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1 CARIBBEAN FISHERY MANAGEMENT COUNCIL
2 SCIENTIFIC AND STATISTICAL COMMITTEE
3 AND
4 ECOSYSTEM-BASED FISHERY MANAGEMENT
5 TECHNICAL ADVISORY PANEL
6 JOINT HYBRID MEETING
7 COURTYARD MARRIOTT
8 ISLA VERDE, PUERTO RICO
9

10 MAY 1-2, 2023
11

12 The Scientific and Statistical Committee and the Ecosystem-Based
13 Fishery Management Technical Advisory Panel convened on Monday
14 morning, May 1, 2023, and was called to order at 1:15 p.m. by
15 Chairman Sennai Habtes.
16

17 **SENNAI HABTES:** Online, just so you're aware, we're going to get
18 started probably in the next five minutes or so. We're just waiting
19 on some more members to arrive. So just please bear with us as we
20 are getting everything set up in the room. Thank you.
21

22 **ALIDA ORTIZ SOTOMAYOR:** Buenos días.
23

24 **SENNAI HABTES:** Buenos días, Alida.
25

26 **ALIDA ORTIZ SOTOMAYOR:** Hola, hola. Ya pude entrar. Hola Martha.
27

28 **MARTHA PRADA:** Hola, hola. Soy yo, Alida. Felicitaciones por ese
29 acontecimiento.
30

31 **ALIDA ORTIZ SOTOMAYOR:** Gracias. Gracias.
32

33 **MARTHA PRADA:** Muy merecido.
34

35 **SENNAI HABTES:** I'm going to move over one, and you can sit at
36 this one, because this one works and this one works. Vance, just
37 take this one. This one works.
38

39 **VANCE VICENTE:** Alida, saludos y felicidades por el reconocimiento
40 que te dieron. Salió en el Nuevo Dia. Muy bonito. Gracias.
41

42 **ALIDA ORTIZ SOTOMAYOR:** Gracias. Gracias.
43

44 **Call to Order and Roll Call**
45

46 **SENNAI HABTES:** Good afternoon, everyone. I would like to welcome
47 you all to the joint Scientific and Statistical Committee or SSC
48 and Ecosystems Based Fisheries Management Technical Advisory

1 Panel. Today is May 1st and it is approximately 1:15 PM. I am Sennai
2 Habtes. I am the chair of the Ecosystems Based Fisheries Management
3 Technical Advisory Panel, and I will be co-chairing this meeting
4 with Mr. Vance Vicente, who will be sitting at my right. At this
5 point I will call this joint meeting of the EBFM TAP and SSC to
6 order.

7
8 Welcome everyone. We'll go ahead and do a quick roll call, and
9 then we have some other business that I'd like to hand over the
10 mic to the Chair of the General Counsel for a quick announcement.

11
12 So, with that, I'll announce myself again. I am Sennai Habtes, the
13 chair of the EBFM TAP. I'm also the Bureau chief of Fisheries for
14 the Virgin Islands Department of Planning and Natural Resources.
15 To my right, we'll go with you, Vance.

16
17 **VANCE VICENTE:** Well, good afternoon. I'm Vance Vicente. I was
18 assigned chairman of the SSC, which is a very honored position, so
19 I'm very glad to be appointed. I will do my best as a chairman.
20 One thing that I believe is important to begin is that I want to
21 tell you all, you know, to behave in the best manner, in the most
22 polite way when making questions and be nice to each other. Okay?
23 Thank you.

24
25 **RICHARD APPELDOORN:** Rich Appeldoorn, SSC member.

26
27 **KEVIN MCCARTHY:** Kevin McCarthy, EBFM TAP.

28
29 **JORGE R. GARCÍA-SAIS:** Reni García, SSC member.

30
31 **ORIAN TZADIK:** Orian Tzadik, EBFM TAP.

32
33 **TODD GEDAMKE:** Todd Gedamke, SSC member

34
35 **JUAN J. CURZ MOTTA:** J.J. Cruz, EBFM TAP and SSC member.

36
37 **TARSILA SEARA:** Tarsila Seara, EBFM TAP and SSC.

38
39 **STACEY WILLIAMS:** Stacey Williams, EBFM TAP

40
41 **LIAJAY RIVERA GARCÍA:** Liajay Rivera García, Council Staff. Buenos
42 días.

43
44 **CRISTINA OLÁN MARTÍNEZ:** Cristina Olán Martínez, Council staff.

45
46 **NELSON CRESPO:** Good afternoon, everyone. Nelson Crespo, DAP Chair,
47 Puerto Rico.

48

1 **GERSON MARTÍNEZ:** Good afternoon. Gerson Martínez, DAP Chair, Saint
2 Croix.
3
4 **JULIAN MAGRAS:** Good afternoon, everyone. Julia Magras, DAP Chair,
5 Saint Thomas/Saint John.
6
7 **MARCOS HANKE:** Marcos Hanke, CFMC Chair.
8
9 **SARAH STEPHENSON:** Sarah Stephenson, Southeast Regional Office.
10
11 **SARAH GAICHAS:** (Dr. Gaichas comment is inaudible on the
12 recording.)
13
14 **GRACIELA GARCÍA-MOLINER:** Graciela García-Moliner, Council Staff.
15
16 **DIANA T. MARTINO:** Diana Martino, Council Staff.
17
18 **MIGUEL A. ROLÓN:** Miguel Rolón, Council Staff.
19
20 **SENNAI HABTES:** Excellent. Thank you to everyone in the room. I
21 will now go across the names as I see them on the screen and ask
22 you to introduce yourselves online. We'll start with Edwin Cruz
23 Rivera.
24
25 **EDWIN CRUZ-RIVERA:** Edwin Cruz-Rivera from Morgan State University
26 and U.V.I. TAP.
27
28 **SENNAI HABTES:** Jesús Rivera Hernández.
29
30 **EDWIN CRUZ-RIVERA:** Sorry. Was that to me?
31
32 **SENNAI HABTES:** No, that's it, Edwin. I was moving on to the next
33 person, unless you had something else to say.
34
35 **EDWIN CRUZ-RIVERA:** We are having a really hard time in the line
36 understanding. It's really garble.
37
38 **ALIDA ORTIZ SOTOMAYOR:** Yes. Yes.
39
40 **SENNAI HABTES:** Is it just my microphone or was it everyone's
41 microphone?
42
43 **EDWIN CRUZ-RIVERA:** Everything is garbled, so I can see that you're
44 talking, but I cannot understand anything that you're saying. I
45 can hear sound.
46
47 **SENNAI HABTES:** Okay. Hold on one second while we try and work on
48 that.

1
2 **ALIDA ORTIZ SOTOMAYOR:** The sound is very poor. I cannot understand
3 what they're saying.
4
5 **KEVIN MCCARTHY:** Yeah, it sounds clear for us that are online.
6 Just not the mics are definitely not working for some reason.
7
8 **RICHARD APPELDOORN:** Testing, testing, testing.
9
10 **ALIDA ORTIZ SOTOMAYOR:** I can hear.
11
12 **LIAJAY RIVERA:** Alida, can you hear me? Can anybody on Zoom hear
13 me?
14
15 **ALIDA ORTIZ SOTOMAYOR:** Now I can hear.
16
17 **LIAJAY RIVERA:** Clearly?
18
19 **SENNAI HABTES:** Testing, testing. Is this any better?
20
21 **GROUP:** Yes.
22
23 **SENNAI HABTES:** Okay, thanks. So, it's that microphone, so I'll
24 just share with Vance for the rest of the meeting.
25
26 All right. Thank you everyone for your patience. We'll continue on
27 with the roll call. I'm just going to be calling the names that I
28 see and allow you to introduce yourselves online. If it goes about
29 30 seconds and I hear no response, I'm going to move on to the
30 next name and we'll just note who's on the call. So, Jesús Rivera
31 Hernández. Okay. Katherine Zamboni. María López-Mercer.
32
33 **MARÍA LÓPEZ-MERCER:** Hi, this is María López from NMFS Southeast
34 Regional Office.
35
36 **SENNAI HABTES:** Thanks, María. Ana Costa. Anne Kersting.
37
38 **CRISTINA OLÁN MARTÍNEZ:** Katherine is hearing but she is having
39 problems with her mic. So, she wrote General Counsel, but my
40 microphone isn't working.
41
42 **SENNAI HABTES:** Thank you, Katherine. So, Katherine, is the General
43 Counsel at NOAA GC. So, I'll keep an eye on the chat for those of
44 you who can't say anything. Feel free to just introduce yourself
45 in the chat as I call your name if you are unable to speak.
46
47 I think we are on Anne Kersting. Thank you, Anne. General Counsel
48 as well. Martha Prada.

1
2 **MARTHA PRADA:** Uh, yes. Good afternoon to everyone.
3
4 **SENNAI HABTES:** So, Martha, if you don't mind, while you're on,
5 could you just introduce yourself and your affiliation with either
6 the SSC or EBFM TAP or Council Staff?
7
8 **MARTHA PRADA:** Sorry, I was muted. Yes, I am representing the
9 Council this afternoon.
10
11 **SENNAI HABTES:** Great. Thank you. Martha. Erik Williams?
12
13 **ERIK H. WILLIAMS:** Yes. Good afternoon. Erik Williams, Southeast
14 Fishery Science Center. SSC member.
15
16 **SENNAI HABTES:** Thank you. Erick. Michelle Schärer.
17
18 **MICHELLE SCHÄRER-UMPIERRE:** Buenas tardes. Michelle Schärer,
19 independent contractor. SSC member.
20
21 **SENNAI HABTES:** Thank you, Michelle. Tauna Rankin.
22
23 **TAUNA RANKIN:** Good afternoon, all. Tauna Rankin with NMFS Office
24 of Habitat Conservation. Here to participate on the EBFM TAP.
25
26 **SENNAI HABTES:** Thank you, Tauna. Katharine Tzadik.
27
28 **KATHARINE TZADIK:** Yes. Good afternoon. Hi everybody. I'm an
29 independent contractor working with the EBFM TAP.
30
31 **SENNAI HABTES:** Thank you, Kat. Wilson Santiago.
32
33 **WILSON SANTIAGO:** Good afternoon, everyone. Wilson Santiago,
34 Puerto Rico Fisheries Liaison.
35
36 **SENNAI HABTES:** Thank you, Wilson. Jason Cope.
37
38 **JASON COPE:** Good afternoon, everyone. Jason Cope, Northwest
39 Fishery Science Center, member of the Caribbean SSC.
40
41 **SENNAI HABTES:** Thanks, Jason. Rachel Eckley.
42
43 **RACHEL ECKLEY:** Hola. Buenas tardes. Rachel Eckley, Southeast
44 Fishery Science Center.
45
46 **SENNAI HABTES:** Thanks, Rachel. Alida Ortiz. Hi Alida.
47
48 **ALIDA ORTIZ SOTOMAYOR:** Hi. Alida Ortiz Sotomayor, Outreach and

1 Education Advisory Planner and EBFM TAP member. Good to be here.
2
3 **SENNAI HABTES:** And I believe last but not least, Julie Neer.
4
5 Okay. If there is anyone that I've missed, I apologize, please
6 just put yourself in the chat and let me know and I can give you
7 a moment to respond. If I see nothing, we'll just move on.
8
9 **LIAJAY RIVERA GARCÍA:** Mr. Chair, may I have a moment? For the
10 people at the room, please speak loudly and close to the microphone
11 for the record for the written transcripts. Thank you.
12
13 **SENNAI HABTES:** All right. With that, let's just go into some
14 general housekeeping rules. Everyone, so again, welcome to the
15 meeting. As Liajay mentioned, please do speak loudly and clearly
16 into the microphone for transcription purposes. As a reminder,
17 those of you that are on any of the SSCs or EBFM TAP or chairs of
18 other panels that are here as part of CFMC business, there are two
19 sheets at the front desk that you'll need to make sure that you
20 sign every day as you come into the meeting. If you have not done
21 so today, please make sure you do so. In addition, I want to make
22 sure that we have a nice, healthy and productive meeting. So, with
23 those rules in mind as we are going through any of the meetings,
24 I would remind everyone to please keep a civil tone, keep an open
25 mind, and make sure that you're willing to listen to any and all
26 comments that come from anyone and be respectful to one another.
27
28 With that said, I will be chairing the meeting today, so if you do
29 have something to say, please raise your hand or alert me to let
30 me know. That goes for you guys online as well. I see Edwin's hand
31 up. I will come to you in just one second, Edwin. I appreciate you
32 using the hand signal to let everyone know that you had something
33 to say.
34
35 We will try to keep comments on most things towards the end of
36 presentations. I will try to provide ample time for everyone to
37 speak and give information. I will also ask you to please do bear
38 with us as this is a joint meeting. There are a lot of things that
39 will be ongoing, and we need to be a bit fluid with the schedule
40 given that there are sometimes where some people need to be in
41 both meetings at once, which is not possible, so we're going to
42 try to accommodate as much as we can throughout this entire
43 process.
44
45 With that being said, I appreciate everyone's attention. I'm going
46 to turn over the microphone to Marcos Hanke for a short
47 announcement of some very important news.
48

1 **MARCOS HANKE:** Good afternoon, everyone. I just want to take this
2 time to express my sincere and the sincere condolences to this
3 group, from the Council, especially for myself that I knew him for
4 Confesor Melo Martínez "Caito", which was a master fisherman that
5 many of us learned to fish with him deep sea fishing and other
6 techniques. He's the core of what is done on the water nowadays,
7 on the North and the East coast of Puerto Rico. He was the owner
8 of Pana, which is a Bertram 31', is a classic fishing boat from
9 Boca Cangrejos. He is the only person that weighted 1086 pound
10 grander in Puerto Rico, blue marlin, in Puerto Rico and this is
11 just one part of his story. The real value of Caito was his honesty.
12 He was open to everybody, welcoming to everybody. His boat was the
13 fishing platform for education, how to do fishing in Puerto Rico,
14 especially on offshore. All the sites that I have for deep water
15 snapper on the East coast, he gave to me. No questions asked.
16 Fishermen understand how important that is. That's the kind of
17 person Caito was.

18
19 Thank you, Caito. Rest in peace. Thanks to the family and a big
20 hug from all the fishery community. Thank you.

21
22 **SENNAI HABTES:** Thank you, Marcos. Sad news indeed. So, with that
23 I'm going to go ahead and Edwin, I see your hand was raised. I'm
24 going to let you go ahead before we move on with the adoption of
25 the agenda.

26
27 So, I am going to assume the hand being down means you're good,
28 Edwin, and we can move on, or did you ask?

29
30 **EDWIN CRUZ-RIVERA:** Oh, no, no. I'm sorry. I thought I had unmuted.
31 I apologize.

32
33 **SENNAI HABTES:** All right.

34
35 **EDWIN CRUZ-RIVERA:** For those of us who are attending online are
36 there any forms or how do we make a record of attendance?

37
38 **CRISTINA OLÁN MARTÍNEZ:** Yes. Cristina Olán, for the record. There
39 are two ways of having the record of your attendance. The first
40 one with the names that Sennai read already we have the recordings
41 of the meeting and the second one is that we also write your names
42 in the attendance list at the meeting room. It will appear under
43 Zoom participants.

44
45 **EDWIN CRUZ-RIVERA:** Okay, good. Thank you.

46
47 **Adoption of Agenda**

48

1 **SENNAI HABTES:** Great. Thanks Edwin. Sennai again for the record.
2 At this point I will go ahead and bring up the agenda, before we
3 adopt the current agenda. I recommend that we have a motion to
4 have some discussion for any of those that have changes that they
5 would like to make to the agenda for the joint SSC. I have some
6 recommendations, but obviously I cannot motion. So, if somebody
7 would motion and second, we could have a discussion on the approval
8 of the agenda.

9
10 **EDWIN CRUZ-RIVERA:** I second

11
12 **JUAN J. CURZ MOTTA:** Yeah, motion to discuss the agenda please.

13
14 **SENNAI HABTES:** Thank you, J.J. And we'll take Edwin's second for
15 that motion. I recommend that we move my time for tomorrow morning,
16 9:00 to 9:30 AM in the overview of progress to date and move that
17 to this afternoon's presentations and that will give another 30
18 minutes that we can use for J.J., Tarsila and Sarah to talk more
19 about some of the work they're doing with Lenfest, which I think
20 is going to be very germane to the conversations we have to have
21 later in the week.

22
23 **JUAN J. CURZ MOTTA:** Yeah, I agree with that. Also, I would like
24 to change the topic of our talk. More than talking about our
25 specific results, we would like to talk about the general vision
26 of what we have learned through these last three years on what is
27 an FEP and how can it actually be used by the Council to help
28 management. So, it's more about the structure of the FEP rather
29 than the results. Of course, we will offer concrete examples
30 through our presentations and how, what we have been doing, fits
31 into that process.

32
33 The reason for this is that we feel that we have been presenting
34 our work, our results at several meetings and yet we feel that the
35 collective says, "Okay, great work. But how does that fit into the
36 FEP." And then we felt like for this special meeting, we needed to
37 convey that message. What's the structure that we have been using
38 that we feel will be ideal and then how our work fits into that.
39 Perhaps details on our research can be given for the working group
40 of the EBFM TAP during Wednesday and Thursday, like, how the
41 specific results we can implement that into the document. Thank
42 you.

43
44 **SENNAI HABTES:** So, for that, I think I was going to recommend, if
45 that's possible, if we can move, Sarah Gaichas' talk. Sarah, would
46 you be okay moving to nine?

47
48 **SARAH GAICHAS:** Yeah.

1
2 **SENNAI HABTES:** All right. Great. And then that would leave you
3 guys, J.J., with some time in there where it's progress towards
4 informing an ecosystems-based approach. You can speak about it
5 then. And then you also have time, I believe, between 1:00 and
6 2:00 PM, but I think we can just use all of your time in the
7 morning and then we can shift. I don't know if we can shift Adyan,
8 I think she has a specific time that she has to present. Let's see
9 how far we get, and we have to cut it off. We'll move you back in
10 the afternoon and bring you back if that's okay.

11
12 **TARSILA SEARA:** Also, the last presentation that I am scheduled to
13 do, we can certainly shorten or move that, if that helps.

14
15 **SENNAI HABTES:** Yeah, I think we'll move it up. That should give
16 you a little bit of extra time in the morning and then we'll just
17 keep popping back to it, if that's all right. If you don't-- go
18 ahead.

19
20 **JUAN J. CURZ MOTTA:** Just a question. That means, if necessary, I
21 will not talk about the goal copy, but use that time for this
22 topic. Thank you.

23
24 **SENNAI HABTES:** Great. So, we will make an update to the agenda on
25 that slide. If I can get everyone to approve it. What will be
26 happening now is we're simply moving Sarah's presentation up to
27 9:00 AM and extending some of the time from 10:30 to 10:40 AM for
28 the Lenfest report out.

29
30 So, with that, I will ask someone to motion that we approve the
31 agenda as changed and specified by myself.

32
33 **EDWIN CRUZ-RIVERA:** Move to approve with changes.

34
35 **JUAN J. CURZ MOTTA:** Second. But, if I may, I have other questions.
36 In relation to the topics for the agenda during Wednesday and
37 Thursday. Can we modify those as we go? Thank you.

38
39 **SENNAI HABTES:** Yep. So those, we are going to consider as separate
40 meetings. So, I think we can talk about those agendas after the
41 meeting, and we can update them prior and then we can do the same
42 process that we did for this joint meeting. But to save time, I
43 figured we just fixed the joint agenda meeting currently.

44
45 **LIAJAY RIVERA GARCÍA:** There is also another presentation by Rachel
46 Eckley proposed for the second date of the joint meeting. That
47 will be the last presentation before other business.

48

1 **SENNAI HABTES:** Thank you. So, I'll make those updates on the slide
2 during one of the breaks or one of the times when I'm not
3 presenting. But I will ask that we just go ahead and adopt the
4 agenda. So as with the modified changes, unless there's anyone
5 else that had a question regarding the agenda or any other
6 recommendations for modification.

7
8 Okay. So, with that, I will ask, are there any opposed? we'll vote
9 on the motion to approve the agenda with changes. Any opposed? Any
10 abstentions? All right. Hearing none, seeing none, we'll take that
11 as the agenda for the joint SSC and EBFM TAP meeting approved
12 unanimously by all members of the EBFM TAP and SSC. Thank you all.

13
14 So, with that, we can move into, I'm going to recommend that we
15 hold off on the approval of the verbatim transcripts for the SSC
16 and TAP until we're at our individual meetings, which will occur
17 on Wednesday. And so that should give other members a chance to
18 review. I'm going to turn over to Liajay for a second.

19
20 **LIAJAY RIVERA GARCÍA:** Yes. For both, the Panel and the SSC
21 committee, pardon, please remember the SSC verbatim transcript
22 from the last meeting is in the Google Drive I shared with you,
23 and the same with the EBFM TAP in their respective folder. Thank
24 you.

25 **EBFM TAP Chair Introduction—Sennai Habtes**

26
27
28 **SENNAI HABTES:** All right. Thank you for that, Liajay. With that,
29 I think we'll just go ahead and move on to the introduction. I
30 will talk to you guys a little bit, which apparently, I'm going to
31 be doing a lot this afternoon to give you an idea of why we are
32 here and what we're going to be talking about.

33
34 So, some of this is going to be a review for a lot of you, so I
35 will move through those, kind of, quickly. If at any point you
36 want more information on the things I'm talking about, please
37 either raise your hand or put it in the chat. I will keep an eye
38 out for it and expand or please just make a note and bring it up
39 after the presentation and we can discuss a little bit more
40 regarding that.

41
42 So, the purpose of this joint meeting is for us to discuss aspects
43 of the fisheries ecosystem plan that we are trying to draft as
44 part of the Ecosystem-Based Fishery Management Technical Advisory
45 Panel, which I will refer to as the EBFM TAP here out. In October
46 of 2019, the CFMC established this Technical Advisory Panel
47 developed an eight-person panel that was to essentially assist in
48 the development, collection, evaluation and peer review of the

1 statistical, biological, economic, social, and other scientific
2 information relevant to the development of a fisheries ecosystem
3 plan and necessary amendments.
4

5 The purpose is to be a group of people engaged in ecosystems-based
6 research or knowledgeable and interested into the conservation and
7 management of ecosystems and managed fisheries. So, these are to
8 provide expert scientific and technical advice to the Council to
9 develop fisheries ecosystems, and ecosystems-based fisheries
10 management work within the U.S. Caribbean.

11
12 The purpose of the Technical Advisory Panel is to help the Council
13 understand the scientific resources and more specifically for us
14 to develop a framework and a plan for how to use those resources
15 in the management of fisheries within the U.S. Caribbean through
16 an ecosystems-based fisheries management approach.

17
18 Next slide, Cristina.

19
20 The EBFM TAP has a charter, and it is to provide the Council
21 ongoing scientific advice on ecosystems-based fisheries management
22 for fisheries management decisions, including the recommendations
23 for habitat status, social and economic impacts of management
24 measures and ecosystem-based impacts stressors on the
25 sustainability of fishing practices.

26
27 What in actuality of this means, is because we are currently not
28 doing this type of management activities within the U.S. Caribbean,
29 is we need to develop a plan that includes a framework of vision
30 and understanding that the Council can use to do this type of
31 research.

32
33 Next slide.

34
35 So, to that end, we have developed a mission, which is the
36 overarching goal of the Fisheries ecosystem plan is to promote
37 ecosystems-based approaches to ensure healthy, resilient, and
38 productive marine ecosystems and the fisheries resources dependent
39 upon those ecosystems within the context of the unique biological,
40 ecological, economic, social, and cultural characteristics of
41 those fishery resources and the communities dependent on them. We
42 also have developed a list of these, I believe it's 12, I can't
43 remember off the top of my head and didn't feel like counting, so
44 that's just a guess. But these are the specific goals that are
45 part of the framework that we are using for that work.

46
47 Uh, gimme one second there. Sorry. All right, next slide.
48

1 The way that we are doing this is generally following a process
2 that's known as the Lenfest Loop, which is a plan for developing
3 ecosystems-based fisheries management and a cyclical process that
4 can be used to evaluate and implement an ecosystem-based fisheries
5 management within a certain region.

6
7 Um, and this is-- you know, I've given this presentation multiple
8 times, so this is kind of just an overall understanding to, I'm
9 not going to go back into the loop again because we've all seen it
10 and we're going to talk about it a lot more, but I just thought
11 it's good to jog your brain about those aspects that are important.

12
13 With that, I'm going to skip ahead a little bit in the
14 presentation. Cristina, why don't I just try and share my screen
15 so I can, is if that's all right? Yeah. I'm going to move about a
16 bit and just make it a little bit easier. Okay.

17
18 So that was a little bit of background as to what was developed.
19 I'm going to talk briefly about where we are now, and then I'm
20 going to go into what we have to do during this joint meeting and
21 why we are all here in the same room, when generally we do these
22 meetings separately. So, this is not meant to give you an
23 exhaustive understanding of all of the research from project
24 partners and the work that's been done towards us. It is more to
25 jog your memories regarding the different groups that are going to
26 be reporting out over the course of this week, so we have an
27 understanding of what to expect and what type of information to
28 use as we're going through that.

29
30 So much of the work being done that is going to be used in the
31 development of our Fisheries Ecosystem Plan has been done through
32 two outside projects. The first being the Lenfest in the U.S.
33 Caribbean project that is being done by Tarsila, J.J. and Stacey
34 all over here to my left. Their job and what they were trying to
35 do was to guide the development of a fisheries ecosystem plan for
36 the U.S. Caribbean by defining management objectives and
37 developing models that describe these marine ecosystems and help
38 identify threats and factors that influence change across the
39 region.

40
41 If you're thinking to yourself, they seem like they've done a whole
42 lot more than what's described in that short paragraph, you'd be
43 exactly right because as everything, the needs and the work that
44 respond to the tasks that we need in management have changed. And
45 so, a lot of what we're going to hear from them is what can inform
46 our process for developing the FEP, what we've learned for engaging
47 with stakeholders and what they find important and interesting in
48 developing that process.

1
2 Another project that was developed by Bill Arnold and Mandy
3 Karnauskas a while back, I believe, and was part of the impetus
4 for the development of this EBFM TAP, which used to be just, kind
5 of an informal group of members of different committees at the
6 CFMC talking, was to identify quantitative indicators and conduct
7 additional indicator synthesis work. So, create the type of multi-
8 varied analysis and show that the type of ecosystems-based
9 fisheries management can be done in the U.S. Caribbean. And I
10 believe Adyan will be talking a little bit about this tomorrow and
11 can inform us on the progress of where that is and how it can be
12 used for the FEP.

13
14 So, through this process, a host of conceptual models were done.
15 The SSC, so all of you there remember this time consuming and
16 annoying process that we went through, but it was very useful for
17 us to gauge an understanding of important indicators and what
18 people think and need within the context of doing EBFM within the
19 U.S. Caribbean. Those are all completed. The merging and data sets
20 and understanding of how we can use that is a lot of what J.J.,
21 Tarsila and Stacey will be talking to us about tomorrow. We have
22 also done a lot of the data assimilation through the SEAMAP Gold
23 copy, which we're not going to talk about because we've talked
24 about that quite frequently already and identified an inventory of
25 the necessary data within the U.S. Caribbean.

26
27 And a large aspect of why we are having these consistent meetings
28 and talking with you on the SSC is down at the bottom of this
29 slide. All right. Doing EBFM within the U.S. Caribbean will require
30 new operational infrastructure for use and management decisions
31 that we do not have currently managed by any of the management
32 agencies in the U.S. Caribbean, or by the Council. To develop the
33 infrastructure necessary for doing this we as a Council have to
34 make the right decisions and develop the framework for doing that.
35 That is part of what we have to write into the fisheries ecosystem
36 plan. But it will help us as we are doing a lot of that work over
37 the course of this week to know what you, on the SSC, find important
38 and what type of frameworks and information you need to be put
39 into the Fisheries Ecosystem Plan to develop this as research
40 priorities that you, as the SSC, will put forward. Because any of
41 the research and any of the implementation and any of the plans
42 that we are going to be book putting through the FEP will have to
43 also go through you, as the SSC, to recommend to the Council. So,
44 it helps us get an understanding of what you need for us to develop
45 that.

46
47 Okay. I'm going to skip that one. The purpose of the FEP,
48 essentially, we've identified a lot of what is necessary to put

1 the EBFM into action for the U.S. Caribbean. A lot of our partners,
2 like J.J. and Tarsila, have done a host of presentations on it.
3 I'm not going to repeat all of those. Some of them are listed there
4 at the bottom of this slide. We've also developed working groups
5 to kind of assimilate the type of information that we need into a
6 draft FEP format, which we are hoping to have completed by the end
7 of this year and ready for submission to the Council by March of
8 next year.

9
10 We've created four working groups that will be working concurrently
11 during the course of the meetings on Wednesday through Friday to
12 develop all this. Many of you will see your names on there. I will
13 remind you of what we said we were going to do associated with
14 those at the last meeting, and we will likely change much of them
15 based on discussions on this meeting.

16
17 Um, J.J. I'm going to just ask you hold the— oh, you want it
18 bigger? Yeah, there's another slide with it. This is just a
19 reminder.

20
21 And then what has happened so far overall is we've created a draft
22 EBFM TAP of goals and objectives that we agreed upon. Then we've
23 started an outline that we're populating, finished all of the
24 conceptual models and the work associated with Lenfest. We're now
25 in the phase where people like Stacey are developing a lot of the
26 multi-variate analyses that are necessary to gain a better
27 understanding for the information from the conceptual models which
28 we hope to include all of that and learn more about that over the
29 course of this week and be finished with a lot of those projects
30 by December of 2023.

31
32 For expected completion of the main objectives, we're looking to—
33 — we still need to create the strategic and operational objectives
34 that will drive the vision of the FEP. That is what has to happen
35 over the course, or at least the pathway needs to be developed
36 over the course of this meeting. Create an idea of what type of
37 performance management measures and draft a management strategy that
38 can be used situationally by the CFMC. We have to complete that by
39 August 2023. And then most importantly is create the feedback mechanism
40 for adaptive management, because if we are not revisiting
41 and reevaluating, then there really is no point. It'll just be,
42 you know, a document with no use.

43
44 And then hopefully, again, I said we were hoping to finish all of
45 that by December of 2023. And then by March of 2024, we can submit
46 to the FEP 2024, sorry, March 2024. I'll fix that. We can submit
47 that to the Council for review. Okay.

48

1 So, at this point, I think we can take a second for there to, I
2 can answer any questions, go into things in a little more detail.
3 We can discuss any of the things that I've created. But these are
4 more just kind of to remind you guys of what we are doing on the
5 EBFM TAP and to create the structure for you guys to keep, bear in
6 mind, you know, what we need to be discussing for the rest of the
7 week. So, with that, I'll open the floor up.

8 9 **Questions/Comments**

10
11 **LIAJAY RIVERA GARCÍA:** Mr. Chair you have. Oh, I'm sorry.

12
13 **ALIDA ORTIZ SOTOMAYOR:** Yes. Can I make a question? This is Alida.

14
15 **SENNAI HABTES:** Alida. Yeah, go ahead. Alida. Sorry, I was trying
16 to get my screen back up to-

17
18 **ALIDA ORTIZ SOTOMAYOR:** Okay. Sennai, are we going to have today
19 or this week the final version of that conceptual model that we
20 have been discussing for so long?

21
22 **SENNAI HABTES:** So, I don't think we'll have a final version of
23 the conceptual model because there are about 24 conceptual models
24 that were developed through the process. I think what we will have,
25 is a summarization of the information from the conceptual models
26 and that will come in the presentations I think that J.J. and
27 Tarsila and Stacey will give. So, we'll have an understanding of
28 what those models are telling us. I don't think, you know, going
29 through an actual conceptual model would be useful at this time on
30 the meeting. Does that help?

31
32 **ALIDA ORTIZ SOTOMAYOR:** Okay. I'll wait.

33
34 **SENNAI HABTES:** Okay. All right, Edwin.

35
36 **EDWIN CRUZ-RIVERA:** Yes, Sennai, you mentioned something about the
37 assignments to different subcommittees or working groups changing
38 a little bit and I couldn't quite read the table in my screen. You
39 said that you had another slide with that.

40
41 **SENNAI HABTES:** Yeah, I do. I'll come back to that a little later
42 and we can go through-- that's more of what we can talk about when
43 we get to the actual EBFM TAP meeting. But I have it on this slide
44 and I'll do that after we go through a little bit more on the FEP
45 outline and some of the other stuff.

46
47 **EDWIN CRUZ-RIVERA:** Okay. Fair enough.

48

1 **SENNAI HABTES:** Are there any other questions or comments on the
2 overall process and kind of where we are now in terms of the EBFM
3 and the FEP development?
4

5 Okay. So, if not, I'm going to go ahead and turn over to Vance
6 real quickly, if he wants to say any words associated with the
7 introduction or to the SSC or just hello to everyone as you are my
8 co-chair.
9

10 **SSC Chair Introduction—Vance Vicente**

11
12 **VANCE VICENTE:** So, you're forcing me to say something. Okay. This
13 is Vance Vicente. Hello. I wish that everybody puts their own
14 inputs in a very rightful, polite way. This is going to be
15 complicated because there's so many different views of what is the
16 ecosystem to begin with and how actually we can make
17 recommendations to make an Ecosystem-Based Fishery Management Plan
18 effective. It's very complex. So, Sennai, I wish you the best of
19 luck.
20

21 **SENNAI HABTES:** So, with that being said, I think I can move on to
22 one of the things where we can actually all discuss and get a
23 little more input, which is the draft outlines of the FEP that
24 were developed. So let me just open that up.
25

26 Well, I guess I'm going to go ahead and then turn it over to Orian,
27 who is going to discuss with you the current standing of the draft
28 FEP, outline the changes that have been made to it, and maybe talk
29 a little bit about what type of input we are looking for and input
30 that we're going to need from you guys on the SSC.
31

32 Again, I'm going to ask you that we wait until the end of the
33 presentation and give all comments, but we can have a robust
34 discussion regarding the outlines after the presentation.
35

36 **New Fishery Ecosystem Plan (FEP) Draft Outline—Review, 37 Discussion, Edits and Approval—Orian Tzadik**

38
39 **ORIAN TZADIK:** I've been asked to see if this one work again. Can
40 you guys online tell me how this sounds, this microphone.
41

42 **UNKNOWN1:** Sounds fine.
43

44 **ORIAN TZADIK:** I didn't catch that one. What'd they say?
45

46 **ALIDA ORTIZ SOTOMAYOR:** Sounds good. Yes.
47

48 **ORIAN TZADIK:** Okay, great. All right let's go with this one.

1
2 Perfect. All right. Good afternoon, everyone. My name's Orian
3 Tsadik, NOAA Fisheries. As Sennai mentioned, I'm going to be
4 discussing the new outline for the Fishery Ecosystem Plan, which
5 is remarkably similar to the old outline. It has all the same
6 ideas, just tried to streamline it a little bit. So, for good
7 measure, I put the Lenfest Loop up there. I thought everybody would
8 take another look at that.

9

10 Next slide, please.

11

12 All right. So, as Sennai has been talking about during this
13 meeting, I think the goals here, during this presentation, the
14 goal is to just present this new vision and outline to this group
15 here, the SSC and the EBFM TAP and then kind of set it all up for
16 some discussion and review later in the week. And then, ideally,
17 we want to finalize and approve the new outline and within that,
18 discuss how to develop the FEP overall. Sennai has discussed that
19 already in his presentation, so it won't go too much more into
20 that other than to say that, yeah, I mean, you know, the discussion
21 that we have this week is going to be instrumental and paramount
22 to the development of this thing. So it should be, you know, that's
23 what we're trying to tee up right now.

24

25 Next slide.

26

27 All right, so these are the headings from the, I'm calling it the
28 2020 outline. And this was one that several meetings ago from the
29 EBFM TAP we developed. It was very much a brainstorming activity
30 almost. And so, we had some of the things that we thought were
31 obviously needed, like an introduction and all these things we had
32 been working on the conceptual models and things like that. And
33 then kind of, you know, as we were going along, people threw out
34 ideas and we populated the outline that way.

35

36 Next slide.

37

38 And for those of you who worked on it. This is what it looked like.
39 It had, as you can see, it's a little bit difficult to see, but it
40 really breaks down each of the different components. In, for
41 example section three, it goes pretty heavily, that says,
42 "environmental setting," and then it goes society and culture of
43 each of the island groups and then how they're connected. And then
44 the economics of each of the island groups, and then how they're
45 connected. Then the ecology, and then the fisheries. There's a lot
46 of background information in this setup.

47

48 Next slide.

1
2 So, the idea behind developing a newer vision was to think about
3 what exactly we wanted to get out of the FEP and what was necessary
4 and what could we, you know, trim down on and what could we really
5 hammer down on and focus on. And so, we developed this draft
6 outline vision with these five major headings or components. And
7 the major headings are going to be then the introduction,
8 ecosystems and ecosystem services, the ecosystem indicators. And
9 this was originally thought to be simply through the conceptual
10 model work and the ecosystem status report. And then using those
11 indicators in management and potentially that could then be part
12 of the risk assessment. And then, you know, a plan moving forward.

13
14 And there's a lot of ideas in here that are kind of generalized,
15 but there's some things that we'd really like to discuss with this
16 group as we move forward. So, one of the things I just want to
17 highlight right now is, Tauna's going to be talking about a risk
18 assessment and the work she's been doing on it-- when? in a couple
19 days, I guess. But, you know, that's been a bit of a difficult--
20 Tomorrow, she says, okay, great. So that's been a bit of a
21 difficult topic to get everybody's head around at the same time.
22 So that's something we'd really like to kind of hammer down and
23 see exactly what we're talking about and whether we want to try
24 and do a risk assessment as a group here, that would be something
25 of evaluating the present risk or how to use risk assessments as
26 we move forward to make decisions in the future.

27
28 And I'm going to stop there because I know Tauna is probably
29 shaking her head and she's got a lot to say on that.

30
31 Next slide, please.

32
33 So, what you're going to see from this new vision are these kinds
34 of points here. One is that this is meant the FEP is going to be
35 a tool for use by the Caribbean Fishery Management Council, right?
36 This is something we're hoping to develop so that the Council can
37 take it and use it as necessary when making decisions. We want
38 this FEP to be actionable, meaning we can actually use it as a
39 tool as opposed to what they call like a coffee table book or a
40 background document, just a lot of information that might be useful
41 for some students or something like that but that don't actually
42 get at the core of what we're trying to do here, which is ecosystem-
43 based fishery management. At the same time, we want the document
44 to be informative and it's going to be true to this original vision
45 that Sennai has mentioned, and that was originally brought up by
46 Bill Arnold. And something that we really want to see be an
47 iterative document, something that we want to see be a living
48 document, something that we can go back to and use for adaptive

1 management.
2
3 Next slide.
4
5 All right, so as I mentioned right at the beginning, you see the
6 old headings and then I kind of just did an old heading and the
7 new headings. I just want to kind of convey here that everything
8 that was in the 2020 outline is still in this newer outline. It's
9 just, I think the emphasis is different and on different
10 components.
11
12 Next slide.
13
14 All right, so these are those five topics I mentioned already, and
15 here they are fleshed out a little bit more. Maybe this is kind of
16 something we could use as a base to discuss when we-- you know,
17 this is the outline as it currently stands in terms of the detail
18 and the topics that we'd like to see in it.
19
20 What I would like to kind of emphasize on this last slide if you
21 could go to the next slide. Introduction. We've basically done all
22 of this. Or at least a draft version of it. We're at a point now
23 where we've gotten through the introduction, you know, in terms of
24 theoretically.
25
26 Next slide.
27
28 We've also done the same thing with the ecosystems and the
29 ecosystem services. Again, all in draft form, but I feel like we're
30 well on our way and I want to kind of emphasize what has been done.
31
32 Next slide.
33
34 As well as section three. And that's going to be a topic of a lot
35 of conversation tomorrow with J.J. Tarsila and Stacey's work.
36
37 Next slide.
38
39 And then, these are the components which we've been discussing
40 already this afternoon that really need to get fleshed out a little
41 bit more and that need some sort of cohesive vision from this group
42 in order to then make this what we hope it can be, which again, is
43 this iterative document that can be used towards adaptive
44 management and that can be used as a tool by the Council to make
45 informed decisions moving forward.
46
47 And that's the end of my presentation.
48

Questions/Comments

1
2
3 **SENNAI HABTES:** Thank you, Orian. I think we'll open it up now to
4 questions and I see J.J. has his hand up, so J.J., you're
5 recognized.

6
7 **JUAN J. CURZ MOTTA:** Yeah. Thank you, Orian, for the presentation.
8 The first question is, those goals and objectives, are those the
9 same that you showed before or—

10
11 **ORIAN TZADIK:** Yeah, good question. So those are the ones that
12 Sennai presented that were developed by, it wasn't the EBFM TAP,
13 I don't think at the time. I think it was still the FEP working
14 group. So, it was developed quite a while ago, but I think that
15 they're still true and they definitely warrant revision, but that
16 was the original goals and objectives as put together by the EBFM
17 TAP.

18
19 **GRACIELA GARCÍA-MOLINER:** (Part of Dr. García-Moliner comments are
20 inaudible on the audio recording.)

21
22 --piece actually looked at the goals and objectives, and it's being
23 discussed by the Council, but as I said, you know, the document is
24 not finalized and if they need to be changed to definitely address
25 the issues of EBFM, then do so, and that's why you will be
26 discussing those. They're not written in stone.

27
28 **SENNAI HABTES:** So, Sennai Habtes again for the record. Just to
29 clarify, those were initially developed when there was an FEP
30 working group. We did review them and approve them and vote on
31 them in the last EBFM TAP as a group. So, the ones that he showed
32 previously were the ones that we drafted and amended and voted on
33 at the last EBFM TAP meeting.

34
35 Since that, based on discussions with those of you that are working
36 on aspects associated with the FEP, I kind of condensed them into
37 this format with the help of Orian, my vice chair, to bring to our
38 group to discuss in a format that I thought would lend itself
39 better to the drafting of an actual FEP, which I will explain why
40 that happened, shortly.

41
42 **ORIAN TZADIK:** And just to clarify, I think, J.J., you were
43 specifically referring to the under bullet one goals and
44 objectives, right? Yeah, that was, again, as Sennai mentioned,
45 that was kind of in the greater outline, but yes, it's those
46 originals. I think there's like 10 that we all kind of agreed on.
47 And then yes, was then approved by the DAPs, by us, and brought
48 forward, but we think warrants one more luck.

1
2 **SENNAI HABTES:** Yes, J.J., go ahead.
3
4 **JUAN J. CURZ MOTTA:** Thank you. Yeah, I had a question and then
5 also a comment. The question was that one, if we could review those
6 based on the structure of the Lenfest Loop and the answer is yes.
7 That's great. The second comment, those drafts are available in
8 the share folder, right? You said you have written those three
9 sections already. The one with check marks. Are those available
10 to--
11
12 **SENNAI HABTES:** No, those haven't been completed yet. I think
13 they're in a draft format. I will share, once I've gotten a chance
14 to review them, I only just got them. So, once I think it's in a
15 stage for sharing, I will send it out.
16
17 **JUAN J. CURZ MOTTA:** Thank you. The other question is, do we
18 formally have to ask for a motion to include in the agenda a
19 discussion on this outline? Or when can we start a discussion on
20 this outline?
21
22 **SENNAI HABTES:** No, I mean, if you want to start that discussion
23 now, we can start the discussion now. There's time for it and if
24 we wanted to compare those with the Lenfest Loop and address those
25 in this context so long as no one has any other questions. Kevin
26 has a question. So well, let's finish these questions and then
27 we'll come back to discussing those in the context of the Lenfest
28 Loop.
29
30 **KEVIN MCCARTHY:** Thanks. This is Kevin. so, I'm going to take off
31 my EBFM hat and put on my NOAA hat. A couple slides back, if we
32 can go back a few, it's not really necessary, but we can do it,
33 where we talk about use, use of this, what does that mean? And
34 maybe we need GC to chime in because that's not how we manage right
35 now, and that's not how we're set up to manage, so what do we mean
36 by use? I'm not against it, but we have to, you know, the Science
37 Center's and SERO have to manage within Magnuson. So, what does
38 use mean? And I'm not suggesting that this isn't useful, I just
39 wonder how that fits in with the way the law is. And there are a
40 lot of ways it could but I'm curious and maybe that's part of the
41 discussion.
42
43 **SENNAI HABTES:** Katherine, go ahead. If you have your mic going
44 now?
45
46 **KATHERINE M. ZAMBONI:** Yeah, I think I do. Can you hear me okay,
47 Mr. Chair?
48

1 **SENNAI HABTES:** I can.
2
3 **KATHERINE M. ZAMBONI:** Okay. Kevin, I think that's a great
4 question, but I don't know that we need to answer that right now.
5 I think at this stage it's worth making that part of the
6 conversation and kind of seeing what comes out of this in terms of
7 how it can be applied under the framework of the Magnuson Act and
8 how that'll be useful moving forward.
9
10 **SENNAI HABTES:** Orian is recognized.
11
12 **ORIAN TZADIK:** Yeah. So, Kevin, I think, you know, great point.
13 I've got a lot of ideas on that, but I definitely think it warrants
14 a lot of discussion. I will say that, you know, we have a lot of
15 models, tons of the other Councils around the country have FEPs
16 that are actionable and useful. I also want to hear some of the
17 other presentations that we haven't heard yet before making an
18 official, you know, "This is what I think we should do." But yeah,
19 I think there's a lot of good uses. And what I wrote there was
20 that it would be a tool for use. And you're absolutely correct, we
21 have to mold that tool to be what it needs to be in order to be
22 able to use it.
23
24 **SENNAI HABTES:** Kevin, go ahead.
25
26 **KEVIN MCCARTHY:** Just to be clear, in our strategic planning
27 workshop in a few weeks, EBFM is a big part of that. So, it's not
28 like I'm against it, I just want to keep us in context of the
29 reality of the situation when it comes to fisheries management in
30 the U.S. So, I'm all for ideas and we'll never get there if we
31 don't start, but I think we also, or at least at least the Science
32 Center and SERO need to keep in our heads the practicalities of
33 how we manage and how we would like to manage and where the law
34 stands.
35
36 **SENNAI HABTES:** Orian.
37
38 **ORIAN TZADIK:** Yeah. And I think that's a really important point
39 you just made is that, I mean, you know, NOAA is continuing to
40 develop its EBFM strategy as we're doing all of this. And so, this
41 whole point about it being iterative and able to change as we, you
42 know, go through this process, I think is hugely important.
43
44 And again, I'll point to kind of how we started with the risk
45 assessment, right? We were all like, "oh, yeah, great, let's just
46 do this risk assessment. Like--" and then we kind of took steps to
47 start that process and realized, that wasn't going to work that
48 way. And so, you know, now we're going to have to reevaluate and

1 see how we can use that tool. And so, yeah, a hundred percent
2 agree, Kevin.

