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 1             GULF OF MEXICO FISHERY MANAGEMENT COUNCIL
 2
 3   MEETING OF THE STANDING & SPECIAL REEF FISH, SOCIOECONOMIC, &
 4           ECOSYSTEM SCIENTIFIC AND STATISTICAL COMMITTEES
 5
 6   GMFMC Office                                   Tampa, Florida
 7
 8                          MAY 2-4, 2023
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11 Luiz Barbieri...
12 Harry Blanchet...
13 David Chagaris...
14 Douglas Gregory...
15 David Griffith...
16 Paul Mickle..
17 Trevor Moncrief...
18 Will Patterson..
19 Daniel Petrolia...
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21 Jim Tolan..
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26 Josh Kilborn...
27 Steven Saul..
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31 Michael Allen..
32 John Mareska...
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48 Richard Cody..NOAA

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 9    Chris Stallings...............................................
10    John Walter................................................SEFSC
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1   The Meeting of the Gulf of Mexico Fishery Management Council
2   Standing and Special Reef Fish, Special Socioeconomic, and Special
3   Ecosystem Scientific and Statistical Committees convened on
4   Tuesday, May 2, 2023, and was called to order by Chairman Luiz
5   Barbieri.
6
7   **INTRODUCTIONS**
8   **ADOPTION OF AGENDA**
9   **APPROVAL OF VERBATIM MINUTES AND MEETING SUMMARY: MARCH 7-9,**
10   **2023 MEETING**
11   **SCOPE OF WORK**
12   **SELECTION OF SSC REPRESENTATIVE FOR THE JUNE 5-89, 2023 GULF**
13   **COUNCIL MEETING IN MOBILE, ALABAMA**
14
15 **CHAIRMAN LUIZ BARBIERI:** Okay. Good morning, everyone. I think
16 it's time for us to get started. Jess, do I have the thumbs-up?
17 Yes. Good morning. My name is Luiz Barbieri, and I am the vice
18 chair of the Scientific and Statistical Committee of the Gulf of
19 Mexico Fishery Management Council. We appreciate your attendance
20 on this webinar and input in this meeting.   Representing the
21 council is Tom Frazer.
22
23 Council Staff in attendance include Carrie Simmons, John
24 Froeschke, Ryan Rindone, Jessica Matos, and Bernie Roy. Notice of
25 this meeting was provided to the Federal Register, sent via email
26 to subscribers of the council's press release email list, and was
27 posted on the council's website.
28
29 This week's meeting will include some the following topics:
30 Adoption of Agenda; Approval of the March 7-9, 2023 Meeting Minutes
31 and Summary; Scope of Work; Selection of SSC Representative for
32 the June Council Meeting; Report from the MRIP Transition Team on
33 Red Snapper and Other Species in the Gulf State Supplemental
34 Surveys; Evaluation of Interim Analysis Process; Review of Queen
35 Snapper, Silk Snapper, and Blackfin Snapper Landings and Catch
36 Limit Consideration; Review of Black Grouper and Yellowfin Grouper
37 Landings and Catch Limit Consideration; Gulf of Mexico Ecosystem
38 Model to Support Fisheries Management; Management Strategy
39 Evaluation Workshop; Discussion of Management Strategy Evaluation
40 in the Gulf of Mexico; Review SHELF Fish Egg Monitoring Program;
41 Scope of Work for Upcoming Gray Triggerfish Stock Assessment;
42 Public Comment; and Other Business.
43
44 This webinar is open to the public and is being streamed live and
45 recorded. A summary of the meeting and verbatim minutes will be
46 produced and made available to the public via the council's
47 website. For the purpose of voice identification, and to ensure
48 that you are able to mute and unmute your line, please identify

