

GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

ECOSYSTEM COMMITTEE

Webinar

DECEMBER 1, 2020

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1 The Ecosystem Committee of the Gulf of Mexico Fishery Management
2 Council convened via webinar on Tuesday morning, December 1,
3 2020, and was called to order by Chairman Bob Shipp.

4
5 **ADOPTION OF AGENDA**
6 **APPROVAL OF MINUTES**
7 **ACTION GUIDE AND NEXT STEPS**
8

9 **CHAIRMAN BOB SHIPP:** If we can get Tab Q pulled up, we'll start
10 the coverage of the Ecosystem Committee. The members of the
11 Ecosystem Committee are myself, Dr. Stunz, Kevin, Ms. Bosarge,
12 Dave Donaldson, J.D. Dugas, Mr. Dyskow, Robin Riechers, General
13 Spraggins, and Mr. Williamson.

14
15 The first thing on the agenda is Adoption of the Agenda. Are
16 there any objections to the agenda, which is Tab Q, Number 1?
17 By the way, this is the first committee I've chaired since we've
18 gone virtual, and I do not know how to recognize people with
19 their hands up, and so, Tom, you're either going to have to help
20 me there or someone instruct me.

21
22 **DR. TOM FRAZER:** I will help you out, Bob.

23
24 **CHAIRMAN SHIPP:** Okay. I don't see any hands up, if you don't
25 either. If there are no objections to the agenda, the next item
26 is Approval of the October 2018 Minutes, which is the last time
27 the committee met, and are there any objections to the approval
28 of the minutes? If you see none, Tom, I don't either. That
29 moves us to the Action Guide and Next Steps, Tab Q, Number 3.
30 Natasha, are you ready to take over?

31
32 **DR. NATASHA MENDEZ-FERRER:** Yes, I am. Thank you, Mr. Chair.
33 For today, we have two items to go over during today's Ecosystem
34 Committee. First, council staff, in this case me, will give you
35 an update on the fishery ecosystem plan. The Ecosystem
36 Technical Committee met for the first time to discuss the
37 development of the fishery ecosystem plan, or FEP, for the Gulf
38 of Mexico region, earlier this year.

39
40 The topics discussed included ongoing projects with the
41 Southeast Fisheries Science Center, ecosystem efforts by the
42 Mid-Atlantic Fishery Management Council, and we discussed
43 translating ecosystem information into actionable objectives.

44
45 The Ecosystem Technical Committee agreed that a successful FEP
46 should have clear goals and objectives, which will provide the
47 tools and background information to support fishery management
48 actions. The summary of this meeting has been provided as

1 background materials to the committee.

2
3 The council's Ecosystem Committee will then be presented with
4 specific suggestions from the Ecosystem Technical Committee,
5 including a mission statement, proposed sections to include in
6 the FEP, and the corresponding goals and objectives. The
7 committee should provide direction to staff regarding the vision
8 of an FEP, specific objectives, a proposed timeline, and
9 additional content to include in the document.

10
11 I also want to highlight that we have Dr. Karnauskas, who will
12 be joining us, and she will be giving a presentation, but she's
13 also the Chair of the Ecosystem Technical Committee.

14
15 Then the next item would be a presentation by Dr. Karnauskas,
16 which will provide an update on the existing ecosystem-based
17 fisheries management efforts that can inform the development of
18 a Gulf FEP. She will also present the results of stakeholder
19 workshops geared towards capturing the perceptions and concerns
20 related to the status of the ecosystem and fisheries in the
21 Gulf. The committee is encouraged to ask questions and provide
22 feedback to help the staff move forward with the development of
23 the Gulf FEP.

24
25 The way that we've structured this is both of these
26 presentations are going to feed into each other, and so we are
27 looking for good feedback from the committee to be able to
28 continue moving the FEP document forward. If we have time, we
29 can discuss other business. Thank you, Mr. Chair.

30
31 **DR. FRAZER:** I don't see, Bob, any hands up, and so I think it's
32 probably appropriate for Natasha just to start her presentation.

33
34 **CHAIRMAN SHIPP:** Natasha, are you ready?

35
36 **DR. MENDEZ-FERRER:** Yes.

37
38 **CHAIRMAN SHIPP:** Okay. Go to it.

39
40 **UPDATE ON THE GULF OF MEXICO FISHERY ECOSYSTEM PLAN**

41
42 **DR. MENDEZ-FERRER:** Since the last time that the council saw or
43 discussed anything related to the FEP, the ecosystem plan -- I
44 figured that we could start with a recap.

45
46 What is an FEP? A FEP is a non-regulatory document that serves
47 as a guide and provides a framework to incorporate ecosystem
48 aspects into fishery management decisions. Through this

1 document, we can outline specific goals, and we can characterize
2 them by priority, and we can provide background information on
3 the physical, biological, social, and economic considerations of
4 the Gulf of Mexico, and it's also an opportunity to identify
5 steps to reach the specific goals and help inform management
6 actions.

7
8 When we're developing this document, there is no clear -- It
9 will be something kind of different to the way that we usually
10 draft our amendments, and it might be a document that's a bit
11 more fluid, and we have the opportunity to design it in a way
12 that will definitely provide the council with all the tools to
13 incorporate ecosystem considerations when developing fishery
14 management actions.

15
16 In October of 2018, there was a council motion to direct staff
17 to develop a fishery ecosystem plan, using the outline
18 presented, which shall include recommendations for how to
19 integrate ecosystem factors into the council decision-making
20 process, and so, during 2018, the council saw a draft outline,
21 and they saw some presentations from the Science Center on some
22 available tools, and, in order to move forward the document, the
23 council passed a motion to establish an ecosystem technical
24 committee to consist of no more than thirteen ecosystem
25 scientists from the Science Center, the SSC, academia, and other
26 stakeholders to assist in the development and implementation of
27 an FEP.

28
29 That was the original plan, and so, from 2018 to 2020, we've had
30 some staff changes, and so we couldn't convene the technical
31 committee until earlier this year, and the plan was to bring you
32 a draft FEP by the end of 2020.

33
34 Clearly, there have been some major events that have happened
35 this year that have made us kind of adjust our course of action,
36 and so, now pending approval, we're considering using funds,
37 through a no-cost extension, to hire a team of scientists that
38 can help us develop an FEP, and, for this process, what we're
39 planning is to convene the Ecosystem Technical Committee and the
40 council for a mid-term review, and so, that way, we can design -
41 - We can make sure that the final deliverable is something that
42 meets our expectations. If nothing happens, the plan is to
43 bring you a draft document by the end of 2021.