3

4 **SENNAI HABTES:** J.J.

5

6 **JUAN J. CURZ MOTTA:** Thank you. I just want to reiterate what you
7 already said. If we are successful on writing this as Lenfest
8 proposals, it will be a tool, an actionable tool. And actually, I
9 would like to add to the characteristics that Orian mentioned there
10 in addition to actionable tool. That is actionable-- You had a
11 third one, informative. Participatory, that will be very important
12 to put in there. And the idea is that if you see the definition of
13 an FEP, it is a tool that will allow you to put in place EBFM ideas
14 or approach. Lenfest, and that's why I'm going to be very-- I would
15 like to go through the outline because Lenfest, is not the only
16 one, there are several, is a process by which you transform
17 objectives into actions, management actions.

18

19 And actually, one of the things that we will be asking a lot to
20 the legal group is whether those ideas of actionable tools can be
21 implemented or not based on MSA. What I can tell you, as a Science
22 Center, I don't know the final result, but whatever it is, it will
23 need, as Sennai pointed out, a shift on how we see things, of
24 course, within the context of the law.

25

26 Thank you. And then when we're finish with questions, I would like
27 to go back to the outline.

28

29 **SENNAI HABTES:** Does anyone else have any comments or questions
30 related to ask Orian? If not, we'll start a discussion on the
31 outline and Lenfest Loop.

32

33 **JUAN J. CURZ MOTTA:** Yeah. I'll start with a general comment,
34 right? And then the question for the Chair will be whether we go
35 into details of this vision during the EBFM TAP on how to tweak
36 all these that you have currently and how we complement with these
37 other things.

38

39 The general comment goes into-- the reason is the one that I just
40 told Kevin. We really need this to be something that we can use.
41 If it's another document, we will lose credibility and that's it,
42 EBFM will not be implemented in years to come. So, my general
43 comment is to make that outline fit the Loop. Currently, there are
44 things that we could change in that outline. I mean, everything
45 there should be in the FEP. But then we should add other things to
46 make it look like the-- or to check all the steps in that tool, in
47 the Lenfest protocol, which, basically, is how that vision we have,
48 we now have an instrument that can actually be used.

1
2 So basically, to summarize my comment is, there are things that we
3 can change here. But then, the question to you, Sennai, the Chair,
4 is when do you see will be-- I mean, if this is a discussion on
5 when we meet individually during Wednesday, Thursday, and Friday,
6 --actually, we changed the presentation to not only say, "Ah,
7 change it because we feel that it has to be changed," but to
8 provide the context, to provide information, the argument, for the
9 changes. And more than changes for the addition that we believe--
10 or will be nice to see in that outline. So basically say, yeah, we
11 consider few things that need to be added. However, the
12 presentation, tomorrow's presentation, will help to support that
13 request to the group. Thank you.

14
15 **ORIAN TZADIK:** Cristina, can we go to the next slide? I believe it
16 is the next one. okay. Sorry. I think it's back. A couple back.
17 Back. One more back. Oh, damn it. Sorry. I'm looking for the whole
18 outline. That one!

19
20 So, this was intended to have all those pieces from the Lenfest
21 loop and if there's not stuff in there, then we should definitely
22 discuss and how to add and everything like that. Do we have a copy
23 of this somewhere? Is it in the shared folder at all?

24
25 **SENNAI HABTES:** The outlines, both versions, are now in the shared
26 folder, but that has not gone out. The link for the new shared
27 folder has not gone out to the TAP as yet. We'll do that within
28 our meeting. I'll try and get an email out to you guys tonight or
29 tomorrow night with the links to those. In addition, you should
30 all still have access to the previous Google Drive that we used at
31 the last meeting. They are in there, because I took them from
32 there, but it's a pain to dig through it. But I will find them and
33 put them in the new drive. I'll share the folders with you this
34 evening.

35
36 **ORIAN TZADIK:** Right. And so, I think that's, you know, a really
37 good start is if we could all kind of take a look and see what we
38 think is missing and everything. And like I said, I'm looking
39 forward to your presentation and Tauna's presentation to really
40 see how we can build out some of these sections and see where they
41 do fit or where they don't because it's become apparent, throughout
42 this process, that certain things might not be as applicable in
43 this region, and other things are more applicable and, you know,
44 and quite frankly, possible or not possible. So, I think we have
45 to keep all that in mind as we-- and yeah. And like everything
46 else here, it's all iterative, right? So, we'll just change it.

47
48 **SENNAI HABTES:** Tarsila.

1
2 **TARSILA SEARA:** Question. Do you know, or do you have a plan for
3 what source of information it's going to be used for number two,
4 for the ecosystem and ecosystem services? What are we using to, or
5 what is the plan for that?
6

7 **ORIAN TZADIK:** Yeah, so the plan there was to try and not reinvent
8 the wheel on that and really try to reference other documents for
9 the most part. I mean, the IBFMPs, for example, go heavily into
10 this. And so, the idea would be to just kind of write some of the,
11 you know, high level themes and then reference and have the FEP be
12 a resource for how somebody could really dive deep into that
13 information. But as a document, be much more high level.
14

15 **TARSILA SEARA:** So, the reason why I'm asking is because I think
16 that should be also informed by the conceptual models and what we
17 found, so that we have there, the conceptualization of the
18 ecosystem from the viewpoint of the stakeholders, rather than just
19 a literature review.
20

21 **ORIAN TZADIK:** Yeah, great. I think that's great idea.
22

23 **SENNAI HABTES:** So, I think J.J., to answer your question from
24 earlier is whether we're going to do this now or when we get into
25 the EBFM individual meeting, I think the answer is both, right?
26 So, I think we should start the discussion. If you see things
27 within this outline that we can talk about now, in a general format
28 associated with the Lenfest Loop, it's fine to make those kinds of
29 comments and open it up to general discussion and allow others to
30 improve the draft outline.
31

32 I think the nitty gritty, the specifics, right? Because a large
33 part of what we need to do in the working group aspects, which I
34 have another presentation that was after that, I can show all the
35 working groups and what we agreed to do and where we need to go
36 with them, and that would be a good place to identify specific
37 aspects of this draft outline that needs to be changed. What we
38 need to do there is not only flesh out the outline with specifics
39 that need to be included, make changes, address the revisions that
40 focus it back on the things for the Lenfest Loop, but address where
41 the resources are for that. Meaning what publications, what other,
42 you know, papers are linked to that and where are the data sources.
43

44 All of that needs to be associated in one place that we can use
45 over the course of the next year to draft this. Because if we don't
46 do both of those in this meeting, then we're not going to be able
47 to write up an FEP over the course of the next year. Period. So,
48 I would say, if you want to go back to this and bring up the

1 Lenfest Loop, I'll take notes and I'll adjust it for later on if
2 we wanted to talk about that now. But I'll put a time limit on it.
3 I'll say we can do 20 minutes of that, and then we can move on so
4 that we keep it at the higher level.

5
6 **JUAN J. CURZ MOTTA:** Okay. However, I want to explicitly say that
7 all my opinions now are part of the collaborative and at the same
8 level work that we have been doing, Stacey Williams and Tarsila
9 Seara. I'm using Messenger, so you can shoot me, not them. And so,
10 I will start for the first thing that we identified on the goals
11 and objectives, right?

12
13 In section one. I totally agree that we should start with the
14 purpose of the FEP. This document is to do this. That's excellent.
15 Then when we talk about goals and objectives, definitely that must
16 be in there. But if you see the Loop that goes back and forward,
17 those goals and objectives are related to what the Loop defines.
18 And you put it in your presentation, Sennai. A strategic
19 operational objective and then, actions, right? So those goals
20 have to be related to those three levels of hierarchy, right?

21
22 As we do have them now, we have all mix in a list. We have things
23 that are more like a general vision, what should be the fisheries
24 system. Others are more concrete that will fit into more like a
25 strategic objective and also, are just tasks, things that needs to
26 be done. Like for example, there are two items related to research.
27 And then you say, "oh, come on, that's just labels that we put in
28 that." The thing is, if you then look at that step two in the Loop,
29 but if you look at step three is very important because whatever
30 performance measure we going to use for the system, not as singles.
31 And this is when we are going to be talking a lot to the Science
32 Center, how we look at this as a whole rather than species.

33
34 So, when we talk about those performance measures, they have to
35 relate back through this hierarchy of objectives. One thing that's
36 very important, because when we list the strategic objectives to
37 start with, based on what the stakeholders said, you will see there
38 are things that are outside the realm of the Council. But still,
39 we need to list them because then this tool becomes very useful
40 for the Council to go to the, I don't know, the coral reef program
41 or to go to the water quality board or whatever and say, "Hey guys,
42 these are things here that you perhaps need to look at. You don't
43 need to do another exercise. Use this one to follow that."

44
45 So, it's because we need to relate back, from what we going to
46 measure in the field, we need to relate all that back to what's
47 the general objective. Because those objectives are classified in
48 things that can be done by the Council and also are classified by

1 expertise, ecological, related to the fleet, related to the
2 environment, anthropogenic impact. So, one important part of the
3 FEP is to have this, it's like a taxonomic key where the different
4 things we are going to do fit, because then you can relate that to
5 specific responsibility to the different bodies in the government.
6

7 It also helps to identify things that we can tackle from broad,
8 like, "Oh, we need a new legislation for that." Things like, "oh,
9 we need a change of culture or an institutional change," as you
10 mentioned that. Definitely, I foresee that will be a very good,
11 important part. So, the first thing that I would say we need to
12 address on that is to give some structure, to those goals and
13 objective. The role, the content is there, but then we need to--
14 my sugge-- bah, "we need" it is suggestion for the group that we
15 need to start dissecting those and tomorrow we will be giving
16 details on how we can dissect and give specific examples.
17

18 So that will be the first thing and motion for the specifics on
19 the details, is to dedicate couple of hours, I would say, to talk
20 and revisit the objectives and goals and vision. Thank you, Chair.
21

22 **SENNAI HABTES:** So, I'm going to just ask a clarifying question
23 before I move it on to Orian. So, you're talking about the goals
24 within this outline, or you're talking about the original mission
25 and framework goals that we voted on.
26

27 **JUAN J. CURZ MOTTA:** The original. That should be here under this
28 new structure, hierarchy, organization. Thank you.
29

30 **SENNAI HABTES:** Okay.
31

32 **ORIAN TZADIK:** Yeah. I think an important step in what you're
33 talking about is defining what we are talking about when we talk
34 about all this stuff. So right now, the goals and objectives in
35 that intro, I believe reads something like, you know, "the primary
36 goal of this document is," and then it says, "as that goes our
37 corollary goals are." And so, there's not really even objectives,
38 right? So, my understanding is that this, under the introduction,
39 those goals and objectives are, what are the goals and objectives
40 of the document? Why are we creating this document? And to me,
41 that's how that goes. Right? Purpose and need of the FEP. What are
42 the actual goals of the FEP? Why are we creating it? and then I
43 missed what happened next. But then, the strategic and operational
44 objectives that you're discussing, yeah, I think absolutely, that
45 should be what comes out of the research. So, as I saw it in that
46 outline, it's okay, these are the goals of this document and then
47 as we get through the whole thing and we present what all of our
48 conceptual models say, what indicators were derived from that,

1 what the stakeholders think, now we couple that all together and
2 we say, "okay, so now we need to create objectives that could be
3 achieved through management." And so, yeah, we need to discuss
4 maybe where to put all these things exactly. But I think that's
5 kind of how-- you mentioned it really well with the whole taxonomy
6 thing. But yeah, we just need to kind of figure out how to
7 incorporate all that and how to make it very clear that that's
8 what we're talking about.

9

10 **SENNAI HABTES:** Yep. Nelson.

11

12 **NELSON CRESPO:** Thank you, Mr. Chair. The industry wants to know
13 how you are going to manage this fishery and we are really
14 interested to be in front of the line in the participation of all
15 these issues.

16

17 **SENNAI HABTES:** So, I'll just comment on that. We would love that.
18 I think part of the reason why we did so many conceptual models,
19 was to make sure that the voice of the fishermen was represented
20 in the type of management that we will do and the type of plan
21 that we're going to develop. I mean, I think it's a very important
22 goal of the EBFM process that we're doing is to make sure that
23 there is more stakeholder, meaning us, the people of the U.S.
24 Caribbeans, engagement and voice in the process for management.
25 And I think a lot of the work that Tarsila, J.J. and Stacey have
26 been doing is to summarize that in a format that can be used for
27 us to develop a plan to implement ecosystems-based fisheries
28 management within the U.S. Caribbean.

29

30 Now that being said, this is not a process that will happen in a
31 short period of time, and I think we have to be very clear about
32 this. But it's not something that we plan on, you know, giving up
33 on. Marcos, I saw your hand.

34

35 **MARCOS HANKE:** Yes. Thank you for the opportunity. Actually, I'm
36 not going to be part of those meetings soon, and I want to take
37 this opportunity to express myself on this. IBFM strategy has to
38 be first, a complimentary analysis on the long term, like the Chair
39 just mentioned, for us to ensure that we are doing the right thing,
40 right? They're going to have two complementary processes taking
41 place at the same time with the scientific analysis on them. And
42 to establish those new tools or evaluations have to be, for sure,
43 a long term. I'm just being redundant but highlighting the
44 importance of being a long-term thing.

45

46 Then, once we have the new indicators of the new data sets or
47 tools, we must be done with ever high industry participation. If
48 you want this to work, you need to capacitate the industry. You

1 need to include the industry on this equation for them to believe
2 in what they are doing and to know the importance of those issues.
3 And it has to be based on a realistic suit sample across the area
4 that is designed for long term analysis and for us to count on
5 those indices to be produced over time with no problem. We need to
6 make sure and plan ahead for that.

7
8 And the other thing that I want to mention. If the tools will have
9 a heavy weight on the management, the data must be closer to the
10 real time data sets, once we get to that moment. I think the
11 [inaudible] on this discussion, because I think the work is
12 amazing, is it super important, it is what is compatible to the
13 Caribbean is the urge to do something. This is something super
14 valuable. We have to take care and do it step by step on with the
15 right timing. This is the last thing I wanted to say. And thank
16 you for your work.

17
18 **SENNAI HABTES:** Thanks, Marcos. Tarsila.

19
20 **TARSILA SEARA:** I just wanted to add to the conversation. Yes. I
21 wanted to emphasize that the reason why we did all the conceptual
22 models was exactly for that, to have the stakeholder input. And I
23 also wanted to add to that, that what we really hope is that this
24 was not a one-time thing, that this is an iterative process that
25 we would continue to engage with stakeholders and continue to
26 develop future conceptual models so we can see how it's changing.
27 So, we can continue to bring that really important input. But also,
28 part of our recommendations is to add other strategies that we can
29 bring in knowledge from stakeholders, from the industry and other
30 stakeholders. So that is a really, really important part of the
31 process, and it's something that we are going to talk about a lot.

32
33 To me, the most, in my opinion I think the most important measure
34 of success of this entire process is how much stakeholder
35 engagement we have. Because at the end of the day, we can have a
36 great document but if that was developed without that stakeholder
37 engagement and input and knowledge it's, in my view, it's going to
38 fail. Because at the end of the day, we need acceptance from the
39 stakeholders, buy-in from the stakeholders, so that we can actually
40 successfully implement what we're recommending.

41
42 **ORIAN TZADIK:** I think, you know, we're sitting here talking about
43 what our vision is for the FEP. I think that's a really good place
44 to start, obviously, this meeting. I think it's important to
45 remember a couple things. One thing is, to go back to Kevin's
46 comment earlier, this is a completely non-regulatory document.
47 This is a guidance document. That relates then to some of the
48 comments that are being made right now.

1
2 So, perhaps this document, as a living document, exists or can
3 exist, not solely, but in part as a tool to get a formal voice of
4 stakeholders to the Council. That's what the conceptual model is.
5 That's what the indicators that are derived from them are, is that
6 these are, instead of people coming into a room and giving their
7 comments, we've made a way for all those comments to be heard and
8 quantified and maybe that's a big part of what this actual FEP is.
9 And I think if nothing else, then I think we've done our job, if
10 that's what we produce.

11
12 **SENNAI HABTES:** J.J.

13
14 **JUAN J. CURZ MOTTA:** Yeah. And then coming back to the topic of
15 the outline, I have seen in—sorry.

16
17 **SENNAI HABTES:** I just put that up if you want to discuss it.

18
19 **JUAN J. CURZ MOTTA:** No, no, no, no. Just to reiterate what you
20 said, Tarsila said, Orian. Is that, I've seen, actually in other
21 FEPs, that there is a special section, and we can make on those,
22 on public involvement or stakeholder involvement, where you
23 include other exercises like, for example, how you formalize the
24 recompilation on information from non-traditional sources. You can
25 include the those reports of fisheries status or reports directly
26 by the fisher. I mean, like, you can create in the outline, and
27 that was another suggestion for tomorrow, to have that section on
28 public involvement or stakeholder involvement. Thank you.

29
30 **SENNAI HABTES:** J.J., I just wanted to clarify. These were the
31 goals and objectives you mean, right?

32
33 **JUAN J. CURZ MOTTA:** Yes.

34
35 **SENNAI HABTES:** So, I think it would be useful then to just take—
36 — we're going to do a break at 3:00 PM, everyone, for those of you
37 that are counting down the minutes. I can see your feet tapping.
38 But we can use this time until that point to discuss, you know,
39 how to frame these. And I welcome comments also from SSC members.
40 If we feel that these no longer fit the outline that we are
41 drafting, perhaps we should identify changes to those goals or the
42 mission that would allow us to create specific objectives within
43 the FEP outline that we're drafting, and then move forward with
44 that.

45
46 I think here is a good place to talk about it at a general level.
47 I'll take notes. I'll update it, and then we can vote on it later
48 in the TAP. So, I would say we can use the next 15 minutes to

1 discuss that and then we'll go on going forward.

2
3 **JUAN J. CURZ MOTTA:** Yeah. Please, accept my apologies, but I think
4 I won't be able to-- I mean, if, if, if. If we decide that we're
5 going to use the Lenfest Loop, we cannot do that today. Because to
6 create those strategic objectives, you need the participation of
7 the stakeholders. We cannot sit down here and say, "the objective
8 of the FEP will be raise pink elephants" right? Because it doesn't
9 matter for the people in the industry. So unfortunately, if we
10 want the FEP to be a living document, like Orian said, and
11 actionable, it needs also, in addition to the characteristics you
12 listed there, it needs to be participatory. It means we create--
13 actually, out of the conceptual modeling work we did, we can come
14 up with a long list, right? But those have to be brought back to
15 the people we engage and tell them, "Look, this is, out of the
16 exercise we did in step one, this is what we believe are the
17 strategic objectives, which will be priority for you guys?" And
18 then those are the ones you bring back to the FEP. Because, and we
19 know our resources are not limitless, so we will have to give
20 priority and that priority has to be set by stakeholders, including
21 and very importantly, the industry. So, yeah. Sorry.

22
23 **SENNAI HABTES:** So, I'm going to make a quick comment and then
24 have, Alida, go.

25
26 I think those are two different things. I think there's a framework
27 under which we are getting objectives that are continually brought
28 from the stakeholders under a framework that we've developed for
29 a process. And I think those are more specific. But we have to
30 create objectives to define a framework under which we're going to
31 do this and that's what we're trying to delve into. But, you know,
32 I just want to-- I think we could-- you know, if these no longer,
33 fit the objectives for that framework, then I think we need to
34 talk about that and fix that now. But we can come back to that.
35 Alida, I'm going to open it up to you, to go ahead and speak.

36
37 **ALIDA ORTIZ SOTOMAYOR:** Yes, thank you. I do agree with J.J., and
38 I also agree with you. The things that we have to see an image. We
39 have to see probably a different scheme of how, what you have here
40 as an objective, came from consulting with the stakeholders. And
41 probably in that way we can see it, you know, that they are always
42 integrated. Because I know the work that J.J. and Tarsila do in
43 the field, how is that integrated into this? But this is not
44 something that we can do just with one sentence or with one
45 paragraph. That's something that we are practically to look almost
46 at the whole document to see, you know, okay, here's what they
47 said, here's what happened, and this is how it was changed.

48

1 I don't know. Probably, I'm making it more difficult to look at
2 than what we have. But that's my idea.

3
4 **JUAN J. CURZ MOTTA:** I mean, just for the benefit of the discussion
5 and to start addressing that specific list. I have it here like
6 number 11, but it's not. Achieve Optimum Yield, right? Under EBFM,
7 that's impossible for all 82 species. Just for the simple
8 ecological fact that if we, by somehow, some miracle, we can
9 achieve that, for let's say some kind of predator, we won't be
10 able to reach that for the prays that is also a managed species.
11 So, I'm not saying take it out, but it will need a little more
12 detail.

13
14 And now as a result of our research, there is this idea that we
15 want to put forward to the Science Center and to legal if they
16 will entertain the idea to come up with this. Don't shoot at me,
17 Kevin, but come up with this idea of optimum yield for the system
18 instead of optimum yield for species A, species B. And I'm going
19 to throw a candy to you. Imagine, in this Narnia world that I live
20 in, that eventually, instead of doing one SEDAR for each one of
21 the species, you will do one single SEDAR for the fishery system.
22 Would you like that?

23
24 **SENNAI HABTES:** Kevin, go ahead tomorrow.

25
26 **JUAN J. CURZ MOTTA:** Tomorrow a few ideas if that legally can be
27 done.

28
29 **KEVIN MCCARTHY:** So, I was actually, you hit on the very notion
30 that I was-- not about the SEDAR, about the optimum yield stuff.
31 You know, maybe in the context of ecosystem optimum yield, we
32 probably need a different word for it. Right? But that may mean
33 something very different, right? You're optimizing your landings
34 or your take to fit within the system, as you're saying. So, you
35 took the words right out of my mouth in that SEDAR-- we'd have to
36 have a new-- we'd have to have a pretty significant paradigm shift.
37 And that's okay because I don't know what that would look like and
38 nobody else here does either yet, but we could get there, right?

39
40 So, we are not against having inventive ways of doing this. But we
41 have tried to do a whole bunch of species at one time. We did that
42 very early on, in particular in the SEDAR process and it's due to
43 the nature of them all being individual-- you know, we're doing
44 these things individually. It was overwhelming and not-- and I
45 know you're thinking of something different than that and so that's
46 where we need to head.

47
48 So, under the current way we do things in SEDAR, probably not.

1 Under some future state, why not?

2

3 **SENNAI HABTES:** Rich?

4

5 **RICHARD APPELDOORN:** I think there's a couple of points that need
6 to be pointed out. You know, first of all, optimum is a fudge term,
7 because maximum wasn't achievable. So, you know, optimum is a
8 social decision about where we want to be. And so, that's going to
9 reflect not just the capacity of the ecosystem, but what we wanted
10 to produce.

11

12 And while we can look at, what is optimal or maximum or whatever
13 metric you want to use that could be produced by the ecosystem, we
14 have a society that puts different values on what comes out of it.
15 And if we want to get down to the primary production and maximize
16 the amount of stuff coming out, great, but most people aren't going
17 to want to eat that.

18

19 And so, we're going to have to build in, those kinds of social
20 decision makings into the process. And when that happens, you're
21 going to find that while you definitely want to see how the
22 ecosystem is doing, because that's basically, hopefully, telling
23 us the basis, the health state of our productive capacity, you are
24 also going to-- you know, that doesn't tell you necessarily what's
25 happening to individual components in there, but those individual
26 components are what people are interested in. So, you will still
27 have to do the individual SEDAR things on at least select groups
28 of species to make sure that is tracking okay with what the
29 ecosystem is doing. So, you don't get out of one or the other.

30

31 But it brings in a new dimension, which, I think, we desperately
32 need is, you know, how is, the system as a whole, which is the
33 basis for producing groupers or snappers or conch or lobster,
34 whatever, how is that doing? Because if our productive capacity is
35 dropping, we'll be saying, "Okay, I guess we're going overfishing
36 because our stocks are going down" but really not, we have an
37 ecosystem problem. And so, it's a complimentary aspect to it that
38 we want to bring in.

39

40 **SENNAI HABTES:** Reni.

41

42 **JORGE R. GARCÍA-SAIS:** Yeah. What J.J. said few minutes ago, it's
43 not really a far-fetched idea. Actually, I have in many instances
44 where we have been analyzing fishery status from the top, you know,
45 just from the top. Just looking at a general landing. And if you
46 go and take a look at the composition of these landings, you will
47 see that in many instances the landings actually vary in relation
48 to the overall variation in a huge group of species.

1
2 So, actually several times that we have analyzed the variations,
3 in landings, we see that the landings go up and down in many
4 species. Many dominant species, they all go up and down together.
5 You know? It's not one species going one way and the other going
6 the opposite direction. We actually see a synchrony in the
7 variation of increases and decreases in the landings.

8
9 What this means is that sometimes we try to analyze things just
10 too much and the facts are very simple. And in many instances,
11 what that variation responds to, is actually in a factor that is
12 a critical factor for fisheries and one which we have the least
13 information of, which is effort.

14
15 So, I was always trying to find a way, and I have said this before
16 many times in this forum here, that we need to incorporate some
17 kind of mathematical quantitative index of socioeconomic activity
18 into these models. And maybe this ecosystem-based management
19 approach provides us with the mechanism to incorporate a
20 socioeconomic index that would allow us to have a much powerful
21 tool for analyzing these variations in annual landings, which is
22 what he uses as a proxy for MSY. Okay.

23
24 So, that's just my comment and I hope that, actually, this
25 engagement allows us at the end to incorporate some kind of
26 quantitative measurement that allows us to modify the models that
27 have been lacking this this factor of effort for so long.

28
29 **SENNAI HABTES:** Julian Magras.

30
31 **JULIAN MAGRAS:** I need a little clarification. I could be reading
32 this all wrong, but I know when we first started to discuss the
33 eco-based management within the DAPs, we identified a lot of the
34 issues that were actually affecting the ecosystem. And what I'm
35 seeing here, from what I'm getting out of this here, 95% of it is
36 more protection on our take of the resource. This is what I am
37 seeing. I am not hearing anything about how we are going to fix
38 the problems that are happening in the territorial shorelines that
39 are affecting the most important ecosystem components.

40
41 We're talking about juvenile habitats, our grass beds, everything.
42 I'm not hearing anything. So, I could be reading this wrong, but
43 what I'm hearing here now and reading and discussing with my
44 counterparts is all I'm seeing here is more rules and regulations
45 that are going to come out of this towards the fishermen who are
46 not the problem that are affecting the ecosystems.

47
48 We identified the different agencies on many occasions and put it

1 in all conceptual models. Saint Thomas/Saint John DAP was the first
2 one that did the regular conceptual model, and we did a fisheries
3 conceptual model. We were the first one. But the ultimate beginning
4 goal was how are we going to fix what's affecting the ecosystem
5 and the shorelines that's affecting all of the juvenile habitats.
6 Even in closed, protected every area. So, if somebody can clarify
7 that for me, that would be great.
8

9 **SENNAI HABTES:** Sure, Julian, I can clarify. So, these are
10 overarching goals and many of the things that you mentioned are in
11 them. I can point to specific ones if you want. So, for instance,
12 you know, promote ecosystem resilience within the context of
13 changing ecosystems, goes directly to preventing overuse of
14 juvenile habitats. Identifying additional ecosystem-essential
15 species in need of conservation and management; Understand the
16 risk to fisher ecosystem tradeoffs for different management
17 strategies.
18

19 But I get your point. I think, you know, from a standpoint of
20 scientific writing, these do not specifically and clearly address
21 some of the priorities that you're mentioning, but they do include
22 them. But the difference is, is that when you incorporate the
23 information for the conceptual models, which will be done in the
24 draft outline, this is separate, these were done before the
25 conceptual models. In fact, the definition of these were what
26 helped lead to the process for doing the conceptual models. So,
27 these were done about four years ago, prior to when we went out
28 and did this conceptual model within the DAPs and the other groups.
29

30 And so, you know, these are the overall framework under the
31 mission. But the draft outline will have the specific process by
32 which we continually go back and talk to the DAPs or the
33 stakeholders, to have them use priorities, to guide the management
34 that's being done. But that framework hasn't been developed yet.
35 That's part of what we have to do with the outcomes from the
36 Lenfest work that they were doing. And I'll let J.J. talk about
37 that more.
38

39 **JUAN J. CURZ MOTTA:** Thank you, Sennai. Yeah. I just want to put
40 an example of what Sennai is trying to convey, Julian. Number two,
41 promote ecosystem resilience within the context of changing
42 ecosystem. That will be within the context of an FEP vision, right?
43 A strategic objective associated to that vision will be coral reef
44 protection. Why is that? Because you will see tomorrow, which is
45 one of the biggest red dots that all stakeholders have pointed
46 out. You just mentioned that. The habitat. Then you develop an
47 operational objective and of course an indicator related to that
48 with a specific metric, and this is just an example, coral reef.

1
2 What are we going to measure in coral reef that relates to the
3 health of the coral reef? Total coral cover, right? Then we develop
4 metrics on that, that then will generate the specific objective or
5 the operational objective that you have to develop. But the
6 important thing here, Julian, is that for, and what I was saying
7 before, is that those operational objectives, those strategic
8 objectives, will be consulted with the stakeholders based on the
9 results of the conceptual modeling.

10
11 And my point before was that we need to reorganize that to convey
12 the idea that, Sennai just mentioned, and I don't know if this
13 example I gave you, gave you an idea how this will go. Thank you.

14
15 **SENNAI HABTES:** Julian.

16
17 **JULIAN MAGRAS:** Okay, well thank you for the explanation. So, we
18 look forward for when that step comes up, because the language
19 that's written here is out of fisherman context. So, I know this
20 was a discussion that we have had recently more here at meetings,
21 is being able to understand what's there. I might understand,
22 Nelson might understand, Gerson might understand, but when this is
23 put before my fishers, the first thing they're going to see, more
24 closures. And that's why I put it the way that I put it. So, all
25 I'm saying that, you know, eventually at some point we're going to
26 have public hearings. We're going to have more discussions on this,
27 and I think the language that needs to be used is a bit more tamer
28 language. It doesn't have to be directly in this, but you have
29 like a box and say, "well, this is what this means." So, that they
30 can understand that you don't end up in a big argument back and
31 forth in a room because they didn't understand. The first thing
32 they've seen is closures. So, thank you for the clarification.

33
34 **SENNAI HABTES:** Orian is recognized.

35
36 **ORIAN TZADIK:** I think it's important that we kind of back up a
37 minute and talk about what, you know, again, really identify when
38 we're talking about operational objectives that we're hoping to
39 implement with regards to management, versus goals that we're
40 creating for a document.

41
42 And so, I think what's getting lost here is, we're going to these
43 bullets. Those bullets, you can't even see it on the top of the
44 screen, but it's a corollary goal to the one that's mentioned over
45 on the left, is to provide a framework that promotes these bullets,
46 right? So, I think we need to kind of back up to the actual goal,
47 what it says right there, the overarching goal of the fishery
48 ecosystem plan is to promote ecosystem-based approaches to

1 fisheries management, basically. Right? And within that, things
2 like Julian and Nelson's comments come up because we have in their
3 social and cultural characteristics of the fisheries, but maybe
4 that's not what our goal really is. I mean, we are creating an FEP
5 to promote EBFM, but maybe we need to then be a little bit clearer
6 in terms of, maybe we need to say what is the actual goal of the
7 document other than just promoting EBFM.

8
9 You know, this is a document that we want to use to inform the
10 Council or something like that. You know, based on stakeholder
11 input, things like that. And to me, that's where I view it, because
12 I'd love to dive into all this stuff, you know, we're talking about
13 optimum yield and new strategies for optimum yield and I think all
14 that stuff would come out in our document, but I do think we need
15 to kind of revisit the overarching goals that we're talking about.

16
17 **SENNAI HABTES:** So, thank you Orian for that comment. It is now
18 three o'clock. What I'm going to do is, I'm going to take a break
19 here. I think we're going to halt the meeting for about-- we're
20 going to do a 15-minute break, and then we can pick this back up
21 for a couple more minutes and then get into the rest of the
22 presentations.

23
24 So, the time now is 3:04 PM. We are going to call a halt to the
25 meeting for, let's be back in chairs at 3:20. Okay?

26
27 (Whereupon, a brief recess was taken.)

28
29 **Overview of FEP Development Working Groups—Review Priorities &**
30 **Objectives, Update and Identify New Membership, Discuss Process**
31 **for Developing Framework and Content of FEP for Technical**
32 **Writers—Sennai Habtes**

33
34 **SENNAI HABTES:** Okay. Good afternoon, everybody. It is 3:25 PM. I
35 apologize, we went over a little on the break. I just wanted to
36 let everyone know that we are back and we're going to get started
37 again. At this point I'm going to open it up to continue the
38 conversation because I know, before we went to break, I didn't let
39 anyone online if they had comments. So, if there's anyone online
40 to continue the conversation, we were having regarding the
41 priorities associated with the mission and the goals, I will open
42 it up for people to continue that conversation. If not, we can
43 move on. Also, anyone in the room too, but I'll first open it up
44 for online.

45
46 Let's move on. Okay. With that, we're going to go ahead and move
47 on. I'm just going to make one quick comment as we're moving on to
48 the next set of presentations. And that is, I just wanted to

1 clarify. We've been having a lot of conversations regarding-- I'll
2 bring up this slide again and share my screen --is like, we
3 continually talk a lot about these frameworks and these goals, but
4 I think it's important to mention that this mission and these goals
5 were what were brought up to the Council and the Council then
6 agreed and has put this to us as the mission of the EBFM TAP.

7
8 We can make changes, but then we're going to continually become
9 this loop of doing little micro adjustments to things that we can
10 still do the same work underneath. And so, I think what's important
11 for us to understand is, this process, what we are trying to do
12 and what we've been tasked with under the FEP, is to create the
13 framework that allows the same type of management decisions that
14 Julian was talking about and that J.J. was mentioning to be done.
15 You know, I think if the framework of these goals helps us to do
16 that, I'm happy to adjust them. But I really don't think they are
17 because I see that we're continually, you know, parsing these out
18 and what we're not developing is a larger system by which this
19 information is being brought into management. And that's, I think,
20 where we should focus our efforts.

21
22 That being said, it ties nicely into the next presentation, which
23 is once again, my wonderful voice for you guys to hear, because I
24 know you're enjoying me talking so much. My hope is that the rest
25 of the meeting, more people are talking, and I can be quiet. But
26 I'm going to bring us back to a little bit about where we were and
27 what we are trying to do. I think this will help because it goes
28 back to J.J.'s point about the Lenfest Loop and how we take those
29 overarching goals and the work that we as the EBFM TAP and
30 hopefully what the SSCs help can do over the next three days to
31 create that framework, those objectives that I was talking about.

32
33 So right now, we're somewhere in between points one and two. So,
34 we're a little bit above two, which is the, where are we going,
35 right? We are still in the process. We have a mission statement.
36 We have a set of priority goals, but we don't have a clear vision
37 for the framework that needs to be used. We have not set strategic
38 objectives, right? And we have not identified a plan for the
39 assessment of risk to be used in a process that can be used in a
40 management objective.

41
42 So, what we as a group need to do is prioritize strategic
43 objectives. Meaning-- and it doesn't have to be specific
44 objectives. It can be a strategy for developing those objectives
45 and put that into a paradigm that can be used by the Council.

46
47 Yeah. I'm going to stop for a second and use, because I think Reni
48 has a clarifying question.

1
2 **JORGE R. GARCÍA-SAIS:** Yeah. I am not sure if I'm clear, what
3 assessment of risk are you referring to? what kind of risk?
4
5 **SENNAI HABTES:** That is a great question, Reni, and something that
6 we have to figure out. Right? There are a lot of different aspects
7 of risk. J.J. wants a turn, so I'll let him continue.
8
9 **JUAN J. CURZ MOTTA:** There are two assessments that are defined on
10 the Loop. One is risk to the fishery system. What is the risk of
11 overfishing X or Y population? And also, there is a risk assessment
12 on management strategies, right?
13
14 Let's say the plan proposes four different management strategies.
15 One of them is do nothing. The other is you keep doing what we do.
16 Or the third one is, let's do that differently. So, you do an
17 assessment of what's the risk of doing A or doing B or doing C or
18 doing D. So, there are two types of assessment that you can do
19 within this Loop.
20
21 **SENNAI HABTES:** Thanks, J.J. In practice though, I find that that
22 encompasses a whole lot of different ways of doing risk assessments
23 and as well as the assessment of a lot of different aspects of
24 both indicators, fisheries and management strategies, which is why
25 I laughed when you asked the question. J.J.
26
27 **JUAN J. CURZ MOTTA:** Excellent point, because then there are so
28 many angles that you can take on this, that you concentrate on the
29 priorities that you have engaged the stakeholders to see where we
30 going to tackle our efforts. And then you concentrate on all those
31 because of all the dimensions this can take.
32
33 **SENNAI HABTES:** Thanks for clarifying guys. The assessment of risk,
34 prioritization of strategic objectives, and then setting
35 operational objectives. Okay. So, what that means is we need to
36 create a clear organized plan under the Fishery's Ecosystem Plan
37 that addresses those four things that I've laid out and creates a
38 strategy for the Council to use the information that's being
39 provided to make the right decisions, as well as to learn and
40 adjust the management practices based on the information that is
41 coming into the Council.
42
43 Now, what we had decided on, in doing this, was to create working
44 groups to move towards the draft that we had created two years
45 ago. I think we've come up with a lot of different questions about
46 what we need to include in both the mission, the objectives, and
47 the outline that's been developed. But I think these four things
48 underneath under finalizing the FEP outline, still hold true.

1
2 We need to identify a clear vision and strategy or what I like to
3 call the framework by which we are going to implement an FEP.
4 Highlight the actions to address that strategy. Meaning what is
5 the process the Council will be taking to do ecosystems-based
6 fisheries management. Structure our operational objectives, or if
7 we cannot identify clear ones, create a process by which those are
8 identified using either information from conceptual models,
9 stakeholder meetings, or management processes. And we need to get
10 to writing up that information.

11
12 To that end-- and Edwin, here is the larger slide I promised you.
13 These are the working groups that we had decided on. The first one
14 was the conceptual models melding. I believe that has grown into
15 something much larger. And that was composed of J.J., Tarsila,
16 Orian, Michelle Duval, Sarah Stephenson, I think Liajay, Rich, and
17 Tauna. The outputs from that were to be-- I'll go into more
18 specifics on the outputs because I have better slides for that.

19
20 Then there was the Ecosystems Indicators, which had Kelly
21 Montenero, Sean Regan, which I believe no longer are working
22 closely with the EBFM TAP or at NMFS or have moved on to other
23 aspect of work at NMFS. So, we'll need to identify other members
24 for that. And J.J. again, Tarsila, Stacey, Orian, myself, and
25 Tauna.

26
27 You're going to see a lot of the same names because there's only
28 eight of us on the TAP. But the Risk assessment group, which was
29 myself, Orian, Kelly, Tauna, Liajay, Rich and Sarah again. And
30 then the data repository, which--Edwin, thank you. We'll add you to
31 that. And then for the data repository, because we're going to
32 need a structure a data management and consolidation system that
33 we can use to manage much of this new information that will be
34 going into the management system.

35
36 Sorry, just trying to take a note. You said ecosystem indicators.

37
38 **EDWIN CRUZ-RIVERA:** Yeah, the one that lost that person.

39
40 **SENNAI HABTES:** All right. Thank you, Edwin. Yeah, well that's
41 true. We'll get into that. And then the last is drafting the FEP,
42 which we all will have to do. But I have some good news on that
43 front, which will be part of the next presentation.

44
45 So again, the purpose of this is to remind everyone that is on
46 these working groups what we agreed upon and what we planned to
47 do. So, for the conceptual model's framework, at the last meeting,
48 we had identified that we would come up with common terms between

1 models before melding and create a crosswalk to create a conceptual
2 model for each stakeholder group and then identify the spatial
3 variability between each model. Validate that cross-sectional
4 conceptual model with all the stakeholders. Compare across groups
5 of stakeholders. Test all models against the ones that were done
6 by the SSC and the DAPs and combined a melted model.

7
8 And to my understanding, I think the majority of that work has
9 been done through Lenfest, and they're going to be presenting a
10 lot of that tomorrow. And from those, the outputs that we were
11 going to get towards the FEP were a list of indicators and gaps in
12 data that have been identified; the model framework that we will
13 use for the iterative process of dealing with stakeholder
14 engagement into the FEP; an appendix with all conceptual models;
15 and a comparative analysis within and among model types; and then
16 a ranking of indicators as best identified by the stakeholders
17 within the U.S. Caribbean.

18
19 Am I missing anything? No. Okay. Well, there, see, that's why I'm
20 the bus driver, J.J., because I remember all. But that is what we
21 agreed to. And so, to remind all of you that see your name on the
22 left-hand side, these are the things that we need to talk about,
23 think about, and we will be working on to create clear bullet
24 points and information that's going into the outline for the FEP
25 on Wednesday, Thursday and Friday. Okay. So that's step one.
26 Summarize all of that information and identify what is going into
27 the FEP from all of those things that we had already specified
28 from a while back.

29
30 So, sorry, the header on that one's wrong. This one's supposed to
31 be the indicators. And so, the task that we'd identified for that
32 group was to identify a suite of indicators that were-- I believe
33 that might be completed. We don't know. I think we'll have to wait
34 and see from Adyan's presentation tomorrow and I'm sure we'll have
35 plenty of questions associated with that.

36
37 Develop a repository of data, so that also needs to be combined
38 with work group four, which was create the infrastructure that's
39 going to be necessary. Summarize the conceptual model and
40 quantitative indicators that we've identified. Identified
41 qualitative indicators related to the conceptual models that can
42 come out of the quantitative indicators that were used and see if
43 there are any extracted from the quantitative models that are
44 important. I think this is extremely important. Four, probably,
45 from this group, will be the most important and needs to be clearly
46 written and identified in the FEP, which is what is the process
47 going forward to prioritize combined indicators identified. So,
48 what are the ones that are going to be used and how can they be

1 used in management if they even can be used in management. And
2 then five, combine a list of ecosystems. What is ESR?

3

4 **ORIAN TZADIK:** Ecosystem status report.

5

6 **SENNAI HABTES:** Oh, the list of ecosystem status report and
7 conceptual model indicators to create a master list of indicators
8 for the fisheries ecosystem plan.

9

10 All right. Oh, it looks like I had a double slide. Anyway, then
11 there's the risk assessment subgroup. That one was, loosely,
12 defined indicators from the master indicator list and the drivers
13 and receivers as a component to develop a strategic objective via
14 risk assessment process to inform the decision support system for
15 the Council. And we had these steps. I'm not sure how far along
16 we've moved on that, but I think the update from Tauna will help
17 us strategize a little bit more. But from my standpoint, for the
18 risk assessment, what would be most useful for the FEP-- I'm just
19 putting this out there. We can all decide that this isn't the right
20 way to go. --but possibly what is the framework or process by which
21 we want the Council to move through a risk assessment?

22

23 I think identifying the structure that they can use, the
24 information that they can use, and the process by which they can
25 go about doing it to inform their decision support system is likely
26 more useful than running through a full risk assessment in the
27 context of an FEP. And my hope it would be that is the direction
28 that we go in during the rest of the week. But it'll be great to
29 hear from the rest of you that are on there, which is just Rich
30 and Tauna, besides me and Orian, who talk about this all the time,
31 so if there's others. Sarah, were you on? Did you agree to that
32 one? Because I see question marks by your name. I'll put you on
33 the spot. Sure. Sarah's in. Yay. Okay.

34

35 All right. And then the last, but not least. This is the hill I
36 will die on, is that we do not have the data management and
37 coordination infrastructure in the U.S. Caribbean to deal with
38 this. Unless there is a process by which we create this
39 infrastructure, ecosystem-based management will go nowhere. It's
40 great to create a policy, but if you don't also create the policy
41 for developing the tools that you need to do the work, it's
42 worthless. So, both of us as an EBFM and you as an SSC, need to
43 put this in your priorities associated with research if we feel
44 that is important, because that is the only way we can start moving
45 towards the development of that. Otherwise, why are we doing this?

46

47 Okay. So, we will work on developing a strategy for data management
48 and coordination policies and the infrastructure, but I'm

1 unwilling to put all the work into that if I do not have the
2 backing of the Council or the SSC as a research priority for
3 developing that data management and coordination infrastructure or
4 the appropriate "okays" from the group to find partners that are
5 willing to do that for us, which to this day, I still haven't
6 gotten. So, I just want to keep putting that out there because I
7 don't know how many times I need to say it, but it's necessary.

8
9 I'm going to stop here and open it up to Marcos who has a quick
10 comment.

11 12 **Questions/Comments** 13

14 **MARCOS HANKE:** Yeah, it is a question to you. Can you just, for
15 everybody to understand it, when you are talking about
16 infrastructure that can be taken in the many different ways. I
17 would like to hear your intake on that, your opinion on that.

18
19 **SENNAI HABTES:** Sure. That's a great point, Marcos. I appreciate
20 the opportunity to talk about this to the group again. I would say
21 that what we really need is both the computing infrastructure,
22 meaning cloud computing or the resources necessary for building,
23 you know, hard component computing systems that can hold all of
24 the data that we are going to be using and collecting for the U.S.
25 Caribbean. I think in addition to that, you need personnel, people
26 that understand how to use, manage, keep that data and build it up
27 historically because, as you mentioned, there is really no point
28 in looking at this whole trend unless we have data going back over
29 a long enough period of time in a consistent format that we can
30 use it to make management decision systems.

31
32 And to be honest with you, we do this every 10 years in the U.S.
33 Caribbean. Someone tries to create a data warehouse and repository
34 with a lot of the same information that we are trying to collect
35 now and put it together and it never lasts because there is not
36 enough of the necessary resources put towards it. So, after that
37 one or two grants that were supporting it for seven or eight years
38 fall away, so does the structure, so does the data and so does the
39 management of it. And unless we, either as a Council or a group,
40 along with federal partners and local partners decide to put
41 infrastructure into a system that will last for doing that, the
42 same thing's going to happen again.

43
44 **MARCOS HANKE:** Okay. Just a follow up. I think in order to
45 streamline this discussion it will be nice if the group send this
46 request, formal request, for Council evaluation to explore and to
47 address in conjunction with the Science Center to see which is the
48 venue. You know, formal request for the answer to come to the

1 table. Otherwise, it will still stay on the air. That's my
2 recommendation.

3
4 **SENNAI HABTES:** I will happily write it up into a formal request.
5 I've done that in the past. I'll do it again.

6
7 **MARCOS HANKE:** Yes, yes. But what I'm talking about is in terms of
8 TAP/SSC. If it can be coordinated, using this meeting as an
9 example, for the Council or the agencies, Graciela, Miguel,
10 everybody to sit down on the same page and to explore our
11 opportunities to have a realistic approach to this.

