a vote on the matter. Again, as we did yesterday, I will only ask for those in opposition or abstain to say over the Zoom, and so either say you oppose or abstain, and, all others who remain silent, I will assume that is a vote for yea. All in favor of approving the agenda as it stands; any opposition or abstentions, please say so. Hearing no nays or abstentions, the vote has passed unanimously to approve the agenda as it stands.

Okay, and so I guess we can get started with continued discussions from the previous day. Before we move into the EBFM TAP information on GIS, does anyone have anything else that they feel we should discuss during this period?

Okay. If anything does come up while we're in our discussions, just say so, and I will ask Liajay to amend or just put in a placeholder for discussion. Okay, and so let's continue our discussions regarding the information that Ori provided.

As he mentioned yesterday, he believes there is some personnel that work on GIS within The Pew Charitable Trusts that may be

able to aid us in our efforts here on the TAP. I did have a conversation with Graciela and Jocelyn offline after this, and I think I should kind of just bring up a couple of those points here, to add to our discussion, just so that we have some clarity.

As always, because we are an arm, or a panel, technically, of the CFMC and the council, we have to bear in mind the fact that what is tasked to us, as the TAP, by the council is stuff that only we can work on. If we are bringing in things from outside, such as products and outcomes that are coming in from things like Lenfest or the ESR efforts, we have to be very clear about how that work is done and how we use that information.

One of the things that we have to be clear on is that we cannot, as the Technical Advisory Panel, task anyone within Pew that is not a part of the TAP, to do work products for us, as the TAP. We can, however, use work products, or outcomes, by other groups that are done on their own accord and bring them in through the general process of the advisory panel and bring it up to the council.

Having said that, the way I was envisioning this, working with the GIS personnel at Pew, would be that it was something that, Ori, you are taking on, as your work within Pew. We, as the TAP, cannot directly task anyone at Pew with that kind of work, and so, if there are projects that you are planning to do within Pew, that you feel are beneficial to the TAP, that can be done in concert with us, meaning you can discuss these things with us, and we can make recommendations to you, as to best uses of your time that can aid in our efforts, but I want to make it very clear that it is not something where we as a TAP can task the people in Pew with work product. Jocelyn, am I correctly capturing our discussion from yesterday?

JOCELYN D'AMBROSIO: Yes, thank you, and I think that's a good summary. I am just trying to make sure that the TAP isn't delegating its position to someone outside, because the TAP has various procedural requirements, like having public meetings, and there is various requirements for data collection and confidentiality, and so, yes, as long as the TAP isn't delegating its function outside, that makes sense, but, as we discussed, leveraging work that others are doing I think is useful and stuff that's commonly done, and so I think you explained it well. Thank you.

SENNAI HABTES: Great, and so I have a comment or a question from Ori. Go ahead, Ori. You're recognized.

ORIAN TZADIK: Great. Thank you for that clarification, from both Sennai and Jocelyn. I guess my question then is would it be appropriate if I was to suggest projects that I was planning to do with my GIS team at Pew, in order to get feedback from the TAP, and would that be an appropriate way to go about this?

SENNAI HABTES: Jocelyn, I'm going to defer to you on this one.

JOCELYN D'AMBROSIO: Sure, and so I think, Sennai, you actually had described that in a way that made sense to me, and so what I understood you to be saying was if, Ori, you're planning various projects, and you're raising that I'm doing this type of work, if we were to try to bring it back to this TAP process and use it in developing the FEP, what way should I structure it so that it can be of use, and so trying to get that feedback, as you just described, on projects that you were thinking of undertaking. Then, once that is done, you bring it to this group, and then it's discussed, and so it's part of that public process, and so I think that's the way to kind of frame it.

ORIAN TZADIK: Okay. Great. Then, Sennai, I guess it looks like Kevin wants to say something, but, after that, I'm happy to present several ideas.

SENNAI HABTES: I think that would be good, Ori. The Chair recognizes Kevin.

KEVIN MCCARTHY: Thanks. I just want to -- I don't know if I want to call it harp on, but I want to circle back to data confidentiality, because this is a big concern. I am thinking of the data that the Science Center is in the process of providing to Lenfest, and so there are a couple of things, and, as we work through that process, we'll probably need to have a couple of discussions with the people who are receiving those data.

Just as a brief summary, the only people that can see the confidential data -- This is not going to all of Lenfest, and this is going to people, and I think the people that are receiving this data are aware of this, but I am just saying this for everybody on the call, and so the only people who can look at the data in its confidential form are the people who have current non-disclosure agreements in place.

What that means is they can't then turn around and pass this data on to others, and this is primarily data coming from fisher logbooks, and they have a right, and an expectation, to

confidentiality, and so the only people who get to see this are those with an NDA.

Rolling this on to anybody else is a big no-no, and there are some serious financial consequences to those who do, and so let's be very careful, as we go through this process, as to who gets what data and when, and so I just want to throw that out there. Again, I think all the folks who are receiving this data are well aware of the rules, but, as we discuss this as a group, we need to understand what might be passed on to a third party, whatever rules you want to set up for that, and what might not, and what might not be confidential data.

When you're looking at GIS in a real hurry, everything becomes confidential, because you're plotting things in space, and you are very likely to have -- To be able to identify individuals, and so that's a big no-no in the confidentiality world, and so I just wanted to get that out there. Again, I think the people who are receiving the data are well aware of this, but I don't want the group as a whole to start to think in terms of what can be done and not recognize the limitations, because of confidentiality.

SENNAI HABTES: Thank you, Kevin. I think that brings up a good area for conversation that we can move to, I think, after Ori's, which is the recommendation to the CFMC to develop either a sub-group within the TAP or another group that can actually compile those type of policies that we can use, and also work towards creating a larger database of the data that is being compiled through all of these different processes.

I think we can -- Let's continue our discussion with the EBFM TAP information on GIS and then move to that as a secondary topic, and so I see Ori has his hand up, and so the Chair recognizes Ori to speak.

ORIAN TZADIK: Kevin, just a point of clarity. Are you referring to the landings data, primarily, and, if not, are there any spatial datasets in particular that you're referring to, and I will get into the -- The reason I'm asking this question you will see in a minute, but most of the projects that I think I'm going to suggest are not to do with landings data, and so, if it's something else, I am more curious on that.

KEVIN MCCARTHY: Well, I am just referring to the data that we're currently supplying to Lenfest, and so, in that case, the data are going to be at the trip level, and so that is confidential data. Now, that's not to say that those data

couldn't be rolled up to become non-confidential and then supplied to other people, and I presume that's going to happen, as reports are written and papers are published and presentations are made and that sort of thing, but the only folks that can see it at the really fine-scale, confidential level are those who have an NDA, even within Lenfest.