44
45 I will go over some of the highlights of the different topics
46 that we discussed during the Ecosystem Technical Committee in
47 March of 2020. During the committee, we discussed building a
48 fishery ecosystem plan for the Gulf of Mexico, and we looked at

1 the approach that the Mid-Atlantic Fishery Management Council is
2 doing for incorporating ecosystem considerations into their
3 management, and we also had a discussion on the regulatory
4 authority of the Gulf Council in the context of ecosystem
5 management, and then council staff presented the outline that
6 you had seen in 2018, to get some feedback from the Ecosystem
7 Technical Committee.

8
9 I won't spend too much time on this item, since Dr. Karnauskas
10 will be touching base on some of the things that she discussed
11 during the meeting, but, during this part of the meeting, the
12 technical committee agreed that an FEP should have a strong
13 focus on underlining cumulative effects, and the FEP should be a
14 platform for the council to provide recommendations to other
15 management agencies outside of the scope of fisheries.

16
17 What I mean by this is that we know that there are other issues
18 that are not managed by the council, are not related necessarily
19 to fisheries management, but that do influence our fisheries,
20 and so this could be a platform to enhance interagency
21 communication and collaboration. For example, considering
22 nutrient input from inland sources and its effects on water
23 quality, habitat, et cetera.

24
25 Then we had a staff member from the Mid-Atlantic Fishery
26 Management Council walk us through the process that they used to
27 develop an ecosystem management document, and so the Mid-
28 Atlantic Council went through a long visioning process to gather
29 information from stakeholders, and just to remind you that the
30 Gulf went through something similar at the beginning stages of
31 the FEP.

32
33 We do have some issues that have been brought up during our
34 council meetings, and we have the stakeholder workshop data that
35 Dr. Karnauskas is going to talk about later on, and so we have -
36 - Kind of like the visioning process, the Gulf Council has some
37 information that we can include in an FEP. The Mid-Atlantic
38 Council decided to divide their document into four major themes,
39 which include forage species, and that's the section that
40 evaluates the tradeoffs for the Mid-Atlantic Council's managed
41 forage species, the habitat section, and they focused on
42 strengthening essential fish habitat designations and
43 understanding the links between habitat and fisheries
44 productivity.

45
46 There is another section on climate change and variability,
47 which emphasizes the potential changes in species distribution
48 and migration patterns, changes in fleet dynamics that could

1 result from climate variability, and then another section that
2 focuses on interactions and looks at the implications of
3 interactions between social, biological, and economic aspects
4 and how can the council integrate those issues within its
5 management structure.

6
7 Then there was some more kind of fluid discussion between SERO
8 staff and the technical committee that covered what things could
9 be included as actionable items in the FEP, and so, basically,
10 trying to make this document give us some guidance on what
11 fishery management actions can come out of it and not just be
12 kind of a literature review of what's out there.

13
14 Ecosystem considerations, again, should require interagency
15 cooperation and then consider stakeholder input, and that's
16 important, because they are our eyes out there, and then
17 developing an FEP is a complex endeavor, but a vision statement
18 can help us focus in guiding this document.

19
20 This is the outline that we presented to the technical
21 committee, and, as you can see, it kind of follows a similar
22 structure to what we're familiar with through our amendment
23 process, and this is sort of what the council had approved
24 during their October 2018 meeting, but what the Ecosystem
25 Technical Committee decided was that we needed to take a step
26 back and not really move forward with this particular type of
27 outline, but try to figure out what does the council want to
28 achieve with this document.

29
30 The committee evaluated and discussed vision and mission
31 statements from other fishery management and is now recommending
32 that a mission statement for a Gulf FEP would be to provide a
33 framework for integrating ecosystem science into the council's
34 decision making for long-term ecological and socioeconomic
35 sustainability of the Gulf of Mexico.

36
37 I can stop here and get some feedback from the committee. Is
38 this something that we should move forward with, or do we want
39 to tweak this mission statement in any way?

40
41 **CHAIRMAN SHIPP:** Tom, I'm going to leave it up to you to call on
42 hands, if you see any.

43
44 **MS. BERNADINE ROY:** Bob, do you see the note on the board that
45 says, "hand is up"? We will put the names there, and I don't
46 see any hands up right now.

47
48 **CHAIRMAN SHIPP:** Okay. I will be watching for it. No hands.

1
2 **DR. MENDEZ-FERRER:** Mr. Chair, if you want, we can let the
3 committee think about this, and then we can kind of hear back
4 from them once I'm done with the presentation.
5

6 **CHAIRMAN SHIPP:** That sounds good. You can move on.
7

8 **DR. MENDEZ-FERRER:** The next three slides include some of the
9 sections that the technical committee recommended that we use to
10 design the FEP document, and so the sections will be focused on
11 ecosystem management goals, having a biological section, and
12 then a socioeconomic section, and so, for these three slides, I
13 will be listing -- They have suggested some goals, and I want to
14 get some feedback from the committee on if we should follow --
15 If we should include these into the document. The ones that are
16 highlighted in yellow are goals, I think, that we already do
17 that are either covered through Magnuson or that are not really
18 management goals, and so, if we wanted to remove them from the
19 goals, that's something that could be completed.
20

21 Right here, we're looking at what's been suggested for the goals
22 to include in the ecosystem management section, which would be
23 to improve management decisions based on interactions among
24 physical, biological, and socioeconomic factors. Document
25 sources, which could affect fisheries productivity, inform the
26 development of new and existing management measures, coordinate
27 and consider ecosystem interaction information across FMPs,
28 identify and prioritize research needs, and we already do this
29 through our five-year research and priorities plan, and include
30 real-time data, in terms of management process, and identify
31 benchmarks and indicators of FEP success. Would the committee
32 want to move forward with these goals?
33

34 **CHAIRMAN SHIPP:** Any comments from committee members? Leann.
35

36 **MS. LEANN BOSARGE:** Thank you. I am trying to scroll down in
37 this PowerPoint to get to the page that I need to get to, but,
38 on the goals, do we have that up the screen? Yes. That improve
39 management decisions based on interactions among physical,
40 biological, and socioeconomic factors, I think I would change
41 "improve management decisions" to maybe "better inform
42 managers", or something like that, or "better inform management
43 decisions", because it's really to inform us, right, which would
44 lead to hopefully reduced management uncertainty and things of
45 that nature, and I think I might change that.
46

47 The very last bullet, identify benchmarks/indicators of FEP
48 success, I can see where that's an idealistic goal that you want

1 to get to one day, and I guess I'm not up-to-date enough on
2 where ecosystem science stands and if we're really at a point
3 where the science is developed enough that you would actually
4 have a benchmark and an indicator that you would be trying to
5 hit.