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 1  yourself by stating your full name when your name is called for
 2  attendance.
 3
 4  Once you have identified yourself, please re-mute your line.  For
 5  members of the SSC on the webinar, we will be using the raise-hand
 6  function for the SSC for the Chair to help recognize you to speak.
 7  Jessica will type the names up on the memo pan on the screen, and
 8  I will be keeping track of hands in the meeting room, as well as
 9  the list.  With that, Jess.
10
11  MS. JESSICA MATOS:  Luiz Barbieri.
12
13  CHAIRMAN BARBIERI:  Luiz Barbieri.
14
15  MS. MATOS:  Harry Blanchet.
16
17  MR. HARRY BLANCHET:  Harry Blanchet.
18
19  MS. MATOS:  David Chagaris.
20
21  DR. DAVID CHAGARIS:  David Chagaris.
22
23  MS. MATOS:  Roy Crabtree.  Doug Gregory.
24
25  MR. DOUG GREGORY:  Doug Gregory.
26
27  MS. MATOS:  David Griffith.
28
29  DR. DAVID GRIFFITH:  David Griffith.
30
31  MS. MATOS:  Paul Mickle.
32
33  DR. PAUL MICKLE:  Paul Mickle.
34
35  MS. MATOS:  Trevor Moncrief.
36
37  MR. TREVOR MONCRIEF:  Trevor Moncrief.
38
39  MS. MATOS:  Jim Nance.  Will Patterson.  Daniel Petrolia.
40
41  DR. DANIEL PETROLIA:  Daniel Petrolia.
42
43  MS. MATOS:  Sean Powers.  Steven Scyphers.
44
45  DR. STEVEN SCYPHERS:  Steven Scyphers.
46
47  MS. MATOS:  Jim Tolan.
48
```

1 **DR. JIM TOLAN:** Jim Tolan.
2
3 **MS. MATOS:** Rich Woodward. Jason Adriance.
4
5 **MR. JASON ADRIANCE:** Jason Adriance.
6
7 **MS. MATOS:** Mike Allen.
8
9 **DR. MICHAEL ALLEN:** Mike Allen.
10
11 **MS. MATOS:** John Mareska.
12
13 **MR. JOHN MARESKA:** John Mareska.
14
15 **MS. MATOS:** Luke Fairbanks.
16
17 **DR. LUKE FAIRBANKS:** Luke Fairbanks.
18
19 **MS. MATOS:** Cindy Grace-McCaskey.
20
21 **DR. CYNTHIA GRACE-MCCASKEY:** Cindy Grace-McCaskey.
22
23 **MS. MATOS:** Jack Isaacs. Mandy Karnauskas.
24
25 **DR. MANDY KARNAUSKAS:** Mandy Karnauskas.
26
27 **MS. MATOS:** Josh Kilborn.
28
29 **DR. JOSH KILBORN:** Josh Kilborn.
30
31 **MS. MATOS:** Steven Saul.
32
33 **DR. STEVEN SAUL:** Steve Saul.
34
35 **MS. MATOS:** Tom Frazer.
36
37 **DR. TOM FRAZER:** Tom Frazer.
38
39 **CHAIRMAN BARBIERI:** Thank you, Jess. Now that we are done with
40 the introductions, the first item on the agenda is Adoption of the
41 Agenda. Are there any comments or proposed modifications for the
42 agenda that is in front of you? Seeing none, the agenda is approved
43 as it stands.
44
45 Item Number II is Approval of the Verbatim Minutes and the Meeting
46 Summary for the March 7-9, 2023 Meeting. Are there any comments
47 or edits or suggestions or modifications for the verbatim minutes
48 or the meeting summary from the last meeting? Not even Harry

Blanchet? Okay. Seeing none, the verbatim minutes and the meeting summary are approved. Now we're going to go to Ryan, who is going to give us an overview of the scope of work for today's meeting, for this week's meeting.

MR. RYAN RINDONE: Thank you, Mr. Chair, and I will go through this stepwise, as we get to each agenda item, and so first up is Dr. Cody with a report from the MRIP Transition Team on the red snapper and other species in the Gulf state supplemental surveys. Thank you, Dr. Cody, for being here in-person.

He's going to present information regarding the discussions for the MRIP Transition Team, which is working with the Gulf states and federal data managers to ID and assess sources of non-sampling errors across the various recreational data collection programs. This work has been ongoing, in various capacities, for a few years now, and it's recently been expanded to include additional species managed by the council. Dr. Cody will focus on the team's efforts with red snapper and briefly review the work with other species, and you guys should consider the information presented, ask questions, and make any recommendations, as appropriate. The floor is yours, Dr. Cody.

CHAIRMAN BARBIERI: Richard, if you don't mind, I am still green at this being chair thing, and my oversight on a couple of items, just before we get started into the meat, right, of the business itself, and one is we have -- Most of you probably have seen that email, but we have a new SSC member, Dr. Dan Petrolia, and, Dan, welcome to the Gulf SSC, if you want to say a few things about yourself.

DR. PETROLIA: I'm an economist at Mississippi State University, and I'm just glad to be here. Thank you, Luiz.

CHAIRMAN BARBIERI: Wonderful. Thank you for joining our committee, and then one other announcement that I thought I would make is about an SSC member who recently had to resign from the committee, due to health issues, and that's Dr. Benny Gallaway. Benny is a long-standing committee member, and he's much liked by everybody, and he has worked hard on a variety of issues that we know around the Gulf, right, and he has been a wonderful SSC member, a valuable member of our committee, but, unfortunately, his health has gotten to a point where he feels it's best to step down and kind of take it easy, at least for a while, and so there is a card that is going to be going around for all of us, you know, from the council staff and the committee, and we want to, of course, take this opportunity to also thank Benny for his many years of service and valuable contributions to Gulf of Mexico

1 marine fisheries research and conservation and participating and
2 helping the council process move along.
3
4 Benny, if you are there listening, thank you for everything, and
5 we love you, man, and it's been great to have you on the committee,
6 and we wish you the best, you know, going forward, and just note
7 that this is going to be going around. Dr. Cody, with that, and
8 my apologies for the interruption.
9
10 **SSC MEMBER:** (The comment is not audible on the recording.)
11
12 **MR. RINDONE:** We have somebody. We have our patsy lined up that,
13 and John Mareska has agreed to that bit of indentured servitude
14 for us, and I will help him out with the presentations and whatnot.
15 As it relates to the MSE portion, Dr. Saul, if you wouldn't mind,
16 if you could be available for that, and I'll talk to you about the
17 agenda, for presenting that portion of it, and I think that that
18 would be -- That that would be a good move, since you're near-and-
19 dear to a lot of that work, and we can talk a little bit more about
20 that at lunch.
21
22 **DR. SAUL:** Yes, I would be happy to. Thank you.
23
24 **MR. RINDONE:** Thank you.
25
26 **REPORT FROM THE MRIP TRANSITION TEAM ON RED SNAPPER AND OTHER**
27 **SPECIES IN THE GULF STATE SUPPLEMENTAL SURVEYS**
28
29 **DR. RICHARD CODY:** Thank you. Thanks for having me here. What I
30 hope to do today is just give you a brief overview of some of the
31 work that's been ongoing with the Gulf of Mexico Transition
32 Research Team, Survey Research Team, and I see that Trevor is here,
33 and so, Trevor, feel free to add to, you know, whatever information
34 that I can provide as well, and Tom is also here.
35
36 What I thought that I would do, initially, is begin with sort of
37 an overview, basically provide some background information on the
38 work of the group and why it is, at this point, sort of a critical
39 component of transitioning the state surveys, and then I'll give
40 you some idea of the scope of the research team, their progress
41 to-date, and then potentially some next steps as well, and so some
42 background I think is good for this process, since it's been an
43 ongoing thing for several years.
44
45 As we all know, you know, the federal surveys were basically
46 designed to produce catch and effort estimates at the wave and
47 annual levels, and also at the regional level as well, and that's
48 how they work best.

1
2 Given that, we'll say, application of the federal surveys, there
3 is a recognized need that, related to ACL management and short
4 seasons, that a more precise method, or methodologies, were needed
5 to address those management needs, and so the state surveys were
6 basically developed to address short season needs, and also to
7 look at what we call pulse and rare-event species as well, and, in
8 particular, the initial, we'll say, development of the surveys
9 focused more on red snapper, and then a number of -- In the case
10 of Florida, a number of species that were involving a suite of
11 reef fish species.
12
13 State seasons being inconsistent with federal seasons produced
14 some challenges, when it comes to, you know, the ability of the
15 federal surveys to provide precise catch information, as I
16 mentioned, and so another function of the state surveys, really,
17 was to try to maximize the season length so that it better
18 reflected the fishery.
19
20 A couple of other points here that I will make, and this process
21 started in 2013, and that was the start of a beginning of a series
22 of workshops, four separate workshops, that initially addressed
23 the question of pulse and rare-event species, but also focusing on
24 red snapper, and there were -- At the very first meeting, one of
25 the points made was that there were two basic approaches that could
26 be taken, and one was to improve the federal surveys, and then the
27 other was to come up with specialized surveys, or supplemental
28 surveys, for the federal component.
29
30 Since then, there's been a development, or a series of workshops
31 that led to the development, of the state surveys, and the state
32 surveys have sort of focused on different approaches, to some
33 extent, and there are some similarities between what Alabama and
34 Mississippi does, in terms of their overall methodology, and they
35 use what's known as capture-recapture methodology, whereas the
36 Louisiana and Florida surveys are more of the traditional type,
37 being probability-based surveys, and complementary in design as
38 well, where one component provides the base effort estimate and
39 then the other provides the catch information.
40
41 The new survey methods were introduced in Louisiana in 2014 and in
42 Mississippi, Alabama, and Florida over the next couple of years,
43 2015 and 2016, and they were refined, I would say, thereafter, up
44 until certification, which occurred for all of the surveys between
45 2017 and 2018.
46
47 There were follow-up -- Following certification, there was a
48 follow-up workshop, led by the Gulf Council, but also by the Gulf

1 States Marine Fisheries Commission, in 2020 to develop ratio-based
2 calibrations, and the initial workshop, led by Gulf States, and it
3 involved the states and NOAA, acknowledged that, you know, there
4 were two approaches they could take.
5
6 They could use a relatively simple approach, using ratio-based
7 calibrations, which would function in the short-term, and may not
8 need to be replaced over time, but the possibility of that was
9 always there, and then the other was to develop a model-based
10 approach, which could take quite a bit longer, and so the group
11 went with a ratio-based approach.
12
13 In 2022, there was a recognition, I think, that there needed to be
14 a more formalized process for transitioning, given that there were
15 a series of workshops with outcomes, and, also, the fact of the
16 matter was that, in certification, all of the surveys were required
17 to have a transition plan, and so this 2022 workshop basically
18 formalized this process.
19
20 Then, at the back of all of this, I think are a couple of other
21 considerations, and I am referring here to congressional
22 direction, and this is the joint explanatory statement from the
23 Fiscal Year 2021 appropriations language, and so there were three
24 components in there that were, I think -- I would say they were
25 critical parts of the process, or considerations for the transition
26 process, the first being an independent assessment of the accuracy
27 and precision of the federal and state surveys, and, basically,
28 there was ongoing work that hadn't, I think, been recognized that
29 played into this, or that contributed to that component.
30
31 Secondly, there was language that required -- Or not required, but
32 had recommended improvements that were made based on that initial
33 assessment that would be used to improve -- That would be
34 introduced and implemented to improve the surveys, and then,
35 lastly, the third component was, once 1 and 2 were completed, an
36 independent evaluation would be done to look into the best methods
37 for calibration of the state and federal surveys into a common
38 currency.
39
40 Those three factors, I think, played a major role in the
41 development of the current process, and so the Gulf surveys
42 transition plan -- As I mentioned, there was a workshop in 2022
43 that basically formalized this process, and I mentioned earlier
44 too that it was a requirement of the certification process as well,
45 and so, in that workshop, there was a recognition that this
46 transition process needed to be as efficient as possible, given
47 that we were looking at several years from the development of these
48 surveys to their current form, and a couple of different iterations

of the calibration, the ratio-based calibrations, as well.

It was acknowledged that challenges to full integration of the estimates, based on the different survey methods that related to coming up with an integrated estimate of catch for the Gulf, and some preliminary work done by the consultants had, I would say, informed that acknowledgement. In an early evaluation, the consultants looked at the different surveys, and looked at a composite estimation methodology, and quickly, I would say, dismissed it, because, basically, there were enough concerns, and differences between the surveys, that the composite estimation method didn't lend itself to an integrated estimate, at that time.

They had made some informal recommendations for improvements that could draw the estimates from the different surveys together, to get them closer together, so that variance considerations, and other statistical considerations, could be at least addressed somewhat, and so, during the workshop, it was decided that there would be two components to the overall -- Or two stages to the overall transition plan, an interim, or near-term, and then a long-term component for the use of the survey information in the management process.

Generally, the interim, or the near-term, focused on the status quo use of the survey information, as it stands, and then the other component of this that I will be talking about a little bit today is the research to better understand the factors contributing to the differences between the estimates, and, during the workshop, the consultants did provide, I would say, a brief roadmap for the transition planning process that largely focused on non-sampling error, because they felt like this could produce the biggest bang for the buck, in terms of making improvements to the different surveys.

Then, also, the other issue that was addressed in the research component was, as I mentioned, the improvements, as called for by Congress, and so what the research planning team -- Well, first of all, let me just backtrack a little bit here. The initial transition planning team, as I mentioned, recognized a near-term and a longer-term component, but they also recognized that there was a research path that had to be completed, and then also an implementation path for the surveys as well, and so the recognition was there that there was a critical need to have these two components, or two paths, build on each other, rather than impede, and a lot of effort going into coming up with processes that were complementary, rather than, we'll say, contradictory, in some respects.

1   The Gulf surveys research, the planning team is a subgroup of the
2   full Gulf Transition Team, and the Gulf Transition Team, for those
3   that may not be aware, has representatives from the Gulf States
4   Commission, the Gulf Council, the states, the Southeast Regional
5   Office, the Science Center, as well as the Office of Science and
6   Technology for NOAA.
7
8   The research team is co-chaired by Tom Frazer, here with the
9   council, and then also by Gregg Bray, and it's supported by the
10 Office of Science and Technology, as well as the other members of
11 the team, and so the initial meeting that we had, following the
12 workshop, focused on the development of a draft research plan
13 document, and there were two parts to that, I think.
14
15 In the initial meeting, it was recognized that there was a need to
16 follow-up on some of the presentations that had been made during
17 the 2022 workshops, or prior to the 2022 workshops, where the
18 Office of Science and Technology provided some insights into the
19 research that's ongoing within NOAA, but, also, the states provided
20 some summaries to the team on ongoing state efforts as well, and
21 so the first order of business, really, was to create an inventory
22 of those studies and include those in the initial plan document.
23
24 The second meeting, which just occurred last week, April 26,
25 focused on this draft document and then on the research inventory
26 and the roadmap developed by the consultants in the 2022 workshop,
27 for consistency, and then the role of the workshop was also
28 expanded to address a question, or a motion, that had been brought
29 before the council, brought by the council, just recently, related
30 to an evaluation of permits to identify the universe of anglers,
31 and so that was the second component that was added to the
32 research.
33
34 The reason for, I think, this part being added to their scope is
35 that, in discussion at the council meetings, it was felt that this
36 was the appropriate team, and, in fact, most of the members of
37 this team would be involved, somewhat, in addressing the question
38 of offshore permitting, and there were implications related to the
39 planned research as well as how this -- How changes to a permitting
40 system, or a licensing system, would impact results.
41
42 The research inventory, and I won't go into an exhaustive
43 description of the different surveys, or the different pilot
44 studies, but there were twenty-four different projects related to
45 state and federal survey improvements that were identified, and
46 fifteen had already been completed. There were three projects
47 that were ongoing, or not completed as yet, and then the majority
48 of the projects had components that addressed, in part at least,

1 non-sampling error, but there were a number that were focused on
2 testing of survey methods, or introducing modeling components,
3 things like that, and sampling error.
4
5 There is a NOAA project that's set to begin in Wave 4 of this year,
6 and that relates to measurement error as well, and I can talk a
7 little bit about that later on, if people are interested.
8
9 The draft research plan, as I mentioned, the goal was to address
10 the independent consultant recommendations. In the research plan
11 itself document, we've addressed a five-year timeline for
12 completion, with short-term goals, and then a series of long-term
13 goals, included in that plan.
14
15 The short-term goals focus on this year and next year, and they
16 largely identify different projects that will be done over the
17 course of the work of the research team, and these projects fall
18 into what I would say are four basic themes. There are projects
19 related to simulation and documentation, and those we consider
20 sort of the least heavy lifts, in terms of fielding the studies,
21 because they are largely desk exercises to look at simulated
22 results, or changes to the surveys.
23
24 There were six of those projects that were identified, and there
25 are a number of projects that were related to data auditing and
26 methodology, and those are largely quality control, or quality
27 assurance, related, and you have, also, a number of collaborative
28 experimental studies that focus on non-sampling error, and there
29 are eleven of those, in total, and I bring those up because those
30 are the most logistically sensitive, but also the studies that
31 require funding to implement. There are some of those that are
32 ongoing, as I said, that are being undertaken by the states, and
33 by NOAA, right now, and so that may affect the prioritization of
34 them. Then, lastly, model-based calibrations, and there are a
35 number of different projects associated with that theme as well.
36
37 As I mentioned, there are two components of this research plan, a
38 short-term and a long-term, and the long-term really focuses on
39 wrapping up the research component, and that would be done through
40 an annual workshop, basically to assess progress with the different
41 projects, in terms of their state of implementation or completion,
42 and also to decide if sufficient information is available to
43 complete the congressionally-directed independent review, and so
44 I think it is the consensus of the group that we don't have to
45 wait until all of these different research pilot studies are
46 completed before that would happen, and that really is the work of
47 the team in the next few weeks, in prioritizing the research.
48

The Gulf team will convene to decide on revisions to the transition
plan related to implementation of improvements and calibration
methods, and this would follow, basically, the annual review, and
the completion of the calibration evaluation as well, and so our
April 26 meeting, as I mentioned, just occurred, and, as I
mentioned, the two items that we did talk about were the council
motion and then also the research roadmap document.

I mentioned a little bit about the research inventory and then the
different project descriptions that were contained in that, and
the second item relates to the motion made at the council meeting,
and, basically, it's repeated here, and that requests that NMFS,
Gulf States, and council staff provide collaborative support to
the five Gulf state fishery agencies for the express purposes of
developing a universal, state-managed recreational saltwater
angler landing permit program to provide more precise fishing
effort for use in both management and assessments.

There are some considerations here, because what the states have
developed, through the use of their current survey programs, are
basically lists of anglers to get at more precise estimates of
effort, and so there is an overlap there in what the goals of a
universal permit would be, versus the lists that are currently
we'll say in different stages of development with the state
surveys.

As far as research prioritization is concerned, the main thing
that I think was important during this last meeting that we had,
last week, was some information on the status of funding, and I
was hoping, actually, to have some clarification, in terms of
whether IRA funding, and that's Inflation Reduction Act funding,
would be available to cover some of the projects, but we don't
have that information at this time, and so, in reality, the status
of funding is uncertain.

I think this is important, an important consideration, for
prioritization, because it means that, in our case, for instance,
if we are to come up with pilot studies of a higher priority, pilot
studies related to the FES or the dockside survey, we'll have to,
you know, find funding from within our division budget to try and
cover that, and so that could affect the timeline, and then also
the quality of the information we get, because it could affect the
scope of the projects, and there are similar concerns with the
states as well, in terms of where funding could be found to cover
some of these projects, but, as I mentioned, some of the projects
are already planned, completed or underway, and so an evaluation
of what we have in-hand already, I think, is an important
consideration for prioritizing the remaining research.

1
2 With that in mind, the team decided that there would be a more
3 formal ranking of the different projects, as outlined in the
4 research document and the inventory, and so, during the meeting,
5 we came up with a number of different criteria that could be
6 applied to rank the different pilot studies, and they're listed
7 here, and this is sort of an exhaustive list, and we've been able
8 to condense this down a bit, into a more manageable amount, and
9 this is being forwarded to the team for their rankings, but,
10 basically, as you can see, considerations are there for the value
11 to each of the state partners, and there is whether the project
12 was duplicative in some sort, and, in other words, if one state
13 was planning to do something that was very similar to what was
14 planned for another state, could that effort be either combined
15 or, you know, one dropped, in favor of the other.
16
17 The applicability of the findings, and, by that, I mean to --
18 Overall to the different states and the federal surveys, versus to
19 just one state, and that would be a consideration as well. Then
20 cost and funding status, obviously, and I just mentioned a little
21 bit about that, but a major consideration brought up, and I think
22 Kevin Anson brought this up, was timeliness and the duration of
23 the study.
24
25 Obviously, if there are studies that can be done in a shorter
26 period of time, a year or less, then, you know, that could affect
27 their prioritization as well, and then consistency with what the
28 consultants had outlined in their roadmap, plus the congressional
29 directive as well, in the JES, and so other considerations here
30 are status of implementation and logistics, and I bring up
31 logistics because there really is a limit to how many studies can
32 be conducted at once in the Gulf, and, even though there may be,
33 you know, a desire to conduct several surveys at one, we have, I
34 think, logistic considerations, in terms of how many side-by-side
35 studies you can field alongside the current suite of surveys that
36 are already in place.
37
38 We do -- I think it's safe to say that most of the state managers,
39 and NOAA, will acknowledge that it is a challenge to conduct these
40 surveys side-by-side, or in a coordinated fashion, so they're not
41 impeding each other or, you know, affecting the outcomes of each
42 other.
43
44 Then, lastly, the last item here is the adequacy of information
45 provided, if there is enough information that we can get from these
46 surveys that some conclusions could be made, or is there a
47 likelihood that it would basically just raise more questions, and
48 then the initial prioritization for this is scheduled to be

1 completed by mid-May, and I think, at that time, the goal is to
2 get the team back together again for an in-person short discussion
3 of the different priorization by the states.
4
5 The council motion, I did mention a little bit about it, and I
6 won't get into an awful lot of detail here, just in the interest
7 of time, but a decision was made to add this to the agenda, and so
8 team members agreed that this would be a good item to bring in
9 front of the TCC, the Technical Coordinating Committee, of the
10 Gulf States Commission for their October meeting.
11
12 There are two points that I will make here. OST agreed to work
13 with the Gulf States to provide the TCC with some background
14 information on the National Saltwater Angler Registry
15 requirements, basically as they are outlined in Magnuson-Stevens,
16 and then, also, we agreed to provide the MOAs detailing license
17 exemptions, and there are council presentations that were made as
18 well, and I think Carly Somerset provided a briefing as well on
19 those exemptions, at one of the council meetings.
20
21 Then Gulf States will coordinate with partners to consider
22 research, a research project, or projects, and the goal would be
23 to develop a white paper that outlines the legislative and other
24 considerations for development of a permit by the states, and then,
25 also detailed in that white paper, would be an assessment of the
26 compatibility with the current suite of surveys and the information
27 that's provided by those, along with a cost-benefits analysis.
28 The TCC will receive this, several weeks before the meeting, and
29 be prepared to discuss it at that October meeting, and so that's
30 basically what I have, as far as just progress to-date on the
31 research plan.
32
33 **CHAIRMAN BARBIERI:** Thank you, Dr. Cody, for that overview. Any
34 questions from the committee for Dr. Cody? Jim.
35
36 **DR. TOLAN:** Thank you, Mr. Chairman, and thank you, Dr. Cody. That
37 was a very nice update on the work that you guys are doing, and I
38 think it's really important work for you all to stay together, and
39 the question I have for you is has the initial Texas ratio
40 estimator been revisited, up to this point, by your team?
41
42 **DR. CODY:** It hasn't been revisited by our team so far, and,
43 basically, the reason for that is we have one year of data, and
44 that's it, and so we have what we have. I think that there is an
45 interest, among the group, to perhaps, if it's possible, you know,
46 but it would take funding, to use -- You know, add another year,
47 or two, to the FES conduct in Texas, and that would allow us at
48 least to get a better assessment of at least variability between

1 years with the effort estimate.
2
3 I think, also, if I can just follow-up on that a little bit as
4 well, in the initial inventory provided by the states, I mean,
5 Texas didn't provide any information on ongoing research that they
6 have planned, and I think there will be time, during the
7 discussions, to introduce some ideas among the group for that.
8 The initial offerings that we got were largely from Mississippi
9 and Florida, and also NOAA, and so I think -- As this progresses,
10 I think there will be a little bit more focus on the other states
11 as well, in terms of how we could get improvements to -- How we
12 could best make improvements to the estimates that we have for
13 calibrations.
14
15 **DR. TOLAN:** To that point, Mr. Chairman?
16
17 **CHAIRMAN BARBIERI:** Absolutely. Yes.
18
19 **DR. TOLAN:** This most recent meeting that you guys has last week,
20 was there someone there from Texas?
21
22 **DR. CODY:** No, Texas wasn't able to make that meeting.
23
24 **DR. TOLAN:** Okay. I hadn't heard about it.
25
26 **DR. CODY:** As far as I know, the Texas representative for that was
27 on the list of invitees, and Gregg Bray is planning a meeting,
28 with myself and Tom, to go over the outcomes of that meeting with
29 that person, and so we are keeping up with them.
30
31 **CHAIRMAN BARBIERI:** Jess, anybody online? No? Any other questions
32 in the room here for Dr. Cody? I have a couple, but I would rather
33 that the committee -- Doug Gregory, please.
34
35 **MR. GREGORY:** Good morning, and thank you, Mr. Chair. That was a
36 good presentation, and my question is a bit off-topic, you might
37 say, and I wanted -- I would like to ask the council staff, and
38 Richard, to plan to give us a presentation on the transitioning
39 that's planned for going from two-month wave estimates to
40 cumulative estimates during the year, and that's all. It's just
41 a request that we get a presentation on that, and it sounds quite
42 important, to me, and maybe not as important as the transition
43 research going on, and I apologize for interrupting that and your
44 questions on the topic, Luiz, and so thank you very much.
45
46 **DR. CODY:** Doug, I would be happy to do that. We have done a
47 series of different presentations, and I think there's one
48 scheduled for perhaps the New England Council coming up as well,

1 and so we have a presentation in-hand for that, and I will mention
2 that there were a couple of drivers in there, I think, for the
3 decision to go to cumulative estimates.
4
5 Largely, it's based on a request from the White House Office of
6 Management and Budget for all of the statistical surveys to come
7 up with precision standards for publication of the estimates, and
8 so, I mean, we've been faced with estimates that have -- We'll
9 call it questionable precision levels over the years, and so this
10 new approach really -- What it does is it tries to take advantage
11 of increases in sample size, as they occur, through accumulation
12 of wave information, and so the idea would be that we would -- As
13 estimates are produced, sample sizes increase, and you get a more
14 -- A more presentable estimate of catch at the cumulative level,
15 whereas, at the wave level, you may have had more questions about
16 that level of precision.
17
18 We would have flagged the estimates, anything above 50 percent,
19 which is what we do now, but we provide confidence intervals as
20 well, and a little bit more, I would say, stringent language, when
21 it comes to the warnings on the use of the estimates.
22
23 **MR. GREGORY:** Yes, and thank you. It's one of those -- It sounds
24 like a good improvement, and it's one of those things that you go,
25 why didn't we think of this earlier, but thank you very much.
26
27 **CHAIRMAN BARBIERI:** Thank you for that question, Doug, because I
28 think this is a relevant topic, and I know it has been generating
29 a lot of conversation in the background, a lot of questions about,
30 you know, the impact that this could potentially have on
31 interpretation of uncertainty, going into the assessments, and
32 then the use of wave-based estimates into projections as well,
33 right, and how do we account for that differential uncertainty at
34 different time scales, and so just thinking about, you know, topics
35 that -- If you could add those to your, your know, perspective,
36 and think about those issues, and, checking with staff, it looks
37 like we will have space on the agenda for the July SSC meeting,
38 and so, if you had somebody available --
39
40 **MR. RINDONE:** We have a little bit of room there, and so we'll
41 talk, during lunch and stuff, about what we can do with the agenda.
42
43 **CHAIRMAN BARBIERI:** Dr. Simmons.
44
45 **EXECUTIVE DIRECTOR CARRIE SIMMONS:** Thank you, Mr. Chair. Thank
46 you, Richard, for the presentation, and so I guess just a question,
47 high-level, regarding timing of the short-term plan and its
48 availability, based on timing of getting the red snapper research

1 track review, and I guess that's later in November of this year,
2 and whether that information would be ready, potentially, to be
3 used when we go to the operational assessment, for some of that,
4 the tweaking and improvements, and can somebody kind of frame that
5 up for me? Does the timing seem appropriate, and ready, for the
6 fall, with this effort, going into an operational assessment early
7 in 2024, for red snapper specifically?
8
9 **CHAIRMAN BARBIERI:** Very good question. Dr. Cody, do you want to
10 address that one?
11
12 **DR. CODY:** In my opinion, I don't think there would be information
13 available that would, I would say, have a meaningful impact on the
14 research track, and, largely, I say that because we have a number
15 of studies that are in various stages of completion, and it's
16 unlikely that that would translate into changes to the surveys,
17 and so I think it might be difficult to try and integrate that
18 information, in a meaningful way, into the assessment process.
19 That's sort of a general answer, but I think, at this point --
20 Trevor, feel free to add to this as well, if you want.
21
22 **CHAIRMAN BARBIERI:** Trevor, please.
23
24 **MR. MONCRIEF:** I guess, on a large scale, that's kind of where I
25 was at, but we passed a motion, at our group, basically to ensure
26 -- Not necessarily ensure, but to incorporate whatever changes, or
27 updates, are made through the transition group within the
28 operational, right, and so we would take a look at what's been
29 completed up to that time point and do our best to integrate all
30 that into it.
31
32 I know, at least, you know, for our state, we've hit the ground
33 running on a few different topics, and we're planning on, you know,
34 launching a few more in this season, and so I think we'll have
35 stuff, at least proposed, by that timeline, and some results to at
36 least be considered, but there was a motion passed to consider the
37 completion, or what has been completed from the transition process,
38 into the operational.
39
40 **CHAIRMAN BARBIERI:** Just to clarify, so that I make sure that I
41 understand, the group that passed that motion -- What group is
42 that?
43
44 **MR. MONCRIEF:** That was the recreational group, and what's the
45 official name for it in SEDAR, for the rec landings?
46
47 **CHAIRMAN BARBIERI:** Dr. Simmons.
48

EXECUTIVE DIRECTOR SIMMONS: Thank you, Mr. Chair, and so that's very helpful. I guess, just to follow-up, again, on red snapper, our favorite fish in the Gulf. Regarding the Texas ratio calibration, and what's being used in the stock assessment, if that one-year ratio was carried back historically in time, and there's going to be no more work done on that, when we get to the operational assessment, does the assessment development team decide if it stays in the Texas raw units or if the Texas landings calibrated to that ratio, the MRIP-FES, back in time will be used for management? That might be a higher-level SEDAR question, but I guess, also, maybe there is some urgency to getting the group to look at that ratio again for Texas, before we get that far.

CHAIRMAN BARBIERI: Jim, just a second, because Trevor may have something.

MR. MONCRIEF: Just, to that point, I was going to say that, when we were sitting at that table, in the rec group, that was the conversation, right, and, I mean, half of our conversation was just on Texas and how to treat that ratio, and we went round and round and round and round, and, finally, there basically was no other choice but to include it, with the thought that this needs to be addressed before it moves forward, because multiplying those landings by -- Was it ten?

MR. TOLAN: Eleven.

MR. MONCRIEF: Eleven? Multiplying those landings by eleven just cascaded down every single aspect of the assessment, and so, yes, we definitely had that one as a priority.

CHAIRMAN BARBIERI: Thank you. Jim.

DR. TOLAN: Thank you, Mr. Chairman, and, to the initial question on the table, as part of the ADT, I can give you my perspective on where we're at, in terms of the research track and this presentation, and I don't even think we're at a good functioning model yet. We have a meeting coming up, and we're still struggling with what to do with the Great Red Snapper Count number, and so how do we fold that in on top of this new currency across all the states. As it transitions into the operational assessment, I don't think so, at this time, and that's just my perspective, as part of the ADT.

Trevor really touched on the second part, and the Texas ratio has yet to come up in our conversations on SEDAR 74 to this point, and so it's hanging out there, and it's a known issue, but it's not part of the conversation at all. Thank you.

1
2 **CHAIRMAN BARBIERI:** I believe, and I don't want to get too much
3 into the weeds here, but, you know, being a member of the ADT as
4 well, right, that our last assessment webinar is scheduled for
5 mid-May, right, and, I mean, that's already, I guess -- Do we have
6 two more or one more? I think we have one in mid-May that was
7 supposed to be our last one, and maybe there is another one in
8 August.
9
10 **DR. TOLAN:** There should be one more. The one in May is do we
11 have a working model or not, and then the following one is we need
12 to make a decision on if it goes forward or not, and so that's my
13 understanding.
14
15 **CHAIRMAN BARBIERI:** So already some complications there, you know,
16 to overcome, and then this is going to be something else to be
17 taken into account, because it may delay the operational
18 assessment. Katie, by all means. Go on.
19
20 **DR. KATIE SIEGFRIED:** Thank you, Mr. Chair, and so I want to stick
21 to the -- I'm sorry that I can't be there this week, and I miss
22 being there in-person, and I will be there in July, and so I guess
23 I have a different interpretation than Jim, as far as a working
24 model.
25
26 We are still trying to figure out what the best way is to
27 incorporate the Great Red Snapper Count, but the model is very --
28 It's functioning very well, and we actually showed it to leadership
29 at the Center, and they were quite shocked at how well it was
30 working, and so hopefully we can get that message better through
31 the ADT, but the Great Red Snapper Count incorporation -- We did
32 present some alternatives at the last meeting.
33
34 As far as Dr. Simmons' question about the data, you know, inclusion
35 at the operational stage, some of the things that we discussed
36 were, you know, whether all the states are going to be available,
37 whether each state individually should be brought in as it passes
38 transition, and there was quite a bit of discussion, as Trevor
39 stated, about Texas in particular, and that's actually my main
40 concern at this point, is that that is a ratio, and there is one
41 year of information to try to do some sort of scaling, or
42 calibration, and the statisticians, and Dr. Cody can correct me if
43 I'm misinterpreting, didn't have a lot to say about just a ratio
44 calculation.
45
46 I am not really sure what else can be done, unless there is other
47 study efforts, and we've been trying to communicate, you know,
48 through Jim, and working with other folks in Texas, and I'm not -

1 - You know, on the transition meetings that I've been a part of
2 it, I'm not really sure what else there is that we can do there,
3 and I'm concerned about that.
4
5 As far as who decides what to include for the recreational
6 datasets, I mean, I do see a need to have further review of that,
7 whatever stage each of the state surveys are in the transition
8 process, because of these sorts of questions. You know, the
9 discussion, at the recreational workgroup, was highly contentious,
10 and I know that a lot of people were really dissatisfied, and so
11 I do think there needs to be further review, when it gets to be
12 the operational stage. Thank you.
13
14 **CHAIRMAN BARBIERI:** Yes, and very true, Katie. Thank you so much.
15 Richard, do you have --
16
17 **DR. CODY:** On the consultant -- With respect to the Texas surveys,
18 from the information that they had in-hand, they basically said we
19 had two choices, do nothing, the status quo, or do the calibration,
20 and I think there was consensus, among the consultants, that it
21 would be better to do the calibration, and their rationale was
22 that, for instance, with the Texas survey, it is more of an index
23 than it is a formal probability-based approach to estimating catch
24 and effort, and so they felt like a conversion of that would be
25 preferable to not doing one, but, you know, they do acknowledge
26 that they don't have all of the biological information available
27 to them for -- You know, to consider as well as just the statistical
28 information.
29
30 **CHAIRMAN BARBIERI:** Thank you for that clarification, Richard.
31 Paul.
32
33 **DR. MICKLE:** Luiz, thank you. I just wanted to make a couple of
34 points and circle back to the presentation, if that's okay. Have
35 we gotten too far down the road, Chairman?
36
37 **CHAIRMAN BARBIERI:** No, and this is fine. Yes, absolutely, Paul.
38 Bring us back to the presentation.
39
40 **DR. MICKLE:** Sure, and it was a productive discussion, and I didn't
41 want to pop in at the wrong time, but can we go to Slide 11? I
42 have a request for clarification, and then I will probably just
43 say my point and then ask the question for clarification.
44
45 The way that I understand it is there's a lot of pilot studies,
46 and pilot -- The scientific community understands that it's a
47 smaller, or initial, experiment to create either data or efforts
48 to launch more efficient, larger-scale research, and so, if that

term is taken how it's presented, understanding all these pilot
efforts, there's a lot of them going on, and I guess that could be
conceived as a good thing, or I'm not quite sure, but I guess my
concern is that, if there are a lot of studies going on, and they
are presenting conflicting results, or inferences, in certain
aspects of either calibration and/or determining uncertainty, or
precision metrics of that, then I'm a little confused on how the
process would move forward.

With my focus, in trying to understand BSIA in this applicability
of this situation, I'm assuming that the decisions of one is
conflicting over another -- Two conflicting studies, duplicative
in nature, as defined, or provided in this inventory rank, and I
guess it's NMFS, through the Magnuson-Stevens Act, that determines
BSIA of one over another, of leaning toward understanding the
outputs of one experiment over another and its integral process in
calibration, but I guess my question is I'm confused on how it
would go forward with such a conflict, if it happens, because we
have so many efforts going on right now, and I think it's a very
strong probability that this could probably happen, and bringing
it to the SSC, for at least giving some opinion of BSIA -- I don't
think there are any survey statisticians on the SSC, and so I don't
really know that we are all that great of a body to get toward
that intent.

Then the outside consultants that -- Literally, I have talked to
all of them, and all of their fisheries experience has been to
this point on, and so, just to be honest, in my personal opinion,
I have reservations about their abilities of BSIA, because
fisheries data is so unique in its nature, and so I think
communication -- I'm really glad that it's going on at this level,
but I guess I have concerns of all these different projects going
on, and I would just really hate for everyone in this group working
together --

When scientists disagree, and we base all of our capabilities on
disagreement and making things better, but I sure would hate for
it to get in a contentious level and we don't have a direction on
trying to work through a peer-reviewed process of BSIA and allowing
the strongest science to lead us down the road to make good
decisions and end up in a place where maybe not everybody is happy,
but understanding that the best available science drove it all.

I guess my question is, understanding the partners -- I guess the
Bullet 4 -- I may have missed it, but is NMFS providing an inventory
of prioritization, and they are determining it, and, because of
the timelines of these are all of different scales, as some are
coming to fruition, and some are, I guess, mid-fruition, how is

1 that going to be determined as BSIA, and what is the path forward
2 when we have a conflict of inference? Thank you.
3
4 **DR. CODY:** Well, I can give you my perspective on it. As far as
5 BSIA is concerned, I think we have to keep in mind that we're
6 talking about the use of the data, and I think there's guidance,
7 at the NOAA level, that no survey can be, you know, constituted as
8 BSIA, and it depends on how that information is used, and that
9 could be the modeling process, or it could be interpretation, all
10 sorts of different thing.
11
12 I think, as far as the scope of this group, and considerations of
13 conflict, we'll say, between the results of one survey and another,
14 they are largely pilot studies that are focused on specific
15 questions, such as measurement error related to the FES, and,
16 obviously, if we were looking at trying to draw the estimates
17 closer together, focusing more on the FES, for instance, might
18 give us a great ability to do that, but I think there are
19 adjustments that are done at the state level to the surveys, in
20 terms of their effort estimates and catch estimates, that can also
21 be looked at as well, and they are not necessarily conflicting,
22 because you're talking about the impact of we'll say an expansion
23 factor, or a question to inform that, at the state level for a
24 specific survey, and so it wouldn't be, I think, like we get a
25 conflict in results in that, because the question would be so
26 specific to that survey.
27
28 I think there are broader applications, where measurement error
29 might fall into more general considerations, but I think, overall,
30 I don't see conflicting results between these different pilot
31 studies as being a major consideration. It might help inform the
32 direction, going forward, in terms of what needs to be done to
33 address those concerns, but I think the highest priority of this
34 group is really getting pilot studies that will give us the biggest
35 bang for the buck, as I said, in terms of addressing non-sampling
36 error, because I think non-sampling error is something that
37 probably impacts all of these surveys, in some form or another,
38 and the drivers for those differences may be in different
39 directions as well, depending on the surveys.
40
41 There is a lot of information, in terms of pilot studies that have
42 been done, and our plans are ongoing, but, as I said, I think
43 they're small pieces of information that will inform the bigger
44 picture. The trick will be making implementation, or implementing
45 improvements to the survey in a way that is the least disruptive
46 it can be, because it is a disruptive process, and we've seen that
47 with the FES, and we've seen it with other surveys as well, and
48 so, I mean, my sense is that we would try to minimize that issue,

1 by bundling changes together, and that would have to be weighed,
2 I think, against the function of the survey right now. Is it
3 worthwhile making a change that may result in a change in the
4 estimates, a reduction in one or an increase in the other, that's
5 only a small amount, and maybe it doesn't have strong
6 justification, and so those are the kinds of considerations I think
7 that we will try to address.
8
9 I do agree, Paul, that this list of different criteria is a little
10 bit confusing, and we have been able to knock that down to about
11 five different components, and the goal is that the states, and
12 NOAA, will inform the prioritization and not just NOAA, and, in
13 fact, I think, initially -- I mean, each state will get to rank
14 the NOAA studies, as well as their own studies.
15
16 **CHAIRMAN BARBIERI:** Any follow-up, Paul, or are you okay?
17
18 **DR. MICKLE:** I'm okay, and I appreciate the answer. It clarified
19 it, and it just -- You know, this is a very difficult process, and
20 I certainly commend everybody involved with it, and literally --
21 Richard did a great job explaining the status and the briefing
22 here today, but there's a whole lot of information that can't be
23 put into a single presentation, and it's really a difficult thing,
24 and I've heard it from leadership on multiple state sides, and the
25 NMFS side, of calibration is a very hard thing to do, overall,
26 and, if we can get away from it, it streamlines the process.
27
28 I know we have to calibrate, and the quantitative side of the
29 process is short-term and long-term, and I think that's a good
30 strategy, but this presentation shows that it's difficult, and I
31 want to emphasize that it's very, very difficult.
32
33 You know, there may be strategies, down the road, where combining
34 surveys, and understanding uncertainties between different
35 surveys, and bringing them together is a messy process, and it may
36 be much more efficient if we can get away from it and just identify
37 which one is better and not calibrate and put one over the other.
38
39 They do this in other realms of science all over the world, and it
40 can be done here, and it just needs to be done in a way where
41 calibration can be considered for historical data, up to that
42 point, but it needs to be looked at, in my opinion, a little bit
43 differently, and understanding that, if certain surveys are more
44 precise in a reef fish universe, then maybe BSIA can identify the
45 efficiencies and choose one survey over another and use that toward
46 management. Thank you.
47
48 **CHAIRMAN BARBIERI:** Thank you, Paul. Trevor, did you have a

1   comment to that?
2
3   **MR. MONCRIEF:** Yes, and Richard nailed it right there at the end,
4   and so the prioritization, and everything else, was actually
5   proposed by Erik, with our group, as far as going partner-specific
6   first and ranking and then moving forward to a larger-scale
7   prioritization, because, obviously, you know, what we had
8   discussed is that, you know, the states have various priorities
9   for their given surveys, and the consultants have provided specific
10 projects to be included in that list, and then, if you look at the
11 overall scheme, you know, the ranking is going to shift up,
12 because, obviously, and I'm not trying to down my own state, but
13 we can't pour a lot of resources into a state that makes up 3
14 percent of the overall catch, because it's not going to have that
15 large of an impact across-the-board, even though, you know, we
16 feel it's important, and it might not be important to the entire
17 Gulf, and so that was kind of our thought process, when it came to
18 the priority list and everything else, and so I just wanted to
19 clarify that, but Richard did a good job explaining that.
20
21 **CHAIRMAN BARBIERI:** Thank you for that, Trevor. Any other
22 questions for Richard? Dave Chagaris.
23
24 **DR. CHAGARIS:** This question is just maybe a little off the subject
25 of the transition process, but what's the plan for making all these
26 data available publicly? MRIP has a nice, you know, web-based
27 query, and you can actually download the raw data, and these other
28 state surveys don't have that, and I think maybe Louisiana has a
29 query form, but, you know, just for the sake of transparency and
30 reproducibility and just to allow for research to take place, you
31 know, with recreational data in the Gulf of Mexico, and what's the
32 plan for that?
33
34 **DR. CODY:** Well, the overall plan is to have them served through
35 the Gulf States Marine Fisheries Commission, and so GulfFIN, and,
36 at this point, there are -- You know, there are a lot of concerns
37 about the compatibility of datasets, the formatting, things like
38 that, and so, initially, the group is more -- The transition
39 planning group team is more focused on just getting the -- Making
40 the data available.
41
42 The idea is, over the next couple of years or so, that there would
43 be, you know, improvements made to the formatting, and make that
44 available, and, like I said, I was hoping to have a little bit
45 more information on funding sources, and that was one of the
46 priorities that we had kind of identified internally as something
47 that needs to happen quicker.
48

1 **DR. CHAGARIS:** Thank you.
2
3 **CHAIRMAN BARBIERI:** Dan.
4
5 **DR. PETROLIA:** Thank you, Mr. Chairman. I am new here, and so I'm
6 getting caught up, but, in terms of moving forward with priorities
7 on the transition, I've heard several things mentioned today, and
8 non-sampling error being the big one, but that's a pretty big
9 category, right, and then I've heard also today mentioned the issue
10 of precision, and then, aside from these, it's just the difference
11 in priorities across the states, and across surveys, and does the
12 group have a feel of which of these particular areas is the most
13 -- Which are the low-hanging fruit, and so, within non-sampling
14 error, is the coverage -- Is it non-response, or is it measurement
15 error, and can you give me a little bit more of that, without
16 getting too much in the weeds? Thank you.
17
18 **DR. CODY:** There is a pilot study that is scheduled to begin this
19 year, and thanks for kind of reminding me about this, and it's a
20 NOAA-based one, but, basically, it's focused on the FES, the
21 Fishing Effort Survey, and so it's the mail survey, but it
22 introduces a question on -- What we call a license sensitivity
23 question, and so several of the states use a question on their
24 survey to identify the proportion of anglers that are unlicensed
25 versus licensed, and so we have designed a number of different
26 treatments of that that we will run side-by-side with our effort
27 survey to give us a better sense of are there differences in the
28 way that angling households would respond to that question.
29
30 That is -- You know, that is one way, one type of measurement
31 error, that we can get at, and the other -- There are other concerns
32 about the questionnaire, or the survey instruments, that are used
33 by all of the surveys, and we have some related to ours, as far
34 as, you know, question ordering and question design, those kinds
35 of things, and I think those are fairly easy for us to do, because
36 we can -- If the funding is available, we can run a side-by-side
37 pilot study and compare those treatments to the current survey
38 design, and we don't have to have them run for an entire year, and
39 it could be one wave, or two waves, and so, you know, initially,
40 they are fairly cost-effective that way, too.
41
42 We do our FES survey through a contract, and so we include options
43 in there to allow us to modify it fairly quickly, and the critical
44 part, for us, is getting the permission from the White House Office
45 of Management and Budget for PRA clearance, and so we have put in
46 place, you know, efforts to do that ahead of time, and so, for
47 instance, right now, we have an approved questionnaire, but we
48 don't have the funding for it to be tested, and we would like to

1   do that next year, and so there are some efficiencies that we can
2   take advantage of there.
3
4   I guess it is a little bit of a betting game, that you hope that
5   the measurement error item that you are looking at -- Or, if it's
6   related to non-response, or related to coverage, that that will
7   give you something to work with, or it will give you something
8   that will bring the estimates closer together, and, you know,
9   that's -- I can't definitively say that we would be certain of --
10 That we're going to get the results we want, or expect, for those
11 studies, but I think we have certain efficiencies that we can rely
12 on to get some feeling of it quicker than normal.
13
14 With respect to the state surveys too, the goal would be not to
15 interfere with the current efforts, and, if we can put a side-by-
16 side benchmarking, or a side-by-side comparative study in place,
17 that would be what we would focus on, but I would say there's
18 plenty of -- There's plenty of things to look at on the measurement
19 side, particularly related to how the surveys are implemented.
20 Hopefully that answers your question.
21
22 **CHAIRMAN BARBIERI:** Thank you for that, Richard, and great
23 question, Dan. I have a couple, Richard. One, and I think this
24 is for the benefit of SSC members who haven't been completely in
25 the weeds, right, of this state survey development and
26 transitioning process, and, you know, as we are presented with
27 stock assessments, right, to review, and different data being used
28 for different stocks, it is unclear, to some people, right, that
29 have not been as engaged, understanding the difference between
30 certification, right, and all the Gulf surveys now, with the
31 exception of Texas, which has never applied for certification,
32 right, but the other ones have, and so can you clarify the
33 difference between certification and transition?
34
35 **DR. CODY:** Sure. Certification really just applies to the survey
36 design, and so, basically, the survey design is certified as a
37 statistically-valid method for estimating catch and effort, and we
38 have terms of reference that we provide to a set of consultants,
39 and, basically, they evaluate whether those surveys meet those
40 criteria, and there is also some criteria in there related to
41 whether the survey meets the needs of the regions.
42
43 As part of the certification process, there is supposed to be a
44 plan for transitioning the surveys, and so, in the case of NOAA,
45 as an example, when we went from the Coastal Household Telephone
46 Survey to the Fishing Effort Survey, we switched modes, and we
47 went to a totally different method, and so we had to account for
48 differences in those designs and the estimates that are produced,

1 and that's essentially what transition is supposed to address.
2
3 Basically, you're looking -- You don't want a break to occur in
4 the information, or at least in the trend information, or it to be
5 misinterpreted as a drop in catch, or an increase in catch, because
6 of the methodology. One thing that's been pointed out to us, by
7 the consultants, is that, you know, all surveys -- Well, surveys,
8 in general, produce different estimates, and so the transition
9 process is a requirement for certification, or a transition plan.
10
11 I think, initially, when we were developing the certification
12 process itself, and before we had the policy and procedure
13 directives in place at NOAA, I mean, this was sort of, I would
14 say, a squishy process, in terms of what "transition" meant. You
15 had examples, on the west coast, where, you know, there was no
16 calibration done, and that's being revisited right now for those
17 RecFIN surveys, as they apply for certification, but, in general,
18 it's just to try and smooth the process for transitioning.
19
20 It doesn't assume that the estimates are going to replace other
21 estimates, and it can be that you have improved survey estimates
22 for the same survey, or you're going and you're changing methods,
23 and so, for instance, all of the states, right now, that have been
24 certified have a requirement in there that, if they make changes
25 to their surveys, they would still undergo a review to determine
26 whether they needed to update the transition plan, and so if that
27 makes sense.
28
29 **CHAIRMAN BARBIERI:** It does, very much, and thank you, because I
30 think having that understanding of those two processes there, how
31 they connect to each other, is important, and, to that point, I am
32 looking at Slide Number 6, right, and so the research path and
33 implementation path, and one thing that, to me, is still unclear
34 about the Gulf survey transition plan is how do we go forward, and
35 I am thinking about stock assessments, right, that come before
36 this committee, and how do we go forward with additional species
37 being integrated into this plan, where the plan is kind of explicit
38 about red snapper and gag, but there is a variety of other species
39 that have been surveyed, right, by states and MRIP, and I think
40 that is difficult, sometimes, for the Science Center itself to
41 understand what has the seal of approval to be, you know,
42 considered acceptable to be used in stock assessments, that comes
43 before, you know, this committee, versus not. Can you try and
44 clarify that a little bit?
45
46 I am thinking, for example, explicitly of red grouper, right, that
47 has pretty much the same distributional range as gag, and we have
48 a scope of work, right, in place for an upcoming stock assessment,

1 and that scope of work explicitly mentions the use of the Florida
2 State Reef Fish survey, but it's unclear to the committee -- At
3 what level are those decisions being made, in terms of whether
4 they're acceptable versus not?
5
6 **DR. CODY:** Well, I think, you know, some of this would depend on
7 scopes of the original certified surveys changing over time. In
8 the case of Florida, they specifically explicitly identify the
9 suite of species that were covered by that survey, but, for each
10 of the other surveys, with the exception of Louisiana, which is a
11 general survey also, you know, only red snapper was identified,
12 but, over the years, I think there has been, I think, a greater
13 understanding of perhaps the potential of those surveys to collect
14 additional information on things like triggerfish and other
15 species.
16
17 To me, I think that kind of begs the question of when is enough of
18 a change enough to reinstitute review of the survey for changes in
19 its design, and I would think that, you know, those would be
20 considerations that the states would, and NOAA also, in terms of
21 review, would probably insist on, as part of the process. It
22 doesn't get you where you need to go, as far as the data being
23 available and the acceptability of the data, but it just basically
24 identifies that we have changes that occurred that involved a new
25 review, and this information, or this survey design, is certified,
26 or not, going forward. That's the best I can answer it that way.
27
28 **CHAIRMAN BARBIERI:** Thank you. Katie, then do you have a question,
29 or a comment, as well on this?
30
31 **DR. SIEGFRIED:** Yes, I do. Thanks, Mr. Chair. I am hoping that
32 we can be flexible, going into the future, with incorporating some
33 of this information, even though statements of work are set up a
34 couple of years in advance, and I am preaching to the choir with
35 the council staff, and I know that that's -- I think that that's
36 an interest of theirs as well.
37
38 Red grouper is something, if I pull up the nice chart that the
39 council staff put together, that we should be able to proceed on
40 similarly to gag, but other species, you know, potentially, that
41 are Gulf-wide, but not necessarily captured on all of the surveys,
42 or there is no discard information, we have to be more flexible
43 and consult and decide whether the information is ready, you know,
44 where it is in the transition process, and whether we have the
45 majority of the species distribution covered. Even though we do
46 need statements of work in advance to set up a schedule, I do hope
47 that we can be somewhat flexible about that and incorporate the
48 transition advice as it is released. Thank you.

1
2 **CHAIRMAN BARBIERI:** No, and thank you for that, Katie, because I
3 think that helps, and my point is, because things are not explicit
4 right now, in the transition plan, right, there is no prescriptive
5 process, that I can see, right, to provide us a roadmap that we
6 know where to go, you know, to become a little less discretionary,
7 to speak, and not to say ad hoc, right, on how we reconsider some
8 of this and which ones fall under thumbs-up or not, right, and
9 that I think would be helpful, to have a transition plan that is
10 a bit more explicit about those things and lists criteria and say,
11 okay, here are the criteria that the committee can look at and
12 evaluate where you are in the process and be able to make that
13 judgment. Does that make sense?
14
15 **DR. CODY:** Yes, it does. I will point out though that the plan
16 itself does have timelines in there, and there is pressure on this
17 research team to get the prioritization done, and, regardless of
18 where are two or three years from now, we have to wrap it up, and
19 so I think there is some incentive there for making changes and
20 making improvements.
21
22 What that translates into at the end of the process, I don't know,
23 and, I mean, potentially, calibration could be a one-and-done
24 thing, and, you know, there's no reason that it wouldn't be, but,
25 at the same time, we have limitations, based on the current model
26 that we're using, that requires that we have a separate ratio for
27 each one, and so each species has to be considered independently
28 of each other, and that poses issues. As changes are made in the
29 surveys, then you get changes in the calibration ratio, and what
30 you had five years ago may not be meaningful now, and we've already
31 run into that issue.
32
33 I think maybe some more information, or some more explicit
34 information, in the transition plan, of those concerns, and
35 perhaps, like you said, a roadmap that might better integrate those
36 concerns.
37
38 **CHAIRMAN BARBIERI:** Yes, and I agree completely. Dan.
39
40 **DR. PETROLIA:** Thank you, Mr. Chairman. I'm curious, and are there
41 opportunities to kill two birds with one stone, for example, as
42 you're moving forward, either with the pilot studies or the
43 research, and so, for example, you mentioned earlier one of the
44 pilot studies would focus on measurement error, but, if that study
45 could be administered in the context of say one of that states
46 that either has the fewest observations for the calibration or has
47 the larger percent error, for example, and are there opportunities
48 for something like that? You mentioned funding and timing being

1 an issue.
2
3 **DR. CODY:** I think we're talking about Mississippi here, and there
4 are some concerns there about just the function of the federal
5 surveys at that level of resolution, and I think there is interest
6 in coupling, perhaps, some of the field-based methods, or pilot
7 studies, with more simulation-type of studies that might look at
8 the behavior of the surveys under certain circumstances.
9
10 I think there is, like I said, some efficiencies that could be
11 harnessed, I think, to get more bang for the buck, and I think,
12 also, there are some commonalities between the methodologies that
13 are used in Alabama and Mississippi, and so, if we field perhaps
14 one in one state, it should have broader application, and so that
15 would be another efficiency.
16
17 **CHAIRMAN BARBIERI:** Thank you, Dr. Cody. That was a great overview
18 presentation, and a great discussion, and thank you for coming
19 over in-person and addressing a number of questions, some tough
20 questions, and we appreciate that. We are due for our first break
21 of the day, and so we're going to break now, and reconvene at
22 10:15, and, at that point, we're going to get started on an
23 evaluation of the interim analysis process. Dr. Katie Siegfried,
24 from the Science Center, and Mr. Ryan Rindone, council staff, are
25 going to walk us through that discussion, and so back on at 10:15.
26
27 (Whereupon, a brief recess was taken.)
28
29 **CHAIRMAN BARBIERI:** All right, folks. By the way, for those of
30 you online, you saw that this represents a two-minute bonus break,
31 right, and you are welcome, and so we are ready to get back, and
32 this is Agenda Item Number VI, Evaluation of Interim Analysis
33 Process, and, Ryan, do you have the scope of work description of
34 what this item is going to begin with?
35
36   **EVALUATION OF INTERIM ANALYSIS PROCESS**
37
38 **MR. RINDONE:** I do. Katie and I are going to present an evaluation
39 of the interim analysis process and discuss how it functions,
40 timing of indices processing, catch advice changes, with respect
41 to the OFL and ABC, time limits on using interims for catch advice
42 after the terminal year of a stock assessment, doing health checks
43 versus getting catch advice, and what's generally needed to do the
44 interim analyses. You guys should consider the information
45 presented and ask questions and make recommendations.
46
47 **CHAIRMAN BARBIERI:** Thank you, Ryan, for the introduction, and I
48 don't know if it's going to be Katie or you that gets us started.

1
2 **MR. RINDONE:** It's mostly me, and if we can just make sure that
3 Katie is unmuted, so that she can chime-in as she's so inclined.
4 An interim analysis is a stock evaluation tool used with minimal
5 data requirements, and we use these in between conventional stock
6 assessments, and it can allow for reconsideration of species catch
7 limits between assessments, and it can also just serve as a health
8 check, just to try and get like a snapshot of what's going on with
9 the stock relative to a single index of relative abundance, and it
10 uses that representative index scale to give us the landings and
11 the acceptable biological catch for a stock.
12
13 They don't take very long, just a couple of months for the Science
14 Center to be able to put together, and the SSC serves as the review
15 body for these. In order to be able to do one though, there has
16 to be a peer-reviewed SEDAR assessment accepted and on the books,
17 upon which the interim analysis will be based.
18
19 You guys had presented some questions and concerns in January that
20 you wanted to discuss, such as the timing of index processing, and
21 so basically when are certain indices available, and how long does
22 it take to work them up, that sort of thing, and questions about
23 catch advice changes relative to the OFL and ABC, how long you
24 guys would be comfortable using interim analyses after the terminal
25 year of a stock assessment, which was something that we saw
26 recently with red grouper, whether to do a health check or to
27 update catch advice, and the kinds of resources that are needed to
28 conduct health checks, and how they're received.
29
30 Regarding the indices, there are three, generally speaking, that
31 we've either used or considered using, and so the NMFS bottom
32 longline index is conducted in the late summer, or early fall, and
33 those data are usually ready in November of the same year, and so
34 we've been using that one for red grouper, and so we've been able
35 to generate an interim analysis for review for the SSC as early as
36 January, using the previous year's NMFS bottom longline data.
37
38 The GFISHER is the new combined video index that the indices
39 working group, and so the SEDAR procedural workshop, has been
40 working on for a while, and helping get that spooled up for
41 everything, and, because these are video data, it's time-consuming
42 to go through a lot of that footage, and so those data are typically
43 ready in September of the following year, and this would be more
44 apropos to some of our groupers, and perhaps triggerfish, and then
45 there's the headboat catch per unit index, which we've used for
46 lane snapper, and that is typically ready in May of the following
47 year, once all the recreational catch and effort data for the
48 previous year have been finalized. I will stop if I see any hands.

1   Other than that, I'm just going to cruise.
2
3   As far as catch advice changes are concerned, the problem is how
4   and whether to generate new overfishing limits from the interim
5   analyses. With the ABCs, we've seen that process, but questions
6   are, you know, is the new OFL going to affect the status of the
7   stock, and how many years of the index are needed to create new
8   ABCs that will be robust to overfishing, and so these are some
9   outstanding questions, and the caveats to all of this is that,
10 when we're talking about these catch limit changes, we have to
11 make assumptions about the probability of overfishing, if we're
12 going to be changing the OFLs without a full stock assessment, and
13 we're also assuming that selectivity and retention functions
14 remain unchanged.
15
16 Our assumptions about that second bullet can be made a little bit
17 stronger by looking at the management history, which we do ahead
18 of every interim analysis, to see have we changed management in
19 some way that would change the age or length of fish that would be
20 selected and retained, or discarded, by the fleets.
21
22 Regarding time limits on using the interim analyses, obviously,
23 the uncertainty builds as the time from the terminal year elapses,
24 because the interim isn't changing any of the assumptions that are
25 made on the key variables, like recruitment, selectivity,
26 catchability, any age-length relationships, as the stock ages and
27 grows or contracts, and distribution, et cetera, and so, you know,
28 we think about some species that, you know, ten years ago, we
29 didn't see quite as many of off of Tampa Bay, and now we see a lot
30 more yellowtail snapper than we used to, and so there's been some
31 distributional change there.
32
33 As we change management measures, like size limits, retention
34 limits, that can change, things about selectivity, and it can
35 affect recruitment, depending on the relationship of size limits
36 to the age or length at which these fish are mature and
37 reproducing, distributional relationships between sex, like we
38 presume to know with gag, with the males being in deeper water, as
39 compared to the females, and so things of that nature.
40
41 Some of these assumptions may be violated, following a stock
42 assessment, if there have been changes that have occurred in the
43 stock, either on the biological level or due to a management bias,
44 and so there's other data that could be considered alongside the
45 interim analysis though that may help shed some light on some of
46 these potential effects, such as length composition from the
47 directed fleets, which we might be able to use as a way to look at
48 whether there's been a recruitment event in the outlying years

36

1 beyond the terminal year of a stock assessment.
2
3 You know, if we're starting to see truncation of the length
4 distribution of retained catches piling up against the minimum
5 size limit, as an example, then that would suggest that there's
6 been a pulse of smaller, legal-sized fish that are being selected
7 by the fishery. Well, those fish had to be born at some point,
8 which means, you know, we back-calculate, based on the age-length
9 relationship, and maybe there wasn't a recruitment event there,
10 and so things like that that might provide some more insight to
11 you guys on how you might look at whatever you're seeing from an
12 index or from the landings.
13
14 Empirical and representative data, or surveys, and so other data
15 that might be able to be made available alongside the index of
16 relative abundance that's being used to represent what's going on
17 with the stock, and, if we're thinking about like the NMFS bottom
18 longline index, you know, larger hooks, deeper water, deployment,
19 those -- You know, that index isn't going to be selecting for your
20 eighteen-inch red grouper nearly as much as it's going to select
21 for a little bit larger size classes of red grouper, and so it
22 might miss a signal of recent recruitment, and a pulse of lots of
23 smaller fish coming in, like we're hearing from the fishermen, and
24 so having other data available that might shed some light on that
25 -- Even if they're not included in an analytical way into the
26 interim analyses, even being presented with those data, if they
27 could be available, could be comparative and informative for you
28 guys in what kind of decision you might make, up or down.
29
30 Then Fishermen Feedback, which is the council's data collection
31 tool for -- That we deploy ahead of stock assessments, typically,
32 and, in this tool, we ask respondents to provide information about
33 specific species, and they can put, within the tool, where they
34 are primarily observing whatever observation they decide to share,
35 and then we use a model to -- It uses a lexicon library to identify
36 suites of words to differentiate between positive or negative
37 sentiments regarding what's going on with the stock, and it's --
38 Fishermen Feedback works better with more responses, and so, for
39 species like red snapper, where we got, I think, several hundred,
40 to near a thousand, responses, you know, it can be quite
41 informative in getting an idea of what fishermen are seeing and
42 where they're seeing it.
43
44 With regard to whether to do a health check or update catch advice,
45 it's currently unreasonable to update catch advice annually, and,
46 you know, there's a one-year lag between an SSC recommendation and
47 management and implementation, at best, and so the way that this
48 timeline works is you guys say change the ABC, and we go to the

1   council, and, you know, the SSC reps tells the council that we
2   recommended changing the ABC, and that's about a month later, and
3   the council says, that sounds like a great idea, and do that.
4
5   Two months later, they see options, management options, for
6   changing the ABC, and they say these look great. At the next
7   meeting, we receive public testimony on it, and we can go final on
8   it, and so that's -- Now we're five months removed from the initial
9   recommendation.
10
11 Then there's, you know, a couple of weeks to make sure that things
12 are all cleaned up and submit the -- Transmit the document to NMFS,
13 and now we're about six months out, and then, if NMFS starts work
14 on the implementation immediately, their review process, and
15 National Environmental Policy Act implementation, is another six
16 months, and so, at best, it's a year lag, and so, if we did this
17 annually, we would always be -- We would always be doing that, and
18 so we're going to work on some regulatory streamlining ideas, to
19 try to expedite the process, and the council will work on
20 developing those in the near future.
21
22 In the meanwhile though, health checks are valuable. They allow
23 the council to be proactive with other management measures, you
24 know, consideration of things like catch limit buffers, retention
25 limits, fishing seasons, but also things like consideration of
26 harvest control rules and things like that that, in the future,
27 might be useful for getting ahead of changes that we might see in
28 a stock that say, in the process of rebuilding, or has experienced,
29 you know, higher than normal combined fishing and natural
30 mortality, for whatever reason, in this last few years.
31
32 Resources that are needed for a health check are the same that are
33 needed to generate catch advice, and it's just the same as the
34 projections on future yields, but you can still analyze trends,
35 such as landings against the ABC, and you can look at discards,
36 and you can examine the trend in the representative index of
37 abundance.
38
39 Updating catch advice may become more expedient with this
40 regulatory streamlining, like I mentioned, and, you know, the idea
41 would be that, if the SSC's recommendations for revised catch
42 advice are within a certain threshold, then NMFS would just update
43 the catch limits, and all of the sector allocations and buffers
44 and everything that's currently on the books would stay on the
45 books and would just be implemented.
46
47 If the recommendation is outside the threshold, then the council
48 would go through its normal process for evaluating what to do next,

1 and it's always important to remember the assumptions that are
2 underpinned in an interim. You know, we're not doing a full-blown
3 stock assessment here, and so we're carrying forward a lot of
4 assumptions for the terminal year of the assessment and the stock
5 assessment's projections.
6
7 Some feedback that's needed from you guys are prioritizing -- You
8 know, whether to prioritize health checks among other Science
9 Center requests, and, you know, these health checks don't -- They
10 don't take an awful lot of time to do, but they do take time, and
11 they do require staff time and resources and review, et cetera,
12 and your time here to review.
13
14 Also, provide feedback about the length of time the council should
15 rely on interims, as opposed to requesting a new stock assessment,
16 and, again, we saw that recently with red grouper, where you guys
17 had some reservations about proceeding with recommending any catch
18 advice based on the last interim analysis, because the terminal
19 year of data for the last red grouper assessment I believe was
20 2017, and so it has some legs on it at this point. Then comment
21 on situations where updating the OFL might be problematic, and so
22 I will leave that slide up, Mr. Chair.
23
24 **CHAIRMAN BARBIERI:** Thank you for that presentation and overview,
25 Ryan. Let me ask Katie if she has any specific comments she would
26 like to put forward at this point, but that doesn't mean one-and-
27 done, Katie.
28
29 **DR. SIEGFRIED:** It might be smart to do that at this point. No,
30 I'm just kidding, and thank you, Mr. Chair. I appreciate Ryan
31 going through the presentation, and the only thing that I will add
32 is just, on Slide 6, when we talked about time limits on using
33 interim analyses, it is true that uncertainty does build as time
34 from the terminal year of the assessment lapses.
35
36 However, at the Center, we've been discussing, quite a bit, about
37 when, we use an index, it actually helps us with our certainty, as
38 opposed to using standard projections over and over again, and so
39 I wouldn't put this on the same footing, uncertainty-wise, as
40 continuing projections, because we do use -- You know, we do use
41 that index, and the only index that we used as a fishery-dependent
42 index is the headboat index, but that's used for the Data-Limited
43 Toolbox method, and it takes the same amount of time as an interim,
44 and so that's just how it's been couched.
45
46 It's relatively simple to do, but, in general, for our more
47 conventional, more data-rich assessments, we recommend using a
48 fishery-independent index, and so we have a lot more confidence

39

1 that that's actually tracking the relative abundance in the
2 population, and so there are -- I would be interested in anybody's
3 opinion, on the SSC, about what other types of data they are
4 interested in seeing alongside the index, because there's been
5 quite a bit of work, in the Southeast, looking at what happens
6 with our predictions when we add length comps, or age comps, just
7 remembering, along the way, that, each time we add a new data
8 source, it's getting closer and closer to an actual assessment.
9
10 Even just checking discards is a health check, and the discards
11 are a model-based estimate, and not just a data query, and so,
12 each time we add those data sources, it's just adding time to our
13 calendar, but that's it. Thanks, Mr. Chair, and thanks, Ryan.
14
15 **CHAIRMAN BARBIERI:** Thank you for that, Katie. That is very
16 helpful, and we already have a question from Steve Saul.
17
18 **DR. SAUL:** Thanks, Ryan, and thanks, Katie, for the presentation.
19 This is super helpful, and for the time for discussing this, and
20 I had a -- I really like the -- I guess a comment and then a
21 question. I really like the idea of possibly adding additional,
22 some additional, information to these interim health checks. I
23 think things like looking at the addition of size structure, both
24 catch-at-size as well as any fishery-independent size information
25 that we might have, I think is really useful to kind of garner a
26 more complete understanding of what's happening with the
27 demographics of the population over the past few years, since the
28 last benchmark, because that can tell -- You know, as was alluded
29 to in the presentation, it can tell an important story about
30 recruitment and about overfishing activities, or not, or reduced
31 fishing on different cohorts, and that can be really useful for
32 us, as a scientific body, and for managers going forward, sort of
33 to digest and help make better-informed decisions.
34
35 I am also curious -- To Katie's point, obviously, and just sort of
36 as a clarifying question, but do we -- I guess do we still typically
37 rerun Stock Synthesis for any of these health checks, or are most
38 of them now just sort of an index-based approach, and, sort of
39 along with that, remind me, or refresh my memory, and you can add
40 additional catches only, right, to Stock Synthesis and then have
41 to re-project from after those catches are added?
42
43 **DR. SIEGFRIED:** Catches can be added, and then it run. However,
44 we've got the new code that we use, and it's external to SS, in
45 order to keep our allocations correct, and, depending on which
46 FMSY proxy we're using, it can be kind of difficult to search in
47 that, and using that algorithm is important, as opposed to using
48 the SS module, and so, yes, we can add catches.

1
2 We haven't traditionally added discards, because, as I stated, it
3 takes longer to get those added, which, you know, we need to
4 discuss our assumptions about discards more explicitly during
5 projections, but we can do that another time, I suppose, and so,
6 yes, the answer to the second question is we can add the catches.
7
8 Otherwise, yes, this is more of an interim -- Sorry, but an index
9 management procedure, basically, and we have an assessment, and
10 modify it based on the trend, how many years of the index we
11 believe -- You know, what sort of buffer in the index
12 interpretation we believe, how much of the variability we believe,
13 but it's not necessarily a re-run of SS to do the interim analysis.
14
15 **DR. SAUL:** Thanks, Katie. That makes sense. I guess, then to
16 that point, you know, we've often -- We've tried to set OFLs and
17 ABCs, based on some of these interim analyses, just by looking at
18 sort of index trends and such, and I also recognize, having been
19 on the other side of this, on your side of this, that it's quickly
20 a slippery slope toward essentially, oh, let's just add this other
21 thing to the model, and this other thing, and then, all of a
22 sudden, you're back at a benchmark, and so I don't want that.
23
24 I guess what I'm trying to open the door, for discussion about, is
25 what sort of the best metrics, or way forward is, if we do need to
26 recommend to the council specific catch advice, you know, for
27 setting OFL and ABC, and how reliable is this sort of index-only-
28 based approach toward kind of guesstimating a change, right, and
29 so, you know, let's say, last year's catch advice -- Or, at the
30 terminal year of the assessment, the catch advice was fifteen
31 million pounds, and then the index dropped, I don't know, let's
32 say 20 percent, and I'm not -- I shouldn't have picked fifteen,
33 and then we take 20 percent off of fifteen million pounds, and
34 then that's the new limit, perhaps, or something like that, and I
35 guess I'm just wondering, or opening the door for discussion, about
36 what kind of the best way forward, or best practices going forward,
37 might be, with respect to setting some of these catch limits.
38 Thank you.
39
40 **CHAIRMAN BARBIERI:** Katie, before you go there, let me just add
41 another comment here that might help, right, with Steve's point
42 there. I kind of assumed, from over the years, the last several
43 years, I would say, what the Center had brought forth, before the
44 council and the SSC, in terms of these interim assessments, that
45 they would follow, by and large, I mean, with some freedom to vary
46 a bit, and I hope that I'm pronouncing this correctly, but the
47 Huynh et al. paper, the 2020, right, *The Interim Management*
48 *Procedures Approach for Assessed Stocks: Responses, Management*

1   *Advice, and Lower Assessment Frequency.*
2
3   Is this the basic -- You know, I think, to Steve's point, is this
4   sort of like the framework that overall is being used, and, of
5   course, with freedom to vary a little bit on a case-by-case basis,
6   or do we still need to have the framework defined?
7
8   **DR. SIEGFRIED:** That paper is the basis for our use of interims in
9   the Gulf at this time, and we do have a presentation, that you
10 will hear from Nikolai Klibansky tomorrow, that will talk a little
11 bit about an MSE that looked at assuming, or using the assumptions
12 in that paper for different types of species, and so I'm interested
13 to hear your interpretation there, but, yes, that is the -- That
14 is the basis of what we've been doing, and, it's -- At this point,
15 the reason I asked for the SSC's input on potentially expanding
16 that is because of the research in other parts of our region and
17 not because, at this time, we have the ability to do that in our
18 models.
19
20 At this point, it's, you know, catches in the SS module or using
21 the index for the interim, and we're somewhat limited there, but
22 I guess the main principle is really that it takes so long to do
23 an assessment, and sometimes it can be -- The answer may not be
24 any better than an interim, and so the idea was, okay, relative
25 trend and abundance may be a good sort of finger on the pulse of
26 this stock, and we would hate to not allow catches to be taken, or
27 precaution to be also taken, if there is some signal in that index
28 between assessments, and so I don't think it's meant to replace
29 them, and to build up to, as Steve said, you know, a new benchmark
30 or update assessment, and so that's sort of the discussion that I
31 was hoping the SSC would have here, is sort of what limitations to
32 it they see, but that paper, that Huynh paper, from 2020.
33
34 **CHAIRMAN BARBIERI:** Thank you, Katie, and I have a queue already
35 forming here. I have Josh and then Dave and then Trevor.
36
37 **DR. CHAGARIS:** I think Steve opened the door for discussion, and
38 that's kind of the discussion that I wanted to have, you know, as
39 far as what we expect to get out of these interim analyses and how
40 we can use them, and, to be honest, I have never really been that
41 satisfied with the way the interim analyses have been conducted,
42 because they're so disconnected from the stock assessment, and
43 there's no inertia from recruitment or anything that's happening
44 in the population that feeds into the interim analyses, and I think
45 there's a way forward here.
46
47 I mean, we talk about the timeliness of this, and, if we add length
48 composition data, well, now we're almost getting back to an update

assessment, and that's not a bad thing. I mean, I think that's -
- We should be trying to achieve that, and we should be trying to
update our assessments quicker, and I think there's a way forward
here where you don't have to rerun an entire assessment, and you
don't have to run it in projection mode either, and you can update
what data you have available, your index data, your length
composition data, your catch data, and then just estimate a few
more parameters.

In your original assessment, your SEDAR assessment, you may update
a hundred -- You may have 150 estimated parameters, between all
your selectivity and recruitment and fishing mortality, and you
can add a couple of years of data that are available, and Stock
Synthesis can accommodate that, and then just estimate a couple
more years of fishing mortality, and a couple of years of
recruitment deviations, and then you have the stock is still
connected to the previous assessment dynamics.

We actually saw this with yellowtail snapper, and that was what
they did, and they were kind of forced to, but that was what they
did, and so we know it works, and we know it can be done, but it's
just the timeliness is really a matter of like getting the data,
and, you know, it's data management and data processing.

I think, if you were to run Stock Synthesis the way that I just
described it, we probably wouldn't have that many issues with
convergence, because it's only going to be conditioned on a couple
of years of data, and so it would look pretty much exactly the
same, and it might start to diverge towards the terminal year, but
I think -- I mean, I would really like to see that happen, because
what we're assuming with this harvest control rule, index-based
harvest control rule, is just proportionality to the index.

We know that a lot of these indices aren't that informative in the
assessment models themselves, and so you can take them out, and
they don't have a big effect, or some of them may, and, I mean,
those are the ones that we should focus on, but a lot of the
indices don't, and so then switching to catch advice, based off of
a single index, to me, is maybe a bit risky, or it could be risky,
and I just think there's a better way forward there, you know,
trying to tie this back to the assessment dynamics themselves.

Then, once you're able to do that, then I think we would probably
be more comfortable with OFL advice, if that's what was needed at
the time, and so I would still like to, you know, continue to try
to raise the bar on the interim analyses a little bit more, have
them more connected with the dynamics from the stock assessment.

1   **CHAIRMAN BARBIERI:** Thank you for that, Dave. A follow-up? Steve.
2
3   **DR. SAUL:** Thanks, Dave, for completing my thought, essentially,
4   and I think we used to do this, some years ago, when I was working
5   for and with the Center, but, also to that point, I am empathetic
6   that it does -- I guess, as a body, it would probably be useful
7   for us to have a conversation/provide advice to the Center, in a
8   bidirectional conversation way, on what data sources would be
9   updated and included, because, when we've done this before, we've
10   updated everything, including the indices of abundance, which,
11   again, it's a lot shorter than redoing the whole assessment, you
12   know, as a benchmark, because, ideally, if you still have the index
13   standardization code, you can just sort of drop in the new dataset
14   and re-estimate the index, and you should just get your next few
15   years tacked on.
16
17   If you overlay the two indices, they should pretty much follow
18   each other, with the addition of just those years, right, and
19   that's what usually happens, under typical -- But other problems
20   come up with all of that as well, and the same with crunching
21   numbers for length comps, but that all does -- Having done that,
22   and gone through this update process, it does take considerable
23   time, and I'm in full agreement, and my preference would be to use
24   -- You know, Magnuson wants to ask for this sort of integrated,
25   right, assessment approach, right, and so my strong preference is
26   with yours, Dave, to set management advice based on, you know, the
27   actual assessment model, rather than these index-based approaches,
28   which I applaud the novelty of them, and the sort of need for
29   throughput and balancing sort of benchmark development with, you
30   know, models with throughput for, you know, management decision-
31   making, but I also kind of get a bit uncomfortable basing things
32   on just one, or a few, indices, rather than sort of having the
33   full dynamics of the model sort of behind the estimate of those
34   numbers, where you're actually grabbing, you know, the system
35   dynamics and associated uncertainty. Thank you, Mr. Chair.
36
37   **CHAIRMAN BARBIERI:** Katie is in the queue, and, Katie, before I go
38   to Josh and Trevor, because it might be different topics there, I
39   will go to Katie and then John.
40
41   **DR. SIEGFRIED:** Thank you, Mr. Chair. I appreciate you letting me
42   jump in here, because I'm sure there will be lots more to talk
43   about, and my list will get long. I just wanted to say that we
44   actually have something in the works to address exactly what Dave
45   stated, because, you know, there is concern that focusing on just
46   one index, especially when it hasn't been MSE tested, may not be
47   the most complete way to go.
48

1 You know, he and Steve both stated the truth, that we are very
2 data-limited, and not just data-limited in the number of data, but
3 also the number of people that can get us those data streams, and
4 I don't want to jump into the excuses part, and I would prefer to
5 say, okay, given those limitations, what type of, you know,
6 quicker, but accurate, and complete, sort of management advice can
7 we provide, with those limitations, and potentially the SSC can
8 let the Center know that those -- You know, those are things that
9 they would like to see more of, and, that way, there's some sort
10 of impetus for improvement on our part.
11
12 We are improving as well as we can, but sometimes, you know, the
13 council and the SSC stating it can help our -- Frankly, just
14 sometimes money, and it can help the situation, and so we have
15 plans to do that sort of something between an interim and an
16 update, as Dave was describing, and looking at not necessarily
17 estimating all the parameters, but estimating key parameters.
18
19 Then, as Steve said, it would be something that we would have to
20 decide which parameters were most important, and, you know, what
21 type of time interval would we need to get those data, is there
22 any way to automate that data provision, and so those types of
23 things are in the works for us.
24
25 Our operational workload, and so like my team, probably isn't going
26 to be able to accomplish that while they're doing other
27 assessments, but we're going to have to rely on, you know, external
28 funding, and the ideas of others, and potentially post-docs and
29 contractors, to assist us, while we maintain our throughput, which
30 is, as I'm sure you understand, is frustrating, because I have a
31 lot of great people on my team that would like to work on this
32 too, and so, each time we get a little bit of an advancement, we
33 get to incorporate that into each assessment, and each member of
34 my team is able to utilize, you know, the advancements, but that
35 sort of list of, you know, priorities, or interests, from the SSC
36 would be fantastic, and so I just wanted to state those two points.
37
38 Then I will point out that one of the other ways to go about this
39 is potentially to test a management procedure in an MSE framework,
40 which that's the longer -- That's the one that takes the longer
41 time, but, if we did it in a strategic way, we could potentially,
42 you know, knock out quite a few of our research goals with one
43 MSE, rather than it being a species-focused MSE, and so those are
44 a few of the things that, at the Center, we've been talking about
45 and would really like to have time to do. Thank you.
46
47 **CHAIRMAN BARBIERI:** Thank you, Katie. John, to that point?
48

1 **DR. JOHN FROESCHKE:** I guess what I was going to say, related to
2 my thoughts when we did the most recent red grouper interim
3 analysis, and that seemed to be dissatisfying, on a number of
4 fronts, and so, for me, what I found perhaps a little difficult to
5 understand is that, for red grouper, and so, for example, it was
6 not overfished, but it was just above that, and so we'll just say,
7 for purposes of conversation, an MSST of 0.5, and then the
8 projections, at some point, some timeframe, will rebuild, or are
9 projected to rebuild, back to BMSY, and so just say that was over
10 a five-year time period, and so you would expect a population size
11 relative to grow say 10 percent a year.
12
13 If the CPUE, on the bottom line index, was reflective of that
14 population, we would also expect that to have some sort of
15 positive, but we evaluate it on a flat slope, but, in a way, you
16 could say -- You could forecast that in and say the slope of that
17 line that we're evaluating against really should be 1.1 and not
18 one, for example.
19
20 Then that would link what was expected in the stock assessment, in
21 terms of growing, but it would maintain the simplicity of that,
22 and I don't know if you would do that linearly or what, but it
23 would build in some additional biological -- It would be more
24 conservative, in my view, and it would link to the assessment,
25 because, when we did that red grouper one, essentially, we're
26 expecting the population to be growing, but the catch limit, or
27 the index, was essentially flat, yet we still got an increased,
28 based on the way that we conduct it now, and so I was kind of
29 trying to square that, and that seemed like that could be a path
30 forward.
31
32 **CHAIRMAN BARBIERI:** Katie, did you want to address that one
33 directly now or -- Just because it does seem to be more of a
34 specific, right, recommendation from John?
35
36 **DR. SIEGFRIED:** I think I need to think about it a little bit
37 first.
38
39 **CHAIRMAN BARBIERI:** Sure. That's fine.
40
41 **DR. SIEGFRIED:** Let me think about it and look at the -- I will
42 follow-up with John, if I don't do so during this session.
43
44 **CHAIRMAN BARBIERI:** Dave, I have others in the queue, and do you
45 have something specifically to this? Then, yes, please.
46
47 **DR. CHAGARIS:** I was just going to say that what John said is
48 another way to think about this. I mean, I'm trying to pull it

1 back to the assessment model, but, if there's ways to actually
2 pull assessment dynamics into the existing interim analyses, you
3 know, just kind of thinking big picture, you know, that would also
4 be more satisfying than what we have now, and so look at
5 proportionality between the biomass and the index and the
6 assessment model and the catchability coefficient and trying to
7 bring that in, you know, thinking about this from both sides of
8 the coin, and so I'm glad you raised that comment.
9
10 **CHAIRMAN BARBIERI:** Right, because, you know, if I may just quickly
11 -- I mean, obviously, this is a matter of bandwidth as well, right,
12 that the Center might have, and so, obviously, we want the
13 Cadillac, if we can, to get every year, or every stock, even
14 though, you know, some of these longer-living species, having that
15 many age classes in the population, and in the fishery, right, and
16 differences, from one year to the next, are going to be basically
17 imperceptible, right, as you rerun the assessment, and so there is
18 some inertia there in the age composition and how many age classes
19 you have in the fishery that's going to, you know, dictate how
20 much change you're bound to see.
21
22 I think the question, for the committee to think about, is how can
23 we maximize throughput in the Center, help to maximize throughput,
24 get us what we need to provide catch advice, but understanding
25 that there's a resource limitation issue that we cannot ignore,
26 right, and so it's the thing that an airplane is great, but not
27 necessarily to run to the supermarket, and can we use a bicycle
28 for that, right, and sometimes we can just walk there, to get the
29 job done.
30
31 Now, if we have a big grocery, then, no, we cannot walk over there
32 and bring all of those back, and so I'm trying to think about how,
33 you know, we can try and develop a process of working with the
34 Center and helping them accommodate just how much is enough, right,
35 that they can provide, in terms of analysis for us that can be
36 used for management advice, but not necessarily -- We don't want
37 to kill our Center, right, and interfere with the throughput of
38 our main assessments, right, our full-blown operational
39 assessments, because data provision, and everything else, is going
40 to be compromised, and so that balance needs to be taken into
41 account, right, and I think we're going to help them, by trying to
42 bring them to that sort of balance, and that, John, might be a
43 good recommendation there. So, after that little Luiz monologue,
44 I am going to return to the queue here, and so I have Josh.
45
46 **DR. KILBORN:** Thank you. First of all, I would like to point out
47 that many grocery stores deliver now, and so that's an option.
48

1   **CHAIRMAN BARBIERI:** For a price, right?

2

3   **DR. KILBORN:** For a price, yes. Everything is available for a
4   price, but, kind of thinking along these same lines, you know,
5   looking at Slide 6, the list of things in Bullet Point 2 that we
6   need, that are assumed, maybe some of those things could be
7   included in a more timely, you know, interim, or health check,
8   kind of analysis, like recruitment, for example.

9

10 We're going to see some talks, later this week, from the SHELF
11 program, and I think that's a really good program that can provide
12 information about, you know, egg distributions and whether or not
13 we're seeing recruitment pulses, and there is the SEAMAP
14 ichthyoplankton surveys that are Gulf-wide, that I think also do
15 a really good job of capturing some of this stuff in a FIM
16 framework, and so I'm wondering if, you know, maybe we could look
17 at some of those things on that list and decide, you know, are
18 there certain variables that are more volatile, that we would want
19 to really kind of keep up with, and others where the assumptions
20 might hold a little bit longer.

21

22 Now, I don't know exactly, you know, how we would rank those
23 things, but that might be a good way to start bridging this gap of
24 kind of adding some low-hanging fruit that would be very useful in
25 these, you know, interim assessments, or health checks, that, you
26 know, we just can't necessarily do on an annual basis. Thank you.

27

28 **CHAIRMAN BARBIERI:** Good point, Josh. Just to remind everybody
29 where we are here in the queue, because it's long, we have Trevor,
30 and then Doug Gregory, Mike Allen, Jim Tolan, and, finally, Harry,
31 and then Steven. Thank you. Trevor.

32

33 **MR. MONCRIEF:** I will be as brief as possible then. I will just
34 say that I am a fan of this approach, when it comes to health
35 checks and interim assessments. We kind of introduced them a
36 little bit when we did the menhaden stuff, and we had Doug
37 Butterworth come in, and, you know, propose some index-based
38 approach with the harvest control rules, and I liked it, and I put
39 our state in that direction.

40

41 Now, given, the State of Mississippi is not the Gulf of Mexico,
42 but we've just developed specialized surveys to be able to have,
43 you know, trusted, which is the biggest part of this, but a trusted
44 fishery-independent index of abundance that we view as relative
45 to, you know, the stock and everything else, and that's kind of
46 how we've moved forward, and so I'm a fan.

47

48 I think, you know, keeping it this way allows us to get more looks

1 at more of the fisheries, and I think, you know, in a fairly quick
2 timeline, and what I was going to say is, when it comes to other
3 things to look at, right, other available data, you know, you said
4 the only fishery-dependent one you had was the headboat program,
5 and you've got the length comps and all that, and I almost wonder
6 if it wouldn't be worth drilling down into the recreational
7 landings, to the point where you have something that's reflective
8 and show contrast that might be relative to the fishery, and, in
9 my mindset, that's not landings, and it's not the number of fish
10 caught or anything else like that, and you would drill down to
11 some level of angler success and use that as some, you know,
12 assumed CPUE, to see if it shows contrast.
13
14 Now, the difficulty is that's going to be a large number of zeroes,
15 but, if you drill that even further down, to the individuals who
16 are targeting the given species that you're looking at, and then
17 look at the associated success of that angler, it might give you
18 something to add on to that fishery-dependent side that we don't
19 necessarily have now.
20
21 I think it will show contrast, for those species that are observed
22 readily, and maybe not for the ones that are a little bit more,
23 you know, haphazard, and not seen throughout the year, and so it
24 might be a good option, and then, for our last feedback needed,
25 for situations where updating the OFL might be problematic, I mean,
26 the direction we're going with this stuff, and we've kind of said
27 it a couple of times, is HCRs, harvest control rules.
28
29 The difficulty with that is always establishing the rules before
30 we play the game, and everyone has to agree with the rules and be
31 okay with the rules, and so, if there's a rule that comes through,
32 and the OFL is supposed to be changed, then we've got to go back
33 and say, well, we made this rule, and this is how it's supposed to
34 go, and I think that's where the problems come in.
35
36 **CHAIRMAN BARBIERI:** Thank you, Trevor. Well put. Doug Gregory.
37
38 **MR. GREGORY:** Thank you, Chair. I've got a number of comments,
39 and one is I agree with the general discussion that we've had about
40 this, and I think it's pretty obvious that we can't be changing
41 management measures every year for a number of species, based on
42 a number of interim rules, and it gets too tangled, and so the
43 bottom line, for me, is I think these should be used as health
44 checks, for a couple of reasons.
45
46 One is, if something shows up, and it takes us a year to do an
47 update and implement management measures, let's say a year-and-a-
48 half, by the time they're implemented, or two at most, and not

49

1 much is going to happen in the ocean in that two-year period. Most
2 of these increases, and declines, are a cumulative trend over
3 years, and we don't get big spikes. This is not menhaden, and
4 this is not Spanish mackerel, for the most part, and so I'm not
5 too concerned about.
6
7 I thought the interim assessments, when they first introduced to
8 us, I think back in 2015, sounded great, and we could get one every
9 year, for a number of species, and keep our finger on the pulse,
10 but it's not proving to be like that.
11
12 The other thing is I would like to see a general discussion of
13 these indices, and maybe not detailed length frequencies every
14 year, but what age segment, or what size segment, of the population
15 do these indices track? Is it young-of-the-year, or is the older,
16 mature, established part of the population?
17
18 It's curious, to me, that OFL is even mentioned in this
19 presentation, because we have never modified OFL based on an
20 interim assessment, and I have questioned, in the past, and I think
21 other SSC members have, why we didn't do interims for OFL, instead
22 of ABC, and it seems like a short-circuiting of the system of
23 discussing uncertainty, because, the way the interims have been
24 working so far, with just ABC, is just deterministic, and I think
25 that's what is making a lot of us uncomfortable.
26
27 Just one final thing, and, also, in making these changes, we're
28 assuming that we're better at setting the appropriate catch limits
29 than we really are, and we're assuming that they have -- Unless a
30 dramatic change is made, which we wouldn't do an interim, and
31 they're going to make a significant difference to the population,
32 within a year or two, and so I think we should use them as health
33 checks. If we see something that seems to be going awry, then we
34 can follow it up, which requires, I think, SEDAR to be a little
35 more flexible.
36
37 We've been doing stock assessment schedules four or five years in
38 advance, and maybe we do need some flexibility, that the interims
39 were intended to provide, but maybe we need something a little
40 better than the interim, so that, within a year or two, we can pop
41 in an update assessment, or an operational assessment, if the
42 health checks show us that something is going awry, and so, with
43 that, I thank you, Mr. Chair.
44
45 Going forward, it would be nice to have discussions about the
46 indices, presentations, what do they represent, and whether we
47 should be looking at OFL or ABC, and I've never gotten an
48 explanation as to why we went the route we went, and so thank you.

1   That's all.
2
3   **CHAIRMAN BARBIERI:** Thank you, Doug, and, to tell the truth, you
4   know, my thoughts were along the same lines, that perhaps we should
5   consider having the Center come back, you know, for a more detailed
6   overview presentation of the interim assessment process itself,
7   right, and, I mean, to some extent, I see us having here a little
8   bit of buyer's remorse, you know, and not that -- Right, because
9   this is not allowed, but we were presented with a methodology,
10 right, that was supposed to create -- To help us with throughput
11 in the main assessments and still update catch advice, based on
12 population trends, abundance trends, that could be, you know,
13 properly indexed.
14
15 We had several presentations about the methodology, and we gave it
16 a thumbs-up, right, and I know the Center -- Because I was there,
17 at the council meeting, and the Center presented this to the
18 council and explained, right, that all of this was supposed to
19 improve the timeliness of alignment between what fishermen are
20 seeing on the water and the catch advice that they are having to
21 live by, with the difficulties in timeliness that we have, the
22 problems with timeliness for stock assessments in general, and so
23 not that we cannot have buyer's remorse, because, you know, now
24 we've seen several examples of this, and we are reassessing where
25 we are, but I think it would be important for the Center to come
26 and give us, you know, a broader overview of that paper, of the
27 whole process, of the methodology.
28
29 I believe that this is tied, and correct me if I'm wrong, Katie,
30 but I think this is tied to the national level of the NOAA Fisheries
31 stock assessment improvement plan, right, that all of this ties
32 into that, in one way or another, to increase timeliness of
33 management advice to regional fishery management councils, you
34 know, without interfering with the schedule for the already full
35 assessments going through the regional assessment processes,
36 whatever they might be. With that, Mike.
37
38 **DR. ALLEN:** Thank you, Mr. Chair. I think this is a really
39 important topic for us to talk about, and it's a really good
40 discussion so far, and I wondered if, you know, one way to look at
41 this -- I am definitely appreciative of staff time, and stopping
42 short of going down the road of a full assessment, and there's not
43 the time to do that, but I am also sensitive to the idea of the
44 inertia of the past data are important, that, you know, having
45 that history of the landings and all that is important for any
46 catch advice.
47
48 I wondered if there couldn't be a tiered kind of approach, where,

1 if updated indices show a major change, show something that we
2 think would be a major change, then there is an update that runs
3 SS with just the new data, as Dave mentioned, but it would only go
4 through that next step, if it looked like the indices showed
5 something that the staff feels like might be important in the
6 assessment. If they feel like it's important, then they would run
7 it with the past data, and include that inertia into the
8 predictions, and so that's just a thought.
9
10 **CHAIRMAN BARBIERI:** Thank you for that, Mike, and our savant staff
11 member here, who takes notes and talks and does things all
12 automatically, hopefully you're capturing some of this, and there
13 are several recommendations for consideration that are valid. Jim
14 Tolan.
15
16 **DR. TOLAN:** Thank you, Mr. Chairman, and buyer's remorse, I guess,
17 is when you're walking back from the store with three bags, and
18 you think, man, I should have only bought two, but, like Trevor,
19 I'm a fan of this, and I think it has its applicability, but, in
20 my mind, it's got to be bounded by a one-way street, where, if the
21 health checks says we're doing better, we're doing better, we're
22 doing better, for the ABC, I could see bumping it up a little bit,
23 because it's already bounded by a buffer, the buffer to the ABC,
24 and I think it's a little less palatable for addressing the OFL,
25 based on one year of data, especially if it says the stock, on the
26 health check, is not doing well, and we've got to really cut back.
27
28 From the council perspective, I think it would be a tough sell to
29 say we're going to cut back the OFL based on that one year of an
30 index, and so, while I like it, from the Center's perspective of
31 we can get more done, if it's just on that one-way street, at least
32 in my mind, I think it works well. To lower it is a tougher sell,
33 for me. Thank you.
34
35 **CHAIRMAN BARBIERI:** Thank you for that, Jim. Harry Blanchet.
36
37 **MR. BLANCHET:** Thank you very much, Mr. Chairman. Back a while
38 ago, the Center had made several comments about automation
39 processes that they were trying to implement to get some of the
40 indices of abundance past through the Center more straightforward
41 than currently, and so the first part of my question is where do
42 we stand on that, and would this impact these interim assessments?
43
44 **DR. SIEGFRIED:** Thanks for the question, and so that point -- The
45 SEAMAP series, and so, for instance, the bottom longline, that
46 Ryan had, I think, on the second slide, that one is available so
47 quickly because of that -- Jessica is probably trying to do what
48 I said, and I said the wrong thing again. Is it on Slide 4?

1
2 Yes, and so the NMFS bottom longline is available so quickly
3 because of that automation process, and that team that standardizes
4 SEAMAP indices has come a long way in getting those particular
5 ones done more quickly. We haven't yet been able to automate
6 combined video. As Ryan said, you know, it's reading the videos.
7
8 There are some promising technologies, and I think a paper coming
9 out, that shows that AI might be able to identify red snapper
10 pretty easily, but certainly not for all the species that GFISHER
11 sees, and we're still in the early phases of that technology.
12
13 **MR. BLANCHET:** I will be fascinated when they get to the point
14 where they can identify mutton snapper. The other -- There was a
15 lot of discussion about incorporating length frequencies, and not
16 mentioned was the possibility of looking at age structure of some
17 of the harvest. I understand that the Panama City Lab has a
18 process for how they ran their schedule regarding reading ages,
19 but many of the states are reading their own recreational harvest
20 information, and it's just a thought that at least some of that
21 recreational age structure information could be used, in some
22 cases, as perhaps more informative even than length frequency, and
23 this would not necessarily be something that the Science Center
24 would have to -- I am trying not to throw anything else on the
25 truck that's already on the Science Center's back, but this might
26 be something that could be a relatively simple process, going
27 through the Gulf states' databases, just for the recreational data.
28
29 **DR. SIEGFRIED:** Mr. Chair, may I follow-up?
30
31 **CHAIRMAN BARBIERI:** Absolutely, Katie. Thank you.
32
33 **DR. SIEGFRIED:** I don't know that -- Recreational age comps are
34 some of the holy grail data for assessments, and I would love to
35 know who to contact to get all of those data, and to put our life
36 history folks in contact with them, to see what the actual sample
37 sizes are by species, because, you know, as you noted, correctly,
38 they are -- Our life history folks have so many age structures to
39 go through, and so, if other groups are doing that, and we are
40 just not coordinating databases, or those folks aren't coming to
41 data workshops, or data scoping, that would definitely be something
42 that we would like to correct. If you have state contacts that I
43 should put our life history folks in touch with, that would be
44 helpful.
45
46 **MR. BLANCHET:** It's my understanding that they get incorporated
47 into the SEDAR process right now, but it's just not -- I am just
48 saying that it's a different process than just a draw from Panama

1 City, and I deliberately did not want to throw Panama City under
2 the bus on this one, but it's just that, for some species, the
3 data are not going to be adequate, and I'm thinking of things like
4 tilefish and deepwater groupers and things like that.
5
6 You're not going to get enough recreational harvest information to
7 be useful, but, for some of our species, like gag, or red snapper,
8 or some of the other species that it could be used for, I think
9 that that often can tell you more about what's going on in a stock
10 than just looking at length frequencies, because, as you know, a
11 500-millimeter fish can be a swarm of different ages, and, you
12 know, you're looking at -- Maybe there's some structure in there
13 that's not apparent from that length frequency, and so just an
14 investigation into some of that, as a possibility, for a data
15 source that might not require a lot of effort from the Science
16 Center.
17
18 **CHAIRMAN BARBIERI:** Thank you for that, Harry. Again, you know,
19 I think that we're going to have to start organizing all of this,
20 as we get our draft report put together, you know, organizing all
21 these recommendations and thoughts for the Science Center on
22 potential changes, or improvements, to the current interim
23 assessment process.
24
25 Then I would really request the Center to come back and give us an
26 overview presentation of how does this fit into a broader
27 framework, so that it doesn't become so ad-hoc-ish, and that we're
28 making these changes, you know, without really having some
29 fundamental underlying framework, you know, underneath it. Jim,
30 I have a couple of people, unless it's to this point specifically.
31
32 **DR. TOLAN:** Actually, to this point, when it comes to workload,
33 and this is a question for Ryan, do these interim analyses take up
34 a spot on the yearly workload? They don't? Okay.
35
36 **MR. RINDONE:** No, and so interim analyses are not part of the SEDAR
37 process, and there have been discussions, in the past, about
38 including them in the SEDAR process, and the council's current
39 position on that is that that's not preferable, because, by them
40 being outside of the SEDAR process, it offers us the flexibility
41 to work with the Center in a more fluid way, to try to get these
42 accomplished in ways that are, one, convenient enough for the
43 Center, and I use that term loosely, obviously, but to be able to
44 do these for the council, and also timely for the council to be
45 able to receive the information, in order for the SSC to make any
46 recommendation, if appropriate to do.
47
48 If it were tied into the SEDAR process, we would have to have

1 everything planned out well in advance, and any scheduling pickup,
2 related to other assessments, has a butterfly effect throughout
3 the process, and the degree to which we could be nimble would be
4 sacrificed, and so it's our current preference to keep it outside.
5
6 **CHAIRMAN BARBIERI:** Steven Scyphers.
7
8 **DR. SCYPHERS:** Thank you, Mr. Chair, and thank you, Ryan and Katie,
9 for the presentation, and I think Ryan answered part of one of my
10 questions there, and that was if these interim assessments are
11 typically initiated through a council request, but then I was going
12 to comment on -- On the last slide, one of the things you guys
13 asked for feedback on was about prioritizing various interim
14 assessments, and it's probably stating the obvious, but it's just
15 pretty clear, from the two different potential uses for interim
16 assessments, one being somewhat of a quick health check, and
17 something else being more involved, where, you know, catch advice
18 might be updated, and I think the prioritization process could be
19 drastically different for those two scenarios.
20
21 For a health check, you could make a case that it needs to be done
22 on your more important, more Gulf-wide, high-priority species,
23 just to keep tabs with what's going on, but, in the other scenario,
24 regarding a lot of the, you know, legitimate concerns about
25 bandwidth, it seems like it's extending the life of assessments,
26 to keep them out of the assessment process, and so I'm just
27 pointing that out, that I think prioritization could get a little
28 complex, and depending on, you know, which use of the interim
29 assessment you're planning to do.
30
31 Then, you know, a little bit of a comment on, earlier, when you
32 asked about Fishermen Feedback, and, actually, it's a question,
33 and so is Fishermen Feedback always launched in a species-specific
34 context, about let us know what's going on with red grouper, or is
35 it ever launched in a way of are there any stocks that we should
36 be aware of something is going on with, and is it ever asked
37 generally, because that might be a way to have stakeholder-driven
38 prioritization, if there's a general implementation of it.
39
40 **MR. RINDONE:** It certainly could be employed, or deployed, in that
41 way. We haven't in the past, because we typically have a lot of
42 stock assessments that get queued up, and so, I mean, we -- In a
43 typical year, we could have two to four deployments of Fishermen
44 Feedback, in a given year, and so adding to that -- One of the
45 things that we try to be conscious of is how often we're putting
46 this out there and trying to get data back from the stakeholders,
47 and so we certainly wouldn't want to flood them with it.
48

1 **DR. KILBORN:** I wanted to go back to the conversation about
2 resources from the Science Center, because, you know, every time
3 we come together, we have lots of things that we want the Science
4 Center to do, and there's always, you know, the general kind of
5 running joke that they just don't have time to do anything, because
6 they've got so much to do, and so my real question is I'm trying
7 to understand the limitations that we're up against for resources
8 to get done the things that we think need to be done, but can't be
9 done, because I'm wondering --
10
11 You know, does it make sense for us to spend years, and potentially
12 thousands, and hundreds of thousands, and maybe millions, of
13 dollars trying to get research done to figure out the best way to
14 optimize some of these processes, when maybe we could just hire
15 two more people at the Science Center? Now, I don't know if that's
16 the answer, and I'm just -- Does anybody know what the actual
17 requirements are from the Science Center, given their perception
18 of our needs from them?
19
20 **CHAIRMAN BARBIERI:** That's a very good question. Katie, I don't
21 know if you feel like you should be addressing that specific
22 question.
23
24 **DR. SIEGFRIED:** Sure, I can address that. I was going to say
25 something about the workload, and so this actually ties in well
26 there.   One of the things that we're having difficulty with is
27 showing the council, and sometimes our leadership, what we're doing
28 all of the time, because there are a number of things that are
29 scheduled, and there's a number of things that negotiated after
30 the schedule, and there is council requests that come in, and then
31 there's requests from states and other cooperators that we need to
32 fill.
33
34 You know, I run one group, but I work with, you know, three other
35 divisions, our Monitoring Division, our Fisheries Statistics
36 Division, and our division that holds the life history folks, and
37 so it's a lot of coordination between each of them, their
38 workflows, and their schedules, and so, you know, the point was
39 brought of, okay, if we hired two more people -- I'm not sure where
40 we could hire those two people that would have the most impact on
41 all of the things that are requested, right, and so one of the
42 things that we did recently was try to look at bottlenecks in our
43 data flow and bottlenecks in our assessment output.
44
45 There are certain things, and, for instance, the video reading is
46 something that we just can't automate yet, and we're working on
47 that. The hard parts, ageing, is something that takes a certain
48 amount of time per hard part, and there's no way to speed that up

1 quite yet.
2
3 There are certain things that just would take, you know, more
4 people, more money, but each individual unit of data is not
5 necessarily something we can speed up.
6
7 There are other things, and like the interims is one way to help
8 with our throughput, potentially, to deliver management advice,
9 but what I would argue that might get to the heart of the question,
10 that was just asked even better, is to write down, in one place,
11 all of the things that are requested of the Center in one year,
12 and just recognize that those things don't all come in at one time,
13 and so sometimes prioritizing is nearly impossible over the course
14 of a year, because everything doesn't come in at one time.
15
16 I know one of the things that we do with the Gulf is try to have
17 a better relationship with council staff, so that I can be more
18 nimble, and more timely, in my responses to the council, and work
19 with those other divisions, because some of it is communication,
20 and some of it is just taking time to do that automation that would
21 make each individual data unit come out more quickly, but, if I
22 had to answer that hard question, I think it's probably something
23 like reading our hard parts, gathering our basic biology and life
24 history information, and then potentially analyzing the -- The
25 videos, at this point, is something that I think we should probably
26 put more money into that, because those are key for all of our
27 assessments, as well as our interims, right, and that's a really
28 good source of fishery-independent information, but those are two
29 very expensive things to focus on.
30
31 I guess that was sort of all over the place, but do you understand
32 sort of the breadth of the question that you're asking and how
33 many different groups we would have to get together to figure out
34 the prioritization of the data flow, and workflow, at the Center?
35
36 **DR. KILBORN:** Yes. Thank you, and that helps quite a bit. I
37 appreciate it.
38
39 **DR. SIEGFRIED:** Sure.
40
41 **CHAIRMAN BARBIERI:** Thank you, Katie. I have John Mareska.
42
43 **MR. MARESKA:** Thank you, Mr. Chairman. I guess my thought
44 processes are kind of along the lines of Mike Allen, that this
45 should be a step-wise process, and so, you know, looking at the
46 indices as a health check, and Jim really didn't make the point,
47 but he kind of did, and he said, so we're looking at a datapoint,
48 and a datapoint is a datapoint, and I think we all agree that we

57

1 should not agree a single year's datapoint, but I would implicitly
2 state that we probably shouldn't take action on anything unless
3 we've looked at three years' worth of data, and so that's just a
4 suggestion there.
5
6 Then, if we do see action, then, to Dave's point, we can integrate
7 more information, so that we have more informed interim assessment,
8 rather than just a single indices, and I was wondering if the trawl
9 index could be used for certain species, as an index of
10 recruitment, rather than plankton, because I think plankton -- I
11 think that's still like a two-year delay, to get it to the sorting
12 center and then get results back, and that's to Luiz's point that,
13 you know, we really need to look at all these different indices
14 and see what the time lag is on each one of these, and so that's
15 my comments.
16
17 **CHAIRMAN BARBIERI:** Thank you, John. Mandy.
18
19 **DR. KARNAUSKAS:** Thanks, Mr. Chair. This has been a great
20 conversation, and lots of good points raised, and I'm not sure
21 what the solution is for the interim assessment, but I do think we
22 need to use this opportunity as hard look at how to streamline the
23 assessment process. I think, if we're going to go down the road
24 of exploring interim analyses, and expending all this work, we
25 should be using it for catch advice, ultimately, after the
26 appropriate simulation testing.
27
28 The idea of the health checks, I am sort of questioning the utility
29 of health checks based on fishery-independent indices from last
30 year, and, if the question, or the need, behind the health check
31 is to understand, you know, what's going on with the stocks, with
32 the ecosystem now, that might require some management
33 intervention, then I think the tool for that is something that's
34 more like an ecosystem status report.
35
36 I mean, what if you saw like a suite of five species where the
37 indices of abundance suddenly dropped? Then the question becomes,
38 you know, what caused that, and is there something in the ecosystem
39 that's causing a shift, and then there's more information that's
40 needed to sort of decode what's going with the indices, and we
41 could go, you know, down the road of these individual species
42 health checks, with the length comp, and the age comp, and, you
43 know, discards, but, again, I think it would be more useful to
44 look at the whole suite of species, the whole ecosystem, a set of
45 indicators, and, again, if we're interested in what's going on now
46 that's going to require management intervention, there is sources
47 of information that are much more up-to-date, environmental
48 information, quota prices, quota utilization, that could give you

1 an idea of what's going on today, and so, if we want to go the
2 health check route, I would recommend that we look at something
3 more like a full-blown ecosystem status report, instead of just
4 looking at a bunch of, you know, indices that may or may not be
5 informative. Thanks.
6
7 **CHAIRMAN BARBIERI:** Thank you, Mandy. That's an excellent point,
8 and I agree completely, and I guess, this afternoon sometime,
9 right, we're going to have a presentation on the Gulf-wide
10 ecosystem model that basically will give us an overview of where
11 the Center is in that process, and it's actually open to a lot of
12 SSC input on what are the things that we would like to see come
13 out of that, right, so it's more integrated into the explicit
14 management process, and can be better used, more efficiently used,
15 by the council.
16
17 I think that's a great suggestion there, and that, you know, we
18 keep that in our minds as we prepare advice in reviewing this
19 afternoon's presentation, and, as we advance this follow-up -- I
20 think a follow-up on this interim analysis process for the Center
21 is important for us to have, at some point, and maybe at the
22 September meeting, Ryan is saying.
23
24 I have another quick question for you here, Katie, and I saw a
25 table of options for interim analysis that Erik Williams presented
26 to the South Atlantic SSC, you know, at the last South Atlantic
27 SSC meeting, and that, you know, provides kind of like a tiered
28 approach, to say, okay, this is what it takes for you to do this
29 kind of analysis, from more complete to less complete, and
30 timelines, and the quality and amount of data that goes in each
31 one of those, and could you look into something like that for us,
32 to bring in September, Katie, that, you know, would let us
33 evaluate, really, what is the workload, what is the resource
34 commitment, that is required for some of these more complete
35 analyses to be done?
36
37 **DR. SIEGFRIED:** Yes, and I have Erik's presentation, and that
38 table, and I didn't listen into the meeting, and was it something
39 where he was -- Is that something that's already offered to the
40 region, because, as far as I understood, the interim analyses were
41 still under debate in the South Atlantic, and so was this just an
42 effort to show how much time it took for each individual data
43 piece, or like what's types of interims were offered? Sorry, and
44 I didn't listen in.
45
46 **CHAIRMAN BARBIERI:** Right, and it was both. It was, you know,
47 providing different options, and this is what it takes, and how
48 many more ingredients do you need, to make this more and more

1 complex type of thing, you know, and I think it's a good
2 perspective for the committee to see, right, how that adds to this
3 conversation, in a way, and so he wasn't saying that that is
4 available yet, and it was just basically information, Katie, is my
5 understanding, information for the committee to realize what it
6 takes, in terms of resource commitment, for some of these
7 additional analyses to be made, including time.
8
9 **DR. SIEGFRIED:** Yes, and I certainly can bring that table, and add
10 to it some Gulf-specific perspective, and is this a good time for
11 me to ask, also, you would like in the presentation, and I have
12 some questions about the OFL versus ABC.
13
14 **CHAIRMAN BARBIERI:** Actually, we have one more hand up here, Katie,
15 and so let's hold back on that. Steven.
16
17 **DR. SAUL:** Thank you, Mr. Chair, and so, to your point, Luiz, about
18 like a potential tiered approach, and to your point earlier, Katie,
19 about the sort of need for resources and the utility of leveraging
20 what we, as an SSC body, need for better decision-making, to help
21 support the work that your group is doing, and I submitted to the
22 Meetings email a -- I was wondering, and I was thinking it might
23 -- I would like to ask if it would be useful for us, as an SSC, to
24 develop a motion that provides language to that point, and if that
25 would be useful for the Center, in terms of leveraging resources.
26
27 To that end, I wrote a really poorly-drafted initial crack at it
28 that I sent to the Meetings email, but I don't know, procedurally,
29 if that's something that is useful, number one, and, number two,
30 if this is the right time, or if we should wait until we hear
31 subsequent presentations on this issue in future meetings, and,
32 three, if it would be helpful, Katie, from a sort of resource
33 allocation perspective. Thank you.
34
35 **CHAIRMAN BARBIERI:** Well, I will jump in, Steve, and I think it
36 would be helpful, you know, to have some perspective, right, so
37 that we can provide some more explicit guidance to the Center on
38 what the committee feels should be considered.
39
40 Now, I would say this is all being considered for discussion,
41 right, as we bring the Center in for us to have a discussion on
42 how we want to handle this process of interim assessments, and so,
43 Katie, this might be the time now for you to go into your additional
44 questions, before we put Steve's, you know, draft motion on the
45 board.
46
47 **DR. SIEGFRIED:** Okay, and so I will wait to comment on the motion
48 more fully until I see it, but I guess the -- It is a fine line

1 between sort of recommending that certain data be prioritized, as
2 opposed to asking the Center to allocate, or budget, a certain
3 way. Of course, the Center doesn't -- You know, it's not really
4 -- I don't know how to say it differently, but, you know, it's
5 better to say what data are important, and prioritize the data,
6 and then the Center will decide how we should change our
7 prioritization, if we should, in order to accommodate that request,
8 and so if that helps, you know, the writing, Steve, and I guess
9 that's my impression, before I see it.
10
11 The other questions that I had had to do with the OFL and ABC, and
12 so there were a few folks that asked, you know, about why is OFL
13 not changing with the ABC, and I remember, specifically, last time,
14 Roy brought this up as well, and so, early on, my recollection is
15 that, because OFL is based on, you know, either the FMSY or its
16 proxy, and we calculate that proxy in our equilibrium projection,
17 it was considered that, okay, well, we're just going to look at
18 ABC, and, if the status of the stock changes dramatically in the
19 positive, or negative, so much that we start to get close to the
20 OFL, then we would want to revisit that with a thorough
21 conventional assessment, and that was what I first heard, and this
22 is, you know, years ago.
23
24 However, if you just look at the math, and you look at the way
25 that it's been used since then, you know, whether or not you have
26 buyer's remorse, if we're scaling the ABC, that is implying, you
27 know, a scale on OFL as well, and so I think one of the things
28 that we can present, in September, is a more explicit discussion
29 about that, and potentially I can have meetings with folks at the
30 Center and provide our position, or what we think scientifically
31 at the time.
32
33 I agree that hasn't been discussed very thoroughly, but those are
34 the two sort of arguments that I've heard lately, and is there
35 anything else that we should cover, with respect to OFL advice,
36 based on the comments before, or those folks who may not have
37 commented? Will that cover it?
38
39 **CHAIRMAN BARBIERI:** John Mareska.
40
41 **MR. MARESKA:** I think looking at interim assessments -- I think
42 Doug said, you know, we've never dealt with the OFL, but I think
43 we've also been hesitant to set an ABC if it exceeded the OFL, and
44 so, at that point, we would probably want an update assessment, at
45 that point.
46
47 **CHAIRMAN BARBIERI:** Yes, and that was explicitly the situation
48 that happened with red grouper, right, is that some of the options

1 there would have the ABC exceeding the OFL, and that was not
2 something -- That was not a direction that we wanted to go. We
3 have General Counsel, and, Ms. Levy, please enlighten us.
4
5 **MS. MARA LEVY:** I am not going to enlighten you, and I'm just going
6 to ask a question. I have heard this OFL thing, that we don't use
7 interim analysis to update the OFL, but I thought we just did that
8 for red grouper, and so I just want to make sure that everyone is
9 on the same page, and so I'm just raising that question. Thank
10 you.
11
12 **MR. RINDONE:** It's red snapper. This last time, we didn't --
13
14 **MS. LEVY:** Red grouper. We did Amendment 53, and then, right on
15 the heels of that, we updated the catch levels, using an interim
16 analysis, and it updated the OFL, and so I just -- We can look
17 back and see whether that's true, but I just want to make sure
18 that we're understanding what we've done, when we talk about things
19 like this.
20
21 **MR. RINDONE:** So, Katie, I think this would be a good point to
22 talk about the cost, in terms of the precision of that, when we're
23 updating the OFL in the same manner as the ABC.
24
25 **DR. SIEGFRIED:** So the cost would be our uncertainty, and is that
26 what you're referring to, Ryan?
27
28 **MR. RINDONE:** Yes, and this was mentioned the last time that we
29 did this for red snapper, of just generally like the cost of the
30 assumption that we're making about the precision of that estimate
31 and its likelihood of being offered with a 50 percent probability
32 of overfishing at the OFL.
33
34 **DR. SIEGFRIED:** That's something we do need to cover more
35 explicitly, and I can verbally state it now, but I do think the
36 group would benefit from a more thorough presentation of that,
37 but, if we -- If the information -- So, if we're not conducting a
38 full assessment, and we don't have all of those pieces of
39 information to inform our biomass estimates into the projection,
40 or the interim period, we're increasing our uncertainty around
41 that -- You know, the base estimate, but the base estimate -- We
42 have no other information to say it's anything besides 50 percent
43 probable that that's the goal that you will achieve, is, you know,
44 you're 50 percent likely to overfish at that point, if you're at
45 OFL.
46
47 If we go to ABC, we have not yet calculated what that decrease in
48 probability of overfishing is, but the idea of the buffer is to,

1 you know, apply the space between the OFL and ABC, in order to not
2 potentially overfish the stock, right, but we haven't yet given
3 you a probability of that, and we've just called them buffers, and
4 we really just have our confidence intervals to go off of.
5
6 If we're continuing on and using the interim, without all of those
7 other data sources, we don't have anything better to tell you than
8 what we've given you for the assessment, except for that it's more
9 uncertain farther out in time, and so that's certainly something
10 we need to do, as a Center, is be more explicit about that, you
11 know, what we're offering for interims, and then also what we're
12 offering for our projections and our ABCs from an assessment.
13
14 **CHAIRMAN BARBIERI:** Thank you, Katie, and I think that's helpful.
15 Those are points that, you know, I think we're going to need to
16 revisit in September, like I said, in more detail. To Ms. Levy's
17 previous point, the question about us having provided, you know,
18 previous OFL advice for red grouper, based on an interim analysis,
19 I'm not surprised, because, I mean, this is a new road that we're
20 embarking on, and we're kind of still learning the ropes, so to
21 speak, and, you know, we're kind of not completely sure of what
22 the sort of codified process is, right, for this, and so it's going
23 back and forth, sometimes, on these issues, but I think that the
24 committee now seems to be ready to engage in this discussion in
25 more detail and, you know, identify a better defined way, going
26 forward. Doug, do you have a question?
27
28 **MR. GREGORY:** Thank you, Chair. No, and I was just -- To what
29 Katie was asking, you know, for those of us that were questioning
30 about OFL versus ABC, you know, how we felt about her plan going
31 forward, I was just going to say that I think it's a very good
32 idea, and I welcome it, and we can flesh all of this out in
33 September, and I think it will be a good discussion, and it will
34 be very helpful, going forward. Thank you.
35
36 **CHAIRMAN BARBIERI:** Thank you, Doug. I agree completely. John.
37
38 **DR. FROESCHKE:** Just a couple of points, like from an operational
39 perspective of these, and, to me, based on like, as Ms. Levy
40 stated, what we did for red grouper, it makes sense, from an
41 operational perspective, from like three points.
42
43 One, in -- Let's start with the best-case scenario, where we have
44 a good assessment of a stock, and you feel good about the science,
45 and the stock is very healthy, and everything is good, the best-
46 case scenario. In those cases, typically, what would be done is
47 that you would feel confident in the science, and so your buffer
48 between the OFL and the ABC is small, complicated perhaps by the

1 narrow PDFs, and that's typical, and so your room to grow, if you
2 don't have the capability to modify it, is very small, likely, for
3 a healthy stock that you wouldn't be concerned about.
4
5 Likewise, the flip side of that, if you take a stock that's
6 overfished, and undergoing overfishing, and you're embarking on a
7 rebuild, your ABC is going to be based on F rebuild, and so you're
8 going to have a huge gap between the OFL and the ABC, and so you
9 have a lot of room to grow on a species that you probably would be
10 more concerned about, but, yet, your ability to do this would be
11 much more -- You're going to have a lot more freedom, and that
12 doesn't always make sense.
13
14 I guess a third wheel, from my head, is, when you do an assessment,
15 you start with the OFL, and then you make some determination of
16 your scientific uncertainty and calculate an ABC, and so those two
17 values are linked, and so it would seem that, if you go just to
18 modifying the ABC, and you're going to raise it, you wouldn't be
19 raising it because you think you have less scientific uncertainty
20 than you did at the time of the stock assessment, and so it must
21 be that you're implicitly determining that the OFL could, or
22 should, be higher. That's sort of my rationale for how this would
23 go.
24
25 **CHAIRMAN BARBIERI:** Right, and, to that point, and I don't know if
26 you want to make a comment there, Katie, but, before you go there,
27 we discussed this specifically during the last SSC meeting,
28 regarding red grouper, right, and, if not the last one, maybe the
29 one before, but, anyway, when we were doing the red grouper interim
30 analysis, and it was this issue of when the buffer that is smaller,
31 versus larger, as time goes by, and I think that buffer itself, in
32 a way, is not being, I guess, at least explicitly integrated into
33 this process, because what you are trying to do is be nimble in
34 adjusting, you know, at the council's request, and I would like
35 our council representative to weigh-in if he so feels, but it's
36 that to be nimble in adjusting catch advice to be more
37 representative of what's been happening in the water, given the
38 time lag there is between the terminal year of the assessment and
39 the whole regulatory process and implementation.
40
41 It takes a while, and so, by the time they implement something,
42 the stock may have already put out a couple of good, strong year
43 classes, and everybody is frustrated, and now I'm going to have
44 these very strict regulations, when the stock seems to be showing
45 great progress, and a point in case is that the council has
46 requested an interim assessment for gag, and we just provided catch
47 advice for gag not too long ago, right, but conversations,
48 impressions, that several fishers have is that the situation has

1 improved, when you're out on the water, at this point, and that
2 the council should take that information into account, and is that
3 correct?
4
5 **DR. FRAZER:** Yes, and so I've been sitting here listening to the
6 conversation, and thinking about it a little bit, and so I think
7 some history is important, again, about the whole idea, at least
8 when it was originally discussed, about what an interim analysis
9 might look like, and what it might be used for, and Clay brought
10 it up in a council meeting, and said, hey, you know, in an ideal
11 world, we would just be able to update the model, right, with the
12 most basic, readily-available information, and we may be able to
13 use that to respond more quickly to the input that we're getting
14 from various stakeholder groups, right, and it becomes, as Ryan
15 pointed out in the presentation, and Katie pointed out, a little
16 more complicated than that.
17
18 Then I'm sitting here, and I'm thinking about all of the discussion
19 around the table, and much of it, in my opinion, is probably
20 outside the purview of the SSC, right, because, I mean, it's not
21 the SSC's job to talk about people's workloads or things like that,
22 but, from a council perspective, and, again, this is a -- I don't
23 want to speak necessarily for the whole council, but, as a council
24 member, one of the things that I'm looking at is how do we promote
25 some stability, right, and also with some simplicity, right, and
26 that's a difficult thing to do, because, as scientists, we're
27 always thinking about how to make things better, and people always
28 have ideas of how we can incorporate information.
29
30 We live in an information-rich environment, right, and everybody
31 expects that that information can be readily assimilated and
32 disseminated and that we can make decisions, but, oftentimes, that
33 information wasn't gathered with a particular purpose in mind,
34 right, and so, in my mind, I think it would be best to step back
35 and say, okay, I think there's a role for the interim, right, and,
36 again, I would stay away from the word "assessment", to begin with,
37 right, because an assessment, by nature, it's a very formative
38 process, right, and there's a lot of information that goes into
39 that, whereas an interim type of evaluation is really kind of a
40 snapshot evaluation, right, of what's going on.
41
42 What you're trying to do is to say, okay, with this interim data,
43 is the -- How indicative is it of the performance, right, of the
44 stock, and, if there is reason to be concerned, right, then that
45 would probably prompt, in my view, an interim assessment, that
46 might be more involved, but it might be accomplished in a
47 relatively short timeframe, right, and so it may be limited, as
48 Dave said, but I think where we're going to head, in the future,

1 is that we're probably going to have longer time intervals between
2 legitimate assessments, right, and I think we are going to have to
3 rely on these interim evaluations to determine whether or not we
4 want to embark upon an interim assessment that would allow us to
5 change the catch advice.
6
7 I mean, that's a long-winded answer to say that we don't have
8 enough resources to do everything that we want to be able to do,
9 and I think we have to realize that, and we have to look at how we
10 might simplify our lives, right, and maybe expand the timeframe,
11 or the time intervals, between legitimate assessments, so that we
12 have some flexibility, and some discretionary ability, in the
13 interim, to do the interim analyses, where we see that there might
14 be a needed change, either because there's an environmental impact,
15 right, that has affected a population, or the fisheries community
16 more broadly, or things have improve, and maybe there's a
17 recruitment event, right, but hopefully that's helpful, Luiz.
18
19 **CHAIRMAN BARBIERI:** Well, it is, because, I mean, the way -- Well,
20 a couple of things. I think the SSC's concern, and we're going to
21 have to, as we continue this discussion, right, to understand this,
22 because, when we provide that management advice to the council,
23 and the changing catch level recommendations, and that's a big
24 deal, right, and, of course, it is prescriptive, and it is
25 codified, and so all of this has implications, right, that the SSC
26 needs to be cognizant of.
27
28 Two is, and I don't disagree, and I'm just saying that the
29 conversation -- As this discussion goes forward with the council,
30 it's about the issue of stability, and so, if we have a five-year
31 projection, a constant catch, to me, that's stability, right, and,
32 if we have projections, and we usually provide projections, that
33 is stability, and it's the same issue about in-season management
34 versus projection-based management for catch advice in general.
35 If we want to be nimble, and respond to things that are changing
36 in the short-term, that's not stability, and so the council is
37 going to have to weigh its desire for stability, on one hand,
38 versus the desire of adjusting catch to stakeholders' perceptions,
39 and, you know, that's not an easy line to walk on, right, and so
40 I understand that it's complicated, but this is the kind of thing
41 that we, philosophically, deal with, as a committee, is trying to
42 understand how can we address the council's request, and what are
43 they really looking for.
44
45 **DR. FRAZER:** Again, I mean, so what -- In an interim situation,
46 right, whether it's an evaluation or an assessment, whatever you
47 want to call it, I don't think what the council is necessarily
48 good at is saying, you know, what measure there, right, would

1 indicate, or trigger, a change in management, right, and I think
2 that's the role of the SSC, to say, if you're looking at an index
3 value, for example, and it's a 20 percent, you know, deviation
4 from what you might expect, or long-term -- I would expect to hear
5 from the SSC, that it says that you've got a problem here, or this
6 is a good thing here, and you might consider, right, acting on
7 that information, but, you know, just to get --
8
9 I want to be careful when I say this, because all input is
10 important, right, and you will hear public testimony about the
11 state of a population, whether it's, you know, exploding, or
12 whether it's deploding, and you will have other stakeholder groups,
13 you know, arguing for something else.
14
15 All of that can prompt a request to the SSC, perhaps, to look at
16 an interim value and say, hey, we've been hearing a lot about this,
17 and what is the real data telling us, and, if the SSC comes back
18 and says, you know, the long-term index value is like 5 percent,
19 you know, from where it normally is, or something like that, you
20 know, it's probably noise, and that's important, right, because
21 then you don't have all these knee-jerk reactions, and that will
22 promote some of the stability that I'm talking about.
23
24 **CHAIRMAN BARBIERI:** I see, and I think this is valid, and a very
25 good point, Tom, that I think provides guidance for us, and, I
26 mean, there is a process, also, that's very explicit within the
27 National Standard Guidelines, you know, called the ABC Control
28 Rule, right, that we're explicitly named in, as a body, and so,
29 you know, those kinds of rules are better integrated, I think, in
30 a control rule, harvest control rule, kind of way, because then
31 it's spelled out, and approved by the council, and we know, you
32 know, what the range is that we consider a thumbs-up, a thumbs-
33 down, or no move at all, right, and this is why I feel like that
34 having the Center come back and say, okay, let's present to this
35 committee what we believe is our set of procedures, the framework
36 that we put in place, and this is guided by a national level,
37 right, statute and guidelines, for implementation that would allow
38 us to follow those types of things, and I think that that would
39 very helpful. Thank you. I think I have John first, and then
40 Trevor.
41
42 **MR. MARESKA:** I just kind of wanted to follow back up with John
43 Froeschke, and he was talking about the buffers, and how we do
44 that in the interim assessment, and, in the interim assessment,
45 there's more uncertainty with the further those projections come
46 out, and so were you kind of inferring that this should be applied
47 -- If we get into the event of scaling the OFL with the ABC, so
48 that, if we have a narrow buffer, it shouldn't scale one-to-one,

67

1 and the margin between the ABC and the OFL should be closer, so
2 that we kind of ensure stability over the catch, because, if we
3 scale it one-to-one, and we actually hit an overfishing limit that
4 wasn't in reality there, and we exceed it, then we decrease the
5 stability of the fishery, and so I'm just trying to follow that
6 train of thought there, and I'm just thinking about how it could
7 be incorporated into the scaling. If we're got a large buffer,
8 then we could move it a little bit, if we don't exceed the original
9 OFL, we have that less likelihood of overfishing, and so --
10
11 **DR. FROESCHKE:** I guess my original thought, just as the way that
12 the system works, is that, for many stocks, we have very small
13 buffers between the OFL and the ABC, and those are typically the
14 ones that we feel most confident in our management systems, and
15 so, if we were going to raise them -- If you don't consider raising
16 the OFL, there is really limited -- You have limited flexibility
17 in what you could do, and so it might not even both worth it.
18
19 You know, if you have a fifteen-million-pound OFL for red snapper,
20 and you've got a 14.9, something like that, there's no point in
21 messing around with all of this infrastructure for that little
22 gain, but the other stocks, where -- For example, with amberjack,
23 there's going to be a huge buffer, or triggerfish, between the ABC
24 and the OFL, and so you could do a bunch of stuff there.
25
26 I'm not sure that you would want to, on a stock that's much more
27 -- You know, that you might want to be more precautionary with,
28 given the stock status, and so that just seems sort of inverse,
29 and so I was just thinking, in my head, that, if you wanted to be
30 more aggressive with a stock that you felt was in a good condition,
31 you would almost have to be willing to take on the OFL as part of
32 it.
33
34 **CHAIRMAN BARBIERI:** To close this up for the morning, Trevor
35 Moncrief.
36
37 **MR. MONCRIEF:** Very quickly, and so consistency and, you know --
38 Consistency in the fishery is key, and so I agree with your points,
39 Tom, and, I mean, that's exactly what we've been saying for a
40 while. My question is so let's talk about reaching a threshold,
41 harvest control rules and things like that, and, obviously, those
42 are going to come species-by-species, and maybe this is cart-
43 before-the-horse stuff, on the clarification of it, but, when it
44 comes to harvest control rules, since we don't really deal with
45 them right now, is that an SSC recommendation that is then passed
46 by the council, or is that a council endeavor that is developed
47 and then passed down to us, should we come down the road with this
48 conversation?

1
2 **MR. RINDONE:** I will answer for Tom. In the case of the HCRs, I
3 think that it would be something that the council would request
4 the SSC evaluate, and then the SSC could look at the data that
5 would support whatever -- Not support, but would inform whatever
6 sorts of things the council is trying to achieve, and so the
7 council would need to be pretty explicitly goal-oriented, like
8 what are you trying to do, and then present that to the SSC and
9 say this is what we're trying to do, and these are the things that
10 we're considering for trying to do it.
11
12 Council staff would then work with the Regional Office, and the
13 Science Center, to drum up whatever data would be informative to
14 that, and then that could be presented to you guys. You guys could
15 evaluate that data and say, you know, we think that these data say
16 this, generally speaking, and, you know, if this is your goal,
17 then these are the things that you might consider to try to achieve
18 that goal, based on what's available.
19
20 If it's a blank, like the data just don't support it, then, you
21 know, your recommendation could be that, or, you know, it could be
22 much more specific, if there are a lot of data to support a
23 decision, but I think it would start with some impetus from the
24 council.
25
26 **CHAIRMAN BARBIERI:** All right, everyone. Thank you, Ryan and
27 Katie, for the presentation and discussion with committee members
28 engaging in this discussion. We're going to break for lunch, and
29 we will reconvene at 1:00, and so let's have a one-hour lunchbreak,
30 and we are going to reconvene at 1:00 to get started on Agenda
31 Item Number VII, which is a review of some of the midwater snapper
32 catch limits and landings. Thank you.
33
34 (Whereupon, the meeting recessed for lunch on May 2, 2023.)
35
36   - - -
37
38   May 2, 2023
39
40   TUESDAY AFTERNOON SESSION
41
42   - - -
43
44 The Meeting of the Gulf of Mexico Fishery Management Council
45 Standing and Special Reef Fish, Special Socioeconomic, and Special
46 Ecosystem Scientific and Statistical Committees reconvened on
47 Tuesday afternoon, May 2, 2023, and was called to order by Chairman
48 Luiz Barbieri.

69

1
2 **CHAIRMAN BARBIERI:** We are going to get started for our afternoon
3 session, and we start this afternoon with Agenda Item Number VII,
4 Review of Queen Snapper, Silk Snapper, and Blackfin Snapper
5 Landings and Catch Limit Consideration, and we're going to have
6 another combo presentation here by Ryan Rindone and John Froeschke,
7 and, Ryan, if you would please go through the scope of work.
8
9 **REVIEW OF QUEEN SNAPPER, SILK SNAPPER, AND BLACKFIN SNAPPER**
10 **LANDINGS AND CATCH LIMIT CONSIDERATION**
11
12 **MR. RINDONE:** Sure. All right, and so I, and, to his apparent
13 surprise, Dr. Froeschke, will be summarizing the midwater snapper
14 landings for 1986 to 2021. These data are in FES data units, to
15 be commensurate with NMFS' interpretation of the best scientific
16 information available. These three species constitute the
17 remaining species in the midwater snapper complex. If you guys
18 recall, you recommended removal of the fourth species, wenchman,
19 from the complex at the two previous SSC meetings during which you
20 talked about wenchman, based on its landings, life history, and
21 fishery dynamics.
22
23 The combined landings of the three remaining species will be
24 considered for generating updated catch recommendations, using
25 Tier 3, and presumably Tier 3a, but you guys can consider what
26 you're comfortable with from the council's ABC Control Rule, using
27 a ten-year reference period for informing the OFL and ABC, and so
28 you guys should consider the landings data and reference periods
29 and make catch limit recommendations to the council, as
30 appropriate, and so we'll get started.
31
32 We took a little bit of a different approach than what was
33 originally published in the scope of work, to try to leave more of
34 it to you guys to decide what you want to do, and, generally
35 speaking, as it relates to the ABC Control Rule, Tier 3a, in a
36 way, rewards variability. The more different the landings are in
37 any given year, the greater the variance among those years, and
38 so, when we look at the OFL, to say two standard deviations, it
39 can be quite a bit higher than what the mean of the landings
40 actually is.
41
42 The midwater snapper landings, as you will see, have been a little
43 bit more consistent, in the last several years, than what you will
44 see for say black grouper, when we get to that later.
45
46 Midwater snapper, what's left? It's blackfin, queen snapper, and
47 silk snapper. There is no sector allocation, and the ACLs that
48 are on the books date back to the Generic ACL and AM Amendment,

1   and they used landings then from 1999 to 2008 to inform the OFL
2   and the ABC, and this was in the Marine Recreational Fisheries
3   Statistics Survey data units, at the time.
4
5   As far as wenchman is concerned, it had high landings in 2020 and
6   2021, and these landings spikes led to the midwater snapper complex
7   ACL being exceeded in both years, during which NMFS closed the
8   fishery. Stock status is, obviously, unknown here, and a lot of
9   the landings were confidential and were almost entirely exclusive
10 to the butterfish trawl fishery, and so the SSC recommended that
11 the council remove wenchman from the midwater snapper complex, for
12 the reasons that you guys had outlined during those meetings when
13 you evaluated it, and so that leaves the other three species, and
14 they are all generally rare-event species, as it relates to MRIP-
15 FES, and, if wenchman is removed from the midwater snapper complex,
16 we're going to need a new catch limit for the remaining three
17 species.
18
19 The ACL for this complex, since 2012, has been 166,000 pounds, and
20 you can see the proportion that each species comprises of the ten
21 most recent years, summed, outlined in that table down there, and
22 so wenchman comprised a good chunk of it. Again, most of that
23 though was coming from that trawl fishery, and followed by silk
24 snapper, then queen snapper, and then, in the rear, with the gear,
25 is blackfin snapper.
26
27 Midwater snapper landings, including wenchman, are shown here, and
28 you will see some scribblings up on the plot there, and so, in
29 2009, there was an estimate of about 580,000 pounds, give or take,
30 of midwater snapper landings. Of that, about 525,000 pounds of it
31 was recorded to be silk snapper.
32
33 Since we've never observed that before, or since, we don't have a
34 lot of confidence in that particular datapoint for silk snapper,
35 and so, in the high landings in 2020 and 2021, that you see on the
36 right-most side there, they're attributable to those high wenchman
37 landings that we've previously discussed, but, absent that, the
38 landings, since about 2011, have been, maybe optically, on a slight
39 downward trend, but generally -- You know, generally oscillating
40 at about a stable mean, it appears, and so potential options to
41 you guys would be to use Tier 3 to set the OFL and ABC for the
42 rest of the midwater snapper.
43
44 This would necessitate updating landings from MRFSS to MRIP-FES
45 units, and we would need to identify a reference period for
46 applying Tier 3, and this would result in a new OFL and ABC for
47 the remaining three species, and, presumably, doing so would be
48 included in whatever action would ultimately remove wenchman from

1 the complex and, as such, the FMP, and like we would, from a
2 regulatory standpoint, try to consider all that at the same time,
3 since it's all germane to the same topic.
4
5 This works out up here as Tier 3a, and, generally speaking, for
6 Tier 3a, there is no stock assessment, but we have landings data,
7 and the probability of exceeding the OFL can be approximated from
8 the variance about the mean of the recent landings, and, you know,
9 the idea is to use recent landings, but, if there's a time period,
10 like a reference period, of catch that you guys think is more
11 appropriate than the most recent years, for some reason, like
12 management bias or something like that, then you could certainly
13 consider another time period.
14
15 You know, we haven't had any meaningful change in management for
16 these species though since the ACL/AM Amendment, and so the most
17 recent time period is pretty stable.
18
19 Based on the best scientific information, the recent historical
20 landings are without trend, or are small relative to stock biomass,
21 or the stock is unlikely to undergo overfishing if future landings
22 are greater than or equal to the recent mean. For complexes, the
23 determination of whether a stock complex is Tier 3a or 3b would be
24 made using all the information available, which we regret to say
25 is not a whole heck of a lot.
26
27 Under Tier 3a, you would set the OFL equal to the mean of the
28 recent landings plus two standard deviations, and a time series of
29 at least ten years is recommended, but, if you think a different
30 number of years is preferable, you can recommend that, and then
31 the ABC could be set to one-and-a-half times -- The mean landings
32 plus one-and-a-half standard deviations, one standard deviation,
33 half a standard deviation, or just the mean of the recent landings.
34
35 In the opposite direction, it's Tier 3b, which, in a way, penalizes
36 you for that variance, and so the OFL would be set equal to the
37 mean of the landings, using a time series of at least ten years,
38 and the ABC would be set using a buffer from the OFL that represents
39 an acceptable level of risk, due to scientific uncertainty, and
40 predetermined for each stock or complex by the council, with advice
41 from the SSC, and so you would essentially just be selecting a
42 percentage reduction from the OFL, which, again, is set to the
43 mean for setting the ABC. Any initial questions on that?
44
45 **CHAIRMAN BARBIERI:** Doug Gregory, please.
46
47 **MR. GREGORY:** Thank you, Chair, and thank you, Ryan. This reminds
48 me of why we need to redo the entire control rule. If we could

stay on this slide for a minute, and I know this is something that
we developed, but I've been having second thoughts about what the
ABCs of one-and-a-half, or one, standard deviation means, as far
as the risk of overfishing.

If we've got mean landings, and that's what we expect the fishery
to produce, it will exceed the OFL only through random deviations
that are quite extreme, and the ABC -- Let's say if we have an ABC
of one-and-a-half standard deviations, and that doesn't mean that
the risk of exceeding OFL is 31 percent. That would be true only
if the landings trend became that -- That the one-and-a-half
standard deviations became the new mean.

If that became the new mean, then that risk statement is correct,
but, if the mean landings stays at what it is, that's an incorrect
risk analysis, and so I would like to have the Center or whatever
revisit that, and it all has to do with what landings are going
forward. What we have, and the reason this whole thing exists, is
that you do have random variability in any population, and the
mean is the mean, and there is random variability going up and
down.

We don't want to be closing a fishery, particularly one like this,
frequently, just based on random variability, and that's why Tier
3b, in my mind, is a non-starter, because, if we did that, and we
set the OFL at the mean landings, we would be closing the fishery
every other year, on average, and so those are my thoughts on this,
and it has nothing to do with what we need to do for this complex,
and I think we're on the right track for the complex, but it's
just the control rule itself I think is misleading. Thank you.

CHAIRMAN BARBIERI: Thank you, Doug, and, Doug, thank you for those
comments, but I think, you know, since we have an agenda item
already mapped out for the July SSC meeting, that deals explicitly
with the ABC Control Rule, that I would encourage you to, you know,
further develop those thoughts, right, and come ready for that
discussion, because I think, at that meeting, we're going to have
a deep dive into the ABC Control Rule, and so I appreciate that,
and we're not going to be digging too deep in this right now, but
I think it's a good idea to revisit in July, for that specific
agenda item.

MR. GREGORY: I agree, but we just need to be careful here, and
that's all.

CHAIRMAN BARBIERI: Right. Any other thoughts or questions or
comments from the committee? We have a couple more people in the
queue. Jim and then Trevor.

1
2 **DR. TOLAN:** Thank you, Mr. Chairman, and then thank you, John and
3 Ryan, for the presentation. I have two questions, and if you could
4 return to Slide 5 for me.   That 2009 point is clearly not
5 believable, and do we have any sort of idea what we went into --
6 It's silk snapper, right? Correct? Why that number is just so
7 high, and was it misidentification, or was it -- Any idea?
8
9 That's a huge number, and, if we throw that out, and that's the
10 first question, and then the second question is the 2020 and 2021
11 landings that include the wenchman, that, to me, look like bumps
12 up that ten-year period for the ACL number of 166,000 pounds, and,
13 if you took those out, and ran that line all the way back to about
14 1994, that's a fairly flat line for these three other species, and
15 so it's -- We've got a pretty good time period to go up against,
16 and so is that recommended ACL number, that 166,000, does it
17 include the wenchman? Thank you.
18
19 **MR. RINDONE:**   I mean, it's possible that there was some
20 misidentification related to silk snapper.   As far as more
21 information about that particular datapoint, we don't have that,
22 at this time, and these are all rare-event species, from a
23 recreational standpoint, and the data are on the recreational side,
24 but, again, I don't have more information than that, at least not
25 readily available.
26
27 The 166,000-pound ACL does include wenchman, and so, if we were to
28 take wenchman out, as you guys have recommended, and the council
29 has agreed with, then whatever would be left would presumably be
30 less than that amount, to some degree.
31
32 **CHAIRMAN BARBIERI:** Thank you for that. Trevor.
33
34 **MR. MONCRIEF:** I was kind of seeing the same thing Jim was, when
35 it came to that ten-year period from 2011 to 2021, and I think our
36 application of this, given the two options -- I don't know if it's
37 -- It's not necessarily, you know, random fluctuations in the
38 population level, but it's random fluctuation in our understanding
39 of what the removals are, because these are all rare-event species.
40
41 I mean, you might get a few of these with public access, and, I
42 mean, obviously, you have, because we have landings in the record
43 and all that, but most of these are coming from the deep-drop fleet
44 that aren't readily taking their boats in and out with public
45 access points, where they would be surveyed, and so I like Doug's
46 point.
47
48 I mean, the last thing you would want to do is put something in

place where the threshold would be reached and you would have to
readdress this one in a year or two, and come back to it every
single time, and, to me, you know, 3a presents itself as the most
logical option, especially given, you know, without wenchman, how
flat that distribution is across 2011 to 2021 for these three
species. I feel like that would be a good starting point, at least
for this group.

CHAIRMAN BARBIERI: Okay, and so can you say that last part again,
Trevor?

MR. MONCRIEF: You mean the 2011 through 2021?

CHAIRMAN BARBIERI: Yes.

MR. MONCRIEF: I think that's the -- Tier 3a and 2011 through 2021,
if I had to look at it and think about the species group, the
landings, where the landings are coming from, the fluctuations
that we're going to see, and it just makes more sense to treat
them that way, because, if they reach that threshold above, you
would that maybe, one, their popularity is increasing, and they're
being encountered more at the dock, or, two, maybe there is some
additional variability that's occurring for some, you know,
unknown reason that we can decipher, but the last thing we want to
do is address this year after year, or every other year, when the
mean is being breached.

CHAIRMAN BARBIERI: Right. Exactly. Thank you, Trevor. Harry.

MR. MORALES: Thank you. I don't think that this is going to solve
anything, but, going back to that 2009 datapoint, I saw something
from the MRIP folks, recently, that they had updated a couple of
wave estimates to, quote, address highly-influential observations.

I have a feeling that this 2009 datapoint was provided by a turn-
of-the-crank estimate of the MRIP program, and you might find one
or two outliers that really drive that half-a-million pounds of
fish, and so I guess my point is that that -- A surprise occurrence
like this, in the MRIP data from then, doesn't surprise me at all,
because you only have to intercept a couple of folks with a lot of
silk snapper, and, all of a sudden, it blows up on you.

You know, I think that a reconsideration of that datapoint might
be worthwhile, if we're actually going back and readdressing this,
because it may not -- It may turn out to be like we have seen in
other cases, just a couple of highly-influential datapoints that
are making that outlier stand like that. Thank you.

CHAIRMAN BARBIERI: Thank you, Harry, and so, Harry, are you suggesting that, instead of going with Trevor's initial recommendation that we use 2011 through 2021, that we actually expand, or extend, that time series to include the revised number for 2009?

MR. MORALES: No, and my point just that, if we're going to revisit this time series, it should be -- It should be taken a look at, to see if that 2009 point is actually a flyer, if it's somebody just ran across a few -- Or one or two trips with a lot of silks in them, or what happened there, and the datapoint is the datapoint, and it's been used in assessments or whatever, and I just -- I feel that anything that we can do to go back and clean up what data we have, rather than just putting an asterisk by it, that that's something that we should do, whenever we have a chance to do it.

CHAIRMAN BARBIERI: Okay. Got it, Harry. Doug.

MR. GREGORY: Thank you again. To Harry's point, I think we did this either with gray snapper or mutton snapper, and we can always just adjust that and take the average of the years prior to and right after that, and adjust it as an obvious outlier.

The other question I have is do we have a landings graph like this for just the species excluding wenchman, because I get the impression that we're being asked to recommend a way forward, but we don't have the actual data to make such a recommendation. Are we expected to come back, at a future meeting, and do that, and we're just giving general guidance to staff now?

CHAIRMAN BARBIERI: No, not necessarily, and Ryan will clarify for us.

MR. RINDONE: There are confidentiality issues with any of the individual species, but aggregating the species clouds that to enough of a degree that, you know, we can show you the annual landings for recreational and commercial combined for the three remaining species put together, and so that would mask things sufficiently, and I can send Jess a plot to that degree.

The other thing, Doug, that I was going to mention is, with respect to Doug and Harry's conversation about silk snapper, so, for the 2009 datapoint, and this is from S&T's website, the PSE for 2009 is 94.9, and the point estimate was revised down a little bit, from 525,000 to 504,000 pounds, but the lower confidence limit is zero pounds, and the upper confidence limit is 1.44 million pounds, and so, typically, the point estimates for, and this is for As and

1 B1s, for silk snapper are a couple hundred to a couple thousand
2 pounds, and so 500,000 pounds seems quite peculiar.
3
4 I certainly don't think any averaging including that datapoint
5 would be wise, and, you know, perhaps using the two years on either
6 side would be an okay approach to take, if it was necessary to do
7 so, but, given the stability in the recent ten years of the time
8 series, I also don't know that it's necessary.
9
10 **CHAIRMAN BARBIERI:** Okay. Josh.
11
12 **DR. KILBORN:** I don't know if this matters at all, but what's going
13 on with those first few years on this time series? Are those real
14 data values, because those aren't that far off from this anomalous
15 that we're looking at, and, I mean, I don't believe they're right,
16 because it looks wrong, but I'm just curious at what is going on
17 with those early data.
18
19 That's a big drop-off, is my point, and so if -- I know we don't
20 use those numbers in the models, right, because I think the time
21 period is different from what we're using here, and, in most of
22 the assessment models, we don't really use that late 1980s time
23 period, most of the time, and I know that management kind of picked
24 up in the mid-1990s, and we see different, you know, signals in
25 the data, and so I'm just curious.
26
27 **CHAIRMAN BARBIERI:** In this case, it's hard to tell, right, first
28 because these are rare-event species to begin with, right, and
29 they're an incidental catch, primarily, non-targeted, which
30 creates more difficulties, right, and, in this case, you're
31 combining more than one species, right, and so it just becomes
32 really, really problematic to get this resolved, I think. Trevor.
33
34 **MR. MONCRIEF:** (Mr. Moncrief's comment is not audible on the
35 recording.)
36
37 **CHAIRMAN BARBIERI:** I mean, I don't know -- John.
38
39 **DR. FROESCHKE:** I don't know if this is what you want to hear, but
40 what I was going to suggest is, given that we have another
41 presentation of a similar, but perhaps slightly different, stock,
42 that maybe we could go through both of them, and, that way, if
43 there are ideas, or issues, that come up in those, you could
44 address all of this at one time, so that we could avoid potential
45 contradiction of concepts or something.
46
47 **CHAIRMAN BARBIERI:** I think that's a good idea, and so, if
48 everybody is okay with this, right, we agree to move forward with

77

1 the next presentation, which also deals with an evaluation of
2 landings to inform catch advice, using Tier 3a and 3b, right. Jim,
3 do you have something before the presentation?
4
5 **DR. TOLAN:** Thank you, Mr. Chairman, and I'm perfectly fine with
6 moving on, and this conversation may have taken place over lunch,
7 when I stepped out for some calls, but, on Item VI, there was a
8 potential motion on the table, and was that rescinded?
9
10 **CHAIRMAN BARBIERI:** That motion wasn't actually presented or
11 seconded, and so, procedurally, it was not really presented, and
12 we can talk to Steve later, before the meeting ends, if it's still
13 applicable, but my understanding is that, you know, since we're
14 going to have a discussion in September, more in depth, of the
15 interim analysis process and procedure, that that would be
16 discussed -- We just postponed that discussion, to be more detailed
17 for later on, and just keep that in your back pocket, Steve. Thank
18 you, Jim. John, please.
19
20 **REVIEW OF BLACK GROUPER AND YELLOWFIN GROUPER LANDINGS AND CATCH**
21   **LIMIT CONSIDERATION**
22
23 **DR. FROESCHKE:** All right. I've been preparing for this for a
24 while. Okay. This is part-two, I guess, of an issue that we've
25 dealt with before, in that we had the assessment for scamp and
26 yellowmouth grouper, and those two stocks are managed as part of
27 the shallow-water grouper complex that was established in the
28 Generic ACL/AM Amendment, which also includes black grouper and
29 yellowfin, which will be discussed today.
30
31 Prior, or currently, I guess, the way that the OFL and ABCs for
32 these stocks were -- They were simply additive, and there was a
33 very old stock assessment for black grouper, and those values, for
34 the ABC at least, were summed with individual ABCs for the other
35 stocks that were computed using the Tier 3a assessments, and those
36 were summed up, and that's how we got our complex.
37
38 Now, we do have an assessment for two stocks, and so we're trying
39 to figure out how to make use of the stock assessment, and
40 subsequent catch projections, with the complex that we already
41 have and the management framework, and so there are a few different
42 options, and I will kind of go through those.
43
44 The black grouper, as I mentioned, there's an old assessment, and
45 it's not thought to be reliable, and it's also a jointly-managed
46 stock, and so, when the stock was done, it included both the South
47 Atlantic and the Gulf, and there are some assumptions that were
48 made with regard to allocation between the two regions, and then,

within the Gulf, for black grouper, there's not a sector
allocation, but it is in the IFQ program, and so the commercial -
- There's a fixed amount of shares and things, and so there's an
assumed allocation of 73 percent commercial and 27 percent
recreational that sort of makes this IFQ program functional, and
then sort of the 80 percent with the other three stocks, and so
that isn't actionable right now, but just for your information.

I mentioned the assessment for black grouper is not useful at this
point, and then we have some landings, and so there are different
options on what to do at this point, and then I will just say the
yellowfin grouper landings, similar to what Ryan showed, they are
very low, and so I could have either shown you an aggregated plot,
or what I just chose to show you was the black grouper plot, and
you can essentially -- It's the same. In some years, yellowfin
were zero.

Here are the recent black grouper landings, and, I guess, when I
put this together, I initially wasn't expecting it to look like
what it does look like, and I sort of found myself in a rabbit
hole about, huh, and so, on this one in particular -- So there's
not a reference year, because it was based on an assessment.

In the ACL/AM Amendment though, many of those we used like a 2001
through 2010-ish kind of a range, and so I kind of thought, well,
if you did that, we could compute things, but, you know, just the
non-stationarity of the data, if you were to use that reference
period, which I don't have highlighted, and I did at one point in
the draft, and then I kind of just highlighted this yellow color,
just for the sake of discussion, you know, kind of a reference
period that you could consider.

My concern, at least for this, was the non-stationarity, and it
doesn't really seem to fit well with the assumptions of Tier a,
and so then there's this Tier 3a and 3b discussion that may be
useful. If you took, just for the purposes of discussion though,
this reference period between like 2001 and 2010, in comparison to
the 2011 through 2021, it's about an 80 percent decline in the
landings between those stocks, and so this does not included the
Keys, and that's apportioned to the South Atlantic.

In terms of -- So the landings -- You know, there is a trend there,
and why I don't know, and, in terms of -- Ryan did a little bit of
stakeholder engagement, and, you know, the price for landed fish,
on the commercial side, is good, and they're certainly desirable,
and so it doesn't seem like -- There is not an absence of interest
in the stock or something that would drive that. There hasn't
been a large number of management changes, that I'm aware of, that

1 would directly affect that, and so the management environment, for
2 this stock, is fairly stable.
3
4 I don't know -- I mean, I think it's a rare-event species, perhaps,
5 but there's a lot of variability in the recreational landings,
6 certainly, and there is sort of a long-standing issue about species
7 identification issues between gag and black grouper, and I have no
8 idea if that plays into this in any way, but I also wasn't aware
9 of stakeholder feedback that would indicate some problematic
10 condition for this stock, although, when you just look at that
11 trend, it's like -- So that's kind of what I thought about.
12
13 In terms of what you might do in this Tier 3 concept, you could
14 use it to identify a reference period, select Tier 3a or b, and
15 then compute a value. The Tier 3a is typically thought of -- We
16 have the slides, but we wouldn't have evidence, or concern, about
17 overfishing or something, and I don't know that that would be to
18 you all's satisfaction, and Tier 3b we use sparingly, and I know
19 we used it once for greater amberjack on an assessment, which we
20 accepted the assessment and then did not use the projections, a
21 long time ago, and this was in 2012-ish, and I don't -- I'm not
22 aware that we've used it since then, but perhaps, and somebody
23 could correct me.
24
25 If we were to select some OFL and ABC values, it's possible then
26 those could be simply added to the existing advice we have for
27 scamp, and then summed up to create a shallow-water grouper
28 complex, and I don't know if that's an issue, because we already
29 have ABCs, but, if we did that, and it were to supersede the
30 individual stock, then we would resolve a potential issue, where
31 you had two different ABCs for a stock. For example, if you had
32 an individual scamp ABC, and then you had a complex ABC, and what
33 would you do if one was met before the other, and so we were kind
34 of trying to figure out how to avoid that. One potential
35 consideration is just to develop an aggregate, just like we have
36 now, and it would supersede the other one in some way.
37
38 This is sort of the Tier 3a and 3b that Ryan showed, and so I'm
39 going to skip over that one, and then the Tier 3b works a little
40 bit different. Rather than the standard deviations, it just works
41 off of percentages. In the way that the 3a rewards variability,
42 that would sort of penalize it, and so it's a little bit -- This
43 is the way it works, is just that the ABC would be set to the mean,
44 and then you would have some percent -- Or the OFL would be set to
45 the mean, and then you would have some reduction for the ABC, and
46 so that's one way it could be done.
47
48 Another way that it could be done is to use the scamp and the

1 yellowmouth grouper as an indicator for the shallow-water grouper,
2 and so it also could resolve the issue of having two separate OFLs
3 for the shallow-water grouper, and it would -- It would use a real
4 stock assessment as the basis for the management advice for the
5 complex, and so that's good.
6
7 The potential drawbacks are that scamp, and their biology and
8 distribution and things, may not closely align with the other
9 stocks in the complex, and so there's a concern that that may not
10 be representative. The other question is it doesn't seem to
11 resolve how you would incorporate that into IFQs, because, at some
12 point, you need a top line number of ABC and OFL that is converted
13 to shares for distribution into the IFQ program, and so, if you
14 were to just to base that top line number on just the subset of
15 these species, you wouldn't, obviously, include those, and so there
16 would have to be some figuring out how to do that. I don't know
17 if that would be worth the hassle or it wouldn't.
18
19 Some of the previous conversations centered around the scamp not
20 being similar to the black grouper, in their life history and
21 distribution, and so I think that's where I will stop. That's the
22 end, and so I definitely will stop, and I will open it up for
23 questions.
24
25 **CHAIRMAN BARBIERI:** Well, before, if you don't mind -- John, before
26 we get into questions, and Trevor has already lined up to be the
27 first one, and thank you, because it's good to have people engaged
28 and participate, but I am just trying to understand a few things
29 here, before we get started, right, and so, for the previous item,
30 has the council decided on whether it wants wenchman to be removed
31 from that complex, because I am thinking that would be kind of
32 like the first step into this, is to know that. If they don't,
33 then why are we doing this, if we're still deciding that?
34
35 **DR. FRAZER:** My recollection is that the council agreed with the
36 SSC's assessment to remove wenchman from the midwater complex, and
37 so they're just waiting on the next steps.
38
39 **CHAIRMAN BARBIERI:** That makes sense.
40
41 **MR. RINDONE:** We have to know what to do with the rest of the
42 complex.
43
44 **CHAIRMAN BARBIERI:** Right, but that step is taken here. The second
45 one is I believe that the SSC also, and this is what I'm asking,
46 if you could refresh my mind, to remove scamp from the shallow-
47 water grouper complex, and did we request that explicitly? I mean,
48 did we make that recommendation to the council?

1
2 **MR. RINDONE:** No, and there hasn't been a recommendation to remove
3 scamp and yellowmouth grouper from the shallow-water grouper
4 complex. You know, the way we had framed this to you guys,
5 originally, was that, you know, there are these four species that
6 are in there, and, you know, the council's initial inclination was
7 to keep the family together, but you guys had the results of a
8 stock assessment to use for scamp and yellowmouth, and so you
9 recommended an OFL and ABC based on that, and then you said that
10 you would take up what to do with black grouper and yellowfin
11 grouper next, when those data were available. As far as what to
12 do next, you know, this just requires consideration of some of the
13 things that Dr. Froeschke mentioned.
14
15 **CHAIRMAN BARBIERI:** That helps me a lot. Thank you so much to you
16 both. Trevor.
17
18 **MR. MONCRIEF:** As always. All right, and so, I mean, I kind of
19 looked into these a little bit, and I pulled it back up, but, for
20 the reference period years for black grouper, if you look at the
21 landings, over half are above the 50 percent PSE threshold, the
22 annual estimates across-the-board, and the ones that are under are
23 at an average of like 48, and so they're pretty close.
24
25 To me, given that much uncertainty about it, once again, I lean in
26 kind of the same direction that I did with the midwater snapper,
27 where Tier 3a -- But then I've got the same thought process, in
28 the back of my head, of, well, you know, it's a different life
29 history, and it's a grouper, right, and, I mean, obviously, they
30 live a little bit longer, and they're a little bit more complex
31 reproductively, and I don't know if the information is there to
32 support it, but my inclination would be, on the ABC, that you would
33 treat it a little bit differently, and kind of back it down a
34 little bit closer to the mean, and so not necessarily the one-and-
35 a-half, and you go down to the one, or the 0.5, option, to keep it
36 a little bit closer. That way, when it does exceed the ABC, at
37 least you have a look at it.
38
39 I mean, it's hard for me to justify that, outside the thinking
40 about their life history and activities and everything else, and
41 the more of the concern for the grouper species, and, to my mind,
42 they both fall within 3a, and there's not enough information there
43 for me to be able to really hold the species to anything, you know,
44 more restrictive than that, and I think my thought process is how
45 you treat the ABC.
46
47 Do you back it down, simply because of some concern with the life
48 history, or do you just treat them both the same way, because, at

1   the end of the day, you have the same equal amount of information
2   for both groups, which is little to none, and so I don't know if
3   that defaults us to the same one, but I would see the same thing
4   here.
5
6   I hesitate always using 2010, and I get it that it doesn't affect
7   the species as much as the others to that degree, but that 2011
8   through 2021 time period, 3a, and then the consideration of whether
9   the ABC should be treated differently or not, but that was me
10 looking at it.
11
12 **CHAIRMAN BARBIERI:** Thank you, Trevor. That was helpful. I have
13 Doug Gregory and then Jim Tolan. Doug, please.
14
15 **MR. GREGORY:** Thank you, Mr. Chair. I would like to find out what
16 the effect on the current OFL would be with what we presented at
17 scamp at the last meeting, and I don't recall, and it could be a
18 mental age thing for me, and I'm not eighty yet, but still.
19
20 The thing that concerns me is there is a life history difference
21 between black grouper and these other groupers, and there is one
22 distinctive difference that concerns me. Of all the groupers that
23 we have age and maturity information on, other than jewfish, or
24 warsaw, the deepwater species, black grouper is the most
25 conservative, and it does not mature until six-and-a-half years of
26 age and thirty-two inches total length, whereas gag and red and
27 scamp, and the ones that we have looked at, mature at half that
28 age, and half are less than at that size, and we've got gag at
29 twenty-four inches, and so it's not half.
30
31 We have never had a size limit in place that, in my mind, adequately
32 protects the reproductive capability of black grouper. Florida
33 had a twelve-inch size limit, prior to council management, and the
34 council implemented, I think originally, a twenty-inch size limit,
35 and then, sometime in the late 2000s, or the late 1990s, the
36 council implemented a twenty-four-inch size limit for black and
37 gag. Black don't mature until thirty-two inches, and so that
38 decline in landings really concerns me.
39
40 There's a couple of things that we need to do to look at that. Is
41 that decline a result of management action, or is it due to
42 something else, and I am inclined not to -- What Trevor brought up
43 is very good, and I don't tend to think of the uncertainty in
44 recreational estimates the driving trends in the stock, but maybe
45 they're more important than I ever realized, but what I would like
46 to try to get information on, from staff and the Center, is did
47 the Gulf of Mexico longline closures for turtles, that was
48 implemented in 2010 -- Could that be a factor in this decline since

1 then?
2
3 The other thing that could have affected these landings, and I've
4 already looked into that, and that is, at the same time, in 2009,
5 the South Atlantic Council implemented a four-month closure on all
6 groupers, all shallow-water groupers, and, of course, that
7 included the Keys, and so that could include not just the groupers
8 that are caught on the Atlantic side, but also groupers caught on
9 the Gulf side that were landed in the east.
10
11 It's reassuring that John said that that data, that that graph,
12 did not include any landings from Monroe County, even though some
13 of those landings would have historically been from the Gulf, but
14 that's beside the point, and so I would like to have somebody
15 research whether or not the longline closure for turtles could
16 have affected this trend. If not, given the size at maturity, and
17 age at maturity, of black grouper, I would be very, very concerned
18 about the status of that stock.
19
20 Then the next thing, in my mind, is what is the most conservative
21 way to go, if we think black grouper could be in trouble, and that
22 gets back to my first question. If we use scamp as an indicator
23 species, how much does that lower the current OFL? You know, we
24 won't know the direct effect of reducing fishing mortality on a
25 particular species, but it will give us a ballpark idea, and so
26 there's some more data that we need to see before we go forward
27 with this, in my mind. Thank you, Mr. Chair.
28
29 **CHAIRMAN BARBIERI:** Thank you, Doug. Those are great points. Dr.
30 Frazer, do you have a --
31
32 **DR. FRAZER:** I just had a question for John, and it's related to
33 what Doug just said, and so, I mean, these are the landings, and
34 I guess -- I can't remember which slide it is, but, on the slide
35 that you showed the landings, those are for the Gulf only, right,
36 and so they're excluding those in the Keys, but I was going to
37 ask, you know, what does the landings history look like in the
38 Atlantic, right, and so part of the issue here is, when you go to
39 the Tier 3b, if you were to go that route, is you have to look at
40 the stock as a whole, right, and so you can't just cleave part of
41 this off, and so you want to know what the whole stock is doing.
42 Doug also pointed out, you know, if there's a closure, is that
43 reflected in the landings.
44
45 **DR. FROESCHKE:** Jess, that email that I sent you, with that link
46 on there, it will have some information on the South Atlantic
47 landings for black grouper, and then, while she's pulling that up,
48 just looking at the commercial landings for black grouper, at the

1 beginning of the dataset, in 1986, there were in the 300,000's,
2 and there was one year that they were over 400,000 pounds. They
3 declined, but never below 100,000 pounds, until 2009, and, since
4 2009, they have never been above 100,000 pounds, and they have
5 gone down almost every year.
6
7 Jess, if you go to "groupers", just click on that, and then just
8 scroll back up a little bit, or go to the chart, and it's not the
9 perfect complementary information to what we have here, but it
10 does show some useful stuff, and it's actually pretty neat what
11 the South Atlantic has put together, but on the Panel B is the
12 units, or the landings in the FES, which is the currency that we
13 have here, and then, on that Panel A, that's the CHTS ones, and
14 that red line is the ABC, or ACL, I think.
15
16 They don't present the commercial data, but they do have some other
17 things, and we can send this link around, if you guys want to look
18 through this on your own. Did you have a question?
19
20 **MR. MONCRIEF:** I haven't looked at this, but is there any mention
21 of identification issues in the span of time which that might have
22 affected this at all?
23
24 **MR. RINDONE:** Usually, when we talk about the misidentification
25 issues, it's a conversation that's typically constrained to like
26 the mid-1990s and earlier. In recent history, there's less about
27 that, especially in the last ten years or so, because everybody is
28 toting a cellphone in their pocket that has some kind of an app on
29 it to ID fish, and law enforcement has the same resources, and you
30 have dozens of pictures of the same fish, at different sizes, to
31 be able to properly ID and things like that, and so it's certainly
32 less of an issue, contemporarily.
33
34 **MR. MONCRIEF:** Except for yellowmouth and scamp.
35
36 **MR. RINDONE:** Well, so yellowmouth and scamp -- At smaller sizes,
37 is what Jim had looked into, with the stock ID workshop, is, at
38 smaller sizes, they're very difficult to tell apart. When they
39 get larger, it's easier to be able to tell them apart, but, with
40 the sixteen-inch minimum size limit for scamp, and the cooccurrence
41 of those species, it's entirely reasonable that you could get one
42 and think it's the other, and so the identified proportion of those
43 landings that are yellowmouth though are very small.
44
45 Also, combined across the entire Gulf, the entire proportion of
46 gag and black grouper landings combined, the black grouper is much
47 smaller than what's reported for gag. We see the same declines in
48 the commercial and recreational fleets, especially at that 2010

85

1 mark. I am looking at the recreational data right now, for private
2 and for-hire combined, and it follows the same trend as the
3 combined, and so -- Other questions?
4
5 **CHAIRMAN BARBIERI:** Jim.
6
7 **DR. TOLAN:** Thank you, Mr. Chairman, and thank you to council staff
8 for another informative presentation, and Doug kind of teed-up the
9 landings question that I had for black grouper, if we can go back
10 to the presentation, on Slide 4, and it will be easier to follow
11 along.
12
13 I going to ask this question in the context of this is a species
14 we rarely see off of Texas, and it's just -- It's an eastern Gulf
15 kind of thing, but the whole period from 2000 to 2010 has been
16 used as a reference period for other species before, and the
17 question I have is, after that, it drops off dramatically for the
18 next decade, into the 2000s, and the question I have is really
19 more for Ryan, in the context of the fleet.
20
21 Has the recreational -- Because it's such a commercially-landed
22 species, and has the fleet pretty much stayed static, or has it
23 dropped off commensurate with the lower landings in the second
24 decade within the 2000s, for the commercial?
25
26 **MR. RINDONE:** For black grouper?
27
28 **DR. TOLAN:** For black grouper, yes. Have they pretty much stayed
29 the same, or have they fallen off, which might explain the -- Like
30 Josh said, it's an 80 percent drop-off in landings of black
31 grouper.
32
33 **MR. RINDONE:** So the drop in the commercial landings starts in
34 about the mid-2000s, you know, from about between 2004 and 2005,
35 and, you know, you could say that -- You know, there could have
36 been a red tide effect from that, and I don't know the -- Luiz is
37 saying now, and I don't know, and, I mean, I know that we had a
38 red tide that year, and so I'm happy to defer to Luiz's expertise
39 on that, but, basically, the drop starts from 2004 to 2005, and
40 then it keeps dropping all the way down to 2010, where it bottoms
41 out, which makes sense, because, in 2010, we had a lot of spatial
42 closures from the oil spill, too.
43
44 Then it creeps up, you know, from a comparative like year-to-year
45 comparison standpoint, and it creeps up a little bit, to about
46 2014 and 2015, and then it kind of slopes back down to where we
47 are now, but, I mean, it's been very low, compared to the average
48 for the 1986 to 2021 time series as a whole. I mean, it's been

1 very low for the last say twelve years or so.
2
3 **DR. TOLAN:** To that point, Mr. Chairman. If could rephrase my
4 question, and the size of the fleet, the number of boats, that are
5 commercially out there for black grouper, is that -- Are the two
6 parts of the -- For the two halves of the 2000s, is it the same?
7
8 **MR. RINDONE:** When did the permit moratorium go into effect? Ava,
9 do you know when the reef fish permit moratorium went into effect?
10 It was 1990, and so, starting in 1990, it became limited access,
11 and, you know, there were no more permits available, and you had
12 to buy a permit to get in, and so, from 1990, you would presume
13 that, beyond that point, effort would have been capped, and so,
14 despite that, you know, there's a decline over time, and so maybe
15 some permits, you know, in the initial years, perhaps, didn't get
16 renewed, and there was some reduction, and I'm sure that some
17 permit analysis could tell us what the trend in that looks like,
18 but certainly not an increase in available number of vessels to be
19 out there chasing them. If anything, that would have remained
20 static, or decreased.
21
22 **CHAIRMAN BARBIERI:** You know, keep in mind that, and Dave Chagaris
23 may remember this, but this last assessment of black grouper
24 actually was discontinued, stopped, because there were so many
25 issues with the data, especially the landings data, that were
26 unresolved. A data workshop was scheduled, and, at the end of the
27 data workshop, the group decided there was no real confidence in
28 the data here to move on in the development of an assessment model,
29 because the data is just not there, and landings data, mainly, are
30 very, very uncertain.
31
32 There's the species ID issue, and confusing the two, and there are
33 reports, in the trip tickets, about dealers actually marketing gag
34 as black grouper, because gag was not considered an acceptable,
35 you know, marketable grouper to be sold to restaurants, and so
36 this may have been all back then, in the historic period, but, as
37 we look at this time series, to determine where, you know, this
38 started, is difficult, and the degree of decrease here is also
39 uncertain, and, obviously, even for SEDAR 72, the Center produced
40 a working paper, right, that developed an algorithm, and that
41 algorithm has to be applied every time that you assess gag, to
42 basically apportion how much of those landings you assign to gag,
43 versus black grouper, and so landings information for black grouper
44 are highly uncertain, and I just wanted to put this out there,
45 because it's very difficult.
46
47 Needless to say, also, you know, the stock-wide information about
48 this -- I mean, the stock is assessed, as a whole, for the Gulf

1 and the South Atlantic, because there's enough exchange for them
2 to be considered a single stock, and so, when we look at the
3 condition of the stock here, by looking at landings in the Gulf,
4 how representative are they of stock status, right, for the
5 abundance, the biomass, of the stock, and I think I know the answer
6 to this question, but I'm going to ask. There is no information,
7 credible information, on fishery-independent indices that we could
8 potentially use, to have a -- You know, to see how it goes against
9 these landings?
10
11 **DR. FROESCHKE:** The only thing that I'm aware of is, in that report
12 from the South Atlantic, they have some that end in 2008, but
13 that's in the South Atlantic, but I'm not aware of any that exist
14 in the Gulf, and they're in that report, if you want to look at
15 it, and it's hard to make heads or tails out of it.
16
17 **CHAIRMAN BARBIERI:** Trevor.
18
19 **MR. MONCRIEF:** Just another comment, in trying to think through
20 this objectively, and so you all know this fishery better than I
21 do, right, and this is a Florida-based fishery, but would the
22 assumption be that removals, throughout the historic time period,
23 should somewhat match gag? Are their life history -- Do they match
24 up at all? The activity of the fishery, does that match up at
25 all?
26
27 **DR. FROESCHKE:** The distribution is quite different. Black grouper
28 are a south Florida species, and so gag really is north.
29
30 **MR. MONCRIEF:** Okay, but then would you suspect that, I mean, as
31 far as the harvest goes, overall, that the trends should pretty
32 much match up, or no, and, just because they're split across
33 ecoregions, they will be completely different?
34
35 **MR. RINDONE:** Their distribution is different, and their size at
36 maturity is different. I don't think that, just because gag does
37 one thing, that black grouper should necessarily do another. You
38 know, what we hear, or what I heard recently, from some fishermen
39 that are still currently, according to them, successfully fishing
40 for them, that they're finding them more commonly in deeper waters.
41
42 From personal experience, you can still find them in shallower
43 waters around the Keys, but they're typically smaller, and, you
44 know, especially in the southern Keys, there's a lot of
45 spearfishing pressure, down to the recreational dive limits, and
46 so you wouldn't have the expectation of seeing clouds of black
47 grouper swimming around in an area with that much activity. I
48 wouldn't feel comfortable making the assumption that trends in

1 black grouper should be expected to mirror gag.
2
3 **MR. MONCRIEF:** Yes, and I was just thinking from the historic time
4 series, because, I mean, there is -- If you look at gag, throughout
5 the entire time, it does now show that cascade, at all. If
6 anything, it's relatively flat, compared to what we're seeing with
7 blacks, and another thing -- I mean, I know -- I know there's old
8 hats around that know about this a little bit more, but that seems
9 like it would be fairly perceptible, for those who fish for them,
10 that, if they were around in the 1980s and 1990s, that's a fairly
11 stark contrast to what would be observed today.
12
13 I know this is kind of outside of our conversation, right, and
14 this is just me trying to objectively understand, and are we
15 looking at a huge cascade in a population size, or is this not
16 reflective of really the fishery itself, because, if it's B, if
17 it's the second one, then I still stand by proceeding the way I
18 talked about earlier, but, if it's A, then maybe there's a little
19 more concern about it, and I just saw those high PSEs, and it just
20 kind of threw me off, and I just don't really know if that's
21 reflective or not.
22
23 **CHAIRMAN BARBIERI:** Ryan.
24
25 **MR. RINDONE:** Thank you, Mr. Chair. To that point, we see -- I
26 mean, for black grouper, we see a noticeable drop from 2009 to
27 2010, which also coincides with the institution of the IFQ program,
28 but we also see that same drop in the recreational landings, and
29 so the recreational fishery shouldn't -- I mean, you wouldn't think
30 anyway, and you wouldn't assume that it would have experienced any
31 sort of effect from the implementation of the commercial program,
32 and that doesn't directly affect what recreational fishermen are
33 doing on the water. It's puzzling.
34
35 **MR. MONCRIEF:** Quite puzzling.
36
37 **CHAIRMAN BARBIERI:** Dr. Simmons.
38
39 **EXECUTIVE DIRECTOR SIMMONS:** Thank you, Mr. Chair, and so, also,
40 in 2010, in the eastern Gulf, we had the bottom longline
41 restriction, the endorsement that Doug is talking about, where we
42 reduced the number of folks that could use that gear, and I think
43 there was like sixty-one endorsements in the eastern Gulf, and
44 then, during a certain time of the year, that fishery is pushed
45 out to thirty-five fathoms, and I think it's during the summer
46 months, to try to reduce interactions with sea turtles.
47
48 Also, during that time, they're only allowed to -- I think it's

1 rig 750 hooks, fish 750 hooks, at a time, and so that was to
2 encourage the soak to not be as long, to reduce interactions with
3 sea turtles, and so the number of hooks that were allowed to be
4 fished was greatly reduced, and so, as Doug suggested, maybe we
5 should look at that bottom longline fishery and see if there's,
6 you know, some trends there.
7
8 One thing to note is that black grouper are closely associated
9 with coral, and coral habitat, and you see them in the Flower
10 Gardens, and you see them on the salt domes, down throughout the
11 Caribbean, south Florida, the Tortugas, you know, and on down, and
12 so, you know, they're not common across the Gulf of Mexico, and I
13 really don't know -- We should look at how much the bottom longline
14 gear interacted with them, because I wouldn't suspect they would
15 put that gear right over that habitat anyway, and they might
16 occasionally get them, but I would suspect it's pretty low.
17
18 If you go to the Regional Office's IFQ program landings
19 information, it doesn't have it broken out by species, but,
20 overall, black grouper, as part of the shallow-water grouper
21 complex, the landings have been quite a bit lower, and I think
22 it's around 30 percent of that quota has been landed, in the last
23 couple of years, but we could pull that up as well, and that's in
24 total, the total shallow-water grouper complex.
25
26 **CHAIRMAN BARBIERI:** Thank you for that, Dr. Simmons. Doug.
27
28 **MR. GREGORY:** Thank you, sir. I think, to Trevor's question, black
29 grouper were caught primarily by longline fishermen, and not
30 handline or bandit fishermen, and I think they're the same
31 fishermen that would probably target red grouper, and they did
32 fish in the coral areas, in the area called Pulley Ridge, I know,
33 because we talked to a number of them recently, in the last five
34 years or so, and they're the ones that mentioned that that turtle
35 closure really hurt their fishery quite a bit, but they were
36 talking in generalities and not specific to black grouper, that I
37 can recall, but Pulley Ridge was another closure that was popularly
38 fished, and it was fished by longlines, because it was a plate-
39 like coral, and it wasn't a coral like boulder corals, or soft
40 corals, and it was mostly a lettuce-like plant that was popular
41 there, and also plate-like corals, because of the depth of the
42 area.
43
44 Pulley Ridge is another closure that could have affected them, at
45 that time, but I am not looking for some way out of dealing with
46 black grouper, because I am concerned about them, and I have been
47 for years, only because of that age-old biological rule-of-thumb
48 that you've got to protect them and to let them mature and

1 reproduce, to some extent, and size limits are the traditional way
2 of doing that, and this fish has never been protected adequately
3 from the size limit.
4
5 Of course, they would have some discard mortality, and they do
6 perform spawning aggregations, and not like gag, but, according to
7 a commercial diver down here, they form smaller aggregations, and
8 they're not consistent year after year in the same location, and
9 so they're kind of in between, I would say, gag, and maybe red
10 grouper, in their reproductive life history behavior, but the main
11 concern I have is the size that they mature.
12
13 If using scamp -- The simplest thing, for me, is to use scamp as
14 an indicator species, and, if that provides more protection for
15 black than we currently have, that's a step in the right direction,
16 but there are things that could have affected this trend that we
17 should ferret out before we jump off the cliff and claim a
18 population crash, but, again, black grouper has been kind of
19 ignored over the years, primarily because it's a south Florida
20 fish, and, again, because of the species ID problem, and we need
21 to keep an eye on it. Thank you.
22
23 **CHAIRMAN BARBIERI:** Thank you, Doug. Paul Mickle.
24
25 **DR. MICKLE:** Thank you, Mr. Chair. I just wanted to mention and
26 chime-in -- I am reading through the South Atlantic document now,
27 the Grouper Snapper FMP, and I appreciate that being shared, and
28 I hadn't seen this document yet, and so it's good to see, but I
29 just wanted to make a couple of comments.
30
31 It was interesting to hear the discussion about the bottom longline
32 changes and the IFQ and all these different things, and we're
33 trying to -- I feel like we're trying to figure out what we could
34 be driving this trend, if we buy into this trend of representative
35 of what's going on there, from a biomass perspective.
36
37 One of the most efficient ways that I think of, when we have data
38 limitations and trying to figure out what might be driving a
39 decline, if we think this is occurring, and hearing from the
40 fishermen is the same, is one of the best ways to do it, even when
41 you have data limitations, is the lengths of the fish over time.
42
43 As we all know, as fishery biologists, as lengths decrease, that's
44 a good sign of fishing down a fishery, even when you do have small
45 amounts of data and episodic landings, such as this, and I just
46 wonder if there is length data to go along with these overall
47 landings, at any resolution level, to see if there's a trend in
48 length per fish over time. Thank you.