12
13 **SENNAI HABTES:** Thank you, Marcos. I agree. I don't mean to make
14 it sound like nothing is being done on that front. We are working
15 with federal partners on a regular basis to develop infrastructures
16 and the Council and I talk. I just, I don't think we're there yet.
17 I think there needs to be a big push and I think it needs to be
18 part of priorities that we send up to the Council on a regular
19 basis.

20
21 **GRACIELA GARCÍA-MOLINER:** Mr. Chair, if I may. So, one of the
22 things that I'll remind you is that the Southeast Fishery Science
23 Center is hosting, a strategic planning meeting here at the end of
24 the month. And I think that it's of extreme importance that we
25 discussed this with them because really the capabilities to do
26 something like that are there. I mean, we at the Council can have
27 a server to host the data. I mean, we have all of the SEAMAP data,
28 and we can make it available, but, you know, it's Liajay, me and
29 Miguel and that's it. We are not database people. We recognize
30 that's not something that we can do. But the Science Center has
31 done quite a bit of work already in assessing, you know, reports
32 that are out there, work that is out there, gathering data,
33 etcetera. So, I think that this would be you know, a good
34 opportunity for the SSC and the TAP to recommend to the Council,
35 but also to bring it to the science Center meeting, which, I mean,
36 that's where it really should go.

37
38 **SENNAI HABTES:** Great. So that is the last of the four working
39 groups that we established. And so, I will put it out to the EBFM
40 TAP members to start thinking now if those are still adequate,
41 based on the directions that we have specified for the draft FEP
42 outline. And if not, are there other working groups that we need
43 to create. But to get you thinking about this from now, what we
44 need to do in the next four days are to summarize the work that's
45 being done from our partners, both Lenfest and the Southeast
46 Fishery Science Center. Confirm working group participation and
47 identify new members. Those of you that are not within the EBFM
48 TAP but are on the SSC and want to engage more with this or have

1 questions or want to be part of a working group, please do let me
2 know. I will happily invite you and put you in the context. I see
3 Marcos says he is interested. Marcos, what which one are you
4 interested in?

5
6 **MARCOS HANKE:** I would like the group to explore, I don't have a
7 name right now because I didn't consult with the person, but people
8 that are doing similar jobs and are in the similar different stages
9 IBFM implementation and other Councils. I think that will be
10 essential for that kind of coordination and to learn out of the
11 experiences. Just a comment.

12
13 **SENNAI HABTES:** That sounds good. I mean, if you have specific
14 people, you let me know, but I will talk to-- I'm in communication
15 with many of them already and they are very helpful when we need
16 things. So, we'll continue those collaborations. And then the main
17 thing here and the main purpose of this meeting in the next three
18 days when we're within just the EBFM TAP was to flesh out the
19 larger FEP outline. That is, complete clear operational
20 objectives, identify priorities and define the framework for the
21 FEP that we're going to be writing.

22
23 I'll also, the next thing I'll talk about is the technical writer
24 updates. We are really trying to get them the information to help
25 develop a framework for the FEP and the writing aspect, so it
26 doesn't have to be all on the working group members. And then,
27 probably the last day will be to translate all of that into writing
28 tasks and working tasks among the working group and to develop
29 strategies to get the FEP completed. Um, and so I see Tauna has a
30 hand raise, so I'm going to recognize you for your question.

31
32 **TAUNA RANKIN:** Thanks. Tauna Rankin NMFS, OHC. I just have a
33 process question with the working groups, and that is whether we're
34 going to identify leads at this time, or at least clarify who will,
35 kind of, initiate working group interactions meetings, because
36 while my name is associated with a number of these, I haven't been
37 engaged in what I understood were working group meetings.

38
39 **SENNAI HABTES:** No, that makes sense. Yeah. That is part of what
40 we need to develop in the EBFM TAP separate meetings, right? Is to
41 identify people who are willing to be leads as well as the process
42 by which we all agree to continue working on these things. And so
43 that, I think is going to be on the first order of business, you
44 know, on the first day on Wednesday. Yep. Orian.

45
46 **ORIAN TZADIK:** I think also, to Tauna's point, I think when we sit
47 down and start discussing these things, we might find out that
48 certain ones can be absolved, for example, or at least very, very

1 close to being finished. Right? Like the indicators, sounds like
2 we're pretty close on something like that. So maybe it's a process
3 that happens a little bit more organically, but I think that we
4 should definitely formalize exactly what you're talking about, but
5 I think that the actual groups and the composition of everything
6 might change a little bit over the next few days.

7

8 **TAUNA RANKIN:** Great. Thank you.

9

10 **SENNAI HABTES:** Any other questions related to that stuff? I think
11 this is the last slide I had on this one anyway. Yeah. So, at this
12 point, I can open it up to questions for clarification from the
13 SSC. Comments or any other EBFM TAP members. If not, I really only
14 have one other presentation that I need to give today, which is to
15 explain the technical writer updates and then the rest of the time
16 can be used for open discussion. And if people want me to, I'll
17 just keep talking because I do like the sound of my own voice, but
18 I hope I don't need to do that, and we can continue conversation
19 with everybody else.

20

21 So, at this point, if people have more questions regarding the
22 process within the working groups, if you want me to clarify
23 aspects of the working groups or clarify the directions and the
24 tasks that we've chosen within that, please do raise your hand and
25 let me know. Marcos.

26

27 **MARCOS HANKE:** Just for everyone. What is the process, let's say,
28 if you want to include something on the way we're going to perform
29 or engage with different agencies or groups and so on into the
30 future, how can we discuss or do that and formalize that petition,
31 if that's the moment now?

32

33 **SENNAI HABTES:** That's a great question. I think my intention for
34 what you're talking about is to create that as a strategic
35 objective with a specific action in the decision support system
36 that the Council will take. The previous way that we had tried to
37 do that was to include a letter we were told that is not going to
38 fly the last time that we brought it up. And so, I think a better
39 way is to put that in as, like, a strategic objective. And I think
40 that's something we can discuss within the other working group.

41

42 **MARCOS HANKE:** My recall on that was to explore with the legal
43 counselor to see if the informative letter had any problems. I'll
44 do I commitment with you. I'm going to consult, and I'll let you
45 know once I have the opinion about that.

46

47 **SENNAI HABTES:** I mean, that sounds good. I have no problem still
48 including that so long as when it goes up to the Council, everyone

1 agrees. And I think that's one way to do it. I think a better way
2 probably to do it is to develop, through the conceptual model
3 process that Lenfest is doing, that is a clear recommendation, as
4 part of the process, to evaluate these other indicators through--
5 And I don't think it needs to be specified as other agencies. I
6 think it be specified from the impacts to the ecosystems and assess
7 that threat on an ongoing basis and to specify mitigations that
8 can be done to manage those from the Council. Because those are
9 clear directives that can be done under management.

10
11 So, I think you can do both. I have no problem doing both. I'm
12 just saying, for now, until we get that clarity, we can put them
13 in that context. Vance, and then Reni.

14
15 **JORGE R. GARCÍA-SAIS:** Yeah. Just a question on perspective.
16 Ecosystem-based fishery management, do we believe at the end that
17 we can use this approach to set up annual cash limits and ABCs.

18
19 **SENNAI HABTES:** I mean, yes. I think there are aspects of ecosystem
20 safe management that incorporates a lot of traditional stock
21 assessment. But the difference is, is that this is a holistic way
22 of managing an ecosystem. And it takes a different approach and a
23 different vision, I think, to fisheries management than we are
24 currently using within single species stock management.

25
26 And so, it may be that from the whole process that we do, you end
27 up with ABCs and those traditional management. Or it may be that
28 there is a whole other metric that we've identified for dealing
29 with the management of, you know, a complex of species, individual
30 species, or the ecosystem as a whole.

31
32 You don't know until you've designed the framework and the process
33 because you're using the data to inform the process by which you're
34 doing the management. And so, you can, I think it would be a shame
35 if you structure it from the beginning and the outset saying, these
36 are the specific metrics that we are meaning to come out with. But
37 you do have to set objectives and, you know, that's something that
38 will be defined based on the work that Lenfest has done. And I
39 think, you know, they'll summarize a lot of that tomorrow during
40 their presentations. And I'll-- oh, can I let J.J. and then you
41 Rich? Is that okay?

42
43 **JUAN J. CURZ MOTTA:** Oh, Rich, please go ahead. I'll go after.

44
45 **RICHARD APPELDOORN:** Yeah. Reni, just a couple of examples. One of
46 the things they had in that Lenfest Loop-- no, excuse me, in the
47 list of 15 priorities, was to incorporate ecosystem considerations
48 into stock assessment. So, one of the things we're already doing

1 when we were defining some of our tier four stocks and for
2 herbivores and I think it was angel fishes, we lowered what the
3 potential we would like to see subject to exploitation because of
4 their importance of their ecological roles. Well, that was done
5 as, you know, an SSC kind of step. We didn't have an ecosystem
6 model backing that up. We had our individual ecosystem knowledge
7 within the committee to inform us to do that. So hopefully, coming
8 out of this larger ecosystem-based process would be something that
9 said, "Hey, yes, in fact you should be doing this." And by the
10 way, for these other species too.

11
12 Another example that came up, might have been in the last SSC
13 meeting, where the question was raised, "Well, how do you deal
14 with closed areas and stock assessments?" And the answer was
15 something like, "well, we ignore them." And you know, that's not
16 fair to the fishers. They've given up space to make this an area
17 that's supposed to be making the stock resilient, and yet this
18 resilience is not going into the assessments per se. So, we are
19 getting a more formal way of getting that kind of ecological
20 protection into the stock assessment in a quantitative sense would
21 be something I would certainly like to see come out of the process.

22
23 So, I think there's ways of trying to do, you know, how do you do
24 this well. There are things we'd like to see happen, and hopefully
25 they'll come out of the process. And if not, then we have to direct
26 the process to do that.

27
28 **JORGE R. GARCÍA-SAIS:** Yeah. I do recall those instances and I'm
29 happy that you brought it up because I think that we need to
30 incorporate all those instances in which this kind of assessment
31 has been useful, or this approach has been useful in order to
32 modify our management approaches so that this process can gain
33 speed and can start interacting with the actual management policies
34 that we have right now and management approaches that we have right
35 now. Because at some instance we will need to be replacing one
36 thing for another, you know, one approach by another. And I, you
37 know, for the record, I just wanted to bring up to the discussion
38 if the finality of this management approach would be the main
39 current guidance for fishery management in Puerto Rico, and the
40 U.V.I.

41
42 **RICHARD APPELDOORN:** Yeah. I don't think you should think of it as
43 being a replacement. I think you should think of it as being
44 complimentary.

45
46 **JORGE R. GARCÍA-SAIS:** So, complimentary in one sense, in the sense
47 that we would incorporate approaches of ecosystem-based management
48 into the actual program that we have right now.

1
2 **RICHARD APPELDOORN:** That's how I would-- that's one way I would
3 see it happening. Yes.
4
5 **SENNAI HABTES:** J.J.
6
7 **JUAN J. CURZ MOTTA:** Thank you. Yeah, I would like to differentiate
8 two things based on a review published two years ago. It is a book
9 by Marshak and a colleague on what it means, right? And also, a
10 paper published by Mandy trying to identify what is the EBFM and
11 what can be used for.
12
13 So, they differentiate two things. One is called ecosystem approach
14 to fisheries management, in which you still manage one species,
15 but then you use ecosystemic considerations. If you use that, yes,
16 you can calculate ABCs and do the traditional stock assessments
17 incorporating some parameters from the ecosystem. However,
18 strictly speaking, if you're going to do EBFM, based on that
19 review, it's about managing the whole system. So, under that
20 approach, no, you cannot calculate ABCs. So, it depends on what
21 you refer as EBFM.
22
23 And then Rich has given a very nice example of the first, ecosystem
24 approach to fisheries management. So, it depends which way you
25 take.
26
27 **SENNAI HABTES:** Anyone else? Vance, finally. Sorry, Vance. Vance
28 had his hand up first before everyone, but the conversation got
29 away from us.
30
31 **VANCE VICENTE:** That's okay. Well, let me see what my contribution
32 can be to this topic. I've been thinking the following. Yeah, I've
33 been thinking the following regarding other partners and other
34 groups that may very well contribute significantly to this major
35 goal. And one of them is, the first one that came up to my mind
36 was in 1999, the San Juan Bay Estuary Program. This program is a
37 federal program. It's been established since 1999. There is a
38 comprehensive management plan, which has become implemented. And
39 such plan includes the whole ecosystem. It includes the North coast
40 of Puerto Rico, which we lack a lot of data. It includes all the
41 major estuaries, specifically San Juan Bay, Laguna San Jose, Laguna
42 La Torrecilla and Laguna Piñones. Okay?
43
44 All these are estuary essential fish habitats for the offshore
45 fisheries. And they've been collecting information on primary
46 production contamination. They have a hydrologic model, which the
47 U.S. Army Corps of Engineer developed for them. And they involve
48 the community in monitoring water quality, as well as the fisheries

1 populations within the lagoons. And they have compiled significant
2 amount of work for many, many years. And I think that we should
3 make use of it to see how their comprehensive management plan
4 became implemented? how did they integrate all these different
5 components? And then thinking about it, I thought of Reni.

6
7 You know, there's also another ecosystem study that was done and
8 published by very well-known scientists here, such as Ariel Lugo,
9 which is the Laguna Joyuda Estuary System. There was a major, I
10 mean, there were years of study looking at how the primary
11 productivity of the mangroves varied, the seagrass production,
12 which I did the study. Reni did the plankton work. Joseph Kimmel,
13 may he rest in peace, did the fisheries work. I know this was
14 integrated and published using the ecosystem model, an earlier
15 model, you know, that was developed by Howard T. Odum, which is
16 the father of ecology. Okay.

17
18 And besides that, we did extensive ecosystem-based studies in Jobos
19 Bay and Guayanilla Bay, which I was in charge of doing the benthic
20 assessment, but also Joe Kimmel did the fisheries. We didn't
21 involve, you know, the fishery communities too much. I mean, that's
22 not the main goal of these other federal programs. I'm specifically
23 talking now, when I talk about Laguna Joyuda Bay, Jobos Bay, and
24 Guayanilla Bay about CEER, Center for Energy and Environment
25 Research, which have conducted a significant amount of studies,
26 scientific studies, which have been published in [inaudible]
27 journals, they have been published as part of an MS thesis, PhD
28 dissertation and so on.

29
30 So anyhow, how can we gather all this information and have a team,
31 a group, maybe another group, you know, that takes care of
32 analyzing to see which other similar type of ecosystem-based
33 approach have been used in the past and see how useful this can be
34 for our purpose, you know. Which is eventually, to provide some
35 advice regarding the fisheries management, which is not the main
36 objective of this previous study, but they did integrate the
37 various components of the ecosystem for decades and decades. Thank
38 you.

39
40 **ORIAN TZADIK:** Quickly, Vance. What was the first one you
41 mentioned? What was it called?

42
43 **VANCE VICENTE:** The first one, right now, most active right now,
44 is the San Juan Bay Estuary Program. It's part of the U.S. EPA,
45 U.S. Environmental Protection Agency Estuary Program. They have
46 different ones in the nation. Tampa Bay is the one that is more or
47 less similar because they have seagrass beds and other stuff.

1 They have a main office. They have a library. The president right
2 now is still a geologist, Pedro Gelabert. He's almost a centennial
3 to begin with, and very, very bright. I have to give credit to my
4 ex-wife, okay, Tere Rodriguez, which was the one that brought in
5 the program for Puerto Rico, which actually is the only estuary
6 program which involves so many different types of ecosystems, which
7 is the other watersheds of the North Coast from San Juan Bay all
8 the way up to, almost, Fajardo. It includes all the lagoons,
9 includes all the mangroves and coral reefs in part, but it's the
10 only tropical estuary program under the U.S. EPA. Thank you.

11
12 **ORIAN TZADIK:** So, a couple comments. One for what you were just
13 talking about, and then also to address what Reni was just talking
14 about.

15
16 One of the first steps in this whole process that we did in 2017,
17 maybe, right at the beginning was identify a lot of these different
18 data sets that we wanted to get ahold of and start this process of
19 a data repository and try and, you know, look at, well, what are
20 the useful ecosystem type data sets that we can get ahold of. We
21 had an intern at NOAA devoted, pretty much full-time to trying to
22 track down a lot of this stuff. And what we found was that it was
23 exceptionally difficult to get people to share their data. The
24 territorial agencies, particularly so, the Water Authority in
25 Puerto Rico, forget it. I mean, you know, some of these were very,
26 very difficult. So, I think we need to continue to pursue it and
27 we need to recognize that it is a difficulty of the process. But
28 I agree with what you're saying.

29
30 Also then, to Reni's comment, I just wanted to say that the way
31 that-- I'm speaking as an opinion here --that I would say, that I
32 would see this process as stepwise. And you're talking about, and
33 to Sennai's point, to come into it and say, "we're going to develop
34 a whole new system that gives us the same reference points as
35 before." I think we'd be putting the car to in front of the horse
36 a little bit, right? We need to do this whole thing stepwise. And
37 so maybe instead of going straight from single species to EBFM, we
38 need to start talking about some of the intermediate steps along
39 the way and things that we can do immediately that would then
40 eventually get us down the road to something a lot more holistic.

41
42 **JORGE R. GARCÍA-SAIS:** I mean, Orian, the way things are going
43 right now in our marine ecosystem probably will require a much
44 more wholesome background that this ecosystem base system
45 provides, you know. Knowing the [inaudible] with the corals right
46 now and the way that the coral diseases are spreading around and
47 actually modify the entire marine ecosystem, sooner or later, you
48 know, it will get down to fisheries results, you know, to affect

1 the fisheries resources. And probably we will be in need of a more
2 comprehensive ecosystem-based approaches to understand these
3 processes and the way we're going to manage fisheries from here
4 on.

5
6 I mean, we're losing a lot of live coral, you know? I mean, now
7 it's not a loss of 20% or 40%. We are beyond 50% in many reefs
8 right now. The way the trends are, are not encouraging. The trends
9 are that it's going to keep on declining to who knows how much,
10 you know? So, I mean, there's a lot of footwork relationships that
11 are going to be affecting a commercially important species in the
12 unforeseeable future.

13
14 **VANCE VICENTE:** Yeah. I'm glad that you brought this up. When you
15 mentioned disease, I think that, specifically in the last decade
16 or so, you're referring to the Scleractinia Coral Tissue Loss
17 Disease. That disease has taken a major toll throughout the whole
18 Caribbean. Actually, throughout the whole wider Caribbean. This
19 disease was first reported in Florida. From there, the disease has
20 been spreading South and North, you know, West into the Gulf of
21 Mexico. And I happen to be monitoring especially the North Coast
22 in the last, well, since 1987, and I quantify the mortality, and
23 based on my experience, about 80% of the population are gone.

24
25 I mean, this is not bleaching. When a coral is exposed to tissue
26 loss disease that means that the tissue is lost. Okay? So, there's
27 no recovery, practically, at all. And I have documents, I have
28 specific reports which are available at the U.S. Army Corp of
29 Engineers, if anybody's interested. But that's something that the
30 Southeast Fishery Center needs to take into account, particularly,
31 to protected resources division.

32
33 Right now, we have seven corals listed under the Endangered Species
34 Act. They you revise that list, because after that major widespread
35 disease, which is very similar to the diadema antillarum extinction
36 back in the eighties, which transformed the reefs, and it is
37 occurring now. But recently they found out that it was a ciliate.
38 I keep up with the literature once in a while.

39
40 But anyhow, I think that's a major issue affecting not only the
41 habitat, but the food resources of the fisheries that we're trying
42 to manage. And this is going to be, this is pretty dramatic. But
43 thank you, Reni, for bringing that up.

44
45 **JORGE R. GARCÍA-SAIS:** Actually, I'm bringing it up just for us to
46 foresee that we will need some other alternative that we never
47 talk about here, to actually replace species that are not going to
48 be there for us sometime in the future, you know? I mean ocean

1 farming, things like that. Mariculture experiments, you know, that
2 have taken place before, such as the cobia experiment, things like
3 that. I mean, I've been doing research on coral reef fishes for
4 almost 30 years now, and I have seen big changes in the community
5 structure of the fishes here. The changes that I have seen in the
6 last 10 years are just out of the scale compared to the previous
7 decades.

8
9 So, just thinking about that we may see that in the next 10 years,
10 next decade, large variations are to be expected in terms of coral
11 reef fisheries. And, you know, we might be in a better position
12 than any in Puerto Rico to foresee those changes and start thinking
13 about alternatives to maintain our fisheries outputs. That's
14 something that, I mean, I'm thinking about every time that I look
15 at the reef's conditions, you know, how they are right now.

16
17 **SENNAI HABTES:** Go for it.

18
19 **VANCE VICENTE:** Yeah. Many of these changes are traceable. We can
20 go back. We can do [inaudible] scan on this. If you take a core
21 sample of, for example, of the mangrove and seagrass flats, you
22 will see a history of change, of major epibenthic changes. Okay,
23 just to give you an example, you know, from porites porites beds,
24 which were a very common, you know, sub zone in the living part of
25 reef, you know, substituted by mangroves. Mangroves died, seagrass
26 bed takeover.

27
28 Also, this has been documented, in many of the Florida Keys. But
29 there's a history on it, and it is San Juan Bay Estuary Program
30 they hired Richard Webb, from the U.S. Geological Survey. He did
31 extensive core studies showing how the infauna, how has changed,
32 you know, throughout the years. So, there's a history. We can go
33 back to some [inaudible] it's not something new. This has been
34 going on. Climate change has been going on for a long night.

35
36 **JORGE R. GARCÍA-SAIS:** Vance, I think that my point that I was
37 trying to make. It's that, probably, the changes that we might be
38 seeing in the near future are not related to fishing mortality.
39 You know? It's something else. It's something completely
40 different. It's doesn't have to do with the type of effort that
41 the fishermen are putting in or the geos or anything of that. It's
42 just a matter of changing environment, you know, and how we as
43 managers are going to be dealing with it.

44
45 **VANCE VICENTE:** I agree. Thank you, Reni.

46
47 **Introduction and Explanation of Technical Writing Consultants**
48 **for FEP Development—Sennai Habtes**

1
2 **SENNAI HABTES:** Well, thank you guys for that informative
3 discussion. I think it's imperative that we develop a framework
4 that incorporates answers to exactly these questions and how it
5 can be used in the fisheries management process here in the U.S.
6 Caribbean. Because I think it's abundantly clear that our current
7 system is not going to be able to handle the complexity of changes
8 that we're going to see over the next two decades.

9
10 I think we're already starting to see that, and we're unable to
11 answer the questions that need to be answered related to management
12 structures. So, you know, that's why we are developing this plan.
13 Okay.

14
15 With that I'm going to, I only really have like one more slide to
16 talk about. So, I will open it up for any lasting questions before
17 I do that, and we can have a more expanded discussion if anyone
18 wants. If not, I will turn you guys over to enjoy the rest of your
19 day after this one. So, if anyone has any final questions or
20 comments, we could do it after. Just this one last thing.

21
22 So as all of you know, we do have to develop an actual written FEP
23 that can then go through the process of approval by the SSC and
24 the Council members. And as all of you know, we are all volunteers
25 and all of us here, including all the other Chairs and other
26 members, besides the Council staff, who have plenty of things on
27 their plate, all have other jobs.

28
29 So, it becomes very difficult to write up a large 50-page documents
30 summarizing years of work from multiple different places when
31 you're all doing other things. So, we have hired a technical writer
32 who is funded by PEW to give writing support in the draft of the
33 FEP. Her tasks are to provide sections of writing that will be
34 reviewed by the EBFM TAP. That is the only goal of this project.

35
36 We do not have any funding within the EBFM TAP, so trying to
37 scramble around and find people that can pay for someone to help
38 us write this stuff, has been a little bit difficult. But we were
39 lucky that there was some funding left over that could be used for
40 that. And so, her support of the draft FEP is to write the intro
41 and background, so that first section; the interface between the
42 fishery and ecosystem management, which was the third section; the
43 environmental setting of the U.S. Caribbean; and then to summarize
44 a lot of the work from Lenfest, meaning the conceptual models. So,
45 it is super helpful to have someone that can take all of that
46 information, summarize it into a format for writing and then
47 present it back to the EBFM TAP for review. So, we can revise and
48 edit and not have to write out a whole cloth, some of the larger,

1 more complicated sections.

2
3 And then, essentially, what will happen is the final working
4 product will be used at the discretion of the EBFM TAP, meaning we
5 will review, edit everything and put it up to the SSC for review.
6 But these are only four sections of what I anticipate being a much
7 larger document. So, getting some help towards that is super, super
8 helpful. I think likely the majority of the rest of the writing is
9 going to fall to those eight of us on the TAP, but having those
10 covered will be nice.

11
12 I think additional technical writing support will likely be
13 necessary to draft the other aspects of it. I'm hopeful that there
14 might be some sources from the Council. But as we've mentioned
15 multiple times, a lot of the work that's informing this, is coming
16 from a lot of different projects outside of what's being done on
17 the EBFM TAP and so, this is one aspect. So, my hope is that we
18 can possibly find additional funding, either through other
19 projects that are ongoing, which I'm hoping some people tomorrow
20 may be presenting on, that will help us find additional technical
21 writing support. Or maybe I can send up another request to the
22 Council to see if they can fund additional writing support for
23 developing the FEP. But seeing as those haven't worked in the past,
24 tried to find additional ways of getting it done so we can actually
25 have something written up over the course of this year.

26
27 All right. And so, with that, I don't really have anything else
28 until tomorrow, which will be a lot of presentations to summarize
29 the ongoing work that's being done, which I think will help us
30 inform the rest of the process that we need to, which is drafting
31 the FEP. But I would ask that all of you take a look back and
32 review some of the information that was on here. You should have
33 gotten an email revise and relearn about the things that we said
34 that we would do so that when we get into the room on Wednesday,
35 we're kind of ready to go for addressing that.

36
37 And for those of you that are on the SSC, I would ask that you
38 stay engaged with us if there are questions that you have, if there
39 are ways that you think you can provide data or information that
40 can better inform the process, you know, please let me know seeing
41 as I'm the chair. So, with that I will open the floor up to
42 questions about this and other aspects of what we talked about
43 today. J.J.

44
45 **Questions/Comments**

46
47 **JUAN J. CURZ MOTTA:** Thank you. I have two, three questions about
48 the technical writer and then a general comment. How many months

1 will we have the help of the technical writer? Like, for how long
2 she or he will be engaged?

3

4 **SENNAI HABTES:** Give me one second and I'll look it up. Two more
5 months.

6

7 **JUAN J. CURZ MOTTA:** Okay. That's short. Well, the general comment,
8 this is super nice, even though it is only two months that we have
9 the help for the strictly speaking writing. But I want, just for
10 the record, to reiterate or have the assurance that this is only
11 for internal consumption of our working group. That everything
12 that we will produce at the end will be validated by all
13 stakeholders. That doesn't mean that PEW is writing the FEP for
14 us. They are just helping to put together information, that is
15 all, and then it will be us that we will put that document together
16 and then will be validated with other stakeholders. Just for the
17 record. Thank you, Sennai.

18

19 **SENNAI HABTES:** That's correct. This is only for the EBFM TAP in
20 support of writing the sections to help the direction that we have
21 already defined and written. In addition, it is not used for any
22 other outside projects, and it will only go through the EBFM TAP
23 to consolidate it into a final product that still has to go through
24 the same process as always, which would be reviewed by the SSC and
25 review by the Council. Kevin.

26

27 **KEVIN MCCARTHY:** So, the technical writer is that job an
28 independent contractor that happens to be getting funding from PEW
29 or this is a PEW person doing it. There's a difference of course.

30

31 **SENNAI HABTES:** It is an independent contractor that is funded by
32 PEW.

33

34 **KEVIN MCCARTHY:** Okay. Because that may open up some additional
35 opportunities for funding, right, as an independent contractor.
36 Whereas, funding a nonprofit becomes more problematic. Right.
37 There are fewer ways to do that.

38

39 **SENNAI HABTES:** No. This is funding from a nonprofit to pay an
40 independent contractor that we identified to help us write the FEP
41 sections. J.J.

42

43 **JUAN J. CURZ MOTTA:** Yeah. One last technical question. How rigid
44 is that contract? For example, can the content of what this writer
45 helps us write, can change the sections or they have to be those
46 sections that are on that?

47

48 **SENNAI HABTES:** They have to be those sections. So, it's a pretty

1 rigid contract, but if it's stuff that is within those things,
2 then they can help write it.

3

4 **JUAN J. CURZ MOTTA:** Okay. Thank you.

5

6 **SENNAI HABTES:** Graciela.

7

8 **GRACIELA GARCÍA-MOLINER:** So, you know, in terms of what needed to
9 be done, there is a huge amount of information that it's already
10 in the FEP that was kind of disorganized, and because people kept
11 putting things in, we had to regroup and reorganize it. So, the
12 ideal situation would be to identify additional funding for this
13 person or any other independent contractor who meets the criteria
14 to continue helping us. I mean, that includes the Science Center,
15 the Regional Office, and the Council because as Sennai said, we do
16 have quite a bit of amendments coming online and it's something
17 that would actually be really good to put someone, because you can
18 tell from the FMPs who's written what sections, and that's
19 something that happens because you have too many people putting
20 the information into that document, which is okay because it's
21 readable. But if you do have a technical writer, someone who speaks
22 the language of the scientist and of the people who are going to
23 read it, that's much better.

24

25 In addition to that, the problem that we have confronted throughout
26 all this time is actually getting our hands on data, on information
27 from other agencies and other regulatory agencies that we need for
28 our assessments. That's a problem because it takes, you know, a
29 whole lot of time to sit down and write notes, emails, make phone
30 calls, and in the end, not get all that you want. So having a
31 technical writer for us has been an excellent addition to the team.
32 And, you know, again, this is information that it's already in the
33 books. The Island-Based FMP for example, has a lot of information,
34 but it's mostly looking at fisheries. This has to be turning to
35 the EBFM approach to fisheries. So, you have to do a little bit of
36 rewrite in order to put across the information that you need
37 everyone to be concerned with.

38

39 So having said that, funding opportunities, the Council deals with
40 the S-K and MARFIN and things like that and requests additional
41 funding from headquarters, etcetera. So, all the things are
42 happening, you know, as you're meeting here. But the fact is that
43 identifying the funding at this time, it's a major issue. So again,
44 you know, your recommendations to maintain someone to do that, and
45 we'll be talking, I think Tauna will be talking about the risk
46 assessment. Again, we don't have the expertise at the Council to
47 do that. So, funding needs to be acquired in order to get someone
48 to do a risk assessment the way it's supposed to be done. So, those

1 are the issues that, really, the Council deals with. But your
2 request to the Council to look into additional funding for the
3 technical writer, for the risk assessment, expertise is one of the
4 recommendations that you can make at the end of the meeting.
5 Thanks.

6
7 **SENNAI HABTES:** Thank you, Graciela. Any other comments, questions,
8 concerns? Kevin.

9
10 **KEVIN MCCARTHY:** This is not direct. It's a new topic. So, the new
11 topic is, I know we've made some changes to the schedule, to the
12 agenda for tomorrow. Are we going to see an updated one of those?
13 Is that going to get emailed out to folks or, I don't know if
14 anybody's been working on that.

15
16 **SENNAI HABTES:** I can update it as soon as we get out of here and
17 I can send it to Liajay and resend, but really the only change is
18 that we're going to move the 9:30 presentations up to 9:00 and
19 then the other present-

20
21 **KEVIN MCCARTHY:** And provide some extra time.

22
23 **SENNAI HABTES:** And provide some extra time for the Lenfest. And
24 then we have Rachel Eckley's presentation, which will go in at 4-
25 - what is it? The three-

26
27 **LIAJAY RIVERA GARCÍA:** Developing a Strategic Plan for Fishery
28 Stock Assessment in the U.S. Caribbean Region.

29
30 **SENNAI HABTES:** And what time do we have her slot it in for?

31
32 **LIAJAY RIVERA GARCÍA:** That will be tomorrow, last thing before
33 other business.

34
35 **SENNAI HABTES:** Okay. All right, so around 4:00. So, I will update
36 the agenda and have them resend it out.

37
38 **KEVIN MCCARTHY:** Thanks.

39
40 **SENNAI HABTES:** Other questions, concerns anyone online? Going
41 once, going twice. All right. With that, obviously I will need
42 someone to make the motion second, and then I'll adjourn for the
43 day.

44
45 **RICHARD APPELDOORN:** Motion to adjourn.

46
47 **JORGE R. GARCÍA-SAIS:** Second.

48

1 **SENNAI HABTES:** Seconded by Reni García. I can say it for him,
2 right? So seconded by Reni García.

3
4 Any opposed? Hearing none opposed. Any abstentions? Hearing no
5 abstentions. It is 4:33 on May 1st, this will adjourn us for the
6 day for the joint SSC and EBFM TAP of the Caribbean Fisheries
7 Management Council. Just as a reminder, we will reconvene at 9:00
8 AM tomorrow, May 2nd.

9
10 Have a good night, everyone.

11
12 (Whereupon the meeting recessed on May 1, 2023.)

13
14 - - -

15
16 May 2, 2023

17
18 TUESDAY MORNING SESSION

19
20 - - -

21
22
23 **CRISTINA OLÁN MARTÍNEZ:** Good morning. Buenos días. Do you hear
24 us? ¿Nos escuchan?

25
26 **ALIDA ORTIZ SOTOMAYOR:** Sí, yo también escucho bien.

27
28 **CRISTINA OLÁN MARTÍNEZ:** We are dealing with connection problems.
29 The server of the hotel is down, so we are expecting-- we are using
30 another connection. Maybe there could be some lag, so please be
31 patient. We are not relying on a strong connection. Okay.

32
33 **SENNAI HABTES:** Good morning, everyone. Sorry for the technical
34 difficulties, we are on now. I am Sennai Habtes. I am the chair of
35 the Ecosystems Based Fisheries Management Technical Advisory Panel
36 for the Caribbean Fisheries Management Council. Welcome to the
37 second day of the joint Scientific and Statistical Committee and
38 EBFM TAP joint meeting. I will call this meeting to order at 9:22
39 AM on May 2nd, 2023.

40
41 We apologize. There is an internet outage here at the hotel. So,
42 we will be using a hotspot to have everything done online. So,
43 we're running on limited capacity, so I'll ask everyone to bear
44 with us and give us your patience. To expedite things, since we're
45 starting a little late, I'm going to ask everyone online to please
46 just in the chat, give your name and affiliation.

47
48 And we're going to have Cristina or Liajay, read them off into the

1 roll call and you can do that while we're doing the roll call in
2 the room. I will start and then we'll start at the top left after
3 me with Cristina and go around the room.
4
5 Again, for the record, I am Sennai Habtes, the EBFM TAP Chair, and
6 I'm also the Chief of Fisheries for the Virgin Islands Department
7 of Planning and Natural Resources Division of Fish and Wildlife.
8
9 **CRISTINA OLÁN MARTÍNEZ:** Good morning, Christine Olan, Council
10 staff and I am also going to read the names of the people in Zoom
11 Edwin Cruz-Rivera, Martha Prada, Tauna Ranking, Katherine Zamboni,
12 Refik Orhum, María López-Mercer, Anne Kersting, Jason Cope, Alida
13 Ortiz Sotomayor, Wilson Santiago Soler, CFMC liaison Nicole
14 Greaux, Erik Williams, Jesús Rivera Hernández, David Beringer. I
15 think that I read all of them. I found one that is not identified.
16 Please, if the person can write his or her name in the chat, we
17 will appreciate it. Thank you.
18
19 **SARAH GAICHAS:** Good morning. My name is Sarah Gaichas. I'm here
20 with the Mid-Atlantic Fishery Management Council's SSC, and I work
21 for the NOAA NMFS, Northeast Fishery Science Center in Woods Hole.
22
23 **LIAJAY RIVERA GARCÍA:** Buenos días. Liajay Rivera García, Council
24 staff
25
26 **MICHELLE SCHÄRER-UMPIERRE:** Buen día. Michelle Schärer, SSC.
27
28 **STACEY WILLIAMS:** Good morning. Stacey Williams, EBFM TAP.
29
30 **TARSILA SEARA:** Good morning. Tarsila Seara, EBFM TAP and SSC.
31
32 **JUAN J. CURZ MOTTA:** Buenos días. Juan Jose Cruz, SSC and TAP.
33
34 **TODD GEDAMKE:** Todd Gedamke, SSC member.
35
36 **ORIAN TZADIK:** Orian Tzadik, NOAA Fisheries, EBFM TAP.
37
38 **VANCE VICENTE:** Vance Vicente, SSC. Good morning.
39
40 **RICHARD APPELDOORN:** Rich Appeldoorn, SSC.
41
42 **KEVIN MCCARTHY:** Kevin McCarthy, EBFM TAP.
43
44 **JORGE R. GARCÍA-SAIS:** Reni García, SSC member.
45
46 **JULIAN MAGRAS:** Julian Magras, DAP Chair Saint Thomas/Saint John.
47
48 **GERSON MARTÍNEZ:** Gerson Martínez, DAP Chair Saint Croix.

1
2 **NELSON CRESPO:** Buenos días. Nelson Crespo, DAP Chair, Puerto Rico.
3

4 **SARAH STEPHENSON:** Good morning. Sarah Stephenson, Southeast
5 Regional Office.
6

7 **GRACIELA GARCÍA-MOLINER:** Buenos días. Graciela García-Moliner,
8 Council staff.
9

10 **SENNAI HABTES:** Thank you everybody. So, just some light
11 housekeeping for those of us in the room, please do remember to
12 sign in on the sheets. If you were not here when Cristina brought
13 them around, at the next break, please do make sure to go over and
14 sign both sheets. For those online, if you put your name and
15 affiliation into the chat, they will make sure to record your
16 information as signed in for the meeting today.
17

18 In addition, for those of you joining either from a phone that do
19 not have your name on the screen, if you can please do change it
20 on settings, it does help us recognize and identify people if
21 called on to speak.
22

23 With that, I want to welcome everybody again to today's meeting.
24 This is a lot of information from partners and people working on
25 similar projects that are going to be used towards both, the things
26 that we need to do during the separate meetings later in the week.
27 So, I'm excited to hear a lot about the results, I'm sure you guys
28 are too. But first we're going to start off with Sarah Gaichas,
29 who's going to give us a presentation on using ecosystem
30 information in the stock assessment and advice process. So, at
31 this point I'm going to turn it over to Sarah and welcome her to
32 present to the meeting.
33

34 **Using Ecosystem Information in the Stock Assessment and Advice**
35 **Process—Sarah Gaichas**
36
37

38 **SARAH GAICHAS:** Thank you very much, and we are just getting it up
39 on the screen. Can we full screen that? Thank you.
40

41 Sorry, I was going to present this from my own screen, but
42 obviously with the internet problems we can't do that. So, we're
43 sharing a computer here. So, it looks like it's showing up now for
44 the folks online, please let me know if you can't hear or see
45 anything. So, thank you for inviting me this morning. I'm very
46 excited to participate in this meeting and see a lot of the work
47 that's being done in this region. I find it very inspiring and I'm
48 looking forward to the discussions later.

1
2 I've been asked to give a talk that I gave to the national SSC
3 meeting back in August and it has a lot of information about
4 different ways to use ecosystem information in both the stock
5 assessment and the advice process. And it draws on examples from
6 several regions, but especially the Mid-Atlantic where I work. But
7 there are many examples from throughout the country. And so, I
8 hope some of this can be helpful in thinking about how to implement
9 some of these ideas in this region.

10
11 There we go. Okay. Just a little delay.

12
13 Good. So, I want to start with the EBFM policy that the United
14 States has, and it's this quote up here, so I'm not going to read
15 the whole thing to you, but what I'd like to emphasize in this are
16 the first couple of words. It's a systematic approach. So, there's
17 a lot of different ways to implement EBFM. I think all of them are
18 going to think about a geographically specified area. They're going
19 to think about resilience and sustainability of the ecosystem.
20 They're going to recognize physical, biological, economic, and
21 social interactions among all the fishery related components. And
22 especially, it's very important that this does include humans. And
23 we're looking about optimizing benefits and a diverse set of
24 societal goals.

25
26 But the systematic approach is the thing that I want to emphasize
27 and the examples that I'll show today represent different but
28 useful, I think, systematic approaches to bring ecosystem
29 information into our decision processes. I'm just going to give
30 you the bottom line right now. I think there's a lot of different
31 ways to do this. There's a lot of options. There's a lot of entry
32 points and they can all be systematic approaches and they can be
33 adjusted to different situations. So that's the end goal here and
34 also, I firmly believe that this is true.

35
36 So, the goal for us really is to, again, increase the opportunities
37 for relevant ecosystem information to be considered in the
38 management decision process.

39
40 Hopefully this slide will update in a moment. There it goes.

41
42 So, this is actually the goal of the Mid-Atlantic Council's SSC
43 ecosystem working group. The idea here, and the Mid-Atlantic
44 Council is also interested in making better use of ecosystem
45 information in decisions. But I think this is also a general goal
46 all around the country, is to make better use of this information.
47 So, there's a lot of different decisions we make. Single species
48 catch limits tend to be the focus of SSC discussions all around

1 the country. That's a very important decision, but it's not the
2 only one. There's a lot of other decisions that Councils make in
3 particular in our region. There are allocations to fleets or areas.
4 There's coordination across boundaries and sectors, and there's
5 definitely multispecies and ecosystem level trade-offs that people
6 look at right now, but don't necessarily have a systematic approach
7 to deal with.

8
9 So, this is where I think ecosystem information can really help.
10 And I'm going to emphasize different tools, ecosystem reporting,
11 or you might see it called ESR, or we call it state of the
12 ecosystem, but some method of reporting indicators; risk
13 assessment, which has already been mentioned and is already
14 initiated here; and management strategy evaluation, which is just
15 an analysis to simulate how we might manage before actually doing
16 it in real life. And I think it's really important too in that I
17 see this happening here already, which I'm very excited about, is
18 that we need to develop our decision processes along with these
19 ecosystem products so that there is a direct way for them to be
20 used in the management arena.

21
22 So, I'll talk, in just the beginning of the talk, about single
23 species stock assessments. I think this is something that every
24 Council does. And there are, I think, many ways to include
25 ecosystem information, at the species level, and one example I'll
26 give you here is another acronym, but the developed in Alaska
27 called the Ecosystem Socioeconomic Profile, so you might see the
28 acronym ESP show up, but it's basically an ecosystem report for
29 the stock or an ecosystem status for the stock. And it's got two
30 main components, I think, that make it useful in management. The
31 first is a conceptual model, which we are also hearing a lot about
32 of the stock lifecycle and the different environmental impacts on
33 that lifecycle at each stage. And that helps you to identify and
34 narrow down on what the indicators might look like for each stage
35 in the lifecycle.

36
37 So, what you're seeing here is Gulf of Alaska cod over on the left-
38 hand side of the screen, it's the lifecycle all the way from
39 basically yolk sack larvae and eggs around to adults. In blue, in
40 the diagram there, are things that are better for that life stage
41 and in red are things that are not so good for that life stage.
42 So, you'll see increased temperature shows up for a lot of life
43 stages in Gulf of Alaska cod, it's not good for them. I don't know
44 how many people know this, but in the Gulf of Alaska, there was a
45 big warming event in 2014 to 2016 and the cod stock actually
46 crashed. So, there's a definite link between temperature and cod
47 there.

48

1 What this helps us do is identify indicators for each component of
2 the stock that we think are most important. And even if these
3 indicators don't go directly quantitatively into the stock
4 assessment, you can develop a table like on the right-hand side of
5 the screen where you've looked at these indicators for each year.
6 In red are where we think those indicators are not so good for the
7 stock, in blue are where we think they are probably favoring the
8 stock. And so, this gives decision makers and SSCs kind of a
9 snapshot of the conditions that the stock is facing that we think
10 are important to the stock.

11
12 So, this type of information, depending on the level of knowledge,
13 you don't have to use one type of data for this, you can bring in
14 lots of different types of knowledge for something like this
15 profile for a particular stock or fishery. So, I think this can be
16 adapted and can be very useful to give, to basically, synthesize
17 an awful lot of information about the stock and look at the current
18 conditions and ask whether we think this stock is going to be doing
19 well or not.

20
21 So, I just said how you would do this, but here's sort of the
22 diagram that where we're trying to implement these in the Northeast
23 U.S. So, for both the Mid-Atlantic Council and for the New England
24 Council, we've got several of these in process right now. And this
25 systematic approach basically starts with a problem statement,
26 goes to a conceptual model, like I mentioned. You develop your
27 indicators and analyze them, and then you make a summary and
28 recommendations. And this loops through, so it looks a lot like
29 some of the loops that we were seeing yesterday. Just again, a
30 systematic approach.

31
32 And this has been implemented for bluefish, one example, in the
33 Mid-Atlantic. So, there's the conceptual model with things that
34 are good and things that are not so good for bluefish at each
35 stage. And you see temperature showing up in there again for
36 [inaudible] juveniles. So, you can bring in information on the
37 different habitats. There's an indicator summary there that isn't,
38 yet color coded for whether things are good or bad because this is
39 also an iterative process and we're still learning about which of
40 these indicators we would want to use. And so, this was just one,
41 sort of one step through the process for us, but I think the stock
42 assessment reviewers really thought this was a promising approach
43 to bring information into the stock assessment and also into the
44 management process. There's a link there that we can share with
45 everyone of what this document looks like.

46
47 And I think for the Mid-Atlantic we might have a direct way to use
48 this information and catch in developing our ABC recommendations.

1 And I'll talk about that in a moment. But I think the important
2 thing to emphasize about the ESP or this type of systematic
3 approach, and I'll say that these are done in lots of regions and
4 it's the same process and it isn't always called an ESP, so I just
5 want to make that really clear. There's lots of people developing
6 conceptual models right now, identifying key environmental impacts
7 on the stock and including that. So, I think the key point here
8 though is it doesn't have to be directly quantitatively in the
9 stock assessment to inform management. So, it could inform
10 uncertainty about the stock assessment. It can form assessment
11 model assumptions or choices of parameter values, or it could be
12 included directly as a covariate. So, there's a lot of different
13 pathways here for bringing ecosystem information directly into the
14 stock assessment.

15
16 That's all I'm going to say about stock assessments. I think that's
17 a very promising way to bring ecosystem considerations into
18 management, but there's a lot of other ways too. And so that's
19 what I want to talk about for the rest of the, of the talk. And so
20 just by way of introduction to our context here is these are
21 examples from the Mid-Atlantic Fishery Management Council, but
22 like I said, there's examples from all over the country and I'm
23 sure we're going to see some really good examples from here later.