6
7 I say that because I see ecosystem changes as being long term,
8 like century-type -- You know, hundred-year changes, in some
9 instances, and so I wonder if we're really to a point where
10 we're trying to hit some sort of benchmark or indicator for a
11 whole host of different things, and maybe you could do it for
12 some things that are shorter term, and so I'm a little hesitant
13 on that one just yet. I think it's idealistic, and we want to
14 get there one day, but I don't know if that's the starting
15 goalpost.

16
17 **CHAIRMAN SHIPP:** Thank you, Leann. I appreciate that. I have
18 finally figured out how to recognize hands up, and so, Dave
19 Donaldson, I see you next on the list.

20
21 **MR. DAVE DONALDSON:** Thank you, Mr. Chairman. Leann touched on
22 one of my comments about the last one, and I tend to agree with
23 her. I'm not an expert on ecosystem management, and I think
24 it's important to be able to measure our successes, but I just
25 don't know if we're at a point where we can do that.

26
27 My other question has to do with the second-to-last bullet, and,
28 Natasha, can you explain what real-time data into the management
29 process means? I'm not really quite sure what that is getting
30 at.

31
32 **DR. MENDEZ-FERRER:** Let me see if I can recall. I think this is
33 more like -- For example, things like landings or how are the
34 fisheries reacting to like environmental stressors, and I'm
35 trying to recollect kind of what the discussions were for this
36 particular item, but I could get back to you. We have Mandy
37 Karnauskas, who is the chair, who could help us with this.

38
39 **DR. MANDY KARNAUSKAS:** I can try to touch on that. I think what
40 we had envisioned there was that, when we have ecosystem
41 changes, or events, outside of fishing, be it red tide or
42 hurricanes or freshwater diversions, things of this nature, they
43 have immediate impacts on the fisheries that need to be
44 accounted for, in some cases, and so I think that what we had
45 envisioned there was that we are able to better account for
46 these ecosystem shocks in real time to improve the management
47 process.

1 **MR. DONALDSON:** Okay. Thanks. I appreciate that clarification,
2 and I'm just wondering if we can't somehow modify that one, to
3 kind of reflect that, because, in just reading that, just having
4 those few words there, I'm not sure that captures what we're
5 talking about.

6
7 **CHAIRMAN SHIPP:** Thank you, Dave. Greg, I see your hand is
8 still up.

9
10 **DR. GREG STUNZ:** Yes, and thank you, Mr. Chairman. Both Leann
11 and Dave made some of my points, and I agree, and I largely
12 agree that we need the management goals, and, of course, we can
13 tweak them, and we need to see, obviously, a more formal
14 document developed, but I really see this document as much more
15 of a living-type document as well that grows with us and our
16 management needs and that kind of thing, that's somewhat
17 adaptable, because that's, obviously, the very nature of
18 ecosystem.

19
20 In reality, as Leann pointed out, this is a pretty difficult
21 task, because the ecosystem science is lagging behind some of
22 the need for an ecosystem management plan, and so, in a way,
23 we're putting a little bit of the cart before the horse, but I
24 feel pretty strongly that we need to get going on this document
25 and just create it in a way that we can modify and adjust as we
26 see fit and our management needs grow.

27
28 **CHAIRMAN SHIPP:** Thank you, Greg. Leann, your hand is back up?

29
30 **MS. BOSARGE:** Yes, sir. There was other bullet on this page
31 that I didn't really understand, the third bullet, to inform the
32 development of new and existing management measures, synthetic
33 indicators of policy success, and so it was the "synthetic" and
34 the "policy" that kind of jumped out at my, and "synthetic", in
35 my world, means not natural, and then the policy -- I don't
36 know, but I associate policy with D.C. a lot of times, but what
37 does that mean, that bullet?

38
39 **DR. KARNAUSKAS:** I can try and take that one, if that's okay. I
40 think what we had envisioned there was that we're looking at
41 other indicators other than, for example, ending overfishing and
42 maintaining stocks at biomasses that support maximum sustainable
43 yield, and so indicators such as resiliency in the system, and
44 so there's other measures of success beyond just the basics
45 outline by Magnuson.

46
47 **MS. BOSARGE:** On the surface, that sounds pretty good, and I
48 think I would want to maybe see a little bit more about what

1 some of those indicators are and things like that, to get a good
2 handle on that one, and so thanks, Mandy. I appreciate it.

3
4 **DR. KARNAUSKAS:** Sure.

5
6 **CHAIRMAN SHIPP:** Anyone else? I don't see any more hands.
7 Kevin.

8
9 **MR. KEVIN ANSON:** Thank you. I looked online at some of the
10 information from the Mid-Atlantic Council relative to their
11 ecosystem-based management, and they utilize a risk assessment
12 approach after the goals, I guess, or the overarching topics or
13 areas that they want to focus, and the risk assessment basically
14 incorporated a public meeting process, with council folks and
15 outside experts, and maybe stakeholders, and so the risk
16 assessment basically was to kind of utilize the goals and the
17 areas as kind of the main theme, but then look at more detailed
18 or specific topics, and I'm just wondering if that's an approach
19 that might be more helpful for us, is trying to strategize and
20 come up with a process for which we set up our EBFM?

21
22 **DR. MENDEZ-FERRER:** I guess it's up to the council what they
23 want this document to achieve, and I think that we're pretty
24 early on in the process to kind of identify those things, and
25 that's why we're going through this exercise and going through
26 these goals. If that's something that the council would like to
27 consider including into the document, then we could certainly
28 add it.

29
30 **CHAIRMAN SHIPP:** Any thought on that, Kevin?

31
32 **MR. ANSON:** I know we had a presentation from the Mid-Atlantic,
33 but it's been some time since that was done, and so I'm just,
34 again, looking online, and there is a paper out there that kind
35 of describes this risk assessment approach for ecosystem-based
36 management, and, to be honest with you, I just started reading
37 it this morning, and so I don't have much information, but,
38 again, in as much as trying to synthesize data, and maybe
39 bringing in the appropriate experts to help the council on a
40 committee-level-type -- It's an approach that they at least used
41 to try to come in with a product to begin assimilating the
42 various research to come up with something relative to a goal
43 that you identified.

44
45 It might be a little bit premature at this point, and I don't
46 know, but inasmuch as their approach, in trying to deal with
47 these issues that we've just brought up today, and were brought
48 up in the previous meeting, as I recall, is that these are

1 complex issues, and it's a little bit different from what we
2 normally think of when we're thinking of trying to do fisheries
3 management, and so the risk assessment might help provide a
4 little bit more clarity and focus as to where there are specific
5 areas that would need attention relative to the highlighted item
6 on this current slide of identifying and prioritizing research
7 needs, for instance.