```
 1
 2  CHAIRMAN BARBIERI:  Trevor.
 3
 4  MR. MONCRIEF:  Sorry, and, just to address Paul's -- Just a side
 5  note, and my assumption, and maybe the Science Center would have
 6  the answer, but my assumption is that, if the landings have that
 7  high of a PSE associated with them, they probably aren't observed
 8  readily, which means that, whatever length comps that are there,
 9  they probably aren't representative, year-by-year, and maybe the
10  commercial fishery has something different than the TIP program,
11  but, yes, I would imagine those rec distributions probably are not
12  reliable.
13
14  CHAIRMAN BARBIERI:  So, you know, one question here, I guess, is
15  we have management advice that we have produced, OFL and ABC for
16  -- I guess we haven't generated the yield streams, as yet, because
17  we were waiting to get this issue resolved, right?
18
19  DR. FROESCHKE:  We have it for scamp, the scamp complex, and we
20  have a yield stream for that, but not for --
21
22  CHAIRMAN BARBIERI:  Okay, and so we have it for scamp, and I just
23  wonder if we're going to be able to -- I mean, what would be the
24  benefit of developing management advice for black grouper at this
25  stage in the process?  I'm looking at the SEDAR grid, right, the
26  schedule, and black grouper is supposed to have a process,
27  assessment process started, in 2026, right, and, considering that
28  the last assessment had to be aborted, because it just -- People
29  couldn't make heads or tails of those data, right, and I just feel
30  very uncomfortable dealing with this without having more
31  information in front of us.
32
33  DR. FROESCHKE:  So, there are a couple of different things to think
34  about, but, one, we have the scamp assessment, and we don't have
35  any way, because of the currency issue, and the existing other
36  species are in MRFSS, and we don't have a way just to insert those
37  new ones into the complex, and so either we just would effectively
38  sit tight on a new assessment, and stay with what we have, or we
39  would split out the complex, and then we would have to reconfigure
40  the IFQ program, however long takes to deal with that, and then we
41  would still have to probably figure out --
42
43  You know, even if you took the apportion of the black grouper
44  from that complex and dealt with that, but we're going to have to
45  do something.  The only way we could do nothing is if we just sit
46  on the scamp catch advice that we already have through that
47  assessment, which seems undesirable.
48
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CHAIRMAN BARBIERI: I see. That's helpful. Then, also, I'm trying to understand -- The complex, and what's the reason that we have a complex, a management complex, for this shallow-water grouper, and we don't have that for gag, or red grouper, for example?