24
25 But just to orient you, the Mid-Atlantic Council has members from
26 basically New York, down through North Carolina on the U.S. East
27 Coast and these are the fishery management plans that it manages.
28 There's also a joint management plan for monkfish with the New
29 England Council. Spiny dog fish is also joint with the New England
30 Council. But the main point of this is you can see they have
31 several multi-species plans, a couple single species plans. It
32 spans everything from invertebrates and sort of tile fishes, the
33 closest thing we have to a reef dwelling fish in the Mid-Atlantic.
34 So, a bit different, but then-- and maybe black sea bass, but also
35 small pelagics like mackerel, squid and butterfish and predatory
36 fish like bluefish and spiny dogfish.

37
38 So, this is the context for the Mid-Atlantic and what we do in the
39 SSC is we determine our acceptable biological catches using the
40 Council's risk policy, which is shown on the left-hand side of the
41 screen. The current one is the solid line. Up until 2020 we had
42 the dotted line, but basically, they do the same thing. It's a P*
43 approach similar to the Pacific Council. And so, the Council
44 determines how much risk they would like to have of overfishing at
45 every level of biomass relative to the B_{MSY} target and that's
46 what P* is. So, you're limited. It has to be less than 0.5 by
47 statute. In the recent update, if B to B_{MSY} is over one and a
48 half, so you're like half again as big as your target, they're

1 pushing the risk policy up to very close to 0.5. It's 0.49 there.
2 So, but then it also slopes down on the other side of the target
3 down to zero. And so, it's trying to balance those risks for low
4 versus high populations like a lot of Councils do.

5
6 So, how does the ABC come out of that? Well, the SSC, most of the
7 work that we do is determining the scientific uncertainty in the
8 stock assessment, which turns into our OFL overfishing limit CV,
9 coefficient of variation. Um, and that directly translates this
10 risk policy into an ABC advice. So, what you see on the plot there
11 is if the OFL CV is very high in the green line, the catch advice
12 is lower, and if the OFL CV is fairly low and the blue line, then
13 the catch advice is higher, it's a higher proportion of the
14 overfishing limit, right? That all seems very straightforward.
15 However, we spend almost all of our time coming up with this OFL
16 CV in the Mid-Atlantic Council. We look at nine different criteria
17 to determine what that should be, and they're listed there on the
18 left-hand side. Everything from data quality model
19 appropriateness, retrospective analysis, all the way down through
20 simulations.

21
22 But I want to point to 0.5. So, we already have an opportunity to
23 include ecosystem factors in thinking about scientific uncertainty
24 in our catch advice process. And so, I've spelled out what number
25 five the criteria are for that here. Is the OFL CV informed by
26 ecosystem factors or comparisons with other species?

27
28 So, this is already on the books, and it has been for several
29 years. And this is where we have the opportunity if someone did an
30 ESP to say, we've got stock relevant ecosystem factors that are
31 either in the model or in the assessment, but not in the model.
32 And there's some examples there, but mostly they have to do with
33 whether we expect the productivity to be changing. So, this was
34 something like the discussion that we were having yesterday about
35 what are the things affecting the stock's productivity? And we
36 explicitly do want to look at ecosystem factors outside the stock
37 assessment that might affect our short-term predictions. So again,
38 this would be general measures of ecosystem productivity or habitat
39 stability. It could be comparisons among related species. If we
40 see lots of species doing the same thing, maybe that's a signal we
41 need to look at. And also, we have a climate vulnerability
42 assessment in the region that can, that talks about the potential
43 impacts and changing productivity under different conditions.

44
45 So, all of these things can be considered. And how do we bin it
46 into lower or higher OFL CV? Well, this table, which is going to
47 show up in a minute here, I hope, shows our decision criteria, so
48 the data quality one on the top there just gives you an idea of

1 probably what lots of SSCs look at. For us, though, the ecosystem
2 factors accounted. There's a lot of options there that would either
3 increase or decrease the scientific uncertainty. So, if your OFL
4 CV is 60%, you're a lot closer to the OFL. If the CV is 150%,
5 you're buffered further away from the OFL. But I'm not going to go
6 through all of those. But basically, like I said, there's already
7 a way for us to use this information and setting catch advice,
8 whether it's in the assessment or not.

9
10 We've gotten, with our ecosystem subgroup, some ideas about how to
11 further use this. And this is a flow chart that's going to show up
12 in a minute here of how we might build more specific ecosystem
13 impacts into our catch advice system. And so, this, again, would
14 use a stock specific conceptual model, but what we are really
15 trying to get at is not so much how much is the catch, but how
16 much is the uncertainty. So, we need to think about filling out
17 over here on the right-hand side, what is the uncertainty? How do
18 ecosystem drivers affect uncertainty and current biomass? and in
19 the reference points. And that's what impacts OFL CV. So, this is
20 ongoing work here that's happening, but I think the SSC actually
21 has quite a bit of leeway to make these decisions and include this
22 ecosystem information, if it's provided along with the assessment
23 or coming from another source. So, it's just one example for catch
24 advice that we can do.

25
26 And some of our members right now are actually doing some research
27 on this with simulation analysis. So, they're looking at, if we
28 had an environmental driver that we knew affected recruitment, for
29 instance, for summer flounder, how would that affect the OFL CV?
30 And also importantly, what if we make the wrong decision about
31 this? What if we say there's more uncertainty or less uncertainty?
32 How does this actually play out? And so that's an ongoing work
33 that's happening right now, and we're hoping to get results from
34 this later in the year.

35
36 So, the second thing that I want to talk about is moving away from
37 our current system, which is very important to support because
38 we're still going to be making catch advice, but thinking about
39 how we might do multispecies or system level advice, which is
40 something we have less of a process for probably across all of our
41 Councils. And so, some of the discussion that we've had has to do
42 with identifying some of these initial priorities in collaboration
43 with the Council. So, it's not just the SSC doing this, but it's
44 really talking with all of the stakeholders and the different
45 groups. But some things that we're going to start focusing on is
46 whether there's multi-species or multi fleet trade-offs that link
47 specifically to economic and social outcomes. So not just stopping
48 at the biomass of the stock, but what are the outcomes for

1 communities and fisheries, and are there changes in ecosystem
2 productivity that we can identify. That might imply that we should
3 standardize our approaches for things like setting reference
4 points or developing rebuilding plans or any other analysis that
5 requires a short-term projection. If, you know your system is more
6 or less productive in the short term, that could affect multiple
7 different decisions that the Council has. And so, a lot of work is
8 ongoing with this, and I'll show some examples of that for the
9 rest of the talk.

10
11 So, the thing that's going to show up next is our loop. And so,
12 it's not exactly the same loop that I think you're working with,
13 but it's very, very similar. It's the Integrated Ecosystem
14 Assessment Loop that's over here on the left-hand side of the
15 screen. And basically, again, this is a systematic approach that
16 starts with defining your goals and targets like we were talking
17 about yesterday. And from those, developing indicators, assessing
18 the ecosystem, analyzing uncertainty and risk evaluating
19 strategies, and then loops back through into implementation,
20 monitoring and evaluating outcomes. And at any point, you should
21 obviously reevaluate your goals and targets, whether you have the
22 right indicators, if your assessment is correct, etcetera.

23
24 So, the Mid-Atlantic Council actually adapted parts of this in its
25 ecosystem approach. And this process actually started in 2011 with
26 a visioning project. The Mid-Atlantic Council said, hey everybody,
27 how do you feel about our management? Basically. Nothing specific
28 about ecosystems, but how do you feel about our management? They
29 got feedback from something like 1500 people all up and down the
30 coast. It turns out that many people were not very happy with the
31 management. Maybe that's not a surprise. But all across all of the
32 stakeholder groups, there was an agreement that an ecosystem
33 approach was necessary. Not everyone had the same idea of what
34 that would look like, but everyone agreed that was necessary.

35
36 And so, the Council has been developing this approach since 2013
37 in collaboration between managers, stakeholders, and scientists.
38 It's all described at that website. What they ultimately came up
39 with was this kind of process here that they use, and then I'll
40 walk you through each of the steps that they're using. So, the
41 first thing they wanted to do was prioritize. This Council has
42 specifically said they want to do EAFM. They do not want to get
43 rid of their FMPs at this time. They want to continue with their
44 current management, but they definitely want to integrate
45 ecosystem approaches within those. And so, they, their first step
46 was prioritizing because they knew they couldn't do everything at
47 once. And this again, is sort of a stepwise approach, like was
48 discussed yesterday. So, they're wanting to try this out before

1 completely jumping to something that might be newer or bigger. But
2 I think so far this is working for them.

3
4 So first they want to prioritize and they're using risk assessment
5 to do that. So, their risk assessment is to identify high risk
6 interactions in their system. Then once those are identified, you
7 can refine the question using conceptual modeling. So, for that,
8 the Council wanted to know what's the key question and what
9 information is necessary and what's available and what isn't
10 available.

11
12 After that kind of scoping of the key question, then the analysis
13 happens. So that is management strategy evaluation to look at which
14 strategies might perform best to actually solve the problem or
15 deal with the risk that the Council observed. And then you
16 implement and monitor and can go back at any point.

17
18 So, the Council has been through this loop once now, since
19 starting. I'll show you what some of the results are of that. But
20 the key points here is there is a direct link between the ecosystem
21 reporting that we do at the Northeast Fishery Science Center and
22 the risk assessment, and I'll illustrate that. The conceptual model
23 is linking across all the risk elements in the risk assessment for
24 the selected fishery or species or high-risk interaction. And then
25 the management strategy evaluation therefore includes the key
26 risks that were identified all the way back in the beginning, and
27 that have basically been derived from ecosystem reporting and other
28 inputs to the process.

29
30 So first, I'll describe the ecosystem reporting. This is something
31 we do at the Northeast Fishery Science Center, but with many, many
32 partners. So, I think there's up to-- yeah, sorry.

33
34 **SENNAI HABTES:** Sarah, sorry to interrupt. Could we maybe have you
35 slow down a little bit?

36
37 **SARAH GAICHAS:** Sure. Sorry.

38
39 **SENNAI HABTES:** That's all right. Just to get some more of the
40 information off your slides before you move on.

41
42 **SARAH GAICHAS:** Yeah, absolutely. And there's already a PDF of
43 these slides and so we can definitely provide all of this. So yeah,
44 I was sensitive to starting a bit late and didn't want to slow you
45 down.

46
47 **SENNAI HABTES:** Don't worry about it. When I need to push us
48 forward, it, I'll push us forward, but right now, take your time

1 and go through the information.

2
3 **SARAH GAICHAS:** All right. Great. Thank you. Alright.

4
5 So, to give you some background on the ecosystem reporting that we
6 do in the region the goal of this reporting is specifically to
7 improve the information and synthesis of that information for
8 fishery managers. So, our target audience for this is the Fishery
9 Management Council, both of them, New England and the Mid-Atlantic,
10 in our region. And so, the report is really shaped towards fishery
11 objectives. So, we do link our ecosystem indicators to overall
12 kind of ecosystem level management objectives that are derived
13 from the U.S. legislation and as the Councils come up with more
14 specific objectives, we will definitely include those. Some of
15 those are already in the risk assessment for the Mid-Atlantic.

16
17 These reports are still contextual information. They're not
18 decisional. We have been reporting annually since 2016. And again,
19 this is a fishery relevant subset of what some people in other
20 regions might call ecosystem status report that would have many,
21 many other indicators in it that may be less relevant to fisheries.
22 So, we are trying to keep this short and focused for the Councils.
23 Short, used to mean 20 pages, it's crept up to 40 pages or more.
24 We're trying to knock that back a little bit but the goal here is
25 to have something fairly digestible for the Councils annually. So,
26 this is used within the Mid's ecosystem process and there's
27 references that'll be on the last slide here.

28
29 So, Brandon Muffley, my colleague, who's Council staff in the Mid,
30 has written a nice paper of how they're currently using this
31 information. So that's something, if you haven't seen it, that's
32 probably worth looking up. We do have the risk assessment, some
33 conceptual modeling and a recently completed MSE that I will show
34 you.

35
36 But first, the reports themselves are divided into two main
37 sections. The first section is performance relative to management
38 objectives. So again, this is where we took the national
39 legislation and specifically the definition of optimum yield
40 that's in the Magnuson-Stevens Act, which says optimum yield is
41 providing maximum benefits to the nation in terms of seafood
42 production, recreational opportunities, and there's a few other
43 things in there as well. So, you'll see seafood production and
44 recreational opportunities listed as objectives at the ecosystem
45 scale. So, we look at aggregate seafood production in the entire
46 region. We look at aggregate recreational opportunities in the
47 entire region, profits, stability, social and cultural objectives,
48 and also protected species objectives.

1
2 What you're seeing on the right-hand side of the screen is our
3 summary page. So, we have two summary pages for this report that
4 are attempting to get all of the information, all the key points
5 and suggest those two graphical summary pages. Again,
6 understanding that Councils are very busy and may not have time to
7 actually read the whole report, or don't need to read the whole
8 report. They just need the bottom line. So, this is what our first
9 summary page looks like. And yeah, you're not meant to be able to
10 read that in this slide, but I can-- The next slide has a link to
11 the full report.

12
13 The main take homes from this though are that seafood production
14 and profits have been declining over the long term in the Mid-
15 Atlantic region and are currently below the long-term average. So,
16 this isn't something actionable for the Council right now, but
17 this, if people wanted to manage to high level objectives like
18 this, this is intended to provide information on that. Recreational
19 opportunities are currently fairly flat, but the diversity of
20 effort in the recreational fleet is also declining and below the
21 long-term average.

22
23 We do have some stability indicators. They're mostly diversity
24 indicators that are fairly mixed for both the fishery and the
25 ecological indicators. We don't currently do trends for social and
26 cultural indicators, but we are reporting on fishing engagement
27 and reliance by each community in the Mid-Atlantic and in New
28 England. And so, these are metrics that look at how many
29 processors, how much landings, etcetera, for each individual
30 community. The Councils were interested in this at the community
31 level. This comes from the social indicators that are produced for
32 the whole country. There's recently been a focus as well on
33 environmental justice vulnerability for each of those communities.
34 So, we try to summarize that for each community in the Mid-
35 Atlantic. And then for protected species objectives, that's
36 generally to try to keep bycatch below the established thresholds
37 and they're currently being met, although there's some different
38 trends for bycatch. And recovering endangered population, so NARW
39 is the North Atlantic Right Whale, and probably many of you know
40 that population is not doing well and is still declining and below
41 the long-term average.

42
43 So, this is just a summary of where you would be if you were
44 looking at these high-level Magnuson-Stevens type objectives. The
45 point is to give the Council a one stop shopping for this kind of
46 information in this report.

47
48 The second section of the report is risks to meeting fishery

1 management objectives. So here is where we have the indicators
2 that aren't directly aligned with the management objective, but
3 the ones that are very likely to be affecting how the Council can
4 decide. So, it's like you don't have control of the weather, right?
5 But if you know what's coming in the weather, you know whether you
6 should be wearing a big coat or taking an umbrella or not. And so
7 that's the idea of these more contextual indicators that we have
8 in here. And that is the link to the current report that was
9 presented to the Mid-Atlantic Council on and the QA code there, so
10 if anyone wants that.

11
12 The two main sections here are climate, obviously, and then other
13 ocean uses is a big issue in our ecosystem right now, in particular
14 with the development of offshore wind farms. And so, what we try
15 to do is summarize what's happening with the climate. I think like
16 everywhere we're seeing a lot of heat waves, increasing
17 temperatures. There's a range of responses though by the species
18 and we are trying to characterize that. Distribution shifts have
19 really been complicating management in the Mid-Atlantic and New
20 England regions. And we are seeing multiple fish with poor
21 condition and declining productivity. So, these are some possible
22 red flags. And then we have a lot of statistics on the potential
23 impact of offshore wind development on the fisheries in the report
24 as well.

25
26 So, what we try to do, we show a lot of climate indicators right
27 now. But really, I think the focus that we're going to be moving
28 forward with in the future is on the implications of the climate
29 change. So, how does that actually connect to the species in the
30 system? And there's a lot of good work in the region right now,
31 but not all of it is synthesized. So that is our challenge, is to
32 try to bring this information on the different climate impacts and
33 connect that with the managed species that each Council has managed
34 and unmanaged species, important components of the ecosystem.

35
36 And so, there's just a few examples there, but one of the things
37 to emphasize here is that we do see negative impacts of climate
38 change. So, ocean acidification is likely to affect some of our
39 very, very valuable commercial shellfish species in the region.
40 However, we're also seeing changes in the Gulfstream warm core
41 rings, and that's actually been increasing the availability of
42 shortfin squid in the region. There's just been five boomer years
43 of this fishery. And so, it's not just a ratchet down the ecosystem
44 information, it can also hopefully highlight where there might be
45 new opportunities or where we should really focus our efforts to
46 understand the environmental drivers of availability of some of
47 the species that weren't as available in the past.

48

1 Distribution shifts is a whole other thing that's happening and
2 that impacts a lot of the allocation, discussions, and no one has
3 a good answer for this yet, but there is starting to be more
4 coordinated management between the Councils on the East coast
5 regarding this. And it's not just fish that are moving, this is a
6 plot of different marine mammals that are also showing distribution
7 shifts. So, this is changing the overlap with some of the protected
8 species and that's something that can also create issues for trying
9 to manage the fisheries.

10
11 So, how do these indicators turn into the risk assessment? What
12 you saw on the previous slide were some color-coded risk elements
13 that came directly from climate vulnerability analysis.

14
15 So, some of our risk assessment elements in the Mid-Atlantic are
16 static. They're not a time series of information. This one is an
17 example of a time series. So, what we're doing is showing you the
18 state of the ecosystem indicator for total commercial revenue. And
19 this is updated to this year's report. The Council looks at this
20 element, at the ecosystem level and so commercial revenue is being
21 used as a proxy right now for commercial profits because we don't
22 have all the information to actually estimate commercial profits
23 at the ecosystem scale.

24
25 So given this indicator, on the right-hand side of your screen,
26 the purple lines are showing that there's a significant decrease
27 over the long term in commercial revenue. And actually, we've got
28 one of the time series lows just recently in 2021 here. And so,
29 the Council developed these risk criteria that are on the left-
30 hand side of the screen and the table, and they all use
31 characteristics of the time series to determine what the risk might
32 be. So, there isn't, right now, an established threshold for how
33 much commercial revenue should you be getting out of your system.
34 But I think what the Council could agree on was that if we're
35 seeing a long-term decrease, that is probably not what we want,
36 right? And so, the risk levels increase as you see these
37 significant decreases. And so, what you would see based on these
38 criteria is this significant long-term decrease gives you a
39 moderate to high risk.

40
41 And so, this risk element for commercial revenue-- this is the
42 slide I actually showed the Council a couple of weeks ago. This
43 risk element's unchanged given the updates to the data. And we do
44 try to point out connections with this and some of the species in
45 the in the report. So again, this change in revenue, a lot of that
46 is driven by changes in the fisheries for surfclams and ocean
47 quahogs. These are climate sensitive species. We are seeing a lot
48 more warming and some acidification in their habitats. And so,

1 these are the types of things we're trying to tie together for the
2 Council. They're not currently using this in the management of
3 these species, but it's providing the context where I think they
4 could, especially if we start to see the temperatures and the
5 acidification continue to increase in the habitats.

6
7 So that was just one example of how one of our time series
8 indicators turns into a risk element. There are criteria for all
9 of the risk elements in the Mid-Atlantic Council's risk assessment.
10 And so, what you're seeing in this slide now are all of the risk
11 elements. So, this is a summary of everything that the Council
12 looks at in their process. And many of these are updated based on
13 indicators from the state of the ecosystem report. Probably all of
14 the ones over on the left-hand side of the screen come out of the
15 state of the ecosystem report or other risk assessments. And the
16 ones on the right-hand side of the screen are actually done by
17 Council staff. And so, these have to do with more management risks.
18 So, things like management control, are we achieving the catch
19 limits that we intended to achieve, technical interactions? Are we
20 having trouble between fisheries? Other ocean uses are mostly
21 winding regulatory complexity, discards and allocation. Those are
22 all done by the Council staff.

23
24 And so, the Council just last week is revising this this year. So,
25 we're starting back into the loop where we iterate. The first thing
26 they did was ask whether these risk elements, which are essentially
27 objectives, are the right ones. And so, this is a discussion that
28 we've just started having with the Ecosystem Ocean Planning
29 Committee of the Mid-Atlantic Council and we are part of the way
30 through it where they decide whether they're keeping these or
31 changing some of them or bringing in some new elements so that
32 they can make better use of the risk assessment in their decision
33 making.

34
35 All right. So how is the risk assessment currently being used? So,
36 one Council member looked at that sheet and he said, "well, this
37 is basically a cheat sheet for me to look at every time we talk
38 about an issue related to one species, I can look at the risk
39 assessment and see what some of the risks are that that species
40 has." And so, that is one way that this information is used. I'm
41 not sure how many Council members are actually using it that way,
42 but they have the opportunity to do that. And that was one member
43 who I think he does consult this pretty regularly. We present that
44 update every year to the Council. But this risk assessment also
45 did go all the way through their process here on the left-hand
46 side of the screen.

47
48 So, the risk assessment as of 2017, identified the summer flounder

1 fishery as a high-risk fishery for conceptual modeling. So, the
2 conceptual model was built in 2018 and finished in 2019. And so,
3 you're seeing the conceptual model there on the right-hand side of
4 the screen. So, if I were presenting, we have an interactive
5 version of this that I think is a lot easier to navigate than this,
6 but there, as you saw, a lot of risk elements in the Council's
7 risk assessment. And this conceptual model is trying to take them
8 and integrate them for a particular fishery. And so, what you see
9 here is that I've highlighted the total discards. Discards are one
10 of the risk elements. Total discards were a concern for the Council
11 and the conceptual model shows you how total discards are
12 connecting to some of the other aspects of either the stock
13 assessment or other risk elements. So, for instance, it connects
14 to-- a fluke is the local name for summer flounder. It connects to
15 fluke distributional shift to recreational, to fluke recruitment,
16 also to recreational value, shifts in the fishery, management
17 control, allocation.

18
19 And so, the Council proceeded with a management strategy evaluation
20 that addressed recreational fishery discards using this
21 information from conceptual modeling. And those of us who work in
22 ecosystems may not think that discards sound like a very
23 ecosystemic kind of thing to do, but the Council was very
24 interested in addressing an issue they already had in the EAFM
25 process. And so, they went all the way through with this, and I
26 think it was successful in that it did bring in more information
27 than they would've had previously.

28
29 So, this was a full stakeholder process that I would be a whole
30 other talk to describe, but it actually worked really well
31 considering it was during covid and no one could attend a meeting
32 in person. They managed to really cast a wide net, get a lot of
33 stakeholders answering some general questions, and then had them
34 nominate a smaller group of people to work together with us through
35 the MSE process. So, we had about 16 people who represented
36 different aspects of the recreational fishery as well as the
37 commercial fishery and different regions along the coast. And so,
38 because this was just finished and presented to the Council last
39 August, we have not made really beautiful summary figures from
40 this yet. So, I apologize for the figures that I'm showing here,
41 but the bottom-line results are there in the title of the slide.

42
43 So, I think overall there were two main takeaways. The stakeholders
44 came up with a lot of different management procedures to reduce
45 discards and also improve their experience as recreational
46 anglers. And they were able to find different ways to manage the
47 fishery that would all improve on what we are doing right now. So
48 that's a bonus. But including distribution shifts in this analysis,

1 actually lowers the expectations across the board. So, I'm just
2 going to point out a couple of things about this plot. First all
3 of these are sort of metrics of success. Out of the recreational
4 fishery, you'll see that there's, you know, 16 of them here. And
5 so, it does include whether the stock is overfished or subject to
6 overfishing, but those are really only two, and that's what we
7 tend to focus on a lot in the SSCs but that is not the whole
8 picture for the fishery. And I'm sure this idea translates to a
9 lot of different fisheries. It's not just those two objectives.
10 There are many other objectives.

11
12 So, I'll focus on the one in the top left-hand corner, keep_one.
13 That's the metric where I go out fishing. I want to keep at least
14 one fish. And as you can see, basically that line, the green in
15 that plot, all the way over to the left, is status quo. And all
16 the management measures had a higher probability of keeping one
17 fish. But the two lines on the top are the sort of basic operating
18 model and then one that has a bias in the catch data. So those two
19 are pretty comparable, which was actually good news. But the bottom
20 line is when you include that distribution shift, and as you can
21 see, the probability is lower across the board. So, you might still
22 choose the same management procedure, but you would expect to get
23 less out of it under the, basically, climate change distribution
24 shift scenario.

25
26 So, I think this was helpful for the Council to see both the
27 stakeholder process and the inclusion of these different ideas and
28 to get some more creative ideas on how to manage the recreational
29 fishery as well as to include a lot of different aspects of the
30 ecosystem in this analysis. They're currently using the model used
31 for this in one of their recreational decisions. They have not yet
32 made any motions to include some of these other management
33 procedures, but I think they're taking that up in one of their
34 technical committees in the future.

35
36 So, the last couple of slides here are just bringing some other
37 information for processes we don't yet have and that, I think, we
38 need to develop. And we'll be watching very closely how this
39 develops here in the U.S. Caribbean with the Multispecies fisheries
40 here, because we do see changes across multiple species in our
41 ecosystem. So how should we incorporate that into management right
42 now? So, the indicator on the left-hand side of the screen is fish
43 condition. That is basically how fat are the fish for their length.
44 Darker colors are poor condition, so those fish are skinny. Lighter
45 colors are good conditions, so those fish are fat. And fat fish
46 are good because they probably have better reproductive success
47 and also, they're probably more marketable for some of the species.

48

1 So, it's a time series along the bottom, starting in 1990 and going
2 up through 2022. Each row is a species. What you can see is lots
3 of species had decent condition up until the year 2000. And then
4 between 2000 and about 2010, all the species had fairly low
5 conditions. So, this does indicate a change in the ecosystem,
6 potentially. And since then, about half the species have recovered
7 their condition and about half have not. And so, this is something
8 that could potentially be an ecosystem signal worth looking into.

9
10 Similarly, we've been looking at fish productivity anomalies.
11 There's two different ways to look at that. Over on the right-hand
12 side of the screen on the top plot is from survey information. So,
13 we count the number of small fish of a particular species and
14 compare that to the large fish biomass the previous year. It's
15 sort of a fishery independent look at recruitment, and that's in
16 the Mid-Atlantic region. On the bottom is the same thing, but from
17 stock assessments for stocks that are mostly in the Mid-Atlantic
18 region. And I think what we're seeing for both of them is since
19 about 2000 or 2010, at the very least, we've seen decreased
20 recruitment across multiple species in the Mid-Atlantic. So, this
21 is a concerning sign and one that we might want to bring into the
22 decision process, at least to standardize across species how we
23 treat this information.

24
25 The other thing that we're looking at are system level indicators,
26 such as ecosystem overfishing and trying to determine whether
27 there's operational thresholds for management here. And so, what
28 you're seeing on the right-hand side of the screen is the Mid-
29 Atlantic plot of total landings from, basically, the seventies
30 through 2020. It's using a published set of thresholds that were
31 based on a global analysis. And so, the questions for the SSC here
32 and the Council before implementing something like this are, is
33 this analysis done on a global basis appropriate in our region? So
34 that's one of the first things we're looking at. This is the review
35 that we just did with the SSC.

36
37 So, we've been updating the data inputs, etcetera. I'll mention as
38 a side note that we spend also much of our time organizing data
39 for inputs into ecosystem analyses and other analyses in our
40 region. So, definitely, data is an issue everywhere, but we're
41 working on that and automating this. And so, the next steps are to
42 really calculate new thresholds using our ecosystem productivity
43 instead of global and to simulation test some of these thresholds
44 with one of our ecosystem models.

45
46 The SSC has been discussing how to use this. So, it's one thing to
47 make the indicator and it's another thing to use the indicator for
48 something. And so, what would we actually do with this information

1 if we had it, is the question that we're going through right now.
2 And the thoughts are that some of these ecosystem thresholds could
3 define a safe operating space for fisheries. We would want to know
4 where does fishing in general cause poor system performance or
5 drops in productivity? And we also need to identify that there
6 will be trade-offs across species in that safe zone. There are
7 multiple ways to keep yourself under the ecosystem overfishing
8 threshold that involve different species. And as was noted
9 yesterday, different species have different values socially,
10 economically. And so, we're really going to have to recognize that
11 as we develop these analyses. And what the Council would like to
12 see is advice on options to correct ecosystem overfishing if it's
13 happening, and to also use social benefits to measure the outcomes
14 and not just bulk biomass of what's in the ecosystem. And so, we're
15 continuing to work on this as well.

16
17 So, almost there, this is the summary slide which you will see in
18 a moment. There it is.

19
20 So, like I said, I think there are a lot of entry points for
21 ecosystem information and management decisions, and I think we've
22 got a good start on this across a lot of different regions in the
23 U.S. And so, I've got a list of management decisions there and I'm
24 sure people can think of more, but they're also aligned with some
25 methods and tools that we already have and that we don't need to
26 be developing brand new things. I think we have a lot of the
27 capacity to do this right now. So, the most important management
28 decision is, is identifying the issues and goals important to the
29 region. And so, this is already in progress here, I think, and
30 your conceptual modeling, I'm very excited to see the outcomes of
31 that because I think that's an excellent approach. So, engaging
32 with the stakeholders and doing surveys of those stakeholders and
33 strategic planning together with the managers and stakeholders are
34 really good ways to sort of narrow down on the goals.

35
36 Like I said, even the elements of our risk assessment, those are
37 basically goals. And so, when we discuss those with the Council,
38 we are figuring out what some of the goals are and being able to
39 provide better information to meet those goals. There's a lot of
40 ways to incorporate this into current decisions, stock
41 assessments, catch level advice, harvest control rules, and the
42 tools for that include ecosystem indicators and reporting risk
43 assessments, uncertainty assessments and management strategy
44 evaluation.

45
46 And I've got what I'm calling new, but these are actually still
47 current decisions that the Councils already make. And I think
48 there's just ways to incorporate data or think about things

1 differently in order to bring in more ecosystem considerations.
2 But there's a lot of decisions on habitat restoration or habitat
3 change, changing species distribution and interactions, trade-offs
4 between fisheries and ocean use sectors. And I think there are
5 ways that we could probably think to integrate across the current
6 processes that Council has in order to make better use of things
7 like risk assessment, conceptual modeling, scenario planning and
8 management strategy evaluation.

9
10 So, I think for us, we're really, with the Mid-Atlantic Council,
11 focusing on what would a decision process look like that can use
12 the ecosystem information. So, they've already got their EAFM Loop
13 and we're using that, but I feel like they want to use it more in
14 operations, in operational decision making that they use all the
15 time. And one example is doing that MSE for a recreational discard
16 decision that the Council needed to make anyway. So, I think
17 they're very eager to incorporate more of this information.

18
19 It's been a collaborative and iterative process, and everyone's
20 already knows that, I think. But it really has to involve
21 everybody, stakeholders, managers, scientists. And that, really
22 thinking, I think the next level is thinking of these multispecies
23 and system level indicators of productivity change over
24 exploitation or both. And so, this is just a little ad for our eco
25 data, our package where we try to keep all of our indicators online
26 on GitHub. We too have had issues with serving some of this data,
27 IT issues, etcetera but we have had some success in at least
28 putting the indicators in the report online and other scientists
29 in the region have been using them. So, we'll continue to do that
30 and until we have a more comprehensive way.

31
32 So, there's just some resources in the next slide and it'll come
33 up in a minute and hopefully this has been useful. The last slide's
34 just a thank you slide, so I don't really need to show that I can
35 just leave this up here unless you want to see Norway. So that's,
36 that's all I got. Thank you for your attention and your patience.

37
38 **Questions/Comments**

39
40 **SENNAI HABTES:** Thank you, Sarah. Very informative. I'm going to
41 give us five minutes to take any questions and then we're going to
42 move on to J.J.'s presentation.

43 I cannot see anyone online, so I'm going to need Cristina and
44 Liajay to let me know. Jason, why don't you go ahead.

45
46 **JASON COPE:** Yeah. Good day everyone. You hear me all right?

47
48 **SENNAI HABTES:** Yes, we can.

1
2 **JASON COPE:** Terrific. Yeah, Sarah, amazing presentation. Just
3 information packed. I really appreciate the extensive overview. I
4 had a question on the OFL decision making because, like you said,
5 that seems to be a really fruitful entry point of many that we
6 could do here. And one of the challenges that I find is that when
7 we try to define the uncertainty to help specify the ABC from the
8 OFL, it's often a ratcheting down and one of the things that you've
9 shown is that these ecosystem processes could cause things to look
10 better or worse. I was curious if, and you showed, for instance,
11 you had a table there that said the CV default and kind of the
12 best-case scenario would've been a CV of I think 0.6. And you said
13 you could kind of look over several indicators, some of those might
14 increase the uncertainty, which is very, makes all sorts of sense.

15
16 I was curious if there are situations that you've encountered or
17 have talked about where it actually makes things look better and
18 that doesn't decrease, necessarily, uncertainty, but it shifts the
19 central tendency in a better direction. And this issue of
20 asymmetric uncertainty, I think is a real challenge for us,
21 especially places that use like a reference model as the decision-
22 making model and then try to build uncertainty around that central
23 tendency wherein there's probably multiple states of nature that
24 may be higher or lower, in addition to the imprecision, which is
25 what we're talking about.

26
27 So, I guess my question here is do, do you run into that challenge
28 of always kind of ratcheting down when in fact the uncertainty
29 might bring better conditions or better-looking population status?
30 And then, along with that, have you talked much about the ensemble
31 modeling approach to be being able to incorporate diversity in the
32 central tendencies in addition to just trying to quantify the CVs
33 when thinking about these sorts of ecosystem processes?

34
35 Thanks. Let me know if that doesn't make any sense. Thanks.

36
37 **SARAH GAICHAS:** Thank you, Jason. Excellent question. And I think-
38 - so for background, you're absolutely right and we struggle with
39 the sort of central tendency versus things being asymmetric. And
40 I'm not sure we have a good approach to that right now.

41
42 So, what you're seeing are three-- we have decided to have these
43 default OFL CVs so that we aren't splitting hairs over, you know,
44 should something be 42% or 43% or something like that, which could
45 be endless discussions in an SSC, as I'm sure everyone understands.
46 So, our default condition is actually the middle box, right? So,
47 it's a hundred percent CV. And that is, we've tried to align our
48 criteria across all of our decisions to sort of the typical

1 assessment in the middle box. And so, basically, we absolutely
2 don't want this to be a ratchet down, all the time. And so, your
3 average assessment should occur somewhere in the middle box and if
4 it's doing better than that, it goes to the lower CV, the 60% box.

5
6 And again, also I'm misspeaking, this isn't really a grade on the
7 assessment, but it is trying to get at the level of uncertainty in
8 an assessment. So, for instance, if we have multiple models in the
9 assessment, we haven't had a formal ensemble yet, but we have had
10 assessments put forward multiple models and if they're all kind of
11 telling you the same thing we tend to go with the lower default
12 OFL CV box for the model identification and other things about the
13 model in our decision criteria.

14
15 And similarly, when we have an ecosystem factor. So, one of the
16 things we use most directly in the ecosystem factors accounted is
17 actually the last sentence in each of these blocks. It's the
18 climate vulnerability analysis. So, all things being equal, if a
19 species has a moderate risk of change in productivity from changing
20 climate, we consider that sort of average in our region. We do
21 have some, what you might call climate winners in our region, which
22 are actually going to either have the same or be even more
23 productive under climate change. And so those would tend to be
24 probably in the 60%. So, they're either not changing or they're
25 going to exceed our expectations from an assessment based on
26 default assumptions. Similarly, if we know we have a species with
27 high risk of changing productivity, that would put you in the 150%
28 bin.

29
30 We have few examples right now that are looking at short term
31 prediction uncertainty from ecosystem and habitat factors, but I
32 think we are going to start to see more of them. And so that's
33 where I think you might have done a really good job including
34 ecosystem factors in your assessment, but they're actually showing
35 that you're going to have increased prediction uncertainty. So,
36 you will wind up in the higher box based on that. But at least we,
37 we know why.

38
39 So, I don't know if any of this is answering your question. This
40 is definitely a work in progress that we're revisiting. And as we
41 get better ecosystem information and also more things like model
42 ensembles, we might be able to refine this, but this is trying to
43 balance including sources of uncertainty that are clearly not going
44 to be included in an assessment with a fairly straightforward and
45 transparent process that we are able to follow consistently, and
46 that our stakeholders are also able to see why we made the
47 decisions we made. I hope that helps.

48

1 **JASON COPE:** Yeah. No, Sarah, that's great. You guys are
2 trailblazing with this and like you said, this is sort of merging
3 science here, the support management decisions, and it's just
4 really, really great. And so, I appreciate that answer. Very, very
5 insightful a lot to think about. So, thank you.

6
7 **SENNAI HABTES:** Okay. I think we only have one time for one more,
8 but we can open it up if we have time later in the schedule for
9 more questions and just general conversation. I think J.J., you
10 had a question?

11
12 **JUAN J. CURZ MOTTA:** Yeah, but I have several.

13
14 **SENNAI HABTES:** Let's do one and then we can come back to it later.
15 So, keep it written down and those of you online if you have
16 questions, when there's some more time, I'll open it back up to
17 ask Sarah some later today.

18
19 **JUAN J. CURZ MOTTA:** Yeah. So let me pick the one-- Okay. Okay,
20 I'll choose this one. Great. Thanks a lot for your presentation.
21 It gave us a lot of things to think about on what we're doing here.
22 The first question--Well, the question that I want to ask is, you
23 mentioned one of the management objectives that was put forward
24 was habitat restoration, right? But that's not directly dependent
25 on the Council, right? So, how in the region you deal with those
26 objectives that are outside the realm of the Council. Thank you,
27 Sarah.

28
29 **SARAH GAICHAS:** Yes. That's a great question. So, there's a lot of
30 work being done right now on the habitat that is within the control
31 of the Council. So, the offshore waters, federal waters, etcetera.
32 There's been a lot of assessments and tools, but we have a whole
33 section in the Mid-Atlantic report, for example, on conditions in
34 Chesapeake Bay, which is inland waters managed by states and
35 incredibly important nursery habitat for many, if not, not quite
36 all, but most of the Mid-Atlantic managed species.

37
38 And so right now I think the Council, you're right, would not have
39 direct control over habitat quality in Chesapeake Bay, but I think
40 what we're hoping is that by including this in the report, if
41 they're seeing, say, increased development or decreased water
42 quality, which is a whole other agency at the federal level, as
43 well as for the states, they would be able to-- and if we can
44 connect this to their managed species, I think they would have a
45 bit more of a say in something changing. But I'm not sure I have
46 anything more than that right now. So, it's kind of a similar
47 issue. But by bringing the issue to them, they've been asking for
48 that. They've been asking what's going on in the estuaries,

1 etcetera, because they understand that this affects their ability
2 to meet their objectives. And so, we're trying to provide that
3 information so that they have something to sort of feedback with,
4 if there are decisions.

5
6 And similarly, the offshore wind is very similar, actually. So,
7 they don't have direct control over what happens with the wind
8 farms, but they are in direct communication and attending and
9 bringing people from the agency developing the offshore wind in
10 order to bring the concerns of the Councils and the stakeholders
11 to them. And so, it's at least opening a dialogue where maybe there
12 wasn't an avenue or an easy avenue for one there before.

13
14 **SENNAI HABTES:** Great. So, thank you again, Sarah. Like I said, I
15 think you're here with us for the rest of the day, right? So, if
16 there's some more time at all, we'll open it back up to answer
17 more questions. But at this time, I'm going to, I think we're going
18 to go ahead and move on to J.J. who's our next presenter, who's
19 going to be talking about a lot of the outputs that came from the
20 Lenfest project and progress towards informing an ecosystem-based
21 approach for fisheries management.

22
23 I think the way we're going to do this for this group, it is J.J.,
24 Tarsila and Stacey have a lot of results to present, and they have
25 three time slots, and you'll move between those depending on how
26 much time is available. So, I'll leave it up to you guys who wants
27 to present at what times. For right now it's about 10:24, you have
28 till 11:10, so I think you can do it in that timeframe as you want.
29 And if you want to ask more questions and donate that time to
30 Sarah, you could do that too. But I recommend presenting on your
31 stuff because we need to see it.

32
33 **JUAN J. CURZ MOTTA:** Yeah, thank you. I think we will do it as a
34 continuum and whenever you reckon, we need to stop, we stop and
35 then we keep going whenever there is more time. But let's do it as
36 a continuum instead of three separate talks. The other question is
37 how do we do this? Like, should I bring my-

38
39 **LIAJAY RIVERA GARCÍA:** do you have it? You haven't shared it yet.
40 Do you have a pen drive that we can connect it?

41
42 **JUAN J. CURZ MOTTA:** No, I don't. I don't.

43
44 **SENNAI HABTES:** Okay. So, while we're doing that, why don't we
45 take five-minute break to get them set up. We'll be back on at
46 10:30. J.J. what I'm going to recommend is we do, you guys talk
47 until 11:10, then we'll stop because we have other ones scheduled
48 that we need to keep on that schedule and then we'll bring you

1 guys back. I don't think it's going to be possible to do it all at
2 one time, just because of the other ones. Or we can move some up
3 if we have people on. Let me chat with you about it real quick.
4 So, let's take a five-minute break and we'll be back at 10:30.

5
6 (Whereupon, a brief recess was taken.)
7

8 **SENNAI HABTES:** Okay. Good morning, everybody. We are going to go
9 ahead and try and keep rolling on. Just a couple process issues to
10 make it work a little better in terms of presentations that we
11 need to get done today. I'm going to recommend that we move J.J.
12 Tarsila and Stacey's presentations to the afternoon starting at
13 one to allow them to have more time and give it all at once. And
14 we may have to move around some other presentations in the
15 afternoon, but for now what we can do is move Tauna, she's
16 graciously agreed to present now, and then Maria can present after
17 her on Island-Based Fisheries Management Plans Updates, and that
18 should get us to when Adyan is supposed to present at 11:10. Then
19 we'll have the break for lunch and come back with the Lenfest
20 project updates. So, I just will ask that we can do a quick vote
21 on that. If I could have someone motion and second.

22
23 **ORIAN TZADIK:** Motion to adjust the agenda as stated by the Chair.
24

25 **RICHARD APPELDOORN:** Second.
26

27 **SENNAI HABTES:** Much appreciated. I'll ask for any opposed. Hearing
28 none. Seeing none. Any abstentions? Okay. Thank you, all. The
29 changes to the agenda have been approved unanimously.
30

31 At this point, I'm going to turn over control to Tauna who will be
32 giving us an update on her work towards the risk assessment
33 approach to inform the fishery ecosystem plan for the Caribbean
34 Fisheries Management Council. All yours, Tauna.
35

36 **Risk Assessment Update—Tauna Rankin, NOAA Fisheries Office of**
37 **Habitat Conservation**
38

39 **TAUNA RANKIN:** Thanks, Sennai. Good morning, everybody. for those
40 who don't know me yet, I'm Tauna Rankin. I work for NOAA Fisheries
41 in the Office of Habitat Conservation. I work a great deal of the
42 time on the Coral Reef Conservation Program on fisheries issues
43 both at the federal and state and territorial level. I have been
44 interacting with the Council on EBFM issues before the TAP was
45 officially established, so going back to around 2018. I'm happy to
46 provide little bit of update on the idea for an ecosystem risk
47 assessment to inform the Council's fishery ecosystem plan.
48

1 Here we go. So, I'll provide just a little quick refresher of where
2 ecosystem risk assessment fits into our FEP process and the
3 development of a previous framework and how it's envisioned that
4 an ecosystem risk assessment will interact with the other projects
5 and tools being developed as well as a proposal on how to move
6 forward.

7
8 So here is the Loop we've been looking at for the past little over
9 half of a day. As you can see, we've been really focused on steps
10 one and two developing the conceptual model, developing indicators
11 goals and sub goals and we are talking about developing the
12 strategic objectives and analyzing risks to those objectives.

13
14 Here's a little more detail of the steps within those first two
15 areas of the Loop. Just a reminder that we're trying to identify
16 ecological, economic and social endpoints of concern,
17 understanding the status of trends, keeping an eye on the threats,
18 having a vision statement that encompasses our stakeholder's
19 management values and then translating those into action and
20 analyzing the risk to those objectives.

21
22 Now Sarah already highlighted a number of applications and benefits
23 of risk assessment to the Mid-Atlantic Council, so kind of echoing
24 what she already said. This is yet another systematic approach
25 that Councils can use to incorporate ecosystem information. It
26 provides a standard framework, but it can be flexible and one of
27 one of the main benefits is that it's transparent. It lays
28 everything out, and it can even be used in a stakeholder process.
29 As the Mid-Atlantic used theirs, it could inform conceptual models
30 and think through threats. They also used it in prioritization to
31 prioritize a species of focus. It could also help in prioritizing
32 strategic objectives. It captures uncertainty and can help inform
33 where data collection efforts should be focused. It can also be
34 used to incorporate ecosystem information into decision making and
35 evaluate management strategies before implementing them.

36
37 So, risk assessment was first adopted by the business world, but
38 there have been a lot of uses in fisheries. Australia is one of
39 the pioneers in applying risk assessment across all their
40 fisheries. Here's the example of the Mid-Atlantic Council that
41 Sarah just went through. There's a lot of other examples. You can
42 refer to Holsman et al. 2017. And also, I just led a tech memo
43 that highlighted some specific case studies from different fishery
44 management Councils around the U.S. I encourage you to look at
45 that because they're all examples that can show how the results
46 can be applied in a Council process.

47
48 So, a few years ago I was doing a detail with the Southeast Regional

1 Office and spearheaded an ecosystem framework for the Council based
2 on the Hobday et al. approach, which is a scale, intensity and
3 consequence analysis, which is a qualitative assessment using
4 expert opinion. It's basically looking at what is the risk, the
5 intensity and consequence of not achieving a management objective
6 for a given unit of analysis, such as a stock, a fishery, a habitat,
7 or the whole ecosystem due to a particular risk factor element.
8 And through that process with the informal working group, we
9 developed 66 risk factors across seven categories, including
10 climate and oceanographic forces, ecological interactions, fishing
11 activities, other in-water activities, land-based activities,
12 conservation and management actions and socioeconomic drivers.

13
14 This is just a sample of part of a scoring sheet. As you can
15 imagine with 66 different risk factors across three different
16 island platforms. And at the time we organized this by six or seven
17 different habitat types. That's easily over a thousand
18 interactions to assess. It quickly became daunting and was decided
19 to go through the conceptual modeling process first for folks to
20 kind of organize their thoughts about the risk factors and
21 linkages, and also to maybe hone in on an organization or a subset
22 that we could use the risk assessment tool for.