8
9 Again, I just offer that as a comment, a general comment, and
10 it's difficult for me to sit and try to go forward with this at
11 this point, particularly since we have a lot of time in between
12 the last time we discussed it, but that's all. Thank you.

13
14 **CHAIRMAN SHIPP:** Thanks, Kevin. I tend to agree with you that
15 this ecosystem management approach has been thrown around for
16 more than twenty years, and it seems to always run up against a
17 stone wall, and it's so complex, and so a risk assessment
18 perspective I think is a potential way to go. Leann, I think
19 your hand -- Is it back up?

20
21 **MS. BOSARGE:** Yes, and I just kind of wanted to piggyback on
22 some of Kevin's comments, and I know that the group looked at
23 the Mid-Atlantic fishery ecosystem plan, and I'm sure there
24 wasn't enough time to go through everybody's ecosystem plan.

25
26 You know, the little bit of interaction I've had with the Mid
27 and hearing about how to handle some things, they seem to kind
28 of take a different path than the Gulf does a lot of times, and
29 they seem to be keen on pretty large-scale closures, whereas we
30 don't necessarily look at fishermen as a threat to the
31 environment, and we want to give people an opportunity to access
32 things.

33
34 Anyway, I just wondered -- I think Hawaii, the Western Pacific,
35 has an ecosystem plan as well, and I have heard them discuss
36 theirs just a little bit, and, the little bit that I heard about
37 it, I really liked it, and, to me, it was a true ecosystem
38 mindset, and they were looking at -- Of course, they're an
39 island, but they were looking at everything from the top of the
40 mountain down, because it's just like here in the Gulf.

41
42 When the Mississippi River flows into the Gulf of Mexico and
43 creates a big dead zone, it's not just the Gulf ecosystem that
44 we have to look at, because, when we only look at that, then
45 we're only focusing on what the fishermen might be doing or that
46 specific ecosystem there and what impacts it, and it's got to be
47 holistic.

1 I was wondering maybe if that committee might have time to look
2 at other ecosystem plans that might be out there, such as the
3 Western Pacific, and let's see what some other people have to
4 say. Thank you.

5
6 **CHAIRMAN SHIPP:** Thank you, Leann. I see no other hands up, and
7 so I will turn it back to Natasha.

8
9 **DR. MENDEZ-FERRER:** Thank you, Mr. Chair. I guess, to address
10 some of the concerns that have been brought up during the
11 slides, I am taking notes of all your concerns, and this is
12 definitely something that we can include in the language that we
13 use for the request for proposals for developing the document,
14 and so it's something that we could explore a little more, in
15 more detail, in the risk assessment used by the Mid-Atlantic
16 Council, but that's something that we could include, and this is
17 not -- This slide is more to get feedback from you guys, and
18 it's not to say that we have to absolutely go with these
19 management goals, and so these discussions that we're having are
20 actually very helpful, and it's information that we will use
21 when developing the call for proposals to hire the team that
22 will be developing the document.

23
24 I also want to point out that, if there are some concerns with
25 this, and we notice that we're kind of staying a little bit too
26 long on some of these goals, it might be good to go to Dr.
27 Karnauskas's presentation, since she will be covering some more
28 concrete examples of incorporating ecosystem into the fishery
29 management actions. If that sounds good, we can move to the
30 next slide.

31
32 The next section that the ecosystem technical committee
33 recommended that we include is the biological section, with the
34 goal to maintain or enhance biological diversity and fisheries
35 productivity in the Gulf of Mexico over the long term. With
36 that goal, they have listed these objectives, and we can pause
37 here for the committee to look at them.

38
39 Again, the yellow highlights are items that are already covered
40 through Magnuson, for example maintaining ecosystem health.
41 That is something that is mentioned through MSA, and, again, we
42 can get some feedback from the committee, if this is an approach
43 or a section that we want to include in the document.

44
45 **CHAIRMAN SHIPP:** I don't see any hands, and so, Natasha, I'm
46 going to send it back to you.

47
48 **DR. MENDEZ-FERRER:** Okay. At least, on the yellow highlights,

1 do we want to keep them there or do we want to ponder on those,
2 or do we want to leave that up to staff?

3
4 **CHAIRMAN SHIPP:** No comments from anyone.

5
6 **DR. MENDEZ-FERRER:** All right. Then let's move on to the next
7 slide. The next section is the socioeconomic section, with a
8 goal to maintain or enhance the blue economy for the Gulf of
9 Mexico stakeholders. The "blue economy" is defined as the
10 sustainable use of ocean resources for economic growth, improved
11 by jobs and ocean ecosystem health, and so these are the
12 objectives that were brought up during the technical committee
13 meeting, which includes define policy success based on other
14 marine use sectors, non-monetary terms, continuing economic
15 growth and business stability, understand preferences and
16 informing tradeoffs, consider human health impacts, promote
17 safety of human life at-sea, reduce conflicts between fishing
18 user groups, and increase consumer confidence in the
19 sustainability of Gulf fisheries. Does the committee have any
20 feedback on these goals?

21
22 **CHAIRMAN SHIPP:** Any comments from committee members?

23
24 **DR. MENDEZ-FERRER:** When we think about what we've been going
25 through this year, with COVID and whatnot, this is something --
26 Are there any objectives that might have affected the
27 socioeconomic environment of the Gulf?

28
29 **CHAIRMAN SHIPP:** Okay. Natasha, back to you.

30
31 **DR. MENDEZ-FERRER:** Okay. Virtual blank stares, and that's
32 okay. These are some examples of potential on-ramps, and I do
33 have just a disclaimer. These were sort of developed by council
34 staff, and we have not had an IPT meeting to discuss the FEP,
35 but, based on what other councils have done and some of the
36 discussions that were had during the technical committee, an
37 idea on how to develop this document is to kind of frame it on
38 potential on-ramps.

39
40 An on-ramp is like potential issues that may arise, and then we
41 can develop or expand on how to respond to them and include an
42 example of a council action. Maybe this is something that can
43 help the council provide some sort of like protocols or a
44 framework of things to consider when developing an amendment to
45 address the effects of specific events. I see Leann has her
46 hand up. I can stop right now and get Leann's question.

47
48 **CHAIRMAN SHIPP:** Leann.

1
2 **MS. BOSARGE:** Thank you, Mr. Chair. I'm a couple of pages
3 behind you, Natasha. I was looking at those goals for the
4 biological section, and the next page was some goals for the
5 socioeconomic section, and I don't necessarily want to get into
6 specific goals, but just kind of an overarching view of the
7 goals.

8
9 I really like that mission statement that the group came up with
10 a couple of slides before that, which was to provide a framework
11 for integrating ecosystem science into the council's decision
12 making for long-term ecological and socioeconomic sustainability
13 in the Gulf.