DR. FROESCHKE: Well, when we did this, I mean, we had the responsibility to set annual catch limits for so many stocks, and there were so many that we just had limited information, and so then there was some analysis to create potential complexes of what fit together, and I think the shallow-water -- Carrie corrected me on this the other day, but this complex pre-dated that, and is that correct?

MR. GREGORY: Yes, John.

DR. FROESCHKE: Thank you, Doug.

CHAIRMAN BARBIERI: Well, and I'm asking this because my understanding -- My recollection, from going through that process, right, and so the process that we went through for development of the Generic ACL Amendment, and we had to generate management advice for a number of stocks, assessed and unassessed, and my recollection is that species that were put in a complex were put in a complex because there was no assessment available to inform management advice at the time, and my understanding was that, as species became assessed, they would be removed from the complex, because now we have direct information, specific to that stock, to provide better -- We can manage them individually better than we can a complex.

I think that that was the discussion, and so I'm just trying to revisit our main points of discussion, right, when we talked about scamp, and it's like, well, we have an assessment, and we decided to assess this species, right, and so here is the yield stream of OFL and ABC, and the council can manage as it sees fit, right, but we do have biologically-based catch advice to provide, right?

DR. FROESCHKE: Just in response, you could make that recommendation, and we would just -- You would understand that this would require fundamental changes to the IFQ program, which would be a heavy lift. I don't -- I am not prepared to speak about what all those changes are.

The other thing though is I think, at some point, we would still have to circle back and figure out how to create some sort of catch advice on black grouper, using something, and I don't know what that would be.

1 **CHAIRMAN BARBIERI:** Right, but that's why we have explicitly put
2 black grouper in the SEDAR schedule, so we can have a dedicated -
3 - There is actually supposed to be a team, involving FWRI and the
4 Science Center, working together, to try to apply data-limited
5 methods or explore other ways to generate catch advice for black
6 grouper. In terms of the IFQ, I understand it's complicated, but
7 is this the role of the SSC, right, and, I mean, that I'm struggling
8 with, a bit. Dr. Simmons.

10 **EXECUTIVE DIRECTOR SIMMONS:** Let me try a little bit. Right now,
11 we don't have an OFL for the complex, and I think some of that was
12 due to the last black grouper assessment we have, and I don't think
13 we could produce an OFL, and so, for the complex, and because I
14 think it's split, we don't have, currently, an OFL for the complex.
15 By getting that updated, no matter what we do, I think, for these
16 groupers, is kind of the direction we would like to go.
17
18 Yellowfin landings are so low and uncertain, and they're going to
19 have to go in somewhere. They're incidentally caught, and they
20 are landed as part of this complex, and I think it's an average of
21 less than 10,000 pounds a year, or something like that, and it
22 depends on what year you look at, and black grouper, until we get
23 some of the stock ID issues worked out, two-and-a-half years from
24 now, with maybe management advice, what do we do in the near-term?
25
26 I mean, it's hard to compare the current yield streams right now
27 that we have for OFL and ABC, for just the scamp and yellowmouth,
28 to the current shallow-water grouper numbers, and those are almost
29 two-times higher right now, what we have on the books, than what
30 we're looking at for scamp and yellowmouth. Now, these are in
31 FES, and the old numbers are in CHTS, I believe, and so I think
32 we're trying to think about a triage approach, and maybe the
33 Science Center has a suggestion that they could come back with to
34 try to help us think about we, in the near-term, could manage this
35 complex.
36
37 **CHAIRMAN BARBIERI:** Don't go away, please, and so, for black
38 grouper, because SEDAR 19 did provide management advice for black
39 grouper, assessment-based management advice, right, and so there
40 was, at one point in the books, OFL and ABC for black grouper.
41 No?
42
43 **DR. FROESCHKE:** It was a joint stock, and so they didn't know how
44 to apportion the OFL.
45
46 **CHAIRMAN BARBIERI:** Ms. Levy, do you have a -- Can you help us
47 untangle some of this, and I'm sorry, and maybe I'm being dense
48 here, and not completely understanding the big picture of this,

1 and this is why I'm asking questions that are popping into my mind,
2 but --
3
4 **MS. LEVY:** Right, and so, when the Generic ACL Amendment went into
5 place, part of that was putting things into complexes, for
6 management purposes, and this particular complex was, I think,
7 already in use, based on the IFQ program, but this amendment made
8 a shallow-water grouper complex and established ACLs and all of
9 that for it, as required by the Magnuson Act.
10
11 It did not define an OFL, because the black grouper assessment
12 that you referred to had an OFL that covered the South Atlantic
13 and the Gulf of Mexico, and the other species in there used the
14 Tier 3 control rule and came out with an OFL for the Gulf, right,
15 and so we didn't come up with a way to combine those, or put them
16 together, to get an OFL for the complex, but there was an ABC for
17 the complex that came from adding all of those up, and so the ABC
18 that came out of the black grouper assessment, and the
19 apportionment that went between the Gulf and South Atlantic and
20 all of that, was added to the ABCs for all those other species
21 that came out of the control rule to come up with a complex ABC,
22 and that's what is on the books now.
23
24 As Carrie mentioned, it's almost double what just came out of the
25 assessment for scamp, and I think it's in MRFSS, and not even CHTS,
26 and so, I mean, it's like a mix of management and science, right,
27 and so, as a policy matter, the council has decided to manage this
28 as a complex for the IFQ program, and whether or not that's still
29 appropriate is a management decision, right, but how are we going
30 to integrate the science, with respect to what an appropriate catch
31 level would be for that complex, if it's being managed as a
32 complex, right, and so -- I think that's kind of what you're being
33 asked to weigh-in on.
34
35 You have an assessment for some of the species, or stocks, in that
36 complex, and we don't for others, which is how it was back in 2010,
37 and how do we take all of that information and update it and get
38 some sort of OFL and ABC that we can use to monitor the complex
39 if, on the management side, the council still is like, no, we
40 really need this to be a complex, because it's an integral part of
41 the IFQ system, and does that make sense?
42
43 **CHAIRMAN BARBIERI:** It doesn't make life easier, but it makes
44 perfect sense, yes.
45
46 **MS. LEVY:** I will just note that so like the most conservative
47 thing to do would kind of be what Doug mentioned, right, and like,
48 if you use an indicator species, or stock, and it's scamp, right,

1 and then that OFL and ABC apply to the complex, you're really
2 limiting the harvest from that complex, right, because it's a very
3 conservative approach, because you're not taking into account
4 black grouper landings in setting those catch limits, but maybe
5 there is something where you do want to take the last ten years of
6 landings for black grouper and somehow incorporate that into the
7 complex, you know, ABC or OFL, and that's a little less
8 conservative, and so I think that's kind of where, you know, we
9 were looking at this discussion.
10
11 You can have an indicator species for the whole complex, or we can
12 have an indicator species and then -- There are various ways you
13 can do it, and you have a lot of flexibility, but we just -- You
14 know, obviously, you're the science experts, and so it's kind of
15 like, to you, what is the science recommendation for how to get
16 this management into place for this complex?
17
18 **CHAIRMAN BARBIERI:** I guess my question would go to Dr. Frazer, if
19 you can, you know, summarize how the council feels about -- I think
20 that's what Dr. Simmons and Ms. Levy just pointed out, and the
21 council would like to retain the shallow-water grouper as a
22 complex.
23
24 **DR. FRAZER:** Again, I think, based on the last meeting of this
25 group, the SSC, right, I think there was -- You guys can correct
26 me if I'm wrong, but there was an inclination to take advantage of
27 the relatively large amount of data for scamp, right, to manage
28 that fishery in a responsible manner, and so then you're left with
29 the other two, right, and so the black grouper and yellowfin, and
30 yellowfin is really kind of *de minimis*, right, and, I mean, there's
31 less than 500 pounds, and so maybe less than fifty fish, landed.
32
33 I mean, I don't think that -- Again, I don't think the council has
34 a strong opinion, at this point, and I think that they would have
35 to see what the options were, you know, with regard to what's the
36 advantage and disadvantage of managing them as a complex, and so
37 I don't think they have a strong position yet, to be honest with
38 you, Luiz.
39
40 **CHAIRMAN BARBIERI:** Right. Thank you, and that helps. I mean,
41 I'm trying to -- Because, I mean, we are a body for scientific
42 advice, right, to management, and usually the role that we play,
43 right, is to get analytical products, and actually make those
44 recommendations based on assessment for those analytical products,
45 and those decisions on, you know, how to manage -- We leave that
46 up to the council, at their discretion, right, to deal with, and
47 so, I mean, and then I will be quiet for a while, and let's hear
48 from other people, but I think some of the questions are whether,

1 now that we have an assessment for scamp, can we provide management
2 advice for scamp, based on that assessment that we have, and then
3 deal with the other species in the complex separately, and perhaps
4 add them up, right?
5
6 **DR. FROESCHKE:** That's one suggestion in the presentation, is you
7 could do that, or, like you said, I mean, the other part is you
8 could dissolve the complex and figure out how you wanted to manage
9 the -- I won't say -- The challenge, for us, is we would have to
10 figure out how to do that, and with the understanding that it might
11 take a little time.
12
13 **CHAIRMAN BARBIERI:** I mean, I don't want to dissolve the complex,
14 and I think this is outside my lane, right, and I would defer to
15 the council. If that's the council's preference, and I kind of
16 sort of understood that the council would prefer to keep things as
17 they are right now, and it's more practical for them to manage
18 this grouper species as a complex, and I am okay with that, but
19 scientific advice to management on catch levels -- To me, if we
20 have an assessment in front of us, that comes out of the
21 assessment, and so, for scamp and yellowmouth -- Yellowmouth or
22 yellowfin? Yellowfin.
23
24 For scamp and yellowfin, those are done, okay, and so those are
25 done, but, in this case, I guess then there are two options.
26 Either we use scamp as an indicator, and, when those landings get
27 hit, the whole complex closes, or we generate some additional
28 management advice coming out of this landings-based -- Then the
29 council has the freedom to add those to scamp and still manage as
30 a complex.
31
32 **MR. RINDONE:** I was just going to say, well, intuitively, if you're
33 using an indicator species, you're essentially saying that
34 whatever happens with that species is likely to be happening with
35 the other species in the complex, which, given the differences in
36 distribution, and some life history characteristics, like size at
37 maturity and things like that, that might be a harder sell for
38 saying that whatever happens to scamp is an indicator of what's
39 also happening to black grouper.
40
41 **CHAIRMAN BARBIERI:** Then whether they're even caught together very
42 often, right, and, I mean, do they -- Does the fleet usually have
43 incidental catches of black together with scamp, and vice versa,
44 to a large degree?
45
46 **DR. FRAZER:** I mean, Eric Schmidt is back there. Eric, are they
47 caught together?
48

1 **MR. RINDONE:** Eric, do you think you might come up to the mic?
2 Thank you.
3
4 **MR. ERIC SCHMIDT:** We catch them together.
5
6 **CHAIRMAN BARBIERI:** By the way, sir, if you could state your name
7 for the administrative record, please.
8
9 **MR. SCHMIDT:** Eric Schmidt. They're caught together, and scamp -
10 - We have an area, off of Fort Myers, that we call the bus route,
11 and it runs down about a thirty-mile stretch, and it's very sandy
12 bottom, with small pieces of coral, and we catch a lot of black
13 grouper there, and we call them carborita, and a lot of scamps,
14 and the scamp likes the real soft bottom, and so, yes, they are
15 caught together, but I don't think you should do an indicator
16 species whatsoever in this complex, because they are different,
17 and your landings numbers -- I about fell onto my chair when I
18 looked   at   those   landings   numbers,   because   that   is   not
19 representative of what we're seeing.
20
21 We have -- From Tampa south, we have a lot of black grouper, and
22 they are predominantly caught, and I have to disagree with Mr.
23 Gregory, and they're not primarily caught longlining. They are
24 primarily caught in vertical line and rod-and-reel, but, yes, our
25 landings have gone up here, especially after the hurricane, and a
26 lot of fish got displaced from down around the Tortugas, and I
27 have seen several pictures, from many people that are spear
28 fishermen, and they're doing five, six, seven fish a trip, and
29 they're big fish. We saw a 103-pounder about a week ago, and so
30 I totally disagree with the numbers.
31
32 I don't know where they came from, and I do -- I do agree that,
33 early on, with your numbers here, there was misrepresentation,
34 with gag grouper being called black grouper, but, anyway, that's
35 that.
36
37 **CHAIRMAN BARBIERI:** Thank you, Eric. Trevor and then Doug.
38
39 **MR. MONCRIEF:** The one that I was going to mention too is that
40 scamp themselves, if used as an indicator species, aren't as
41 geographically isolated as black grouper are, and so you wouldn't
42 be able to reliably link those two together, because you could
43 still have plenty of productivity throughout the rest of the Gulf
44 of Mexico that might give you a different look, and the second
45 part is, to my knowledge, if I am thinking through the process
46 correctly, you're artificially taking fish off the table, per se,
47 if you're using one as an indicator species and not addressing any
48 of the other ones, which I get it that that's more of a, you know,

1 real-world management implication, but it would be something that
2 essentially we would be signing-off on, if we use scamp as an
3 indicator species and not addressing this one at all.
4
5 **CHAIRMAN BARBIERI:** Thank you for that. Doug and then Jim.
6
7 **MR. GREGORY:** Thank you, Mr. Chair. I appreciate what Eric is
8 saying, and one way to look at it, historically, is to look at the
9 landings. I know, in the last stock assessment data reports, they
10 had landing by region in the Gulf, and I was surprised how many
11 black grouper were caught outside of south Florida, and that should
12 be revisited.
13
14 What I was going to suggest, to Carrie or John, is to talk to those
15 longline fishermen that we worked with when we were developing the
16 Pulley Ridge closure, and restrictions, because that was one of
17 their main things they were fishing for, I think, besides red
18 grouper, and so, if you take the handline information, that you
19 get from people like Eric and Tom Marvel and others, and combine
20 that with the longliner information, we might get a better picture
21 of what's going on in the fishery, because it's their livelihood,
22 and so I think this could use some forensic researching. Thank
23 you.
24
25 **CHAIRMAN BARBIERI:** Thank you, Doug. Dr. Frazer, do you have a
26 comment before --
27
28 **DR. FRAZER:** I think it's Jim's turn, and I will follow-up after
29 Jim.
30
31 **DR. TOLAN:** Thank you, Mr. Chairman, and, actually, I got passed
32 over in the queue earlier, which would have meant that I was going
33 to follow legal, and I'm glad that I got passed over. I will
34 preface this comment by saying that I will certainly defer to Doug,
35 when it comes to using scamp as a proxy for black grouper, and he
36 certainly knows more about these two species than I do, but I'm in
37 the camp that I just don't think the life history matches up well
38 to use it as a proxy.
39
40 We've already sort of established what the catch limits ought to
41 be for yellowmouth and scamp, and so that's pretty much done, and
42 we're kind of splitting up the complex, and we've got these two
43 left over, and yellowfin is just a tiny, tiny part of it, and it's
44 all just the black grouper, and now what do we do with black
45 grouper?
46
47 Well, of all the conversation that I've heard, all the discussion
48 here, what I thought I heard Luiz say earlier was, based on our

1 scope of work, that we're to come up with OFL and ABC numbers,
2 based on the data in front of us, and I thought I heard you say
3 that it's just not there yet, and so my recommendation is to go
4 down that road to say that we simply can't come up with catch
5 advice yet for this species, based on the data available to us,
6 and so thank you.
7
8 **CHAIRMAN BARBIERI:** I don't disagree, Jim, but, just to basically
9 reassure the council staff, and the council members, right, that
10 we're not letting this fall by the wayside, that we want to revisit
11 this, that we're going to be looking at -- You know, I'm going to
12 dig into the GFISHER, right, and we have a Florida Keys visual
13 survey that has a long time series of data, and I know that it's
14 on the Atlantic side, but at least we have some fishery-independent
15 metrics that, right now, you know, have not been -- We have not
16 been made aware of, and, you know, it hasn't been available to us.
17 It may take a little while to dig through those, but I think that
18 we're going to have a better-informed discussion if we look at
19 that fuller picture, right?
20
21 **DR. FROESCHKE:** (Dr. Froeschke's comment is not audible on the
22 recording.)
23
24 **CHAIRMAN BARBIERI:** Right, and thank you, Dr. Froeschke. Staff is
25 recommending that perhaps, and I think I can see Trevor's eyes
26 lighting up there, that he's thinking that I will make a motion to
27 that effect, right?
28
29 **MR. MONCRIEF:** I was going in the opposite direction, but, if
30 someone wants to make that motion -- I mean, I'm not going to make
31 it. My sentiment is the other direction. I mean, obviously, an
32 assessment was tried to be run on this species, and it was thrown
33 out, and that likely indicates that there's probably not a lot of
34 fishery-independent information out there, and, if you all
35 couldn't grab it off the top of you all's heads, after dealing
36 with all this stuff, then I don't know what that's going to give
37 us, and we're always going to divert back to the recreational and
38 commercial landings, which aren't getting any clearer, or any
39 better, and so I think we'll go through the work and look at it,
40 and I think we're always going to revert back to the same
41 situation, and maybe that's just me being a pessimist today, but
42 I feel like we've got the data we've got, and, at the end of the
43 day, we're going to revert right back to the data that we have and
44 have to make the same decision all over again, but I don't discount
45 the due diligence side of it. I get it.
46
47 **CHAIRMAN BARBIERI:** Right. Mandy. Dr. Karnauskas.
48

1   **DR. KARNAUSKAS:** Kind of to that point, I am looking at the
2   abundance indices that were put together for SEDAR 19, and, you
3   know, I don't know how representative the UVC, the visual census,
4   is, and, I mean, I think it probably covers a lot of the core
5   distribution of black grouper, but it shows a completely opposite
6   trend than we see here. I mean, there's really low abundance from
7   the 1980s and 1990s, and then, starting in 1995, the abundance
8   almost doubles, or triples, and I would think that that would be
9   less, you know, biased, in terms of the misspecification, or the
10 misidentification, of the species.
11
12 I think we could look at some fishery-independent abundance indices
13 to get a better sense of what's going on, and I just can't make
14 sense of the landings here, with the stock ID issues, with the
15 partitioning out between the Gulf and the Atlantic, and I feel
16 like we need more information to make a better decision.
17
18 **CHAIRMAN BARBIERI:** So we're going to have Josh, and, in the
19 meantime, folks, we need a motion, just to make this clear in our
20 report, right, and we need a motion to that effect, that basically
21 would request that fisheries-independent data for black grouper be
22 summarized and presented to the committee to revisit this agenda
23 item. Josh.
24
25 **DR. KILBORN:** Thank you. Just to add more complexity, I guess, if
26 you look at the Stock SMART resources trends website for the South
27 Atlantic and Gulf of Mexico, the 2010 assessment for black grouper,
28 they show a similar kind of trend in their catch as what we have
29 here, but the biomass of mature animals, in pounds, is basically
30 just going straight up. It went from around 400,000 pounds to,
31 you know, almost 850,000 pounds since 1986, and so I don't know
32 what's going on here, but that doesn't match the estimations of
33 the stock, and I don't know where this model got the information,
34 you know, to make the biomass trends so opposite from the catch
35 trends, but we need more information, I think, is what everybody
36 is saying, and I totally agree with that.
37
38 **CHAIRMAN BARBIERI:** Right, and one other thing to add to this,
39 real quickly, is the fact that, you know, for SEDAR 19, the stock
40 was estimated to be at a biomass level above SSB MSY, by far,
41 right, and so it would have to be fished down to MSY, at that
42 point, and, for this last assessment that ended up being aborted,
43 one piece of information there, that left people scratching their
44 heads, is that some of the older ages in the population seem to
45 still be there showing up in the composition, and so there hasn't
46 been the level of stock juvenescence that you would expect to see
47 if you see, you know, a level depletion that is reflective of this
48 decline in landings, and so, you know, age composition would be

1 very sensitive, I think, to that, and that wasn't observed. Again,
2 it's more information that we can probably put together and bring
3 for the committee to reevaluate, together with some of the other,
4 you know, sources of data that we talked about.
5
6 **MR. RINDONE:** Mr. Chair, I sent Jess the reef visual census data
7 from SEDAR 48, to pull up onto the screen, so that you guys could
8 look at that, and, from my recollection, most of the issues, from
9 pulling the SEDAR 48 assessment, related to the recreational and
10 commercial data and the misidentification issues, and so these
11 data, from the reef visual census, might be a little bit better to
12 look at.
13
14 The lower plot there, the box and whisker plot, and then the top
15 plot, Figure 3 on the next page. These data go from 1997 to 2014,
16 and so you can see the standardized index for the reef fish visual
17 census for black grouper over that time period, and, you know,
18 like Mandy had mentioned, for SEDAR 19, at that time -- The data
19 from SEDAR 19 don't match up to what we're seeing from the total
20 landings data, and I don't think these do either, as far as seeing
21 a drop in the index.
22
23 **CHAIRMAN BARBIERI:** Doug Gregory, did you have a comment?
24
25 **MR. GREGORY:** Probably not a good one, and I am going to call you
26 all a bunch of Pollyanna's, but, kidding aside, SEDAR 19 was done
27 in 2009, and so it's not going to show anything concerning a trend
28 after 2009. The stock assessment then, and the one I think earlier
29 for mutton, were very optimistic, because we had a lot of longline
30 landings in the stock assessment, which were the larger, older
31 fish, and that's why the juvenescence wasn't there.
32
33 Many of the fisheries that we've sampled, which don't have a fleet
34 of offshore, deepwater, long-distance catches, show juvenescence,
35 because we're not really sampling the entire population, and we're
36 sampling the inshore, accessible population, and so that was --
37 Mutton and black grouper really stood out in the stock assessment,
38 and they were like the two that looked good, for a change, and I
39 think I talked with Shannon at the time, and I came away with the
40 understanding that part of the reason why is that we had those
41 larger, older fish in the assessment.
42
43 Again, let's look into it, but think back to the way we managed
44 things in Amendment 1, when we didn't have any stock assessments,
45 or maybe one for red snapper, and we kind of make decisions and
46 recommendations to the council based on what we felt was our
47 commonsense, and so let's look at the groupers.
48

1   We've got gag, that mature at twenty-four inches, and reds, that
2   mature at eighteen to twenty inches, and scamp, that matures at
3   fourteen inches, and black grouper, that matures at thirty-four
4   inches. There's always been concern about sperm limitation with
5   gag, and, consequently, we've got the reduced ABC recommendations
6   that we've got now, partly because of that, and gag is in trouble,
7   and red grouper is not really healthy, given all these years of
8   management, and so what do you think the status of black grouper
9   is, given the lack of management over these years?
10
11 That's the last I will say about it, but I look forward to more
12 data, more insight, but we've got to look at the current data, and
13 we've got to try to figure out what's causing this trend since
14 2010 and not what came before then, and, if we end up doing
15 something dramatic, like I guess I've been suggesting, we'll hear
16 from the fishermen, for sure, if we don't consult them ahead of
17 time. Thank you very much.
18
19 **CHAIRMAN BARBIERI:** All right. Thank you for that, Doug, and so,
20 in terms of moving forward, do we have a motion for how we're going
21 to proceed with black grouper?
22
23 **MR. RINDONE:** I mean, at this point, the data that are available,
24 or at least the datasets that are available, and like I think we've
25 more or less identified. You know, it's possible that we could
26 request an updating of the reef visual census, through whatever
27 year is most current, but the recreational and commercial data --
28 They are what they are.
29
30 As far as getting into, you know, age and length comps and things
31 like that, I don't know how -- I don't know what we'll get out of
32 those data, and I don't know what data are available, if they're
33 going to be representative across years, if the sample sizes will
34 be large enough. Since it's looking at -- You know, if you look
35 at the NOAA S&T site for the recreational data, in at least half
36 the years, the PSEs are greater than 50, and S&T doesn't recommend
37 their use, and, in the rest of them, none of them are lower than
38 30, and so they stress caution in their use.
39
40 Where the majority of the landings are predicted to be coming from,
41 we're not advised to use those data, and I guess, frankly, my point
42 is there's not a lot to work with here, and there's likely not a
43 lot to be uncovered either, and so I think updating the reef visual
44 census is about -- You know, through 2021, or 2022, or whatever
45 the most recent year available would be, would probably be it,
46 unless, you know, you guys can think of something else.
47
48 **CHAIRMAN BARBIERI:** Well, and I don't know. I mean, without going

1 back and talking to staff about, you know, all of the work that
2 was done since the oil spill, and all the surveys over the West
3 Florida Shelf that eventually generated GFISHER, right, and
4 there's a lot of expanded surveys, $25 million worth, to be
5 specific, right, of six stacked-up different surveys that were
6 done between Key West and the border with Alabama over the West
7 Florida Shelf.
8
9 I don't know if the data is there for black grouper, right, and I
10 just -- This is a personal thing for me, but looking at this, when
11 I have a data workshop, right, and the scientific body, in that
12 data workshop, tells me that these landings data are unreliable,
13 that makes me feel uncomfortable, using that data to generate
14 management advice here.
15
16 I am trying to think about other things that we could look at,
17 right, and I don't want to do, you know, either too much, or too
18 little, in terms of management, and I would like to do what
19 represents, you know, the right amount, going forward, and so this
20 is why I'm thinking that trying to find something else might be
21 more informative, because, I mean, we can go and average, right,
22 for that period of 2011 to 2021, and come up with a number there,
23 and the credibility in that estimate, to me, is poor.
24
25 John Mareska, being before the council, and presenting the SSC
26 report, is going to have to address the questions from council
27 members about what guided the SSC's decision, and what level of
28 confidence do you have in this advice, and so those are the things
29 that, you know, keep me awake at night, kind of thinking how do we
30 get out of this pickle. Trevor.
31
32 **MR. MONCRIEF:** I certainly wouldn't want to put my colleague, John,
33 in that situation, but how else will we generate catch advice, if
34 it's not somewhat derived from landings? What else is there,
35 outside of an assessment, that could give us a number to lean on,
36 outside of landings, and, if we default to say we can't do it,
37 because half the time series is unreliable, does that then fall
38 directly to the council to take it upon themselves to decide, well,
39 it is what it is, and this is what we've got, and we're just going
40 with that, or does that responsibility always default back to us?
41
42 **CHAIRMAN BARBIERI:** No, and that's a valid point, Trevor, because,
43 in reality, eventually, we're going to probably have to resort to
44 landings data, right, some form of landings data that falls under
45 our control rule. What I am thinking is we keep having these
46 discussions, right, about what's the status of the stock, when we
47 don't have fishery-independent information right in front of us,
48 and some of it may exist, and so this is what I'm saying.