23
24 And so, this is kind of the proposed approach right now, which is
25 to use the conceptual models to identify risk factors to evaluate.
26 And where we have more quantitative indicators through the
27 ecosystem status report that Adyan is going to talk about and the
28 quantitative modeling work that J.J. and others are working on,
29 use those as indicators on set thresholds where we can and then
30 evaluate the potential in intensity and impact of those risk
31 factors to the subgoals. Now that's assuming we don't have
32 strategic objectives defined yet. We do have draft goals and
33 subgoals. And then, the results could be used to craft strategic
34 objectives or if we have draft strategic objectives to prioritize
35 those objectives around high-risk management relevant factors.

36
37 Not much has been done to advance this approach as of yet, other
38 than the work on the ESR and the quantitative modeling and the
39 conceptual modeling. However, I secured funding from the NMFS
40 office of Sustainable Fisheries for one year to support this
41 effort. So, we now have additional capacity, or we will have
42 additional capacity which is good news.

43
44 And so currently this is how I've been envisioning the connections
45 of the risk assessment up to these different pieces. We've been
46 talking about the idea of building a consensus conceptual model
47 from the individual models, whether that's by island platform or
48 a regional one. Even without that, we can definitely look at the

1 commonalities and differences across those conceptual models to
2 inform the risk assessment. And then use the goals and subgoals as
3 those sort of management objectives that we are assessing risk
4 against and drawing from the relevant indicators of the ESR and
5 quantitative modeling efforts.

6
7 Now, this is before I saw sort of the timeline of things yesterday.
8 And so now the question for this group is, should the strategic
9 objectives be informing the risk assessment, or should the risk
10 assessment be informing the strategic objectives? And so that's a
11 question I'd like to discuss and work towards a decision on. This
12 is just kind of a rough timeline of how things could play out.

13
14 The funding that I procured is going to go onto the cooperative
15 agreement with the Council, who's going to hire a contractor. That
16 contractor can then work with these side teams or through the
17 working groups to compile relevant information for the ERA, drawing
18 from the indicators gathering literature where quantitative data
19 is lacking for our specific region. And then develop and refine
20 that framework from what was previously developed, streamlining
21 where possible and then eventually presenting to the SSC. Although
22 I think there's a step in here with the EBFM TAP to review and
23 perhaps provide expert opinion where needed.

24
25 And based on this, this could be completed in the December to March
26 timeframe. But another big question that's not included in here is
27 to what extent this product will be developed or refined through
28 stakeholder input. And so that's another question. I should have
29 added that specific question to these discussion questions, but
30 I'm interested in reactions, how folks are feeling about the
31 relationship between the risk assessment and the strategic
32 objectives; how you feel about the timeline and any other
33 considerations I should know about.

34
35 And I'll just add, I don't want to overpromise, especially since
36 we don't have a person in place, but this may be a role that could
37 also support some of the technical writing if the skillset of the
38 hiring matches with that. So, I think there's other synergies
39 between this effort and some of the other pieces that we can
40 explore.

41 So that's all I have. Thank you. And I'll take questions.

42
43
44

Questions/Comments

45 **SENNAI HABTES:** Great. Thank you, Tauna, I'm going to open up the
46 floor for questions. I'm going to give that about five minutes
47 unless we really need a continue conversation. I'll start with
48 J.J. to my left.

1
2 **JUAN J. CURZ MOTTA:** Thank you, Sennai. Tauna, my suggestion for
3 the second question, my opinion is that we develop strategic
4 objectives out of what the conceptual modeling is telling us. And
5 then we do then the ecosystem risk assessment, specifically on
6 those strategic objectives.

7
8 Actually, I will go even further. To simplify the FEP writing, I
9 would suggest prioritizing those strategic objectives and do the
10 ERA only on those priorities and leave as a future work to do the
11 ERA on the rest of the objective as funding comes through. So,
12 that will facilitate your work and will also facilitate the writing
13 of the FEP. So, that will be my suggestion when we actually talk
14 about these details.

15
16 And the other question, Tauna, when is this person going to start
17 working so we can give you and that person the results of the
18 conceptual modeling? Thank you.

19
20 **TAUNA RANKIN:** Thanks, J.J. I appreciate that feedback. That makes
21 sense to me and if we're able to do some prioritization of the
22 strategic objectives before doing the ERA, that will definitely
23 streamline that process and make it more manageable, but it can
24 also help inform that process if we need to. And I don't know when
25 that person will be hired. The Council doesn't even have the money
26 yet. I'm expecting the money this week, and then it will be loaded
27 on their cooperative agreement. So, I don't believe they'll get
28 the funding and maybe Graciela can help out for a month or so and
29 then it's anybody's best guess on the length of time to hire. So,
30 I was thinking we are probably two months out, but maybe that's
31 optimistic.

32
33 **GRACIELA GARCÍA-MOLINER:** Mr. Chair, if I may. So, the Council
34 will probably need to go through a bidding process depending on
35 how we get this money or if there is a sole source that we have
36 available. But as of right now, I don't know yet. We are working
37 on the statement of work for the publication of that notice for
38 the bidding process. So, it depends. It can take, you know, a few
39 weeks. But first we need to have the money in house before we do
40 anything else.

41
42 **SENNAI HABTES:** Thanks, Graciela. I'm going to just hop in and
43 make a quick comment. Tauna, I think I agree with J.J. and we can
44 discuss this a bit more when we get into the EBFM TAP meeting on
45 its own, that we should use what's come out of the conceptual
46 models to create strategic objectives to inform the ERA.

47
48 In addition, I think in the interim time, what we really do need

1 is the structure framework by which we would do this in a continual
2 process, right? Like, we don't have a framework for how we're going
3 to identify and do ERAs going forward, and that's, I think, the
4 main thing that needs to go into the FEP and the main thing that
5 we need to develop. And that, I think, whenever we do hire this
6 contractor should be a large portion of what they're doing, is
7 writing that process that we've agreed upon into the FEP and how
8 it can be used to reevaluate things from stakeholder engagement
9 and conceptual models and create a process by which the Council
10 will effectively use risk assessment to make decisions.

11
12 That's my 2 cents on how we go forward but we can discuss that a
13 little bit more. And then I saw Orian had his hand up, so I'm going
14 to recognize him.

15
16 **ORIAN TZADIK:** Yeah, I actually was going to say very similar to
17 what you just said and that I agree with J.J. and Sennai.

18
19 **SENNAI HABTES:** Cristina, do we have any online?

20
21 Okay. well, with that, I think we're going to move on. Tauna thank
22 you very much for giving us an update, and we look forward to
23 chatting with you more in the meetings the rest of the week.

24
25 **TAUNA RANKIN:** Thank you.

26
27 **SENNAI HABTES:** All right. I think we will move forward now, I
28 think with María, if she is ready to give her presentation on the
29 updates for the IBFMPs. Sound good, María?

30
31 **MARÍA LÓPEZ-MERCER:** Yes, I am. Yep. All good. Just gimme a moment.
32 Okay?

33
34 **SENNAI HABTES:** Yep.

35
36 **MARÍA LÓPEZ-MERCER:** I'm trying to share my screen.

37
38 **SENNAI HABTES:** Perfect. Thank you.

39
40 **MARÍA LÓPEZ-MERCER:** Okay. So how much time do I have? This should
41 not take a long time, but just in case there's questions.

42
43 **SENNAI HABTES:** Let's go with 20 minutes. Does that work for you?

44
45 **MARÍA LÓPEZ-MERCER:** Okay. Way less than that.

46
47 **SENNAI HABTES:** Oh, perfect. Then we're going to go with 10.

48

1 **MARÍA LÓPEZ-MERCER:** Okay. All right. So gimme a moment, guys. I'm
2 not used to sharing my screen. I think you should be able to see
3 the presentation. No? let's see.

4
5 **SENNAI HABTES:** Nope. We did, but it's gone now.

6
7 **MARÍA LÓPEZ-MERCER:** Okay. Hold on. Jesús. Okay. Now. Okay. You
8 guys can see my screen now?

9
10 **ALIDA ORTIZ SOTOMAYOR:** Yes, now we can. At least I can.

11
12 **Island-Based Fishery Management Plans Update— María López-**
13 **Mercer, Southeast Regional Office (SERO)**

14
15 **MARÍA LÓPEZ-MERCER:** Okay, perfect. Thank you. Sorry for that.
16 Okay. So, this is María López with NOAA Fisheries Southeast Region
17 Regional Office, Caribbean Branch. I'm just going to give you an
18 update on all the actions that the Council is currently working on
19 and the things that they discussed during the past Council meeting,
20 which was in April, and the things that will be of your interest
21 in this meeting and maybe in future meetings.

22
23 Okay. So, as you know, the plans became effective in October 2022.
24 So right now, all of the amendments that we are doing are going to
25 be amending all, either all of the plans or each one of the plans,
26 right? So, the first amendment that we worked on is the Generic
27 Framework Amendment 1 to all of the Island-Based FMPs. This is the
28 one that updated the reference points for the spiny lobster based
29 on SEDAR 57. So that was submitted in 2022, in September, and the
30 amendment went through the proposed rule process, final rule
31 process, and became effective on April 15th, 2023. So not long ago.
32 So that means that the reference points and the ACLs that were set
33 during that amendment, for spiny lobster, in each one of the three
34 islands are in place right now.

35
36 Next, we have the Generic Amendment 1. When we're talking about
37 generic it's because it's an amendment that is going to be in each
38 one of the plans, right? So, the one before is the framework
39 amendment, this is a regular amendment with all the parts. This is
40 for updating the buoy gear definition and use. This one prohibited
41 the use of this particular gear by the recreational sector because
42 this is a gear that is mostly used by commercials. And then also
43 increase the number of hooks that could be used with the buoy gear
44 for the commercial sector for all the fish that they will be doing
45 to 25, it previously used to be 10. So, this, right now, is in the
46 proposed rule phase. The amendment itself published on April 6th
47 and there's a comment period that is open until June 5th. The
48 proposed rule recently published on April 24 and the comment period

1 is open until May 24. That information should be available on our
2 website or in the Council's websites if anybody wants to go in and
3 comment on the proposed rule.

4
5 Okay, so the next amendment that the Council has been working on
6 is the Generic Amendment number two. It is to all of the plans.
7 This is a trawl net gear and descending devices amendment. This
8 one would prohibit the use of all trawl gear throughout the EEZ
9 and then prohibit the use of gill nets, trammel nets, or purse
10 seines in the EEZ. There are differences between the islands, one
11 of them being that in the U.S. Virgin Islands and in Puerto Rico,
12 the Council wanted to select as a preferred alternative, for gill
13 nets, prohibiting the use of gill nets for everything except for
14 three or four groups of bait species. And if you want more details
15 on that, we can talk about that later, or you can go to the
16 presentation that it's in the briefing book.

17
18 So, another thing that will come out of this amendment is a
19 requirement to have descending devices when fishing and possessing
20 reef fish managed by the Council. The requirement would be to have
21 it on the vessel available for use in case the fish that you just
22 caught is showing barotrauma signs. So, one of the things that the
23 Council is going to be doing regarding this one is also having an
24 education and outreach program that goes along with this, of
25 course, because these are things that are going to be affecting,
26 you know, fishers in the near future.

27
28 Okay, so for this one, as I said during this Council meeting, the
29 Council finalized the selection of all the alternatives and then
30 they may be able to take final action, which means submitting the
31 amendment to the Secretary of Commerce for approval in August 2023.

32
33 Next, is the Generic Framework Amendment 2 to the Island-Based
34 FMPs. This is another update for management reference points and
35 ACL for the spiny lobster. This is based on the 2022 update
36 assessment to the SEDAR 57. As you may recall, you all recommend
37 that OFLs and ABCs for 2024 through 2026 for each one of the FMPs.
38 At this April meeting, the Council selected preferred
39 alternatives. They selected as a preferred to do the 5% buffer
40 from the ABC to set a new ACL for 2024 to 2026 for the spiny
41 lobster. And then, this one is very probable that the Council will
42 be able to take final action in August 2023.

43
44 The next amendment that the Council is working on, is amendment
45 number three to the Saint Croix in Saint Thomas/Saint John FMPs.
46 This one will do new management measures for dolphin and wahoo.
47 And there were some things that happened during this April meeting.
48 There was a huge discussion. This document was restructured into

1 four actions. We've divided it by island and by species. The
2 Council selected preferred alternatives at this April meeting for
3 U.S. Virgin Islands. They requested establishing size and
4 recreational bag limits options for Dolphin and Wahoo in Puerto
5 Rico. So, before we had separated the amendment, one was going to
6 be for the U.S. Virgin Islands and then Puerto Rico because Puerto
7 Rico, at the time, back in December, they were not ready to make
8 decisions, but during this meeting they decided to put everything
9 back together and so there's still some work to do. So, the Council
10 will review all the decisions that were made during the April
11 meeting that were going to be translated into either preferred
12 alternatives or new alternatives developed. They will discuss that
13 at the August Council meeting.

14
15 Okay. So, Amendment 3, I just told you this one was included in
16 the other one. Now, all of the actions that I'm going to discuss
17 right now are actions that are not in the amendment phase are
18 actions that are coming our way or maybe your way, eventually,
19 once the Council is ready to task that to you. So, one of the
20 actions is the development of a federal permit system. This is
21 something that has been discussed in the past. The idea will be to
22 bring this to the Council's attention at the August Council meeting
23 so that the Council can provide some guidance in terms of the scope
24 of the action. Like for example, if we are looking at general
25 permits for federal waters, or we're looking at limited permits,
26 or if you want to do a pilot federal permit, things like that.
27 It's very important for the Councils to provide guidance because
28 this can go so many ways, right? And this is going to be a very
29 complicated process. So, that's something that the staff is going
30 to be looking for at the August meeting.

31
32 Another action is the trap reduction plan for the U.S. Virgin
33 Islands EEZ. This is something that the Council was updated in
34 December 2022. There are some pending actions internally of the
35 U.S. Virgin Islands that staff have been in communication with
36 Sennai and Nicole to work on these things and get together and
37 figure out a plan for what to bring to the Council as to if is
38 this trap reduction or any other actions that need to be
39 compatible. It's something that the Council would like to
40 entertain.

41
42 Another action is the timing of seasonal area closures for the red
43 hind grouper in Puerto Rico EEZ. This is something that you
44 discussed in the past and you had a recommendation to the Council
45 to look into making shifts to the red hind closure dates in the
46 EEZ, Western Puerto Rico, to be able to accommodate some of the
47 reproductive activity that may be occurring outside of the closure
48 area. So, this, the last time that this was discussed at the

1 Council was December 2021. However, it was brought up during this
2 April Council meeting and the Council basically tasked staff to
3 bring additional information to the August 2023 because we were
4 still pending some information from the availability of
5 reproductive individuals during the states, etcetera. So, we are
6 in communication with scientists to get that information and see
7 if we can bring this to the August meeting so they can make some
8 decisions as to whether to move forward with this action or not.

9
10 The other action, and I'm almost done, modification of red hind
11 seasonal closure in the Saint Croix EEZ. This one, the Council
12 requested to modify the Lang Band red hind closure to allow fishing
13 for pelagic species during the closure. During the red hind
14 closure, all fishing is closed in that area, so fishers were
15 wanting to basically open the water column in a similar fashion as
16 in other places, for example, in Bajo de Sico or in the Grammanik
17 Bank, where you're allowed to fish for certain species, not reef
18 fish in the closure. So that's something that we may be bringing
19 an options paper either for August or the December meeting pending
20 on other actions that we are working on.

21
22 Now, this one is highlighted. This is a rainbow runner. So, this
23 was brought to the Council's attention by the Puerto Rico, DAP.
24 The Council tasked staff to look into reclassifying this species
25 as a pelagic fish under the Puerto Rico FMP. So, what's going on
26 is that the rainbow runner belongs to jacks. We have three jacks
27 that are managed as individual stocks. The rainbow runner is one
28 of them. Right now, this species is put under the reef fish
29 category. The fishers mentioned that they were basically unaware
30 of this. There are certain regulations that apply to reef fish
31 that do not apply to pelagic fish. Apparently, this fish is a fish
32 that is harvested in open water and the water column. It is a more
33 pelagic species, etcetera. So, the Council is wanting the SSC to
34 provide recommendations, at this meeting, if possible, maybe add
35 is as other business if you think this is something that can be
36 done and look into information as to recommend a reclassification
37 of this fish in the FMP instead of being a reef fish as a pelagic
38 species. So, this is something that you guys may be able to look
39 at this meeting and then provide recommendations if indeed
40 reclassification is merited, right? And that's your recommendation
41 and then the Council will add this as an action to one of the
42 amendments to the FMP.

43
44 And then the last thing that I want to bring up to your attention
45 is the 2023 accountability measure discussion that we had at the
46 Council meeting on the first day. This is basically NOAA Fisheries
47 does an evaluation of all the ACLs and see if there have been any
48 exceedances, so as to determine accountability measures, right?

1 And we have accountability measures for most of our stocks that
2 basically will close the season, right? The season during that
3 year for the amount of time needed so that the ACL is not exceeded
4 again. And for pelagic species, we have an ACT and there's not a
5 specific AM that says we're going to closure. It's just saying
6 that there needs to be an action taken. The Council will determine
7 what action needs to be taken.

8
9 So, NOAA Fisheries, you know, SERO and the Science Center, they
10 did their evaluation and then all the stocks that were on over the
11 ACL for this year fall under the enhanced reporting, meaning that
12 it was not due to increased catch because, you know, they were
13 over their ACL that way. Simply said that there was enhanced
14 reporting, for example, species were added into the catch report
15 forms later on after the ACLS were set and some different things
16 like that. And if you want, we can discuss a little bit more about
17 this later on but basically, the Council discussed revisiting ACLs
18 for those stocks that will fall under that enhanced reporting. So
19 bottom lines is, that there are no closures this year. What we do
20 have, the Council will want to check why these ACLs were exceeded
21 and see what other actions we can take for that. Like if, for
22 example, if we need to update the ACLS based on more recent data
23 or data that includes those species, for example, in the catch
24 report forms.

25
26 So, there wasn't really like a task for the SSC. However, we think
27 this is something that was brought to the Council attention, so
28 this will be something that may be coming your way. And then when
29 the time comes, then we can discuss a little bit more about that.
30 And I think this is all I have. Yep, that's all I have. So, I can
31 take any questions. If there any.

32 33 **Questions/Comments**

34
35 **SENNAI HABTES:** Thank you, María. Yep. We've got a couple questions
36 in the room. Reni.

37
38 **JORGE R. GARCÍA-SAIS:** Hello, María. Reni García, here. María,
39 what is the issue with the rainbow runner? I mean, in terms of
40 management, what difference does it make if it's classified as a
41 pelagic versus a reef fish?

42
43 **MARÍA LÓPEZ-MERCER:** Right. So, thank you for that question. So,
44 for example, we have some regulations that apply to the reef fish
45 and don't apply to pelagics. For example, in the reef fish we have
46 Bajo de Sico. When the Bajo de Sico is closed for the spawning
47 season, I believe it's October through March, the regulations from
48 the Council say that you cannot fish for reef fish, right?

1
2 So, apparently there's fishers that go fishing and water column
3 for other species, for example, they go jigging and they go fishing
4 for some pelagics, and if rainbow runner stays as a reef fish,
5 then you cannot harvest rainbow runner because it's prohibited
6 during that closure and for other places, not Bajo de Sico, during
7 the closure. But throughout the year we'll have bag limits that
8 apply to the reef fish so that the jacks, which is rainbow runner,
9 will fall under that bag limit.

10
11 So that's basically the issue. Fishers are concerned that this is
12 not really, although it has a reef component in their life stage,
13 it is a fish that it's mostly, based on the literature and by the
14 way it's harvested, it indicates that it may have more pelagic
15 life stages. So, it may be able to be reclassified if that's
16 something that's merited. So that's basically it, regulations will
17 be different.

18
19 **JORGE R. GARCÍA-SAIS:** Thank you, María.

20
21 **MARÍA LÓPEZ-MERCER:** Mm-hmm.

22
23 **SENNAI HABTES:** Co-chair Vance Vicente.

24
25 **VANCE VICENTE:** Hola, María. Hello. The issue regarding the rainbow
26 runner was brought up by our DAP Chair Nelson. And I don't know
27 what specific data there is other than the fishers claim that they
28 do fish them in pelagic environments and not in benthic habitats
29 or the reef habitats. I don't know, I would ask Nelson to see if
30 they have looked at their guts. Look at the fishes that have caught
31 them and open them up and if they find what sardine, squids, flying
32 fish, well, it will definitely be pelagic. If they find benthic
33 invertebrates, you know, crabs, worms, and the like, then, you
34 know, that will be evidence that they're reefoid, at least during
35 their feeding habits. So that's my suggestion. Thank you.

36
37 **MARÍA LÓPEZ-MERCER:** Yeah, absolutely. Thank you. So, in terms of
38 data, and I think that this is something that if the SSC decided
39 to include it in their discussions, perhaps tomorrow, we can talk
40 about that. We can talk about what we have for landings. I mean,
41 rainbow runner is mostly a recreational species. This is something
42 that the charter fishers and recreational fishers go after. It's
43 not necessarily a commercial species. So, the information on the
44 commercial side is going to be a little limited.

45
46 The ACLs were mostly based on the recreational use. This is why it
47 was included in the FMP. An important question would be, what is
48 the species caught with? What are you fishing for when you get the

1 species? Are you catching reef fish when you're catching rainbow
2 runner? But if we look at, for example, the information that we
3 have in the FMP, in terms of essential fish habitat, most of the
4 description that we have, it's as a pelagic species and then
5 another information that will be in the FMP.

6
7 So, before we used to classify all of-- in the other plans, all of
8 the jacks were classified under reef fish FMP. So, it's a
9 possibility that, you know, when this was reclassified-- this was
10 something that was not done through the Council process. It was
11 done on the background when the FMPs were being developed. There's
12 a possibility, you know, that because of the previous way that it
13 was managed, everything was put in the reef fish FMP. However,
14 this is an opportunity to look at the particularities because this
15 is a stock that it's managed individually. If it merits, you know,
16 reclassified, it shouldn't be a giant issue, of course. But that's
17 why the Council is asking you to take a look into all of that
18 information about the biology catchability, etcetera, to see if
19 this is something that can be recommended to them. Any other
20 questions?

21
22 **SENNAI HABTES:** I don't see any other online. So, I'm going to go
23 back to Reni.

24
25 **JORGE R. GARCÍA-SAIS:** Yeah. I'm going to add a little bit of
26 information about the rainbow runner because we typically see a
27 rainbow runner at Bajo de Sico when we're diving there. Also, we've
28 seen it with the ROV at the shelf edge of Grammanik Bank and of
29 the MCD and several other shelf edge areas. The rainbow runner
30 does behave like a pelagic fish. It is the main prey of the wahoo,
31 certainly. We've seen the Wahoo going after rainbow runner, but
32 rainbow runner at the same time predate mostly on zooplanktivorous
33 schooling fish such as mackerel scads, such as creole wrasse and
34 the likes. You know, any kind of schooling zooplanktivorous fish
35 in the water column is good prey for rainbow runner. So yeah, you
36 know, in my opinion, it behaves like a pelagic fish. Pretty much
37 associated with reef areas because you know that open water pelagic
38 fish in most instances it is associated with shelf edge areas, you
39 know, areas where there is reef below, but actually predate mostly
40 on zooplanktivorous water column fish. So, that's my take on that.

41
42 **MARÍA LÓPEZ-MERCER:** Great information. Thank you so much.

43
44 **SENNAI HABTES:** Great. I do not see any other questions here in
45 the room or online. So, with that, I'm going to thank you for your
46 updates, María. I just wanted to clarify. The one action item you
47 had asked for the SSC was to consider in their meeting the
48 recommendation for moving it to be a managed as a pelagics for

1 rainbow runner, correct? There is nothing else that you needed
2 them to discuss at their other meeting, right?

3
4 **MARÍA LÓPEZ-MERCER:** At this particular meeting, well is if you
5 make a recommendation, right? If you want to evaluate, if you want
6 to conduct an evaluation of the rainbow runner, kind of like what
7 Reni just did and see if you can recommend something to the Council
8 as to whether to move forward with this or not? Yes.

9
10 **SENNAI HABTES:** Okay. Thanks. So, with that, I think we're going
11 to go ahead and move on to our next presenter, which is going to
12 be Adyan Rios from Southeast Fishery Science Center, who is going
13 to be talking to us today about the, well, I don't have the agenda
14 in front of me, but I believe it's the ecosystem status report
15 progress. So, Adyan, I'll turn it over to you.

16
17 **Ecosystem Status Report: Ecosystem Indicators—Adyan Rios,**
18 **Southeast Fishery Science Center (SEFSC)**

19
20 **ADYAN RÍOS:** Thank you, Sennai. How is my audio and video?

21
22 **SENNAI HABTES:** It's perfect.

23
24 **ADYAN RÍOS:** Awesome. All right. So good morning, everyone. I will
25 be presenting work by the rest of the team. So, I work closely
26 with Mandy Karnauskas, and this was work that was started by Kelly
27 Montenero and also Seann Regan. And we'll be talking about the
28 ecosystem status report.

29
30 This is exciting to share, particularly with the SSC. The TAP has
31 seen this information previously in a different format when Kelly
32 presented it, and the OEAP saw this presentation that I gave for
33 Mandy at GCFI. And so, we have this information, there's still
34 work in progress, but the presentation that's available and ready
35 to go and to share and to make sure that everyone kind of is up to
36 speed, on what has been presented to date is what I'll be able to
37 share today.

38
39 So, what is an ecosystem status report? What does this report do?
40 It provides information on the past and as well as the possible
41 future conditions of marine ecosystems based on suites of
42 indicators. So, this report compiles information to provide
43 context for decisions as we move forward with more ecosystem-based
44 management.

45
46 So, this talk today will focus on indicators. And we'll just take
47 a moment here to think about how much data and how many
48 relationships exist when you're thinking about a whole ecosystem.

1 A lot. So, the exciting challenge here is figuring out how to
2 quantify, monitor, and communicate key ecosystem dynamics to
3 facilitate how we develop and implement management approaches that
4 incorporate more objectives.

5
6 I also want to point out that there is a national work group. Mandy
7 and Seann participate in this, and there are representatives from
8 each region. And so, it's exciting to know that the developments
9 and the advances occurring in different regions do come together
10 for that exchange. Those kinds of conversations across regions are
11 incredibly important for supporting a holistic approach to marine
12 resource management.

13
14 So, in the ecosystem status report, we have two types of
15 indicators. The first tracks progress of fishery management
16 objectives, and there's examples here across the top. These can be
17 used to develop objectives that can be taken into account when
18 we're selecting, implementing and evaluating appropriate
19 regulations and considering alternatives for management measures.
20 Then the second type of indicator is about monitoring risk. This
21 is so that the process of developing ecosystem management can
22 incorporate what we know about past events and what we expect about
23 future events, and we can make our plans to be robust to things
24 like bleaching, hurricanes and sargassum.

25
26 The process to develop the list of indicators is included in the
27 report and it depends on the type of indicator. So, for the first
28 type of indicator, the tracking of fishery objectives, those come
29 from broad categories derived from island-based FMPs. The risk
30 indicators are derived from conceptual models, indicator scoring,
31 and expert working groups. Today I'll be presenting information
32 related to the indicator indicators for risk. So, the second type.

33
34 So, on the far left, just to provide an example of the indicators,
35 we have sea surface temperature, an indicator for bleaching,
36 primary productivity, hurricanes, pollution, coastal development,
37 habitat, sargassum, tourism, employment, and market disturbances.
38 And so, the goal is to identify and establish these as indicators
39 and facilitate how that information can be quantified,
40 communicated and digested, and be made available to factor into
41 the management process.

42
43 And to do that sort of quantification communication and
44 facilitating the use. I'm excited to orient you to this plot on
45 the right side of the slide. We're calling this a relative trend
46 visualization. And I first want to orient you to the X axis where
47 you see here. And then the units on the y axis will change depending
48 on an individual indicator. The indicator name will be shown along

1 the top of the plot. And then there are some lines on the plot
2 that I'll orient you to. There's a dotted horizontal line that
3 represents the average, and then the horizontal solid lines provide
4 a reference of one standard deviation above and one standard
5 deviation below that average. You see some shading and green when
6 the value of an indicator is outside of that standard deviation
7 and in red when the values are below. So, you see that here the
8 far left and far right, we see this example trend showing some
9 shading and green and, in the middle far left, a little bit of
10 red.

11
12 Now let's focus on the far right where you can see there's a light
13 gray shading that kind of points out information that is of recent
14 information. And we also see some of this information at the bottom
15 that gets summarized into icons. And so, these icons are kind of
16 nice and loud and stand out to kind of really summarize what's
17 going on with this indicator in recent years. And so, when we're
18 seeing a slope, a meaningful slope, we'll see this arrow pointing
19 up. And when we see that the recent years are like becoming an
20 anomaly outside of this standard deviation over the longer time
21 period, we'll see the a plus sign or a minus sign and a descending
22 arrow if those are changing in that direction.

23
24 So now let's look at some of our indicators. For sea surface
25 temperature our plots here show the sea surface temperature monthly
26 mean, the monthly minimum and the monthly maximum. And if we just
27 go to that far right and just kind of get our quick icon summary,
28 we do have incre-- you know, a higher anomaly that we're seeing in
29 the sea surface monthly minimum but no kind of significant slope
30 that we're seeing and that we're not seeing strong changes for the
31 other two variables. But we do have more anomalies that we've seen
32 in recent years. So that's kind of a way to kind of look at these
33 plots from far away, but still take home a lot of information.

34
35 So, the information we can take home, in this example, is we have
36 generally increased over time. We have sea surface temperature
37 generally increasing over time. The last five years, the mean is
38 above average, and the monthly minimum are greater than one
39 standard deviation above average.

40
41 Let's go to the next one. So, we've got an example here of coral
42 bleaching stress, and it was generally below average until 2004.
43 We see a sudden peak in 2005 and a slight increasing trend in the
44 last five years. Hurricane activity we see how this information,
45 this is accumulated cyclone energy index, and over six years of
46 six decades of data. And we see that 2017 was an all-time high.
47 Next, we have a Sargassum Inundation index. This index shows a
48 seasonal pattern as of 2014 and a general increase over the time

1 series. Coastal development will refer to just a brief table here.
2 We have increased in developed land and into impervious surfaces,
3 which leads to modifications and effects to the shoreline habitat
4 and water quality. So, we see a percent change in land developed
5 for each Saint Croix, Saint John, Saint Thomas, and Puerto Rico.
6 We see that the percent change in developed land has increased and
7 the percent change in impervious surfaces, where water cannot
8 drain, has increased in all three islands in the Virgin Islands,
9 but we do not have these same numbers for Puerto Rico.

10
11 Here is an index of hotel occupancy rates in Puerto Rico, in the
12 top, and U.S. Virgin Islands in the bottom. We see the clear
13 impacts from hurricanes and the pandemic. And so, these are showing
14 declines in those recent years. Continuing with kind of the social
15 science information that we have. We have information about wages
16 and employee levels. And so, the impacts of Hurricane María and
17 Irma and the pandemic are also evident, and it tells a story of
18 instability, hurricane damage and population decrease. So, we see
19 an increase in ocean economy businesses, establishments, but a
20 decrease in the number of employees and in the wages.

21
22 So, a lot of the plots that we've been looking at so far have been
23 based on like a single value. Now we're also going to talk about
24 how this information can be like a composite of summarizing lots
25 of information into just kind of one visual that tells us about
26 the system as an indicator. And so, this plot we'll be talking
27 about, now, looks at food production and it's going to look at a
28 disturbance level. That's explained in the bottom left, but
29 essentially, it's how different is a given year compared to past
30 years. So, you know, the landings as they're distributed by month,
31 how much change are we seeing? So how unusual is this in a given
32 year compared to other years? We see that this disturbance level
33 was generally low and in recent years, it's been quite high,
34 especially in the recent five years of data that are included in
35 this graphic.

36
37 So, the risks, additional risks, we have chronic stressors. So, we
38 talked about mean sea surface temperature, sargassum, coastal
39 development, and yeah, those are risks to meeting our fisheries
40 objectives, to factor in as we consider alternatives and ecosystem
41 management plans. There are chronic stressors and then there's
42 also acute stressors. So acute stressors are very strong maybe
43 shorter period, but still very important to classify and monitor.
44 Those are things like temperature anomalies, bleaching,
45 hurricanes, and economic instability like events.

46
47 So, the next steps are for additi- like looking into the additional
48 indicators for food production, socioeconomic health, equity

1 engagement, bycatch, governance, outreach, enforcement, and
2 protection of the ecosystems. And so, this work has continued. So,
3 we've seen kind of in this presentation that was what was available
4 last time we gathered to kind of compile a large sharing of this
5 information. And so, I look forward to being in touch with Mandy
6 and the rest of the group who are working on this so that we can
7 have an update to the update. And just continue to highlight the
8 importance of how these summaries can be used to facilitate
9 development of management as well as development of measurable
10 objectives and targets that we can use to guide how we capture
11 socioeconomic, biological, and physical aspects of ecosystems in
12 the ecosystem-based management direction ahead.

13
14 And so, with that I want to thank you all for listening. I want to
15 thank everyone who's been involved and my collaborations with Mandy
16 and her support to allow me to kind of represent this group because
17 I appreciate it. It's very exciting work and I look forward to
18 seeing it further developed. With that are there any questions?

19

20

Questions/Comments

21

22 **SENNAI HABTES:** Excellent. Thank you, Adyan. I'll open up the floor
23 now to questions. I saw Rich's hand go up first.

24

25 **RICHARD APPELDOORN:** So yeah, really interesting stuff, Adyan.
26 Thanks. is it possible to go back to the bleaching slide?

27

28 **ADYAN RÍOS:** Absolutely.

29

30 **RICHARD APPELDOORN:** So, what stuck out for me was that the first
31 really big bleaching event, which was '87, '88 is that blip there,
32 but it's barely above the mean, yet it was a major bleaching thing.
33 So, the trends are interesting, but there's like maybe some other
34 stuff going on that we're not capturing. That's just a comment.

35

36 And then, I think it's just one more slide to the hurricanes, or
37 maybe two. You know, this one I find really scary because the peak
38 trends are, you know, going way up. What's the next one going to
39 look like? I don't have a comment on that other than it looks
40 really scary. And you have it looking like it's going down but, of
41 course, that's the most recent five years. But what is really
42 interested is the trend in those peaks, and the trend in the peaks
43 over the long term is going way up.

44

45 **ADYAN RÍOS:** No, I agree, Rich. Thank you for those comments. I'll
46 share those and look into that. I think for the coral, it's really
47 interesting to consider that and think about that further because
48 what the indicator is, is related to the temperature of the water

1 and the anomaly of the water.

2
3 **RICHARD APPELDOORN:** Yeah. Is that the degree weeks thing that
4 the-- Yeah. Okay.

5
6 **VANCE VICENTE:** Yeah. Regarding the bleaching. Maybe the reason
7 why the frequency or the intensity since 1987-- I mean, or the
8 1987 issue popped up, because that was the first time that we
9 published it in science. That's where we created the alert that
10 bleaching was happening. It was published by Williams and Goenaga
11 and myself. From there on there has been an increasing trend in
12 the frequency in which reefs were being monitored. So that's, I
13 think, a major factor. I mean, the farthest away from 1987, were
14 the greater or lesser incidents and is it's going to show.

15
16 **ADYAN RÍOS:** Thanks, Vance.

17
18 **VANCE VICENTE:** Yeah, Reni. Sorry.

19
20 **SENNAI HABTES:** It's fine. Reni.

21
22 **JORGE R. GARCÍA-SAIS:** Yeah. Well, not only the frequency. What's
23 happening with the bleaching, also in relation, for example, the
24 difference, as a stressor, with the hurricanes, is that this
25 bleaching has an accumulated effect. You know, because corals grow
26 so slow, one bleaching after another, after another has come to an
27 accumulated effect on the reef, to the point that there is very
28 little life massive Scleractinia coral left. There are some reefs,
29 we've been monitoring reefs since 1999. We have permanent transects
30 in, now, 42 stations. The decline in coral cover has been
31 significant in 17 of those reefs, several of which we can't measure
32 any further degradation because the confidence limits take the
33 percent cover down to zero.

34
35 So, the problem with the hurricanes is different because the
36 hurricane passes causes mechanical damage and eventually the reef
37 comes back. But for the bleaching, the problem is that is
38 transforming the entire habitat. And that is something that we
39 will need to deal with, because, as I mentioned yesterday, it will
40 cause, eventually, some effects in the food webs and eventually in
41 the entire community structure from which many of our managed
42 species are produced.

43
44 So, the problem with the accumulation of the bleaching events, you
45 know, will eventually have very serious considerations to our
46 fisheries management.

47
48 **SENNAI HABTES:** Thanks, Reni. I'm going to pass to Michelle who

1 had another question, unless, Adyan, you wanted to comment?
2

3 **ADYAN RÍOS:** No, those are really good comments set out that I'll
4 share with the team. Thank you so much.
5

6 **MICHELLE SCHÄRER-UMPIERRE:** Hi Adyan, this is Michelle.
7 Congratulations. I just wanted to bring up the Sargassum issue. We
8 generally have a perception that it's negative, but I think we
9 have a big gap in understanding the potential influx of bringing
10 food or other species to our ecosystem before it lands and becomes
11 a sargassum brown tide.
12

13 So, I think that could go either way, and we really need to put
14 this into context when we decide, if these trends are positive or
15 negative for who.
16

17 **ADYAN RÍOS:** Thank you.
18

19 **VANCE VICENTE:** Yeah. One thing that kind of worries me is that
20 there is existing information associating catch, fishery catch and
21 some of these events. For example, in the last Caribbean Fishery
22 Management Council meeting, a couple weeks ago, the Puerto Rico
23 Department of National Resources and Environment gave a
24 presentation in which they stated, and they showed data that
25 indicated that during the pandemic there was a 49% decrease in
26 effort, in fishing effort for the whole island. I wonder how much
27 of catch information we have and have not been able to associate
28 it with all these stressors. Thank you.
29

30 **ADYAN RÍOS:** That'll be exciting to see kind of more indicators
31 come together and kind of presented, not so much as like a big
32 bulletin board, but in a report where we can kind of see the big
33 picture and then zoom in and focus on and look into explaining why
34 some of the trends are the way they are and how we can interpret
35 them and use these potential indicators as metrics for what we
36 keep an eye on or what we aim to try and accomplish with management,
37 in management strategy evaluations, or in kind of adapted
38 management triggers moving forward as alternatives.
39

40 **SENNAI HABTES:** Okay. Edwin has a question online.
41

42 **EDWIN CRUZ-RIVERA:** Yeah. Thank you. So, I have one observation
43 and one question. My question is regarding the sargassum data.
44 You're talking about landings, what is the origin of that data?
45 Where was it obtained? Because as somebody who's been trying to do
46 this for a long time, I keep getting barriers on, you know, people-
47 - we were talking about this yesterday. People have data they don't
48 want to release, and they don't want to share. That has been my

1 experience with the landings data, especially if it's hotels or
2 local governments. So, my first question is where did this
3 sargassum landing data come from?
4

5 My observation is regarding the stressors and fisheries, which
6 we've also been trying to model. The one thing I can mention is
7 that some of the basic rough calculations, and again, we have very
8 noisy, sketchy, incomplete data, is that sargassum events alone
9 can depress, in some places, fisheries catch, total landings, at
10 about 17%. So that is the one number that we've been able to relate
11 to some areas, not the entire Caribbean, but some islands.
12

13 **ADYAN RÍOS:** Sorry, can you repeat that? 17% was what?
14

15 **EDWIN CRUZ-RIVERA:** We did this looking at comparisons between
16 specific islands. This is not the entire Caribbean. So, what I'm
17 giving you is a higher end on, I believe, Barbados. We didn't see
18 the same thing for, for example, for Saint Thomas.
19

20 **ADYAN RÍOS:** Sorry, I couldn't hear the whole part. So just the
21 17. What did the 17% represent?
22

23 **EDWIN CRUZ-RIVERA:** Total landings is not really a particular
24 species catch. It's overall landings.
25

26 **ADYAN RÍOS:** 17% of landings are associated with sargassum?
27

28 **EDWIN CRUZ-RIVERA:** No, they're decreased by 17%.
29

30 **ADYAN RÍOS:** Oh, okay. Thank you. so, this information comes from
31 satellite data. And so, we've got the reference from work from the
32 College of Marine Science at the University of South Florida.
33 That's where this particular index is coming from. But I know from
34 attending GCFI that a lot of ideas that came up to even [inaudible]
35 in science could be used to inform landings and where sargassum is
36 landing and how much of it is there with submitting photos.
37

38 So, there are some ways to think about how that can be done in a
39 kind of wider Caribbean context. But, you know, satellite
40 information also needs to be ground truth.
41

42 **EDWIN CRUZ-RIVERA:** Exactly.
43

44 **ADYAN RÍOS:** Mm-hmm.
45

46 **EDWIN CRUZ-RIVERA:** That's why I was asking. I agree completely.
47 And the people who have this information have been very un-
48 forthcoming with it, let's say. There used to be a site that people

1 could report this, and it still exists. And even though these are
2 volunteer data, they want to sell it to you for just-- I mean,
3 they gave me a bill for \$21,000.

4

5 **ADYAN RÍOS:** Wow.

6

7 **EDWIN CRUZ-RIVERA:** Yeah.

8

9 **ADYAN RÍOS:** That affects tourism a lot. You know, people want to-
10 - I've had friends ask me, when should I go on vacation? When will
11 there be less sargassum? And I'm like, there are models for that,
12 but I can't tell you. There's a lot of sargassum sometimes.

13

14 **SENNAI HABTES:** So, I'm going to make just a quick comment and
15 then we'll do one more question from Todd. So, Edwin that has been
16 identified as a problem, particularly for the U.S. Caribbean. There
17 is only one company that does regional modeling of sargassum
18 landings, and they're a French company, which makes it difficult
19 to pay them to create that stuff by local governments and
20 particularly with federal money. But we have been working with
21 partners, particularly USF Chuanmin's Lab to put in grant funding
22 to develop more forecasting and landing systems using their
23 satellite data. My hope is that we'll get funded for the one that
24 we put in earlier this year, but I won't know that until July. But
25 if it's funded, I'll provide you more information on it. But it
26 would likely create more satellite products that will give us
27 landings as well as large scale patch and inundation tracking for
28 the U.S. Caribbean.

29

30 **EDWIN CRUZ-RIVERA:** Well, I mean, we should talk about this because
31 I have some funding through NASA that is aimed to do this very
32 thing.

33

34 **SENNAI HABTES:** No, I know. We've talked about that before, but we
35 can-- let's continue it offline. I'm going to turn it over to Todd
36 for questions.

37

38 **TODD GEDAMKE:** Just a couple quick comments. First URI has been
39 developing a project on this also, and they've been trying to track
40 this down. I think his name is Ken Hamel, but I can track that
41 down a little bit more for you. And I just wanted to second also
42 Michelle's comment that, you know, the inundation, a lot of the
43 language being used surrounding this is negative, and Barbados was
44 brought up.

45

46 Barbados' key fish is flying fish. They use surface nets. You can't
47 fish with surface nets for flying fish. So of course, your landings
48 are going to go down and your abundance is going up in those

1 situations. So just keep your thoughts open and consider the life
2 history of the species. But more importantly, catch ability,
3 because you do have people that are trawling for pelagics that
4 can't trawl through the sargassum. So, your catch ability changes
5 directly in relation to sargassum patches. And I think it's just
6 a complex issue and I would love to see some baseline tracking of
7 some of the larval inputs and some of the redistribution of things
8 that's probably occurring from this. Nice work. Thank you.

9
10 **ADYAN RÍOS:** Thank you.

11
12 **SENNAI HABTES:** Richard.

13
14 **RICHARD APPELDOORN:** Yeah, one more comment. We can use the
15 sargassum figure there as a reference, but it applies to the
16 bleaching as well. You're generating your means and your standard
17 deviations on the entire data series when things are, you know,
18 getting a lot more interesting and exciting and variable in later
19 years. So, what doesn't look like a problem, say, in this
20 particular graph, in, I guess, 2015, might have been, but you've
21 moved the goal post, so to speak. So, it looks like it's always
22 just the mean, but at the time it happened, it wasn't the mean, it
23 was actually a pretty high peak. And that, I think, is what was
24 happening with the bleaching levels. You know, back in 87, and
25 again in the late nineties, there was another big bleaching event.
26 The peak is there on the graph, but it looks like, oh, it's just
27 at the mean level. But again, the means are going way up by setting
28 your baseline over the entire data series. So that's, I think, why
29 some of these things that were very stressful, when you look at
30 them in the graph, don't look that way, because the goal posts are
31 being moved by the climate.

32
33 **ADYAN RÍOS:** Absolutely.

34
35 **SENNAI HABTES:** All right. Julian.

36
37 **JULIAN MAGRAS:** Just a comment on the slide with the tourists with
38 the hotels. Since the hurricanes, we still have two of our major
39 hotels in the Saint Thomas/Saint John District that are closed.
40 So, the occupancy rates would be down in that area, but what a lot
41 of rental people have done is turn their rentals into Airbnb.

42
43 So, the numbers of the tourists still coming into the islands has
44 been up and above what you would normally see with two of your
45 major hotels closed, Sugar Bay and the Marriott, which Marriott's
46 going to open up this month. But I just want to put it out there,
47 that even though you don't have that hotel occupancy rate, maybe
48 you can request from the U.S.V.I., there should be someone that

1 could provide you information and the quantity of Airbnb that we
2 created.

3
4 Now, presently, they're starting to change those Airbnb back into
5 rentals. It was a big hit during the pandemic because the U.S.
6 Virgin Islands was pretty much open up to people still coming in.
7 So, we had the high rate of tourists coming to the Virgin Islands.
8 So, I wanted to put that in there to see how it fits into the
9 equation.

10
11 **ADYAN RÍOS:** Thank you. Yeah, I will share that information with
12 the team. That's completely relevant. You know, these are dynamic
13 times and incorporating alternative information perhaps into like
14 a composite that can account for or a different way of getting at
15 how tourism is being affected will be useful as an indicator for
16 the region. Thanks, Julian.

17
18 **SENNAI HABTES:** So, Adyan, I had one more question, and this is
19 more logistics. What is the timeline and timeframe for the
20 reporting from this and data being available for use in things
21 like the FEP that we are trying to develop?

22
23 **ADYAN RÍOS:** I need to check on that with Mandy and the team and
24 they are double booked as well. There's a Gulf SSC meeting
25 currently. So, I will check back and share that information to be
26 communicated, perhaps after lunch.

27
28 **SENNAI HABTES:** That would be much appreciated. Or if you have
29 time to join us in the EBFM TAP meeting at some point, you could
30 discuss it with us then.

31
32 **GRACIELA GARCÍA-MOLINER:** Mr. Chair, if I may. So, the other
33 question to ask is what's the bottleneck? So, is there a problem
34 with funding or having someone that actually will complete the
35 ESR? What's the bottleneck in finishing it and having it available?
36 Thank you.

37
38 **ADYAN RÍOS:** Okay.