14
15 To me, that -- What I hope to get from this FEP is just that.
16 It's essentially a process where, just like lane snapper or red
17 grouper or you name it, but, when we start to embark upon an
18 amendment to make some change, where we get a hot sheet that
19 brought forth the fact that lane snapper is not 50 percent
20 sexually mature until nine inches, we'll almost have some sort
21 of document in the briefing book that gives us all of the
22 science, physical and oceanographic and things like that, that
23 will provide a foundation for us to better understand what is
24 happening surrounding that particular species, what might be
25 driving some of the changes that we're seeing out of whatever
26 we're looking at, landings or profiles or a stock assessment or
27 something like that.

28
29 It's, to me, all about that foundation of providing us a
30 snapshot of the science every time we get ready to make some
31 sort of change, but, when you get down into the goals that were
32 listed, the goals don't really seem to follow that mission
33 statement, and they seem to be much more -- I don't know the
34 right word, but robust, and it's actually -- Like this FEP is
35 going to try and reduce dead discards. No, it should inform us.
36 It's going to minimize protected species interactions. No, it
37 needs to inform us about what interactions with protected
38 species are going on, so that we can make better decisions on
39 things.

40
41 I guess that's my only beef there, and I think that it has some
42 real meaty stuff there, and there's a lot of meat on the bones,
43 but it's almost like it's trying to do the management, rather
44 than inform the management.

45
46 **CHAIRMAN SHIPP:** Thank you, Leann. Natasha, back to you.

47
48 **DR. MENDEZ-FERRER:** Thanks, Leann, for your feedback. I am

1 making notes of all of this, because this is information that we
2 can include on the request for proposals, and I know that we're
3 sort of in a crunch time on when -- If those funds get approved,
4 it's not like we can have another Ecosystem Committee meeting to
5 go through all of this, but hopefully, in that mid-term report,
6 we can kind of address -- We can tweak the document and make
7 sure that we're including the goals and following the framework
8 that would provide the council those tools for making management
9 decisions. I hope that kind of addresses your concerns.

10
11 If we go back to the slides for potential on-ramps, these are
12 kind of examples of dealing with the invasive species, and so
13 what kind of data do we need to collect to better inform what
14 kind of management decisions we need to take?

15
16 We could look also at climate change and the vulnerability of
17 species or fisheries and how this can affect migratory patterns
18 of changing climate and ocean conditions. Some of the examples
19 of council actions would be like adjust ACLs as the landings
20 fluctuate in response to episodic events or just changing
21 environmental conditions, spatial management, and whatnot.

22
23 These are all just examples, and Mandy Karnauskas will go
24 through some more of them, but this is kind of how I was trying
25 to envision the document and kind of framing it on, in the face
26 of these ecosystem factors, how would the council address the
27 impacts that they might have on a fishery. I can stop here to
28 get some feedback from the committee. If not, we can kind of
29 close this part of this presentation and then get some more
30 examples from Dr. Karnauskas.

31
32 **CHAIRMAN SHIPP:** Any committee members have comments or
33 questions? I don't see any hands. Natasha, I think we're back
34 to you again.

35
36 **DR. MENDEZ-FERRER:** All right. This is the last slide of my
37 presentation, and I kind of wanted to bring it back to what is
38 the document supposed to be, and it's a non-regulatory document,
39 and so it's supposed to give you a guide and a framework and
40 information that you could incorporate to address ecosystem
41 factors into the council's fishery management decisions.

42
43 The draft timeline that we are clearly running with is to
44 continue convening the Ecosystem Technical Committee, to get
45 their feedback, and, again, this is all depending on the status
46 of the pandemic, and then, pending if we get the funds from the
47 no-cost extension, then we would do our request for proposals to
48 begin work in drafting a document by a contractor next year.

1 Then we would keep the council in the loop with the development
2 of the document, and then we would present a draft FEP to the
3 council in 2022. That's it.

4
5 **CHAIRMAN SHIPP:** Thank you, Natasha. Good job. We're going to
6 finish up with Mandy Karnauskas. Mandy, are you ready to go?

7
8 **SOUTHEAST REGIONAL EFFORTS TO BUILD A FOUNDATION FOR THE FISHERY**
9 **ECOSYSTEM PLAN**

10
11 **DR. KARNAUSKAS:** I am ready to go. Good morning, everyone.
12 It's nice to see some familiar faces on the screen. I hope you
13 all had a good Thanksgiving, and I know your agenda is really
14 packed, and so I'm going to try to be as brief as possible, but
15 I do want to build on the last presentation by Dr. Mendez-
16 Ferrer.

17
18 I think the Science Center, over the last couple of years, has
19 really made a lot of progress in trying to address ecosystem-
20 based fisheries management in some tangible ways, and so I'm
21 really excited to share that with you today.

22
23 I wanted to remind you kind of where we left off. The last time
24 I actually presented to the council was a couple of years ago,
25 and so, at that time, we were just rolling out these EBFM
26 Roadmap Implementation Plans, and this document, as I saw it,
27 was really kind of a conversation starter, and so this is where
28 we laid how we can actually address some of the ecosystem issues
29 with the existing resources that we have and the unique
30 characteristics of our Gulf region.

31
32 What this document contains, essentially, is a summary of a lot
33 of the existing science that could be used to inform management,
34 and so we kind of divided that into these seven areas. We have
35 science that can be used to advance stock assessments, better
36 track ecosystem trends, address issues related to climate
37 change, habitat considerations, address some of the multispecies
38 interactions, thinking about connectivity and the spatial scales
39 at which we manage, and better incorporate human dimensions and
40 social and economic issues.

41
42 The big task before us now is to figure out how we make this
43 science actionable, or operational, and how do we actually
44 integrate this information into the management process?

45
46 One of the big limitations of this document is, at the time that
47 we developed it, is that we really were missing a specific
48 destination, or a set of end goals, when we talk about ecosystem

1 management, and so, really, this is kind of an EBFM roadmap to
2 nowhere, as I saw it, and this really gets at why we need this
3 fishery ecosystem plan and why the Ecosystem Technical Committee
4 spent so much time talking about potential goals.

5
6 This is really the information we need from the council. What
7 are the end goals of fishery management at the ecosystem level?
8 Once we have that destination and the steps become clearer, we
9 can fill in with the science and the information that's needed
10 to reach those goals. Then the importance of the FEP is that it
11 lays out the social, ecological, institutional, or economic
12 objectives for the region, and then, accordingly, it provides
13 that decision framework for meeting those objectives.