1
2 I mean, if there is an urgency for us to produce this, you know,
3 now, by all means, but, if this can wait a few minutes, we could
4 add this to even the July or September meeting, and we would work
5 jointly to try and come up with, you know, summarized information
6 that can be reviewed. Steve.
7
8 **DR. SAUL:** I guess I share your concerns, Luiz, in terms of how to
9 set limits for this animal, and if they're even needed, right, or
10 to the extent that they're needed, right, you know, given our lack
11 of knowledge. I guess my question is more procedural, and like to
12 what extent can we -- It might be more for Ryan, and like to what
13 extent can we wait, can we keep kicking this can down the road,
14 and, if we do wait until the September meeting, does that -- A, is
15 that enough time to gather available information, like you said,
16 all the Deepwater Horizon kind of work that was done, the NRDA
17 work, what came out that, and even work from academics, like
18 Murawski's group, and, you know, they did all those surveys.
19
20 You know, July is not far away, and neither is September, with
21 respect to like collating all this data and figuring out perhaps
22 a count, right, of fish, that then the catch data can be looked at
23 against, and then we could sort of figure out fishing mortality,
24 in a crude way perhaps, something like that, or a proportion of
25 catch coming out of the population, and maybe the size distribution
26 of -- The catch relative to the size distribution of the
27 population, if we have those fishery-independent samples, or does
28 something have to be done sooner?
29
30 Like I doubt all of that -- You know, A, who is going to work all
31 that data up, and, B, will it be worked up in time for September,
32 for us to look at, and then, you know, on the flip side to someone
33 else's comment, and I forgot who made it a minute ago, but, if we
34 punt on this, does the council just pick a number, pretty much,
35 you know, which, I mean, as a body, as an SSC body, I would rather
36 we have some control over sort of recommending the bounds of that
37 value.
38
39 **CHAIRMAN BARBIERI:** Right, and I don't understand that part either,
40 you know, whether this number, you know, is needed right now or if
41 this -- By having now separate management advice for scamp, it has
42 generated a trickle-down effect, a domino effect on this, and, all
43 of a sudden, we're going to need to have it for black grouper,
44 immediately. John and then Mike.
45
46 **DR. FROESCHKE:** In this case, we're not under a statutory deadline
47 to implement catch level changes, because the stocks are healthy,
48 and we don't have any evidence of that, and so that's the good

105

1 thing. The council -- I mean, they could -- They have the OFL and
2 ABC for the scamp complex, but, in order to operationalize that,
3 some major things are going to need to happen. Either we would
4 need additional advice for what to do with the other stocks or we
5 would have re-figure out how to implement with the IFQ, which would
6 not be a trivial matter.
7
8 I mean, I guess, from a science perspective, the danger is that
9 you have updated catch advice for scamp, which, I mean, it's a
10 reduction in catch, and, if that's needed, then, the longer we
11 wait, then we're missing that opportunity, and so there is that.
12
13 I mean, the one that it seems like we could think about is like,
14 for example, if we got an updated index, in September or something,
15 and just say, for example, that it was fairly stable, perhaps what
16 you could do is -- You know, you're not -- That reference years
17 that I had highlighted in that, you're not obligated to that. If
18 you felt like, well, in the Generic ACL/AM Amendment, 2001 through
19 2010, or whatever -- You could pick a different time series, based
20 on your expertise, and provide different recommendations, if we
21 felt like those were reasonable, and you would arrive at different
22 catch advice, and it wouldn't be as constraining as what it would
23 likely be if you were to simply add.
24
25 The scamp OFL, or the scamp ABC, is 203,000 pounds, and so, if you
26 were to add -- Essentially, just for example, the mean landings
27 for black grouper, and yellowfin, is about 168,000 pounds, and so,
28 if you were just to add all those up, that's about what you're
29 talking about, in terms of ABC, on a Tier 3b. If you were to go
30 on a Tier 3a, it would be higher than that, by some amount. If
31 you went to an earlier reference period -- When I looked that,
32 from the 2001 to 2010, it was about 80 percent higher than that
33 reference period that I highlighted, and so, if that was
34 representative, you know, you would get an increase, but, beyond
35 that, I don't know what other options -- You just have to make
36 some -- Whatever you feel is the best way to go.
37
38 **CHAIRMAN BARBIERI:** Thank you for that, John. That's very helpful.
39 Mike.
40
41 **DR. ALLEN:** Thank you, Mr. Chair, and so I drafted a motion, just
42 to try to capture the conversation here, and it seems, to me, that
43 I'm not hearing that we're comfortable making any catch advice
44 recommendations based on the landings trajectory alone, and so I
45 would offer this motion, but this motion, I think, would assume
46 that there's going to be some fishery-independent data out there
47 that could shed some light on this process, and I'm not sure about
48 that, but, assuming that there are maybe data that would shed some

106

1   light on the process, I will offer this as a motion.
2
3   **CHAIRMAN BARBIERI:** Thank you, Mike, and so we have a motion on
4   the table, right. Before we proceed for discussion, do we have a
5   second for the motion? It's seconded by Jim Tolan. Thank you,
6   Jim. I will read the motion, and then we will open for discussion.
7
8   **The SSC discussed the shallow-water grouper complex, with**
9   **potential for providing OFL and ABC catch advice. Previously, the**
10 **SSC had provided catch advice for scamp and yellowmouth grouper,**
11 **leaving black grouper and yellowfin grouper within this complex**
12 **for consideration.   Given a lack of fishery-independent data**
13 **available, as well very uncertainty in the landings data for black**
14 **grouper, the SSC recommends additional fishery-independent data**
15 **(e.g., the reef fish visual census) sources be examined before**
16 **providing catch advice for the remainder of this complex.** Thank
17 you, Mike. Is there discussion? Dr. Frazer.
18
19 **DR. FRAZER:** I'm just trying to think about how this would all
20 work out, right, and so, again, we've got -- Based on the
21 deliberations in this body, we're able to move forward with catch
22 advice for scamp and yellowmouth, right, and so we could do that,
23 and what this is saying, potentially, and, Mike, correct me if I'm
24 wrong, is that you've got essentially black grouper what to do
25 with, and that doesn't leave, in my view, a path forward for the
26 council, right, because then they have a species that is caught,
27 right, and it's part of a complex, to begin with, and so there's
28 no way to regulate it.
29
30 My question, really, to this group, is -- I mean, so the group
31 feels pretty strongly about the scamp assessment, and they feel
32 good about where that landed, right, and, essentially, if you look
33 back at the last ten years of data, the proportion of the total
34 shallow-water grouper complex that can be attributed to blacks is
35 about 20 percent, and, I mean, it's pretty tight, right, and so,
36 forever reason, Trevor, right, where there's a biological
37 association, or maybe it's just, you know, coincidence, but, in a
38 way, the scamp landing is acting as an index, right, and, I mean,
39 if you plot those two together, and R^2 is probably going to be at
40 about 0.9, or something like that, you're not going to even get a
41 better index, and so I don't -- I mean, from the council's
42 perspective, not to tie their hands, it seems like a viable option,
43 moving forward, would be to adopt the scamp assessment, right,
44 whether you want to add whatever the percentage was to it, but
45 then in fact use the scamp as the indicator species.
46
47 I think that would keep everybody's life simple, right, moving
48 forward, recognizing that we're not going to get a lot of new

information on black grouper for the foreseeable future, and so
I'm just trying to work with the data that we have and trying to
explain to the council what the options are, based on the
discussion that comes out of this body, but, to me, that seems
like a viable path forward, and one that can be defended.

CHAIRMAN BARBIERI: Thank you for that, Dr. Frazer. I think that
was very helpful, because this was more direction, right, than we
had received before from the council, and, to me, that's what makes
the difference, right, and we all operate -- Each of us operate in
our own lane, specific lane, right, and so, now that we have
explicit what your desire is, we can proceed accordingly, and so,
with that, I am going to go to Doug Gregory and then Jason.

MR. GREGORY: Thank you, Mr. Chair. I support the motion, but I
don't like the example, and if we could take that "for example"
out, partly because I don't want to focus somebody into a
particular fishery-independent data source, and, secondarily,
that's a South Atlantic data source, and not necessarily a Gulf
data source, and I think part of our future conversations should
be do we have a separate Gulf black grouper population, or should
they be kept combined, and we haven't really talked about that,
and I don't want to start that now, but, with taking out that
example, I would be much more comfortable with the motion. Thank
you.

CHAIRMAN BARBIERI: Thank you, Doug. Jason.

MR. ADRIANCE: Thank you, Mr. Chair. I like the motion too, but
I had more of a technical question, and I don't know if Dr. Frazer
said it more eloquently than I was going to ask it, but,
technically, what happens if we pass this motion? Does the advice
revert back to the complex advice that's on the books, even though
we mention that we provided advice for scamp and yellowmouth, and
what happens? Thank you.

CHAIRMAN BARBIERI: There is a little caucus here going on now,
Jason, and they are discussing how to respond.

SSC MEMBER: I will just add a comment to Tom Frazer's point. You
know, a fairly consistent 20 percent of the total landings being
black grouper, that's new information that we didn't have before
the discussion, and that's really useful information, to me,
because it would indicate that scamp might be an indicator,
effective indicator, for black grouper catches, and so --

MR. RINDONE: I was going to make a comment to what Mike said.

1   **CHAIRMAN BARBIERI:** Well, let's get to Jason's question first, and
2   then we can go to --
3
4   **EXECUTIVE DIRECTOR SIMMONS:** Jason, to answer your question, what
5   the council has on the books will stay there until we have a full
6   plan amendment, I think, to make changes, and I was just talking
7   to some staff in the back, and it sounds, to me, like we can't
8   operationalize the scamp and yellowmouth projections until we know
9   what to do with the other complexes, because that's going to be a
10 major change to the structure of the IFQ program. I think it's
11 good to get more information, and be very explicit about what you
12 all want to see, and I guess I'm not sure why the other part of
13 the motion is necessary.
14
15 I would just ask that we think about how this information is going
16 to be utilized into catch advice. A fishery-independent index, or
17 indices, how are we going to take that and get catch advice? I
18 would maybe like to hear more discussion on that, after the motion
19 passes.
20
21 **CHAIRMAN BARBIERI:** To that point, Dr. Simmons, right now, it's
22 simply this is why we integrate both types of information into the
23 assessment, right, and one is based on landings, and so it could
24 be market-driven, and it could be fuel prices, and it could be
25 targeting or non-targeting, and there are several reasons for why,
26 you know, fisheries information would be variable over time, and
27 that is a precipitous drop there in landings for black grouper,
28 and so I think the committee had a question about what's the
29 population -- Do we have any other indicator of population status?
30
31 If that matches what we saw in the landings, I mean, to us, that's
32 a good indication of the landings, as untrustworthy as they are,
33 would be reflective of stock abundance, and we can develop catch
34 advice confidently, based on that, and so it was more, you know,
35 to try and have an idea on, if we are constraining landings for
36 black grouper to that level, right, how scientific defensible is
37 that advice?
38
39 **EXECUTIVE DIRECTOR SIMMONS:** Just so I understand, so you're
40 talking about the black grouper landings to the OFLs and ABCs for
41 scamp or some additional analysis that we would add?
42
43 **CHAIRMAN BARBIERI:** No, and we're just looking at black grouper.
44 We want to interpret the trends in landings of black grouper
45 relative to population size, you know, either biomass or abundance
46 over time.
47
48 **EXECUTIVE DIRECTOR SIMMONS:** Okay, and so, I guess, directed at

1 you, do you think that you all could get that information together
2 by the September SSC meeting, because that's going to have to come,
3 largely, from your staff.
4
5 **CHAIRMAN BARBIERI:** The short answer is yes, because I know who
6 makes that decision, and it can happen.
7
8 **EXECUTIVE DIRECTOR SIMMONS:** One more, and so what is the
9 possibility of switching black grouper, on the assessment
10 schedule, with hogfish for Florida? Is that a possibility, at
11 this late date, because the council is considering other management
12 changes, potentially, for black grouper, such as size limit and
13 other things, and so I just would put that out there as an idea as
14 well, for long-term planning.
15
16 **CHAIRMAN BARBIERI:** Well, that's a little off-topic, and I think
17 this would be better discussed at the SEDAR Steering Committee
18 meeting coming up in a couple of weeks, and we can discuss that.
19 I haven't checked with my management side of the FWC, to see how
20 they prioritize black grouper to hogfish, right, in terms of
21 getting refreshed management advice, but I can tell you that an
22 assessment for black grouper is going to be complicated. You know,
23 it's going to be difficult for us to get anything that we have a
24 high degree of confidence in, no matter what, because the landings
25 data seem to have issues that we have not been able to resolve.
26 Trevor.
27
28 **MR. MONCRIEF:** All right, and so, coming off of what Tom's comment
29 was, because I think it's fairly constructive, is that 20 percent
30 -- That is the commercial fishery landings, between black and
31 scamp?
32
33 **DR. FRAZER:** I think it's the overall, and I will look at the
34 actual data from Ryan, but, I mean, of the total catch, of the
35 total scamp harvest, or of the total shallow-water grouper, scamp
36 is 80 percent of the commercial, which is 73 percent of the total
37 harvest.
38
39 **MR. MONCRIEF:** Which could be like fleet dynamics of whatever else,
40 bycatch of another fleet, whatever you want to call it, and I think
41 -- I mean, if we're going to look at fishery-independent metrics
42 here, we should also get a good look at that side as well, if
43 that's a viable option.
44
45 **MR. RINDONE:** I think an important consideration, especially like
46 with talking about the commercial landings, is scamp is caught
47 Gulf-wide, and there's a considerable fishery for scamp that occurs
48 north of say Tarpon Springs, and towards the Big Bend, and all the

way to Louisiana, and for-hire captains that go deep off of the
northern Gulf have told us, the last few years, that they're seeing
more and more larger recreational boats are going out and deep-
dropping and bringing back scamp, and, like you had said earlier,
the vessels that are going to be capable of doing that aren't the
kinds of vessels that typically use public access points, and so
it may be more difficult to get a good bead on what they are or
are not catching.

With respect to looking at the proportion of scamp, and using that
as an indicator, I think there's still some questions that would
need to be answered.

To that end, as far as the black grouper landings, I think it's -
- You know, we need to remember that, based on what we're seeing
from S&T's page on the recreational landings, this is a rare-even
species, with poor precision in the data, and, as Eric had
mentioned earlier, as Captain Schmidt had mentioned earlier, he
didn't believe the landings as they were presented, because he
said he's borne witness to more landings than he thinks are being
represented here.

The fishermen that I talked to prior to the meeting had said
basically the same thing, that they don't know if there were some
sort of displacement, or something from the recent hurricane, from
Ian, or what, but that fishing for black grouper in southwest
Florida is pretty prime right now, and so I feel like the fishery
-- I feel, because, you know, we haven't delved through all of
this yet to say I think, but I feel like the fishery-dependent
data are not telling us all that we are used to them telling us.

It would be interesting to see what FWC can come up with, and the
scamp assessment is sitting on a shelf right now, and gathering
some dust, and so I would encourage you all to be acutely mindful
of that, and we certainly don't want to be in a situation where we
find ourselves several years removed from it and then trying to
use it for management, and so, whatever we direction provide, and
it ultimately sounds like it's going back to Luiz's shop, and I
would encourage you to be as prescriptive as necessary to make
sure that you get that which you know that you need.

MR. MONCRIEF: Yes, and that's why I brought up the landings side
of it, right, because my main concern, with defaulting as a proxy,
is that you artificially just take fish off the table. That just
happens by default, but, if you are able, if that's a
consideration, of adding in that percentage back to it, to account
for that loss, then that's a way to abate that artificial removal
and, you know, potentially not have to lean on a time series in

1 which the estimates don't meet the precision threshold.
2
3 **MR. RINDONE:** Well, and that percentage though is based off of
4 black grouper landings in MRFSS, which is how the quota is
5 currently monitored. I guess, in practice, it's monitored in FES,
6 and then back-calculated all the way back down to MRFSS, and so
7 it's going to be quite uncertain anyway.
8
9 **MR. MONCRIEF:** But the proportion of scamp and black grouper were
10 commercial landings, right?
11
12 **MR. RINDONE:**   Yes, and, I mean, that's going to be pretty
13 consistent.
14
15 **MR. MONCRIEF:** So there's at least something there to deal with,
16 and so I feel like, if we're going to go through this exercise, we
17 might as well go through that side as well.
18
19 **CHAIRMAN BARBIERI:** If I may, Steven, just to make a point here,
20 and I'm going to play devil's advocate on my previous point, right,
21 and, since we have black grouper on the schedule for 2026, whatever
22 advice we provide right now is going to be, by definition,
23 provisory anyway, and it's going to be just there for two years,
24 and so this could be another practical avenue, and I'm sorry for
25 bringing this up right now, but a lot of new information is coming
26 out that, you know, we had not been thinking about, and so we could
27 provide management advice for black grouper based on average
28 landings, you know, Tier 3, or 3b, now, knowing that we're going
29 to have a more in-depth look into this, from all different angles,
30 in a couple of years, right?
31
32 **SSC MEMBER:** But, based on Tom's comment, we actually don't want
33 to provide black grouper advice, and we want to provide the complex
34 advice, right, the way it's set up right now, and so, if there's
35 a way for us, in a better-informed way, to give complex advice, I
36 am completely onboard, as far as the scamp assessment, and we don't
37 want that to collect dust. That's a strong assessment, with good
38 advice in there, and so --
39
40 **CHAIRMAN BARBIERI:** Steve.
41
42 **DR. SAUL:** I think I know the answer to this, because we've been
43 through it, but, just to clarify, we have to give advice on all
44 the species in the complex, right, and we cannot -- We can't say,
45 okay, here's advice for scamp, because we have a solid assessment,
46 and punt on the others, for now, and we have to do the whole --
47 All of it, right?
48

1   **MR. RINDONE:** We have to have advice for all four species.
2
3   **DR. SAUL:** Okay.
4
5   **MR. RINDONE:** Even if they end up being -- Even if it came to pass
6   that they were going to be managed separately, we still have to
7   have advice for all four species, because that's what we have right
8   now.
9
10 **DR. SAUL:** Okay. Understood, and so scamp we can check-off,
11 because we've got a solid assessment to give advice on that one,
12 and it's the other three that are --
13
14 **MR. RINDONE:** Well, scamp and yellowmouth together were included
15 in SEDAR 68.
16
17 **DR. SAUL:** So then the other two are the problem children, so to
18 speak.
19
20 **CHAIRMAN BARBIERI:** Okay, and so I have --
21
22 **SSC MEMBER:** Sorry to interrupt, and so, if we were able to give
23 advice on black grouper, and yellowfin grouper, then the total of
24 those would be the complex.
25
26 **CHAIRMAN BARBIERI:** Okay, and so I had Doug, Jim, and then Mandy.
27
28 **MR. GREGORY:** Thank you, Mr. Chair. I have a couple of things
29 now. One thing is Ryan said we needed advice on all the species,
30 but, if we use scamp as an indicator species, we really don't, I
31 don't think, and that was one thing that I wanted to point out.
32
33 The other thing is I had a question for you, Luiz. In reference
34 to species identification, is that a problem that continues to
35 exist, let's say, after 1990, or is that a problem primarily, or
36 exclusively, prior to 1990, because, if, beginning in 1990, we
37 have a good idea of what's black and what's gag, that's thirty-
38 plus years of data, and I don't know why we can't do a stock
39 assessment on thirty-plus years of good data. I remember stock
40 assessments with very few data, and so I am curious as to the
41 species ID problem, and is that an ongoing problem, or is that a
42 historical problem that we can just put aside? Thank you.
43
44 **CHAIRMAN BARBIERI:** The short answer is I don't know, really. I
45 mean, we would have to bring the right people in the room, who
46 have, you know, been working on those assessments, and have been
47 looking into those data, to actually bring that up, and look into
48 more detail, but we will be doing this, already by design, in a

couple of years, right, and so, I don't know, and perhaps the most
logical thing to do would be that we provide management advice to
the complex, use scamp as an indicator species, and, that way, we
don't compromise, potentially, an impact from black grouper,
right, and we go from there, knowing that, in a couple of years,
we're going to have more holistic look at black grouper, at that
point, just because it's on the SEDAR schedule for that analysis
anyway. Jim.

DR. TOLAN: Thank you, Mr. Chairman, and, while I completely
understand the need of the council to address this, to come up
with some number for the complex, I go back, again, one last time,
to the scope of work presented for Item VIII, and it basically
says, for these two species, with the landings, and the
representative time period, can we give catch advice, and I think
that motion covers it directly. Given the data we have to work
with, I don't think we can do it just yet. Thank you.

CHAIRMAN BARBIERI: Thank you, Jim. Mandy.

DR. KARNAUSKAS: I am trying to think about how we go about this,
with the really limited information that we have, and I'm thinking
about Tom's comment earlier about stability and simplicity, and I
guess part of my problem is I don't always understand the
implications of the decisions that we're making with the
intricacies of the IFQ program and how it works, and, if we use
scamp as an indicator species, what's the implications on that, in
terms of how -- You know, what happens with the management.

I guess my question is, is there a way that we can maintain, or
what would we have to do to maintain sort of the status quo,
because I don't think that we have evidence that, you know, black
grouper are in big trouble, and we need to do something to scale
back on the catch, and, I mean, maybe others disagree, but I don't
think I see that here, and so what decision we would need to make
to sort of more or less maintain the status quota, but also use
the scamp, the catch advice coming out of the stock assessment?

CHAIRMAN BARBIERI: John, can you help with that one?

DR. FROESCHKE: Well, I can try. I mean, I was trying to think
about it in terms of -- I guess the way I would interpret status
quo was not requiring management changes that would enact
reductions in harvest and limits and things like that, and we were
kind of trying to figure that out. I think the -- I was trying to
think about that, and was it around 750,000 pounds or something,
and is that what we would need, in terms of --

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MR. RINDONE: (Mr. Rindone's comment is not audible on the recording.)

DR. FROESCHKE: I was just trying to think about, if you were to add -- You know, what are we catching, in recent years, for the complex, in FES, and that's the other thing that's complicating this matter, and so -- The total landings are 643,000, is what the recent average for the shallow-water grouper complex is, in FES, and so the ABC for scamp and yellowmouth is 203,000 pounds, and so, you know, depending on -- You know, trying to not just work backwards from the numbers, you know, my algebra homework, but, you know, if you were to use an older reference period, and use some sort of Tier 3a or b approach, you would certainly go farther to do that, and that's kind of what I was curious about.

If you were to look and say, well, this index has been flat for twenty years, and, you know, the original generic amendment was based on the sort of 2000 to 2010 reference period, that would probably get you there, because, when I was doing the calculations for black grouper, and the difference between the 2000 to 2009 reference period from the 2011 to 2021, was about an 80 percent reduction, and so the inverse of that -- You would be there, and I don't think it would require management changes otherwise.

CHAIRMAN BARBIERI: Okay, folks. Any other thoughts on the way forward here? I mean, at the very least, let me make an off-the-wall suggestion here. We can table this discussion right now, for Thursday, and so we could table this now, and we have a motion on the board, and we had a second, and we're all aware of it, right, and we discussed a lot of issues, and this will give us some time, right, to think about this, to sleep on it, and that, most likely we do not expect that a lot of those items on Thursday are going to go over time, and so that would give us some time to actually, you know, revisit this. Trevor.

MR. MONCRIEF: Does that delay the midwater snapper stuff, too?

CHAIRMAN BARBIERI: Yes.

MR. MONCRIEF: So both of them. All right.

CHAIRMAN BARBIERI: Yes. Steve.

DR. SAUL: I think that makes sense. I think Mandy's comment, and question, pushed me over the edge, in terms of having -- In a good way, and that didn't come out right, but in a good way, but in terms of -- You know, there are no indicators, and we've heard from the captain in the back, and from others, that there is no

1 smoking gun here that's saying, you know, this thing is -- The
2 stock is in trouble, and, to your point, Luiz, a full-blown workup
3 on it is coming up, right, in a couple of years, which is, in
4 fisheries science, short, right, and so, you know, maybe we just
5 do continue the status quo.
6
7 You know, we have a great assessment for scamp, that we don't want
8 to age any more than it has to, and it's not beer or wine, and so,
9 you know, perhaps using what we have, and sort of continuing the
10 status quo -- The index, you know, in the last years, is pretty
11 flat, and so, if we need something quantitative to grab onto, and,
12 even though we don't believe the early years, the recent years are
13 probably okay-ish, and so I would be comfortable sort of keeping
14 the status quo, catch-wise, as a way forward.
15
16 **CHAIRMAN BARBIERI:** That sounds good, Steve. Thank you. I will
17 -- Unfortunately, I'm going to have to close this down, and we
18 have to move on from this issue, and I will let Paul, who has
19 patiently waited in line there, say the last word regarding this
20 topic, and then we'll revisit this again on Thursday morning, after
21 are done with the other agenda items. Paul.
22
23 **DR. MICKLE:** I think Mandy addressed my question and concern, I
24 guess, and, Steve, I really appreciate those last comments towards
25 this, and it's a complicated issue. Obviously, I just -- I don't
26 know if tabling it is -- First, I don't know if that information
27 is going to come up by Thursday, additional information and maybe
28 some side conversations to help us, but, also, procedurally, since
29 Mike made the motion, did the Chairman ask the motion maker if
30 it's okay to table, or does the Chairman have the ability to table
31 without requesting it from the motion maker? Thank you.
32
33 **CHAIRMAN BARBIERI:** Thank you, Paul. I am going to make that
34 request then. Dr. Allen.
35
36 **DR. ALLEN:** I am fine to have the motion tabled until Thursday.
37
38 **CHAIRMAN BARBIERI:** Then the second was Dr. Tolan.
39
40 **DR. TOLAN:** That's fine by me.
41
42 **CHAIRMAN BARBIERI:** Okay. Thank you so much. Good point, Paul.
43 We are going to close this up and revisit these issues on Thursday
44 morning, and it's just complicated to get everything resolved
45 today, and so we are running behind schedule by quite a bit now.
46 Let's have a five-minute break, and then we're going to reconvene
47 with the Gulf of Mexico Ecosystem Model.
48

1   (Whereupon, a brief recess was taken.)
2
3   **CHAIRMAN BARBIERI:** All right, folks. We are going to go back to
4   Agenda Item Number IX, right, and so we have Dr. Holden Harris and
5   Dr. Skyler Sagarese to give a presentation on a Gulf of Mexico
6   Ecosystem Model (GoMEM) to Support Fisheries Management. Ryan,
7   can you give us the scope of work?
8
9   **A GULF OF MEXICO ECOSYSTEM MODEL (GOMEM) TO SUPPORT FISHERIES**
10   **MANAGEMENT**
11
12 **MR. RINDONE:** I can. Skyler and Holden are going to talk to us
13 about their research efforts to support ecosystem-based fisheries
14 management within their Gulf-wide ecosystem model. Sky is going
15 to start off by describing the Ecopath and Ecosim components of
16 the model and its recent applications for assessing ecological
17 reference points.
18
19 The Ecopath food web model consists of seventy-eight functional
20 groups and sixteen fleets, and it has a diet matrix based on nearly
21 600 studies. The Ecosim model is model is a time-dynamic model
22 fitted to 160 different time series from stock assessments from
23 the likes of SEDAR and ICCAT and then the SEAMAP surveys. Holden
24 will   then   talk   about   recent   RESTORE-funded   projects   and
25 publications that identify tradeoffs and ecological reference
26 points   for   Gulf   menhaden,   as   an   example,   and   this   model
27 demonstrates   how   target   biomasses   of   menhaden   and   menhaden
28 predators could be achieved by modifying fishing pressure for
29 menhaden or its predators, and Holden has got a Shiny app that he
30 can walk us through.
31
32 Next, he will present current efforts for developing a spatially-
33 explicit Ecospace model and describe syntheses for habitat maps,
34 spatial-temporal environmental drivers, functional response, and
35 initial   results   and   validation,   and   so   the   model   is   its
36 developmental stage right now, and they are looking for feedback
37 from   you   guys   on   next   steps   and   calibration   fitting   and
38 incorporating   qualitative   scientific   and   fisher   knowledge.
39 Specifically, they are looking for input on how to best apply the
40 model   to   address   ecological   questions   and   support   regional
41 ecosystem-based   fisheries   management,   and   potential   research
42 directions could include assessing reference points, spatial and
43 temporal   fishery   closures,   impacts   from   marine   energy,   and
44 environmental stressors from climate change.
45
46 **CHAIRMAN BARBIERI:** Thank you, Ryan. I believe that we start with
47 you, Skyler.
48

1   **DR. SKYLER SAGARESE:** That's correct.
2
3   **CHAIRMAN BARBIERI:** Yay. It's great to hear your voice, after
4   quite some time, and go ahead.
5
6   **DR. SAGARESE:** All right. Well, thank you all so much for making
7   some time for us on this agenda item. We're really excited to
8   come and present some of the work that we've been doing, and I
9   just want to acknowledge the coauthors first.
10
11 This has really been a big team effort, led by Dave Chagaris, with
12 his modeling experience, and, at the Science Center, we've had
13 Igal Berenshtein, who is our post-doc, who did much of this work,
14 Matt Lauretta, Amy Schueller, and Holden has recently come onboard.
15 I am going to kind of give you the spiel for what we've been
16 working on for almost the last decade, and then Holden is going to
17 come in and give more background, moving forward.
18
19 My part, I have, believe it or not, been working on this model for
20 quite a while, since really 2014, when I was a post-doc, and so
21 we'll kind of walk through the development of what we started with,
22 why we started, and I'll talk about the model that we've developed
23 and published in a few papers, talk about a specific application
24 for Gulf menhaden, and then Holden is going to come in, which he's
25 really working on the most complex of the model, is moving it into
26 the spatial component, and just trying to move forward with some
27 questions that are of interest, based on where we think the Science
28 Center is going and where priorities are.
29
30 I am going to start with the first part, more background, and lots
31 of data, and then Holden will come in and really walk through his
32 plan for how envisions developing those model at the Science
33 Center. Without external support from post-docs, we really don't
34 have as much time to work on this, and so we're really excited to
35 have extra help.
36
37 Okay, and so my part, again, I'll just give sort of a very quick
38 summary. I will try to go through the background quick, and make
39 up a little bit of time, but, basically, I will explain, number
40 one, why did we get started with this modeling in the first place,
41 and I will talk about the Ecopath model that we started with, how
42 we moved it into Ecosim, with external funds from the RESTORE
43 program. I will talk about our specific application, focused
44 around Gulf menhaden, and then, in terms of the menhaden
45 application, I will give a couple of discussion points for future
46 applications in Ecospace, but much of my kind of Part 1 is really
47 focused on a specific question in relation to Gulf menhaden.
48

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1   I am not going to linger here, and, I mean, we're all aware of how
2   complex the Gulf of Mexico ecosystem is. We've got an enormous
3   diversity of fish, of inverts, of fisheries, and we've got the
4   highest recreational component in the country, and so we know it's
5   fairly complicated, and it's very difficult to develop models to
6   characterize that complexity.
7
8   One of the biggest gaps that we've identified, as well as other
9   researchers, is the inability to really get a good handle on the
10   feeding habits, and so we're not like the Northeast U.S., where
11   they have a trawl survey that's been running for over fifty years,
12   getting comprehensive diet data for different size classes and
13   species. We really have a bunch of different data sources that
14   get pieced together to try to give us the best idea of who is
15   eating who and how much are they eating.
16
17   Specifically to our region, we've got the issues with trying to
18   look at reef fish stomachs. If they regurgitate their stomachs on
19   the way up, it's really hard to get some information, as I'm sure
20   Luiz and Dave, who work with the FWRI database know, and there are
21   clear data gaps, and there's not a lot of success, in terms of
22   trying to get additional funding to fund these sort of data gaps,
23   and that's something I think, moving forward with EBFM, we'll have
24   to tackle, is how do we fund these types of studies.
25
26   The biggest data source we do have is the FWRI database, although
27   it tends to be fairly biased to the east, and that's one of the
28   biggest data sources we have, and I know that's come up in
29   discussions.   We've also got the Gulf of Mexico Species
30   Interactions Database, but, again, it's really just kind of piecing
31   together a bunch of different temporally and spatially-designed
32   diet studies, and so there's a lot of gaps that we tried to move
33   forward with, among other modelers.
34
35   The most common ecosystem modeling platform that's used is this
36   Ecopath with Ecosim and Ecospace, developed by Carl Walters and
37   Villy Christiansen, essentially, and this will look very familiar.
38   This is a slide demonstrating, with Dave's West Florida Shelf
39   model, which is, I would argue, one of the most comprehensive
40   models we have in our region, where you start with an Ecopath
41   model, and so you basically compile all the available data you
42   have, biomass, population dynamics, diet, fishery removals, and
43   you develop a static snapshot of your ecosystem.
44
45   You mass balance it, and then, from there, that's essentially your
46   Timestep 1. From there, you compile time series of data, and you
47   fit to it, to see how well your model is predicting, and here's
48   just plots showing -- In the middle, it's plots from one of Dave's

                                    119

1   West Florida Shelf model iterations. I will let Holden go through
2   Ecospace later, but, for my part, we're really going to focus on
3   Ecopath and then focus on Ecosim, in terms of the modeling work
4   that we've done with the RESTORE project.
5
6   Where did ecosystem modeling begin? From the literature that I
7   could find, one of the first studies, in terms of Ecosim, was the
8   Carl Walters study back in 2008, where it was -- The figure on the
9   right is just kind of a summary of all the different Ecopath with
10 Ecosim models that I could find when I did this review back in
11 maybe 2015, and so you can see, in the Gulf, there's a lot of
12 different regional studies, and there are a few that are specific
13 to the northern Gulf, which is what we are very interested in with
14 our model, and so we started with this Walters model.
15
16 One of the key things to note is that, when it was developed, it
17 was essentially built to kind of demonstrate the capabilities of
18 Ecosim. One of the biggest gaps within the model was the diet
19 matrix, where much of it was just based on expert opinion, and so
20 there wasn't a ton of quantitative diet data going into it, and
21 so, for this northern Gulf of Mexico region, Tess Geers came more
22 recently to this model and did a lot of work to further develop
23 the diet matrix, using a lot of different quantitative studies,
24 and also incorporating discards from the recreational fleet.
25 There has been a few models before ours, and, obviously, there is
26 others that have been developed since then.
27
28 Why am I talking about this in the first place? Well, after
29 Deepwater Horizon, when I was doing my post-doc at the Science
30 Center, under John Walter, about 2014 or 2015, I got brought into
31 this project, to try and quantify the -- To try and quantify damage
32 after Deepwater Horizon. The thought was, well, let's look at
33 some of these ecosystem models that exist, and let's see if we can
34 evaluate what the impacts would have been.
35
36 At the time, one of the hypothesized ways was to say, well, what
37 if we reduced the menhaden purse seine fishing effort, because
38 there were concerns that they were catching larger species as
39 bycatch, and so what we did is we went to both the Walters and the
40 Geers models, and we started doing simulations, to say, well, what
41 we if reduced purse seine effort, and what would we see, and the
42 first thing we started noticing -- You know, as you dig into these
43 models in more detail, you basically start to find these issues.
44
45 One of the biggest concerns we still had was the diet matrix.
46 There were a lot of gaps, especially for the higher-trophic-level
47 predators, and there was also still a lack of incorporating
48 discards for the variety of fisheries that we have, and so what we

1 basically said is, well, you know what, let's go forth and make
2 our own model.
3
4 From here, we put a lot of time into developing an Ecopath model,
5 focused on the northern Gulf, that we call the Gulf-wide model,
6 which basically is the U.S. continental shelf that extends out to
7 400 meters. It doesn't cover the whole EEZ, just because of the
8 lack of data, but we designed this model to cover the whole area,
9 how we manage what we're interested in, to cover the spatial scale
10 of how we manage our species.
11
12 We also wanted to focus on the federally and internationally-
13 managed species, and so we've got tunas, sharks, all of our reef
14 fish, and we really wanted to have those groups in there, and the
15 first thing that we wanted to do was work towards the best
16 available diet matrix that we could, as well as incorporate as
17 many fishery discards, as well as try to quantify the bycatch
18 removals from the menhaden purse seine fishery, and so we spent a
19 lot of time trying to dig into the data, to see what we could get
20 done.
21
22 I'm not going to spend too much time, and we do have some background
23 information, if you're interested in more details, and I am more
24 than happy to follow-up offline, with any questions or further
25 thoughts, but this 2017 paper that we put together essentially was
26 an Ecopath model, where we focused on looking at 2005 to 2009
27 snapshot of what the ecosystem looked like, and we looked at a
28 variety of different ecosystem metrics.
29
30 The first thing that we really spent a lot of time was looking at
31 the diet matrix, and what I want to highlight here is basically
32 what we did was a large literature review. We went through and
33 found as many data sources as we could, and we looked at the
34 GOMEXSI database and tried to get the raw references, the actual
35 references, to get the diet data. That database was very
36 underdeveloped at the time.
37
38 We looked through Scholar, trying to get journal articles,
39 technical documents, white papers, theses, whatever we could find
40 to compile any diet information, whether it was percent weight,
41 percent volume, percent number, percent frequency of occurrence,
42 whatever we could get, and, in terms of the database, we set it up
43 where basically each row of our database, and so an observation,
44 is essentially a diet study that is specific to either a region or
45 a length class. It's not individual stomachs, and it's a reference
46 that we found, and so we found over 1,900 of those different
47 references, which is essentially a species, or a species group, by
48 region or length class.

1
2   We compiled all the information for the various functional groups
3   within our model, and on the right-hand side is just kind of a bar
4   graph showing you the species with the most diet observations,
5   and, of course, our more aggregated groups, like demersal coastal
6   invert feeders, which are like the croakers, versus some of our
7   more important reef fish, and, for example, at the bottom, we've
8   got yellowedge grouper, and, again, it's really hard to get diets
9   for some of those species that live deeper, because they
10 regurgitate their contents on the way up, but, again, I don't
11 really have too much time to go into detail, but I just wanted to
12 highlight here that we did as big of a review -- At the time, this
13 was about 2015, and we compiled all of the information we could.
14
15 Then, from there, once we had this big database of all the diets,
16 we ended up using an approach that Cam Ainsworth has developed and
17 has used for his Atlantis model, where what you take is you take
18 your dataset, and you take ten random samples, and you develop the
19 average diet. We kept track of the region that the study came
20 from, the method that was reported, and, of course, percent weight
21 is favorable, because our ecosystem models need diet composition,
22 in terms of weight or biomass, and, if it was percent frequency of
23 occurrence, there is a study that talks about converting that to
24 the percent weight, using just a regression.
25
26 We also kept track of sample size, and so we wanted to develop a
27 weighted proportion, taking all of that into account. Of course,
28 Gulf of Mexico studies were given the highest weight, and we did
29 have to go outside of the Gulf, to other regions, for some of the
30 species. For example, the larger sharks, there is just not a lot
31 of Gulf-specific diet data, and so we did the best we could. We
32 compiled all the data we could, and we developed this statistical
33 approach to estimate the diet, and we bootstrapped the 10,000
34 samples, once we had our ten random observations, and then we fit
35 a Dirichlet distribution to the different prey items, for our
36 bootstrapped data, and then we got maximum likelihood estimates
37 for each of the prey groups.
38
39 The figure on the bottom-left is just giving you an example of
40 we're got our predator, dolphin, and the Y-axis is just the
41 frequency of the observations, and on the X-axis is the proportion
42 of diet, of cephalopods in particular.
43
44 The important thing to note here is the red and blue lines are
45 essentially your just straight average, or a weighted average,
46 value, whereas the green line is the maximum likelihood estimate
47 that came out of this approach for the species, and so you can see
48 it's not perfectly on the mode of the observed data, but the model

122

1 is simultaneously fitting to, you know, thirty to forty prey items
2 at a time.
3
4 What we ended up doing with this is we were really focused on this
5 Gulf menhaden question, and we put out, in 2016, a paper, in *Marine*
6 *and Coastal Fisheries*, that looked at the data -- It basically ran
7 this analysis for Gulf menhaden and focused on reporting predators
8 of Gulf menhaden. In the figure, it's just looking at the percent
9 weight, from our analysis, for each of our predator groups.
10
11 For example, juvenile king and Spanish mackerels tended to eat the
12 most, although those had fairly low sample sizes, down to, I guess,
13 other big predators were Gulf Spanish mackerel, red drum, blacktip
14 shark, and so there is lot of things that make sense, and there
15 are some that don't, and, for example, age-zero yellowedge grouper,
16 and that is often -- In some cases, we have to make assumptions
17 about what species might be interacting, and so some of those
18 trends I think it's worth really digging into, in terms of when
19 you have a question at-hand, trying to look into those and further
20 refine them, and we actually did refine some of our diet, further
21 along in our Gulf menhaden process.
22
23 In terms of the diet, we really thought that was the biggest place
24 that we wanted to invest much of our time, but we were also
25 interested in trying to quantify the bycatch within the menhaden
26 purse seine fleet. The overall take-home is that it's negligible,
27 in terms of the percent number. Of course, you're going to have
28 a few predators, compared to billions and billions of menhaden,
29 but, when you look at it from a weight perspective, on the right-
30 hand side is a comparison, in the top, of Gulf menhaden landings
31 by the reduction in the purse seine fleet over time.
32
33 You can see the peaked in the mid-1980s, and, on the bottom, it's
34 basically the estimated total bycatch, all species combined, but
35 just based on percent, and so a couple of different studies that
36 are fairly old, and the Guillory and Hutton in 1982 actually
37 quantified the proportion of bycatch that was in menhaden landings
38 and said it was about 2.35 percent of menhaden landings were other
39 species.
40
41 There have been other studies that have reported other metrics,
42 and so this is actually something we presented during SEDAR 49 for
43 red drum, but we looked at all the various estimates, and, when
44 you look at it overall, you know, thirty-two metric tons, about,
45 in the peak menhaden landing years, can actually be quite a bit of
46 removals, for some of the species that we're assessing, and some
47 of the species that we're not assessing, and so we really wanted
48 to quantify the bycatch, as best we could, in terms of species

composition that was available and also the proportion of the
retained bycatch.

Now, one thing to note is this is a very, very, very controversial
topic, and I'm sure that many of you are aware that there is
currently an RFP out to get some more recent data on this issue,
and so we're really excited that that is underway, and we hope
that, you know, what we did with this analysis -- We used the best
information we had, and we made assumptions to make it work, to
assume that, you know, 2.35 percent of the landings every year
were these other species, and we're really excited for this data
collection to continue, and I just referenced the SEDAR 49 paper,
in case anyone is curious.

So where are we now? We were really lucky to be part of a
successful RESTORE project that was led by Dave Chagaris, and many
of you have seen his half of that project, with his West Florida
Shelf and red tide modeling work, and, at the same time, we were
working on an application for Gulf menhaden, and so, of course,
our model was much less developed than Dave's, and we've kind of
been progressing in small chunks, and that's kind of what I'm going
to go through today, to just give you a very quick snapshot of the
last five years of work we've been doing on this project, being
led by Dave, but also working with Kim de Mutsert, who is now at,
I think, the University of Southern Mississippi, but who is at
George Mason University, and really working with some of the top
ecosystem modelers in the Gulf. Again, this was funded by RESTORE,
and we were very, very lucky to get this external funding source.

The first thing we did, within the RESTORE project, was to revisit
our Ecopath model. What we wanted to do was we wanted to
incorporate all the time series, the longest time series we could,
and so the first thing we did was re-parameterize our Ecopath model
to be a snapshot for 1980.

Why did we choose that year? That's where the data source start
to come online, and we also had the information, in terms of the
purse seine bycatch, and we ended up making some modifications to
our model structure, based on a scoping workshop that we had as
part of this RESTORE project, and I think it was back in September
of 2017, in St. Pete, right before a hurricane was hitting the
area, and so we were all a little stressed, but we ended up getting
quite a bit of good feedback at that meeting and making a bunch of
changes.

I don't want to really spend too much detail on this, but, in the
bottom-right, it's just the snapshot of our model from the 1980
picture, and the vertical lines -- The horizontal lines are our

1 trophic levels, from one being our primary producer at the bottom,
2 and moving up to higher trophic levels at the top, and so we've
3 got a lot of functional groups, seventy-eight groups, twelve
4 commercial fisheries, four recreational fisheries, and there's
5 just a lot of interactions and each of those gray lines is a
6 linkage.
7
8 We did a pretty thorough job of going through, to see how well the
9 model was performing, by looking at pre-balanced diagnostics that
10 had been put out by Jason Link, and we spent a good bit of time
11 reporting those in our papers, as well as in our tech memo, and we
12 also looked at some best practices from Heymans' literature, and
13 so there's a lot of different information that we compiled in our
14 models, but then we also tried to dig into them and make sure they
15 were performing the way we expected, and on the bottom-left is
16 just an example of what these models -- What you would want to see
17 when you plot your biomass, versus your trophic levels. Of course,
18 you would have the highest biomass for your primary producers, and
19 then your trophic level would decline as your biomass increases,
20 or vice versa, and so the higher-trophic-level species have less
21 biomass in the region, and so this is just one example, but there's
22 many others that we report.
23
24 One of the biggest products that we produced for the RESTORE
25 project was a tech memo documenting the input data for the Ecopath
26 model, again for 1980, but then the data, the time series, that we
27 compiled for the Ecosim model, and so, at the time of this project,
28 when we really got started, our terminal year was 2016, and so,
29 obviously, that's about seven years ago, and, in a perfect world,
30 we would update everything with the most recent, but, at this time,
31 this is what we ended up reporting.
32
33 We had 160 time series, many of which were time series of biomass
34 or catch or fishing mortality or fishing effort, largely from SEDAR
35 stock assessments, some from ICCAT stock assessments, and we had
36 relative abundance trends from the SEAMAP groundfish for some of
37 our aggregate groups and species that were not assessed with stock
38 assessments, and we also used NOAA landings for some of our ICCAT
39 species, since ICCAT tends to report not just the Gulf, but
40 Atlantic and such, and so we compiled all the information we could.
41
42 Within the Ecosim model, you're able to force your nutrient
43 loading. In this case, we're using the total Mississippi River
44 flow for that, and so we're incorporating that environmental factor
45 into the model, to drive primary production. In terms of forcing
46 our fisheries, we have -- In some of our species, we're forcing it
47 with fishing effort, and some we're forcing it with fishing
48 mortality, from the stock assessments, but, basically, within

Ecosim, you compile all of your observed data, and then you compare
your predictions from your Ecosim model, to see how well it's
fitting, and, in some instances, there are some tweaks that get
made.

One of the biggest parameters within Ecosim are your vulnerability
parameters, which basically specify how vulnerable a prey is to a
predator, and those are some of the parameters that are the most
sensitive, and so there are some tweaks that go on within Ecosim,
when trying to fit the model to obtain better fits, and the fit is
quantified by the sums of squares within Ecosim.

Just for example, here are some of the groups from the model that
we've provided and reported in a tech memo. On the -- Well, first,
I'm just going to kind of highlight our observed data, and so the
input data we had were in the black dots. For some of these
species, you will notice there are very noisy data, and those are
the SEAMAP groundfish survey relative abundance, and then some you
see are a lot more refined, and those are assessment outputs.

For example, amberjack and cobia we were fitting to our assessment
model outputs, and the reason we decided to use that is, when we
started this project, we wanted to be able to encompass all of the
best available science, all of the different assessment models,
and build everything into this ecosystem model, although we
recognize that this is definitely one of those key issues that can
go both ways. We should potentially be fitting to the fishery-
independent surveys, and that's something that we can always do.
We can always make those kinds of changes when we go through these
applications.

The dark-gray line in each of the figures is the Ecosim prediction,
and so, for example, in amberjack, the fits are pretty good, with
the exception of since 2010, and Ecosim is predicting higher
biomass, and the numbers in brackets are the sums of squares, and
so, the lower the value, the better the fit.

The first thing to note too is that we've got biomass -- For
example, our age-zero to one, sometimes they don't fit very well,
and we've got king mackerel. Within the model, and we talk about
it in the tech memo, you know, we're not really fitting very well
for our age-zeroes, for many of the different species, but, again,
we, very often, do not have a lot of good age-zero data in our
stock assessments.

Some of the other species that we're looking at, we actually fit
quite well, and the adult Spanish mackerel is fitting pretty well,
but, ultimately -- You know, for the most part, we were fairly

1 happy with some of the groups that we were looking at, in terms of
2 how they performed in comparison to our stock assessments and our
3 relative abundance.
4
5 Now, at the other end of the spectrum, we, of course, do have
6 groups that don't behave well, and one thing to notice is these
7 are all mostly our shark groups and our ICCAT, our highly migratory
8 species, groups.
9
10 One of the big assumptions that we had to make with this analysis
11 was, if we were using ICCAT stock assessment outputs, they don't
12 specify Gulf of Mexico, and it's really Gulf plus Atlantic, and so
13 we're assuming that those trends would be characteristic of the
14 Gulf, but, as you can see, we do have quite a bit of misfits for
15 some of our sharks, and, you know, we get questions. Whenever you
16 look at this sort of work -- The take-home with looking at these
17 models, where there is so many functional groups, is, if you have
18 a species in mind, you really have to evaluate how well the input
19 data were, how well the model is fitting, and, in these cases, you
20 would not want to hang your hat, really, on results for these
21 functional groups that are not performing well.
22
23 That is just a caveat to keep in mind, and we do talk about that
24 in the tech memo, and we tried to really highlight our
25 uncertainties and limitations and try to give recommendations to
26 move forward.
27
28 Now, we're also -- This is the comparison for time series fits for
29 our catches, and so our landings for the various species, and,
30 again, you can see some species fit pretty well, like the adult
31 Spanish mackerel, and we've got some that are very wonky, like our
32 demersal invert feeders, and red drum, and so red drum is perfect,
33 because we're driving with our catch recommendations, because we
34 don't have a fishing mortality estimate from a Gulf-wide stock
35 assessment, and so, again, you know, you look at the groups, and
36 it's hard to draw conclusions for some of the groups, other than
37 we need better data and further refinement within the model, but,
38 overall, we're pretty happy with some of the groups.
39
40 The same kind of conclusions hold, again, with our sharks, and
41 some of them are fitting fairly well, and some of them are not,
42 but, again, we do think that there's some potential data sources
43 that could be reevaluated for some of these shark and HMS groups.
44
45 I did want to just highlight that the menhaden, since we focused
46 so much of our project on Gulf menhaden, and we were fitting for
47 the age structure, and we wanted to match the age structure that's
48 used in the stock assessment, and our biomass estimates fit fairly

1 well. You can see they are very noisy, given their importance of
2 the Mississippi River outflow, and so the oscillatory behavior is
3 very evident, but, for the most part, we were pretty happy with
4 the fits to our biomass for these groups and catches for most of
5 the age classes.
6
7 Once we fit to time series, there were some other analyses that we
8 ran, and I'm going to try to just quickly talk through a different
9 types. One of the most important, I think, for this group is
10 basically an FMSY analysis. We ran with an Ecosim, and we did
11 simulations where we changed the fishing mortality for the various
12 groups, and Ecosim estimated an FMSY for each of these functional
13 groups.
14
15 The blue line, or the blue-dashed line, is essentially the FMSY
16 estimate, where all the other group biomasses were the same, and
17 so the only thing that changed was the biomass of the target group
18 that we were conducting the simulation for, and then the red line
19 is if we allowed all the biomass groups to change in response to
20 our target. The thick-yellow line is the stock assessment estimate
21 of FMSY, and so, overall, for the most part, they're fairly close,
22 for many of the species.
23
24 Some of them are almost right on, amberjack and tilefish, which is
25 very interesting, but, for the most part -- You know, this is,
26 again, just a summary of a few of the species, and we always see
27 good fits, and we always see poor fits, but, for the sake of time,
28 we're just going to try to give you a taste of the results from
29 the model, to see how well the model is performing compared to the
30 stock assessments that we run, and, overall, we were pretty happy
31 with these results.
32
33 For the Gulf menhaden application, we were very interested in
34 trying to explain the relationships with some of their top
35 predators, and so, on this figure, it's the same plot we saw
36 before, and so we ran an FMSY analysis for each of our predator
37 groups, many of which did not have a stock assessment, and so what
38 we're comparing for the FMSY proxy, essentially, is just saying
39 it's an equivalent to natural mortality.
40
41 Of course, you know, this is just based on the best information we
42 have, and we wish we could have stock assessments for many of these
43 groups, but just to give an idea of how our model was projecting,
44 or estimating, FMSY compared to those proxies, or the FMSY estimate
45 from the stock assessment that we had for large coastal sharks, as
46 well as adult king mackerel and adult Spanish mackerel, and the
47 fits are -- Some of the groups are not so great, but we did want
48 to just kind of show, for example, that this is how well the model

1 would be performing.
2
3 Many of these groups, again, are aggregate groups, and they're
4 based on a bunch of different species, but we really wanted to
5 display these trends for these top predators of menhaden, so that
6 you could see how well the model is doing, in terms of predicting
7 their dynamics.
8
9 Another sensitivity analysis that we looked at here was simulating
10 changes, and, as I mentioned, we're very interested in Gulf
11 menhaden and the effect that that fishery has on other species, on
12 the species that we assess every day, and so, in this sensitivity
13 run, what we do is we're comparing the biomass from our simulation,
14 where we just keep increasing the fishing mortality of Gulf
15 menhaden or the purse seine fishing effort, but, basically, just
16 using a multiplier. As that increases over time, we can see
17 changes in the biomass of all the functional groups that we have.
18
19 For the analysis looking at Gulf menhaden and the top predators,
20 we ended up focusing on the top-ten species at the bottom that you
21 can see that had the most -- That were most negatively affected,
22 because we thought that that would be the most appropriate, in
23 terms of how much of a change would that -- Changing menhaden
24 fishing mortality or effort, what change would it have on those
25 functional groups?
26
27 Again, you know, you could probably sit here for an hour and kind
28 of dissect each of these results, and so, for example, yellowfin
29 tuna, and why on earth did they increase so much, and, well, that's
30 where the ecosystem nature, I think, of these models comes out.
31 If menhaden is going down, other forage fish may be going up, if
32 there's availability of, you know, their prey, habitat, predator
33 release, and there's a lot of complex dynamics going on, but, for
34 the purposes of this presentation, and kind of this study that I'm
35 walking us through, we're really focused on these Gulf menhaden
36 predators.
37
38 The meat of basically the last five years, and the deliverable,
39 where we wanted to get with this Gulf menhaden component of the
40 RESTORE project, was to propose ecological reference points, to
41 show that there was a way to develop them, and not to present final
42 numbers that need to be adopted, but just to show that, look, we
43 have a model, and here's the data that went into it, and here's
44 what we can get out of it, if we were able to, you know, go through
45 an approach that was done with the Atlantic.
46
47 For Atlantic menhaden, a similar approach had actually been adopted
48 for use in management, and it went through a SEDAR 69 process, and

1 there was a -- I encourage anyone that's curious to look at that
2 analysis, and I think that's a big success story, as far as moving
3 into the ecosystem realm for our stock assessments, and so we
4 wanted to essentially follow that path and do a similar analysis
5 for Gulf menhaden.
6
7 What we've done, in this Berenshtein reference, is try to do just
8 that, to propose a way forward and develop reference points that
9 could potentially be considered, could be refined, just to show
10 that there's a way to do this, and so I'm going to try to carefully
11 explain this tradeoff plot, because this is really the most
12 important aspect of where this analysis lands.
13
14 We have, on the Y-axis, the fishing mortality for each of our
15 predators, and so we would have ten tradeoff plots, with predator
16 fishing mortality on the Y, and the small-dashed horizontal line
17 is just showing the current fishing mortality rate for that
18 predator at the time, and it was 2016. Again, not so current
19 anymore, but it was the best available at the time, and what's
20 most important, in terms of this horizontal-dashed line, in that
21 was our fishing target for the predator, which we defined as 75
22 percent of FMSY.
23
24 Again, you know, it would be nice to vet all of these assumptions
25 and decisions, do a technical peer review of this process, to get
26 a final product that could be adopted for management, but we felt
27 that everyone's opinion -- Everybody helped contribute, and so
28 this is just to show how this could be done.
29
30 On the X-axis is our menhaden multiplier, which, again, is either
31 the menhaden fishing mortality or the fishing effort from the purse
32 seine fleet. The colored figures, the contour plots, is the ratio
33 of a predator's biomass to their target biomass, and so the thick
34 white line, the thick contour line, that's basically where the
35 predator's biomass is equal to their target, and that's where we
36 would want to be, and so our ecological reference point for this
37 predator is the value of that menhaden F multiplier, and so we
38 find that intersection, where it intersects with the F target, and
39 this contour plot, and that would be the ERF for this single
40 predator.
41
42 We did this for each of our predators, and, again, we just focused
43 on the top ten predator groups. Again, it would be great to have
44 almost a more formal working group to sit down and kind of hash
45 out which predators should be included, and should it be all ten,
46 or should it be the top five, or should it be one, and one big
47 difference from our analysis to the Atlantic is that the Atlantic
48 had a clear dominant predator, striped bass. Well, we don't have

1 that in the Gulf, and we have maybe a lot more complex ecosystem,
2 a lot more different types of forage fish, and so it wasn't really
3 as clear-cut, and so we provided these reference points for each
4 of our predators.
5
6 The ERP at target is basically that value that I showed you on the
7 tradeoff plot for each of our ten groups here, and you can see the
8 tradeoff plots for each of them, and we also developed the ERPs in
9 terms of an F threshold, and so that was basically fishing at your
10 MSY, or the biomass at MSY, and so, because we didn't really have
11 a single predator, what we ended up doing, for this paper, is just
12 a straight average of these ten groups, and so the mean ERP is the
13 average of the top ten.
14
15 We were very grateful to have Amy Schueller onboard, who is the
16 menhaden stock assessment analyst for both the Gulf and the
17 Atlantic, and she ended up taking the EFPs that we produced from
18 this model and reran her Gulf menhaden projections, using the same
19 exact approach that they do with their stock assessments, and she
20 projected forward with our EFP target and the threshold value that
21 we found in the previous slide, and those values were converted
22 into the fishing mortality units that were comparable to the stock
23 assessment, so we were projecting in the same units as is used in
24 the stock assessment, and, I mean, this is really the final -- The
25 biggest outcome of the paper.
26
27 On the left-hand plot, we're showing the fishing mortality over
28 time, coming out of the stock assessment, with I believe a terminal
29 year of 2017 here, in comparison to the different ERPs that we
30 produced, and so the solid-red line is showing our EFP at the F
31 threshold, the blue is showing the EFP at the F target, and the
32 dashed lines are just the plus or minus one standard deviation.
33
34 On the right-hand side, it's comparing the landings time series,
35 and so the take-home is that, for the most part, when you consider
36 the uncertainty in our estimates -- Again, you know, it's based on
37 our assumptions, and I'm sure there's some aspects that we made,
38 and decisions that we made, that could be, you know, looked at
39 further, in terms of uncertainty, but, overall, for the most part,
40 many of the projected landings are -- Sorry. Many of the projected
41 fishing mortality rates earlier were above the thresholds, but,
42 more recently, it seems to be within a range, and so there doesn't
43 seem to be a clear concern.
44
45 There were a few years of landings in 2011 and 2012 that were above
46 what our analysis would suggest would be acceptable levels, but,
47 again, you know, we did incorporate the uncertainty, and you can
48 see that there is quite a bit of uncertainty.