This is a real -- NOAA takes this very seriously, and I'm sure that everybody who is getting the data will as well, and I'm just referring to the data that I am supplying, and I don't know what the rule are for other groups who may have data that are at that very scale, where individuals can be identified, and they will have their own rules, but, as far as NOAA data go, whatever they are, there is this confidentiality issue looming over every dataset.

I mean, we could talk about them, and maybe not now, but as the Lenfest team moves forward, to be sure that we're following all the rules, because what we don't want to do is have the people who supply the data turn around and say, hey, I'm being identified here, and this is not good, and this is not what I signed on for, and I have a real problem with that, and so that's the concern, right, that fishers are -- The confidentiality concerns of the fishers are being carried for.

Every NOAA dataset that contains confidentiality concerns is basically what I am talking about. The ones that I am supplying are the landings and the effort, and there is some economic data in there, and it's at trip level, and so you would have prices and pounds and areas fished and things like that, and amount of effort, and so that's all confidential stuff, because you can tie it directly to an individual. Does that answer your question?

ORIAN TZADIK: That's very helpful, yes. Thank you.

SENNAI HABTES: Any other questions or concerns regarding the data confidentiality? Okay. Hearing none, I think we can maybe continue on with the discussion, and so, Ori, if you had ideas of areas for work that you plan on doing within Pew that you wanted to discuss within the TAP, to see how it can aid our efforts, or dovetail into the work that's being done within the TAP, I think now would be a good time for that kind of discussion.

ORIAN TZADIK: That's great. Thank you, Sennai. What I would like to do is present these projects kind of one at a time and get the feedback from the TAP on a couple of things, TAP and all

members on the call, frankly, and one would be utility towards the FEP, if we see this as something that would contribute to one of the components that we've been discussing, and then two would be any direction that could be provided.

I know it sounds like people on this call have a lot of experience with a lot of different datasets, and so just saying something -- For example, we can start with the one that was triggered yesterday with the shoreline erosion project, and that sounds like a great idea. I personally don't know what datasets to look for, in order to do that sort of analyses, and I would love input on that, and so maybe we can start with that one, and I would like to hear if anybody has -- Again, kind of the two components here are, one, if the utility -- If we think that this is something that would inform the TAP, and, two, just kind of direction towards datasets.

SENNAI HABTES: I can start, Ori. In terms of the shoreline erosion, I do think there is some utility. I think there are a number of efforts ongoing in Puerto Rico and the USVI that are working on that particular project, and they are somewhat disjointed, and so I do think having someone who could kind of work with all of those groups to kind of put the data together, so that it would be useful for our efforts, would be useful.

I think one of the largest barriers in this type of project is contacting all of the different federal agencies that have taken aerial photographs pre-1970 for the region. It's a little bit easier for Puerto Rico, and it's a lot harder to find for the USVI, and so, if that is a project, for instance, that you were taking on at Pew, having those GIS people trying to track down all available satellite and aerial photography to create the longest time series available, and coordinating with the groups that are already doing that in Puerto Rico and the USVI, would be helpful.

I would be interested to hear from the people at Lenfest, and those that are on both the TAP and the SSC, what type of data, from that analysis, would be useful for our conceptual models, but, before that, Graciela has her hand up, and so Graciela is recognized.

GRACIELA GARCIA-MOLINER: Thank you. I don't know if the group here might have aerial photographs pre-1970 that would include the USVI, and so I can reach out to some people that use these aerial photographs and find out if they know if it extends to the Virgin Islands. If not, the only other person that I can think of, right off the top of my head, would be Roy Armstrong,

to see what he has regarding the aerial photographs.

Lastly, the NOS group that originally worked on the benthic habitats of Puerto Rico and the U.S. Virgin Islands did quite a bit of digging, in terms of the aerial photographs, and so I will send out a message to Roy, and probably Mark, and see if they can help with this project. Thank you.

SENNAI HABTES: Thanks, Graciela. That would be very helpful.

ORIAN TZADIK: That all sounds great. Thank you both for the feedback. Is there any other feedback on this particular topic, or should I move on to another?

SENNAI HABTES: Maybe J.J., or Tarsila, if you guys can talk about what type -- Or even Kevin, because you guys kind of straddle both worlds, and maybe if you could talk about the utility and what type of information should come out of this analysis that would be useful for our efforts at the TAP, so we have clearer outputs, or outcomes, that Ori knows would be beneficial in his work. J.J., you're recognized to speak. Go ahead.

JUAN CRUZ-MOTTA: Thank you. As Ori was speaking, I was thinking about it, and, I mean, I think what I am not -- I don't know if that work that Ori is proposing, and that is amazing, by the way, but would it be related to the work that the sub-group on databases is going to do? It's not -- I mean, the objectives are totally different, but, however, they are kind of related, because, if we start developing GIS layers for whatever products we develop, that's going to be linked to the data, right?

For example, the products go from a spatially-explicit platform, and you can access the data, the raw data, and you can go from there to present actual products like, for example, visualizations on how, for example, the structure and composition of fish assemblages have changed through time.

I am not sure, and I am sorry, Sennai, that I cannot give -- As Ori was speaking, I was thinking, okay, what can we -- What product can we develop to provide, even to Ori's team, but I am still thinking about it. I would tend to say, okay, perhaps, instead of the first option that I gave, like easy access to the data, it would be more like somehow find a way to make spatially explicit the results of our research, but I am not sure how, at this stage. Thank you.

SENNAI HABTES: Thanks, J.J. Alida.

ALIDA ORTIZ: This is something very general, but, Ori, when we speak about shoreline, usually they take only the sandy areas, the beaches, and, if you think of habitat areas of particular concern that are very, very important for the fishes, even though the council has to do only with the Economic Exclusive Zone, but remember these fish go from the deep to the shallow, and so, in your project, you can include the state of the mangroves, the status of the mangroves, and many of these mangroves, especially in parts of Puerto Rico, have almost disappeared.

Not just for inland action, but also with the conditions of the changes in the ocean itself, and, also, the seagrass beds are very, very, very important, and so if shoreline goes beyond mangroves and beyond the beaches, I think it will be very important information, and, as far as I know, very little has been done, at least in Puerto Rico, in telling us what are the state of those ecosystems after the hurricanes and after the earthquakes that were in the southwestern part of the island, and so I think you make very good information. That's it.

ORIAN TZADIK: Great, Alida, and thank you.

SENNAI HABTES: Stacey.

STACEY WILLIAMS: Thanks. Ori, I think, as I see like the GIS products, it would be kind of like -- Well, the maps would kind of be like a final product of what we do, and this is just an example, but like for the Lenfest project, and so, as we compile conceptual models, and we have this other data, biological and environmental data, to visualize these patterns and changes -- As J.J. mentioned, like fish assemblages, or the benthic assemblage, and I think it would be a great tool to visualize this as like a final product that can be interactive, and you can play around with the different layers, because we are collecting a bunch of environmental data that can be displayed on a map.