14
15 Before I go forward, I just want to clarify and make sure we're
16 all on the same page. Here are a couple of definitions. When
17 we say "ecosystem-based fisheries management", or EBFM, we're
18 talking about a systematic approach to fisheries management that
19 contributes to the resilience and sustainability of the system
20 and recognizes physical, biological, economic, and social
21 interactions affecting the fishery-related components of the
22 system, including humans, and seeks to optimize benefits among a
23 diverse set of societal goals. Again, the FEP should provide a
24 statement of those goals and a framework for addressing them.

25
26 Now, there has been recipes for developing FEPs that have been
27 laid out, and I'm not going to go into details there, and
28 there's a figure on the lower-right here of a paper published by
29 Levin et al. that goes through this process, but what I want to
30 talk about today is to first show you that we really have a good
31 foundation for developing an FEP, in terms of this first step of
32 developing conceptual models and selecting and calculating
33 indicators and inventorying threats. We have a fair bit of
34 foundation to work on, and then how do we put this foundation in
35 action, and I will try and give some concrete examples of that.

36
37 I also want to point out that EBFM is not something we've just
38 started working on recently. The conversations go way back,
39 before my time at NOAA, and they started in the mid-2000s, and
40 the council had some efforts, and there was some funding
41 available, and they had some stakeholder workshops and surveys,
42 where they were trying to get input on EBFM and what it should
43 look like in the Gulf.

44
45 There were some efforts to identify data sources that were
46 available and evaluation of models for use in EBFM, and then, in
47 the last five years, or ten years, closer to ten years, I think
48 we've seen a lot of research funding injected in the Gulf,

1 following Deepwater Horizon, and we've really seen a big
2 increase in the rate of information that we can use to make EBFM
3 actionable.

4
5 A couple of examples is an effort by Arnaud Gruss et al., where
6 they developed an inventory of data that were available and used
7 this to produce species distribution maps for a suite of
8 species, and another example is a really good effort by Dave
9 Chagaris et al., where they actually held a workshop to scope
10 what are some of the major threats and management challenges and
11 then try and match up ecosystem models, or other tools, that can
12 be used to answer these questions, and so we're really getting
13 to the point where EBFM can be actionable.

14
15 Another thing we have at hand is the ecosystem status report,
16 and, as Leann mentioned, when we look at single species, when
17 we're trying to make decisions, we really have to have the
18 background of what's going on, what are the other factors,
19 outside of fishing effort, that are affecting the species, and
20 that's what these status reports are designed to do provide, is
21 a collection of indicators, everything from the physical to the
22 social and economic environment, all the things that are
23 changing, and the backdrop on which you make these management
24 decisions. We have two of these reports that were published in
25 2013 and 2017, and we do continue to update some of these
26 indicators.

27
28 Another effort that I want to talk about -- This is a new
29 initiative that the Southeast Fisheries Science Center started a
30 couple of years ago, and, in terms of building a foundation for
31 an FEP and this idea of conceptualizing the system, we have been
32 carrying out these workshops, and we call it a participatory
33 system dynamics modeling workshop.

34
35 Essentially, what we do is we go out to fishing communities and
36 work with small groups of stakeholders to try and understand,
37 when we say ecosystem-based fisheries management, what is this
38 ecosystem we're trying to manage.

39
40 There was some discussion yesterday about the importance of
41 getting input from folks on the water, and this is something
42 that I really firmly believe in, and I think it's really
43 critical when we talk about EBFM, because people are part of the
44 ecosystem, and industry -- People involved in the industry have
45 a really intricate knowledge of what are all the factors
46 impacting the fish and the fishery.

47
48 We did workshops, and we're trying to document that information

1 and actually go through a process where we're trying to map out
2 the ecosystem from the perception of the stakeholders. For this
3 initial trial, in 2018 and 2019, we focused on snapper grouper
4 communities for the West Florida Shelf and the fisheries, and
5 that's not to say that others are not important, and we would
6 love to expand out, but, for this initial trial, this was more
7 logistically feasible for us to focus on.

8
9 I could talk for many hours about all that we learned from these
10 workshops, and they really provided a ton of insight, but we're
11 short on time, and so I'm going to try and sum it all up with
12 some themes across the four workshops in this one slide.

13
14 What you're seeing on the top, these are actually the system
15 models that we produced, and so they're little sticky-note-and-
16 arrow models, and, again, these just represent the ecosystem
17 components, or the linkages, as the different groups of
18 stakeholders see them.

19
20 Then, in the afternoon -- We spend the morning building these
21 models, and then, in the afternoon, we talk about -- We kind of
22 dig into the models and talk about some of the major concerns
23 and the things that people value, and so, again, a very broad-
24 brush summary, but, in terms of the factors affecting the
25 fisheries that people brought to the table, the vast majority of
26 factors could be classified into kind of these themes here.

27
28 First of all, water quality and habitat, bait and forage fish,
29 invasive species, predator populations and depredation and gear
30 loss issues, the practicality of regulations, accountability,
31 and then technology and effort and participation.

32
33 We also go into talking about what are the major concerns and
34 then trying to highlight -- Going back to this idea of trying to
35 inventory threats, and this could be considered sort of a risk
36 assessment sort of approach, and we're trying to identify what
37 are the key issues that are going to come back and bite us if we
38 don't pay attention to them, and these are some of the major
39 concerns that we identified, where, again, we have water
40 quality, target fish populations and just keeping those
41 maintained, forage populations, or lack thereof, economic
42 impact, and so forces outside of fisheries that are having
43 impacts on the businesses and profits.

44
45 Accountability was another major concern, perverse incentives,
46 and what we mean by this is people feeling that they're getting
47 backed into doing things that they don't feel are in the best
48 interest of the fishery because they're cornered in by

1 regulations that might have unintended consequences. Then
2 opportunities for meaningful input was another concern.

3
4 Then, finally, we asked what people value most in the ecosystem,
5 and this can inform, again, those end goals of what are we
6 trying to get out of fisheries management from an ecosystem
7 perspective, and so we asked people what they valued most, and,
8 again, water quality and habitat is something that is highly
9 valued. Abundant fish populations, and, of course, we spend a
10 lot of time addressing that and the goals with single-species
11 fishery management.

12
13 There is other things, like tourism and working waterfronts and
14 the presence of fishing communities. Then maintaining fishing
15 heritage, and these were all things that stakeholders valued and
16 wanted to see preserved with fishery management.

17
18 I could give a ton of examples of how we might address each of
19 these factors, but I am going to focus on water quality and as
20 it manifests itself with issues with red tide, because this is
21 an issue that was really a priority issue identified in these
22 workshops, and it's something that we've been researching for a
23 long time, as you're aware.