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1
2 One way to get at that would be with additional work within this
3 analysis, before this was actually adopted, or considered, for
4 management, but, again, you know, this is really just a starting
5 point, to show that it could be done.
6
7 I did just want to briefly mention, and I'm not going to really
8 focus on this too much, but, within the project, we also did a
9 bunch of other analyses, looking at, for example, comparing the
10 biomass of menhaden to king mackerel under different scenarios of
11 no fishing mortality, no menhaden fishing mortality, maximum
12 mortality, just to kind of make sure that the results make sense.
13 You know, as menhaden fishing went up, we saw declines in king
14 mackerel biomass, as you would expect.
15
16 We looked at broad ecological indicators for the entire ecosystem
17 that are reported in the Frontiers paper, just to kind of look at
18 how different -- How changing the menhaden fishing mortality would
19 affect not just, you know, our predators, but the whole ecosystem,
20 and topics like that, and Igal worked on a forecasting analysis of
21 Ecosim.
22
23 One of the biggest questions we get is, you know, how well does
24 the model perform, and that hasn't been published yet, but he has
25 been working on that, and he presented that at an ecosystem
26 modeling conference, and I would say, at least in my everyday job,
27 most importantly, we, from this project, produced a time series of
28 natural mortality, age-specific natural mortality, that was
29 incorporated into the Gulf menhaden stock assessment update
30 conducted in 2021, to kind of see, you know, if we incorporated
31 this, what would the result be on the stock assessment, and so Amy
32 ended up doing that, and that's in the GDAR 03 report, and so that
33 was very exciting.
34
35 To summarize, you know, we spent a lot of time, at the Science
36 Center, kind of working in the shadows, before the RESTORE project,
37 just trying to build a tool that we could use to address some of
38 the questions that we had, and, at the time, we had this question
39 about menhaden, what effect could menhaden fishing have on the
40 greater ecosystem, and some of those species that we assess through
41 the SEDAR realm.
42
43 What this analysis -- We were able to show that, you know, we could
44 develop the ecological reference points, and they could be
45 established in the Gulf. Of course, you know, one of the things
46 I want to -- I hope the take-home from this talk is we tried to be
47 very clear with the data sources that we used, and that's all
48 reported in our tech memo, but we also wanted to really clearly

1 highlight the uncertainties we had in our analyses, as well as any
2 data limitations, and we did that within the tech memo.
3
4 For example, this is just showing -- I think, in the last table in
5 the document, we go group-by-group, and we basically summarize
6 what diet information did we have, and did we have a bunch of diet
7 observations, or did we have one, or did we have none? Did we
8 have time series, and we tried to just qualitatively score that,
9 if I wanted to do a model tomorrow, if my question focused on, you
10 know, how well prey availability affect bottlenose dolphins, I
11 would go to this table, and I would say, well, okay, so there's a
12 lot of work that would need to be done on this model, and the data
13 inputs, before this type of approach could be used for that group.
14
15 We would need species-specific biomass and diet, more diet, and
16 time series, and so we tried to do that, and to be very clear, for
17 the various groups. If anyone had, you know, a project they were
18 thinking about, they could go to that, and they could say, okay,
19 well, here's where we stand, and here's where we could go. Some
20 of the SEDAR species actually we had quite good data, and so we're
21 pretty excited about some of those results.
22
23 Kind of just wrapping up the menhaden application, you know, we
24 had this RESTORE project, and, ultimately, we always know that,
25 for every question we try to address, we come up with ten more.
26 We see a different path that we could take, in terms of moving
27 into Ecospace, into the spatial component, to allow us a better
28 way of capturing bycatch especially, and we would want to move
29 into Ecospace as well, to be able to incorporate additional
30 environmental information, such as temperature, salinity, hypoxia,
31 and, ultimately, you know, I think this project has been very eye-
32 opening, because of Gulf menhaden, and it's a very hot subject at
33 the moment.
34
35 You know, what's been done at the Atlantic, we really have the
36 ability to do it in the Gulf, but it's just we are faced with a
37 lot more challenges, but I think we could get there if we had a
38 peer review, a technical review, where we could sit down, as a
39 group, and build these models, maybe build a simpler model focused
40 on the key species, just as was done in the Atlantic, and move
41 forward in a more ecosystem-based approach to managing Gulf
42 menhaden.
43
44 That being said, you know, the RESTORE project was focused on Gulf
45 menhaden, but that has come to a close at this point, and so we're
46 really excited, moving forward, to -- I'm going to let Holden.
47 Well, actually, let me stop and ask if there are any questions, or
48 input, before our next part.

1
2   **CHAIRMAN BARBIERI:** Thank you, Sky. Any questions for Skyler,
3   before she moves forward, or Holden starts his presentation? David
4   Griffith.
5
6   **DR. GRIFFITH:** Thank you, Mr. Chair. Skyler, thanks a lot for
7   that presentation, and it was really interesting. I just want to
8   say that this area of research is really ripe for fishermen input,
9   I mean, getting traditional ecological knowledge, because one of
10 the things that fishermen think a lot about is what eats what,
11 right, and so we've done a lot of work in the Artic, and the
12 Atlantic, on, you know, interviewing fishermen about what they
13 think different species of fish eat, and, you know, what they find
14 in their stomachs, when they're cleaning them and stuff like that,
15 and so this is an area that I think you could incorporate fisher
16 knowledge very well, and I would be happy to turn you on to some
17 references along these lines. Thank you.
18
19 **DR. SAGARESE:** Thank you very much for that. I won't answer it
20 too much, and I don't want to steal any of Holden's thunder, but
21 I absolutely agree with you, especially in terms of Gulf menhaden.
22 Who is eating who, what species are eating Gulf menhaden, how much
23 are they eating, and, you know, we've done the best we can with
24 the available data, but we really do think that some combination
25 of quantitative data, starting with the diet matrix, but bringing
26 in stakeholder information, local ecological knowledge, and
27 further refining those interactions -- I absolutely think that
28 that's really what we need to start doing with these models, and
29 I am very onboard with trying to find external funding to bring
30 the stakeholder component into these types of data inputs, because
31 I might have stolen Holden's thunder, and, if I did, I'm really
32 sorry, but I am really excited with your comment, and I completely
33 agree.
34
35 **CHAIRMAN BARBIERI:** Thank you. I have Trevor and then Jason.
36
37 **MR. MONCRIEF:** I just want to ask about king mackerel, and maybe
38 this is going to be answered, or maybe I missed it, but how do you
39 reconcile the impacts, potentially, from a very localized,
40 regional fishery to a species like king mackerel, which is, you
41 know, across the Gulf?
42
43 **DR. SAGARESE:** That's a great question, and that's one of those -
44 - One of the reasons why we're interested in moving into the
45 spatial component, because that would give us a better way to
46 spatially put all the stocks where they belong, but also, you know,
47 refine the menhaden to where they belong, and, ultimately, what
48 we've done to this point --

134

1
2 The modeling for this project, we did not consider the spatial
3 component, but we did consider, you know, the diet matrix, and we
4 spent a lot of time trying to quantify king mackerel, the
5 menhaden/king mackerel connection, and so I think your comment
6 about trying to refine that interaction, you know, how much do
7 they overlap, I think that's something that we want to move forward
8 with in Ecospace to do, but we feel pretty comfortable, in terms
9 of the results that we've shown from the fitting to the stock
10 assessment for king mackerel, and it was one of our better-
11 performing species, as well as the additional analysis that Igal
12 had done, looking at how the changes in the fishery would affect
13 king mackerel biomass, but your question is a good one, and I think
14 that's why we're very interested in moving forward to Ecospace.
15
16 **CHAIRMAN BARBIERI:** Thank you, Sky. Jason.
17
18 **MR. ADRIANCE:** Thank you, Mr. Chair, and thank you, Skyler, for
19 the presentation so far, and this has been great, and I've seen
20 bits and pieces before, and some of these -- The question I have,
21 I may have asked before, but, before I do that, I have a comment
22 about the bycatch.
23
24 I will be glad to see this RFP go through that's out there, because
25 I think, since the Guillory and Hutton, that fishery has
26 implemented some changes that reduced bycatch a little bit, and I
27 think you see that in the later studies, and it will be interesting
28 to see how newer work compares to those works in the 1990s, versus
29 the Guillory and Hutton in the 1980s.
30
31 My question really goes back to Slide 15, and it's about seatrout
32 in general, and you said some of that data came from SEAMAP ground
33 trawls, and is -- The seatrout, does that comprise sand, silver,
34 and spotted, or is it just spotted seatrout, because, if it
35 comprises all three, there are some pretty good differences in
36 what you might see in that SEAMAP bottom ground trawl for the other
37 two trout, other than spotted seatrout, and, given where they hang
38 out, there may be some diet implications there, if you're trying
39 to group those altogether, and spatial considerations. Thanks.
40
41 **DR. SAGARESE:** Thank you very much for that question, Jason. This
42 is an aggregate cynoscion group, and so this is silver, sand, and
43 spotted, and this is kind of everything combined, because it is
44 Gulf-wide, and so there's, you know, the Florida aspect, the
45 Louisiana aspect, and so we recognize that, you know, maybe this
46 is where talking about building a simpler model -- If we were
47 strictly focused on Louisiana, we would target in on maybe a single
48 species, or age classes as well, but, for our purposes, it is

1 combined.
2
3 It is all of those seatrout combined together, but, yes, you're
4 right that, you know, you start blurring across diet trends and
5 biomass, but, for the purposes of this model, we did keep it from
6 that Gulf-wide perspective, and so that's certainly something that
7 could be reconsidered. If we were to -- If Gulf menhaden managers
8 wanted to pursue this further, that is the kind of stuff that we
9 could talk about refining the model configuration and the
10 structure, to move forward.
11
12 **MR. ADRIANCE:** Thanks for that, and I think that, in combination
13 with moving to Ecospace, would help, given where that fishery
14 operates.
15
16 **CHAIRMAN BARBIERI:** Thank you, Jason. Harry.
17
18 **MR. MORALES:** Skyler, I've got enough questions to probably run us
19 into Thursday afternoon from here, and so maybe we need to take
20 some of this offline, but probably the simplest question that I
21 have is I saw that the M values that you were using for most of
22 these groups -- That you're drawing out of FishBase, and I was
23 wondering why that was being used, when we had M estimates coming
24 out of assessments, and, I mean, the one that --
25
26 Several of them struck me, but the red snapper is quite a bit
27 different, and red drum is quite a bit different, and I will say
28 that the estimate of F coming out of this assessment for red drum
29 seems remarkably low, considering the fisheries that occur for
30 that species, and so that's kind of a question, but, if you've got
31 current estimates of M that are say twice, or three-times, what we
32 have in a stock assessment, like what you have with age-three-plus
33 red snapper, that disappearance rate is going to be going somewhere
34 other than M. Can you explain how that might work in that
35 assessment, if you've got a lower M than what you currently have
36 in the model?
37
38 **DR. SAGARESE:** Yes, and so let me start by first explaining -- Are
39 you talking about a specific slide, because the natural mortality
40 rates that go into the model are documented in Table 5 of our tech
41 memo, and most of the SEDAR species are coming from stock
42 assessments.
43
44 In some cases, we had to aggregate them, to get a single number,
45 if it's age-specific, but we do clearly state, in that table, for
46 each of those functional groups, where the natural mortality is
47 coming from, and then, in Table 6, we talk about the range of
48 natural mortality rates, if we needed to use that, what would have

1 come out of FishBase, based on all the different quantitative
2 equations to estimate natural mortality, but what we did use, in
3 the Ecopath model, it should be in Table 5, and so for all those
4 other species, and we just wanted to report, you know, the range
5 of Ms that would come out of FishBase, but we don't use those
6 values. The M Source column in Table 5 tells you where the natural
7 mortality came from.
8
9 **MR. MORALES:** Okay. I was getting that from the text of your
10 paper, where it says it came from FishBase.
11
12 **DR. SAGARESE:** I personally -- I think FishBase has its positives,
13 but I really don't like relying on FishBase as my source, and I
14 would rather choose either more data or go to the actual references
15 that are cited on FishBase, because sometimes there are typos,
16 but, yes, Harry, please send us -- If you have a list of questions,
17 please feel free to send that.
18
19 **MR. MORALES:** Actually, it's more of a scattering here and there.
20 The other thing that struck me was it was something like -- I was
21 looking at one of the supplementary tables, and it was something
22 like 99 percent of the anchovy harvest was coming out of the
23 menhaden fishery, and that seemed unusual to me, because there's
24 the shrimp fishery that probably catches a bunch of them.
25
26 **DR. SAGARESE:** That's something that I can try to look into
27 further, but, yes, it could be that that's the estimate coming out
28 of -- If that's coming out of Ecopath, I will have to look into
29 that more in detail and see what is causing that, and you said
30 that's a supplementary table?
31
32 **MR. MORALES:** Yes, that was in that supplementary table.
33
34 **DR. SAGARESE:** Okay. I will take a look at that more in-depth,
35 but it's gut-checks like that really -- We need to be doing this
36 sort of gut-checking, anytime we're doing this kind of modeling,
37 and so that's really important for us to address, but I will try
38 to take a look at that.
39
40 **CHAIRMAN BARBIERI:** John Mareska.
41
42 **MR. MARESKA:** Thank you. Good presentation, Skyler. I may have
43 missed it earlier, and so why did you break up the king and the
44 Spanish mackerel into juveniles and adults, and so zero to one
45 versus adults? That's my first question, and I've got another
46 one.
47
48 **DR. SAGARESE:** We wanted to break out the juveniles from adults

because of just having a better understanding from the stock
assessment, and we had data at the time, as well as, you know, the
-- Particularly, I think, Gulf menhaden, the importance of Gulf
menhaden to the diets, we thought there would be some difference
with adults and juveniles, and so we tried to break out -- For our
SEDAR stock assessment species, we tried to break them all into at
least a juvenile group and an adult group, and so that decision
was made for most of the SEDAR species, with the exception of Gulf
menhaden, and we broke out the age-specific estimates.

MR. MARESKA: Okay, and then my next question is, in the diet
composition, did you try and determine lengths or age of the
menhaden, because menhaden consumed as juveniles probably wouldn't
benefit from the reduction of the effort for the purse seine
fishery.

DR. SAGARESE: We did not have any of that data available, but I
really hope that we can collect diet information, by measuring the
predators and the prey, so we can get at which size classes are
being affected. I mean, that's the biggest -- To be honest, that's
one of my biggest data gaps in this entire analysis, was it was
hard enough to pinpoint what predators were eating Gulf menhaden,
because the majority of studies didn't really specific, and they
would stop at clupeid, and so it was hard enough to identify who
was actually eating Gulf menhaden, but trying to then parse out
the predation of age classes of menhaden -- We had to kind of take
a step back and do some additional analyses, but we really need to
have a better handle of the diet information, who is eating age-
zeroes, who is eating the adults, and I really hope that we can
collect more data to get at that question.

CHAIRMAN BARBIERI: Thank you, Skyler, and, Skyler, are we ready
to hand it over to Holden, to start the second part? Are you done
with yours?

DR. SAGARESE: Yes, and, please, if anyone has any follow-up, I'm
happy to address offline, on a call or an email or however. Thank
you so much.

CHAIRMAN BARBIERI: Wonderful. Thank you, Sky.

DR. HOLDEN HARRIS: Hi. I'm Holden Harris, and I started in
October. I'm an Assistant Scientist at the University of Miami
CIMAS, a NOAA affiliate with the Gulf IEA group. My coauthors on
this are, clearly, Skyler, and also Dave Chagaris, and then we
also had a lot of guidance and leadership from John Walter and
Mandy Karnauskas.

Skyler went the first part, on the Ecopath and Ecosim component of
this model, and I will talk about kind of the current efforts,
what I've been working on recently, with a major focus of where we
want to go, with the idea of really wanting to get input and
direction from the committee.

I will give a little bit of context for Ecospace, in particular
its applications in the Gulf of Mexico. I will talk about where
the model is, and most of the work I've been doing is synthesizing
data to develop the spatial model, and the focus here will be on
the next steps of trying to develop quantitative and qualitative
next steps for validating and fitting the model, and I'll talk
about our research directions, trying to operationalize the model,
and the potential questions and hypotheses that we would like to
address with this spatial model.

Skyler showed this earlier, and, again, this is the Ecopath with
Ecosim framework. With EwE, I think there's almost 500 published
models currently, and there's a lot less Ecospace models here.
Skyler gave a pretty in-depth overview of the model that we have,
which is relatively large and complex for an Ecopath model, and
now we're moving it into a spatially-dynamic model.

To explain this, the equations that run in Ecospace are the same
in Ecosim. In Ecospace, you have a two-dimensional grid, and, in
that grid, you have these square grid cells, and each one of those
grid cells is running Ecosim, and so those mass dynamic equations
are running in there, and then you have biomass groups that are
moving into and out of those cells.

What's driving those is the preferences, based on abiotic
conditions for habitat and environmental drivers, and these can be
static or dynamic, and then they also move around to forage and
feed and to avoid predators, and then you also have fishing fleets
that are moving around and chasing the fish, and so you can either
use the Ecopath-based effort or and Ecospace gravity model, where
these fleet dynamics will travel to chase the fish.

I think this is a really good illustrative example of Ecospace,
and this was the first published model for Ecospace by Carl
Walters, and so this plot you see of the grid cell is this two-
dimensional grid, and, in each one of those grid cells Ecosim is
running, and the dark black is land, and the plot on the right
shows that transect, as you move across the marine protected area,
and this was the first application, and what Ecospace was
originally developed for.

In that top panel, Panel A shows Ecopath, and so this shows where

1   biomasses are not moving around, and that next panel underneath it
2   shows aggregation of biomass in kind of those center areas, where
3   you have higher biomass in a marine protected area, and the next
4   panel down, Panel C, shows movement effects, and so this is trying
5   to simulate these spillover effects that you would expect for a
6   marine protected area, but then, the next panel down, you also
7   have fishing aggregation along the sides of that marine protected
8   area, and so the final plot, ideally, shows a semi-realistic model
9   of spatial dynamics.
10
11 Since that first application, over twenty years ago, there's been
12 a lot of different reimaginings, and new uses, of Ecospace, and I
13 want to highlight a couple applications in the Gulf of Mexico, to
14 kind of give us some context.
15
16 The first is a work by Kim de Mutsert, and others, looking at the
17 effects of hypoxia on Louisiana fisheries, and, here, what they
18 found in the model is a bit counterintuitive. The primary
19 production gains from increased nutrients coming from the
20 Mississippi River increased production, and then a lot of the
21 nekton were able to move around the spatial model and avoid poor
22 habitat conditions, and so the model actually found that those
23 primary production gains largely counteracted negative effects
24 from hypoxia.
25
26 Another example by Kim de Mutsert, and also in Louisiana, is they
27 looked at the effect of freshwater diversions on Louisiana
28 fisheries, and I think this shows one of the key capabilities of
29 Ecospace models. It's able to identify winners and losers from
30 these restoration efforts, and I think the neatest thing is that
31 these were used by the Louisiana Coastal Restoration Authority to
32 prioritize future research monitoring efforts and then diversion
33 projects.
34
35 A third example is by Daniel Vilas, working in Dave Chagaris' lab,
36 where he looked at the effects of red tide on the West Florida
37 Shelf, and so this is clearly a spatial problem, and these plots
38 on the rights showed that incorporating the harmful algal blooms
39 did give more realistic results, and they were able to produce
40 time series of episodic mortality, which clearly can be useful for
41 stock assessment and decision-making.
42
43 The last example shows a work that I did in my post-doc, where
44 we're trying to consider climate change and land use changes and
45 how that would affect freshwater provisioning, and so we developed
46 an Ecospace model of the Suwannee River estuary, where we took
47 inputs from a hydrologic model, and this is going to change, these
48 spatial gradients of salinity and nutrients and temperature in

this model, and the Ecospace model is able to concurrently consider top-down impacts and bottom-up drivers.

Let's look at the model itself, and so developing the Ecopath with Ecosim model that Skyler just presented, and the data that's we've been working to synthesize can be characterized mainly as map and the responses to these maps, and so these maps are static, and so they can be habitat and then spatial-temporal environmental drivers, and then the functional groups respond to this, and it will have base dispersal rates and then be able to move, or have preferences, based on these drivers.

The map here to the left shows the Gulf of Mexico federally-managed waters in the Gulf of Mexico, and what I want to point out, on the map on the right, is that the Gulf of Mexico spans three orders of magnitude in depth, and so it's a very large area. The map on the bottom is the base map for the Ecospace model, and so these grid cells, if you look kind of the Big Bend area, and you can kind of see those grid cells a little better, those are each about eight-second grid cells, and so about fourteen-kilometer-square areas.

This is the current resolution, which I felt was a good compromise between speed and resolution, but we can change that resolution to be finer or more coarse, and the last thing I want to point out is that I have a lot of links here, and so this links to the GitHub repository for making these, and these are all on the PDF, and so I wanted this to kind of be a resource for myself, and also others, to kind of dig into this later, and there's a GitHub repository that I've been working on developing for all of this work.

Here is the six habitat layers that are in the Ecospace map, and we have three types of hardbottom. We have artificial reefs in the top left, and, if you look carefully, you can see a really high concentration of artificial reefs there off of Alabama, and then generally kind of a lot of artificial reef habitat in the western Gulf, which is the oil and gas infrastructure out there, and below that is hardbottom, and you see a lot of structure on the deeper waters, and the shelf, as well as you have more coral and rubble in eastern Gulf.

We have two types of softbottom. We have sand, which is mostly in the eastern Gulf, and mud, which is mostly in the western Gulf, which helps kind of get species into place, and we also have coral essential fish habitat, and seagrass habitat in the map.

Here's what everything looks like overlaid, and so this is the snapshot from the Ecospace model itself, with all the different habitat layers in the map, and then we have five spatial-temporal

environmental drivers, and so this is how the Ecospace model
starts, and this represents the global average. We have three
types of temperature, bottom temperature average, surface
temperature, salinity, and then a depth-integrated Chlorophyll-A,
and so that's the nutrients that go into the model which drive the
bottom-up processes in the model.

These are the static snapshots that these videos run, and this is
what it kind of looks like when it's running in the model itself,
and so you see these maps changing, and this is temperature, bottom
temperature, average temperature, and surface temperature, and
these were developed from the HYCOM data. The HYCOM data is
available from 1993 to 2022, and, again, the model ends in 2016,
and it runs from 1980 to 2016. For the years between 1980 and
1993, I just took monthly averages, to run the models themselves,
and then there's links to the PDF files to look at those more
carefully.

This shows the last two spatial-temporal environmental drivers,
and salinity was also from the HYCOM data. It's hard to see, and
you don't really such much change in salinity. On the left, these
are nutrients, and you do see annual and seasonal changes from the
nutrient data. The nutrient data is from MODIS.

Those are the drivers, both habitat and spatial-temporal drivers,
and the next step is dispersal rates, and so, in Ecospace, the
standard heuristic is this 300-30-3 rule for assigning dispersal
rates for relatively-fast-moving, slow-moving, and sedentary
species, respectively, and the units for this is kilometers per
year.

We've been working on, and for this used, I think a little more
empirical results, where we queried characteristics from FishBase,
and sometimes we aggregated it together, and what we were getting
is length and then the aspect of the caudal ratio, the tail, and
then whether or not they're pelagic or demersal species themselves,
and this gave a relative swimming speed, and bigger fish swim
faster, and then what really controlled it is that caudal fin
ratio. Thinner caudal fins, like tunas, are going to swim more.

What we did is took those relative swimming speeds and scaled them
to experimentally-derived dispersal rates, based on acoustic
tagging for red drum and spotted seatrout, and then aggregated
those out by functional groups, and what we get here I think seems
pretty reasonable. The fastest-moving species were the billfish,
followed by the tunas, and the next group, between about 400 to
100, we have some the surface pelagics, like amberjack and mackerel
and mahi, and this seems to align pretty well with this 300-30-3

heuristic, and then our integral piscivores and reef fish species were about sixty to fifteen, and so it seemed pretty reasonable to us.

Then what drives placing these species on depth and habitat is these preference functions, and so we started with getting the preference functions from FishBase here, which it's been acknowledged earlier that FishBase can sometimes be problematic, and we aggregated by species, and so some of these we've been reviewing and adjusting and kind of manually tuning, and I will talk a little bit more about this later.

What we get from FishBase is minimum and maximum and then preferred minimum and preferred maximum, the 10th and 90th percentiles. Typically, in Ecospace, what has been done is that they use these trapezoids, shown down here on the bottom-left, and they see the minimum and maximum in red, and the preferred minimum and maximum here in blue, and I developed a double-logistic function, which I think is a little bit more reasonable, and so that shows just an example for yellowedge grouper. The next plot over shows what it looks like when it goes into Ecospace, and what I want to point out is that it doesn't necessarily have to be a double-logistic function for this, and so you can start it and see it run, and it can be a single-logistic function.

I have developed preference functions for all of these, and this is just a couple of examples, and then I link to where you can see all the information for this, but, for each preference function, we have depth, temperature, and salinity. Salinity, right now, isn't really placing things too much, and neither is temperature, and depth is really kind of putting things where they ought to be, but I do want to just point out, with these examples, is that you see a good amount of variability, based on the information, and I think they do seem to be pretty reasonable. Some of these we're hand-tuning, which I think is where we need to do, moving forward.

Here is where we're at with the model right now, and this is kind of a ten-thousand-foot view, like looking down from an airplane, and I guess the main thing to point out is that we have a functional model that's not crashing, and it's running, and I think it's actually doing pretty well right now. Some of these blue groups are doing -- These are the tunas, and some of the tuna groups are going down, and some are coming up, and we're still kind of working on these here, but what I wanted to talk about, for the committee, is the next steps, where we're going with this.

What we're working on, which I think we're kind of at the frontier, is trying to fit, and calibrate, these spatial models, and so it's

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1 a known deficiency, with spatial models, that we're not able to
2 fit to the data, and so I want to show an example here with brown
3 shrimp, and that plot to the top-left -- The blue dots here, just
4 like on Skyler's presentation, represent the data that the model
5 is fitting to.
6
7 It might be kind of light, but the squiggly lines underneath it
8 show the fitted data, and, for the shrimp groups, it does a really
9 good job, and you can see it captures that trend pretty well, and
10 then the model also is capturing seasonal variability, and the
11 plot underneath it is the Ecospace output, which isn't doing as
12 well, and what you see is that there's no points in there, because
13 Ecospace can't fit to the data.
14
15 Dave Chagaris' group first started doing this, this Ecospace
16 fitting routine, and this was done by Daniel Vilas, in his West
17 Florida Shelf paper, where he developed a routine, which we then
18 took and modified and used for the Suwanee River ecosystem model,
19 where you can run Ecospace thousands of times, and iteratively
20 change parameters themselves, and that's something that we're
21 going to be wanting to do here.
22
23 The other thing that we're working on doing, both maybe
24 quantitatively and qualitatively, is fitting these spatially, and
25 so, for brown shrimp, in the plot in the top-right, it shows a
26 distribution plot, and I think this was put together by Ocean
27 Conservancy, based on SEAMAP data. Underneath it is the calculated
28 habitat capacity from the Ecospace model, which the shrimp groups
29 seem to be doing pretty well, which puts them where they ought to
30 be, and then below it is the Ecospace output.
31
32 What I want to show here is this -- This isn't kind of a final
33 result, but just that we have a good amount of data that we can
34 work on trying to do this with, and so what we're doing right now
35 is kind of manual tuning with this data, and a lot of data has
36 been collated by the Gulf of Mexico data atlas, in the NOAA NCI
37 group, and what we're trying to do is get things kind of fit where
38 we think they ought to be, and a lot of them I think are actually
39 looking pretty reasonable, and so we have phytoplankton blooms,
40 which is being driven by the MODIS data in these nearshore areas,
41 in that top-left, which we think is pretty good.
42
43 Pink shrimp is the next one over, which I want to show as an
44 example, that like there is other literature, and that's from a
45 Drexler and Ainsworth paper, where our model seems to be fitting
46 with habitat predictions from other models, and the last example
47 shows that the menhaden fleet, down in the bottom-right -- This
48 isn't just for functional groups, when we're able to get data about

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1 fishing, landing, and effort, and so this is from the menhaden
2 SEDAR, and we can try to fit our model to help validate, and
3 calibrate, that.
4
5 We don't have data for all the groups, and so, as was brought up
6 in the questions and comments earlier, an area that we're really
7 looking forward to doing is continued validation of bringing in
8 expert and stakeholder knowledge, both scientific experts and
9 local ecological knowledge from the expert fishermen, and this has
10 been done before, and so Jacob Bentley used this approach with
11 Ecopath and Ecosim, where they incorporated fisher knowledge, and
12 they did make better model results, and the way that I foresee
13 this. with this model, is those preference functions that I showed,
14 and so, here, this is just an example for red snapper, but those
15 preference functions for depth and temperature and salinity, and
16 then also placing them in habitat types and reviewing these habitat
17 capacity of where things are.
18
19 Skyler has a term for this that I really like, the red-face test,
20 and are things where we think they ought to be, and the idea here
21 is to do this early and often, so you don't have kind of a big
22 explosion at any point, and it's to be constantly kind of touching
23 base and checking in with people, and does everything kind of look
24 right, and are things where they should be.
25
26 The final section that I want to propose, and I would like to get
27 input, and maybe some of this will be offline, or afterwards, given
28 the time constraints, is where we're going in operationalizing
29 this model, and this is what we see as the way forward.
30
31 There's a quote that I wanted to give from the recent paper by
32 Craig and Link. It says: "The requisite conditions for enhanced
33 operational use of Ecopath with Ecosim to support and inform
34 resource management decisions exists, and these models can
35 contribute to both strategic and tactical management decisions."
36
37 In that paper, they go on and show different case studies where
38 this has been done and then offer criteria for operationalizing,
39 which I adapted here, and the first critical thing that you need
40 is well-defined objectives and then clear tradeoffs, because
41 that's where an ecosystem model has value, is in assessing these
42 tradeoffs, and then you need a management process that can respond
43 to these tradeoffs, and so the models themselves need to be
44 accessible, well-documented, and follow best practices, and then,
45 ideally, you have multiple models, which can help assess the
46 structural uncertainty.
47
48 Then a key component is that you coproduction, and so we get early

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engagement and interaction from scientists and stakeholders and managers, which is why we're here presenting a model that's not finished, and this needs to be collaborative and be able to respond to this direction, and so to be able to iterate and incorporate these, and, finally, as Skyler touched on, you need a rigorous review process, I think more rigorous than just a peer review, I think, in order to be operationalized in management.

The way that we see this is being incorporated in these Gulf of Mexico fishery ecosystem plans, and so, from that document, it states that: "Fisheries ecosystem plans require models of the ecosystem for stakeholders and managers to visualize and make predictions about how fishery ecosystems function." Then, later on in that same page, it says: "Perhaps the most effective use of mathematical ecosystem models is within a hypothesis-testing framework." That's how we envision ecosystem models, and this model, being useful.

It's kind of small, but there's the Gulf of Mexico fisheries ecosystem plan loop, and I kind of distilled that down into those five steps to the right. It's where are we now, where are we going, how do we get there, and then implement that plan, and then, critically, you assess did we make it, and you learn and adjust.

What I'm positing is that ecosystem models, like this one, can help with that learning and adjusting and assessing how do we get there, to assess tradeoffs, to simulate management actions, and then potentially to inform management strategy evaluations.

Again, this, I think, will contribute to this framework, shown by Karnauskas et al., of this kind of increasing complexity of ecosystem approaches to fisheries, ecosystem-based fisheries management, and ecosystem-based management, and so what I want to pose is three research directions that we've been considering, and I think doing this along the way is very useful, because we've had meetings, in the past, before, where we kind of thought that this is the direction that we want to go with the model, and then we've gotten input, from management and stakeholders, that in fact surprised us, which I think is useful, so we didn't get too far down a direction that might produce something that's not valuable.

The first fisheries ecosystem issue that this could address is that the Gulf of Mexico is multispecies, with overlapping fisheries, with bycatch and discard mortality, which is, of course, the issue that this group has been working on for years and years, and will continue to work on, and the tradeoffs that we might be able to assess, some better than others, with ecosystem modeling, is we could address tradeoffs in fishing access, fishing effort,

1 and then discards, and then, also, between fisheries, bycatch
2 issues.
3
4 For instance, if you have commercial net fishing, which is having
5 bycatch from other fisheries, of finfish, that would be potential
6 future yield of other species.
7
8 The decision support that an ecosystem model could help give is to
9 identify times and places where bycatch interactions might be
10 worse, and where they should be monitored and limited, and we could
11 test potential management decisions related to like spatial and
12 temporal opening and closing, or changing these areas, and a
13 strength that should be pointed out from this is that this is
14 within kind of this traditional scope of Ecospace.
15
16 If you remember the Walters 1999 paper, Ecospace was originally
17 developed to look at marine protected area, and so this kind of
18 might fit right within the scope, but a weakness that might be
19 pointed out is, depending on the questions from management and
20 stakeholders, is that the scale might not be appropriate, and so
21 an example that Skyler mentioned before is the Atlantic menhaden,
22 where an ecosystem model was used in that SEDAR.
23
24 What they did is take a more complex Ecosim model and reduce it to
25 a model of intermediate complexity, and then used that, as that
26 lower-complexity model was better able to be operationalized.
27
28 The second fisheries ecosystem issue is that we have forthcoming
29 development, in that we're going to be facing cross-sector
30 management of fisheries, protected species, and habitat management
31 from offshore wind and decommissioning of oil and gas
32 infrastructure, and this is an issue that there's been a lot of
33 interest that we've heard from, and so the plot on the left shows
34 these BOEM lease areas that were announced last year, and the plot
35 on the right shows the four-and-a-half-thousand, or so, I believe,
36 oil and gas infrastructure, oil and gas structures, in the Gulf of
37 Mexico.   Eventually, of course, we'll run out of oil, and
38 everything will be decommissioned.
39
40 Something that I want to point out here is that Europe, and other
41 areas, which have been faster than the United States in building
42 offshore wind farms, has used Ecopath with Ecosim and Ecospace to
43 assess some of these tradeoffs with offshore wind, and so there's
44 been a number of recent publications, from off the north coast of
45 Scotland, off the west coast of France, as well as from Asia, and,
46 to our knowledge, this has not been done in the United States.
47
48 There will be tradeoffs here, of course, with wind and oil and gas

1 decommissioning, and then we have the energy sector, versus
2 fisheries sectors, versus impacts to protected species. Some of
3 the things that we could potentially look at, with the ecosystem
4 model, is that there's reef effects, and questions of production
5 versus aggregation, and then potentially exclusion effects, if you
6 exclude access to fishing in marine spatial areas around these
7 structures, which would be well within the scope of Ecospace, and
8 then there's also been some recent papers looking at hydrologic
9 and primary production effects, due to upwelling and downwelling,
10 from offshore wind farms, and so Ecospace couldn't model that,
11 exactly, but we could connect biogeochemical models to look at how
12 primary production would percolate through that food web.
13
14 These models could help consider designs for reef structures, and
15 then I think an important decision-making strength in decision-
16 making support is kind of the timeliness of this, is that we know
17 we have forthcoming development and decommissioning, and so
18 simulations like this could help direct research and monitoring
19 and experimental programs for what we know is going to be coming,
20 and, ultimately, what we would like to help is inform these
21 managements.
22
23 I just wanted to point out, and there's a link here, that we have
24 a proposal in review for the National Center of Ecological Analysis
25 and Synthesis to form working groups to look at this.
26
27 Again, there's a lot of stakeholder and management interest, but
28 there's no precedent for using EwE in ecosystem impact assessment,
29 and, again, I think there might be issues of scale depending on
30 management and stakeholder interest. For instance, if there's a
31 desire to look at the impacts within those BOEM lease areas, then
32 a Gulf-wide ecosystem model is probably going to be too large to
33 look at that specific area, and so we would want to build new
34 models, probably, adapting these models.
35
36 The last fisheries ecosystem issue that I will consider here is
37 that we're going to be facing wide-ranging, and potentially
38 compounding, environmental stressors from climate change, and so
39 the plot to the left just shows the anomalous year of 2022, in
40 terms of sea surface temperature, which we're expecting to probably
41 just continue to increase, and the plots on the right show a
42 reminder of what these spatial-temporal drivers look like in
43 Ecospace, and we can project this forward.
44
45 We can do this either crudely or using more sophisticated methods
46 of projecting these maps forward into the future, and this has
47 been done by Natalie Serpetti and others, where they looked at the
48 impacts of rising sea surface temperatures and how that could

1 inform long-term ecosystem approaches to fisheries, and so this
2 plot on the bottom -- What I just wanted to show is that what they
3 did is they identified winners and losers from this, and so they
4 modeled out I think it's fifty or eighty years in the future, if
5 you had fishing, and then under the different climate scenarios.
6
7 Most species were losers, and most species fared worse under the
8 worsening climate scenarios, but some species actually did better,
9 and then the last plot, on the right, is gray seal, and you just
10 have to know that gray seals go down, and what's important here is
11 that gray seals weren't directly affected from sea surface
12 temperature changes, but their prey sources were, and so they ended
13 up declining in the model, and so that shows the utility of a food
14 web model, is that it's able to capture that.
15
16 The tradeoffs that we could potentially consider is decreased
17 current yield, versus long-term precautionary management, and I
18 just wanted to point out that it's not just temperature that we
19 could model with climate change, and we could also look at changes
20 in primary production and nutrification, and then, also, model,
21 potentially, the poleward expansion of tropical species.
22
23 A strength of this is that a Gulf-wide spatial scale could
24 consider, potentially consider, these large-scale climate impacts,
25 and then, also, like offshore wind, there is, I think, a
26 groundswell of stakeholder and management support for this, from
27 the NOAA climate, ecosystem, and fisheries initiative, and I think
28 we could also leverage information from the NOAA climate
29 vulnerability assessments.
30
31 Something that is unclear, to me, is how a model like this could
32 be useful for technical decision-making and how this could be used
33 as a decision support tool, and so that's a weakness that I think
34 I would want to -- That we would want to consider, and so the
35 Serpetti paper, for instance, is plotting out fifty to a hundred
36 years, and I think, with this model, we would want something where
37 at least the products could be more useful for management.
38
39 This last slide just shows, ultimately, where we want to go. Our
40 goal is an operational model that supports decision-making for
41 ecosystem approaches to fisheries, ecosystem-based fisheries
42 management, or ecosystem-based management, and, to get there, the
43 key is to have co-produced models, where we have early and
44 iterative direction and input, and also validation, that red-faced
45 testing, and that we can leverage stakeholder knowledge, both
46 scientific experts and then fishers, and then, finally, the goal
47 would be a robust model that can withstand rigorous review that
48 could be used by management, and we picture this being more

rigorous than just a peer review process, and so I give a couple
of examples here of where ecosystem models have been used for
decision-making by management and where they've gone through other
workshop, or review, processes, similar to a stock assessment, or
sometimes using the Center of Independent Experts.

This is our final slide, and there's a lot of acknowledgements,
and, again, thank you for the time and for allowing us to come
present this work to you.

CHAIRMAN BARBIERI: Thank you, Holden and Skyler. Excellent
presentations and a great overview of this process. It was very
informative. I am going to open up the floor to questions, and I
have Trevor over here.

MR. MONCRIEF: Great presentation, and I will try to be quick,
since we're, you know, at the end of the day. I think this has a
lot of applications. I think some of the proposed applications -
- There might be an inability to actually, you know -- It might
not be a viable option, simply because it's not a viable option,
enforcement-wise or anything else, but it can still be used to
inform.

I had a specific question about Slide 54, if we can go back to it.
The menhaden fleet -- This caught my eye, and I know we talk about
menhaden a lot, and it's obviously a big part of it, and that --
The Ecospace model, that fit, has a lot of heat offshore, it looks
like, of land, and is there something missing there, or is it --
Because that fleet -- To my knowledge, it operates a little bit
more in the coastal areas than everything else, and so, if it's
fitting outside of it, you might have like a bigger impact to say
king mackerel and species like that.

DR. HARRIS: I think what's driving that is those depth preferences
for menhaden, and I think what you're pointing to is where we want
to go to, and what we haven't fully done, is going through these
plots and getting inputs in a longer way that's going to take time
of are things where they ought to be, and so some of this, that
we're kind of manually tuning, is based on just FishBase data of
these depth ranges, and that kind of puts things where they are.

For menhaden, I think the depth range is further offshore, I think,
that they probably are, and so that puts them further offshore,
and then the fleet moves further offshore, and so, specifically,
if like, for instance, you have a question of bycatch, of assessing
bycatch, getting things very fine-tuned and specific, for
something like that, it is going to be very important, but that's
basically where we're moving. Again, just to reiterate, these are

1 preliminary plots, and we welcome input and ideas about that.
2
3 **MR. MONCRIEF:** I appreciate it.
4
5 **CHAIRMAN BARBIERI:** Like you said, the whole idea of the co-
6 production, right, that you integrate input from the very
7 beginning, from the get-go, and along the way. Thank you. Any
8 other questions, or comments, for Holden and Skyler?
9
10 **MR. RINDONE:** I know it's late in the day, and Holden will be
11 loitering around, and so feel free to corner and question
12 frequently, if you like.
13
14 **CHAIRMAN BARBIERI:** Go ahead.
15
16 **DR. GRIFFITH:** I would just like to say thank you very much, and
17 I would just like to ask one question. Are you considering
18 incorporating information on like other animals besides fish, like
19 birds and otters and those kinds of things, in these models down
20 the road, and then, of course, eventually humans?
21
22 **DR. HARRIS:** We do have species in that model, and we have birds,
23 and we have turtles, and we have a couple of different whale
24 groups. We have inshore and offshore, and we have dolphins, and
25 Skyler can probably speak better to this, but I think the focus,
26 so far, has mainly been on fisheries, and that's where most of the
27 data has been, and so the questions have been, and the objectives
28 have been, to support fisheries management, and the data has been
29 where we have stock assessment data based on that, and so some of
30 those are kind of in the model, and relatively inert, and then,
31 depending on the questions, they could be fine-tuned better.
32
33 For instance, like, for offshore wind, if there is -- It could be
34 a potential that we want to look at like whale and seabird
35 interactions, just kind of speaking offhand, and I'm not positive
36 we could do that, but, depending on the question itself, we could
37 put better data into that. Thank you, and I will be around for
38 the next two days, too.
39
40 **CHAIRMAN BARBIERI:** Any other questions, or comments, for Holden
41 and Skyler? Before we move to the next item, let me just thank
42 you again, Holden and Skyler, for bringing this before the
43 committee. I mean, I think this is super interesting, and,
44 obviously, very, very relevant, and, you know, we appreciate being
45 given the opportunity, right, to see this in this initial state of
46 development, to provide input, and have a better understanding,
47 and please keep us engaged. You know, come back to see us more
48 often, as things develop, because I think it's really informative,

1 and to keep us engaged, right, in the conversation, and to have an
2 understanding of where this fits is really important, and so I
3 really, really appreciate it.
4
5 With that, I think we can close Item Number IX, and our next item
6 is Public Comment. Do we have any members of the public who would
7 like to have comments to the committee? Just give us a minute,
8 and Jess is checking online. Okay. There is no public comment
9 today, and so we are ready to adjourn for the day, and thank you
10 for a great meeting, great discussion, today. It was very valuable
11 and helpful, and I will see you all tomorrow, at 8:30 tomorrow
12 morning.
13
14 (Whereupon, the meeting recessed on May 2, 2023.)
15
16   - - -
17
18   May 3, 2023
19
20   WEDNESDAY MORNING SESSION
21
22   - - -
23
24 The Meeting of the Gulf of Mexico Fishery Management Council
25 Standing and Special Reef Fish, Special Socioeconomic, and Special
26 Ecosystem Scientific and Statistical Committees reconvened on
27 Wednesday morning, May 3, 2023, and was called to order by Chairman
28 Luiz Barbieri.
29
30 **CHAIRMAN BARBIERI:** Good morning, everyone, both here and online.
31 We are going to start our day-two of the Gulf SSC meeting, May
32 2023, and, before we get started on today's main item, just let me
33 thank the committee for a great discussion yesterday on a variety
34 of not-so-easy-to-discuss topics and brainstorming and trying to
35 come up with solutions to some complicated issues.
36
37 I really appreciate that, and I think I'm going to ask to send
38 out, to the committee, that motion on the black grouper, the
39 shallow-water grouper complex, the motion that Mike Allen and Jim
40 Tolan proposed yesterday, and we haven't voted on the motion yet,
41 and so I don't know if, procedurally, this is allowed, but, for
42 information purposes, send it out to all the committee members, so
43 we can basically think about that issue, you know, and I would ask
44 the committee members to revisit that topic, look through the
45 presentation, all the supporting documents, and I would like to
46 start tomorrow morning with those two items that are left over
47 from yesterday, but, of course, we want to have had enough time to
48 think about those issues and come back with some solid suggestions,

1 or recommendations, for moving forward.
2
3 Depending on how today goes, which seems to sometimes go a little
4 faster, or sometimes not so fast, right, and so, depending on how
5 today goes, if we end up with all the presentations and the
6 discussion all completed today, we might even revisit that today,
7 instead of tomorrow morning, but, looking at the agenda as it
8 stands right now, I would say we should get those two items handled
9 first thing tomorrow morning.
10
11 With that, Ryan, if you're ready, we're going to get started this
12 morning -- Today is going to be our management strategy evaluation
13 workshop, all day, and so it should be a fun, fun day, and we have
14 a lot of great guests joining us today, with a variety of
15 presentations, and all of this was really coordinated, and I want
16 to thank Ryan Rindone, our Chair, Jim, Nance, and Steve Saul, who
17 jumped in and helped get all of these presentations queued up in
18 a way that was the most logical and that would walk us through a
19 number of issues having to deal with the use of management strategy
20 evaluation. With that, Ryan, if you have the scope of work that
21 you can introduce the discussion topics.
22
23 **MANAGEMENT STRATEGY EVALUATION WORKSHOP**
24
25 **MR. RINDONE:** I can do that. This particular scope of work item
26 is particularly short, given the volume of information that's going
27 to be talked about today, but this is something that we've been
28 trying to put together for nearly a year for you guys to be able
29 to start talking about in earnest.
30
31 We're grateful to have Doctors Bill Harford, Tom Carruthers, Adrian
32 Hordyk, John Walter and Cassidy Peterson, and Nikolai Klibansky on
33 for today, to present a series of talks to you, and Dr. Steve Saul
34 is going to be the quarterback, so to speak, to kind of guide the
35 discussions along, and these talks are intended to serve as a
36 primer for management strategy evaluation, including techniques
37 and guiding principles, and they're going to showcase some real-
38 world examples to you that are in development or in use and provide
39 context for the SSC with respect to its place in evaluating MSE on
40 behalf of the council.
41
42 You guys should evaluate all of the materials that are presented
43 and provided, ask lots of questions, and make any recommendations
44 to the council, as appropriate. I think Bill is leading it off,
45 unless Steve wants to say anything.
46
47 **DR. SAUL:** Thank you, Ryan and Mr. Chair. No, and I'm just happy
48 to have all of you here, and thanks for your time and

153

thoughtfulness in putting together the presentations. I think,
before we get going, some of the things for us, as SSC body, to
think about, as we're listening to the presentations, are, you
know, first, getting kind of all on the same page, with respect to
what a management strategy evaluation is, so that we all have a
clear understanding of that process, and then, from there, trying
to understand, and define, what the role of us, as an SSC, would
be in the sort of management strategy evaluation process and our
role in sort of understanding and reviewing these things and the
extent to which we participate in them and where in that process
kind of we come in, versus the full council, versus the Southeast
Fisheries Science Center staff and other stakeholders, the fishing
industry, and recreational fishing community as well, NGOs, et
cetera.

Then, ideally, to try and understand where we may be doing some of
this already, and so within ecosystem work that we do, and some of
that work is MSE-like, or very similar to MSE, and so that's
another sort of point of reflection, as we listen to presentations
this morning, and then what, you know, extent, and what role, MSE
should play in sort of developing management directly or as -- Or
are they better left as a tool for exploration, right, and sort of
general understanding of processes and sort of where that line is.

Then trying to prioritize, you know, where do we -- You know, so
we have this tool, and we understand it, and we sort of define
what our role, as an SSC body is, relative to the council, the
Science Center, the fishing industry community and other
stakeholders, and then, finally, sort of how do we prioritize,
right, and how do we guide the council, and the Science Center, to
prioritize where, and how, this tool is implemented, and when, and
so when is this tool useful, versus when are the current methods
we use at translating stock assessment results to management advice
useful, and so those are just some of the primers that, you know,
I would like to sort of discuss, as we go through the
presentations, plus any and all other points, and issues, and
questions, that come up during the discussion. Sorry for that
academic interlude from the professor over here in the corner.
Thank you.

CHAIRMAN BARBIERI: No, and that was great, Steve. Thank you.
Bill, you will get us started there?

PRIMER, TECHNIQUES, AND CONSIDERATIONS

DR. BILL HARFORD: Absolutely. Good morning. Thanks for inviting
me to participate in this discussion, and so my role in today's
discussion of MSE is to provide a high-level overview of a variety

of the key concepts involved, and my hope is that this presentation
sets up this group to talk about more technical things, what I
suspect will be more technical things, through the rest of the
day.

There are two parts to the presentation, as I mentioned, some high-
level concepts, and then I will get into sort of a very light
technical introduction to the steps involved in conducting MSE, or
management strategy evaluation, and so we'll start with a simple
overview.

We'll start with a definition, and so MSE is used to simulate the
interactions between data collection, data analysis, or stock
assessment, and fishery regulations. What it is intended to
achieve is it highlights how well these interacting parts can be
expected to result in the achievement of management objectives,
and I will explain that as we move forward through the
presentation, and just a note, in terms of why I put "data analysis
and stock assessment" in parentheses, is this approach can be used
for both what we might consider data-rich and data-limited design
of management strategies for those data-limited stocks, as well as
data-rich, and so we might think of this as using the stock
assessments that you're familiar with, in the data-rich context,
but there also might be alternative approaches where we do some
form of data analysis, and not a stock assessment necessarily, but
some form of data analysis to support the subsequent decision-
making for data-limited stocks, and I will talk about all of these
in a little more detail as we move forward.

At a very broad, broad level, we might think of the application of
MSE in two different approaches. We might think about tactical
guidance, and that is designing very specific management measures,
for a specific fishery, or set of fisheries, and that is typically
done through stakeholder engagement, in public forums like this,
and is very involved and detailed.

There is another facet of application of MSE, which we might refer
to as strategic guidance, or this might be referred to as sort of
the desktop exercises that some of us are familiar with, and this
is generally where an analyst can address some technical issue,
and you know this often is found in the primary literature, and we
see a lot of this work, and I think everybody on the panel today
has done work like this as well, and so just two flavors to
highlight, to get us started, and I think we're going to talk more
about this later.