I see it as kind of like a final product that will help users visualize what we're writing on paper, and so I think it could be useful, and I think people are tending, more and more, to go this way of having these ArcGIS interactive maps online for like a deliverable in projects, and so I see that as kind of towards the end of -- Not towards the end, but of our Lenfest work and how could it be useful.

ORIAN TZADIK: Thank you, Stacey. Just a -- I think you guys

were -- I think you and J.J., at your first meeting in St. Pete, the woman at NOAA, Cindy Meyer, was still running the FEP show, and, if you remember, this was one of her original ideas, that she wanted to have -- I think she wanted the FEP to be like one of these GIS online interactive tools, and I don't think the rest of the group necessarily agreed with her, but it's a good sentiment, and I'm glad you brought it up, because I think it's a nice way, at the end of all of this, to be very interactive with the users.

Instead of having, like I referenced yesterday, like a coffee table book FEP, you can have something that's dynamic and something that's interesting and interactive and that, quite frankly, would maybe get more stakeholders involved, which is what we all want to do.

SENNAI HABTES: Thanks, Stacey and Ori. J.J., you're recognized.

JUAN CRUZ-MOTTA: Thank you. I just wanted to say that that last thing that Ori mentioned -- I am 100 percent behind that, and I think it's very important that we do have products that can be used by the broader community, by different stakeholders, especially if those are spatially explicit, and what comes next is a question, out of my ignorance of this work.

Let's suppose that we decide, or the sub-group that is going to talk about data storage, archiving that data decides, or recommends, that the data should be archived in NOAA, and I am just -- Or CARICOOS, and just a few examples, right, but can the GIS team in Pew pull data out of those archives to generate the products, or will they have to host and also create a copy of the data in their Pew servers, so that, in order to produce those products?

That's the first question, and the second question is, and this is an open question to whoever has the expertise, and the second question is, isn't that something similar to what MBON wants to do, I mean, based on Miguel's conversation? If so, shouldn't we talk about who is going to do it, before we start repeating efforts? I don't know what is -- Perhaps I missing the point of MBON, and it's doing something different from Pew. Also, if they do -- Alternatively, if they are proposing to do similar things, then we should discuss who should do it, and so I think I need a little bit of guidance on how all this works, or will work. Thank you.

SENNAI HABTES: Ori.

ORIAN TZADIK: I think I can answer both of those questions, J.J. The first is that, no, Pew would not house the data. These guys made it clear that I would be the one pointing them to datasets that they could use and not that they could then house and work with from there.

To answer the second question, I plan to talk with Miguel, and I actually already have spoken to Miguel, albeit very briefly, and, after his presentation from a couple of days ago, and after the discussions that we're having now, there is absolutely a need to coordinate with him, and I will be doing that.

The way that I envision it though is that Miguel and MBON was a little bit more, like you were talking about, kind of housing the data and visualizing these kind of vast datasets. Ideally, what we could do, and let's just take the shoreline erosion as an example, would be to create some sort of next level GIS layer that is maybe a little bit more complicated than somebody like Miguel has the expertise to do.

For instance, I don't know how to do shoreline erosion analyses, and to break apart beaches versus mangroves versus seagrass and that sort of thing, but, once that's done, I do know how to click on a layer that would, ideally, show me all of those things, and so I'm hoping -- That would be my vision for it, is that we would work together and that the Pew team would work on projects and products that would then be able to inform and potentially be housed on that MBON server, at the end.

JUAN CRUZ-MOTTA: Thank you, Ori. That's very helpful. As I said, MBON, from what we saw from Miguel yesterday, and the day before yesterday, is it was more like a map with the stations of the Puerto Rico Coral Reef Monitoring Program data where -- Then you will click on those stations, and then you will basically have a summary of the data that was there, percentage of coral cover, and then you see how that came down.

What you're saying is perhaps Pew could go and then, instead of -- Or on top of having that, I mean like kind of maps of, for example, distribution of the coral cover and then changes to -- I mean, more like mapping more than summarizing data, and perhaps it would be like that?

ORIAN TZADIK: I mean, I need to definitely sit down with some people who know more about this than I do, but that is kind of my vision, yes, would be something that, if you're picturing the map, and you want -- As a researcher, J.J., you decide that you

want to go to the FEP data depository for information, and you see what Miguel has put together, similar to what we saw him present, and so just spatial visualizations of fish communities and benthic communities, but then there's also an option to click on a layer that would show just, let's say, red polygons of where there used to be shore and there is not anymore, and then pink polygons for where they used to mangroves and there's not anymore, and green ones for seagrass, or something like that. That's my vision right now, but, obviously, this needs to be vetted further.

SENNAI HABTES: J.J., hold on one second. Stacey has had her hand up, and so I'm going to let her go, and then we can come back to you.

STACEY WILLIAMS: I just wanted to like just follow-up with J.J., with examples. I see that -- Like one example that could be useful, with this GIS, is that MBON is showing us the benthic assemblages and the fish assemblages at specific sites. This is where we're gathering the different data. Like with the biological data, and this is just an example, but I mentioned the susceptibility of these different sites to a coral disease, and, right now, we have the stony tissue coral loss disease, which is very aggressive.

What we can do with these maps is that, since we are gathering current information, and we have that biological information of like the coral composition, we could just take it a step further and even do like some modeling, where you can even highlight areas that could be susceptible to future disease outbreaks or -- So we can definitely expand on what MBON does, which is great work, but, since we're gathering all these different other layers and information, I think we could do modeling, some trajectory modeling, of what sites might look like, or susceptible sites to overfishing, or anything like that. I think a lot could be done with this project, and I guess we just have to talk to the right people.

SENNAI HABTES: I mean, I think that's part of our discussion today, is we should try and identify some of these and try and collate a list of people. Graciela, you've been patient, and did you have something to add?

GRACIELA GARCIA-MOLINER: Thank you. Ori, one of the things that the council has done, over time, is to gather these old habitat maps and the USGS sediment types, et cetera, that we have already in a GIS format. The thing that has not been done, and this would be addressing changes in habitat, as Alida was

saying, because most of them are nearshore, changes in the seagrasses and mangroves, et cetera.

Would that be something -- I mean, the main, basic maps are available, and they have the metadata and the information where they came from. They are in very different resolutions, and so that's an issue, but would it be the kind of data that the GIS group could address and make it into some kind of changes over time that you can actually see the changes in the seagrasses nearshore and these mangroves on the shoreline, et cetera? I think that we had talked about it at some point, but those maps are already in a format that can be used for that type of analysis.

ORIAN TZADIK: Sennai, if you don't mind, I will answer that.

SENNAI HABTES: Go ahead, Ori.