24
25 Red tide has, obviously, been a major concern for a long time,
26 and this is something that we started addressing in the mid-
27 2000s, starting with some of the gag and red grouper assessments
28 in the late 2000s, and we were seeing this big decrease, a
29 substantial decrease, in abundance across-the-board for some of
30 the surveys, and, at that time, based on fisher input, it was
31 thought that red tide had contributed to this big decline.

32
33 There was a whole bunch of research done by John Walter and
34 others in looking at developing an index of red tide that was
35 based on satellite data, and so we were able to quantitatively
36 incorporate the impacts of red tide into the stock assessment
37 process.

38
39 Following that, that led to a lot of expanded research, looking
40 at how we can address the fact that red tides are impacting
41 multiple species at one time, and so those ecosystem impacts,
42 and then trying to understand management strategies for these
43 episodic mortality events. How do you manage a species when you
44 don't know if there is a red tide coming next year, or in ten
45 years, and what are the management options, and how should we go
46 about setting quotas and catch limits and buffers, given that
47 these stocks are experiencing these natural mortality events?

1 The work basically done up to about 2017 or 2018 was largely
2 focused on trying to incorporate red tide into the single-
3 species management process, but one of the things that we
4 learned, coming out of these stakeholder workshops, was that we
5 really -- There was a need to address red tide from an ecosystem
6 perspective, and so we know that red tide affects target fish
7 stocks, but there's also an effect on the prey base, the
8 habitat, the aquaculture, publicity, tourism, seafood demand,
9 real estate, and health. All of these things are fairly
10 obvious, but the key point is that these things have compounding
11 effects and synergistic effects that really are sort of
12 pervasive in the system.

13
14 For example, you have a red tide killing the fish, which is bad
15 enough, but then you have bad publicity and social media and
16 these types of things, and that's just sort of exacerbating
17 issues of tourism, loss of tourism, seafood demand, et cetera.

18
19 This is one of the network models that came out of one of the
20 participatory workshops, and we had been addressing basically
21 this little link in the middle, which was the water quality
22 effects on the mortality of the Gulf, but what we learned from
23 the workshops was that there was a need to address red tide from
24 this wider EBFM perspective, and so it really has a pervasive
25 effect on the ecosystem as a whole.

26
27 Following these workshops, and understanding that red tide and
28 water quality was a big issue, we put together a number of
29 initiatives within the Science Center and our collaborators, and
30 so one of the first things we did was we set up a red tide
31 response cruise, and this was leveraging borrowed resources from
32 our NOAA partners, such as our NOAA research sister lab in
33 Miami, the Atlantic Oceanographic and Meteorological Lab, AOML.

34
35 We also collaborated with the state, with academics, with Mote
36 Marine Lab, and we got some rapid response funding from the
37 National Ocean Service line office, and so, essentially, we
38 expanded -- There's an existing survey, water quality survey,
39 focused on Everglades restoration, and we were able to get some
40 funds to expand the survey north to cover the red tide areas.

41
42 The first cruise was done in October of 2018, and AOML has
43 actually gotten funding from the state, and so we now have a
44 permanent cruise path, and so we're going every two months to
45 survey water quality in these heavily-impacted red tide areas.

46
47 One of the big things, surprising things, that we found on this
48 cruise in 2018 was a very substantial hypoxic area that has

1 grown in southwest Florida, and there was 1,400 square
2 kilometers of water under three milligrams per liter of oxygen,
3 and this was after Hurricane Michael had actually passed through
4 the area and mixed things up, and so likely the hypoxia was much
5 worse.

6
7 This was something that was not on our radar, and it brought up
8 a lot of questions as to how frequent these types of hypoxic
9 events are, and do they always occur with red tide? When and
10 where do they occur? We have since devoted a lot of research
11 effort to this issue and trying to understand impacts of red
12 tide and hypoxia on the system, and we have some results that we
13 should be able to report back soon.

14
15 Of course, red tide has not only impacts on the ecosystem, but
16 it also has impacts on the fisheries and the people, and so
17 another initiative that we started, following these workshops,
18 was trying to get a better understanding of the human impacts of
19 red tide, and we went out and did interviews, and we ended up
20 interviewing sixty-two fishermen across the communities, on the
21 map that you see here.

22
23 We looked for key informants, and so folks who have been fishing
24 these areas for many decades and could give a good history of
25 the water quality and red tide in their area, for both
26 commercial and for-hire fishermen. The goals of this initiative
27 were to understand how red tide varied in time and space
28 historically, and, as you might remember, this information was
29 actually used in SEDAR 61, in the red grouper assessment, and
30 Skyler gave a presentation to the council, I believe, and we
31 used this information to refine the projection scenarios for
32 trying to reduce management uncertainty in the stock
33 projections.

34
35 Another goal is to try and understand what the impacts of red
36 tides have been on fish populations, habitats, and humans, and
37 get some testable hypotheses, and so we have a number of
38 hypotheses that we're derived that we're now looking into, and,
39 then, finally, looking at trying to figure out fishermen and
40 coastal communities have adapted to red tide, and I starred this
41 because we've got a lot of good information here, and this might
42 be of interest to the council, in terms of a future presentation
43 on how fishermen are responding to these events and what we can
44 do on the management side to try and make them more resilient.

45
46 One of the things that we learned from these interviews was the
47 value of having real-time information, and so these red tides
48 are pretty dynamic and patchy, and they don't occur in the same

1 time and place, and so fishermen spend a lot of time in trial-
2 and-error in trying to figure out where to fish, where they
3 catch fish, when we've got these big red tides going on, or how
4 they can reschedule charter trips, when is the red tide going to
5 start, when is it going to end. If they don't have this sort of
6 information, it's a lot of trial-and-error, and it's a lot of
7 waste of time and money, and so we really got to appreciate the
8 value of real-time information in trying to make businesses more
9 resilient in the face of these red tide events.

10
11 Another thing we've been focusing on is a coordinated monitoring
12 effort, and, again, we're doing this in partnership with our
13 sister lab, AOML, and with the state, with FWRI, and also with a
14 group of fishermen, and so there's a group, Florida Watermen,
15 that was formed following the workshop, and they are helping to
16 fill in on the monitoring gaps, and so we have a coordinated
17 effort between the state and federal and private fishermen.

18
19 This group raised their own money to purchase scientific-grade
20 equipment, and we've been coaching them and helping them with
21 equipment, to make sure it's functioning properly, and they're
22 out there collecting data, and, of course, the real advantage of
23 working with fishermen is that they are usually the first to
24 realize that something has gone wrong.