To ease us into what we're talking about here, in terms of MSE, I
have provided this sort of simplified representation of what might

1   be called a fisheries system, and, when we're talking about
2   simulating this system, we're talking about simulating the
3   connections between all of these parts, and so we'll start in the
4   top-left, with the fish population, the fish stock, and we
5   represent fish population dynamics, and we would, obviously,
6   connect those dynamics to what we refer to as monitoring, and
7   what's important here is that we simulate the observation of data,
8   which means that we simulate data collection, which means we
9   simulate imperfect observation of what's happening with the fish
10 stock. We're trying to represent that as close to reality as
11 possible, and, again, the purpose here is to evaluate management
12 strategies in their entirety, including the challenges that come
13 with, or the realities that exist, with data collection schemes,
14 and we work with those realities in making decisions.
15
16 Of course, that information feeds into stock assessment, or data
17 analysis, as I mentioned, and the outputs of those stock
18 assessments would feed into what is referred to as a harvest
19 control rule, and this is the decision-making platform, in terms
20 of setting management, or adjusting management, regulations, like
21 TACs, or total allowable effort, or what have you, and this group
22 is very familiar with this process, and this is where -- This is
23 where facets of OFL, ABC, et cetera, would come into play, in terms
24 of how you design your harvest control rules.
25
26 Then, of course, that affects the fishery, in terms of
27 implementation of those, and changes in management measures, and,
28 of course, fishing affects the fish stock, and so the cycle
29 continues, and so we are attempting to simulate this entire
30 decision-making process and its linkages to the fishery and the
31 fish stock.
32
33 Okay, and so what can we achieve here then? Well, you know, just
34 a few thoughts on what this sort of analysis can produce, and the
35 first is scientific defensibility, and what we're really doing
36 here is we are designing and testing a management strategy, or a
37 management procedure, prior to its real-world implementation, and
38 that is really the goal here.
39
40 In doing that, what we can achieve, potentially, is buy-in, which
41 means that we have likely created capacity for and knowledge
42 sharing among stakeholders and decision-makers and scientists, and
43 what that leads to, hopefully, is informed decision-making, and
44 it's important to point out what MSE really is, in terms of its
45 product, and it's a form of tradeoff analysis.
46
47 What we find is that not all harvest strategies will produce the
48 same outcomes, of course, and there are, ultimately, tradeoffs

1 among those strategies, and, really, the purpose here is also to
2 illuminate those tradeoffs, so that the council, and other
3 decision-making bodies, can make informed decisions.
4
5 It also tends to lead to cohesiveness and coherency, and this gets
6 back to the idea that we're explicitly simulating the connections
7 between monitoring and assessment and decision-making, and these
8 are not disconnected from one another, and so we're taking a more
9 holistic approach to the way that the scientific information
10 informs decision-making, and the connections between those are
11 very important, and so we're exploring how the strategy, as a
12 whole, will perform, given all the potential issues that might
13 arise, data quality, challenges with stock assessment, and then,
14 often, the aspects of translating that information into a good
15 decision.
16
17 Finally, and I think I touched on this already, but transparency,
18 and it's worth reiterating. A harvest strategy is a pre-agreed
19 decision-making process. This produces transparency, because
20 stakeholders know what to expect, and, of course, there are
21 opportunities for involvement, not only -- From the outset of the
22 design of these things and not simply at the end, in terms of
23 reviewing and providing guidance on which management procedures
24 are right for stakeholders, but they can be involved right from
25 the conception of this process.
26
27 Finally, this idea of discovery, and, from the perspective of an
28 analyst, what we often find, when we conduct MSE, is that we
29 illuminate problems, and we identify issues that persist within
30 the framework, the decision-making framework, that we're trying to
31 design, and so I have said, at the top of this slide, that
32 conducting MSE is an iterative process, and what I mean by that
33 is, and this is an important issue for this group to be aware of,
34 is that, when you set out to conduct MSE, and you expect that you
35 will produce a final product a few months down the road, you may
36 actually be only on the first iteration.
37
38 There is often a need to come back and refine and discard core
39 strategies for better alternatives, and so, as a process, as a
40 scientific process, MSE is, in itself, iterative, and it really
41 creates some interesting, and valuable, opportunities for
42 collaboration between all kinds of experts and decision-makers and
43 stakeholders.
44
45 I am going to shift now into walking you through a few steps in
46 the MSE process, and so this is set up a six-step process, and so,
47 at the outset of MSE, it's really critical to identify management
48 objectives. The management objectives essentially work as the

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standard against which you're going to evaluate the performance of the management strategies. In other words, what do you want to achieve? MSE analysts take these management objectives and translate them into quantifiable, measurable metrics, which we call performance metrics, which I will come back to a little later.

The second step is to start to think about the key uncertainties, and this is really critical, because what we're generally trying to achieve is identify a management strategy, or a management procedure, that works in the face of those uncertainties, and I will talk a little more in detail about uncertainties in some subsequent slides, and so we'll come back to this idea, but, at the outset, identifying the really critical issues that exist, the unknowns, in terms of managing your fishery, is very important.

The third step is then to take that information and develop an operating model, and an operating model is just a way of saying -- An operating model is just a way of describing fish population dynamics in a simulation context, including characteristics of the fishery and the way in which the fishery would implement any management measures.

Once you have sort of a structure, an algorithm, you have to parameterize that, and, again, this is a place where uncertainties really come into play. Again, I will come back to the uncertainty issue a little bit later. After you have an operating model, what you do is you tend to identify a set of candidate management strategies, and these are the combined approaches to monitoring, and it's linked to assessment, and it's linked to a harvest control rule.

Finally, of course, the last step is to simulate and interpret all of this information, and this is where Step 6 links all the way back to Step 1, where those management objectives that have been translated into performance metrics are the product of the MSE now, and we can examine how well management strategies perform in relation to those performance metrics, and, thus, evaluate whether management objectives are likely to be achieved.

Let's return to our fisheries system, and I'm just going to walk us through how the connections are made between this representation and the steps involved in the process.

Okay, and so identifying management objectives, and these are the formally-stated goals of the fishery, and this might -- This presentation is created sort of for a variety of audiences, and this might not be as big of a challenge in the United States as it might be in other places, given the Magnuson-Stevens Act and the

1 National Standard Guidelines, et cetera, and so we might be in a
2 very good place to define management objectives. Where this
3 becomes important is the translation to performance metrics that
4 are quantified during this simulation.
5
6 The second bullet point is important here, and so I'm just going
7 to read it. Ideally, management objectives, or their translation
8 into performance metrics, are measurable, with timelines for
9 achievement, and that means that, often, industry is concerned
10 with what's going to happen in the next few years, and ecologists
11 may be more concerned about the transition to long-term stable
12 states, but both of these sorts of timelines for achievement of
13 objectives are very important, with stated levels of acceptable
14 risk or acceptable levels of performance.
15
16 This allows us, at the outset, to identify what would be considered
17 acceptable, or satisfactory, in terms of identifying management
18 strategies that might be suitable for a given fishery.
19
20 Just some context here, and so some very basic examples of what we
21 mean by performance metrics, and that actually should say
22 "performance metrics measures", and "metrics" is better. Stock
23 status, and so we, of course, might be interested in the
24 probability of a stock being overfished, and that's very familiar
25 to this group, and, of course, we're concerned with avoiding stock
26 collapse, and so that might be measured as the probability of
27 avoiding some lower-limit reference point.
28
29 Achievement of high yield, and we can measure catch in relation to
30 some theoretical optimum, such as MSY, and catch stability is
31 usually a concern, and so a performance metric there could be
32 interannual variation in catch, and how stable are the catches
33 from year to year. The last one is a little bit more abstract,
34 but this idea of sometimes we are concerned with the precision of
35 the quantities used in decision-making, and this is another place
36 where MSE can be used to actually evaluate whether it's worthwhile
37 to improve data collection schemes, and with the expectation of
38 improving precision of quantities, and so it depends on the
39 context, sometimes, of why we're doing the MSE.
40
41 I mentioned tradeoffs, and the plot on the right shows the very
42 simple concept of the tradeoff that we usually see between high
43 catches and high biomass, and these tend to be a conflicting
44 tradeoff, in terms of both not being achievable and there has to
45 be some balance achieved between these, of course, and the second
46 bullet point says to focus on a few performance metrics that are
47 understandable, and this usually means focusing on catches,
48 biomass, and variability in catches, and I think that bullet point

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1   is a bit misleading.
2
3   What I would say, in fact, is I think that there has to be a
4   balance between, on the one hand, a few performance metrics that
5   are clear and understandable to everyone and the need to embrace
6   the complexity of some performance metrics, as needed, to provide
7   a complete and thorough analysis to support decision-making.
8
9   Finally, the third bullet point is also very important here, and
10 it says -- At the bottom of that bullet point, it says "options
11 and anticipated consequences". I put that there as a cue to point
12 out that, through MSE, when we conduct MSE, and we end up with a
13 set of management options, and their anticipated consequences,
14 through the performance metrics, we tend to be a in place where
15 we've shifted the thinking from providing a single recommendation
16 to managers to providing a set of options and their anticipated
17 consequences.
18
19 That might differ, somewhat, from the responsibilities to provide
20 a single recommendation to the council, and it is very important
21 that -- That might come later, but it's very important, in MSE, to
22 illuminate the set of options, and their consequences, so that
23 everybody involved can understand the tradeoffs and speak to what
24 would work best for them.
25
26 Okay, and so this second step, on key uncertainties, and so this
27 is where we get into this in a little more detail, and it's very
28 important to identify the places, or the key uncertainties, that
29 are thought to have potentially important influences on the
30 performance of a management strategy.
31
32 What we find, sometimes, is whether a management strategy performs
33 well is dependent on how the operating model is configured, and
34 the configuration of the operating model might change based on our
35 degree of certainty in different parameters. That presents a
36 problem, because what might seem optimal is dependent on an
37 assumption made in an operating model, and so the place that we
38 try to get to is to explicitly lay out all of the uncertainties
39 and evaluate how each management procedure performs against that
40 operating model, and, at the end of the day, what you're trying to
41 do is you're trying to understand how to cope with that
42 uncertainty.
43
44 Instead of reducing uncertainty, the place where we end up finding
45 ourselves, with MSE, most often, is asking can we make a good
46 decision in the face of uncertainty, and, typically, that means
47 selecting one of those management procedures that functions in a
48 satisfactory   way   across   that   range   of   operating   model

1 configurations, or across that range of uncertainties. I am going
2 to touch on this a little more in a subsequent slide, this slide
3 right here.
4
5 Just some examples of uncertainty, and I think that this will be
6 familiar to this group, uncertainty in life history parameters, of
7 course, uncertainty in historical trends and abundance in catches,
8 and that's another big one, and the third bullet point is rather
9 specific, but it represents the case where we might have
10 environmental influences on catchability, and I just included that
11 to highlight that environmental influences on how we perceive
12 what's happening with the fish stock often enter into the equation
13 in a big way, as you start to get into the weeds of MSE, in many
14 cases.
15
16 Getting back to this idea of what do we do when have management
17 procedures that perform differently under different circumstances,
18 what might be of interest here is the issue of robustness, and a
19 management strategy is said to be robust to a key uncertainty when
20 it results in satisfactory performance across all plausible
21 operating model configurations, and so this might be something to
22 keep in mind, moving forward, in terms of identifying, or
23 selecting, suitable management strategies.
24
25 The third step is developing an operating model, and so, as I
26 mentioned, this consists of the fish population dynamics, the
27 characteristics of the fishery, and characteristics means things
28 like the selectivity of the fishery and the precision with which
29 management tactics are implemented, and this is sometimes known as
30 implementation error, and so the most common questions that might
31 come up, when we're designing an operating model, at the very
32 highest level, is how do we develop an operating model in data
33 moderate, or data-limited, circumstances, and so the idea being,
34 if we can't do a stock assessment, which is functionally
35 representing the population dynamics, then how can we build an
36 operating model? I will touch on that in a second.
37
38 The other typical question is how do we use existing information
39 to build an operating model, and this is you may already have a
40 stock assessment, and a lot of effort and thought has gone into
41 that, and, of course, we don't need to abandon that really
42 excellent information to build an operating model, and I will show
43 you on the next slide.
44
45 In a data-rich case, at the very highest level, I will simply say
46 that you can use your complex stock assessment as the operating
47 model, and so all of the work that's gone into designing the stock
48 assessment can be translated directly into an operating model. I

1 suspect we'll hear more about that later today.
2
3 In the data-moderate, or data-limited, case, we're dealing with
4 greater uncertainty, but it is certainly possible to create
5 meaningful operating models, through a process that involves
6 gathering any information that we might have on the fishery,
7 historical patterns, trends, what we know about the life history,
8 and going through a sort of model-tuning process, and there are
9 various flavors of this that we can work through, but, essentially,
10 you can build operating models, or sets of operating models, that
11 represent the plausible range of population dynamics, or other
12 uncertainties related to a fish stock, even if you can't perform
13 a complex assessment today on that fish stock, and that is really
14 useful, because then we can use that to test simple management
15 procedures, indicator-based approaches and data-limited-based
16 approaches.
17
18 Selection of parameters, and I think I've covered this, but what
19 I really wanted to get at here was how uncertainty can be
20 represented in MSE at a very high level, because I think that this
21 is a meaningful thing to understand.
22
23 There are generally, in broad strokes, two approaches. Some
24 parameter that is uncertain can be represented as a distribution,
25 and, when we run the analysis, values of that distribution are
26 drawn, permutations, and they are propagated into the simulations
27 to create the range of plausible outcomes, and that's what I'm
28 showing you on the top, and I think you're going to hear a lot
29 about that approach today.
30
31 In other cases, we may come up with what I have called discrete
32 scenarios, and you might call these states of nature, or just
33 scenarios, and so the example that I have provided is perhaps we're
34 unsure about the history of the biomass trend in the fishery, and
35 so we may come up with a trend that is declining historical biomass
36 and a second, or alternative, to examine that has a stable trend
37 in historical biomass. I think what you will find, when analysts
38 work through these problems, is they use some combination of both
39 of these approaches to produce the analysis, but just to be aware
40 of this.
41
42 CHAIRMAN BARBIERI: For those of you online, just to let you know,
43 we're having a little bit of a technical issue here that Jess is
44 trying to address, and so we're going to get back to the
45 presentation momentarily.
46
47 DR. HARFORD: Okay. We're going to talk about the design of
48 management strategies, very briefly here, in one slide, and so,

1   again, this consists of three parts and how they interact. We
2   talk about the various monitoring programs, the way an assessment
3   is conducted, and the way information produced by the stock
4   assessment is fed into a harvest control rule.
5
6   An important point about a harvest control rule, or an HCR, is
7   that you can really think of it as controlling the degree of
8   management responsiveness to prevailing conditions, and that means
9   the frequency at which it is applied, the degree to which you're
10 fine-tuning things like TACs, and the coarseness in the adjustment
11 of those measures, et cetera, and that all goes into the design of
12 a harvest control rule.
13
14 I have an example here for you, and, now, I tried to think of the
15 simplest harvest control rule that I could think of that utilizes
16 information from data analysis, and this is not a good harvest
17 control rule, okay, but it's just an example, and so let's set
18 aside the idea of stock assessment, for a minute, and just think
19 about this really simply, and let's just say that we have a
20 fishery-independent survey of biomass, and no assessment is made.
21 Instead, we look at the survey and make a decision, in terms of
22 whether we should adjust the TAC, and so it could consist of two
23 states.
24
25 If the fishery index is above some target level, we might multiply
26 last year's TAC by 1.1, and, in other words, increase it by 10
27 percent and set that TAC, or, if the survey index is below some
28 target level, trending downwards, we might multiply last year's
29 TAC by 0.9, and, in other words, reduce it by 10 percent, and you
30 could visualize how, each year, you're making -- Or every few
31 years, you might make an adjustment in TAC, and this is not a great
32 approach, but it's a concept.
33
34 Okay, and, finally, in some of the concluding slides, I would just
35 like to make some contrast between stock assessment, which we are
36 all familiar with, and MSE, and so MSE replicates management
37 responsiveness to changing conditions. That is a bit different
38 than stock assessment projections, which are commonly used to
39 forecast, or project, the effect of constant management into the
40 future, or we could think of this as constant fishing mortality,
41 F, or a constant TAC into the future.
42
43 Instead, what MSE is doing is it is simulating that entire
44 decision-making process. The council is not going to set a
45 constant F for the next fifty years. They are going to rely on a
46 stock assessment today, a decision made in the near future, and a
47 year, or a few years, down the line, updated monitoring
48 information, an updated stock assessment, and then an updated

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1 decision, in terms of a TAC, and you already do that.
2
3 That is what MSE is simulating, that entire decision-making
4 process, and so the little graphic shows a decision made in year-
5 one, and a TAC is implemented, and, in this example, it operates
6 on a five-year decision interval, and so, five years later, we
7 take the updated information, and we update the stock assessment,
8 and a new decision is made, and that's what the graphic is
9 highlighting.
10
11 Just, also, credit where credit is due, and I borrowed a couple of
12 these talking points from Tom and Adrian's material, and so I think
13 -- But I just wanted to echo these points, because I think they're
14 really valuable. Stock assessment provides immediate guidance,
15 today, right. However, the point here is that we don't know
16 whether this guidance, or this advice, will continue to be reliable
17 in the long-term, right, and so what MSE is doing is it's
18 objectively focused on whether that repeated management advice, on
19 some interval, over many, many years, results in achievement of
20 management objectives, and so, in other words, MSE simulates
21 recursive decision-making over time.
22
23 Stock assessment is focused on scientific accuracy, and that makes
24 sense. MSE is focused on achieving successful management in a way
25 that is robust to uncertainties. I think that sums up the main
26 talking point of this presentation.
27
28 Finally, once we have gathered all of this information, and MSE is
29 really a simulation exercise, where we evaluate each operating
30 model configuration, and, as I mentioned, those configurations
31 could be based on statistical sampling distributions, or they could
32 be designed based on discrete states of nature, or some combination
33 thereof, and each of those is evaluated against a candidate
34 management strategy, and the results are presented, as I've
35 mentioned, in terms of performance metrics that illuminate the
36 tradeoffs between the different strategies.
37
38 This is the final slide, and this just, in a very simple way,
39 highlights the way results can look, just one example, just to
40 give you a flavor, and so there are three management procedures
41 presented here, and each column, in the graphic, is a different
42 management procedure. For our purposes in this talk, it doesn't
43 matter what these management procedures are, but just understand
44 that there is three different ones, and each row represents a
45 performance metric.
46
47 I want to start on the right-hand column on the middle row, and we
48 can see that that management procedure produces a very high and

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1 stable biomass, but, if you look at the bottom row, the bottom row
2 is yield, and it does so at the expense of yield, and so there's
3 an obvious tradeoff there.
4
5 If you look at the two columns on the left, the left and the
6 middle, if we follow that same pattern, and if we look at the
7 middle row now, we can see that we don't get as high biomass, but
8 biomass is sitting somewhere around the ratio of B over BMSY of
9 one, and so that might satisfy a management objective very well
10 there, and, correspondingly, on the bottom, in terms of yield, we
11 get higher, and more stable, yields, and so this is just an
12 example, a simple example, and we're going to get into much more
13 technical detail, I think, in the subsequent presentations, but
14 this is a very simple example of the kinds of information that
15 comes out of MSE, and I believe that is my last slide, and so I
16 can probably leave it there, so we can look at that one a little
17 bit. Thank you, Mr. Chairman.
18
19 **CHAIRMAN BARBIERI:** No, thank you, Bill, and, Steve, I don't know
20 how you want to handle this, if we want to have questions and
21 discussions now from the get-go, or we're going to have a more in-
22 depth discussion, right at the very end, that's more structured,
23 I would say.
24
25 **DR. SAUL:** Either way. If folks have questions, or they want
26 clarification now, maybe it's easier to handle it that way, and
27 then kind of have a higher-level kind of conversation, toward the
28 end, that addresses some of the points that I made, the
29 introductory points that I made. However people want to do it.
30
31 **CHAIRMAN BARBIERI:** That sounds good, and so let's limit, for the
32 presentations, that are just clarification questions relative to
33 the specific presentation, to each one of the presenters, and then
34 we're going to have a more in-depth, structured discussion at the
35 end, that Steve will guide us through, and so any questions from
36 the committee? Jim Tolan.
37
38 **DR. TOLAN:** Thank you, Mr. Chairman, and great presentation, and
39 this last slide, to me, is really illuminating, and the question
40 I have is, at the very end, when you're evaluating these three
41 different strategies, is there an objective, quantitative way to
42 make that evaluation, or does it just come down to professional
43 judgement, looking at, you know, how I'm trading things off? Thank
44 you.
45
46 **DR. HARFORD:** That's a really important question, and it's not
47 professional judgement. At the outside of this process, and Step
48 1 was defining management objectives, and that becomes critical,

1 because while, in this last slide, I haven't explicitly said what
2 management objectives we're comparing against, ultimately, those
3 would be defined, and you could identify which of those strategies
4 meet, or exceed, your objectives, and so the process is not meant
5 to be subjective, based on the analyst's interpretation, or
6 viewpoints, and it's meant to reflect the values, and the
7 objectives, that are brought forth by stakeholders and decision-
8 makers, and we try, to the extent possible, to explicitly represent
9 those objectives and values in the way we present the performance
10 metrics.
11
12 **CHAIRMAN BARBIERI:** John Walter.
13
14 **DR. JOHN WALTER:** Thank you, Mr. Chair. Good morning, everyone.
15 John Walter, Southeast Fisheries Science Center, and Jim brings up
16 a really good question about who makes the decision on what
17 management procedure, and I think that's something that we'll go
18 into in a bit, but, ultimately, because it is about tradeoffs that
19 are likely going to be the purview of the council, to ultimately
20 make that decision, as they make the decisions on what the annual
21 catch limits should be, under advisement from the SSC on what the
22 allowable biological catch is.
23
24 In partitioning those rules and responsibilities, there is the
25 biological must-pays that the SSC says, yes, this meets those
26 things of not overfishing, and having an ABC that meets those, and
27 then the council has to make the decision on the tradeoffs that
28 are inherent in terms of things related to yield or risk, and that
29 is where -- Ultimately, that decision is going to be the council's,
30 and selecting one of those -- If the full power of the MSE is used
31 for binding management advice, the council is going to choose one
32 of these three management procedures, in this case, which is going
33 to represent that tradeoff space and encompass their concerns about
34 risk, yield, et cetera, and the other operational management
35 objectives, and that's a process that I think needs to be a
36 discussion point, and I will go into that, in terms of how we fit
37 this into basically our MSA framework, but I think this is sort of
38 a good preface to that. Thanks.
39
40 **CHAIRMAN BARBIERI:** Thank you for that, John. Trevor.
41
42 **MR. MONCRIEF:** Mine is real quick, and I really appreciate starting
43 at a high level and delving down into this, so I can make sure
44 that I have a good understanding of it. I guess where I'm kind of
45 -- Maybe a connection will establish a little bit later on, but
46 what I'm kind of missing here is that, you know, our goal, when we
47 run this, it's to get a number, right, but, in an action, when
48 it's actually put into, you know, implementation, right, to look

1 at species that this will be applicable to, some highly-
2 controversial species, and some that have undergone numerous
3 management changes and everything else, and that number translates
4 to days, and days, inherently, are what is implemented as let's
5 just say the management strategy, and then it's implemented year-
6 by-year, and those catches fluctuate wildly.
7
8 I know we talked about, in there, being able to account for
9 uncertainties in removals and everything else, and I guess this
10 probably is not a clear question at all, and I'm just trying to
11 express my thoughts, and I'm having a hard time reconciling coming
12 up with the best strategy, in terms of removals, or catch, what
13 that number would be, and then, you know -- Essentially, we can
14 come up with a number, but, at the end of the day, we implement
15 that number by the number of days of a fishing season, and then
16 that number starts to fluctuate all over the place, and so we
17 harvest below it sometimes and harvest well above it sometimes,
18 and I am just trying to figure out the actual side of it, when the
19 rubber meets the road, but maybe a case example that comes up, or
20 something, will help me connect that.
21
22 **CHAIRMAN BARBIERI:** This is -- If I might step in for a second,
23 but, just in the interest of time, and us moving this forward,
24 and, you know, I think this is a very good point that you brought
25 up, Trevor, but I just think this is more a general discussion of
26 the use, right, of MSEs, and how it fits into our regular, you
27 know, fisheries management framework, right, and governance
28 structure that we have in place, and so I would prefer, actually,
29 if you write this down, so we don't forget about it, and that we
30 revisit this during the discussion that, you know, Steve is going
31 to be moderating later, because we might have, you know, some
32 examples that are addressed in there that will help you build on
33 that point. I have John. No? Okay. Josh.
34
35 **DR. KILBORN:** Thank you. Great presentation, Bill, but I'm a
36 little confused about -- You have that one slide, on I guess Slide
37 26, talking about the difference between MSE and stock assessment
38 projections, and there is that kind of additional arrow, you know,
39 five years in, where it looks like there's another decision being
40 made, and then, on the last slide, you show some like fifty-year
41 projections, or a hundred-year projections, and so I'm trying to
42 reconcile those two slides in my brain, and I can't do it, and so
43 I was hoping that you could help me kind of understand, a little
44 better, the difference between these projections on the last slide
45 and that slide that you're showing on the screen right now that
46 says, no, they're not the same thing.
47
48 **DR. HARFORD:** Yes, that's a really important point of

1 clarification, and so let's start here, and, in this case, a new
2 decision is being made every five years, but, of course, we could
3 imagine a new decision being made every year, if that were the way
4 in which management should proceed, and so let me jump ahead to
5 the last slide and connect that for you.
6
7 Okay, and what's not shown on this slide is the decision that's
8 being made, and this is only showing the outcome of those
9 decisions, okay, and so, in fact, this is not a projection of
10 constant fishing mortality, and this is the outcome of making a
11 new management decision every year, okay, and so that's just not
12 shown here, but this is just the product of that, in terms of
13 biomass and catches, et cetera.
14
15 **DR. KILBORN:** Thank you.
16
17 **CHAIRMAN BARBIERI:** Okay. Any other direct questions on this
18 presentation for Bill? Nothing online, Jess? If not, then I think
19 we are ready to move on to the very interestingly titled
20 presentation of "Flavors of MSE" by Dr. John Walter and Dr. Steve
21 Saul. I am -- John, you have known me for a long time, and, you
22 know, I am a fan of analogies that relate to food, and so Flavors
23 of MSE hits me right in the heart, and I appreciate it.
24
25 <center>**FLAVORS OF MSE**</center>
26
27 **DR. WALTER:** Well, it's supposed to hit you in the stomach, but
28 maybe we aimed a little high. Good morning, everyone. John
29 Walter, Southeast Fisheries Science Center, and I'm the Deputy
30 Director for Science and Council Services, but, today, I'm probably
31 speaking more as the western bluefin tuna rapporteur, in terms of
32 having helped to shepherd through a management procedure,
33 basically from nearly the start to its actual finish and adoption
34 by the ICCAT Commission in November, and so I will use that as a
35 case study for how that process can go through a decision-making
36 body, from the science to the decision-making, and I think that's
37 another segment of the agenda. Mainly, right now, I'm focusing
38 just on the flavors of the MSE.
39
40 This is a presentation that I gave to the Gulf Council a month
41 ago, and I will probably bounce -- I will need to bounce around a
42 lot, and I've got the same presentation, and pardon me, and I
43 didn't really reconfigure it to meet specifically this agenda, and
44 so it will have to be a little bit of a bouncing around.
45
46 One of the things that I think Bill gave a great presentation of
47 was sort of the basics of MSE, and, unfortunately, there is a
48 little bit of jargon that people have to gain some familiarity
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with as we move into using these and incorporating these into our
framework, and, obviously, knowing what management strategy
evaluation is is essential, and then what a management procedure
is, and the management procedure -- Sometimes people call it a
harvest strategy, or a catch control rule, and it's actually the
entire recipe for setting the catch, and so it's everything that
goes into it, including the tactical management actions that
actually do the management, as Trevor was saying, that there is an
annual catch limit, but the thing that's doing the action is
actually something else, and maybe it is actually days of fishing,
and so all of that would be in the recipe.

The management procedure would be setting out that recipe, and, in
the case of how it might fit into our current framework, that
recipe could be written down in a framework amendment, or something
like that, and then, each year, or every two years, that recipe
run, and then the ABC and ACL derived from it, and there is some
fast-tracking processing that would allow that to happen
relatively quickly, and that's a presentation that our Executive
Director gave at the council, on how some of these things could be
streamlined through the rulemaking and the council process.

Once the recipe was agreed upon, then the annual catch limit would
therefore be derived, by applying that recipe on whatever the
predetermined intervals are.

The management objectives, as Bill went over, those are the
formally-adopted goals for the fishery, and, in many cases, we
already know what those objectives are, and they achieve maximum
sustainable yield, but, in a lot of cases, those goals really have
yet to be defined, and I think we're beginning to evaluate that
solution space with things like optimal yield, which we really
haven't well defined what optimal yield, which it's defined as
MSY, as decremented by relevant social, biological, ecological,
and environmental factors, and that's entirely unclear, what those
are, and I think that's something that we may want to address
through the FEI process, and that is one of the FEI, a fishery
ecosystem initiative, ideas, is to chase optimal yield and try to
get what that might mean and how we might find the space that
becomes optimal yield.

Then interim assessment, and we'll hear a great presentation from
Nikolai about applications of interim assessments, and we're
already using them, for a number of species, and it is sort of an
MSE-lite, in the sense that it's not always fully simulation
tested, but it's a bridge between a full management procedure and
stock assessment, because it's essentially modifying a stock
assessment output based on an indicator.

1
2 My outline, and I'm going to jump around a whole lot here, and I
3 will talk about the first challenges here, and then I will move to
4 Section 6, the steps forward, which will be flavors of MSE.
5
6 The take-home message, and this is the message that I gave to the
7 council, and I think it's, unfortunately, a little bit putting the
8 cart before the horse to speak to the council before the SSC, and
9 we generally want to speak on the science issues to the council
10 first, and it just happened to be that, in the timing of things,
11 that the presentation went to the council first. I think, if the
12 council members took away nothing more from our presentation, then
13 hopefully they took away these three messages, that management
14 procedures developed through a management strategy evaluation
15 allows the council to test management before it goes into place,
16 and I think that's what Bill pointed out, is we rarely actually
17 test our management, to determine whether it works, given many of
18 the uncertainties.
19
20 If I am council member, having to make these weighty decisions, I
21 sure as heck want to be able to say that it is robust to things
22 like environmental uncertainty, and it's robust to uncertainties
23 in the basic data collection, or in the implementation process,
24 and those are the kinds of things that I want to be able to say,
25 okay, yes, when I put this into place, it's likely to work, and I
26 think that's good peace of mind, both for an SSC member and giving
27 that science advice, as well as for a council member and anyone
28 involved in the process.
29
30 Then why management procedures, and I think I will go into what
31 are some of the key challenges we're facing, but one of the biggest
32 things that's going to happen is the environment is going to change
33 in the future. We're already seeing that non-stationarity that
34 challenges the fundamental assumption of our stock assessments
35 that our benchmarks are constant, that we have stationary
36 benchmarks. If those change, and the basic productivity of the
37 system changes, it's going to be really hard to estimate what those
38 benchmarks are when things are changing.
39
40 We may not actually be able to estimate them, because they may be
41 moving targets. How do we give management advice in that? Well,
42 we, ideally, simulate test a management procedure that's robust to
43 changing dynamics, and I will explain the bluefin tuna one, which
44 actually has some pretty severe environmental changes built into
45 the operating models, and the management procedures were
46 simulation tested to be able to account for that. As I said,
47 that's probably one of the first climate-ready management
48 procedures that's been adopted to-date.

1
2 Then there's the ability to incorporate, more explicitly, a lot of
3 diverse management objectives that I think we're realizing that
4 we've got very diverse fisheries, diverse stakeholder groups, and
5 they don't always want the same thing. How do we find that space
6 where everyone is equally unhappy, and I think, in this case, we've
7 got a recreational fishing community who might want something
8 different than the commercial fishing community, and recreational
9 fishing communities may want access and opportunity, and
10 commercial fisheries may need stability in yield, and how do we
11 find that space across those competing objectives, and then there's
12 a number of other objectives that we are not explicitly accounting
13 for.
14
15 Then, I think, in terms of how we apply the right tool for the
16 job, we need a clear objective, before we apply MSE, and we want
17 to match the resources to the scope of the problem. MSE is neither
18 cheap nor easy in its full stakeholder application, and so we want
19 to reserve its full power for the highest-priority situations.
20
21 Some of the key challenges are I talked about optimal yield, and
22 we actually don't quite know what it is, and we think we want it,
23 but we aren't quite sure how we're going to get there, and non-
24 stationarity, ecosystem-based fisheries management, which is
25 explicitly incorporating, or considering, ecosystem things, and we
26 heard a great presentation from Holden yesterday on ecosystem
27 models, and perhaps those allow us opportunities, as maybe
28 operating models, to test management procedures that are robust to
29 ecosystem considerations, and then tactical management actions,
30 and we're always challenged by allocations, and allocations take
31 up a tremendous amount of bandwidth at the council, and a lot of
32 our management actions, such as size, bag limits, area-specific
33 management, are things that we might want to simulation test before
34 we put into practice.
35
36 In fact, a lot of the framework and outputs of MSE fit very well
37 into the necessary scoping that would occur with any rulemaking,
38 where you've actually got to evaluate the economics, the social,
39 the biological impacts, and those would be outputs from the MSE,
40 where you actually would just be able to scrape them right out and
41 then probably put them right into a framework and streamline the
42 rulemaking.
43
44 Pardon me while I bounce down here to Section 6, and so, in terms
45 of -- I will go to the flavors of MSE here first, in terms of
46 applying the right tool for the job, and there is really a
47 continuum of degree of intensity of management strategy
48 evaluation. The full stakeholder MSE, which you all can see here

that stakeholders are an integral part of the process of MSE, and, in the full iteration, where you need to develop the operational management objectives, both conceptually and in the operational ones, and put timelines and probabilities on them, then, yes, you need full stakeholder input, and, when the path is not clear, in terms of what the management procedures might be, stakeholders can actually be tremendously useful in that.

That is a really intensive process of having iterative conversations with stakeholders, and, in this case, that's where you would want to reserve them, in my opinion, for the most highest-priority situations, and you would want it to matter. You would want the result to eventually lead to a management decision, and one of the reasons is that, if you're going to spend all that much conversation time with stakeholders, you better make it matter, or you're not actually giving credit to the value of their time.

Their time is very precious, and they're not paid to be here, and, often, many of us are, and so I think it's valuing the power of our stakeholders, and their time, to make their points matter, and to matter the decision also matter, because difficult decisions don't get made unless they have to get made. I mean, that's a basic process of human dynamics. You always put off a decision, and say we need more information, unless a decision has to be made, and, if a decision has to be made, then that's when those difficult tradeoffs get considered, and you ultimately make that decision.

There is also expense, and a lot of time, involved in the full stakeholder MSE, and the bluefin tuna one took about eight years, and, ideally, we can speed that process up, in a lot of other applications, from learning from what is useful and what's not, and bluefin is probably not the best example for how to get it done in an expedient manner.

An intermediate MSE would be in between there, where a desk MSE -- Where the operational management objectives are already pre-defined. If you already know what your objectives are, then an analyst can sit in front of their desk and run that simulation and get the results out of that. That might be to test different stock assessment models, different configurations of stock assessment models, and those are generally more what's going to apply more often, in terms of MSEs, because I think, a lot of times, this seems like a process that's being driven by scientists, and they're saying, to decision-makers, hey, you should try MSE, and here's why, because, as a stock assessment scientist, you want to test all these things.

Well, if that's the whole point of it, then that can be done in a desk MSE. If the objectives are clear, you don't need stakeholders to get involved in it, and, if there's no management decision, and it's just how you're going to configure an assessment model, it's pretty straightforward, and so that's an intermediate, and that would be the desk MSE.

Then there's a lot of things that are not MSEs, and a key part of an MSE is that there's a feedback loop, where the management feeds back in. If it's just a simple simulation test, then it doesn't have that feedback loop, and we can do simulations quite quickly say with our stock assessment models, where we're simulation testing two different projection scenarios, but, unless you're going to build that feedback loop in, it's not an MSE, and, in that case, there is things like risk analyses, and other less-intensive processes, that might get the answer to the problem much quicker and faster, and the key is what is the problem, what is the objective, and which is the right tool for the job, and I think that's a key thing, as we go through the FEI process, is can we get the things solved, faster and cheaper, with something besides MSE, or do we need the full power of the stakeholder process.

To give some guidance on how that prioritization might occur, there's a paper written by the National MSE FTEs, full-time equivalents, and so all of the Science Centers have an analyst whose main role is to help facilitate management strategy evaluations, and so the Northwest, the Southeast, the Southwest Center, the Pacific Islands, and we have a full-time MSE expert, Dr. Cassidy Peterson, and you have probably heard presentations from Cassidy, and they put together this paper on when should do MSE.

I think it's a useful paper to help prioritize when we would want to apply that, and the highest-priority situations for full stakeholder MSEs, as I noted, are for adoption of binding management advice. Make it count, and don't just explore management options. If you're going to do that, you don't need to involve everybody else, but, if you're to go embark on it, make it count.

When there's a really difficult policy decision, and you need to gain stakeholder buy-in, that's one of the thing that the process can do, because, in some situations, we are very divergent in our objectives, and we're not really even at the same table on looking at those tradeoffs, and I think allocations, right now, are a zero-sum game, which we're not really considering the tradeoffs of them, and I think we need to get people to the table, to be able to see what maybe the other side's needs are, and that, somewhere in the

1   solution space the council is going to have to decide on, is going
2   to be a compromise across there, and, ultimately, optimal yield
3   will emerge as the compromise space between those competing
4   objectives.
5
6   That's going to be a really difficult policy decision, which is
7   we're going to need to have everyone write down their management
8   objectives and then evaluate which management procedure achieves
9   a better solution to those, and the only way to do that is to have
10 people around the table and then seeing those tradeoffs.
11
12 When there's heretofore intractable stakeholder conflicts, and I
13 think I just noted an example of that, and when there are
14 disenfranchised stakeholders, and, in that case, when there's a
15 stakeholder who is not part of the table, or not part of the
16 fishery management plan, and, in that case, their objectives are
17 not even being considered. In this case, the ecosystem might
18 qualify as one of those, and, in a lot of cases, we've got fisheries
19 where we've got substantial bycatch issues that are driven by a
20 fishery outside of the control of that fishery management plan.
21
22 That's a situation where there's a disenfranchised stakeholder,
23 relative to one or the other fishery management plan, and that's
24 where getting those to the table, and finding that solution space,
25 where one fishery is affecting another, and so the MSY is
26 functionally dependent on how one fishery operates, and those both
27 need to be part of the table, if you're going to find the best
28 societal solution.
29
30 There are situations where the scientific integrity threatens --
31 Or the scientific uncertainty threatens the integrity of the
32 current management approach, and those are situations where the
33 status quo management is clearly failing, and it's a known unknown,
34 and we know it's not working, and bluefin tuna was a good example.
35 For three consecutive years, we did stock assessments, and each
36 time they were rejected by an expert review.
37
38 We lost the ability to give biological reference points, and we
39 said we cannot give biomass-based reference points, due to
40 uncertainty in the stock-recruitment relationship, and so we no
41 longer gave B over BMSY advice, and then, for three consecutive
42 years, we had a rejected stock assessment, for both the east and
43 the west, based on the various things, and so the assessment status
44 quo was failing, which really necessitated movement towards this
45 management procedure approach.
46
47 Then there are situations where there are unknown unknowns, where
48 the future is really uncertain, and I think climate change is

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probably one of the great unknown unknown challenges for us in the
future, and how we manage our way through our uncertain climate is
going to be probably the next big challenge to this body, and I
think to most of our fisheries management advice.

We can get fishing mortality under control, and we have shown that,
and we can stop overfishing, and usually we can rebuild stocks.
There are some situations where we're unable to, and that's a known
unknown. When the stock is not rebuilding, something else is
likely going on, when we reduce F and it doesn't come back, but
then, when it's really unknown, how we manage through that is where
these are opportunities for us to create operating models, expand
a great degree of uncertainty, and then develop management
procedures that continue to be in our biological must-pays and are
able to manage through that uncertainty.

There are other situations where we could reduce, scale back, the
degree of MSE, and one situation is where an empirical management
procedure approach might simply improve on the status quo, and, in
this case, an empirical management procedure is something that
would be simply using empirical data like an index, or mean length,
or something to adjust the ABC, and those have a lot of benefits
over a model-based management procedure in situations where you
want simplicity, where you don't have a lot of information, and
say it's a data-limited situation, or sometimes, when the overkill
of a stock assessment is just too much, and a good example is the
dolphinfish MSE that's ongoing in the South Atlantic, where we're
actually trying to derive an index-based management procedure for
a stock that really wouldn't be well suited to a full stock
assessment, given how short-lived it is and how the fact that our
normal assessment, project forward for two years, would basically
be not very useful for an animal that lives less than two years,
and really only lives about one year, and so, for dolphinfish, we
want something that's quite responsive to whatever nature or
foreign fisheries give us, and that management procedure would
likely be empirical, based on an index.

Then to modify a catch control rule, when time and resources are
limited, and, oftentimes, you will see MSEs applied to get a --
Simply to develop a harvest control rule, or catch control rule,
and, in those situations, quite often, perfection is the enemy of
pretty good, and we spend, often, a lot of time trying to get a
catch control rule, when, oftentimes, just implementing something
simple, like a 40-10 rule, is probably better than spending three
or four or five years trying to tune that up, and I think that's
one of the things that we often see, is all those resources put
into that, when you could just implement something simple and then
fine-tune it later. That might be a better approach.

1
2 Then tactical decisions regarding allocation of survey and
3 scientific resources, which MSE could be used for, and then when
4 stakeholders desire information for an external purpose, and this
5 is a little bit controversial, because, quite often, the Marine
6 Stewardship Council would like to see management procedures that
7 are tested through MSE, and that often allows a fishery to qualify
8 for MSE certification.
9
10 In those situations, there are interested parties, often spending
11 a substantial amount of money for the certification process, but
12 then simply asking for an MSE to be done by whatever body for free,
13 and we're recommending that, if that's the interest of that
14 stakeholder group, then they support that process of developing
15 that management procedure.
16
17 Then, lastly, research and scientific questions not intended to
18 support management advice, and, in that case, if one of our
19 assessment analysts wants to do an MSE, a desk MSE, they can
20 certainly do that, but, if it's not intended for management advice,
21 it doesn't need to come before the council, and so I think, with
22 that, that's the flavors, and the steps forward, and I could talk
23 about a number of different applications that are ongoing that are
24 of different flavors.
25
26 ICCAT is embarking on a lot of different MSEs to develop management
27 procedures. Northern albacore and bluefin tuna are the two adopted
28 ones, and tropical tunas and swordfish are in progress. The South
29 Atlantic dolphinfish MSE is ongoing, and we can answer questions
30 about that, and that will be one to watch, because, if that gets
31 through the council process, and we can complete that, that will
32 be probably the first empirical management procedure to provide
33 catch, I think, in the Southeast Region, and potentially one of
34 the first nationally.
35
36 There is the South Atlantic reef fish, and we'll hear from Adrian
37 and Tom Carruthers, and then the three flagged -- Two of the three
38 flagship ones that the Science Center wants to embark upon, and
39 one on Gulf shrimp, one on Kemps sea turtles, and then the
40 dolphinfish are the three flagship ones that we're embarking upon,
41 and then a number of interim assessments that we are also
42 collaborating on, and so, with that, I will take questions, and
43 that, I hope, kind of gets to the flavors of MSE, and I can go
44 through the rest of the presentation, if our agenda allows. Thank
45 you.
46
47 **CHAIRMAN BARBIERI:** Thank you, John. Excellent presentation, and,
48 like we did with Bill's presentation, if we can limit the questions

1 just to clarification points regarding this specific presentation,
2 and then save broader discussion points for more structured
3 discussion later. Any questions for John, clarification
4 questions, regarding this presentation? John, that was very clear
5 to everybody, and so I just want to make one comment here, real
6 quickly, and this seems to, you know, a process, at least the full
7 stakeholder integration MSE, that seems to be ripe for
8 collaborative work that integrates, you know, social sciences, and
9 social scientists, and so, when we get to (f), Agenda Item (f),
10 and we talk about the Southeast Fisheries Science Center
11 statistical plans for MSEs, and how they tie into catch advice,
12 and management in general, I would like to hear, you know, what
13 the thoughts are regarding that point, more explicitly. Jim.
14
15 **DR. TOLAN:** One quick question, and, with this body pretty familiar
16 with the time length it takes to do a stock assessment, for a full-
17 blown MSE, or, on like Slide 28, the intermediate MSE, and what
18 timeframe are we looking at?
19
20 **DR. WALTER:** Probably about three years for the full-blown MSE,
21 and, for something intermediate, without stakeholder
22 participation, a couple of months.
23
24 **CHAIRMAN BARBIERI:** Trevor.
25
26 **MR. MONCRIEF:** I promise that I will be quick, Luiz, but do you
27 gain efficiencies in that three years? So, if you do the full-
28 blown MSE, does that give you a better understanding of kind of
29 all the management scenarios across the board, so that you don't
30 have to revisit it maybe as often?
31
32 **DR. WALTER:** If you adopt a management procedure, then you pre-
33 specify, for a certain timeframe, how you're going to derive the
34 ABC and OFL, and you shouldn't have to revisit it until you revise
35 your management procedure, and I will explain that with bluefin as
36 the example.
37
38 Presumably the efficiency is, if the management procedure is what
39 is setting your ABC and OFL and ACL, then you don't need to revisit
40 it unless something exceptional happens, and that's what the jargon
41 "exceptional circumstance" is, which is usually reviewed by a body
42 annually, or semi-annually, but there should be a substantial cost
43 savings, and efficiency savings, in not having to do the full stock
44 assessment on the same timeframe that we normally do, and the
45 reason we usually want a new stock assessment is because we think
46 something is wrong, but we simulation test what could go wrong,
47 and so we've got some confidence that we're not in those
48 exceptional circumstances, those things going wrong, that it's all

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1 been tested, and we're comfortable with it, and that's, I think,
2 one of the benefits of it.
3
4 **CHAIRMAN BARBIERI:** Thank you, John, for that, and good question,
5 Trevor. Okay. It looks like we are ready to move on to the next
6 presentation, but we have -- Ryan, our break is scheduled for 10:00
7 a.m., and I would imagine that Tom and Adrian's presentation may
8 take more than fifteen minutes.
9
10 **MR. RINDONE:** Likely so.
11
12 **CHAIRMAN BARBIERI:** Likely so, and so how about we do our break
13 right now, and we'll take a fifteen-minute break, and then we'll
14 start, after the break, with the South Atlantic Fishery Management
15 Council approach.
16
17 **MR. RINDONE:** You're in charge. If the whole thing goes off the
18 rails, we just hang it around you, and so --
19
20 **CHAIRMAN BARBIERI:** Thank you for that reminder. All right, and
21 so we're going to reconvene at 10:00 a.m.
22
23 (Whereupon, a brief recess was taken.)
24
25 **CHAIRMAN BARBIERI:** All right, folks. We are ready to reconvene,
26 and so we're going to go back -- Jess, I would imagine that Tom
27 and Adrian have already made contact with you, and that we can
28 hear them well. Okay. Sounds good. Hopefully everybody who is
29 online has been able to get back, and, Adrian, whenever you're
30 ready, please go ahead.
31
32   **SAFMC APPROACH**
33
34 **DR. ADRIAN HORDYK:** Good morning, everybody. I am Adrian Hordyk,
35 from Blue Matter Science, here in Vancouver. In this presentation,
36 I'm going to give an overview of the management strategy evaluation
37 project that we're working on in collaboration with the South
38 Atlantic Fishery Management Council on their snapper grouper
39 fishery, and so I want to thank you for inviting me to this meeting
40 and giving me the opportunity to talk a little bit about this work.
41
42 The way I look at it is an MSE focuses on four key questions of
43 what do we know, what do we want, what can we do, and what should
44 we do, and these first three questions are inputs to the analysis,
45 and the answers to these questions are derived from a combination
46 of analyzing data, and also consultation and discussions with
47 stakeholders, and the answer to the fourth question, what should
48 we do, is the output of the MSE process. In the next few slides,

1   I want to go through each of these questions and just talk a little
2   bit about how we are addressing these questions in the snapper
3   grouper MSE project.
4
5   We start with what do we know, and an understanding of the system
6   dynamics is captured in an operating model. An operating model
7   is, arguably, the most important component of an MSE. It's a
8   mathematical description of the dynamics of the fisheries system,
9   and so it describes what we know about the system, both the
10 dynamics of a fish stock and the fishing fleets that exploit it,
11 and it also describes what we don't know. It captures, and
12 includes, the key uncertainties in the system, and I will talk a
13 bit more about that later on.
14
15 In general, an operating model captures, in terms of the dynamics
16 of the fish stock, things like the growth and natural mortality
17 rates, the reproductive behavior of a species, spatial
18 distribution, absolute magnitude of the stock, and also the
19 exploitation history, the current stock status, and, for a
20 description of the fleet dynamics, an operating model includes a
21 description of the selectivity of the gear, the historical
22 exploitation pattern, and there's a spatial component, a spatial
23 distribution, of the fishing fleet, or the fishing fleets, that
24 exploit the stock.
25
26 In a multispecies fishery, such as the snapper grouper fishery,
27 the operating model can include multiple species, and a
28 multispecies OM, operating model, needs to include additional
29 information as well, and it can include any biological interactions
30 between the stocks, as well as interactions between -- A
31 description, basically, of how the fishery fleets preferentially
32 target behavior for the stocks, and this is important, because, in
33 a multispecies fishery, changing regulations for one species is
34 likely to impact the exploitation of other species.
35
36 For example, if you have a closed season for one species, then the
37 effort is likely to be shifted towards -- Focused onto other
38 species, and so, therefore, the evaluation of any particular
39 management strategy, in a multispecies fishery, has to include
40 this dimension of interactions, both between species, if they
41 exist, and also, particularly, a description of how the fishing
42 fleets are likely to behave, and respond, due to changes in the
43 management of any single species.
44
45 The snapper grouper fishery in the South Atlantic includes over
46 fifty species of snappers, groupers, and other related species,
47 and it's distributed over a huge geographic area of the four
48 states, and so it's really -- It's a complex fishery, and it's

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highly variable, and there's a lot going on in there, but, in
general, as we're sort of summarizing the exploitation of it, we
classify three main fishing sectors, the commercial fishers, the
recreational headboats, and private recreational fishers, who are
either on vessels or are shore-based.

Doing an operating model for the entire snapper grouper fishery,
for all the species, is technically possible, but it's going to be
really challenging, and so we're focusing the project, at least
initially, on two species of interest, the red snapper and the gag
grouper. Red snapper was chosen because it's an important species
in all the regions of the South Atlantic, and it's experiencing
very high exploitation.   The key issue in the MSE is to examine
the possibility of reducing the really high levels of discard
mortality that the red snapper are experiencing.

The gag grouper is another important species, and it's been
assessed as overfished in the most recent assessment, and it's
under a rebuilding plan, and so the aim of the MSE here is to
identify any potential management changes that could, for red
snapper, reduce discards, discard mortality, the wasted fish that
are going back to the water, returned back to the water after being
caught and suffer a high discard mortality, and, also, particularly
for the gag grouper, to try to rebuild the stock to target levels,
while balancing other objectives.

This initial stage of the project, which we're in now, is to
develop a framework for building operating models for these
species, and, once we've done that, once we've got a framework for
going from the assessments and the data that exist for these
species to operating models that describe their dynamics over this
whole region, and also any interactions between the two species,
and how the fleets behave and all that, we can expand it out, by
adding by more species in, following that same framework.

So how are operating models built? We've already heard, this
morning, that operating models are generally built by fitting
population dynamics model to data, and it's a process known as
operating model conditioning, and so, if an age-structured
assessment, stock assessment, already exists, this can be used to
generate the operating models. In many cases, it can be quite
straightforward.

The assessment already includes all the crucial information of the
operating model, a description of the biology of the species, and
it has predictions of the historical exploitation pattern, and it
describes the historical management of the stock as well, and so
all of that can just be input straight into an operating model to

1 be used for an MSE.
2
3 In cases where a stock assessment doesn't exist, or if a stock
4 assessment doesn't include all the necessary information for the
5 MSE, the operating models might need to be conditioned directly
6 from data.
7
8 The snapper grouper fishery is kind of in this latter case, and
9 recent stock assessments do exist for both the red snapper and the
10 gag grouper, but we can't use them directly. The main reason for
11 this is that the objectives of the stock assessment, as we've
12 already heard in the previous two presentations, are not the same
13 as those for the MSE. A stock assessment aims to describe the
14 current state of the stock and to estimate biological reference
15 points.
16
17 On the other hand, management strategy evaluation aims to evaluate
18 the performance of different management strategies, and so one of
19 the management strategies that the South Atlantic Fishery
20 Management Council wishes to evaluate, in this project, is a
21 comparison of different season lengths, different closed seasons,
22 for these two different species.
23
24 Red snapper currently has a really short fishing season. The
25 recreational fishery is only a couple of days a year, when they're
26 allowed to catch and retain red snapper, and gag grouper has a
27 closure for over the spawning period, and one of the things we
28 want to do in the MSE is to evaluate changes to those seasonal
29 closures, to those mini-seasons or the spawning closures, to
30 evaluate alternative seasonal closures and see what the
31 consequences are, but the structure for the stock assessment wasn't
32 designed to answer these sorts of questions. The assessment is
33 designed to understand what's going on right now.
34
35 For the MSE, we need operating models that separate the
36 exploitation patterns between the on-season fleets, where they're
37 allowed to retain the catch, and the off-season fleets, where the
38 fishers are still going out and interacting with catching the
39 species, but they're having to discard them, because they're not
40 part of the open season, and so we need to separate out the fleet
41 structure into on-season and off-season fleets, in this case.
42
43 This highlights the first point that I want to make, and that is
44 that the structure, the necessary structure, of the operating model
45 depends on the management questions that are being asked, and so
46 it's important to have, at the beginning of our process, to have
47 a thorough discussion about the types of management options that
48 are wished to be evaluated before you start constructing the

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1 operating models, or at least before you get too far down that
2 road of building operating models.
3
4 For example, if you want to ask things like seasonal closures, and
5 seasonal dynamics, or some spatial questions, that sort of
6 structure needs to be built into the operating model, and, if you
7 try and bring those questions up later on in the process, and the
8 structure is not there, the spatial structure is not there, or the
9 seasonal structure is not there, then you won't be able to answer
10 those questions.
11
12 For the red snapper and the gag grouper, what we're working on
13 right now is conditioning these models directly from the data,
14 and, to do this, we're using a model called the Rapid Conditioning
15 Model, RCM, and this was my developed by colleague here, and this
16 was developed by my colleague here, Quang Huynh.
17
18 The biological information already exists, from scientific studies
19 in the literature, and it's already captured and explained in the
20 stock assessment documents and reports, and we have the raw fishery
21 data, essentially the same data that's been used in the
22 assessments, but we structure it in a slightly different -- As I
23 explained, we structure the fleets into on and off-season fleets,
24 and then we put all this data into essentially the Rapid
25 Conditioning Model, which essentially does something like a stock
26 assessment, and it's fitting a population dynamics model to those
27 data and generating operating models that can be used by the MSE.
28
29 Another management question that the South Atlantic Council wishes
30 to investigate is different types of regional management, and, to
31 address this, the operating model needs to have a spatial
32 dimension, and so we've divided it up into three broad regions,
33 and we are including the best spatial structure, and we're also
34 thinking about adding a depth component as well to the model, and
35 we're doing that right now, and this will be used to evaluate the
36 implications, or the performance, of different -- Potentially
37 different management measures that can be used for different
38 regions.
39
40 For the distribution of stocks, we've got results of the scientific
41 trawl surveys, to get an understanding of how these two species of
42 fish are distributed over those areas, and we have the fishery
43 logbooks that describe to us how fishing exploitation, fishing
44 effort, is distributed across these areas throughout time.
45
46 Even in a well-studied fishery, there is lots of things that we
47 don't know. In a complex case of a multi-fleet and multispecies
48 fishery, it's going to be -- There are always going to be aspects

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of an operating model that can't be resolved with data. There is
going to need to be assumptions that are made, or uncertainties
that the data can't resolve sort of what the most accurate
description is, and it's really important to include these
uncertainties in an MSE.