ORIAN TZADIK: Yes, absolutely, Graciela, and I was the one who took a first stab, or one of the ones, I think, because, again, I think Cindy tried to look into this, but I think it's an interesting idea to revisit, because, when I originally approached it, with my limited expertise on the topic, the problems I had -- First of all, I was looking primarily for coral reef, and so that's a much different layer than looking at some of these shoreline layers, because the biggest problem was that the older datasets were just too broad in their characterization of the benthos, and so they would say things like, in the 1950 dataset, you only had about five categories, and one of which would be like alive bottom, including algae, coral, sponges, and whatever else, and so looking at that was pretty useless, but I would have to revisit that, to see. If they do have a seagrass layer, or a mangrove layer, then that's a different story, and I think that's a great idea to revisit.

SENNAI HABTES: Thanks, Ori. J.J.

JUAN CRUZ-MOTTA: Thank you. Thank you, Stacey, and that was very helpful. I was wondering, of course, if we can do that, given the constraints that we have, as staff of the TAP, if we're allowed to invite the Pew people to give us like examples of things that can be done, because then that could help the different people doing different projects to -- You know, like once you're collecting the data, and analyzing the data, to have that in the back of your mind, so that you could not only collect the data for your own purposes, and your own analysis, but also to have it in mind that it will be cool to show it this way or that way, and, Sennai, would that be possible, to invite

to the next meeting to give a talk about potential products that could be -- As Ori pointed out, they might have a better idea of what can actually be done. Thank you.

SENNAI HABTES: Ori, are you raising your hand to answer that?

ORIAN TZADIK: Yes, and, I mean, unless you have a different idea on the topic, my suggestion, based on what I am hearing from Jocelyn and from your summary at the beginning of this call, would be that -- To take it kind of one step at a time, and maybe, once I have had this discussion with you guys, then I can have the discussions with them, and maybe I think it would be more appropriate for them to come back with a presentation of what they're already doing. Then the TAP could ask for nuances, in terms of their abilities and capabilities, and would that satisfy what you're requesting, J.J.?

JUAN CRUZ-MOTTA: Sure. Definitely.

SENNAI HABTES: Graciela.

GRACIELA GARCIA-MOLINER: Okay, and so I don't think it's a problem. Are they working on anything already related to Puerto Rico and the Virgin Islands? The reason for that is because I usually like to focus on things that are happening here, rather than to bring a product that someone created in Florida or something like that.

ORIAN TZADIK: They are currently working with me to work in the region, and they're not -- But no, they're not -- Most of their previous experience is mainland U.S.

GRACIELA GARCIA-MOLINER: Can I follow-up with that, Mr. Chair?

SENNAI HABTES: Yes. You're recognized, Graciela. Go ahead.

GRACIELA GARCIA-MOLINER: This is one of the exercises that Ori was talking about. At the beginning, we took a quick look at what these changes -- I mean, just to see what's available that is already in a GIS format for the various years for which we have data.

There is a map for St. John from 1959, and so these are data that -- They're all maps that the council had collected, and it's very limited in the amount of information that they have, but then you have the newest information from the NOS group and anything that has come up, and would this be the kind of thing that they could quickly look at and see if this can be brought

back to life and it would actually tell us something about the changes in habitat in St. Thomas or St. Croix, whatever you decide to look at first?

ORIAN TZADIK: Yes, I believe it is.

GRACIELA GARCIA-MOLINER: I mean, I think that that would be -- You know, it's just a very small example, but, if the TAP is agreeable to that, this is something that can be moved forward, I think, from a GIS perspective, fairly quickly.

SENNAI HABTES: I think those all sound like good ideas. My question is I want to make sure that anything that we're working on is something that's going to move us forward towards the goal of the TAP, which is the FMPs, right, and so I do foresee there is a lot of information from this approach that can be used towards outreach, later on down the road, but I also want to make sure that, if we're working on some of these, that the direct outcomes are going to be things that help us move towards finishing the things that we need to as a TAP. I would just ask that we all bear that mind as we are proposing these ideas for Ori. I have J.J. and Graciela, and your hands are still raised, and did you have other comments?

JUAN CRUZ-MOTTA: Sorry. I don't. I just forgot to lower my hand.

SENNAI HABTES: No worries. Just making sure. Ori, one thing I wanted to add is I work tangentially on a project over here that's doing some shoreline stuff, and so we've identified protocols that we're going to be using for our analysis, and so, when you are doing that kind of work, if that's a project you move forward with with your group at Pew, loop me in, and I can try and have you link in with our GIS and satellite people that are currently working on those analyses for the USVI.

ORIAN TZADIK: That would be great. Sounds good.

SENNAI HABTES: Okay. What I am hearing is, on this topic, what we're going to be doing now is Ori has a couple of ideas that he's going to reach out to his group at Pew, and, at a later date, he's going to report back to us on potential synergies that can help us with our work, and possibly, for the next meeting, either him, or people that he works with, can present to us data format and projects that we can discuss for use within the TAP. Does that sound about right to everyone?

ORIAN TZADIK: That sounds good to me.

JUAN CRUZ-MOTTA: I agree.

SENNAI HABTES: Okay. Sounds good. Any other discussion, questions, or concerns on the topic from TAP members or others on the call? Hearing none, I will ask Liajay if you can put back up the tentative agenda, and I believe we can use this time now to discuss any other questions, business, concerns from yesterday that we have not address, and do any council members have anything that they want to bring up or discuss?

Okay. Hearing or seeing none, we can move on with the agenda, and so the only other things that we have are Recommendations to the CFMC and Other Business. We could take a break now, if people want, or we can just move on through.

EDWIN CRUZ-RIVERA: I personally prefer that we continue.

RECOMMENDATIONS TO THE CFMC

SENNAI HABTES: That's my preference as well. Is there anyone opposed that needs a break? If so, now, or forever hold your piece. All right. Hearing no objections, let's go ahead and move to the Recommendations to the CFMC.

Based on our discussions from yesterday, I believe we are in the process of proposing two recommendations, the first be the development of the sub-group and the other being the use of risk assessment tools.

Let's start with the sub-group discussions, and, Liajay, would you mind putting up a text document, or a Word document, that we can use to draft the recommendations? If there is anyone else who is better at wordsmithing than I am, please go ahead. I am not really sure what is the best way to phrase recommendations to the council, and so, Graciela, maybe if you want to take the lead on drafting this, and we can kind of hop in with clarifications.

GRACIELA GARCIA-MOLINER: Where do you want to begin, with the risk assessment or the development of a sub-group for providing the --

SENNAI HABTES: Let's start with the sub-group.

GRACIELA GARCIA-MOLINER: Okay. So development -- First, you have to say the TAP recommends that a sub-group be created to provide guidance on data management and repositories, and do you

want to do everything together, or do you want to separate the data management from the --

SENNAI HABTES: No, I think it should be one group.

GRACIELA GARCIA-MOLINER: Okay. On data management and repository possibilities, and data repository -- I am trying to remember the -- Repository options. Thank you, Sarah. The TAP recommends that a sub-group be created to provide guidance on management and data repository options.