39
40 **SENNAI HABTES:** All right. So, with that, we've got like two
41 minutes before lunch. I'm going to open it back up to-- oh,
42 Cristina. Edwin, your hand is still raised. Did you have a follow
43 up question.

44
45 **EDWIN CRUZ-RIVERA:** Oh no, sorry. It's just that I forgot.

46
47 **SENNAI HABTES:** Okay, thanks. So, with that, we're going to thank
48 Adyan for her great presentation. Really appreciated for your time.

1 We're going to use these last couple of minutes to open up the
2 floor to any other additional questions from previous presenters
3 that people wanted to bring back up before lunch. And if not, then
4 we can break for lunch. Orian.

5
6 **ORIAN TZADIK:** So just in the interest of the time, I'll ask a
7 really quick one for Sarah. I was wondering on the slide that you
8 had presented about the EAFM risk analysis; and you said that
9 somebody, one of the Council members was using it as a cheat sheet.
10 So, was that the entire risk assessment? And how many categories
11 was that? How many elements were scored?

12
13 **SARAH GAICHAS:** You're going to make me have to count them?

14
15 **ORIAN TZADIK:** No, I mean, ballpark, like is that everything?

16
17 **SARAH GAICHAS:** That is the whole risk assessment.

18
19 **ORIAN TZADIK:** And so, it's only like 20 elements or something?

20
21 **SARAH GAICHAS:** Yeah, probably on the order of actually more like,
22 yeah, 25, 30ish.

23
24 **ORIAN TZADIK:** Okay. And then just really quickly, how were they
25 scored? Exactly? Like was it subjective?

26
27 **SARAH GAICHAS:** Each one has its own criteria. And so, the criteria
28 were developed kind of looking at the risk element itself. And the
29 Council-- I think we proposed some, we were like, you could do
30 this with long-term or short-term trends or whatever.

31
32 Some of them are actually scoring risk based on the fishing
33 mortality and biomass status. Those come straight out of, is it
34 overfished or overfishing and things like that. So, we translated
35 existing thresholds into the risk elements for the Council for
36 some things and for other things it has to do with the trend.

37
38 So, I think it is subjective in that we went through with the
39 Council and said, "here's some ways of looking at-- you know, what
40 do you think is risky here versus less risky" and translated those
41 into criteria. But we did that for each element, so it would be
42 appropriate to each element.

43
44 **ORIAN TZADIK:** And then, ultimately, it's not subjective because
45 it's based on subjective guidelines, but then ultimately it has a
46 number, right. Okay.

47
48 **SARAH GAICHAS:** It has criteria. So yeah, when something changes,

1 you should be able to change it according to the criteria. Yes.
2 **ORIAN TZADIK:** All right. Thanks.

3
4 **SENNAI HABTES:** Okay. I don't see any other hands raised in the
5 room or online. So, I think we can go ahead and break for lunch
6 now. Graciela, are we good for that? All right. So, it is
7 approximately 12:02 PM. We are going to break for lunch and return
8 back at 1:02 PM to begin the afternoon sessions. Yeah. 1:02. We
9 have an hour for lunch now.

10
11 **RICHARD APPELDOORN:** Now it's 1:03.

12
13 **SENNAI HABTES:** Yeah. Thanks for that, Rich. Now it's 1:03. All
14 right. See you guys then.

15
16 (Whereupon, the meeting recessed for lunch on May 2, 2023.)

17
18 - - -

19
20 May 2, 2023

21
22 TUESDAY AFTERNOON SESSION

23
24 - - -

25 **SENNAI HABTES:** Okay. Good afternoon, everyone. It is 1:11 PM on
26 May 2nd, 2023. We will reconvene the joint EBFM TAP and SSC meeting
27 for the Caribbean Fisheries Management Council. Thank you everyone
28 for their attendance and their patience. We are going to move a
29 couple things around on the agenda again this afternoon. So just
30 a process update. We're going to start now at 1:12 and we're going
31 to have the Lenfest updates from J.J., Tarsila and Stacey. That is
32 going to run until 3:15 where we're going to have a break. And
33 then at-- Is it 3:15, Liajay, or 3:00?

34
35 **LIAJAY RIVERA GARCÍA:** You have from 1:12 to 3:15 the presentations
36 followed by a break at 3:15.

37
38 **SENNAI HABTES:** Great. All right, so we'll break from 3:15 to 3:30
39 and then we'll come back and have Martha who's going to give us
40 the updates on the GIS platform for the CFMC, as well as the SEAMAP
41 gold of accessibility. And then that will run from 3:30 to 4:00 PM
42 and then we'll have Kevin and Rachel who will give us some updates
43 from the SEFSC. And so, if anyone has issues with those timelines,
44 please do just send me a message in the chat, I'm sure we can move
45 some things around, but just so that we are going with the proper
46 process, I'm going to ask for an EBFM or SSC members to motion to
47 accept the changes to the agenda as proposed by the chair and
48 second, and then we'll do a quick voice vote, and then move on

1 with the updates.

2
3 **ORIAN TZADIK:** Motion to accept the agenda as proposed by the
4 Chair. Orian Tzadik, NOAA Fisheries.

5
6 **EDWIN CRUZ-RIVERA:** Second.

7
8 **SENNAI HABTES:** All right, thank you. With that, are there any
9 opposed to the change in the agenda? Hearing none. Seeing none.
10 Any abstentions? Okay. Hearing none. Seeing none, the changes as
11 proposed by the chair have been approved, and we will go ahead and
12 move forward with the updates from the Lenfest Group, from J.J.,
13 Tarsila and Stacey. The mic is now yours, J.J.

14
15 **Progress Towards Informing an Ecosystem-Based Approach for**
16 **Fisheries Management in the Caribbean—Juan J. Cruz-Motta**

17
18 **JUAN J. CURZ MOTTA:** Thank you. Here we go. As, as I mentioned
19 yesterday, we change a little bit of the content of our
20 presentation to talk about the structure and logic behind the FEP
21 using, in this specific case, the Lenfest Loop. As Sarah pointed
22 out earlier, the Lenfest Loop is not the only loop or the only
23 tool that we have, however, how it is systematic way of building
24 an FEP. As we do this, we will introduce some examples on how the
25 data that we have been collecting can fit into this this loop. The
26 intention of this change of a structure was to help the development
27 of or the work that we want to do Wednesday and Thursday on the
28 FEP.

29
30 So basically, based on this loop, an FEP is just a tool, which
31 Orian mentioned the characteristics of that tool that will help
32 the Council to implement EBFM. In general, it will be geared
33 towards consolidating information to better understand the
34 linkages and tradeoff between the environmental, economic, and
35 social aspect of the fishery. Basically, what the Lenfest Loop is
36 trying to do is to translate the FEP goals into some sort of
37 action.

38
39 A little bit of context. What we mean by EBFM? What you have on
40 the screen is just the schematic representation of a single start
41 fisher management approach, which are typically reflected in an
42 FMP. Something that we listen to this morning was an ecosystem
43 approach to fishers' management that is still a single species
44 management. However, all these environmental, social, economic
45 disturbances aspects come into play and, typically, those are
46 reflecting an FMP.

47
48 As an EBFM, now, what we're using as an operational concept is

1 we're trying to understand the fishery system as a whole and
2 understanding which is a multi-specific multi driver problem. And
3 as before, we subject to different drivers in addition to fishing
4 mortality and taking in consideration of these socioeconomic
5 aspects as well. All that is reflected in an FEP, which is what we
6 we're trying to write up.

7
8 I won't put the loop because we have seen the loop like so many
9 times already. I am going to go straight to the steps. The first
10 step is answering, where are we now? which is basically defining
11 the fishery system. And one of the first thing that Vance mentioned
12 as we started the meeting was, what is the system? What is an
13 ecosystem? What is the definition? Basically, following this loop,
14 the stakeholders define what will be the system that we're trying
15 to manage. So, with this loop it will be very well defined. Of
16 course, it won't be a purely ecological definition. It won't be a
17 purely socioeconomic definition. It will be a definition, a product
18 of the perceptions of the different stakeholders.

19
20 To define this, we use conceptual models that Tarsila will talk
21 about them in a few minutes. Also in this first step, we not only
22 define the system, but we try to understand what has happen in
23 that system, using what the stakeholders believe are the main
24 components of that system. In this sense, as Tarsila was mentioning
25 yesterday, the introductory part of the FEP should have some
26 component on these trends that are happening to these main
27 components.

28
29 And the third step in this first section is also to identify
30 potential threats to the system. And that identification also comes
31 out of the conceptual models. I just going mention two things about
32 conceptual models. I'm also going to mention that defining the
33 fishery system can be done in the FEP using two documents that we
34 do have now, which is the conceptual models that we developed, but
35 also the ecosystem status report that we just heard about. So, we
36 have two sources of information to define what will be the fishery
37 system.

38
39 The only thing that I want to highlight on the things in red, I
40 mean, I put this in red all through the presentation. Is that-

41
42 Can I get control of the-- Yeah, I'm online. Yeah, thank you. Yeah,
43 you will see why I want to do it from here in a few minutes.

44
45 So, what I wrote there, that the conceptual model is not considered
46 finished until everybody agrees that it is finished. That actually
47 what we have now, and what we will see using in this next slide is
48 not final until it's validated by all the stakeholders that

1 participated in the creation of this conceptual model.

2

3 Tarsila, could you please take it from here?

4

5 **TARSILA SEARA:** Yes. All right. So here it is. It's the big
6 consensus conceptual model. So, this right here incorporates the
7 conceptual models of all seven stakeholders. So, this is for the
8 entire U.S. Caribbean, and these are the relationships between
9 components. And this is really to illustrate how much information
10 we were able to obtain as a visual. This is not, you know, the
11 most helpful but it already begins to give you an idea. If you
12 look at some of the components that have highest frequency of
13 mention by stakeholders in you know relationships, you can begin
14 to identify some priorities. And this is again, from the standpoint
15 of the entire Caribbean and all seven stakeholder groups.

16

17 So, with something like this, I mean, this translates into this
18 big data set that is incredibly helpful for us to derive a number
19 of different products, a number of different analyses. We can look
20 at this in so many different ways. We have already begun to work
21 on island-based conceptual models, which we won't show here. For
22 the purposes of this presentation, we just want to show a couple
23 of examples that we think illustrate well, how this can be used
24 for immediate next steps in terms of where we're going in this
25 process, and how the conceptual models can inform some of these
26 steps. But we just wanted to show the whole, the blob, the whole
27 thing so we can have a visualization of how much information we
28 have.

29

30 So, here's one example of one way that we analyzed. So, the data
31 set that we used to generate this particular analysis is a data
32 set of all the relationships that were identified by stakeholders,
33 all stakeholders. So, the big matrix looks like you have
34 relationships. Component A effecting component B. And then, in
35 columns we have each conceptual model and whether or not that
36 relationship was identified within that conceptual model. What we
37 did is that we grouped the different conceptual models. We did
38 multiple conceptual models with the same stakeholder groups in
39 some instances, so we grouped them by stakeholder type. In this
40 analysis right here, what we did was a similarity between
41 stakeholders by island, so we can look at some of the patterns.
42 What we really wanted to illustrate here is if you look at the
43 relationships that are explaining the patterns that we're seeing
44 here we can already begin to identify some important priorities
45 and some potential indicators and indicators of risk to the system
46 as well.

47

48 So, a couple that I just wanted to highlight, you can see the

1 importance of coral reefs for fisheries resources, for instance,
2 and multiple relationships that involve impacts to habitat,
3 impacts two coral reefs. One of the ones that I wanted to highlight
4 right there is marine diseases impacting coral reefs. We spent
5 some time yesterday talking about the importance of this, and that
6 is reflected right there as a stakeholder priority. Other issues
7 affecting habitat, like water quality and pollution are also
8 reflected there. And a couple of important socioeconomic
9 components like outreach and education and local cultural and
10 religious traditions also impacting the system and the health of
11 the fisheries.

12
13 So, this is just one example what that data is informing us and
14 how we can begin to identify these priorities, potential risk
15 factors, and also some potential vulnerability indices that can be
16 developed based on what we're finding with this. Anything else,
17 J.J., that you want to. okay.

18
19 So, a different way to look at the data. So now, instead of looking
20 at the relationship, so instead of using the relationship matrix
21 that I just explained in the context of the previous slide, here,
22 we're only looking at components. So, the components that were
23 right here in this case, drivers. So again, this is for the entire
24 U.S. Caribbean, and it's difficult to read but this is a two-mode
25 network, meaning that what we're looking at here is different
26 groups of stakeholders. They're represented by the squares, so we
27 have all seven stakeholders represented there. The nodes represent
28 drivers, so components that stakeholders identified within the
29 conceptual models as being important drivers in the relationship.
30 So, components that are impacting other components in the system.

31
32 So, what we are seeing here, in the middle, the colors, they
33 indicate the number of stakeholder groups that identify those
34 components as important drivers. So, all the red components were
35 identified as important by all seven stakeholder groups, the orange
36 by six and the yellow by five, etcetera. So, as we move away from
37 the center it's last stakeholder groups until we get to the pink,
38 which were components identified by only that one particular
39 stakeholder group. So, I know that you can't read the components,
40 but I do have a slide that has a table with those components that
41 were identified by all stakeholder groups. And that is the first
42 thing that I wanted to highlight with this particular figure is
43 that this is another way that we can look at priorities, right?
44 So, components that stakeholders agree are priorities, they are
45 important within the context of the ecosystem. And this can also
46 help us identify potential indicators.

47
48 The other thing that I wanted to point out with this figure is,

1 and with the previous figure, I also should have mentioned
2 something, but with all of this, is that this illustrates well the
3 importance of doing this in a participatory way. We can visualize
4 here the importance of co-production, of knowledge, of all
5 stakeholders bringing their knowledge and their priorities to the
6 process because we can focus on what are, essentially, consensus
7 or what are things that we all agree on. But it is also important
8 to think about all the unique components that all the different
9 stakeholder groups are bringing to the process. And so, we can
10 look at this and analyze this data by using all these components
11 and thinking in terms of all the unique elements that everyone is
12 bringing to the table.

13
14 The next slide, J.J., is essentially the same thing, so I won't go
15 in detail. But this is the same thing, same idea, but for
16 receivers, meaning these are components in the ecosystem that are
17 being impacted by drivers. And the next slide has a table that's
18 summarized. And again, here I'm just highlighting there that we
19 are looking at the ecosystem components that were identified by
20 all seven stakeholder groups. This is just to create an example of
21 where everybody agrees. This is not to say that it is not important
22 to look at components that were not necessarily indicated as
23 important by all seven. But this just is, just to give an example.

24
25 And so, here is the list of those components that we saw in the
26 previous figures that were in red. So, a number of them were
27 identified as both important drivers and receivers. They're at the
28 top. So again, we begin to identify some priorities, some potential
29 indicators, and some good candidates for risk assessments. So
30 recreational fishing-- and J.J. I think you were going to talk a
31 little bit in more detail about some of these, but just to go
32 through the list. But recreational fishing and coral reefs, runoff,
33 tourism, education and outreach and marine diseases being
34 identified as both important drivers. And receivers and
35 disturbances, coastal development, local culture and religious
36 traditions as important drivers and water quality, mangroves and
37 seagrass important receivers.

38
39 So again, you know, this are different ways to look at this
40 information and just a couple of examples of ways that we can use
41 this information to inform the process that we're going through
42 and also to illustrate the importance of the participatory
43 component of this.

44
45 **JUAN J. CURZ MOTTA:** Thank you, Tarsila. So, in the next step using
46 the Lenfest Loop. The next step is to select and calculate
47 indicators. And again, we just saw the talk by Adyan of one way of
48 doing it. And also, we can select those indicators using what

1 Tarsila just mentioned. And then you could take an any peek from
2 that initial table she presented.

3
4 The idea of this indicators, there are two aspects that are very
5 important. One is to describe what happened to those indicators
6 through time, as Adyan showed before. But the second one is how
7 they respond to anthropogenic drivers. Trying to identify what
8 will be the drivers making those indicators change. That's
9 something that Stacey will talk a little bit about how we approach
10 that.

11
12 The first step to select this indicator is that we need-- for each
13 one of those components, and I'm putting an example here, coral
14 reef. Something that everybody agreed was important. Actually, the
15 conversation when Adyan made her presentation was around what
16 happened to the coral reefs. --Is to define what would be the
17 attributes that we will be looking at those coral reefs. And in
18 this case, I just put one single example. We will be looking at
19 total coral cover as an important attribute to evaluate the coral
20 reef.

21
22 I also put in an example here with the second component that was
23 listed in Tarsila's stable, which is recreational fishing. And
24 again, we can come up-- and this is just an example. --the
25 attribute of that component will be the total biomass. I mean we
26 cannot see here, but this big, big red here is coral reef. And
27 then, the second one here is recreational fisheries. Again, aspects
28 that everybody agrees is important. And just to put that up front,
29 recreational fisheries is something that we're not looking at, but
30 everybody's saying is important. I'm just saying this because then
31 also, in this specific case, this conceptual model helps us
32 identify an important data gap.

33
34 I want to say the indicators can be selected using different ways.
35 A qualitative approach. And then here, even though it's not the
36 most cited, but since it was authored by Kelly, I put it as an
37 example, how you can use a qualitative approach based on extra
38 opinions, stakeholder engagement, to decide what would be the
39 indicators in your system. But also, you can use a quantitative
40 approach. I really like this paper from two years ago where they
41 use a hypothesis testing approach to select what will be the best
42 indicators. For that you need some good data set to actually test
43 those hypotheses. However, as you can see here in this paper, those
44 predictors are univariate, single species. In here you have what's
45 happening with the seal abundance. Here, what's happening with the
46 herring abundance and the chinook abundance and so on and so forth.
47 But what you will listen from Stacey, here in the next few slides
48 is an alternative to select indicators taking in consideration the

1 whole assemblage not one species at a time. And for that, we're
2 proposing to use this multi-species, multi-driver option. Thank
3 you.

4
5 **STACEY WILLIAMS:** Thanks J.J. so, if you've attended any of our
6 workshops the past couple times, you're going to notice and
7 recognize these maps. These are the data that we are working with
8 when conducting these quantitative analyses.

9
10 So, the first set of data is from the SEAMAP C data. This is
11 collected, as you can see in the map all, around Puerto Rico, there
12 are some gaps like the North and South, and also in Saint Thomas,
13 gaps in Saint Croix. And this is for fish abundance and fish
14 biomass with hook and line and at one point also using trap data.

15
16 The other data set that we are looking at or analyzing is the local
17 monitoring programs. In Puerto Rico there are a lot of sites. Right
18 now, we are analyzing or monitoring 42 permanent stations. Some of
19 these stations have more than two decades worth of data. Also,
20 it's hard to see on this map, but there are also permanent stations
21 in the U.S.V.I. that are monitored either yearly or bi-annually.

22
23 And finally, we have the NCRMP data. And when we started collecting
24 all this data, you'll see in the next slide from the satellite
25 driven data, we are only using data sets up, I believe, to NCRMP
26 2017. So, there's years that were collected afterwards. So, you
27 can see that NCRMP data there were two years for Puerto Rico and
28 three years for the U.S.V.I. and data, like the local monitoring
29 program, we're able to analyze fish assemblage and the benthic
30 composition at these different sites.

31
32 So, as you can see, we have a lot of data that we can analyze.
33 There are some gaps as you can see in the North coast of Puerto
34 Rico, just due to weather. It's really hard to get out there and
35 survey. But we have a lot to look at.

36
37 The other data sets, besides biological, when we are describing
38 the fisheries ecosystem, we all know that environmental data,
39 social economic data are very important. So, we are working with
40 different data sets, and the table to the right is the satellite
41 driven data. This was with the help of Iliana Chollett. As you can
42 see, there's about 24 variables that we were able to receive. So,
43 every single point that you saw on the map, we actually have data
44 for all of these 24 variables. And some of these variables as you
45 see highlighted and red, we have a temporal resolution to that.
46 So, we can actually look at trends through time when we're
47 describing fish assemblage or benthic composition.

48

1 We also have fisheries dependent data from fishers and observers.
2 And then also socioeconomic data as you can see from the different
3 sources of this data. So, we can look at the relationships between
4 the biological data and that of the environmental and socioeconomic
5 or fisheries dependent data. So yeah, there should be arrows
6 pointing everywhere, not just from those points.

7
8 So, I'm just going to go over some, and I'm guessing in the next
9 couple days we'll go in like the nitty gritty of what this data
10 says. So, I just wanted to show some of the results that we are
11 initially getting from this data. So, this is for the-- I'm just
12 going to show data from the Puerto Rico Coral Reef Monitoring
13 Program and also the local monitoring program from the U.S.V.I.s.
14 These are at permanent stations through time. Like I said, some of
15 these data sets have more than two decades worth of data.

16
17 So, for this analysis, I just looked at what the sites that we are
18 now serving that have more than six years of data. So, Reni, you're
19 going to see that there's some data points missing. But as you can
20 see there are some similarities in fish assemblages when we're
21 talking about mean abundance. So, we also have, I'm just going to
22 be showing abundance, but we also have biomass data. And you can
23 see that there are similarities in fish assemblages in Mona and
24 Desecheo and some other regions.

25
26 So, the factors, the environmental factors that show a high
27 relationship to the change in fish assemblage is actually something
28 that we've been talking about. Like, the change in actual reef
29 conditions. So, that can be quantified by the mean macroalgal
30 cover; also, the change in macroalgal cover, as you can see in the
31 third one; connectivity, larval connectivity showed a high
32 relationship to what were the patterns that we're seeing in fish
33 assemblage; the distance from a nursery location depth; Max Kd,
34 which is the diffusion attenuation, diffusion coefficient, that's
35 just the organic turbidity in the water; max productivity; max sea
36 surface temperature; the human population density; and watershed
37 pollution, so the runoff of sediment and other non-organic
38 materials. So, these are the indicators that what we initially
39 have found to be highly related to the fish assemblage in the
40 Puerto Rico Coral Reef Monitoring Program through time.

41
42 So, for the benthic change, since coral reefs were mentioned
43 multiple times by stakeholders, and we all know coral reefs are
44 very important, other ecosystems are also very important, like
45 seagrasses and mangroves. But for coral reef, for the Puerto Rico
46 Coral Reef Monitoring Program, again, we see these regional
47 differences Mona, Desecheo, also Vieques stands out with the
48 Northeast. And the environmental factors that played a major role

1 in the change, this is the benthic change through time at these
2 permanent stations, was the variation of the, this attenuation
3 coefficient. Also, you're going to see like it's the max and the
4 mean, so the variation, the max of the attenuation coefficient,
5 the mean of the attenuation coefficient.

6
7 And actually, Reni and I published a paper showing this, that, you
8 know, this was all before the Stony Coral Tissue Loss Disease, but
9 at some sites that actually had higher attenuation coefficient,
10 well, higher organic turbidity we're actually able to see a slow
11 recovery in coral reef cover, like that in Tourmaline. Like I said,
12 this was right before Stony Coral Tissue Loss Disease and that's,
13 kind of like, thrown out the door now. That's changed up the whole
14 scenario. But as you can see in these other factors are the
15 variation in sea surface temperature, the change in human
16 population, max productivity, larval connectivity, distance from
17 river, distance from nursery habitat and mean productivity. So,
18 we're going to be going through like what benthic category is
19 actually influencing these, looking at the different species
20 composition and identifying what, either fish species or coral
21 species, is actually influencing these patterns. So, this is just
22 really broad results of what we can actually do.

23
24 Next to the U.S.V.I.s, so again, for mean fish abundance, you can
25 see there is a division between Saint Thomas/Saint John. So, it's
26 Saint Thomas/Saint John together, and Saint Croix. Again, the
27 factors that we found to have a high relationship with the fish
28 assemblage through time. You can see degree heating week, so
29 climate change, habitat heterogeneity, rainfall, also sea surface
30 temperature. Again, habitat quality, this is like the variation of
31 dead coral with turf. Also influenced the fished abundance,
32 distance from spawning aggregation, connectivity and hurricanes.
33 So those are those factors. And then, finally with the benthic
34 cover there were only 10 factors out of everything that we found
35 to be significant. And I forgot to mention this is using a distance
36 based linear model and as you can see habitat condition played a
37 major role in identifying the change in benthic cover through time;
38 also, productivity, degree heating week, and sea surface
39 temperature. So, a lot of habitat condition and that influencing
40 the climate.

41
42 So, when we're looking between Puerto Rico and U.S.V.I., and this
43 is just for the permanent stations, you can see that there's a lot
44 of, well, not a lot, but there's a couple of things that pop out
45 to be possibly indicators or important variables. Those are, you
46 know, when we're talking about attributes to the system, we might-
47 - you know, a lot of these models show that the change in coral
48 cover played a big role in defining these patterns in fish

1 assemblages. But we also might want to think about macroalgae as
2 an indicator, also, like, connectivity, and yeah, I think those
3 are the-- So, the habitat, the conditions of the reef with that,
4 a change in coral cover or macroalgal cover and connectivity.

5
6 And then, going back to what Tarsila mentioned. So, one of the
7 goals of our projects or our objective to this project is to see
8 how the quantitative analysis matches up with qualitative
9 conceptual models. And as you can see, Tarsila's results are in
10 the right and most of the stakeholders felt that coral reefs were,
11 that's an important driver to the fisheries ecosystem, also runoff
12 and I should have highlighted coastal development. And you can
13 see, and this is just for the Puerto Rico Coral Reef Monitoring
14 Program, looking at what factors are important to the fish
15 assemblage, you can see that there is some overlap. So, like when
16 we're talking about the conditions of the coral reefs, you know,
17 mean macroalgal cover, change in macroalgal cover, as I mentioned
18 before, also the change in coral cover. These were just the 10
19 more important ones in the models.

20
21 Also, you can see that watershed pollution, that is an overlap to
22 that of the conceptual models with runoff and population density
23 to coastal development. So, there's some overlap of what we're
24 seeing between our quantitative analysis and that of the
25 qualitative conceptual models.

26
27 **JUAN J. CURZ MOTTA:** Thank you, Stacey. So, this section will be
28 pretty straightforward to propose some indicators based on Adyan's
29 work and what Stacey explained, especially those in yellow. Not
30 only the stakeholders believe are important, but the analysis of
31 historical trends are also showing that indeed, those drivers are
32 related to changes in the fish assemblages and in the benthic
33 assemblies.

34
35 So, the next step in the process, and this is basically the answer
36 I gave Tauna this morning, it's an inventory of threats, right?
37 Even though we need to have all the list complete, and this is
38 just an example from what they did in the Pacific. Even though we
39 need to have all those threads listed, we don't necessarily have
40 to use them all on the next steps on the risk assessment that comes
41 down below. And also, these traits can be extracted from the
42 conceptual models using the same logic I just mentioned before,
43 for the indicators, right? This is another example. But also, we
44 saw examples of risk of threats and then followed by risk
45 assessment, this morning.

46
47 Please note that the different FEPs conduct this risk assessment
48 at different stages in the process, right? Like, for example, for

1 the North Pacific, they did it at the same time they identified
2 the threats. What we are suggesting, and what I was telling Tauna
3 this morning and proposing to the group, is that we conduct that
4 risk assessment after we prioritize those threats.

5
6 So, we have been talking, and on most of the research we have done
7 is to populate that first section of the FEP. But then comes the
8 second section that we haven't talked much about it. And actually,
9 I would like to spend some time to prepare the ground for tomorrows
10 and Thursday discussion.

11
12 Based on the loop, on the protocol we're using, the second section
13 is about having a vision, and objective, etcetera, etcetera. And
14 it all starts with the vision, and it can be easily adopted from
15 the CFMC strategic plan. There is nothing wrong with that. It also
16 could be taken from what we have already proposed. The second
17 option is the EBFM TAP, what we call goal, overarching goal.

18
19 Now, and this is where, I believe, the Lenfest Loop becomes very
20 handy in which it uses this nested approach to understand or to
21 decide what ultimately the FEP will be informing or helping with.
22 And this nested vision starts with a nested structure. It starts
23 with the general vision that then gets split into strategic
24 objectives, and then, each one of those, into operational
25 objectives, and then sub-objective, and then all, each one of
26 those, somehow there should be an indicator associated to it, so
27 we can evaluate whether we achieve or not that objective.

28
29 In terms of the strategic objectives is a general statement of
30 what we want. Typically, they're not directly using in management,
31 but they're like a wish list, like healthy reefs, resilient
32 communities, something like that, right? And typically for vision,
33 we will have several strategic objectives. Also, and this, I think
34 is very important, those strategic objectives should be
35 categorized by realm or domain, no? Like, for example,
36 socioeconomic, ecological fisheries, fleet related. And what is
37 important from the Lenfest, and again, is in red, is that once we
38 in this group come up with some strategic objective, we should go
39 back and validate those with the stakeholders.

40
41 So that's why I was mentioning yesterday, Sennai, that definitely,
42 we will write some stuff tomorrow and Thursday, hopefully. But at
43 some stage that needs to go back to whoever participate in the
44 whole process. And as I mentioned before, again, conceptual models,
45 very important to define those strategic objectives. If you just
46 go back and see on that network analysis that Tarsila presented,
47 what is relevant for the stakeholders.

48

1 As I mentioned they're not only categorized by domain or area, but
2 also, it's very important that those strategic objectives are
3 separated and distinguished between what is directly under control
4 of the Council and what is not. And then the question goes, why
5 should I have those that are not under control of the Council?
6 Sarah answered that beautifully this morning. Still, this is a
7 document that then you can share with the other agencies and say,
8 "look, this is what you can do if you care about the fisheries
9 somehow."

10
11 And again, the red big dots are those that we'll prioritize
12 strategic objectives here. And I included that because Tarsila
13 kept saying, "oh, come on, remind people about stakeholder
14 engagement. Remind them." And then she said, "look, in a situation,
15 especially like the Caribbean, where we have data concerns, where
16 we have no enforcement or very little enforcement, the only way
17 the FEP is going to work is that everybody in this room is on
18 board." That's why yesterday I wanted to be very, very, very
19 explicit that whatever comes out of the FEP is going to be, you
20 know, like thumbs up by everybody because if everybody agrees,
21 everybody's going to collaborate on that being applied.

22
23 And then following on the example, I have been developing with the
24 two main red dots. I mean, so a strategic objective could be one,
25 to maintain integrity of coral reef. Again, that cannot be used
26 directly in management, but it is a wish list, right? It is part
27 of the wish list. The second, to understand the effect of
28 recreational fisheries on the fishery system. We don't know that
29 yet, but we would like to know that and then we can create a
30 strategic objective.

31
32 The next step is then to prioritize and then again, conceptual
33 models. I'm hammering this down because for two years we,
34 especially at the SSC, we were, why the heck are we doing this?
35 What's the sense of all this? And then again, conceptual models
36 will be used to prioritize those strategic objectives. The FEP in
37 our opinion, should contain all those strategic objectives, but
38 with a rank. Because we don't have limitless resources and then we
39 will have to concentrate in those that have the highest priority.
40 And those three are basically the criteria to do that
41 prioritization.

42
43 Number two is what Tauna was asking before. Should we use the risk
44 assessment to inform the priority or the other way around? You
45 know, I have already told you about our opinion on that. And then,
46 you do the risk assessment. I won't go into details because that's
47 what Tauna is doing. And this is the stage in the FEP where the
48 risk assessment comes in and is going to inform the whole process.

1 I used the example, there are several ways of doing it. What we
2 chose to do was the one that the aussies are using.

3
4 Now coming still, this is an example of a risk assessment, but we
5 just listen Tauna. Now, this is where things start getting
6 interesting. The operational objective. Those objectives, that
7 management is actually going to use. And then we start with those
8 high priority strategic objectives. And then this, the definition
9 of operational objective, is on the screen, but they need to be
10 concrete, and you should be able to quantify, to measure what's
11 going on with the-- if you achieve that objective or not.

12
13 Those characteristics have already been mentioned before an
14 example of this operational objective will look like, first part
15 of the statement, there is something about increase, reduce,
16 change, minimize, something that is important to who, to the
17 stakeholders. And then, hoping that if you do that, it will have
18 a consequence on profits, biodiversity and protected area,
19 whatever.

20
21 So, this strategic objective is what I want to change and what do
22 I expect to receive if I change that. And then, here is what I see
23 most of the discussion going. But I don't know, because we really
24 need to think about that. The beauty about that, is that we need
25 to concentrate only on those that we think are priority. By the
26 way, these types of objectives are already included on the Island-
27 Based Fisheries Management Plan. And then, we could start with
28 those, we don't need to reinvent the wheel.

29
30 I just put an example. This is the second objective of the Puerto
31 Rico fisheries management plan, which is reduce by catch and waste
32 in the fishery. The only thing that we will need to do is to extend
33 that and add the following statement. For example, to increase,
34 maintain diversity of commercial important fish assemblies. This
35 is just an example that I can-- why is it important to come up
36 with this second statement? Because then you can refer back to the
37 indicator and something that I'm going to describe in the third
38 step, which is the performance measures. So, we can actually
39 evaluate whether we achieve that objective or not.

40
41 And then, what I put down here is-- I'm developing the example of
42 the coral reefs. I'm developing the example of the recreational
43 fisheries. And then, for example, associated to the first which we
44 have, which was the integrity of coral reef, the operational
45 objective would be to increase total coral cover to improve fish
46 habitat or increase herbivore biomass, improve coral recruitment.
47 In the case of the recreational fisheries is create fisheries
48 information. That is something that Sennai has been advocating

1 for, so that could become operational objectives built in the FEP.
2 And then to increase data availability. And then, oh, create
3 recreational fishing licensing to initiate fleet sensing and
4 understand that fisheries.

5
6 As I mentioned before this should be clumped into different groups.
7 We are proposing seven categories based on the work that SSC did.
8 I don't know if you remember, we classify everything into those
9 seven groups. And also very important, again, classified those in
10 strategic objectives that are under the control of the Council and
11 the control of other agencies.

12
13 So, which bring me to one of the first things that I already
14 mentioned yesterday, but I would like to put it formally on the
15 table. One of the things that we need to do in these coming days
16 of work is to revisit those objectives. I put in green, those
17 actually are strategic objectives. But then now we have to create
18 the operational objectives based on the results of the ESR and the
19 results of the conceptual modeling. So far there is only one that
20 could be considered an operational objective. The other colors
21 refer to things that are more like plans or actions. Two
22 [inaudible] are reaching some of those operational.

23
24 The second reason why I am proposing that we've revisit this is
25 because there are elements of concern in the conceptual models
26 that all stakeholders agree are not being considered here. And
27 then we should basically add those over the-- Now, and this is
28 something that I promise, Kevin, yesterday, how do we get there?
29 How we implement these things? And how do we assess them? What
30 Lenfest says is, you need to have some sort of performance
31 measures, right? Somehow, and when we heard a little bit about
32 that this morning when Sarah was explaining what they're doing in
33 her part of the world is, okay, we need to have this, not only
34 what we are going to measure, but what will be the reference point,
35 right? Sometimes, as she mentioned, having a reference point will
36 be really, really hard to have. However, we can consider, and Sarah
37 mentioned that, that instead of having reference points, we have
38 reference change. And she was saying that the profit increase
39 always be considered okay.

40
41 Now, the challenge-- and then from, single species view, that's
42 perfectly fine. But now we run the following challenge. And
43 Michelle and Todd, and I think Rich brought to the table the
44 following. What we consider is bad for species A could be good for
45 species B. So somehow, we need this framework that allows us to
46 put in, if you wish, to put it figuratively in a balance what
47 sargassum is doing for one species and what Sargassum is doing for
48 the other species, right?

1
2 If we have-- I'm going to use this very, very simple example. Let's
3 say our fisheries is made of only two species, right? And then 60%
4 of prey, 40% of predator, right? And that equals two \$1,000
5 revenues. What is better? to have a system where you have \$2,000
6 revenue, but then you have 90% prey and 10% predators. So, you are
7 having to balance two aspects that need to be considered, right?
8 So, what could be good from an economic point of view,
9 ecologically, might not. But perhaps, perhaps having 70% and 30%
10 will be sustainable. And not having 2000, but 1000 and a half,
11 which is better than the 1000 that we have now.

12
13 So, this, from a multi-specific point of view and is what I'm going
14 to try to exemplify, what is our view on that on that sense? I
15 just want to finish these slides saying that to have a performance
16 measure, we need two things. What are we going to measure? which
17 is the performer metrics. And also, what is the reference point?
18 or what I just mentioned, what is the change of reference? So now
19 think about this, in a multi-specific multi-driver reality, there
20 is not up, there is not down. Yeah. Imagine that, as I said, in a
21 two-dimension reality, a two-species reality, one might go up, the
22 other might go down, right? But what is the balance? Imaging in
23 our system, which is 82, positive and negative will be really,
24 really hard to define in that multi-specific universe or reality.
25 So that's why we are going emphasize reference of change. And what
26 I'm going to spend some time is, what would be that reference?
27 towards what?

28
29 Just to finish a little bit on what the-- this is the last part of
30 section three of Lenfest. It is like, basically, we used those
31 indicators we selected in step one, and then we choose some of
32 those to have our performance metrics. As I mentioned before, and
33 Sarah gave very nice examples of this, we can use this within the
34 context of the single species. However, in this EBFM multi-
35 specific, we do not have it. And that will pose a challenge.

36
37 Let's suppose at this stage that we cannot come up with a
38 performance measure in a multi-specific world. We receive very
39 good example, and I just wrote down that when Sarah was speaking,
40 very, very good examples. How can these FEP be directly used on a
41 single stock assessment? So, let's suppose what I'm going to tell
42 you a continuation is crazy, still, the FEP will be useful within
43 what we call at the beginning of this presentation and ecosystemic
44 approach to fisheries management. I just want to finish this
45 presentation. This is more for the Science Center for the
46 analytical part.

47
48 I want to start this; I extracted a few slides from what we

1 presented at the national SSC. You can see all the people from the
2 EBFM TAP were included in that work. Again, it's based on a
3 multidimensional, multivariate understanding of the fisheries.
4 Here we have what is happening with the landings, right? This is
5 what the fishers are reporting to the local agencies. In here,
6 this is the case of Puerto Rico. The only thing that we can see
7 here is that the four regions of Puerto Rico are fishing different
8 stuff. That's not a mystery. We have different environmental
9 conditions. We also have different gears used in different places.

10
11 I want to show this type of graph, because that's very similar to
12 one of the graphs on length biomass that Sarah presented at the
13 end of her presentation, just to tell you that that type of data
14 they're using is very similar to this. I use here only biomass,
15 but what I'm going to show you is that it can easily be translated
16 to length and length biomass frequency, or only abundances. Any
17 metric you think will be pertinent. This is just how the different
18 gears are used in the different regions in Puerto Rico, and how
19 that use has changed through time. So, just to say, "Look, there
20 is no mystery that the fisheries or the landings are different.
21 It's because we're using different gears. And also, those gears
22 are changing through time."

23
24 Because I talked already about Puerto Rico, now I'm going to
25 develop the exercise with the Virgin Islands, right? And these are
26 the landings for the Virgin Islands. Again, no surprise, what
27 you're getting in the different islands is not the same. Actually-

28 -
29
30 **SENNAI HABTES:** Sorry. I just wanted to make clear. You still have
31 time? You have until three and we're only at 2:15.

32
33 **JUAN J. CURZ MOTTA:** Okay. Okay.

34
35 **SENNAI HABTES:** So, if you want to go back and look at the specific
36 results from these plots and describe the trends to help people
37 understand the type of operational objectives that we need to
38 create, now is a good time to do that.

39
40 **JUAN J. CURZ MOTTA:** Beautiful. Okay. These, more than the
41 operational objectives, is related to how we are going to assess
42 whether we meet those, from a multi-specific point of view, right?
43 We saw examples of how we can have performance. A typical perform
44 performance metric is percentage of overfished stocks in a region,
45 right? So, like that you can say, "okay, we're doing well or we're
46 doing bad."

47
48 I'm presenting those examples to have the equivalent from a multi

1 specific point of view. This approach is based on multivariate
2 analysis. Actually, nonmetric, nonparametric multivariate
3 analysis, which are based on similarity or the similarities on our
4 observations. In this specific-

5
6 And thank you I really appreciate that, because I'm just talking
7 like-- I'm losing connection again. Now I have internet back. Thank
8 you, Cristina. I don't want to be rude with you, but the thing is
9 just now I want to draw things on those. Yeah, yeah. But now I'm
10 back. I'm back.

11
12 **SENNAI HABTES:** Just a point of clarification, guys. If you are
13 talking between people for the benefit of the people that are
14 online and they will be reading the transcripts later, even if it
15 is an interpersonal conversation associated with stuff, please use
16 the microphones so that we can capture the information for all
17 aspects. We apologize to those online. We had some internet
18 connectivity issues. J.J. will be putting his presentation back up
19 shortly and we will continue with his presentation.

20
21 **JUAN J. CURZ MOTTA:** Okay, we're back.

22
23 So, I was saying that thank you Sennai for you coming because I'm
24 assuming here, we are all familiar with multivariate statistics or
25 in this particular case, graphical representations of multivariate
26 data. And MDSs have been in the ecological literature for some
27 time but I'll take a few minutes to explain this.

28
29 So, each one of those symbols, dots, in that representation is one
30 of observation. In this particular case, one observation is the
31 structure and composition of the landings in that particular
32 region, in that particular year. So, what we see here is whether
33 the different observations are similar or dissimilar to each other.

34
35 The interpretation of this is that all the observations done on
36 the North of Puerto Rico were different from those made on the
37 West, South, and East. In the same token, we can see that what
38 happened in the South and the East is very similar. Their landing
39 is very similar, right? Or more similar than what is happening in
40 the North. We can also see that the temporal variation in the North
41 is higher than the temporal variation in the other three regions,
42 right?

43
44 So, in this basic-- this is a representation. What is being landed
45 in Puerto Rico? Is it similar? Is it different? Please note this
46 is the same type of results that Stacey was presenting before. And
47 this is key because we can go back to each one of those years, to
48 those regions, and then we have data on what we are landing, but

1 also, we have data on what is being seen by fisheries independent
2 observation. We also have data on environmental data, and we have
3 also data on socioeconomics. And we can start doing all these
4 relationships. And then, what our project will offer to the EBFM
5 TAP are those drivers quantitatively chosen from those multiple
6 correlations. Right? Thank you, Sennai.

7
8 This is used a graphical representation. What you see here are
9 hypothesis, testing, multivariate analysis that tells you whether
10 those differences that I just described from a graphical point of
11 view are statistically significant or not.

12
13 So, I want you to know that for example, the region or a scene in
14 the graphs were statistically significant. There is no mystery
15 there. But also note that time was a statistically significant.
16 Even though you can conclude from this, that spatial differences
17 are larger than temporal differences. And then when I go back to
18 the U.S.V.I. example, we will go into detail about the trends,
19 because going back to section one of the Lenfest that we need to
20 describe what is happening to the fisheries, these results will
21 inform or will be related or summarized in the FEP to let the
22 reader know, the Council know, what is happening to the fisheries
23 from a multi-specific point of view. Okay?

24
25 This is, well Sarah explained that, but it's the same principle.
26 On top, you have the different observations. It means you have the
27 different regions and on the letters that we cannot see here, you
28 have the different years. So, it's basically the same observations
29 we had in the previous graph, organized by region and ordered by
30 time per region. What you have here on the left are the list of
31 species or taxa or groups of species that are being reported by
32 the fishers. These species, and this is very important because it
33 will relate to something that Reni mention-- I'll repeat that when
34 he comes back. Reni mentioned that there are important groups of
35 species that shop together in the landing. And that's not a mystery
36 if you're talking to our colleagues, the fishers.

37
38 So, the red lines identify those groups. Whatever is with a red
39 line means they have similar patterns of spatial and temporal
40 variation. Same as Sarah's graph, each one of those shades tells
41 you whether-- because here, we're using biomass, whether there is
42 more or less biomass. In the case of Sarah was all the way around
43 because it was a relationship between length of biomass, less of
44 a color, means good, a lot of dark blue, means really, really bad.
45 Skinny versus fat. Okay.

46
47 The only difference in this graph from--yeah?
48

1 **ORIAN TZADIK:** Just because I can't see. Each of those headings,
2 does it go-- There you go. Thank you.
3
4 **JUAN J. CURZ MOTTA:** Chronologically.
5
6 **ORIAN TZADIK:** Chronologically. But it starts over each time,
7 right? In each--
8
9 **JUAN J. CURZ MOTTA:** Yes.
10
11 **ORIAN TZADIK:** Okay, that's what I was asking.
12
13 **JUAN J. CURZ MOTTA:** Yes.
14
15 **ORIAN TZADIK:** Thank you.
16
17 **JUAN J. CURZ MOTTA:** Thank you. Okay. So, the only difference with
18 Sarah's graph is that, on the left, we also have analyzed, through
19 an index of association, what species behave similar or not. Now,
20 what you have here is on the, again, on the X-axis here, we have
21 the four regions, right? And then for each region, we have the
22 complete time series, right? Starts all over again. And then as
23 stock bars, like traditional stock bars, you have, how much
24 biomass, total biomass was captured using these different gears.
25 We have nets, traps, long line, hand lines and the blue one down
26 is diving, by hand.
27
28 So, it can show you-- and I'm not showing all the results, but we
29 have done this for everything --that there is a high correlation
30 between what is happening with the landings and what we are seeing.
31 Of course, if you compare absolutely what you see in the visual
32 census, it has nothing to do with the landings. However, when you
33 analyze the patterns of differences in time and space, they are
34 the same or very, very similar. And that's very informative. What
35 is that telling you? Even though we have-- I don't know what we
36 haven't said about the landings data, right? But at least at this
37 level, when we take in consideration everything, the patterns of
38 differences that we are observing with the landings is the same
39 we're observing with the independent censuses. Moreover, there is
40 a higher correlation between these landings and the environmental
41 information.
42
43 Again, I'm not showing those result. I can show those when we go
44 into the details of this discussion. And of course, this graph
45 shows that there is an intrinsic correlation in how I'm fishing,
46 what is my environment and what I'm getting. Which there is no
47 mystery, but traditionally all these correlations are not included
48 in our models. Yes. Go ahead, please.

1
2 **ORIAN TZADIK:** Sorry, just to clarify. When you said that you see
3 the same trends, do you mean you see similar anomalies occurring?
4 Or are you saying that you're seeing the same trends with regards
5 specifically to species and that sort of thing? Um, or are you
6 saying like, well, we always see 2006 and 2008 as these outliers
7 in every data set.

8
9 **JUAN J. CURZ MOTTA:** Exactly that. Let's see if I have it. No, I
10 don't have it in this presentation. It's not open. But I can show
11 you-- It is the second. It's the second. It's whenever you see
12 2015 having a jump on the landings, you also see that happen on
13 the visual censuses. And you see that also happening in your
14 environmental data.