25
26 They see water that's not the right color, or they see that the
27 fish are behaving weird, and so now we can just drop -- If they
28 have these instruments onboard, they drop them in the water. As
29 soon as they get back to shore, the information gets emailed to
30 us, and we can process it and get it back to them, usually
31 within a day, and get an idea of what's going on. Is there
32 something developing? Is there hypoxia? Are there blooms, or
33 what's going on out there?

34
35 We're feeding this information into the predictions for harmful
36 algal blooms, and we're working with GCOOS to get this QA/QC'd
37 and sort of publicly, so the research community can use it, and,
38 ideally, our long-term goal is that it will inform a seasonal
39 forecast, so that people can make better business decisions,
40 because they will have an idea of where it is and when it might
41 occur.

42
43 As you've seen in the sort of water quality red tide example,
44 we've gone all the way from including the issue, and accounting
45 for it in the single-species stock assessment framework, but,
46 also, we're almost to the point where I think we can start
47 giving some advice for how we might be able to help the fishing
48 industry become more resilient in the face of these events.

1 Obviously, red tide is probably not going away anytime soon, and
2 so we need to help people and businesses stay afloat, despite
3 all these stressors.

4
5 To try and wrap up here, I just want to go back to what's the
6 end goal, and I'm showing you this figure of the different
7 management approaches, and so, currently, we focus pretty
8 heavily on the single-species management approach and managing
9 with fishery management plans, and that's where most of our
10 fisheries management advice comes from, and this continues to be
11 extremely important and fundamental to the idea of EBFM.

12
13 What we would like to see is that we have a larger variety of
14 information coming into the management process, and so we're not
15 just looking at single species in isolation, but we're
16 considering all the other factors that are affecting the impact
17 and the way that species interact and fleets interact, and so
18 that's sort of the vision for the future.

19
20 Then, again, going back to the end goal, the primary question
21 is, and continues to be, are stocks overfished, and are we
22 overfishing, and this is a question that we've gotten very good
23 at answering, and, in some ways, is largely a mission
24 accomplished, and so, if fishing effort is generally where it
25 needs to be, and we've almost ended overfishing, with a few
26 exceptions, and our stocks are generally at the biomass where we
27 are hoping they are, or at least on their way to rebuilding
28 towards that biomass, and so we have essentially accomplished
29 this, and we know how to do it, and it's been a big success.

30
31 Now I think we have a different set of questions that we're
32 getting asked to focus on, and this is where adopting more of an
33 ecosystem approach can help us try and make progress on some of
34 these questions, and so, for example, how can we mitigate the
35 impacts of poor water quality on fish stocks?

36
37 What are the impacts of increasing predator populations or loss
38 of bait fish and invasive species on our target species? How
39 can we ensure that regulations don't ensure perverse incentives,
40 and how can we reduce discard rates? How can we improve
41 accountability and increase access to fisheries? How can we
42 maintain coastal livelihoods, despite all of these repeated
43 shocks, and we've had hurricanes, oil spills, red tide, COVID,
44 and these things just compound each other.

45
46 I would welcome a discussion on how we can work together, the
47 council and the Science Center and the Regional Office and the
48 stakeholders, on how to address some of these issues with the

1 science we have.

2
3 This is where I will leave you, and just a few acknowledgements.
4 I want to thank everyone, and there were a lot of people
5 involved in the red tide research and other water quality
6 research that we've been involved in, and I really want to thank
7 all of the fishing industry members and stakeholders who share
8 their knowledge and perspectives with us.

9
10 Before the pandemic hit, we were spending a lot of time on the
11 ground at fishing communities and talking to people, and,
12 really, that is what has been invaluable, and so I really
13 appreciate everyone taking the time to speak to us, and that's
14 all I have, and I don't know if there's time for questions.
15 Thank you. Thanks for your time.

16
17 **CHAIRMAN SHIPP:** Thank you, Mandy. Does anyone have any
18 questions or comments for either Natasha or Mandy? We're
19 running a little late, but there's always time for a question.
20 Leann.

21
22 **MS. BOSARGE:** Thank you, Mr. Chairman. I really liked Mandy's
23 presentation, and that ecosystem status report that you kind of
24 started off with, Mandy, or Dr. Karnauskas, I remember reading I
25 guess it was the first one that came out for the Gulf back in
26 2013, I think it was, and, boy, I was excited about that
27 document.

28
29 I really thought it had some good information in it, and it
30 wasn't a lot of fluff, and it wasn't a flow chart saying, oh,
31 this is ecosystem-based management, and then you get -- It
32 actually got into the nuts-and-bolts, and it even talked about
33 changes in the temperature of the water on the bottom of the
34 ocean versus up in the water column versus surface temperatures
35 and how those changes we're seeing in the Gulf are different
36 than the changes you're seeing in the South Atlantic and other -
37 - It talked about how some of this stuff affects species, and, I
38 mean, it really got into things that could be useful in our
39 discussions for management.

40
41 To bring this all back, and I requested an update on that, which
42 I know staff is going to put on an agenda, a Sustainable
43 Fisheries agenda, coming up soon, where we would get those
44 physical oceanographic indicators and get an update on those,
45 and we may also want to get the ecosystem status report from
46 2017 re-presented to us, because I'll be honest that I don't
47 think I've read that one, and maybe it was presented to us, and
48 I have it printed here, but I haven't read through it, and so

1 that would be a good thing.

2
3 I think that's really where we have to start this whole process,
4 is with the fishery ecosystem status report, and that, to me, is
5 where the meat is, where we get into the different indicators,
6 and, before we can develop a fishery ecosystem plan, us as a
7 council, and I know you're very familiar with all of this, Dr.
8 Karnauskas, but, for us, it's a little bit of grief.

9
10 It's kind of pie-in-the-sky, and we're not really sure what's
11 out there and what it is, and I think we have to get into these
12 different indicators and determine what indicators are important
13 to us as a council and what do we want to see, and, once we have
14 the foundation there, which is science-based, because everything
15 we do is science driven, right, and then we can take that and
16 build that into an FEP, but I think we're putting the cart
17 before the horse if we jump straight into the FEP without really
18 understanding what science, specific science, is at our
19 disposal, and so I enjoyed your presentation, and I really look
20 forward to your next presentation in the future, where you give
21 us some of those physical updates. Thank you, ma'am.

22
23 **CHAIRMAN SHIPP:** Thank you, Leann. I don't see any other hands,
24 and so, unless someone pops one up, we're going to move on.
25 Thank you, Mandy, and thank you, Natasha. The last thing on our
26 agenda is new business. Does anybody have any new business, or
27 other business, for this committee? Seeing none, I am going to
28 go ahead and pass it back to you, Tom. I know we're late, but
29 here we are.

30
31 (Whereupon, the meeting adjourned on December 1, 2020.)

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