SENNAI HABTES: I would say guidance on data management policies and data repository options.

GRACIELA GARCIA-MOLINER: In this case, you can have the -- One or two members of the TAP, but probably the principal idea would be to invite MBON, CARICOOS, the Southeast Fisheries Science Center, people that deal with these things all the time. Is that what you had in mind from yesterday's discussion?

SENNAI HABTES: That is. Sarah has a chat mentioned, and she says and tie it to the FEP, and then a question-mark, and, Sarah, do you want to --

SARAH STEPHENSON: I just wanted to say maybe the why of why you're recommending this, and so you're recommending that a sub-group be formed to do these things, but for why, and it's for whatever products you're creating for the FEP, and so just kind of tie it back to -- Otherwise, they would be like why are you just housing data, and like they could ask that, and so I think, if you could provide some sort of why answer in your statement, it would be helpful.

SENNAI HABTES: Maybe, at the end, data repository options for the purpose of archiving data used in the development of the FEPs. I think this order is correct, but, if not, I apologize. J.J., Jocelyn, and then Kevin. J.J., you're recognized.

JUAN CRUZ-MOTTA: Thank you. A question. Are we allowed to also recommend the composition of that sub-group? I mean, I am not saying names, but organizations that should be included.

GRACIELA GARCIA-MOLINER: I would say yes, and the reason for that is because this will be work done specifically for what you are developing, and you already know at least most of the players that use the data products that you will be incorporating in the FEP. You can always make a suggestion. This is a recommendation, but the council can always say, well,

no, we went the Vice President of the USA to be part of this group.

JUAN CRUZ-MOTTA: That would be nice.

SENNAI HABTES: I do think we should probably make a suggested list of personnel to populate, based on people from the TAP and then those outside. Once we finish discussion of the recommendation, why don't we work on that? Jocelyn.

JOCELYN D'AMBROSIO: Thank you, and so just one minor point, and so, when it says the EBFM TAP recommends that a sub-group be created, just to clarify that it's a sub-group of the TAP be created. Otherwise, it could be a question of if you're asking for a different entity entirely.

Then sort of a related point is, if it's a sub-group of the TAP, I think it needs to be made up of the TAP members, and so the TAP members were appointed by the council, and so the council would have to be okay with additional entities being on it, and I think just the way that it makes sense is you have the TAP and then some subset of that group is part of this sub-group, this working group, basically, of the TAP, and so I think it has to be made up of TAP members.

This gets back to another point that the council has been talking about, is drafting a charter document for the TAP, which I think would set forth the goals and statements about membership and how many persons are going to be on it and things of that nature, and so I think it's really important that the council continue with that work, so that we can have clarity on how it's formed, and so this recommendation to have a sub-group will continue that conversation of creating that charter document that has the number of members, the goals, the ability to form sub-committees, et cetera.

Just as a general point, I think a sub-committee should be made up of persons that are on the committee, and then, if there are outside experts that you would like to speak to, I think you could just -- They wouldn't have to be TAP members, but you could invite them to the meetings to provide presentations to you, and then that sub-committee could then make recommendations back to the full committee, based on those conversations, but, again, in terms of procedure, the sub-committee meetings would have to be conducted like this meeting, as a public meeting, noticed in the Federal Register and all of that, and so just the two points.

I think, one the council should continue creating that charter document with some of the rules of the road for this committee, and then, two, I think the sub-committee should be made up of TAP members, but we would want additional council guidance, which I think you're seeking, just on the committee's roles and responsibilities and all that. Thank you.

SENNAI HABTES: Thank you, Jocelyn. Kevin.

KEVIN MCCARTHY: Thanks, and so I think that Jocelyn beat me to the punch. I was going to suggest that this sub-group really needs to be TAP members, and then we invite outside experts in to -- Basically, to teach us what they know and to actually -- I don't know the rules about having additional people on the TAP, or anything like that, but what I am thinking is it's a pretty big ask to get somebody in from the outside to join a sub-committee that we're then going to task them with work.

It's an entirely different proposition for somebody from the outside to come in and provide some expert guidance in a meeting or two, and then they're not sort of tasked to develop products and things like that, and I think that would be asking a lot of people, and we might have some real difficulty in getting people to participate, and maybe not.

Maybe they would, but I didn't envision this sub-group as effectively enlarging the TAP by bringing in other people, even if they only served on the sub-committee, and I thought it was heading more along the lines of I think what Jocelyn is describing, that it's a sub-group of the TAP that brings in outside experts to help provide some expertise, but not necessarily serve on the sub-group, but, again, I don't know the rules of how the TAP out to function, and maybe that also is what Jocelyn was getting at with this charter that the council is apparently working on.

SENNAI HABTES: Thanks, Kevin. I agree, and I think one area where there might be -- One concern I have is that there is a few people that we have identified that we're already kind of working with that are not TAP members, and so -- Scratch that. Not that we are working with, but that have expressed interest in helping us with our goals for developing the FEPs and the work that we're doing on the TAP.

One example is Miguel Figuerola, who presented to us yesterday and on the SSC, and a lot of his work, I think, can easily dovetail into things that would be beneficial for the TAP, but he's not necessarily a TAP member, but I do see him as a good

fit for working on something like this sub-group, because he's already engaged in doing that kind of work, and so the question becomes how do we maximize or ability to tap into those existing efforts, while remaining true to the mandates by the council for the TAP?

Another secondary thing would be do we want to go ahead -- Well, I guess we have to wait for the council to approve the recommendation before we nominate persons from our group to be on the sub-group, and so, Graciela, I see your hand is up.

GRACIELA GARCIA-MOLINER: Yes. Thank you. One of the things that you discussed yesterday had to do with the writing assignments and everything else, because everyone is pretty much tied up with many other things, and, as you see, we have members of the SSC and members of the TAP, et cetera, and so I would suggest that you go ahead and discuss the potential people that can be involved in this, because this would move us forward, in terms of -- I mean, when we talk about the datasets that are being created, and the amount of QA/QC that is going on, we would not like to see all that effort going to waste.

As I said, I think yesterday, or the day before, the council is working on trying to set up a server for these videos that are available from SEAMAP, et cetera, so that people have access to all this data.

They can shut you down and say, you know, well, we don't want a sub-group, and then we'll have to deal with that, and maybe get NMFS only involvement in setting up the policies, et cetera, which they might already have, but I think that, because it's fresh in our minds right now, the people that have presented to us and are involved in projects that are directly related to the FEP, I would suggest that you bring forth the names of experts that could contribute positively to bring these issues forward.

That would include not only Miguel Figuerola with MBON, but I would also be -- I think that it's Patricia Shardon, who might be involved with the data management of CARICOOS, or Yasmin Detres, and I don't know exactly who would be the person, and I think that we should also have someone directly related to the Science Center, because, after all, a lot of the data are coming from the Science Center.