15
16 The correlations in the multivariate space between the three
17 matrixes are statistically significant. So, that's telling you
18 that even though we have criticized a lot the landings data not,
19 not to be reliable, and I get it, you can say, "Okay, let's put a
20 little bit of that and a little bit of those" like, you can think
21 of only lobsters and do something with the lobster that are-- which
22 will be impossible, is to manipulate the intrinsic correlation
23 matrix behind all the species.

24
25 So basically, the message that I want to translate is, even though
26 it was not my original idea is, if we analyze the fishery system
27 as a whole with all the species, there is rich information there.
28 Just put a very small example. We are-- well, it's already out
29 there. We are even-- No, I won't go there. Sorry. Yeah, because it
30 can get longer, even though-- I'm abusing the license you gave me,
31 Sennai.

32
33 **JORGE R. GARCÍA-SAIS:** J.J. a question. To clarify. What you're
34 saying is that what you see, the pattern, is that when you see a
35 fluctuation in the total biomass or total landings, if you go to,
36 at least, to the dominant species, you see that the fluctuation is
37 a correlation between the species, you know? So, they increase and
38 decrease as a group, or no?

39
40 **JUAN J. CURZ MOTTA:** Yeah. Look at the screen. You see this graph
41 over here? A bunch of them are going up. In this graph, a bunch of
42 them are going down, similarly. These start to go down and up. So
43 yes, they come up-- They do--

44
45 **JORGE R. GARCÍA-SAIS:** That's what I was saying yesterday. When
46 told us about the multi-- The thing is, is that it is obvious, and
47 it is simple. And we've been seeing that for decades, here. For
48 decades. And we're trying to explain it with very sophisticated

1 models. And it's--

2 **SENNAI HABTES:** Reni, I'm going to ask you to hold off on this for
3 just a little while until he finishes [crosstalk] This is good.
4 J.J. [crosstalk]
5

6 **JORGE R. GARCÍA-SAIS:** [crosstalk] it's a pattern that comes out
7 of the picture.
8

9 **SENNAI HABTES:** It's true. And that is the point of doing this
10 type of management. Julian Magras.
11

12 **JULIAN MAGRAS:** I just want to say that this is a very, very long
13 presentation and I think we should have done it in pieces because
14 there's so many questions to be asked and to go back to ask, all
15 of them, I think we're going to be here for another week just to
16 ask all the questions. Because it's a lot of information that's
17 getting pushed out there, and it's becoming confusing. I think
18 we've gone from eco-based into something totally different here
19 now. So, I'm just saying that from the fisherman standpoint. I
20 have a lot of notes here that we are taking, but I think we are
21 all over the place and I think we have gone off track here for a
22 minute. So, I'm just throwing that out there.
23

24 **SENNAI HABTES:** Well, I appreciate the comment, Julian. I think we
25 can go back through the slides as we go through, if you have
26 specific questions that lead to other conversations and discussion
27 pathways, we can always bring back the information.
28

29 The purpose for having all of it in one presentation was to allow
30 to see the synthesis across the different areas that the Lenfest
31 group was presenting on, which is very necessary for us in the
32 EBFM TAP that we're going to be talking about later in the week.
33 But I think, let's let J.J. finish up the presentation and then,
34 anywhere that you want clarification on, I'll give you time to get
35 that clarification. Okay.
36

37 **JUAN J. CURZ MOTTA:** Thank you, Sennai. For your benefit, Julian.
38 Basically, the message of all these slides is as follows. As it is
39 now, every time one species goes down, that's bad for you, right?
40 Or for the fishers, for the industry. If the biomass goes down,
41 that's no good. Right? The message of what I'm trying to say here,
42 in the two minutes is, using this approach, there is no bad, there
43 is no good, there is only change. Some species can go up and some
44 species can go down. That doesn't mean that that is bad, it's just
45 change. At the end of the presentation is, what is the change that
46 we are prepared to accept? Under this approach, some species can
47 go down. Because let's suppose there is no fishing, right? and
48 somehow the predator goes up, obviously the prey is going to go

1 down. And that doesn't mean that's bad. It's part of the natural
2 process. So, it's an alternative analysis where you can have you
3 can have a balance of things that go well and things that don't go
4 that well.

5
6 But anyhow, the next slide was the case of the U.S.V.I. Please
7 note, basically the interpretation of this representation here is
8 similar to what's happening in Puerto Rico. Regions or islands are
9 very different. What you're landing in Saint John is not the same
10 as your landing in Saint Croix and that's not a mystery because we
11 know that in Saint Croix is mostly diving and then in Saint John
12 and Saint Thomas, we're using traps.

13
14 With this, I want to show, this is basically the same
15 representation as that, right? The only thing here, the size of
16 the bubble is total landing for that year, that region. The
17 conclusion from that representation is that landings in Saint John
18 are really, really, really low. So, for what comes next, I excluded
19 Saint John. I'm talking only about Saint Croix and Saint Thomas.

20
21 Here, we are concentrating only in Saint Thomas. And we have
22 divided Saint Thomas in three arbitrary regions, North, South, and
23 West. We did that because since I don't have an NDA with NOAA, we
24 had to clump the data. Even though you report that data at a
25 smaller spatial scale, we clumped that into these regions. And
26 what we have again, is that the South, not only there are
27 differences between the islands, but within the islands there are
28 also differences. We have the South here, we have the West here,
29 and then we have the North. And then you see a line that connects
30 all the years.

31
32 Let's suppose here for the North, these three angles. What you
33 have here, this is the direction in which the landings, the
34 structure and composition of the landings, changed. The conclusion
35 here is that the structure and composition of the landings changed
36 through time in a statistically significant way. The point here is
37 why change, what species am I landing in 2012 that I'm not landing
38 in 2020. Please note, Julian, and this is why I ask you, that
39 between '15 and '16, there was a drastic change in all regions,
40 even though the regions were different. The same change was
41 observed in all three regions. A possible explanation was perhaps
42 we changed the way we reported the landings. But you told me that
43 happened in 2017 after we see this this shift.

44
45 Again, this is what gears are being used in the different regions.
46 Not trying to explain those differences. Please note that contrary
47 to Puerto Rico, the differences among regions within Saint Thomas
48 are not related to the use of different gears. They're related to

1 something else. For example, it could be environmental conditions.
2 We haven't explored that yet.
3
4 Now, this is what happened. I'm now zooming in, in the South of
5 Saint Thomas. You started here 2012, and you end up here in 2021.
6 This is, again, taking into consideration all the species. The
7 conclusion here that the structure and composition of the landing
8 changed. And we can go back to the graph that I explained before
9 and identify what species, for example, this one here, I was not
10 landing at the beginning and then what species I am landing now.
11
12 So, for example, Reni, we have here this blue box, right? Those
13 species or group of species were not being captured or they were
14 captured but relative biomass was not that important before 2015.
15 But then they started to show up more. These, in the yellow box
16 here, you have species that did the contrary. They were landed a
17 lot, but now they're not as landed as before. And for you benefit,
18 I just want to mention that those shades of black and gray and
19 white have been standardized by the maximum that that species was
20 landed. Basically, the rationale behind is like, okay, if we caught
21 in a given year, 2000 tons of red hind, that's the maximum that we
22 could ever catch. I mean, that was the assumption. And then
23 everything else was standardized in relation to that maximum value
24 that that particular species or group of species could have.
25
26 So, what I'm saying here is, yes, things change, but sometimes
27 some go up, some go down, right? We cannot evaluate the fisheries
28 as a whole, saying, "ah, because this in yellow went down, is doing
29 bad, because then others go up." The important step here is then
30 to identify what is better in terms of our operational or strategic
31 objectives, right? So, in this representation, what I-- can I go
32 to the top left? okay. Is what you mentioned before, Reni, that
33 there are the groups of species that are having similar trends
34 when one show up, the other show up and others and so on.
35
36 Now, what is the reference point here? And this is where I can go
37 back here. Let's suppose this is, as I was saying before, that's
38 a circle that represents half of the landings were groupers and
39 the other half were parrotfish, right? And then perhaps over here,
40 then you had like, this. 20% were groupers and 80% were parrotfish.
41 And then over here in 2021, everything was parrot fish. The point
42 is-- and we can do this with socioeconomic data, because we know
43 how much value there was here, how much value was here, how much
44 value was here. And then the reference point from this multi-
45 specific point of view consists of the stakeholder deciding which
46 one of these states will be an optimal state for the fisheries.
47
48 Of course, I'm putting here a very basic example with only two

1 species, which is totally unreal. But the idea is to define a
2 priority, what will be an ideal state for the fisheries, taking in
3 consideration the multiple species, the value of that species, and
4 the different environmental factors that are affecting that
5 system.

6
7 And then instead of saying, "Okay, this is my reference point" is
8 let's say, "My ideal state is something here" right? What we do is
9 evaluate every year using these multivariate techniques, whether
10 my line is moving towards that or not. We evaluate whether the
11 rate of change is towards that ideal fishery system of fishery
12 composition and structure.

13
14 And with that, I would like to finish the presentation. Of course,
15 happy to take question and go back to any of the slides.

16 17 **Questions/Comments**

18
19 **SENNAI HABTES:** Great. Thank you, J.J. I'm sure there will be a
20 lot of questions, so we're just going to go straight to it and
21 open it up. I think Cristina, if you keep the slides up and those
22 of you online, if you raise your hand, Cristina, will let me know.
23 I see Kevin's hand up first, so we'll go ahead and start with you,
24 Kevin.

25
26 **KEVIN MCCARTHY:** Thanks. So, I noticed that the RVC data you had
27 is only going back a few years, is that right? And it does go back
28 farther. I know it's spatially limited as you go back, so maybe
29 it's not really what you're looking for. Was that the reason why
30 you didn't use the full-time series? The methods did change and
31 all that, but the team has developed some conversions for that.
32 So, I'm just curious about that because it's a great tank data set
33 to use.

34
35 **JUAN J. CURZ MOTTA:** RVC. You mean these landings? Ah, NCMP. I'll
36 refer to Stacey.

37
38 **STACEY WILLIAMS:** To tell you the truth, we were just-- yeah, there
39 is data back before involving benthic data and everything. I don't
40 know why we didn't select that data. Maybe because it didn't have
41 benthic data to associate it with benthic composition. And also,
42 we have, you know, like, recent years and we're deciding whether
43 we contact Iliana again to have her extract all the environmental
44 data because she has to do it by point-by-point basis. So, we're
45 trying to decide on that.

46
47 **SENNAI HABTES:** Orian, go ahead because it's related to this point
48 then I'll get [crosstalk]

1
2 **ORIAN TZADIK:** To answer, Kevin. I think NCRMP before 2015, I
3 think, was Parguera, Buck Island and Saint John. So, if you want
4 to get a full spatial representation, that's another thing too.
5 And, as you mentioned, they were doing transects instead of point
6 counts.
7
8 **SENNAI HABTES:** Is it related to this? All right, Todd, go ahead
9 because it's-- Okay. so then, Edwin, I see your hands up. You go
10 ahead.
11
12 **EDWIN CRUZ-RIVERA:** Yeah, this one's for Tarsila. You had one of
13 the MDSs, or I don't know if it was a one-dimensional scaling,
14 graphs that had data separated by, it had Saint Croix, what I
15 assume from the abbreviations that included Saint Thomas and Saint
16 John together, but there were other labels that were Virgin
17 Islands. So, my question is whether that has-- yeah, that's the
18 one.
19
20 So, my question is whether those differences in labels are because
21 the data themselves can be found per island or for all the Virgin
22 Islands together, or whether there is some degree of scaling up
23 component here, some hierarchical component that for some
24 variables you can say that all Virgin Islands are equally affected
25 or separate them per island.
26
27 **TARSILA SEARA:** Yes. Thank you for that question. This is Tarsila.
28 The answer is much simpler. It's simply because for some of the
29 conceptual models we had, specific conceptual models for Saint
30 Croix and for Saint Thomas and some of them we did together for
31 the whole U.S.V.I. because we didn't have enough people to actually
32 do separate ones. So, for managers, you have the whole U.S.V.I. as
33 one group of conceptual models. So, it was managers from both
34 island groups. And the other one is the experts. So those were two
35 that we had everybody together. And then you'll also notice that
36 the SSC is only the one that gets repeated every time because it's
37 just, yeah. So and's the reason why.
38
39 **EDWIN CRUZ-RIVERA:** Thank you.
40
41 **SENNAI HABTES:** Todd.
42
43 **TODD GEDAMKE:** I was dancing with Kevin because this one's directed
44 at him. The 2015? No, no, 2015. I thought that was great work.
45 Great presentation. I mean, some of the breaks that you saw on
46 there are why I'm now looking at him, because there's very few
47 people I know, that know the data better than he does.
48

1 So, I'm just wondering, from 2015-2016, does anything jump out at
2 you in terms of-- I mean, I know the forms were changed earlier.
3 There was, we had 2008, we had 2009. There was a period where there
4 was a lot of angst in everyone, and reporting might have changed.
5 But from your gut level, I mean, is there something in that--
6 Because what I saw was pretty obvious changes in what they're
7 doing, and there may be other aspects to it, but from the data
8 standpoint, is there something that you could enlighten us with on
9 that?

10

11 **KEVIN MCCARTHY:** Well, I don't know how enlightening it'll be, but
12 I'll answer. So, in the Virgin Islands, for sure, there were
13 fundamental changes throughout the time series in-- and recall
14 that the Virgin Islands fishing year goes from July 1 to June 30th
15 of the following year. So, all of the changes would've been mid-
16 calendar year. So, in 2011, July of 2011, there was a fundamental
17 change in the forms in the Virgin Islands and species-specific
18 data was reported for the first time. Now, prior to that, you could
19 report conch, you could report lobster, but the finfish were, were
20 in species groups.

21

22 And then there was another change in 2016 where-- so let me back
23 up. So, in 2011, the forms were such that you could report by
24 species but there were particular species that were associated
25 with particular gears. So, if by chance you caught something that
26 wasn't on the list for your gear, you could write it in, but you
27 might not have, right? And then in 2016, it changed, so you could
28 report any species with any gear. And then in 2019, some additional
29 species were added to the forms because in the 2016 change, a lot
30 of the HMS species went away. They were just taken off the form,
31 like a lot of the sharks.

32

33 So, there were some really fundamental-- you're right. There were
34 some fundamental changes in the reporting forms that could really--
35 - you really have to be aware of, you know. I mean the case all
36 the time with fishery dependent data, right? What could be
37 reported? What were the management things in place that might drive
38 the patterns you see? So, one of the things that we want to do,
39 just put in a plug for future research, is to just get a data set
40 of those form changes, because it's more than just what species
41 showed up. Now you can report discards in a way you couldn't in
42 the past. You could report discards in the past, but they were all
43 species of fish or lobster. So, there's a lot of form changes and
44 I'd be happy to sit down with you all and go through those.

45

46 **TODD GEDAMKE:** Thanks, Kevin.

47

48 **KEVIN MCCARTHY:** One last point is, there are many, many fewer

1 form changes in Puerto Rico but a few, a few that have happened.

2
3 **SENNAI HABTES:** Okay. So, Reni and then Julian.

4
5 **JORGE R. GARCÍA-SAIS:** Okay. Just a couple of comments regarding
6 some of the multiple graphics that we've seen here. Regarding the
7 annual trends and spatial trends of fish abundance from the Puerto
8 Rico Coral Reef Monitoring Program. That's a data set that includes
9 right now 42 reefs. And I just want you to give a heads up of the
10 magnitude of variability that may be involved in this data. Okay?
11 You can go to a reef, sample it at 9:00 AM without wind and without
12 current, and then one hour later you sample it in windy conditions
13 and current and the variation can be huge. Okay. Huge, more than
14 50, 60% of variability, in terms of the total abundance. So that
15 is something to be dealt with, that you need to deal with.

16
17 Also, the abundance for a given station is pretty much driven by
18 numerically dominant species. Some of them are goby, okay. For
19 example, the masked goby may represent 80% of the total abundance
20 of those values that you saw there, in many of the stations.
21 Sometimes it's a short-term variation associated with wind and
22 current. Other times it's a permanent or a longer lasting variation
23 associated, for example, with the hurricane pass. When a hurricane
24 passes, this small fish that are in the water column cannot be
25 retained in the reef, and they are washed away for months, for
26 years. We have been measuring declines of the population for more
27 than three years after the pass of a hurricane. Okay?

28
29 Now, that brings up a big variation just because it's a numerically
30 dominant species, but also because it's the forage species of other
31 species. So, it brings about a long-lasting term, potentially, in
32 terms of biological diversity in the fish community. Okay? So just
33 keep that in mind and process it. You know, because it's not an
34 over exploited fish. It's not overfished. So, it comes back, okay?
35 It comes back a few years after.

36
37 Now, the largest and most important change in the community
38 structure of fishes within the neritic zone is associated with the
39 decline of the grouper populations. Many of the groupers. Starting
40 with the nassau, yellowfin, probably others that hang around with
41 the nassau grouper during spawning aggregations, okay? The case of
42 Puerto Rico is that we have not seen nor measured a comeback of
43 those populations in more than two decades of management, now.

44
45 Contrary to the U.S.V.I., particularly South of Saint Thomas, MCD,
46 which has been a successful management initiative that has a
47 allowed these large groupers to come back, you know? But
48 apparently, it's a very regional effect because we are not seeing

1 that come back in Puerto Rico whatsoever. And it's starting with
2 the red hind and finishing with the nassau grouper and the black
3 grouper and the yellowfin grouper, none of those have come back.

4
5 So, when you look at these changes in the populations that you see
6 that you like more of this and less of that, you have to think
7 that you might not be able to control that, no matter what you do,
8 unless you are thinking outside the box like many of us have been
9 trying to think about that way because of anything else works. You
10 know, we can add centers of mariculture and try to restore the
11 populations by artificial seeding of the species and so forth.

12
13 But that's not the point. The thing is that probably the most
14 interesting and important aspect of this presentation, in my
15 opinion, is the fact that you come 20 years later and recognize
16 something that we had seen 20 years ago. You know? And that is the
17 fact that when you see these fluctuations in the landings and you
18 look at the species composition, you see that most of the species
19 come up and down together. You see, that's kind of telling you
20 that this may be a matter of a changing effort, you know? And then,
21 but why? And why is this going on? Well, there's a lot to be
22 explained in terms of socioeconomic activities.

23
24 Also, another aspect that you need to incorporate when considering
25 this ecosystem-based management options is the fact that fishermen
26 have told us from decades ago that their fisheries are demand
27 driven. Not only demand driven because of the amount of landings,
28 of the amount of pounds of lobster, but also of the types. Today,
29 even talking with Nelson just casually, telling me, "Look, is that
30 sometimes, the guy at the restaurant tells me, 'Nelson, don't bring
31 anymore queen snapper. Bring me lobster. I need lobster. I'm not
32 going to buy you any more queen snapper for the rest of the month.
33 Bring me lobster.'" So, what do you think Nelson does, bring more
34 queen snapper? No, he doesn't go fishing for queen snapper. He
35 goes fishing for lobster.

36
37 So, you know, the demand in this industry regulates the effort and
38 the type of effort that fishermen undertake. And it may not be the
39 same in Puerto Rico as in Saint Thomas. So, all these
40 considerations are important, but the fact remains that whether
41 one way or another fishery in this area seems to be a lot determined
42 by commercial demand and by the type and amount of effort that the
43 fishermen exert on the fisheries. And we've been saying this for
44 a long time.

45
46 **SENNAI HABTES:** Oh, is that a question? Yeah, go ahead.

47
48 **JUAN J. CURZ MOTTA:** Yeah. Well, a comment on the variability of

1 the observation. What you have now on the screen is the same that
2 I explained before for Saint Thomas, but now is for the West region
3 of Puerto Rico. It goes from 2003 and then ends up here 2019. So,
4 from looking at the landings, we're just describing a pattern where
5 important changes occurred during those 20 years or less than 20
6 years. What other drivers of those changes? But you have proposed
7 one of many potentials. And then we can explore that by multiple
8 correlation with the different data matrixes.

9
10 But I wanted to refer to the spatial variability. In this specific
11 case, we have only one data because that's how the data was given
12 to us from the Science Center. What we have here, and also what I
13 showed you before, what you have at the bottom of those are
14 groupers, as you mentioned before. But now we have here-- Oop, I'm
15 going up, sorry. What we have here is the same, but for the data
16 you have been collecting, Reni. Please note, even though the line
17 is not exactly the same, you start here in 2004, on the right of
18 the diagram and you end up on the 2019. Now, I ask you, how many
19 stations do you have in the West region? About 20 or 18 or so.

20
21 Okay. What you have there that single dot for 2004 is what is known
22 as the centroid equivalent to the average. That is taking into
23 consideration, not only the variation that you have among the
24 different reefs on the West, also among deep between different
25 depths and also between different transects. And built in that
26 single point is then all those changes that happen due to the
27 specific time you went and the special conditions you found.

28
29 What I want to tell you is then what we're trying to do here is,
30 on top of all that variability-- that you're totally right, is
31 happening. Then what is striking, and this is what I was telling
32 Orian before, is that there is a significant, even though not high,
33 it is only 47%, correlation between the temporal patterns in what
34 the fishers are reporting and what you're seeing in the water. The
35 interpretation out of that result is some biological sign of or
36 ecological sign of change we're picking up there. There something
37 happening with the structure and composition of the assemblages
38 that two different methods of reporting on that, are picking up
39 those changes.

40
41 **JORGE R. GARCÍA-SAIS:** Is it a linear relationship or what?

42
43 **JUAN J. CURZ MOTTA:** No, no, no, no. It's monotonic. All this is
44 happening in a nonmetric space. In a very simple to understand
45 spaces is whatever is closer is more similar to things that are
46 more separated. That is simple to interpret. However, it has the
47 disadvantage that we cannot quantify in terms of biomass or
48 magnitude, how much was that change. However, we can definitely

1 say that the changes happened in the same direction.
2
3 **SENNAI HABTES:** Okay, I'm going to-- Reni. Reni.
4
5 **JORGE R. GARCÍA-SAIS:** That's going to be little more difficult to
6 digest.
7
8 **SENNAI HABTES:** Yeah. Reni, I have to hold you at that one. If
9 there's more time later, I'll let you ask more questions, but
10 Julian Magras has been patiently waiting to ask his questions, so
11 I'm going to open it up to him.
12
13 **JULIAN MAGRAS:** Well, it's not really a question. It's a few
14 comments. And Reni, thank you for what you just did there, because
15 he brought a lot of my points to the table. From 2004 I've been
16 involved in this process from the Sustainable Fisheries Act, and
17 I watched things change year by year. One of the things that
18 changed a lot in those years is the way the fishermen report.
19
20 I've been involved in all of the changes of the catch report forms.
21 The last one that was done, and I gave you a copy today, J.J., was
22 to account for the species identified by the SSC that we needed to
23 get information on in order for us to move forward, to do stock
24 assessments and see what those species were doing. So, with that
25 said, you know, I look at the difference in how the fishery has
26 performed over the years, and there's a lot of different reasons
27 why certain species are targeted now and wasn't targeted before.
28 One of the main things is what the market demands.
29
30 The way the fishermen fish, how they move from areas to areas.
31 Let's use a large grouper as a perfect example, we have put so
32 much protection on these, what I call now predator. You remember
33 you said earlier. The predator goes up. They are now predators.
34 They're more vicious than the actual lionfish because the bigger
35 they get is the more they're eating. They're eating the lionfish.
36 When they first came into the picture, the sharks were afraid of
37 them. The fishers were afraid of them. A lot of the different
38 species were afraid of them. Well, guess what? Everybody's eating
39 them now. But the ones that are still staying out there are these
40 large groupers, because we have so much restriction on them.
41
42 We have seen the population in the U.S.V.I. just continue growing
43 and growing and growing and there's a lot of information out there
44 that U.V.I. and other people who have studied these species have.
45 And they need to come and present it to see how we can make some
46 changes to start to remove some of these groupers, so the smaller
47 fish can catch themselves.
48

1 The juveniles. Is the same thing. Like the sharks. We put a lot of
2 protections on the sharks. The sharks in the B.V.I. is a no take.
3 So, guess where all the extra sharks are ending up, down in our
4 waters. And I can show you videos of 10, 15 sharks on a regular
5 basis. No matter what string of traps I go and pull, they're
6 waiting for something to eat. Anything they can get to eat. So, we
7 have all of these predators that are doing damage and we're not
8 doing anything about it.

9
10 Because of the market drivers that we have, you will see
11 fluctuations in a lot of different ways. This year we have a
12 lobster season that has been the best, I have some fishers saying,
13 for over 20 years. These are my lobster guys. They're saying this
14 is the best. Guess what? Our market can't sustain it because we
15 have people bringing lobsters from Vieques, people bringing
16 lobsters from B.V.I. They're underselling us. We have to pull back
17 and be sufficient.

18
19 So, all I would say is, when you guys see different changes that
20 are going on in these models, it would be a great idea to get some
21 of the fishers involved and ask them questions. You don't have to
22 pull-- say you pick five fishers, you don't have to pull the five
23 fishers together, interview them on a one-by-one basis and see
24 what the outcome result is going to be. So it might be, "Oh, well
25 you guys met before and you guys all have the same answer." Do a
26 little scale interview like that. We can get you the guys. Get
27 them to cooperate. Because they don't like to talk to scientists
28 because what all they see is regulations every time they talk to
29 a scientist. But I think the way we do business; we need to do it
30 a little better because there's a lot of information that the
31 stakeholders have, that is not being included in these models.

32
33 And Kevin, thank you for your comments also. Because every time
34 the Science Center sees something that's missing on these catch
35 reports, they say, "Well, listen, we need to get in there and fix
36 this because we need this information." And that's what we need to
37 do. In order for you to drive the models for the stock assessments,
38 you need to have the correct data to drive them. Instead of us
39 just throwing money away trying to do a stock assessment and you
40 don't have the information. It's going to be the same thing that's
41 going to come out of this eco-based management plan. You're looking
42 for drivers. You're going to need the correct information.

43
44 And my last note that I have here is, this plan, once is approved
45 by the SSC and approved by the TAP committee, is going to be
46 presented to the Council to see if they want to adapt it into the
47 EEZ. But what happens to adapting it into the territorial waters
48 where most of the problems lie, our juvenile habitat. How are we-

1 - and I say "we," because we are all in this together. How are we
2 going to ensure that that component happens? And that's my biggest
3 problem and my counterparts say that's their biggest problem. Can
4 talk about all the different issues that were brought up in the
5 conceptual models, that are the drivers that causing this eco-
6 based to get damaged. So, thank you.

7

8 **SENNAI HABTES:** J.J.

9

10 **JUAN J. CURZ MOTTA:** Thank you, Sennai. Thank you for your
11 comments. Definitely I failed to communicate a few messages and
12 I'll trying to repeat again. All this process, Julian, started
13 asking stakeholders, how many fishers did we interview?

14

15 **TARSILA SEARA:** It's about 112 or something.

16

17 **JUAN J. CURZ MOTTA:** We did, actually, go out there and meet
18 individually. Even those people that didn't want to speak when
19 their peers were-- we sat down later on, "What do you think? You
20 think these are the drivers?" Julian, perhaps I didn't do a good
21 job, but let me assure you, this is stakeholder driven.

22

23 Actually, if our analysis is to be criticized, is that we put too
24 much weight on the fishers because we have 137 versus how many
25 experts? 10. That's playing an important way. So, Julian, your
26 opinion and the opinion of [inaudible] is included in. Second, at
27 any stage we said, that change is because of overfishing. We never
28 said that change is because of pollution. One thing is to describe
29 a pattern, which we're doing, and it coincides among different
30 observers. It coincides with what you're saying. It coincides with
31 the Science Center. It is that there is a change.

32

33 My whole point is, instead, because of the very reasons you
34 mentioned, because we don't have the proper data, instead of
35 modeling what is going to happen if I fish this much or that much
36 under the assumption that the only source of mortality is fishing,
37 instead of that, what I'm proposing is, let's analyze the change
38 to start with. I'm not attributing the change to anything. I'm not
39 saying you guys are causing the change. I'm not saying the
40 pollution. There is a no obvious. That, that's a fact. The change
41 is a fact. And what I'm advocating for is let's build on what we
42 know for sure. What Reni said, what you're saying are very good
43 models, are very good explanations why the pattern is happening.

44

45 As you mentioned, we might not have all the data to support
46 competing models. Because when I say it's fishing, that's a model.
47 It's an explanation and it's the model that the Science Center
48 uses. Some other guys can come up with the model of habitat and

1 they will say, "No, it's because of coral reef degradation." and
2 they will use their coral reef data. And then there will be the
3 guy of pollution and they will come up with a model. And we fell
4 short of making prediction based on those models because of all
5 the critiques that we keep saying on the data.

6
7 So, what I'm saying, instead of modeling, this is not about these
8 and those models, Julian, these are descriptions of what you are
9 reporting. Doesn't matter what's the cost, there is a change. And
10 what I'm saying is, let's take this adaptative management approach
11 in which we recognize, and this is hard to swallow for-- let's
12 recognize that we cannot model, we cannot predict the future. Let's
13 describe what is really happening based on what you guys are
14 saying, based on what the independent survey is saying and let's
15 react to that, because we cannot predict.

16
17 So, Julian, I apologize because obviously I did not communicate
18 well these messages. This is about stakeholder engagement, asking
19 you every step of the way. I have kept bothering Orian and Sennai,
20 let's make sure whatever we write goes back and gets seen by
21 everybody. We have asked a lot more fishers, 10 more fishers than
22 experts. Thank you.

23
24 **JULIAN MAGRAS:** Just a little rebuttal. You guys did an excellent
25 job. Don't get me wrong. And thank you for the clarification,
26 because I know what's been put into this and it's far from over.

27
28 So, I'm not trying to beat anyone down. It's just that we want to
29 get our points across in a very professional way. Thank you for
30 the explanation. It is not your fault that you feel that you didn't
31 clarify something. You did an excellent job. So don't beat up
32 yourself. I think, we are heading in the right direction. If we
33 need some clarification, we'll ask for it. So, thank you guys again
34 for all the hard work.

35
36 **SENNAI HABTES:** Michelle?

37
38 **MICHELLE SCHÄRER-UMPIERRE:** Yeah. I just had a question about
39 within the fishers that were consulted and the conceptual models
40 that were created, how many were of recreational fishers?

41
42 **TARSILA SEARA:** I mean, if you want to start. I was just going to
43 say, I think for what we're-- and Stacey can talk a little bit
44 more. For the fisher conceptual models, those are mostly commercial
45 if not entirely commercial. The recreational fishermen will be
46 represented in the DAPs. You know, not as a separate group, but
47 their perceptions. But we did not do specifically conceptual models
48 with recreational fisheries.

1
2 **ORIAN TZADIK:** Can I just clarify?
3
4 **SENNAI HABTES:** Sure.
5
6 **ORIAN TZADIK:** Point of clarification. Commercial is including
7 charter guys or charter guys are recreational?
8
9 **TARSILA SEARA:** In this definition, charter would be considered
10 recreational. Yeah.
11
12 **SENNAI HABTES:** J.J.?
13
14 **JUAN J. CURZ MOTTA:** Yeah.
15
16 **SENNAI HABTES:** After this though, I'm going to-
17
18 **JUAN J. CURZ MOTTA:** huh?
19
20 **SENNAI HABTES:** After this, I'm going to cut it off because we're-
21
22 **JUAN J. CURZ MOTTA:** No, because that's a very important point and
23 I don't know the reason for your question, but what everybody's
24 pointing out is that we're not taking into consideration those
25 guys and then whatever we do in the future needs to be
26 incorporated. Like, for example, it would be a terrific idea if we
27 repeat this exercise, we actually target recreational fishers.
28 Because everybody's saying these, guys are important. They're
29 taking a lot of fish out of the system and nobody's looking at
30 them.
31
32 **MICHELLE SCHÄRER-UMPIERRE:** Yeah, I was just thinking about that.
33 When we're relating the extractions to the observations of fishery
34 independent for some reef fishes, the recreational extraction
35 might just help meet that missing gap.
36
37 **SENNAI HABTES:** Okay, everyone I think we've reached the time where
38 we need to take a little break. So, thank you Tarsila, J.J., and
39 Stacey for all your great work on this. I expect we'll be
40 continuing to talk about it for much of the rest of the week. But
41 it's 3:20 now. Let's take a break until 3:30. Let's reconvene at
42 3:30 and we'll have Martha Prada talking to us about the GIS
43 platform and the accessibility of the SEAMAP Gold copy data. Thanks
44 all.
45
46 (Whereupon, a brief recess was taken.)
47
48 **SENNAI HABTES:** Good afternoon, everyone. We're going to slowly

1 get ourselves together here and get started. If everyone can take
2 their seats, get back to the computers, wrap up any excess
3 conversations. We're going to go ahead and have Martha either share
4 her screen or get her presentation up and then we're going to get
5 started here in the next 30 seconds or so.

6
7 Okay. Thank you everybody for your patience. I appreciate everyone
8 getting back. It is now 3:40. We're running a little behind, but
9 I think that's okay. I am Sennai Habtes, the chair of the EBFM
10 TAP. This is again, the Caribbean Fishery Management Councils EBFM
11 TAP and SSC joint meeting. We're going to continue with our
12 presentations and Martha Prada is going to give us a presentation
13 on the CFMC data hub, as well as I believe we're going to roll
14 straight into the accessibility of the SEAMAP Gold after at this
15 presentation. So, Martha, if you're there and ready, I'm going to
16 turn everything over to you.

17
18 **MARTHA PRADA:** Yes, thank you, Sennai. I hope everybody can hear
19 me well.

20
21 **SENNAI HABTES:** We can. Thank you.

22
23 **Caribbean Fishery Management Council Geographic Information**
24 **System (GIS) Platform Update**

25
26 **MARTHA PRADA:** Okay. Good afternoon, everyone. I'm Martha Prada.
27 I am working under contract with the Caribbean Fisheries Management
28 Council, and the purpose of my contract is actually to produce a
29 digital data hub that provide easy access to all users about the
30 availability of data from the, initially, commercial landings,
31 both for Puerto Rico and the U.S. Virgin Islands. But then the
32 idea is to be able to compile a lot of different kind of information
33 that is making available on a public basis and on an easy way.

34
35 So, we have been working for almost a year now. What I'm going to
36 do in this presentation, is only a quick view of the different
37 windows we have developed so far for this work. To begin with, the
38 portal starts actually introducing the Caribbean Fisheries
39 Management Council within the U.S. Nation as a whole trying to
40 provide some context that the responsibilities, for public in
41 general, not necessarily everybody is aware of how the
42 administrative and jurisdictions issues are related.

43
44 I also like to mention that the hub is produced in a web-based
45 using QGIS Cloud. This is an application free of charge for most
46 users. It allows a lot of different kind of formats to download
47 the data. The user does not need a particular GIS software since
48 QGIS itself is a free of charge software that anybody can access

1 through online. And also, data is being analyzed in Google platform
2 named Data Studio. With Data Studio, we have produced a different
3 dashboard. We hope that with that we are able to present the
4 general public, the information that we like to present.

5
6 So, the hope is right now structured in these main windows. As you
7 can read, that includes a jurisdiction window, fishery associated
8 data, fishery independent data, benthic habitat data, a little bit
9 of the managed areas, marine managed areas in particular, but also
10 includes some of the coastal areas. And perhaps in the future we
11 can include additional relevant information when trying to
12 understand the fisheries data and the ecosystem perspectives.

13
14 So, in general, just to give you an idea of what the number of
15 data we have now integrated into these commercial landings that
16 are initially focusing my work. We decided to structure the data
17 in several ways. I don't know if that will be the final way.
18 Perhaps once we are a little bit more advanced in this work, we
19 can, in conjunction, choose if both ways are useful or we need to
20 select one of them, or we need to integrate in a way those windows.
21 But for now, number of interests is structured by decades. And the
22 database in general started back in 1993 and goes up to 2021.

23
24 As you can see at the beginning of the data set, I don't know if
25 this a reality, or if this is an artifact of the reports. The data
26 acts actually, the reports provided by the fishermen, organized by
27 the state agency and then finally managed by the Southeast
28 Fisheries Science Center. And so, what we're trying to produce--
29 here is not the entire data set I am trying to keep all the all
30 the compromises, not publishing any particular data but also be
31 able to inform what is going on, what the data is saying. And this
32 is important because many of the fishermen, particularly in this
33 case that I'm talking about, commercial landings, several times
34 complain that they provide the data, but they are usually not able
35 to see how that data is going to be used or how his particular
36 data relates to other data and so on.

37
38 So, this portal is actually aiming to counteract that invitation
39 receiving from the stakeholders, in particular from the fishermen.
40 But it is also useful for educational purposes, for fisheries
41 management, for conservation agencies, and also for the general
42 public.

43
44 What can I say? The different databases for U.S. Virgin Islands
45 and Puerto Rico contain a more complex kind of information. For
46 the U.S. Virgin Islands, it took me a while just to continue
47 verifying the data, verifying the codes. All the species are using
48 [ID code?] for a moment and using common name, and to be sure that

1 the gear codes are correct and total weight are correct and
2 everything.

3

4 But as Kevin was mentioning when J.J. was talking about it, there
5 has been changes through time in the structure of the databases.
6 So lately, and I mean lately starting in 2011 and there has been
7 additional information requested in the reports. And that is going
8 to, in particular for the U.S. Virgin Islands, is going to be
9 related to more specificity in the fishing areas now considered at
10 a very small scale. They also included landing site; these were
11 not common in the past. And from time to time, fisheries reported
12 depths. The use of the depth value in this database is kind of
13 tricky. It contains a lot of gaps, but it also, not sure if all of
14 the values reported are in the same units, so you can have values
15 from ranging from 10 to almost 6,000. So that's why I mentioned
16 that so far, I haven't used the depth variable for now.

17
18 In comparison, the database for Puerto Rico, contains additional
19 information, and I also completed that information using
20 [inaudible] code in addition to the [inaudible] revise and complete
21 the information. And make sure that the [inaudible] are using the
22 last version because this latest version is being permanently
23 updated. So, thanks to Daniel Matos, he and I can have been talking
24 about, and every time I ask for his support, he provides me with
25 the latest information. He also helps verify that some of the codes
26 utilizing the database are correct. And so, when you're dealing
27 with such large databases perhaps some of the mistakes in entering
28 the data are possible.

29
30 So, just summarize, from the U.S. Virgin Islands, in particular,
31 areas are initially considered in this column that for now I am
32 naming 'zone'. Those zones are very large areas in the ocean. But
33 for Puerto Rico, we only have landing sites.

34
35 I am just going to do a very quick presentation of the kind of
36 graph the data is presenting. Here we have are naming this window
37 historical trends. We have compiled information from the reports
38 as well as for the database. And particularly for this graph, I am
39 showing the entire data set for the entire set of species. Here is
40 divided into the fish, lobster, conch and sometimes we also have
41 a [inaudible].

42
43 Because I'm not presenting to you, in order to save time, how the
44 database is extracted. But you can see here that the district is
45 considering Saint Thomas, Saint John and Saint Croix on a different
46 color. I also include here an orange color when the database is
47 reporting fishing areas outside the U.S. Virgin Islands. I mean,
48 outside, some of the data is reporting captures in the British

1 Virgin Islands for several years and perhaps other areas for Puerto
2 Rico. That is not common, but it's in the data set. I do not like
3 to lose that information and I don't like to also create new
4 conflicts in the reporting data that is not properly reported or
5 fished or whatever. So, once you hit this district, species name,
6 or year the entire graph is changing accordingly to the consult
7 from the user. And so, you can then download the data that is of
8 your interest in different formats, meaning for the text format or
9 for Google Excel sheets. So, it's very practical.

10
11 Here are the landings, here is the number of fishermen. In that
12 perspective, we also have all the information summarized by the
13 three-fisher census done in the U.S. Virgin Islands and I'm going
14 to present that. But currently I am improving the way that the
15 price is being reported for different products through time. Here,
16 when you consider the data by decades, it is interesting to see
17 that, if you see here, this histogram, in the gray color is the
18 areas with no particular identification of a fishing zone. So, for
19 now, it's no colored. But also, you see that as you move with time,
20 like in the graph on the right, you see that that gray color is
21 almost reducing giving the opportunity to fishermen to, through
22 time, improve the quality of the data they are reporting. So, as
23 you move with the decades you will see that the reports get a more
24 organized and better structure information.

25
26 So here, the user can also search for a particular year, for
27 certain number of years, for a particular district, for a
28 particular zone, for a particular species or for a particular =
29 fishing gear. And so, once you change any of those, the entire set
30 of graphs will automatically be updated and you automatically can,
31 if you decided, you could download that particular search as you
32 wish.

33
34 Since 2011, I have been mentioning that there was a change in the
35 former report that changed in the large area here to these very
36 tiny squares. So that creates a little bit of complexity. You can
37 see here also how the fishermen took, like, six or five years to
38 better reporting. The gray color here indicates the number of
39 entries, where a particular small square identifies all the
40 previous fishing zone. So, at the beginning of the changes there
41 was a combination of data, but at the end there is a more a better
42 quality of the data with respect to that.

43
44 Also, with each different decade I have summarized the main
45 important issues related with the U.S. Virgin Islands, in
46 particular. That is not only fishing related aspects, but the
47 establishment on particular MPA or the establishment of certain
48 types of changes of kind of engines, the type of boats, or

1 hurricanes, or the contamination problems and so on. So, for each
2 particular decade, I also have a small summary of the relevant
3 things that maybe think about and better inform that the fishery
4 activity, it relates and respond to different other activities.

5
6 So, this is the second kind of presenting information. And in this
7 way, data is not organized by decades, but it's organized by
8 relevant key species or representative species. So, we organize
9 the entire data set for queen conchs, spiny lobster, snappers,
10 groupers, dolphinfish, and parrotfish as species representative
11 from different in relevance to ecological or commercial fishing in
12 general.

13
14 So again, the user can consult the database, the dashboard,
15 changing gear, gear fishing, changing gears by district or by
16 fishing zone. So, once you change any of those, you can get updates
17 on any of that.

18
19 And when you use the species, now, what is presented is the
20 management regime in particular for that species. So, the size
21 limit, the harvest quota, the commercial trip limit, and the
22 recreational bag, the closed seasons and so on. So here I'm not
23 describing what is important that year, but what is important for
24 that particular species.

25
26 And since this year I started working with the Puerto Rico
27 commercial landings database. And so, it is similar and different.
28 In the first decade in 1983 to 1990 it caused my attention that
29 the majority of the data actually comes from the West part of
30 Puerto Rico. I'm not sure if this is true or not, or maybe it is
31 an artifact of being closer to the fishing lab, having more
32 personal or having more information from that area in comparison
33 with the other. So here is the decade from 2001 to 2010. In here
34 you can see the four regions represented here, still the West the
35 West area, the West region is important, but other regions are
36 also becoming important. And the last one here indicates the
37 landings by municipality. So, by species, by fishing gear, by
38 municipality, and by region.

39
40 The dashboard in Puerto Rico is now in Spanish. In the beginning
41 I wanted to have consistency and had both of them in English, but
42 then in the end I decided to-- because this is for user demand, I
43 decided to change everything to Spanish in this fishing year. In
44 the dashboard in particular, each of the dashboard is accompanied
45 by a map. This map is illustrating here, the limit for the state
46 water, the limit for the region, and the limit for the municipality
47 in general.

48

1 Still not able to complete all the information for decades in
2 Puerto Rico, because right now I'm dealing with the changes in the
3 fishing areas in Puerto Rico, which is kind of challenging to me
4 but I'm working on that. It appears that in the last decade, the
5 number of reports is slowly smaller compared to the 2001 and 2010
6 decades.

7
8 Now we're moving a little bit to the benthic habitat window. And
9 here what I have is the benthic map generated by GPR on the contract
10 with the Caribbean Fishery Management Council on the three areas,
11 the MCD, the Lang Bank, and the mutton snapper closed area. So
12 maybe you cannot see here in detail, but I wanted to have the scale
13 that you can see the three areas. But you have here the dashboard.
14 And in the dashboard, you can consult, in particular, type of
15 habitat, the kind of unit, because this is a hierarchical habitat
16 classification with approximately 20 different habitats. And so,
17 you can make different queries depending on your needs. The idea
18 is to be able to complete this benthic habitat window linking this
19 portal with the portal already developed by NOAA, but I recognize
20 that all the NOAA portals are based on ESRI software, which is a
21 proprietary software and for downloading some of the data and
22 seeing that data, perhaps the user will need to have that
23 particular program unless you download the particular shapefile.
24 And so, you can now, having a shapefile is more usable for
25 different platforms.

26
27 Right now, all of the maps included have a button for download the
28 shapefile. But any map in this platform will be able to be
29 downloaded not only in shapefile, but also as a KML. You will be
30 able to see it in Google Maps and other Google platform.

31
32 So, this is for now in summary, what I have developed in
33 conjunction with my team. I don't know if perhaps I can stop here,
34 have the discussion and then move to the next presentation.

35 36 **Questions/Comments**

37
38 **SENNAI HABTES:** That would be fine. Are there any questions for
39 Martha regarding this? Rich?

40
41 **RICHARD APPELDOORN:** Yeah, this is Rich. You know, really
42 impressive, Martha. I had a lot of questions and every time I wrote
43 one down, you then went and answered it already which left me just
44 with one, and that has to do with the habitats. You mentioned that,
45 as an example, you have the areas, the spawning areas that are
46 closed areas that were done in the Virgin Islands and the habitat
47 maps that were generated for those. There are lots of other habitat
48 maps, are there, like, there's the NOS one that was done around

1 2000, 2001. There are ones that were done for the three areas off
2 the West coast of Puerto Rico. There are additional habitat maps
3 that people have done in certain areas. Are those eventually all
4 going to be a target of your compilation?
5

6 **MARTHA PRADA:** Well, the idea is, yes, to have the more complete
7 set of information compiled in this data portal. I don't know at
8 this moment if we will need to have a special agreement with NOAA
9 in particular, because they have their own portals, or maybe we
10 only need to link our platform to their platform. Perhaps there
11 are a lot of benthic information from other studies and other
12 management documents. So as soon as I am able to complete at least
13 the analysis for the commercial landings, I will need to focus on
14 more on the benthic information, including the mesophotic areas.
15 I now have a copy of some of the crews that you have leading in
16 the path. I have that information and perhaps Reni has additional
17 information. We need to do that, but for now, it's only myself
18 actually. So, I am not having enough time to do a lot of work. So,
19 this is progressing slowly. But, yes, the idea is not just to have
20 that habitat maps, but perhaps be able to combine with information
21 with abundance of a key ecosystem species like mammals, sea
22 turtles, sharks, all the species that are relevant. Thank you for
23 the question.
24

25 **SENNAI HABTES:** Vance.
26

27 **VANCE VICENTE:** Martha. Thank you very much. This is Vance Vicente.
28 Hello?
29

30 **MARTHA PRADA:** Yes.
31

32 **VANCE VICENTE:** How are you? Anyhow. Since 2001 when NOAA
33 developed, I think it was the first overall general benthic map
34 for Puerto Rico and the U.S. Virgin Islands, it was 2001, there
35 has been a lot more information like Richard mentioned. But one
36 question I have is like myself and probably Reni and others have
37 very recent descriptions of areas that have not been described in
38 detail at all, or they might have been described generally, and we
39 have much more detail, with underwater photographs, etcetera. We
40 would like to know, you know, what kind of format would you need
41 us to supply that information so that it would increase the
42 diversity of your file. Thank you.
43

44 **MARTHA PRADA:** Thank you, Vance. Yes, I guess part of the objective
45 of this presentation today is to invite you to share with us some
46 of the information you may have and it's not easy to get it
47 everywhere. For the format in particular, if you have shapefiles
48 or if you have PDF files all of those will be good enough because

1 then we will be responsible to digitize those in a proper way and
2 to be able to combine different kinds of information in this
3 platform.