I don't foresee this as tasking them more than once or twice, because what you want to do is establish the policies, that this is the way that we're going to do it, and this is the criteria that you need to set up this database management and these

repository options, and this is the funding that you will need to set up a repository for the data, and, people who do this all the time, I think it would take them one or two meetings just to get that expertise to the table, and we can move it forward. I don't think that it's jumping the cart, because we really need to deal with this data management.

SENNAI HABTES: Thank you, Graciela. J.J. and Jocelyn, your hands are still up. Did you have comments, or is that just from previous?

JOCELYN D'AMBROSIO: It was just from previous, but I can -- If it's all right, I would just sort of summarize what I was thinking, and then we can go from there.

SENNAI HABTES: Yes, go ahead. You're recognized.

JOCELYN D'AMBROSIO: Thank you. I think that this is a good discussion about kind of the needs for the TAP, and so, just to summarize the points that I was making, I think we do need a TAP charter from the council, and so this request will help them continue that work, and that charter can talk about membership and goals and sub-groups and things of that nature.

I think the sub-group would need to be made up of TAP members, and that's what I would recommend to the council when they discuss this, and then that doesn't prevent the sub-group from inviting outside experts to its meetings, to provide that advice, and, as Graciela was saying, if that would only take a few meetings, I think that would just be useful, to invite them to the meetings to provide that information, as opposed to having them on the group.

However, if there are persons who you really think should be on the TAP, you could recommend that to the council, and see if they would be willing to expand the TAP membership, and so that's something that we can talk about as part of that first point, the TAP charter setting forth the number of persons and the way the meetings operate and all of that.

SENNAI HABTES: Thank you, Jocelyn. I am a little confused now, because I think we have a couple of different routes here that we have to decide on. Do we follow -- Based on what Jocelyn just said, I think that sounds like the best roadmap forward, and so should we continue drafting the recommendation to include that wording, Graciela, or do we leave it general like this and see what the council comes back with?

GRACIELA GARCIA-MOLINER: I think that something like this that is general enough, and, I mean, I would, as I said already, identify the invited speakers to speak to the TAP members. If you do have volunteers right now to set up this sub-group from the TAP, I would also do so, because that -- It would show the council that you are really very much interested in moving forward this recommendation, and so you would need the volunteers from the TAP and the invited speakers, invited experts, for the sub-group.

SENNAI HABTES: All right. First, Liajay, can you just -- I think, maybe on -- Well, actually, never mind. I think it's fine as it stands. Are there any other additions or amendments that we want to make to that first statement from the TAP as a whole? Hearing none, let's move on to suggested membership. Are there any TAP members that are willing to serve on this sub-group?

Given that I am not hearing any volunteers from the current group, it seems to me that we're going to have a problem filling that with current TAP membership, given how many people are -- How stretched people are between different working groups within the CFMC already. I would be willing to sit on it, and so you can put my name down, Liajay, and I'm not sure -- Ori, any interest?

ORIAN TZADIK: I was going to say -- I mean, I'm happy to do it, but I just have very little expertise in this topic. I am happy to kind of be part of the sub-group that listens to the experts, and we can talk about it and make decisions, but I really don't know a lot about it, but, having said all of that, with that caveat, yes, I am happy to participate.

SENNAI HABTES: Stacey is recognized.

STACEY WILLIAMS: I could sit on the sub-group.

SENNAI HABTES: Okay. Thank you, Stacey. Any others?

EDWIN CRUZ-RIVERA: If expertise, like first-hand expertise, is not expected, then I am willing to participate.

SENNAI HABTES: Okay. Thank you, Edwin. Any others? Okay. Hearing none, why don't we list potential outside membership that we can recommend, either for the council to decide on adding them as members to the TAP or as experts that can come in and work with us. I personally am fine with either, but I think we can leave that to the council to decide, but also to indicate

that the expertise is needed for us to do it. J.J., you have your hand up? J.J., if you're speaking, you're muted.

GRACIELA GARCIA-MOLINER: Let me send him a message.

SENNAI HABTES: Okay. I think we can move on with potential outside members, and I would recommend Miguel Figuerola, and I think his title is CARICOOS MBON data management technical consultant.

GRACIELA GARCIA-MOLINER: And DNER, PR DNER.

SENNAI HABTES: Is he still here at DNER? Then I guess DNER. All right. Stacey and then Edwin and then Tarsila. Stacey, you're recognized.

STACEY WILLIAMS: I suggest William Hernandez, and he works -- He's an adjunct professor at the University of Puerto Rico, and he has his own consulting company, and he does GIS and remote sensing. Also, we are working with a consultant, Iliana Chollett, and she's really good at extracting remote sensing data, and she has her own consulting firm, but he's based in Ireland at the moment.

LIAJAY RIVERA: Sorry, Stacey, but could you repeat the description of her position?

STACEY WILLIAMS: She would be -- She does remote sensing and extracting physical and environmental data and does mapping.

SENNAI HABTES: Jocelyn has a comment of can we change the heading to "Potential Members or Invited Experts from Outside the EBFM TAP", and I think that's fine. Then, Tarsila, you are recognized to speak.

TARSILA SEARA: Thank you. I just wanted to ask if it's fair to assume that this is going to remain a flexible list, because I would like to identify somebody who could help with the sort of unique challenges of dealing with the socioeconomic data, but I don't know exactly who, off the top of my head, but I would like to identify somebody who could help with that and then suggest a name at a later date, and is that okay?

SENNAI HABTES: Graciela, is this something that, once it goes up to the council, it's -- I mean, we can always, to my knowledge, make another recommendation, where, if there is someone else you wanted to add, that we could.

GRACIELA GARCIA-MOLINER: Exactly, and this would bring up -- I mean, if we put something on the socioeconomic side, I mean, even NOAA Headquarters might have someone that does that kind of database thing, and so it could bring another contributor. I can't think of anyone, off the top of my head, but they must have someone that deals with all the data from the socioeconomic side of things.

TARSILA SEARA: Can I just make a comment?

SENNAI HABTES: Yes, go ahead.

TARSILA SEARA: I would know who to ask, to try to identify this person, but I just don't have a name, off the top of my head, but it's something that I could certainly get back to the group with some suggestions.

SENNAI HABTES: My other question is, if they are potential invited experts, if they're not permanent members on the sub-group, like the four listed above, can they just not change out interchangeably? Like whenever we have someone that we wanted to bring in, can we invite them without approval from the council?

GRACIELA GARCIA-MOLINER: For your meetings, yes. One thing is that you can actually mention the expertise, and so, in this case, it would be socioeconomic data manager, something like that, so that you have a holding place in there, and so you don't -- Some of them you can name, because you know them, and they've been working with you in different aspects, and the other thing is we need someone that deals with socioeconomic data.