4
5 The use of photographs is really useful, and we can link all of
6 the photographs to particular habitat maps or particular special
7 information. If you perhaps have some lat. and long. information
8 or general context information where that particular picture was
9 taken. This way, we are very open for complete this platform and
10 we recognize that this is really important. Perhaps one of the
11 first steps is to go to you. This group is the most relevant
12 stakeholders from the scientific perspective and slowly moving
13 ahead across the society because different stakeholders have
14 different kind of information and all information is important
15 just to see it and compare and be able to-- each person have their
16 own necessity, their own interests and this is the main purpose of
17 the platform.

18
19 **VANCE VICENTE:** Yeah, thank you Martha. And also, these recent
20 maps are very relevant to what we've been talking about because
21 the benthic habitats have dramatically changed during the last 10
22 years, as Reni pointed out. So, thank you very much and nice to
23 talk to you again. Bye.

24
25 **MARTHA PRADA:** Thank you.

26
27 **SENNAI HABTES:** Okay. I'm going to suggest we move on to your next
28 presentation, Martha, and if there are other questions after that
29 we can get to them then.

30
31 **MARTHA PRADA:** Can you see it now?

32
33 **LIAJAY RIVERA GARCÍA:** Martha, do you want me to share your
34 presentation? You also can try to press control l to expand your
35 screen.

36
37 **MARTHA PRADA:** Yes, I'm doing it, but for some reason it's not
38 working. I'm sure.

39
40 **LIAJAY RIVERA GARCÍA:** I can share it from. Okay. There you are.

41
42 **General Public Use and Accessibility of SEAMAP Caribbean Gold**
43 **Copy**

44
45 **MARTHA PRADA:** Okay. And thank you. Well, this is going to be very
46 short because we are running behind time, and I have not been able
47 to work with the Sea Grant Fish data. I received the data like 20
48 days ago or so, and since I received the data, the data is being

1 revised and I just added a couple of columns to that database
2 perhaps trying to facilitate the illustration for the general
3 public.

4
5 So as in previous presentation, I received this data that contains
6 information only for Puerto Rico. There are still some points like
7 here and here and here that I am assuming are correct because this
8 data said is being verified so I left it there. For some reason,
9 those stations are located there. So, the data contains a little
10 bit more than 4,000 entries and integrates data from 1991 to 2020.
11 That means 25 years of information. But there are some gaps in the
12 data set for those years. So, the database in general contains
13 like 29 different fields, as you can see it here. I just give you
14 a moment to see the kind of information this database is comprised
15 of.

16
17 Now, moving ahead and presenting what fields I have added. Just to
18 classify some of the information into a group that may be easier
19 for people to understand. And this here, I classified information
20 for fish size. I classified information for depth. I generated an
21 additional column separating stations within the federal waters
22 and state waters. I create, like, a group because for late years,
23 the database contains information that are beyond the fish itself.
24 And so, I'm not sure if I want to delete or not consider all these
25 other species or leave it like that and create a group that allows
26 me to have some of the biodiversity associated with this but
27 considering that this is only a fish data set.

28
29 I also haven't done that, perhaps I will later communicate with
30 some of you, but I would like to add some category by the species
31 level. And when I mean that category by species level, I am also
32 referring to add that category to the commercial landing. So,
33 perhaps, the commercial landings already determined six different,
34 kind of, species like demersal, pelagic, reef fish and so on. But
35 I was thinking that perhaps some of the categories I would like
36 them to have better structure. So, in the next month, I will
37 certainly communicate with both groups. I will make a proposal and
38 try to get your recommendation if that is valuable or not.

39
40 Right now, we have species level, but remember that not all the
41 years have the detailed information at the species level. In the
42 beginning there where only bony fish or sharks or pelagics and as
43 time progressed, the detail information of the species is becoming
44 more and more and more complex. So perhaps in order not to lose
45 some of the information, we can explore classification on the
46 species level.

47
48 And so, this integrated into the data portal under the fishery

1 independent data. Here you can see the how the data plots
2 considering different variables. One for abundance, one for
3 biomass, and one for the depth category. I've done that because I
4 recognize that changing the fishing gear through time, it also
5 allows for information at different depths in different years. So
6 perhaps I'm just exploring what can be a best way to illustrate
7 this data set. But, as mentioned before, I am just beginning to
8 play with this data set.

9
10 It also contains some maps. Right now, I'm plotting here the
11 species. This map is very complex. It really doesn't show an easy
12 thing to see. So, that's why I was thinking if I, in the map,
13 illustrate more like a group of fish or something, it will be more
14 easy to understand for different stakeholders while containing the
15 detailed information. It is just the way of how you present this
16 information.

17
18 So, as in the past, this is a work in progress and thank you very
19 much.

20

21

Questions/Comments

22

23 **SENNAI HABTES:** Thank you, Martha. I also wanted to just clarify
24 that I do think that the data you're using is from the SEAMAP C
25 program, so the Southeast Area Monitoring and Assessment Caribbean
26 Program, and that the coordinator for that program is hosted in
27 Sea Grant, but it is not technically Sea Grant data. So, just to
28 clarify for everyone that it is SEAMAP and that is the same data
29 that J.J. was using in the gold copy and presented some of the
30 things from earlier today.

31

32 **MARTHA PRADA:** Thank you. Yes. You are right. That was my mistake.

33

34 **SENNAI HABTES:** No worries. Any other questions, Vance?

35

36 **VANCE VICENTE:** Yes, Martha, regarding your request for adding
37 additional taxa, I recommend to at least include the major benthic
38 components of the U.S. Virgin Islands and Puerto Rico. Relatively
39 shallow habitats which are Scleractinia coral, hard corals, one,
40 two octocorals, and three sponges. Okay. That's regarding macro-
41 epibenthic invertebrates.

42

43 **MARTHA PRADA:** Okay.

44

45 **VANCE VICENTE:** Okay. Well, that's regarding the invertebrates,
46 but also there are categories for vegetation, for underwater marine
47 vegetation. You know, sea grasses, red algal beds, green algal
48 beds, and other categories. Thank you.

1
2 **MARTHA PRADA:** Yes, thank you. Yeah. The advantage of having a
3 hierarchal classification scheme is that it allows you to present
4 the habitat information at different levels of detail. So that's
5 why the more detailed information right now is around close to 20
6 different kinds of habitats, but then you can drop it into two or
7 three. That depends on the interest.

8
9 **SENNAI HABTES:** Great. I don't see any other questions online or
10 here in the room. So, I'm going to say thank you very much for the
11 presentation, Martha. We really appreciate it. And now, we're going
12 to move on to our next presentation. That is going to be Rachel
13 Eckley, I believe. She is going to present on the Caribbean
14 Strategic Planning Project and then after her we will be Kevin
15 McCarthy on the data triage.

16
17 **RACHEL ECKLEY:** Can you guys hear me?

18
19 **SENNAI HABTES:** No, there's a little feedback there. Maybe turn
20 down your speakers a little bit, if you can.

21
22 **RACHEL ECKLEY:** Yeah. Okay. Is that better?

23
24 **SENNAI HABTES:** Yeah, I think that'll work if you want to go ahead.

25
26 **Caribbean Strategic Planning Project—Rachel Eckley**

27
28 **RACHEL ECKLEY:** Awesome. So, hi. Good afternoon, everyone. I'm
29 Rachel Eckley. I'm an affiliate with CIMAS, which is the University
30 of Miami's Cooperative Institute. At the Science Center I work in
31 the Caribbean Fisheries Branch. I want to thank the SSC and EBFM
32 TAP Chairs for some time on the agenda today to share with you
33 some recent progress on the Caribbean Strategic Planning Project
34 which is led by Kevin McCarthy et al.

35
36 This effort is a three-year project funded by the Southeast Fishery
37 Science Center, internal ECSAI Funds, which stands for Ecosystem
38 Climate and Stock Assessment Improvement, which is part of the
39 larger ecosystem-based fisheries management efforts at the Center.
40 And we're just beginning the third year of that project now.

41
42 Next slide, please.

43
44 So, the Center has attempted many U.S. Caribbean stock assessments.
45 And although most were accepted by independent reviewers, they
46 were not used for management, because the traditional data rich
47 management advice could not be made. So, because of that catch
48 only methods have historically been used to provide catch advice

1 for the region's fisheries. Until very recently, only the two
2 relatively data moderate stock assessments for Caribbean spiny
3 lobster in Puerto Rico, queen triggerfish were used to provide
4 that management advice.

5
6 In Kevin's presentation next, you'll hear more about the recent
7 data triage work by members of the Caribbean Fisheries branch at
8 the Science Center. And what they found was that only a few species
9 have sufficient data for those data moderate stock assessments
10 that we've been doing. And finally, the Center and Regional
11 stakeholders are very enthusiastic about ecosystem-based fisheries
12 management and historical work has occurred towards that effort in
13 those efforts that they would greatly benefit from having a more
14 organized approach.

15
16 So, you can go to the next slide.

17
18 So, with that rationale in mind the primary objective for this
19 three-year project is to develop a strategic plan for data
20 collection in the U.S. Caribbean to support stock assessments and
21 EBFM within the regional ecosystems.

22
23 Next slide.

24
25 So, moving on to the scope of work for the project. At the moment,
26 there are some key data limitations in the U.S. Caribbean that
27 impacts stock assessment in EBFM. Some of those limitations are
28 here on the screen, and they include a lack of temporally and
29 spatially extensive fishery independent data sets for managed
30 species, a lack of reliable life history and size and age comp
31 data for many species, a lack of recreational catch statistics,
32 the need to incorporate socioeconomic impacts into the stock
33 assessment process and EBFM efforts, and the need for improved
34 internal and external communications.

35
36 Next slide.

37
38 So as the project objective is to develop a strategic plan that
39 improves those regional limitations, how are we actually going to
40 accomplish this? Well, we're using the Hoshin Kanri Strategic
41 Planning Method and hosting facilitated workshops that take us
42 through the Hoshin process. The outcome of that process is a highly
43 connected diagram of prioritized activities that are aligned with
44 identified strategic goals rather than a lengthy to-do list.

45
46 The first workshop was in May of 2022. It involved Center personnel
47 only. We identified short-term actionable projects that work
48 towards our larger goal of improving stock assessment in EBFM. The

1 second in-person workshop will occur in three weeks, where we'll
2 go through the same Hoshin process with Center personnel and
3 regional partners, to identify more actionable projects that will
4 emphasize the needed collaboration within the region. And the third
5 virtual workshop will occur this fall or winter in which Center
6 personnel will meet to review our progress this far and develop a
7 plan to continue that progress moving forward as the project ends.

8
9 Next slide.

10
11 This project is a huge team effort, so I want to highlight all of
12 the groups that have been part of it at the Science Center or will
13 be soon with our regional partners in the upcoming workshop.
14 Involvement at the Science Center spanning across four divisions,
15 11 branches, and the Social Science Research Group. Involvement
16 among regional partners will include the Caribbean Fisheries
17 Management Council, the SSC, CIMAS the National Park Service, NOAA
18 Headquarters, territorial Governments, the NOAA Quality Management
19 and Continuous Improvement Professional Specialty Group, who's
20 going to provide some facilitation assistance, SERO and various
21 Universities that perform Caribbean fisheries research.

22
23 Now, because so many data inputs go into the stock assessment and
24 EBFM we didn't just want to include a broad representation of
25 organizations. What we really wanted here was a broad
26 representation of expertise. So, scanning through the list of
27 involvements you may notice that we've included personnel from the
28 whole spectrum of stock assessment, including the survey
29 designers, port samplers, students and professors that perform the
30 research, data managers, data analysts, stock assessors,
31 assessment reviewers, and fisheries managers.

32
33 Next slide, please.

34
35 So, now I'm going to take us through the Hoshin process of
36 strategic planning. So, these were the steps that we actually
37 followed in the previous workshop, and we'll follow again in the
38 upcoming workshop in a few weeks. The Hoshin process is separated
39 into three stages, which is pre-work, idea generation, and
40 deployment.

41
42 For the pre-work stage we first reviewed any previous work and
43 effort that may have contributed towards our project goal. Next,
44 we performed a PESTEL scan, which stands for political, economic,
45 social, technological, environmental, and legal. And during that
46 activity we identified factors that in that could influence or
47 impact our goals moving forward. The next activity was the SWOT
48 analysis in which we identified internal strengths and weaknesses,

1 as well as external opportunities and threats. And this helped to
2 identify potential impacts as well as ongoing efforts that we could
3 leverage. And finally, for the pre-work stage, we defined our
4 vision, mission, and our long-term goals.

5
6 Next slide.

7
8 Moving on to idea generation stage. We began with brainstorming
9 ideas that would allow us to achieve our goals and our future
10 vision statement. During which we came up with over a hundred
11 actionable tasks and activities. Then we performed an affinity
12 grouping exercise in which we grouped liked brainstormed ideas
13 together and created category names for those groupings, which
14 then became the basis of our first level goals, which are to
15 improve data collection efforts, accurately analyze data,
16 efficiently manage and automate data, incorporate EBFM and
17 socioeconomic impacts, enhance internal culture and communication,
18 increase external collaboration and communication efforts, and
19 address funding and securities.

20
21 Next slide.

22
23 Then we created tree diagrams in which we organized all of those
24 identified tasks that we came up with into second level goals and
25 subsequent local projects that we could accomplish on a shorter
26 term that work towards achieving our long-term objectives at the
27 top. So, on the screen here is a really simplified example of what
28 that tree diagram would look like. We've got our long-term
29 objectives at the top, our first level goals below that, followed
30 by our second level goals and at the bottom are the local projects,
31 which are the actionable tasks that we've began working on and
32 will continue accomplishing in working groups.

33
34 Next slide, please.

35
36 So, this next exercise was the ERD diagram exercise in which we
37 analyzed all of the second level goals against each other, to
38 determine what type of relationship each goal had with the other
39 goals. So, we did this by lining all the second level goals in a
40 circle as shown here on the screen. And then we drew arrows between
41 to indicate which goal drives the other. And then finally we
42 tallied all the arrows going in and out of each goal in an activity
43 called driver's means and outcomes. And that identified the top
44 driving goals and projects that we should accomplish first.

45
46 So, for this example on the screen, we were focused on the green
47 box on the right that's outlined in blue. And the arrows going in
48 and out of that center dot represent the relationship that this

1 particular goal had with all of the others. So, we did this same
2 exercise diagram for each of the second level goals. And then in
3 the bottom right you can see that more arrows going out meant that
4 this goal was a driver and something that we should focus on first
5 as it drives the success of the other goals.

6
7 Next slide.

8
9 Moving on to the final stage of deployment. This is where we built
10 our X matrix, which is that nicely organized diagram that I
11 mentioned at the beginning that details how our action items are
12 connected to one another in our higher-level goals. So, on the top
13 of the x Matrix are the prioritized driving local projects that
14 we've begun working on. These correspond to the first level goals
15 on the left side and the two overall long-term goals on the bottom,
16 based on the inner relationships in the top and bottom left
17 corners. And then on the right are the team members in leads for
18 the project based on the legend that you see up in the top right.
19 I guess the legend is in the bottom right, but the icons are up in
20 the top right.

21
22 So, this x Matrix is our entire strategic plan and a single page
23 document, which makes it super easy for us to understand the
24 current tasks at hand, who's involved in those, and then how they
25 relate to our higher-level goals. And as we start to tackle some
26 of the other projects that we identified in the workshop, this x
27 matrix will grow in height and just keep increasing until
28 everything's displayed on there.

29
30 Next slide, please.

31
32 So now I wanted to get into some, what some of those actual local
33 projects are. So, during the workshop, we identified 50 actionable
34 items after we went through all of the tree diagram and affinity
35 grouping exercises. So, we had 50 at the end called local projects,
36 some of which are represented by the white text on the screen. The
37 yellow text represents the first level goals that those projects
38 relate to. So, to date, we've completed three of these local
39 projects, and we're currently working on 11 others in working
40 groups giving us a percent address of 28%. And we've already
41 prioritized the remaining 36 projects. So once some more of these
42 current projects are complete, we already know which projects we
43 want to begin working on next and those are the ones that we'll
44 add to our X Matrix to increase it in height.

45
46 There are a few projects that we identified during the workshop as
47 action items that would help achieve our long-term objectives, but
48 they were already ongoing and involve personnel outside of our

1 strategic planning effort. An example of this would be the first
2 one on the screen there, which is to develop recreational data
3 collection programs for spiny lobster and queen conch. So, we
4 recognize that the work and effort and personnel involved with
5 that project and some of the others go beyond our efforts. But we
6 opted to include them in our plan still because we share the same
7 goals for improvements to those regional data limitations.

8
9 Next slide.

10
11 I also wanted to briefly highlight one of our other current local
12 projects which is for the data analysis goal, and it's to identify
13 and compile regional data sources with emphasis on federal funding.
14 We're putting this in a database that we've called the Caribbean
15 Research Inventory with the purpose of improving data
16 accessibility for the region. So, I want to note that the inventory
17 doesn't actually house the data themselves, but rather could be
18 considered more of a searchable repository to locate past and
19 ongoing research projects in their associated reports and
20 publications.

21
22 So, to get started with this effort, we built upon previous lists
23 of ongoing work, performed targeted searches using Google Scholar,
24 the NOAA coral Reef Information System, the Council's research
25 library. We also reviewed projects funded by NOAA internal grants
26 and we requested information from regional partners at previous
27 meetings. So, with this inventory, we'll be able to more easily
28 identify existing data sources for use in stock assessment in EBFM,
29 as well as identify species and location specific data gaps, which
30 will allow for a more optimized use of funding and effort moving
31 forward with this project. This inventory can be searched
32 temporally and spatially by target species or species groups, by
33 the type of study, whether that was fishery dependent or fishery
34 independent and by data category.

35
36 Next slide please.

37
38 So, I want to dive a little bit deeper into what those data
39 categories are. These were the descriptors that we assigned to
40 indicate the type of data that was collected or analyzed in a
41 particular project. So, many of these include the data necessary
42 for stock assessment, like life history, abundance, take, size and
43 age comp. But we also started to incorporate things like social
44 sciences, MPA monitoring, aquaculture, education and outreach,
45 habitat and others on there. So, to date, we've identified 640
46 various projects and 1600 documents and reports, including
47 conference papers, dissertations, tech memos, publications, SEDAR
48 papers all dating back to the early 1,919 hundreds, and then up to

1 the current time.

2
3 So, we're still working on this inventory. It's currently in the
4 production stage and it's housed in a Science Center application
5 called ODM or Online Data Set Manager. We're still working with
6 app developers to get it functioning and up and running. But once
7 it's ready to go live our goal is to make this accessible for
8 general use. And we're still trying to work out, how and what that
9 means but we're working on it now, so I just wanted to include
10 that there.

11
12 Next slide please.

13
14 Okay. So going back to the larger strategic planning effort. As I
15 mentioned earlier, we're about three weeks away from our second
16 facilitated workshop, which will occur in San Juan, Puerto Rico,
17 and involve Center personnel as well as regional partners. We'll
18 follow the same Hoshin Kanri method and develop new vision, a
19 mission statements and strategic goals. That, hopefully, will
20 define more of the collaborative efforts that we need in order to
21 improve those regional data limits for stock assessment and EBFM.

22
23 Each individual organization that will participate in the workshop
24 has their own individual strategic plans or goals already. We know
25 this. But this will be the first project of its kind to sort of
26 bring all these ideas and goals together into one place, into one
27 plan that we collectively work on together in working groups moving
28 forward. And aside from, you know, the goal of a successful
29 strategic plan, we really hope that this workshop strengthens the
30 trust and rapport that we need to have efficient working
31 relationships with one another moving forward.

32
33 Next slide.

34
35 So that's all I have. I want to thank our regional partners for
36 your enthusiasm and willingness to join this effort. We're really
37 excited to work with everyone, in a few weeks, at the upcoming
38 workshop. and we're looking forward to continuing the progress
39 that we've made on this project.

40
41 So, I'd be happy to take any questions now. I know we're sort of
42 limited on time, but I can take them now or my emails on the screen
43 if you think of something later and want to reach out to me, please
44 feel free. Thank you.

45
46 **Questions/Comments**

47
48 **SENNAI HABTES:** Thank you, Rachel. I think we have enough time for

1 a couple questions if there are any. I'm not seeing any hands here
2 in the room or anyone raising a hand online. I'll give it five
3 seconds, but while we're doing that, Cristina, if you want to go
4 ahead and put-up Kevin's presentation, that would be fine. Okay.
5 Yeah--

6
7 **RACHEL ECKLEY:** We gave a very similar presentation last week, so
8 a lot of people have already heard this, and we got a lot of great
9 questions then. So, if you guys think of anything else that comes
10 up, please let me know. I'm happy to talk through anything with
11 you.

12
13 **SENNAI HABTES:** Awesome. Thanks so much Rachel. We appreciate your
14 time.

15
16 **RACHEL ECKLEY:** Thank you.

17
18 **SENNAI HABTES:** Next up, we have someone everybody in the room
19 knows, Kevin McCarthy. He's going to be presenting on the Caribbean
20 data review for stock assessments. Kevin, take it away.

21
22 **SEFSC Data Triage Work—Kevin McCarthy**

23
24 **KEVIN MCCARTHY:** Thanks, Sennai. Well, thanks everybody for hanging
25 in here. I guess Sennai probably wouldn't have let you out the
26 door. I guarantee you this is going to be the best presentation
27 you see after 4:37 today, no guarantees for tomorrow.

28
29 So first off, I want to thank Stephanie, Kim, Refik and Adyan.
30 Steph, Refik and Adyan are in the Caribbean Fisheries Branch with
31 me. Kim Johnson is in our Fishery Statistics Division. They did
32 all the work. Some of you have already heard this, so thanks for
33 bearing with me. For those of you who don't, these are the folks
34 that did all the work, and I was hoping Stephanie was going to be
35 able to present, but she's got a couple other things going on
36 today, so it falls to me. So, thanks for putting up with me for a
37 little bit longer.

38
39 Next slide.

40
41 So, in various presentations, you've seen this slide or something
42 similar to it, but it's just very basic. These are the data inputs
43 that are required for stock assessment. You know, we need to know
44 the catch, the take as Rachel referred to it earlier. We need to
45 know some of the biology, like, size composition and life history.
46 And it's always good if we have an index of abundance, so a catch
47 per unit effort series. In some of the assessments, we're starting
48 to look at the reef visual census, so the diver survey. And we can

1 get catch rates from the logbooks and get a CPUE series from there.
2 So, this is the kind of stuff that we need for an assessment.

3
4 Next slide.

5
6 And so, we came up with a strategy to review those data that are
7 available to us. There's a lot going on in this slide, but I'm
8 going to take you through it step by step. So, let's move on to
9 the next slide.

10
11 That was our overall strategy for this data triage. And the first
12 step is to define some terms. So, there are three different groups
13 of species that we considered. The first group are those species
14 that are indicators within species unit. So, for example, in Saint
15 Croix Grouper Unit Three is made up of coney and graysby, but coney
16 is the indicator. In some units, like unit one or Snapper Unit
17 One, in Saint Croix, there are 2, 4, 5-- four species, but two of
18 them are indicator species. So, we're interested in the indicators,
19 not the other species in the group. Not that we don't one day want
20 to have information about them, but for this first cut at what are
21 the species we want to focus on, for stock assessment, it makes
22 sense to. There's a reason they're the indicator, and that's why
23 we're going to keep them as part of this exercise.

24
25 Then we've got this other group where there's not an indicator,
26 but there's only a single species. So, we certainly want to keep
27 all of those under consideration for the data review. And then,
28 there are some groups that have multiple species, but there's no
29 indicator. So, we want to keep all the species in that group. So,
30 for example, in Puerto Rico, Grouper Unit Four has, black, red,
31 tiger, yellowfin, and yellowmouth grouper. There's no indicator.
32 So, all of those species will remain at this first step in our
33 review of the data.

34
35 Next slide.

36
37 So, we're keeping everything that fell within A, B, or C. So, all
38 the indicator species, all the single species units and all those
39 multiple species units that don't have an indicator within each of
40 the groups. So that was our first step.

41
42 Next slide.

43
44 And this is what we ended up with. So, in Puerto Rico, we began
45 with 65 species, and when you keep A, B, and C, you end up with
46 53. Because there are a number in group A that aren't the indicator
47 and so, they fell out at this first step. I'll note that we didn't

1 consider sea cucumber, sea urchin or corals, even though those are
2 managed species.
3
4 Next slide.
5
6 And then, in Saint Thomas and Saint John, we went from 49 to 29
7 species. So, there are a lot of species that fall within groups
8 that have an indicator but didn't happen to be the indicator
9 species themselves. So far, we're not eliminating anything due to
10 lack of data.
11
12 Next slide.
13
14 And in Saint Croix we went from 45 species to 33.
15
16 Next slide, please.
17
18 So on to step two, where we started to look at data. We were
19 interested in which species that made it out of step one has size
20 comp data, have sufficient data for size comp analyses.
21
22 So, next slide.
23
24 So, some of the things we need to consider here are sample size
25 and the distribution of samples across time. So, were there
26 samples, say, back before 2000? how many years of data are in the
27 data set? what does the most recent year of data look like? Are we
28 missing data in the last five years, say? What's the size range of
29 the data? Is there gear specific data? were there changes in
30 selectivity that maybe explained some of the patterns in the data?
31 If we see changes in the size comp over time, we want to make sure
32 we attribute as much as our discussion was earlier about species
33 that are on the form or not on the form. Again, if we're looking
34 at fishery dependent data reporting, management, all of that stuff
35 has to be considered when you're looking at the data.
36
37 So, next slide.
38
39 So, here's an example of a nice time series. This is spiny lobster.
40 We've got good sample size across time. In '20 and '21, it drops
41 down a little bit. That's probably a covid effect. But it goes
42 back into the early eighties. A lot of samples every year. It's
43 distributed across a couple of different gears, but there's
44 consistent sampling across those gears. So that's a pretty nice
45 time series and when we are looking at that, this is where the big
46 limit came in.
47
48 So, we went from 51 species in Puerto Rico to 14, right? That have

1 sufficient size composition data at first cut. We'll talk a little
2 bit more about that later. How we might be able to grab a few more
3 species. Anyway, we went from 29 to 12 in Saint Thomas and Saint
4 John, and 33 to 4 in Saint Croix. So, the size composition really
5 limits us.

6
7 Next slide.

8
9 So, here's what a bad series looks like. You'll note that after
10 2010 in that red square there aren't a heck of a lot of samples.
11 And from 2011 to 2016, there weren't any. So, not a lot going on.
12 But if you consider 33-- almost 34,000 animals were measured and
13 had they been distributed over these 34 years at a thousand animals
14 each, that would've been great, right? They're mostly pots and
15 traps, so we don't have to worry about shifting amongst different
16 gears. But alas, most of them were sampled in the nineties and
17 before.

18
19 Next slide.

20
21 So, now we're on to step three, looking at commercial landings.
22 what's the landings time series look like? I'll tell you the
23 punchline now. If you've got size comps, you typically have
24 landings because they're tied one to one another. Things that are
25 landed a lot, get measured a lot.

26
27 Next slide.

28
29 So, we're looking at things like-- similar questions as to what we
30 had with the size comp information, the number of years of most
31 recent years of data. Are we missing years of data? Do we have
32 landings by gear? Are there changes? Are there shifts from one
33 gear to another? distribution of the-- just generally the
34 distribution of landings by species over time. And again, were the
35 species on the form? Are some of these patterns driven by the way
36 the fishers could report or were asked to report?

37
38 Next slide.

39
40 So, here's again, what a nice time series looks like. You see the
41 different gears proportionally stay reasonably the same. We can
42 deal with that if they were to shift from one gear to the other
43 over time. But it's nice that they're and easier if it looks like
44 this and there are a lot of landings. This is lane snapper. It
45 didn't really change the numbers of species that have data
46 sufficient to try a stock assessment. We went down to 12 from 14
47 in Puerto Rico. 11 from 12 in Saint Thomas/Saint John, and still
48 4 out of 4 for Saint Croix.

1
2 Next slide.

3
4 This is what a bad time series looks like. I can't show it to you
5 because the date is all confidential. So, this is what it looks
6 like when you don't have sufficient commercial landings.

7
8 Next slide.

9
10 So, now we're on to life history because a lot of times you can
11 have all this other stuff and you get to life history, and we don't
12 have it. Or we do, in some cases. But it's a critical data input
13 for the assessment models.

14
15 Next slide.

16
17 And so, we leaned really heavily on a review paper by Stevens and
18 colleagues that came out in 2019. We've also begun looking at the
19 more recent data, but this was an outstanding job by a group of
20 folks that really dug into a lot of the prior data. And the nice
21 thing about it is they gave a score, which you could see under the
22 column LH on the left. I think in the last time I gave this, I
23 mentioned that a score of two or higher was used. I talked to
24 Stephanie and Refik, and they said if it was a one or higher, they
25 retained it, so we lost a couple of species. Well, more than a
26 couple. Four in Puerto Rico, we're down to eight. We're down to
27 eight in Saint Thomas and Saint John, and we're down to three in
28 Saint Croix.

29
30 Next slide.

31
32 Here's the species from Puerto Rico that have sufficient data to
33 attempt a stock assessment. The four in the bottom, either have
34 already had an assessment run or are in the middle of an assessment
35 or are scheduled for an assessment. And so that leaves four that
36 have not yet been assessed or are on track to be assessed, at least
37 not before 2025. So, SEDAR likes to get a couple years ahead,
38 partly because some of the life history information requires a bit
39 of time to process.

40
41 Next slide.

42
43 So, Saint Thomas/Saint John, here's our list. That top one, the
44 red hind, we can change that from a question mark to, this will be
45 recommended for assessment in 2025. That was a Council decision at
46 their meeting a couple weeks ago. We're scheduled for a yellowtail
47 snapper in the fall. Well, actually we'll begin in the summer for
48 SEDAR 84. Spiny lobster, as you know, has already been assessed in

1 SEDAR 57 and the 57 update, which just was completed at the last
2 SSC meeting and then addressed at the Council meeting a couple
3 weeks ago. It is also scheduled for SEDAR 91, which depresses me
4 somewhat since I began in SEDAR 4. So maybe it's time to retire or
5 something. But anyway, that's scheduled for 2024. And then SEDAR
6 80 is ongoing, and the SSC will hear more about that this week.

7
8 Next slide.

9
10 So, all the species on this first look at data sufficiency for
11 stock assessment are either scheduled for a SEDAR or have already
12 been assessed. However, there are some things we can do. As you'll
13 recall, the big drop in number of species that have sufficient
14 data was with size comp information. We lost a lot of species at
15 that step.

16
17 So next slide.

18
19 We can do some things with that. And so, we're going to consider
20 some alternative ways we might approach that data limitation. And
21 so that leaves us with 2, 4, 6 more species that we're going to
22 have a look at in Puerto Rico. We'll dig a little further into
23 those data, see what we can do. There are some ways to model. You
24 can't model your way out of everything, but you can model your way
25 out of some things, or you can at least offer it up as an
26 alternative. So anyway, there's six more that we're going to have
27 a further look at in Puerto Rico.

28
29 Next slide.

30
31 Another four in Saint Thomas and Saint John.

32
33 Next slide.

34
35 And quite a few more in Saint Croix including red hind. And again,
36 this is what's been recommended by the Council for stock assessment
37 in 2025. So that question mark can actually come out of there. And
38 recall that with the limited staffing and the requirement to do
39 three separate stock assessments every time we do one, we want to
40 limit that to two species. So, we can do one species on one island
41 and the same species on the other two platforms. So that's why we
42 want to keep it to two. A single one would be even better, and my
43 staff will thank you for that SSC and Council when thinking of the
44 future of how we want to do assessments, but we've got quite a few
45 that we'll dig into the data a little bit more.

46
47 Next slide.

48

1 So that got us to our recommended species, but we have these steps
2 over here, five, six, and seven. We know we have issues with
3 recreational landings. The main issue being, we don't currently
4 collect those data, but we're working on it. Primarily, that work
5 in Puerto Rico is being driven by DNER. In the Virgin Islands,
6 it's a partnership between DFW and the Science Center to collect
7 those data. We've also got to dig into the into the data for
8 indices of abundance. So that's step six and seven.

9

10 The F-D is fishery dependent. So those are things like the logbooks
11 that the fishers submit after trips. So, we can look into those
12 data for indices of abundance. And then the F-I is fishery
13 independent. We have, right now, the one time series that appears
14 to be most useful for indices is the diver survey, the NCRMP, or
15 the RVC, you'll sometimes hear it called. So, we've been working
16 with the folks who run that survey and looking into those data. So
17 that will be added to this this triage.

18

19 It's not great to do an assessment without an index, but we've
20 done it for spiny lobster. We want to not do that again, but we
21 can do it and that's why it's in red here. And we went ahead and
22 presented this information without having completely and
23 thoroughly gotten into the data that are available for indices.
24 So, I'm not sure what's next.

25

26 Next slide.

27

28 Okay. So just future work. I've already touched on some of it.
29 Looking at the abundance indices and we've talked with the fishers
30 in Saint Thomas/Saint John about getting their help and looking
31 further into those data in in Saint Thomas and Saint John. You
32 know, we're working on recreational landings, data collection
33 programs on all the islands. We've been working on commercial
34 landings estimation surveys for a number of years now. Certainly,
35 we're interested in EBFM components that can fit into this and
36 further inform the sort of traditional stock assessment data.

37

38 Next slide.

39

40 We've already covered this. This slide was really for the Council
41 meeting two weeks ago. So, it will be red hind in the Virgin
42 Islands in the 2025 SEDAR assessment and hogfish in Puerto Rico
43 had already been decided upon.

44

45 Next slide.

46

47 So, I just want to thank the many folks who have done a bunch of
48 this work previously. For example, in SEDARs four and 46, there

1 was also a special SEDAR workshop that really dug into the data.
2 The team that put all this together, thank you all-- you know who
3 you are; some of you are in the room --because they relied heavily
4 on that work. There was also a fishery independent survey workshop
5 that was hosted at the Science Center some years ago. Skyler
6 Sagarese did a bunch of work on species prioritization, not just
7 in the Caribbean, but in the rest of the Southeast. and Adyan Rios
8 really kicked us off with this particular iteration of this work
9 last year. She got it going and then she was joined by the rest of
10 the team to carry on the work for the remainder of the year.

11
12 Next slide.

13
14 I would stress, and I talked about these two weeks ago, about how
15 critical it is for the SSC, the Council, the fishers, DFW, DNER to
16 be involved in the SEDAR process. So, I won't keep beating that
17 drum unless you don't show up and then I will start again.

18
19 Next slide.

20
21 Just a quick-- this is a total aside from all that, but it does
22 tie into it somewhat in that now that DNER is getting data from
23 electronic logbooks in Puerto Rico, we've hit a snag in terms of
24 data accessibility. So DNER, the Shellcatch Group are collecting
25 those data, who set up the application for the collection. ACCSP,
26 which down below you'll see is the Atlantic Coastal Cooperative
27 Statistics Program, where some of the data will be warehoused; and
28 Science Center staff, primarily Yanet Jiménez and Kim Johnson, are
29 working to iron out the bugs so that the data that are being
30 collected that are now not readily available to the Science Center,
31 will get to the ACCSP where we can get it and we won't have a big
32 hole in the landings time series for commercial data in Puerto
33 Rico. And, I think, that is it.

34
35 Next slide. That's it! So, I know it's late and we have one minute
36 for questions. I don't want to overstep tonight.

37
38 **Questions/Comments**

39
40 **SENNAI HABTES:** There's more time. It's okay. I'll start with
41 Julian Magras because he's been pretty patient all day.

42
43 **JULIAN MAGRAS:** I just want to say, Kevin, excellent presentation
44 and I think we are headed in the right direction. This is the
45 conversation that we've been having, that we can close a lot of
46 these loops and we're looking forward to working with you guys and
47 helping in any way that we can help, so the process can be easier
48 for everyone. Thank you.

1
2 **KEVIN MCCARTHY:** Yeah, thanks Julian. I look forward to looking at
3 some of those logbooks and seeing what we can get out of those.
4 Thanks.
5
6 **SENNAI HABTES:** I believe I saw, Rich, had his end up.
7
8 **RICHARD APPELDOORN:** Very nice, Kevin. Maybe, probably a reminder,
9 because you're already probably aware of this. You were looking at
10 that first list of species for indicators, what were, you know, da
11 da da da. I'm looking down that list and for each island there's
12 maybe 12 species-- unfortunately, they're not always the same 12.
13 --that really are the ones that we would want to work on. Some of
14 those are not ones that have sufficient length data at the moment.
15 So, when you're talking about, well, these are kind of the ones we
16 could work on. You know, I would say we need to get some effort
17 into the ones that we don't have that information on but are in
18 fact the key species we want to look at. And, like I said, this is
19 a reminder because I'm sure you're well aware of it, but just there
20 are species we need to do and then there's species we really need
21 to do, and we need to make sure that that second group is eventually
22 getting the data. And I'll add that conch might be one of the ones
23 that comes online because with the change in the SEAMAP sampling
24 protocol where we go to circles, that's basically a catch an effort
25 index that you're getting there, along with the length, size
26 distributions. You know, modeling conch is a whole other story,
27 but at least we'll be getting data that will be more suitable for
28 that process.
29
30 **KEVIN MCCARTHY:** Yeah, I completely agree with you, Rich. That is,
31 much like the modeling work that the team's done with the EBFM,
32 this work also points to areas where research is needed, right. It
33 really sets that up and it's yet another argument when you're going
34 after money, right? "Hey, this has been identified through the
35 EBFM work, through the data triage work."
36
37 Yeah, conch sort of-- I told them, magnificent animal though it
38 is, like, this is problematic. Let's leave it out of this triage
39 because it's kind of different from everything else.
40
41 **SENNAI HABTES:** Michelle.
42
43 **MICHELLE SCHÄRER-UMPIERRE:** Yeah. Thanks Kevin. I'd just asked you
44 to go back to 2014. I think we had a red hind SEDAR 35. That's
45 actually where we met. So, your Puerto Rico graph had red hind as
46 not assessed previously. But that's just a comment.
47

1 **KEVIN MCCARTHY:** Yeah, and you're right, there are a number of
2 those that have gone through assessments that were data limited
3 assessments that the review team said great work, but we can't get
4 an ACL from that. So, I think we were-- yeah, strictly speaking
5 that's incorrect but these are the ones that we're hoping to have.
6 In some cases, have already led to ACLs and we're hoping in the
7 future we'll lead to ACLs.

8
9 **MICHELLE SCHÄRER-UMPIERRE:** Yeah. One more question. Given our
10 situation, I think a lot of these, when we say we have enough life
11 history data, is there a caveat for regionally collected life
12 history data, or we're going with the whole shebang.

13
14 **KEVIN MCCARTHY:** So, we didn't limit it here, because that's the
15 ideal. And so, we're not going to say don't continue to do life
16 history work, because what we will do is, is separate out those
17 that were borrowing information from somewhere else. It's not
18 ideal, but does that shut down the assessment? That's a call for
19 the review. Right? But we will, when we start to get out of this,
20 sort of--

21
22 I always thought about this as sort of a multi-tier thing, right?
23 We've got a high tier that's ready to go. We could probably, in
24 good faith, try to do a stock assessment and maybe it's got the
25 life history data from the region. And then there's probably
26 another tier where it's borrowing stuff. It's got all the pieces,
27 but some of them are borrowed. And then there's a level where we're
28 missing some stuff and that's where we ought to focus research
29 dollars on, as well as that sort of tier 1A where we borrowed some
30 stuff, you know. And then as Rich was saying, you know, as a group,
31 we might want to look at those and prioritize within that.

32
33 And that's really the Council's call, you know, with SSC guidance,
34 with guidance from stakeholders, it's not really a Science Center
35 call, I don't think. We can offer up our opinion if asked. And
36 then there's going to be a level of species that is going to take
37 a while to build up the data, to be able to do a stock assessment.
38 And maybe those are never going to be a priority just because the
39 landings, the fishing effort directed towards them, or even
40 incidentally, may not ever be sufficient, but they might be
41 important as ecosystem components, right? So, we don't want to
42 just judge things based on, it's got a lot of economic value in
43 the fishery. It may have a big role in the ecosystem.

44
45 **SENNAI HABTES:** Well, I am no longer seeing any hands up in the
46 room or online, so if there are no other questions, I will thank
47 Kevin for his presentation and the excellent work he and his staff
48 are doing. I will say that I need a-- Do I need a motion and a

1 second or I can just end it? I can just end it. I can just end it.
2

3 **GRACIELA GARCÍA-MOLINER:** Yes, but you have to also remind them
4 that you guys will be at the board room number two on the second
5 floor. And for those who are not staying here, we need to get you
6 a card so that you can go up and down the elevator or ask at the
7 reception area to let you up.
8

9 The SSC will meet here, then tomorrow. Do you need the SSC and the
10 TAP to meet again later? I don't think so, but—
11

12 **SENNAI HABTES:** I don't think that's the case. I think this was
13 sufficient for our needs. I would say—yeah. No, I think that's
14 good. I think anyone who is not staying at the hotel that doesn't
15 need a card, please see Graciela. We will convene at 9:00 AM in
16 the-- do you have a question? Okay. Let me finish this announcement
17 and then I'll come to you.
18

19 The EBFM TAP will be meeting on the second floor, boardroom number
20 1. Room 102, or 201?
21

22 **GRACIELA GARCÍA-MOLINER:** One. One. Boardroom number one.
23

24 **SENNAI HABTES:** Boardroom number one on the second floor. Tomorrow
25 beginning at 9:00 AM.
26

27 The SSC will be meeting in this same room tomorrow morning,
28 beginning at 9:00 AM.
29

30 With that, let me go to Kevin first then Liajay for other
31 logistical announcements.
32

33 **KEVIN MCCARTHY:** Liajay, may already be ahead of me and is about
34 to answer this question, but were there any changes in tomorrow
35 morning's schedule that don't show up on the FR notices? because
36 I want to get to the right class, right?
37

38 **LIAJAY RIVERA GARCÍA:** We moved the approval of the Verbatim
39 transcripts to their individual meetings. That's what's pending
40 right now. But, for what I wanted to say, if you don't have any
41 other question.
42

43 **KEVIN MCCARTHY:** Who's going to have the best class?
44

45 **GRACIELA GARCÍA-MOLINER:** But let me answer that. So, tomorrow
46

47 **SENNAI HABTES:** So, what I would recommend, Liajay, put the agendas
48 up and we can just see them now and people can figure that out.

1
2 **LIAJAY RIVERA GARCÍA:** Okay.
3
4 **GRACIELA GARCÍA-MOLINER:** So, you'll make any changes today, if
5 need be.
6
7 **SENNAI HABTES:** So, while that's coming up, I do want to thank all
8 of our presenters before the people online head off. I appreciate
9 everyone's time and everyone's attention. I'm not sure, Sarah, I
10 don't think you'll be with us tomorrow. So, we want to thank you
11 for taking the time to come down and give us that presentation and
12 hope that we will see you again in the future and can be able to
13 call on your, talk to you about things as we're moving forward
14 with this process.
15
16 So, with that, I think we've got-- which one's this one, the SSC
17 or the EBFM TAP?
18
19 **LIAJAY RIVERA GARCÍA:** EBFM.
20
21 **SENNAI HABTES:** Okay. So, it looks like starting at nine, it's the
22 roll call. We're doing the overview of FEP development. Other
23 themes for discussion, stakeholder perceptions. And then we go
24 straight into working groups.
25
26 So, essentially in the morning we'll go back through the agenda.
27 I think we'll use that time to develop the framework. We're going
28 to want to work through for the rest of the next three days,
29 identify which working groups and timeframes we use for those
30 sessions. So, the morning we'll be planning for the rest of the
31 three days as well as identifying the meetings and times.
32
33 So, I would like all EBFM TAP members to be there, at least, nine
34 to 12 and we'll use that time to plan out the rest, look at the
35 SSC agenda and identify times that we need to go to the SSC.
36 Because the two of you, Juan, Kevin and myself that have sessions
37 that we definitely need to be at.
38
39 So, Liajay, if you want to put up the SSC?
40
41 **VANCE VICENTE:** Just regarding to Kevin's question if there's any
42 changes for tomorrow's schedule. Miguel asked me, during the last
43 Caribbean Fishery Management meeting, to take time to discuss the
44 draft terms of reference for the SEDAR 91, Caribbean spiny lobster.
45 So that will be added to the agenda. I mean, I put it up as a
46 motion. Well, Miguel, told me. So, I will put it up as a motion,
47 if somebody seconds it, then it's going to be it. Okay, thank you.
48

1 **SENNAI HABTES:** So, it looks like for the morning you guys are
2 doing the overview of the past research priorities.
3
4 Is that what you guys-- you guys are going to continue on with
5 that in the morning? you're going to do the research priorities?
6
7 **VANCE VICENTE:** Yes.
8
9 **SENNAI HABTES:** So then, when do you think you're going to be doing
10 selection and finalization of the research priorities?
11
12 **VANCE VICENTE:** The last day, May 5th.
13
14 **GRACIELA GARCÍA-MOLINER:** The way that it was arranged is to fit
15 in with the Southeast Fishery Science Center, SEDAR, stuff that we
16 all do on May 4th. And depending on how long that takes, at that
17 time we'll include the spiny lobster and everything. I mean, just
18 do SEDAR during the May 4th and then come back on Friday to finalize
19 the research.
20
21 So tomorrow we'll be dedicated to all research. So, after you're
22 done organizing the framework, then come by and look into the
23 research priorities that you have in your Google Drive, etcetera
24 for the ecosystem component. And then, you can come in and discuss
25 with the SSC what you need to include there.
26
27 **SENNAI HABTES:** Okay, thanks everyone. For the attention, it is
28 5:13 PM. With that, we will adjourn for the day. We will reconvene
29 at 9:00 AM in this same room for the SSC and upstairs in boardroom
30 one for the EBFM TAP. Thanks all and have a good evening.
31
32 (Whereupon, the meeting adjourned on May 2, 2023.)