SENNAI HABTES: Liajay, can you just put a placeholder in for socioeconomic data representative, and Edwin, I believe, is next, and then Kevin. Edwin, you're recognized.

EDWIN CRUZ-RIVERA: Thank you. As a theoretical construct here, we don't need only people that know how to manage, or clean, data, but also people that know how to store it and can provide suggestions on where to keep it. It just occurs to me that this is something that every EPSCoR had to deal with, and so maybe approaching the people that do it for the EPSCoRs in Puerto Rico and the UVI might be a potentially productive thing to do.

SENNAI HABTES: We currently, at VI EPSCoR, don't have anyone with that capacity. They have mentioned hiring someone for that, but I think that got dropped off, and so it's currently up

to me, actually.

EDWIN CRUZ-RIVERA: I don't know about the Puerto Rico then.

SENNAI HABTES: Thank you, Edwin, and I agree that there are other -- We have people on our EPSCoR board who are well versed in that, but I'm not sure we could get them onto the --

EDWIN CRUZ-RIVERA: Right, and so my second suggestion -- A question, first. Are we looking for people that specifically work with the Caribbean, or just people that have this type of expertise?

SENNAI HABTES: I think people that work with the Caribbean is always better, but anyone that works with the expertise that is willing to help us with these, which are Caribbean datasets, would be --

EDWIN CRUZ-RIVERA: I can commit to reach out to colleagues at the Great Lakes Lab, with whom I am working, who are sort of hardcore remote sensing people that do this for a living, and we're working on expanding what they are doing there to the Caribbean, and so maybe they will be willing to come, but I cannot speak for them at this moment, and so I will just make the commitment to reach out to them.

SENNAI HABTES: Okay. I think that would be fine. Kevin, you're recognized.

KEVIN MCCARTHY: Thank you. I think Edwin hit it right on the head. Having people who use the data a lot, and QA/QC data, and are used to dealing with big datasets is good to have, but we also need to have the real database kinds of people, and database developers, and so the two of them together -- The database developer doesn't necessarily know squat about your data, but you've got a bunch of hardcore data people on here know, and so I would recommend, and I can't name the person, but I would recommend that the council request, from the Southeast Fisheries Science Center, some database experts of their choosing, because they have some who could advise.

They probably are not going to have the time to sit on the panel, but they could certainly advise and participate in meetings and help this panel understand the kinds of things that they would need from a database side, both sort of the hardware kinds of issues as well as the kinds of database development that you would have to have to upload data into a -- To build the database and upload data there, and so I would just leave it

sort of open that a Southeast Fisheries Science database expert, or words to that effect, and then they can figure out who that would be, and I can talk to people there and kind of give an idea of what the need is, so they can get the right kind of expertise in whoever they put up for that, for that role, for this committee, but I don't know who that might be.

There are a number of people it could be, and I would leave it up to the Science Center to identify that person, and I can't say that they would be able to -- You know, if these folks end up -- If some, or all, of them end up sitting in as committee members, and I don't know if this person would have that kind of time, but certainly you could ask them, in at least an advisory capacity, because you really need a database geek who understands the issues, not so much from the data side, and you've got your data people here, but from the actual database side.

As somebody said, and, Sennai, maybe it was you yesterday, but this is a whole field of study. This is a whole specialty in and of itself, just the database stuff, and it's important to have somebody on there, and maybe Miguel can help fill that role as well, and I'm not sure, but I think asking somebody that the Science Center identifies -- They may kick it up to Headquarters.

As Tarsila said, having somebody that understands one kind of database doesn't mean that you don't need to hear from somebody who knows about an entirely different database, a socioeconomic database, and I don't know how different they might be, but that's why I am not on this committee. Anyway, that's my recommendation.

SENNAI HABTES: Thank you, Kevin. I agree with that, and I think, also, it would be useful for us to reach out to CARICOOS, and they work with this frequently, from oceanographic and physical, and so, if we could put a placeholder in there for a representative of CARICOOS DMAC and Information Systems, and then, in parentheses, you could put Jorge Capella or Jose Colon, I believe are the people that had been managing those, and so perhaps if the council can reach out to Julio Morrell and see if he would be willing to put someone in, because they've been building these systems for physical oceanography in the USVI and Puerto Rico, and they have a DMAC system in place, and maybe they could be helpful for us for doing this. Graciela has her hand raised, and, Edwin, do you have another question, or is it just from previous?

EDWIN CRUZ-RIVERA: Sorry. The phone is acting up, and I trying to lower the hand, and it's not taking it.

SENNAI HABTES: No worries. Just making sure. Graciela, you're recognized.

GRACIELA GARCIA-MOLINER: Okay, and so we have in fact been talking to CARICOOS, because of SEAMAP more than anything else, and so this is really a good time to keep on talking to CARICOOS, especially because they are looking to merge the physical oceanography and the biological data, as part of their future work, and so I think that this is great. Thank you.

SENNAI HABTES: I mean, I think, if more higher-level conversations than I can direct -- If that can happen between the council and CARICOOS, this would be a very good area for collaboration, using the existing DMAC within the CARICOOS to help us with the organization of this data that we need to house, which a lot of it is socioeconomic and biological in nature, but there's also the physical and oceanographic, which CARICOOS is also interested in.

Are there any other recommendations for either members from the TAP to be in the sub-group or outside experts that would attend the meetings of the sub-group?

EDWIN CRUZ-RIVERA: Another suggestion that is local is I would recommend Tom Lombardi. He is a data science person at UVI, and he is doing something like this with the astronomical data for the Etelman Observatory.

SENNAI HABTES: Great. Thank you, Edwin. All right. Any other recommendations? All right. Can everyone please -- I will read it out, and, as I'm reading it, everyone please take a look at what is written on the screen and let me know of any edits that need to be made before we move on.

The first recommendation to the council is that the EBFM TAP recommends that a sub-group of the TAP be created to provide guidance on data management policies and data repository options for the purpose of archiving data used for the development of the FEP.

Potential members for the sub-group are Sennai Habtes, Ori Tzadik, Stacey Williams, Edwin Cruz-Rivera, and then potential members, or invited experts from outside the EBFM TAP are Miguel G. Figuerola, CARICOOS/MBON/PR DNER data manager; William Hernandez, adjunct professor at UPR/consultant; Iliana Chollett,

remote sensing for physical and environmental data; a socioeconomic data representative. I would put, instead a "--", put "a socioeconomic data representative. The same for SEFSC database developer, and so "an SEFSC database developer". Then Tom Lombardi at UVI. Edwin, can you give Liajay a description for -- Is he an assistant professor or an associate professor, and in what department?

EDWIN CRUZ-RIVERA: Assistant professor of data -- Sorry. Assistant professor of information systems, and he's the chair of information systems at UVI, and he is building the database for the Etelman Observatory.

SENNAI HABTES: That's perfect. I would say, Liajay, don't worry about the Etelman Observatory part, and you can simple put "Chair ITS" in parentheses, and then "-- UVI". All right. Does anyone else have other edits or things that we should clarify in this recommendation? Hearing none, I will close discussion on this, and I think what we need to have is a motion and a second and a vote to send this recommendation to the council. Does anyone motion?

ALIDA ORTIZ: I motion to send that recommendation to the council.

SENNAI HABTES: Okay, and so Alida Ortiz motions that we send the recommendation, as written, to the council.

ORIAN TZADIK: I will second that.

SENNAI HABTES: It's seconded by Ori, and so let's have a vote. Again, all in favor, remain quiet. All opposed, say nay. Any wishes to abstain, please say they abstain. **Hearing no abstentions or nays for opposition, the recommendation has passed, by unanimous consent, to be moved up to the council.**

Graciela and Liajay, I would ask that you -- When you need to, reach out to me for email addresses or contact information for the people on the sub-group, so we can add that when we present it to the council.

All right. The second thing for discussion was the risk assessment tools, and so if someone could just remind me of where we are with this, and was it that we needed to draft a recommendation now, or we were waiting to hold off for our next meeting to create a recommendation for how we're proceeding with the risk assessment?

ORIAN TZADIK: Sennai, my understanding is that we were waiting.

SENNAI HABTES: Okay. Graciela, did you have a comment?

GRACIELA GARCIA-MOLINER: Yes, and you wanted to have Tauna invited to the next TAP meeting to discuss how the best approach would be regarding how to move forward with the risk assessment, and, in fact, you actually discussed, yesterday, going through the elements of the risk assessment and the ECMS that have been developed to-date, and see where that would take us. I believe that she said that that was easy enough to do, and so the ideal situation will be that we will invite her at the next meeting and have that in the agenda.

SENNAI HABTES: Great, and so there's no need to draft a recommendation to the council on this yet, and we will simply invite Tauna to provide a presentation on those options to us at the next TAP meeting. Correct?

GRACIELA GARCIA-MOLINER: Yes.

SENNAI HABTES: It doesn't only have to be Graciela, and others can let me know if I'm going astray as well, and so, with that, I don't believe there were any other recommendations to the CFMC that needs discussion, and I will give us thirty seconds, or not even that, but fifteen seconds, for anyone to say -- Ori has hand up, and so the Chair recognizes Ori to speak.

ORIAN TZADIK: Do we want to -- I don't know if this is a recommendation to the council, but maybe just remind them about the goals and objectives that we're still looking for feedback from.

SENNAI HABTES: That would be a question for Graciela and Jocelyn, I think, on that point, and do we need to send a recommendation to remind them to look at the goals and objectives, but also on drafting a charter for this?

GRACIELA GARCIA-MOLINER: Not really, but you can, and we will have to add that to the agenda, so that they will be receiving the goals and objectives as they saw them last, and I will bring up -- I don't think that you have to make a specific recommendation to the council, and I will bring up the charter with Miguel, when I talk to him today or next week.

SENNAI HABTES: Excellent. Well, I think that would handle it, and I can always, at the next chance I'm at the council to present on TAP, I will remind them as well, but I think, yes,

Graciela, if you will reach out to Miguel and talk to him about those two things, when you speak to him, I think that would be sufficient. Ori, your hand is still raised. Do you have another comment? No? Okay. Anyone else with a potential recommendation to the council that we would need to draft?

Okay. Hearing none, I will move on to the last agenda item, which is Other Business, and is there anything that you guys would like to bring up to have an open discussion within the TAP, in terms of other business that we haven't discussed as yet? If there is, just raise your hand, or please type into the chat. Graciela is recognized.

OTHER BUSINESS

GRACIELA GARCIA-MOLINER: Okay, and so I believe that, from what you saw yesterday in the checklist, as of the dates, the TAP would have to -- If the council approves the sub-group, that can be one meeting that we can have without having to deal with the checklist, but then, since you have the checklist, I think you're pushing the next TAP meeting until August of September, when there will be more information and more analysis of the datasets, and is that correct?

SENNAI HABTES: That is correct. Liajay, do you have that? I can find it, actually.

LIAJAY RIVERA: I have it, and I will open it.

SENNAI HABTES: Okay. Thank you, Liajay. The conceptual models we have were to be completed -- We have pushed that back to August of 2021. I think the next time that we would need to meet would be after those models had been completed, because then that would be a good time to talk about the risk assessment and how we can use that to refine the models.

My recommendation would be to have our next meeting in August of 2021, and do we want to have discussion? Does anyone think otherwise? Hearing none, I would say the answer to that question then, Graciela, is yes. That's when we would have the next meeting, is August of this year.

GRACIELA GARCIA-MOLINER: At that time, we would have -- It would be the presentation of the CM analysis, or an update of everything that has been completed to-date, and then invite Ori and the GIS group.

SENNAI HABTES: Right, and Tauna's presentation.

GRACIELA GARCIA-MOLINER: And Tauna's presentation.

SENNAI HABTES: Then I think, once we have those presentations, we'll need to have a discussion on using risk analysis within the conceptual models, and also an update from our sub-group on the data management. Hopefully, at that point, the council will have completed a charter for us to review, as well as giving us feedback on the goals, and so we would also hopefully have those as agenda items.

GRACIELA GARCIA-MOLINER: Perfect.

SENNAI HABTES: Okay. Any other questions on that, Graciela, or other business to discuss from anyone?

GRACIELA GARCIA-MOLINER: Not from my part, and I don't see anything in the chat either. For the update, we'll invite, again, anyone who has been working on anything related to the FEP, and so we'll invite Mandy and Kelly and the SSC, if they've done anything differently, and have an update on Lenfest and MBON, because it would be, of course, up to date with the USVI data, and so that's for the updates, and I think that we have everything we need.

SENNAI HABTES: Great. Unless there are other updates or concerns or questions or other business from others on the TAP at this point, I will ask for someone to motion that we adjourn the meeting.

TARSILA SEARA: Motion to adjourn.

SENNAI HABTES: Thank you, and so motion to adjourn from Tarsila Seara. Do I have a second?

EDWIN CRUZ-RIVERA: Second.

SENNAI HABTES: Thank you, Edwin. It's seconded by Edwin Cruz, and, with that, I believe that we can bring this meeting, the second meeting of the Ecosystem-Based -- Sorry. The second day of the Ecosystem-Based Fisheries Management Technical Advisory Panel meeting on February 5, 2021, to a close. Thank you, all, for your attendance and your continued efforts and work on this advisory panel, and I look forward to hopefully one day being able for us to meet again in-person, and then, if not, I'm looking forward to talking to you again virtually at our next meeting. Take care, everyone.

(Whereupon, the meeting adjourned on February 5, 2021.)