There is two ways that uncertainty can be included in the MSE.
The way I've described them is system uncertainties, and these are
uncertainties in our knowledge of the system and projection
uncertainties. This is unavoidable uncertainty about a future
condition.

For system uncertainty, this is -- Often, approaches use axes of
uncertainty, and this approach basically builds multiple operating
model that are each developed and conditioned with a different set
of assumptions, or a different set of data, and each operating
model is a plausible description of the fishery system, but it
explains sort of one snapshot, one hypotheses, for what's going on
in the fishery, and so, for example, some of the axes of
uncertainty that we're considering in this fishery is the life
history parameters, particularly natural mortality, and it's often
not well known, in most species, and so it's an important axis of
uncertainty, and we build operating models with different assumed
values, or values that are taken from a plausible range, from
biological studies or meta-analysis and things of that nature.

Another axis of uncertainty is discard mortality, and it's not
that well known, and so we have to -- There is certainly
uncertainty in the estimates of discard mortality, and so we build
multiple operating models that include different levels of discard
mortality, and there is also uncertainty in the landings data, and
so, basically, the way this works is each operating model is
considered a single hypothesis of the system dynamics, and once
we've built -- You can build as many operating models as you need,
basically, the span the key uncertainties in the system, the key
system uncertainties, your key uncertainties in your understanding
of the system.

Any part -- When you're building the operating model, any time
there's a question that somebody -- When there's disagreements
among -- Either in the data or amongst stakeholders and experts,
and there is disagreements about what is the most appropriate
description of the fishery, that gets entered in as an axis of
uncertainty.

In an MSE, we're not focused necessarily on what is the right
answer to all these things, but we want to acknowledge that, if
there's uncertainty in a sort of aspect, or a certain description

1 of the fishery system, we want to include that in the MSE process,
2 so that we can test that management strategy that we're going to
3 identify is robust to that uncertainty, that it's going to work
4 and get the expected outcomes, even though there are things that
5 we don't know about the system.
6
7 Projection uncertainty focuses on things that are -- Changes to
8 the system that are unknowable or unforeseeable, but potentially
9 could happen in the future, and so this could include things such
10 as climate change, which may impact the spatial distribution of
11 the stock, or the productivity of the stock, and so, again, the
12 idea is to find a management strategy that is robust to these
13 uncertainties.
14
15 If it's not possible to do that, to at least identify the
16 conditions where a management strategy is likely to fail and to
17 identify some indicators that will alert the managers that system
18 is experiencing those changes, and so you can see that the results
19 of the MSE might be able to tell you that a particular management
20 strategy is likely to fail if there is say increases in natural
21 mortality, or decreases in growth.
22
23 If that's something that you know, then that's something to watch
24 out for, and, if you observe that happening in the system, that's
25 how we need to go back and spend some more time focusing on this,
26 and you can no longer just keep using that management strategy.
27
28 Projection uncertainty can include lots of different things. For
29 the snapper grouper fishery, we're exploring the concept of regime
30 shifts in future recruitment, and also changes in exploitation
31 pattern. For example, under sort of the default projections, we're
32 assuming that the number of fishers, particularly recreational
33 fishers, isn't going to change dramatically in the future, but we
34 can include scenarios of what if there's an increase in population
35 in the area, as there seems to be, and there's a higher -- An
36 increase in fishing effort over time, and how is that going to
37 impact the performance of these management strategies. There is
38 lots of other things that we can evaluate, in terms of projection
39 scenarios.
40
41 The second question in an MSE is what do we want? What do we want
42 to achieve? What are we aiming for? What are the management
43 objectives? Now, these can vary, and they do vary, from place to
44 place and from fishery to fishery, but, in general, there are sort
45 of two categories, biological and socioeconomic objectives.
46
47 Biological objectives focus on things like sustainability, the
48 probability of having a low biomass and the probability of

overfishing, and some of these things are written into law, that a management strategy has to achieve certain performance, with respect to biological outcomes, and, from the socioeconomic side of things, effects on catch, the amount of catch, the stability of the catches, the size composition of the catch, and so the opportunity of different sectors in the fishery to go fishing.

Performance metrics are where we convert these higher-level management objectives into quantitative measures that we can actually measure and evaluate in an MSE process, and so I've got, in the next few slides, a couple of examples of performance metrics that we've developed for the snapper grouper fishery.

For the biological dimension, one of the management objectives is to avoid the stock being in an overfished state, and so there's a quantitative metric, there's a performance metric, that we can calculate for any given management strategy, or any given operating model, and it gives an understanding of the fisheries system, and we can calculate the probability that the spawning stock biomass is above the minimum stock size threshold, which has been defined as 0.75 SSB MSY, in this case, and we can calculate that at any point in time, or over time, and it's usually quite common to calculate that in the short, medium, and long term, for a given harvest strategy.

Another management objective is to avoid overfishing the stock, and so we could do something similar and calculate that the probability of the fishing mortality is less than the maximum fishing mortality threshold, and then we can also say, well, the management objective says, if it's overfished, we want to rebuild the stock to a target level within a desired timeframe, and so, in terms of a performance metric, a quantitative metric of that objective, we calculate the probability that the spawning stock biomass is above these limit reference points by some specified timeframe, and so, for red snapper and gag grouper, it's been calculated as 2044 and 2040. These are the sorts of biological performance metrics that are quite common to use in an MSE process.

For the recreational -- For the objectives of the recreational and commercial sectors, there's been a couple of studies, and a couple of projects, that have gone on, particularly for the recreational fisheries, that have involved discussions with stakeholders, to ask them what they want, what their idea of a well-managed fishery is, and so we've used these documents, in some meetings that we've had with them, to try to develop some management objectives, first, and then convert them into quantitative performance metrics for the recreational and commercial fisheries.

1   On the recreational side, one of the objectives was to catch a lot
2   of fish, and what that meant was to keep enough fish -- They want
3   to catch a lot, and they want to have a high encounter rate, and
4   they want to be able to keep enough to make the trip worthwhile,
5   and "enough fish" meant at least one trophy fish to keep and to
6   take some home.
7
8   One of the metrics that we can calculate, to evaluate whether a
9   management strategy is likely to achieve this objective or not, is
10 the average catch rate, relative to the current catch rate, for
11 example, and a particular management strategy will be high catch
12 rates, or high chance of catching a fish, and also the probability
13 of catching a trophy-sized fish, however you define trophy size,
14 and we can calculate that for different size classes, and it's the
15 probability of catching a fish at twenty inches, or twenty-four
16 inches, and so on.
17
18 The second objective is to maximize fishing opportunity. They
19 wanted the opportunity to go fishing when it best suited the
20 angler, and so one of the metrics here, within the report, is the
21 season length and the average catch during these seasons, and,
22 also, a management objective is to reduce the discards compared to
23 the kept fish.
24
25 No one really enjoys catching fish and throwing them back and
26 seeing them -- Knowing that some of them are going to die, and so
27 it's an important objective to try and reduce the number of
28 discards compared to the kept fish, and so one of the metrics we
29 can calculate for that is a ratio of the discards to kept fish,
30 and we can trade that off with the total catches, or the average
31 catches, for example, and see -- Use that tradeoff to make a
32 decision about a management approach that is likely to be
33 satisfactory to most stakeholders.
34
35 On the commercial side of things, these are fairly conventional
36 management objectives.   Stability in catch, and commercial
37 fisheries tend to like the idea that the catch, the TAC, or the
38 ACL, doesn't vary a lot over time, and so they've got some -- That
39 it doesn't have large changes between management cycles, and so
40 they've got some way of planning for their business, and so, to
41 report that, we can calculate the average interannual variability
42 in catch, and we can calculate how much the TAC is likely to change
43 between management cycles, as a percentage.
44
45 Another objective is to maximize yield, and so we can just report
46 the average catch for any given management strategy, and that's
47 generally reported in units of tons, or pounds, or whatever,
48 something you can just relate directly to, and then, of course,

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1 the same objective is just to reduce discards. Commercial fishers
2 probably enjoy even less having to spend time and effort catching
3 fish if they can't retain them and bring them back to the market,
4 and so it's the same quantitative metric there, and you're trying
5 to calculate the ratio of discards to kept fish, and you're trying
6 to find management approaches that keep the relative level of
7 discards quite low.
8
9 The third question is what can we do? What can we do in terms of
10 management strategies for this fishery? A management strategy is
11 the entire process of collecting data, analyzing the data, seeing
12 those regulations, and it includes a component of the compliance,
13 or how well those management regulations are going to be
14 implemented into the fishery, and so all those things together is
15 a management strategy, or can be a management strategy.
16
17 A management strategy basically explains what data will be
18 collected, how it will be analyzed, what methods will be used to
19 set regulations, and then, when you're evaluating a management
20 strategy, you need to consider what the compliance rate is likely
21 to be for a certain type of management strategy, because it's
22 obviously important to put that in the MSE as well. If you
23 implement sorts of regulations that are good in theory, but can't
24 be implemented, or can't be -- They won't be met with high levels
25 of compliance, they're not likely to be effective in the fishery.
26
27 For the management strategies for the snapper grouper fishery, we
28 focused in on these, and we divided them into basically two
29 categories, and management strategies in general can be divided
30 into two categories of static controls, and these are -- It's
31 arguable whether this is strictly a management procedure, because
32 they don't include any like feedback, necessarily, and these are
33 just static controls, management regulations that are fixed in
34 time, fixed in place, and don't change in response to data, but
35 you can certainly evaluate these sorts of things in an MSE process.
36
37 Things like this could be a seasonal closure, bag and retention
38 limits, size limits, even a total allowable catch, and you can
39 just set a total allowable catch at some level, at average stock
40 catches, for example, and that's been done in other places, and,
41 also, this could all be done regionally as well, and these are
42 things that don't change over time, and an MSE can be quite useful
43 for just -- Once you've got an operating model built, for
44 evaluating these sorts of static controls, and what would different
45 size limits look like, and what would different bag limits, or
46 seasonal closures, look like, in terms of management outcomes?
47
48 Dynamic controls can include all those sorts of regulations, but

1 the main thing is that these regulations change in response to the
2 data, and the data can be anything that -- Any data, any
3 information, that comes from the fishery that can tell you
4 something about the state, or the change in state, of that fishery,
5 and so, for example, it could be the size frequency, composition
6 of the catch, or it could be some sort of length-based approach,
7 or it could be trends in catch rates, and that's often used to
8 derive the index of abundance, or, if you've a survey, or surveys,
9 they can be used to develop an index of abundance, and we saw that
10 this morning, in some presentations earlier, some simple examples
11 of those, management strategies, or management procedures, that
12 adjust controls. Size limits, catch limits, bag limits, any of
13 those things can be controlled, up or down, based on, for example,
14 an index of abundance.
15
16 For the snapper grouper fishery right now, the initial focus is
17 we're assuming that the ACL is going to stay relatively -- Once
18 you get it calculated, and implemented, in the same way it has
19 done in the past, but we're evaluating the consequences of
20 different static controls, different seasonal closures and bag
21 limits and size limits and so on, in combination with that total
22 allowable catch, which is set to the fixed term from the management
23 strategy process. Right or wrong, we might move to looking at
24 more dynamic controls.
25
26 We've got these three components, and we've described what we know
27 in an operating model, and we've described what we want, what we
28 want to get out of it, in our performance metrics, and we've
29 described the options, what we can do, in our management
30 strategies.
31
32 Once you've got these three things, we can plug them into the MSE
33 framework, and you've seen presentations on these, and the MSE is
34 the closed loop simulation testing, and the operating model gets
35 projected forward in time, and each of these management strategies,
36 as many as you have, get applied to that operating model, to the
37 same operating model, where everything is identical, except for
38 the only difference is the management strategy that sets the
39 regulations, and then the MSE framework basically does the
40 calculations and reports back the performance of those different
41 management strategies, in terms of the performance metrics that
42 you specify.
43
44 In our case, we're using openMSE, and it's a framework that we've
45 developed for conducting management strategy evaluation for a
46 whole bunch of fisheries, and, essentially, the MSE framework
47 really -- There's lots of alternatives out there, and, essentially,
48 it's a calculator, and so it's like the old basic, conventional

fisheries population dynamics model, and so you can think about it
as a calculator, that the information goes in, a description of
what we know, what we want, what we can do, goes in, and it crunches
the numbers, and the results come out. The results are what should
we do, and what does it suggest is the right thing to do.

One of the main focuses of an MSE process is usually on the
identification of a robust management strategy, and so a management
strategy essentially says collect these data, analyze the data in
this way, and then adjust the management regulations with this set
of rules, and it could be, in many cases, collect an index of
abundance, or collect data to generate an index of abundance,
generate the index of abundance, and then adjust the total
allowable catch based on some set of rules that says to increase
the catch, if the index is going up, or decrease the catch, if the
index is going down, for example.

It's rarely the case that that results will show you that one
management strategy is dominant, is the optimal performer, with
respect to all the others, and with respect to all the performance
metrics, and usually, as we've heard already, there's tradeoffs
amongst competing objectives, and so the MSE won't necessarily
tell you what is the -- It can help you eliminate really bad ideas,
and it can find management approaches that are unlikely to meet
any of your management objectives, and, if you have a management
approach that doesn't meet, particularly, the management
objectives, or the performance objectives, that are specified by
law --

If a management strategy doesn't make those things, then it's going
to be eliminated from the set of options that you consider, and,
amongst the remaining ones, at least you've got a -- You've
quantified the tradeoffs that may exist among different management
strategies, and then it may involve a discussion with stakeholders,
or still a decision needs to be made about what the right tradeoffs
to make is, and that's something that the MSE process kind of
presents those results, but it doesn't necessarily resolve that
discussion.

There are ways that people have developed to drive these more
objectively, but it's not used that commonly, but we can talk more
about that if you're interested.

Like I said, the MSE process often focuses a lot on the
identification of a robust management strategy and the evaluation
of those tradeoffs, but I think it's important to also consider
the other outcomes that come out of an MSE process, and so the
first one is our operating models, our collection of operating

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models, and this is a collection of documented hypotheses describing the fishery dynamics, and so this, by itself, I think is a really valuable product.

Even if you haven't got through to the end of the MSE process yet, you've got -- Before an MSE process begins, typically everybody who is involved in fishery has an understanding, like in their head, an understanding of a fishery that they think is going on, but you may not have an actual mathematical model, something that people can examine and manipulate and understand and communicate clearly, and a set of operating models -- With a set of operating models, you do have that.

You have a collection of documented descriptions of the fisheries system, and they might be wrong, and people might disagree with them, but at least you've got something to say this is what we believe is going on in the fishery, and so I think it's a really important product of an MSE process, that in itself.

One of the things that you can do with an operating model, or a collection of operating models, is evaluate costs of current uncertainties, and you can see -- You can quantify how uncertainty, knowledge of the system, those uncertainties in the axes of uncertainty, impact management decisions.

If you find things that certain types of management would give you really good outcomes, but they're too uncertain, and you can't use them, because there's too much uncertainty in the system, that tells you that this particular understanding of a fisheries system is an area of high importance to focus on, because, if you put effort, research, into reducing the uncertainty of that, you might get better management outcomes.

A kind of related idea to that this is the value of information, and so you can see that, based on the uncertainty that you have included in the operating models, and what impact they have on the management outcomes, you can prioritize scientific research, and you can identify the improvements which lead to the largest gains in management outcomes, and so, often, you can find, in the MSE process, that there can be lots of uncertainties, but some uncertainties are much more important, in terms of management outcomes, than others, and so, from a management perspective at least, those are the things that you want to focus on for further research, to try and reduce the uncertainty for things that make a difference in how you would manage it.

Other uncertainties may be interesting, and important, from a science point of view, but the MSE process may tell you that

1 resolving those uncertainties isn't going to change the way you
2 manage the fishery, and so, from a management point of view, they
3 may be less important.
4
5 Related to that, or sort of similarly, is performance metrics.
6 Once you've gone through the stakeholder process and developed a
7 set of management objectives, and converted them to performance
8 metrics, you have formally-stated quantitative management measures
9 for your fishery, and so you often, before an MSE process starts
10 -- People may have a vague idea of these things, but it's not
11 formally written down anywhere, in many cases, and so, again, this
12 is, I think, a really useful outcome of an MSE process, is the
13 description of this is what we want to get out of this fishery,
14 and this is what we're trying to aim for.
15
16 Just two summary slides, a sort of general summary, and the way
17 that I often describe an MSE is it's a framework for a
18 reproducible, transparent, defensible decision-making for a system
19 with high uncertainty, and, by reproducible, I mean that this
20 analysis can be repeated by others, and they will get the same
21 result, and so the whole thing can be run with objective ways of
22 going from data to operating models, and operating models get
23 evaluated, with management procedures in an accessible framework,
24 and somebody else can just take the whole thing and redo it and
25 get the same answers.
26
27 It's transparent, and that means that all steps in the decision-
28 making process are clearly explained, and so, whether you use data
29 to explain what data has been used, what assumptions are being
30 made, explain what those assumptions are, and so anybody can take
31 a look at it, and, even if they disagree with the approach, they
32 can at least see exactly what was done and why.
33
34 Related to that is defensible, and that means that the decisions
35 are based on data, and we've clearly explained the rationale, and,
36 where we have to make assumptions, those assumptions are, again,
37 made explicit.
38
39 Just sort of a final general summary points, and I think the
40 concept of MSE can be -- It's relatively straightforward, this
41 idea of evaluating the performance of different management
42 strategies, but it can be a bit of a changing -- A switching gears
43 from sort of the stock assessment paradigm, which a lot of people
44 may have more experience in, and you should recognize that these
45 new ideas do take time to digest, and so, even if they are kind of
46 conceptually quite simple, once you understand them, it takes time,
47 and so, if you're at the beginning of this process, in a new place,
48 it's important to kind of build that time, and you need to get

everybody at the same understanding.

I think the software and computing barriers have largely been removed in MSE in recent years. You know, computers are -- High computer power is much cheaper, and there's lots of packages and things out there that can do the number crunching for us quite quickly, but building defensible operating models still takes time, and so I think, in the past, a lot of time for MSE projects involved building this giant simulation framework, and that took a lot of time in itself, but that's largely been removed, but, still, building these defensible operating models, and understanding and describing the system uncertainties, takes time.

As we've heard, it's a collaborative process with stakeholders, and so it's often presented in a linear form, and we do the steps, and we do this, and we do this, and we do this, but, in practice, it's usually quite -- It's more iterative, and, typically, you develop some performance metrics, and then you start seeing some results, and you realize that some of them may not make sense, or may not really be that they mean, for example, and you go back and change them. It ends up always being an iterative process, which means it takes longer than it may look if you just put it into a simple sort of flowchart of sequential steps.

There is potential for an enormous number of questions in an MSE, and so my advice would be to try and start small, and really stay focused on what a particular -- On what the question is. If we're trying to set a management strategy that's going to set the catch limits, for example, do we want to evaluate different size limits? We could do all these different things, but it's useful to stay focused on one thing at a time, so you can answer specific questions, rather than just throwing everything at it and finding that people get quickly lost in the weeds.

Just my final point, that I would just make at the end of my presentation here, is I think it's sort of high-level, again, but to consider the value of each component of the MSE process. Selecting a robust management strategy is definitely super important, but all those different components of the MSE that you build along the way are useful products in themselves, and I think that should be valued, and so I think that brings me to the end. Thank you very much for your attention, and I'm happy to take any questions.

CHAIRMAN BARBIERI: Thank you so much, Adrian. Great presentation and great overview. Like we did before, any immediate questions for Adrian, regarding his presentation? Mike Allen.

1 **DR. ALLEN:** Adrian, thank you for the excellent presentation. I
2 wondered, in this process, and I think you've outlined it, but I
3 would just have you speak a little bit about where the process of
4 like evaluating the quality of the different data streams, as far
5 as informing the assessment and the whole process, and like
6 monitoring program design and those kinds of things, and I'm
7 assuming that that fits in here, but I'm just wondering a bit about
8 the timing of how the evaluation of the different data streams
9 fits into this process.
10
11 **DR. HORDYK:** Sure, Mike, and I think there's two ways. One is the
12 data, like the current existing data, is going to be used to
13 develop operating models, either through -- It's already been done
14 through an assessment, and you can incorporate them, or, like I
15 sort of mentioned, you can develop them from scratch.
16
17 If you do that sort of developing it directly from the data,
18 condition the operating models, then that's going to be really
19 important, to consider what data exists, and what is the quality
20 of the data, and so on, and that's a whole process that goes on in
21 the operating model development, but I think what your question is
22 getting at is the question on data that's been collected sort of
23 in the future, the projections, and how that's -- How you describe
24 that process, if I understand you correctly.
25
26 The way we try to do it is, if we're say developing a management
27 strategy that uses an indices of abundance, it's try to generate
28 -- What we do, in the conditioning process, is we have a historical
29 index of abundance, or a historical data stream, and it could be
30 anything, and we try -- We quantify the observation error,
31 basically how well that data tracks, using the real -- The real is
32 the operating model dynamics, right, and the operating model
33 describes that is really going on in our virtual system, and our
34 data is what we saw, and so we basically describe -- We calculate
35 the observation properties of the match, or mismatch, between our
36 data and what's described in the operating model, and then we use
37 the statistical properties of those observations to generate data
38 in the future.
39
40 Basically, what that means is the sort of default assumption is
41 that the data -- The index of abundance that you generate, for
42 example, in the future, the projections that you are going to test
43 and provide to your management procedures, is going to have the
44 statistical properties, in terms of the observation error, as it
45 has in the past, but one of the things that you can do, in MSE, is
46 say what if, and what if we had better-quality data, or what if we
47 started collecting age composition data now, or something, and so
48 the MSE gives you the ability to say -- To sort of invent scenarios

1 where your data quality may improve.
2
3 You can say, you know, if we could collect this data, or collect
4 more data, or reduce the CVs on that, what is the expected outcome,
5 and, if it shows that it has a big consequence on the management
6 procedure, that would tell you that's an important thing to focus
7 on, and so I guess there's two ways, and it's in either in the
8 operating model conditioning, which happens right at the
9 beginning, or, otherwise, it's when you develop the management
10 strategy, and, when you're doing that, you can think what data in
11 the management strategy is going to be used, or data stream, and
12 then what's the likely process that is going to be -- What is
13 likely, or what are the potential processes that you can use to
14 generate the data from that system, and try and model those.
15
16 **DR. ALLEN:** Thank you. That got at my question exactly.
17
18 **CHAIRMAN BARBIERI:** Thank you, Adrian. Nikolai, did you have a
19 question, or a comment?
20
21 **DR. NIKOLAI KLIBANSKY:** This is Nikolai Klibansky, and I have kind
22 of a specific sort of Southeast Center question about the work
23 that you described doing for gag and red snapper. You know, given
24 the multispecies nature of the fisheries that you talked about,
25 given of what tactics you're considering evaluating to try to
26 reduce discarding, while trading off, you know, favorably with
27 other things, like, you know, fishing opportunities and landings
28 and things like that, and I don't know if you've gotten to that
29 point in the process, but I'm just kind of curious how that's
30 going.
31
32 **DR. HORDYK:** I mean, that's really -- That's like the whole
33 challenge with this. I mean, we haven't really got to an answer
34 for that yet, and hopefully we get to some sort of answer, but
35 that really is the challenge, right, like particularly with this
36 fishery, and there's a real problem, with the red snapper, with
37 like the high exploitation in the past, and so basically reducing
38 the recreational season to shorter and shorter lengths, to try and
39 bring the exploitation rates down, but, as a consequence, there's
40 been really high discards.
41
42 We haven't kind of gotten to any answers to that yet, and one of
43 the things that we're going to evaluate, for the red snapper at
44 least, is that, at the moment, they don't have any size limits at
45 all, and they got rid of the size limits when they brought in the
46 mini-seasons, and so one of the things that I'm looking at now is
47 the consequences of -- First of all, just changing the season
48 length, and so, if you increase the season length, would it result

1 in more dead fish, or would it just result in more fish that are
2 retained, and, if it turns out that the fish would die anyway,
3 then you might as well catch them, but the main thing I'm looking
4 at is that in a combination with size limits, but -- Then the other
5 thing is effort controls, because, I mean, sort of the obvious way
6 to reduce exploitation is to reduce fishing effort.
7
8 Those are the sorts of things that we're considering at the moment,
9 and then they've talked about some potentially spatial closures,
10 but we haven't gotten to that yet, but, yes, I don't really have
11 a clear answer for you yet, and, like I said, that's the whole
12 challenge of this project, which, I'm not going to lie, is
13 challenging.
14
15 **DR. KLIBANSKY:** Thanks for that. I'm excited about your work, and
16 I look forward to hearing the results, and some of those challenges
17 are things that we're, you know, dealing with with just trying to
18 figure out how to improve our projections and things in the stock
19 assessments, and so hopefully there will be some of -- Some of
20 that information that you get at will be useful to us in those
21 ways, too.
22
23 **CHAIRMAN BARBIERI:** All right. Any other questions? Dave
24 Chagaris.
25
26 **DR. CHAGARIS:** Thank you, and so great presentations, guys, all
27 the way around, so far. My question is about the operating models,
28 and I wonder if you could maybe talk a little bit more, from your
29 experience, in which situations are you able to basically utilize
30 like the age-structured, annual age-structured, stock assessment
31 model in MSE, versus having to build a completely, almost
32 completely, different operating model.
33
34 For example, like some of the desk MSEs that John talked about
35 previously, they could probably be done, you know, with an age-
36 structured assessment model, but then what you described, as far
37 as the South Atlantic, where you're also looking at seasonal
38 closures, size limits, bag limits, and it seems like there would
39 be a disconnect between the annual age-structured dynamics and
40 what you might need for the operating model, to capture all those
41 different sort of tactical management implementation actions, and
42 so can you talk a little bit more about like the different -- The
43 range of operating models that you've developed, you know, across
44 different applications and how they might look different in some
45 situations versus others?
46
47 **DR. HORDYK:** Yes, sure, and so I think it all depends, a lot, on
48 the type of management questions that you're trying to ask, that

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1 we're interested in asking, and so the challenge here was -- The
2 big thing was they were interested in reducing discards, and,
3 because these fisheries have a closed season, and, at least with
4 gag, there's a size limit, and we're potentially going to test
5 size limits for red snapper, the whole charge was discards, in
6 that case, because you get discards that get all the fish that are
7 discarded, when the fishery is closed, and they're still being
8 captured, but they can't be retained, and you get discards from
9 the open season, when the fish are below a size limit or are just
10 too small to keep or whatever, and those discards occur throughout
11 the year.
12
13 The question -- The whole problem we had with the structure of the
14 assessment is it didn't split those things out, because, from an
15 assessment point of view, it didn't really matter, but, from an
16 MSE point, it does.
17
18 I think it's fairly -- The combination of those things is fairly
19 unique, in this case, and I haven't come across it before, and so
20 that's why we're going to have to go down this route, although,
21 you know, there is ways of basically taking the assessment model
22 and superimposing the information on top of it afterwards as well,
23 but, sort of to answer your question, in most cases, if a
24 management system, or a management strategy, is focused on a catch
25 limit, which is done in a lot of places, and they just set like a
26 TAC, or however they describe it in the fishery, and then assuming
27 that the fishery dynamics aren't going to change, like the seasonal
28 dynamics aren't going to change, and the only thing that's going
29 to change is the catch limit, then you can generally go straight
30 from the age-structured assessment straight to an operating model,
31 without anything else.
32
33 You can add spatial structure to an operating model, and like, if
34 it doesn't include it in the assessment, and you can add it
35 afterwards, and we've done that before. For example, we've done
36 Bay of Fundy herring, and the assessment didn't have any age
37 structure in it, or, sorry, spatial structure, and we superimposed
38 that into it afterwards, for the operating model, and that's fairly
39 straightforward to do.
40
41 We did a bunch of California, for the state fisheries in
42 California, over the last few years, and, there, we focused on
43 data-limited fisheries that didn't have any assessments at all,
44 and, in some cases, they had very few data at all, and so any sort
45 of time series data can be used for conditioning, and so, in those
46 cases, we developed operating models, like a data-poor way of doing
47 operating models, just to try to describe -- To sketch out, for
48 example, the historical patterns in fishing effort of what people

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thought, what stakeholders thought, the general relative pattern was, and we've got, you know, a lot of uncertainty in the biological parameters and so on, and then we just evaluated -- We didn't have any idea about status and so, when we did the MSE, we said status, the current state of the fisheries, was an axes of uncertainty, and so we tested it for low, medium, and high, high-ish, stock status, and so that was kind of a data-limited process, and we didn't have any sort of formal conditioning, or, in most cases, any sort of fishery data that went into it directly.

I think it varies a lot, but I think, in many cases, if your question, if your management question, is focused on things that are already captured, already described, in the operating model, or, sorry, in the assessment model, then, in most cases, actually, I think you can go straight to an operating model and be fairly quick. The advantage of doing that is you've got a system that everybody already sort of understands, and is familiar with, and so you can just make changes to the data or whatever, or make different assumptions, and just generate the operating models really, really quickly, and that's, for example, what we do in the ICCAT swordfish fishery that John was talking about earlier. I'm not sure if I answered your question enough, but I will just stop there.

DR. CHAGARIS: Yes, you did, I think, and could you maybe talk a little bit about like the timesteps that might be required in an operating model for different situations, and like I could see where an annual timestep might not work, and have you ever had to, you know, go down to a monthly, or even a weekly, timestep, or do you foresee that maybe happening with the South Atlantic MSE?

DR. HORDYK: Thanks for reminding me, and that was a point that can be brought into the temporal resolution, and, in many cases, an annual model is -- The main reason, the first reason, you will want to go to smaller timestep is if you have a short-lived species, where the sort of interannual, or intraannual, sorry, dynamics become important, and the seasonal dynamics become really important.

I am working on an octopus fishery, at the moment, in Indonesia, and they live for like twelve to fourteen months, and so you have to have either a monthly or a weekly model, because an annual model is just a whole new population every timestep, and so that's the first reason you would want to go down to it.

Like we generally recommend it if a species maximum age is less than about five or six, and you probably don't want to use an annual-structured model, and it can be fairly straightforward to

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1 convert the whole thing over to further timescales, but you just
2 need to -- Your parameters and so on should just be converted,
3 and, if you have a monthly timestep, for example, like when the
4 management -- What the management interval will be, will it be in-
5 season management, or will the management advice be set every year
6 or whatever, and think about what the data is going to look like
7 at that time.
8
9 The other thing is, like I think you were getting at like the
10 seasonal dynamics in the South Atlantic, and we're still doing
11 that with the annual models, but what we do is just try to
12 characterize, try to describe, how fishing -- How the effort is
13 distributed throughout the year, and so, that way, you can look
14 at, if you close, for example, certain months of the fishery, you
15 can calculate the relative decrease in fishing effort, annual
16 fishing effort, that would happen.
17
18 If the fishing effort, for example, is all -- If it mostly occurs
19 in a couple of months, you can calculate the proportion of annual
20 effort that occurs in those months, and you can close them, and
21 you can reduce the effect by that proportion, and that's the way
22 we deal with it at the moment. It's certainly possible, but it
23 can get kind of -- A little more complicated, and it can certainly
24 take a lot longer, in terms of computations, if you go down to
25 finer timesteps, and so, most of the time, in my work, I've done
26 -- I've focused on annual models, except for really short-lived
27 species, and just really complicated sort of seasonal dynamics,
28 which we so far haven't encountered.
29
30 **DR. CHAGARIS:** Thank you.
31
32 **CHAIRMAN BARBIERI:** Thank you, Adrian. Jim Tolan.
33
34 **DR. TOLAN:** Thanks again for the presentation, and thank you, Mr.
35 Chairman. Your first answer that you gave to Dave I think really
36 covered a lot of what I was going to ask, and it was more of a
37 philosophical point than really a question, and we've talked a lot
38 about operating models and the whole concept of what do we know,
39 and the philosophical thing that I was going to throw in was, well,
40 what if we really don't know, and the example that I was going to
41 use is greater amberjack.
42
43 I think, if we applied a full-blown MSE, and jumped in with both
44 feet, I think we would be in the same position we're in now, but,
45 in your first answer to Dave, I think you brought out some of the
46 flexibilities of the operating model to be able to get around those
47 things that we don't really know, but, again, thank you for the
48 presentation.

1
2 **DR. HORDYK:** Sure, and if I could just make a comment on that, and
3 I think that's a really important part of the MSE, is to include
4 like those uncertainties, and, in many cases, you can be in
5 situations like you're describing, where we just don't know what's
6 going on, but I think the -- It may not be very satisfying, but I
7 think the advantage of the MSE process, in that case, is, one,
8 you've got an operating model that includes that uncertainty, and
9 it basically says this thing could be -- It could look like this,
10 or it could look like something completely different, and we don't
11 know, and it's somewhere in this sort of huge range.
12
13 If you have specified management objectives of this is what we
14 want to get out of it, you may still find a management approach
15 that can get what you want, given the uncertainty, and so we had
16 that problem in California, where we worked on the warty sea
17 cucumber, that sea cucumber that no one knew anything about, in
18 terms of biology, and you can't measure these things very well,
19 and no one -- But they had fairly well-defined management
20 objectives of what they wanted, and so you can show -- I guess
21 it's kind of obvious, in retrospect, but, if you don't really know
22 anything about the system at all, and you want certain things,
23 then the only things that will get you there are going to be sort
24 of fairly restrictive management approaches, right, and they're
25 going to say, if you don't know anything at all, but you want to
26 not overfish, you're going to have to keep fishing effort quite
27 low, just because of all that uncertainty.
28
29 I think it's -- The fact that you don't know anything at all,
30 what's the alternative? If you don't know anything at all, how
31 will you set management regulations otherwise? If you don't use
32 a system like this, then you still don't know anything, but you
33 have to kind of clearly explain that, and so, anyway, thank you.
34
35 **CHAIRMAN BARBIERI:** Thank you, Adrian. Any more questions from
36 the committee for Adrian on the South Atlantic Snapper Grouper
37 MSE? Adrian, I have a quick one. Given the breadth, I think, of
38 your management objectives, right, what you're trying to achieve
39 here in the South Atlantic, and reconcile, perhaps, the interests
40 of the two sectors, right, and they may not be perfectly aligned,
41 I would imagine that, you know, this process is going to have to
42 engage a full-blown MSE process that involves, you know, major
43 stakeholder input and managers being engaged as well, in perhaps
44 a formal stakeholder engagement process, and so the first question
45 is, is this really the case? Is this how you guys are handling
46 this, and, two, if so, can you give us an idea of the timeframe to
47 get all of this completed? I'm just trying to, you know, gauge
48 the use of this approach to situations in the Gulf and having an

1 idea of, you know, resource investment, and timelines is important.
2
3 **DR. HORDYK:** In general, I think, as soon as you do involve sort
4 of stakeholder groups, that timeline becomes really important,
5 because that takes time, and, one, you need to get everybody up to
6 speed with what's going on, and people need to hear the same thing
7 sort of a couple of times over, and it takes time to digest all
8 that sort of stuff, and so that certainly takes a lot more time.
9
10 In California, we did that with a stakeholder group that had
11 representatives from the different fishery sectors, and the whole
12 project took four years. This project that we're looking at right
13 now is a two-year project, but, I mean, I'm not sure where it fits
14 into John's scheme of like MSE-lite or not, but like we're doing
15 this sort of closed-loop MSE stuff, but we've got the main -- We've
16 had a public meeting, which we had last with stakeholders, to have
17 a chance to be involved, and there may be another one of those,
18 and there may not, but the main group we're focusing on working
19 with, collaborating with, is the Snapper Grouper Advisory Panel,
20 and that has representatives from the commercial sectors, and NGOs,
21 and the recreational fisheries as well, and so it's representative
22 of those stakeholder groups, the key stakeholder groups, and the
23 managers, of course, and so, basically, they're the group -- That's
24 the group that we're working with to develop this whole process.
25
26 I think it depends, in each sort of case, whether that's an
27 approach that is suitable or not, or do you need to kind of develop
28 something equivalent to that from scratch, and, if you do, that
29 takes more time, and so, in that case, it's still, I think, a
30 fairly ambitious timeline, but we've got a two-year project to try
31 to do this, but just using that advisory panel group that we meet
32 with every three months or so, and they're the ones that basically
33 gave us all the feedback that we've used so far for our objectives
34 and mapping out the operating models.
35
36 **CHAIRMAN BARBIERI:** Right. That makes sense. Thank you, Adrian.
37 If there are no other questions for Adrian, I think we are ready
38 to move on, and we have to do a last presentation before lunch,
39 right, to close the morning. Harry Blanchet.
40
41 **MR. BLANCHET:** Thank you, Mr. Chairman. I wasn't going to talk,
42 but oh well. The mention of the AP brought this to my mind. If
43 they are already working with some of the committees of the South
44 Atlantic Council, it would seem, to me, that it might be worth
45 engaging also with the Law Enforcement AP, to get a bit of a
46 different perspective, in terms of the implementation of the
47 management. Thank you.
48

1 **DR. HORDYK:** Thank you. I have noted that. Thank you.
2
3 **CHAIRMAN BARBIERI:** Very good point, Harry, and I'm glad that you
4 brought it up. Thank you. Any other questions or comments? If
5 not, I think we'll move on, and we have now Nikolai Klibansky, who
6 is going to be presenting a Southeast Fisheries Science Center
7 Approach and Interim Analyses.
8
9   **A SEFSC APPROACH AND INTERIM ANALYSES**
10
11 **DR. KLIBANSKY:** Thanks for that, and I'm Nikolai Klibansky, and
12 I'm a stock assessment scientist at the Beaufort Lab, in Beaufort,
13 North Carolina, and I'm going to be talking about a use of
14 management strategy evaluation to evaluate different procedures
15 for updating catch advice of reef fishes, some pictured here,
16 between stock assessments that was done for the South Atlantic.
17
18 I have a lot of slides, and I'm going to kind of blow through a
19 lot of them, and so you can kind of just treat the presentation,
20 which you should all have, as you, sort of additional
21 documentation, but I think we've gone through a bunch of some of
22 my introductory materials, and so this is a project that I worked
23 on with Cassidy Peterson, Kyle Shertzer, Matt Vincent, and Erik
24 Williams, and all of them are at the Beaufort Lab.
25
26 We got started on this project due to recent NMFS guidance which
27 prioritizes efficiency in the stock assessment enterprise, and so,
28 basically, we want to be able to provide more catch advice more
29 frequently with less effort, and that's sort of the dream, right,
30 and so stock assessments, full stock assessments, take a lot of
31 time, and so we're kind of often thinking about different ways to
32 provide, you know, catch advice, sort of at lower cost, more
33 quickly, that sort of thing, and so this interim assessment
34 approach that I'll be talking about was documented in a paper by
35 Huynh et al. 2020, and they found that adjusting catch advice
36 between stock assessments, based on an index of abundance, was a
37 pretty effective management procedure in simulations.
38
39 We wanted to, you know, see how this would work for our South
40 Atlantic stocks, some of our South Atlantic stocks, you know, where
41 we could configure operating models and things that are very
42 specific to our situation.
43
44 This is yet another diagram with a circle with a bunch of arrows
45 between it, and we've seen a couple of these before, and the idea
46 is that -- You know, what's contained here is basically just
47 talking about management procedures, which we've talked about a
48 bunch, these formal rules that define how fisheries are managed,

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1 and they contain a bunch of parts that can be formalized in a
2 management strategy evaluation, and we can kind of play with
3 different elements of these management procedures, and compare
4 among them in an MSE framework, either to, you know, actually make
5 management changes or just as sort of a simulation environment,
6 which is kind of how we're using it here.
7
8 We've talked a bunch about management strategy evaluation, and I
9 guess one thing that I wanted to add, about what I find is really
10 helpful for the MSE process, or useful about it, is that, in
11 contrast to something like, you know, running projections from a
12 stock assessment, there were sort of just -- You know, we're
13 setting parameters projecting our assessment dynamics into the
14 future, but there's feedback, and we've heard a bit about this
15 idea of closed-loop simulation, and I think that's, you know,
16 really one of the key things that makes this management strategy
17 evaluation framework extremely valuable, is that you then can run
18 an assessment, sort of project forward based on what you've learned
19 about the stock from an assessment, put it in your operating model,
20 and then you can simulate some feedback in the next cycle, in
21 multiple cycles, in a projection, and so it's a really nice way to
22 be able to apply these different management procedures in a
23 simulation framework and get that feedback and really be able to
24 generate a lot of output and compare a lot of different
25 possibilities.
26
27 I guess, in some ways, the way that this talk fits in with some of
28 the other things that we've seen is this is really, you know, an
29 example of the use of management strategy evaluation framework to
30 answer a very specific question, and, in this case, we wanted to,
31 you know, look at how a kind of current management procedure
32 paradigm compares to an alternative in which we would actually be
33 updating catch advice between stock assessments.
34
35 This slide shows how -- You know, what we often do is conduct these
36 full stock assessments every few years, and, you know, maybe every
37 five years, and, you know, from those assessments, we set some
38 kind of -- You know, some kind of catch limit is set, and maybe
39 fixed, until we do the next stock assessment, and so these blue
40 lines that you see here are just horizontal lines. You know, we
41 do a stock assessment, and then we don't have any information until
42 we do the next one, a few years later, and so changes end up being
43 these sort of -- You know, appearing in these steps, where there
44 is -- As you get closer to the next stock assessment, there is the
45 potential that things have really gone off the rails.
46
47 Using an interim assessment approach, where we actually monitor
48 some kind of index of abundance that we know to be proportional to

biomass, we could adjust catch. You know, if the index goes up,
maybe increase the catch a little bit. If the index goes down,
decrease the catch a bit, and so, with the MSE framework, we can
simulate both approaches and compare them.

This is effectively what Huynh et al. did in that 2020 paper, and
we effectively set out to extend their work to our situation and
just, you know, see if it worked with the specific parameters of
the operating models that we built.

We used this openMSE software that Adrian is a big part of, and it
was put together by Blue Matter Science, and it's a collection of
actually several sub-packages, the Data-Limited Method Toolkit,
the Management Strategy Evaluation Toolkit, and the Stock
Assessment Methods Toolkit, and, for our purposes, it was helpful
to use this, partly because we were, you know, starting off with
what Huynh et al. had done, when they had used this software, and
we also just found that it was a really efficient way to this
analysis, while also allowing us to be pretty flexible and match
our -- You know, we could build the operating models in a way that
would be pretty specifics to our stocks and our stock assessments.

We focused here on four operating models, based on four species,
and specifically the stocks of red porgy, black sea bass, snowy
grouper, and vermilion snapper in the U.S. South Atlantic, and,
you know, most of the information that goes into our operating
models comes from our stock assessments using the BAM, or the
Beaufort Assessment Model.

I'm going to -- There's a lot of detail in these next few slides,
and I'm going to try to kind of skim over it and just talk about
what I think is sort of the more important stuff. Just to get you
a sense of kind of what goes into these operating models, there's
a bunch of different pieces, and so we're able to put a lot of
specific information in there, stock-level information about
biology and life history and so on, that really characterizes sort
of what's happening in the environment, and there's fleet-level
information about catch and fisheries, observation parameters,
which allow us to, you know, take sample sizes and observation
error-type information from our real system, working in the South
Atlantic, and put it into this simulation.

Then the implementation part is something we didn't really mess
around with too much right now, just to keep it simple, but there
are ways to modify the way that management is actually applied,
and how effectively and how efficiently it's applied, and then
there's a lot of other very specific things that you can put into
these models to really try to tune them, or condition them, to

match a particular stock.

In addition to the openMSE software, there's a bunch of code written that's available on GitHub, in a couple of different packages, and a lot of the conditioning of the operating model was done with this function in openMSE that basically pulls a lot of output from our model, from the Beaufort Assessment Model, and builds these -- It builds a lot of the operating model inputs.

That slide that I just kind of glazed past gives you a lot of specifics, and, in most cases, we were able to match things pretty well. One place we had to simplify our models was in terms of fleet structure, and so our fleet structure is often fairly complicated, I think, with just, you know, a number of different fleets for landings and discards and all the age and length composition data that go along with that, and, for the purposes of this analysis, we just simplified that structure, and so we basically just have one series of removals, which includes landings and discards, and a selectivity is estimated based on compositions for both of those types of fleets combined, and so a simplifying assumption, and I don't think it has an important effect on the results.

This is just a slide to demonstrate one example of how well the Assess2OM function was able to match the inputs to BAM, and so the point of this slide is just effectively to say that, in the projections that we're doing, in the simulations, there is a bunch of historical information that's contained in the operating model, and it's pretty much the historical information from BAM, and so it pretty much carries the history of the fisheries and the stock in the operating model, just as it was in BAM, and so, you know, a good level of realism there.

Okay, and so we're going to look at a bunch of different management procedures, which we were comparing, and our main goal was to try to, you know, try to evaluate how these management procedures perform across the different operating models, with a few different scenarios that I will talk about in a couple of slides, and so one thing to impress upon you is that, whether or not they use some kind of interim adjustment between stock assessments, all of the management procedures run -- You know, they're periodically running full stock assessments, and so the stock assessments -- Just suffice it to say that the stock assessments are not using the stock assessment model that we use in the Southeast, but it's set up to be pretty similar, and perform pretty similarly.

All the management procedures, and I will talk a little bit about these nine different procedures, and they all run these statistical

1 catch-at-age stock assessment models, every one, five, or ten
2 years. In the assessment years, the TAC is set equal to the MSY
3 from the stock assessment, but then, between assessments, the TACs
4 are set in different ways, and this is the table where I really
5 want to pass on information about how the TACs are adjusted in
6 between -- Adjusted or not between assessments.
7
8 We have three different approaches where the TAC is fixed between
9 assessments, where assessments are run, and this is sort of the
10 status quo approaches, if you will, where just the only thing
11 that's varying is the assessment frequency, but nothing is changing
12 in between, and we're setting a fixed TAC.
13
14 Approaches 4 and 5, the TAC is projected, and so varied, but based
15 on a projection, between assessments, and then, in these last four,
16 we're actually stepping in and making adjustments between
17 assessments, based on an index of abundance, either based on a
18 moving average of the index or with some buffering, based on how
19 variable the index is, and so that allows you to be making smaller
20 adjustments if you're less confident in the index, basically.
21
22 We posed a little bit of a data lag here, where, just as in reality,
23 when we do an assessment, the data are already a couple of years
24 old, typically, just because of how long it takes to get
25 everything, you know, finalized, and so, in the years when we do
26 stock assessments in the simulation, the data are basically a
27 couple of years old, but then management goes into effect the next
28 year, and we assume no lag from the end of the index in the interim
29 years, and so, basically, in any given year, the adjustment is
30 made based on the index from that year, but then management doesn't
31 actually go into place until the next year.
32
33 There's a bunch of different layers of these management strategy
34 evaluations, and so we've talked about different operating models,
35 and different management procedures, and we can also, you know,
36 parameterize these things to run different scenarios, and one of
37 the challenges that I found, in this process, is that it's actually
38 -- In some ways, it's easy to run a lot of scenarios, and it's
39 harder to narrow down what you're going to focus on, and so we
40 actually run twenty-plus scenarios, where we varied all different
41 kinds of things, you know, in that -- You can think of those loop
42 diagrams that you've seen in a couple of presentations, and I
43 showed a couple. There's all different things that you can change,
44 and you then end up with just tremendous amounts of output to sort
45 through.
46
47 We tried to focus here on a few, and most of what I've been talking
48 about so far describes what we think is the most realistic

scenario, which we're just thinking of as our base scenario, and
then we looked at a few alternatives, either having where the index
that we're dealing with has high or low uncertainty, or has some
amount of bias that's increasing over time, and then Scenarios 4
and 5, Alternative Scenarios 4 and 5, where the TAC was a little
more aggressive, at 1.25 times MSY, or a little more conservative,
at 0.75 times MSY.

Sort of the last layer of methods here is just thinking about, you
know, okay, once we generate all the output, how do we score that,
and so you've seen some of these already, but we've looked at
several different reference points, some of which are pretty common
things that we look at in stock assessments, and then performance
metrics, like average long-term yield, probability of having a
healthy stock status, and so on, that are sort of more specific to
the MSE process.

Now, to get into results, and there's a lot of results slides, but
I'm going to go through them -- I will try to go through them
pretty quickly, and kind of paraphrase, and then get to some
discussion points, and this is sort of, you know, first-level
results, where we're just looking at what some of the simulated
indices would look like, and so we basically fixed the history of
the indices for all these simulations, and so, if we just look,
for one minute, at the top panel for black sea bass, we see this
solid-red line, up to a vertical-dashed line, and that is basically
the historical period, and so that's always the same in all of the
simulation runs.

Then, for -- This is the base scenario, and, for this base
scenario, we're actually running a lot of replicates, and so I
think, here, this is about fifty replicate runs that are run with
-- The inputs are sort of modified slightly, depending on
uncertainty in different inputs, and so you can see here this
dashed line, going into the future, is sort of a median response,
but, actually, among a lot of the runs, there's a lot of variation
in that index, and so, just to give you a sense of how variable
these indices are, and that variability is characterized by the
observed variability in those indices from what we've seen in the
past.

This is a set of plots, and we're looking at box plots, where, on
the bottom of the plot, you'll see the abbreviations for the nine
different management procedures, and each panel, you know,
represents a different species, and there are three box plots --
There is groupings of three box plots, because they represent
different time periods where we looked at different reference
points for performance metrics, because, depending on where in the

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1 simulation you look at those results, you might get sort of a
2 different outcome, and so, here, we're looking at SSB over SSB
3 MSY, and, effectively, when you look within any one of these little
4 trios of box plots, you see that there is kind of --
5
6 There tends to be an increase in the box over time, and it sort of
7 levels out by the third box, and so there's this variation in time
8 within any one of these management procedures, but, when you
9 compare across any of the boxes for a similar period, there's
10 really not that much variation, and so, basically, not much
11 variation among the management procedures, in terms of the SSB
12 over SSB MSY.
13
14 We see a similar situation with F over FMSY. It's somewhat more
15 variable within time periods, and that's still largely consistent
16 across MPs, and I know there's a lot of output, and I'm
17 generalizing, so that we can have some discussions about it, and
18 there's certainly more detail that one could look at this in.
19
20 Here, we're looking at catch, and it's also pretty similar. The
21 total catch is also pretty similar among the MPs for all species,
22 for similar time periods, and now, here, we're looking at average
23 annual variability in yield, and so this is a calculation that
24 takes into account, you know, how much is catch changing between
25 years, and, here, we see that there's a bit more variation among
26 MPs, and so let's say we want to look at snowy grouper, at the
27 bottom, and the fixed TAC and projection MPs tend to show this --
28 This AAVY, that's a bit lower, and it's a bit higher in the average
29 index MPs, and then even a bit higher in the buffered index MPs.
30
31 For vermilion snapper, you see the fixed TAC MPs are a bit lower,
32 and the projection MPs may be a little bit higher, or, excuse me,
33 slightly lower than some of the interim procedures. For black sea
34 bass, there's really not much that difference among the MPs,
35 compared to what you see in some of the other species, but
36 definitely more variability, when we look at this average annual
37 variability in yield, than some of the other metrics.
38
39 This is just another way of looking at some of these metrics,
40 looking at time series, and so you can get a sense of how similar,
41 or different, they are, when you look more specifically by year.
42 I am going to skip through some of this, just to get to -- I want
43 to get to these tradeoff plots.
44
45 We talked a bit about tradeoffs, and these tradeoff plots can be
46 useful, in terms of trying to separate management procedures in a
47 sort of tradeoff space, and so, here, we're looking at probability
48 of yield being -- The variability in yield being low, versus the

probability that SSB is greater than SSB MSY, and you see some
separation along the horizontal access, and not so much along the
vertical axis, and so, sort of similar to some of the earlier
results, the management procedures vary more in how much the yield
varies than in the stock status result.

Here, we're looking at a variability in yield, versus the
probability that F is below FMSY, and, again, you see more
variation, in terms of the variability in yield, than the less
than FMSY.

This is a similar plot, but it's the variability in yield compared
with mean relative yield, and so kind of where this is going is
that the metric that really -- I'm just kind of skipping through,
because I want to just sort of get toward some discussion, but the
main metric that really separates the MPs is this variability in
yield, and a lot of the other metrics really don't set them too
much apart. This is just kind of a different way of looking at
some of these results, and, again, if you look at the -- All these
points are individual runs of the simulation, and the large colored
circles are kind of the median values, and it really just didn't
separate too much.

This is a lot of results to get some fairly simple observations,
in the end, which was that the average performance of the interim
MPs in the base scenario was really not that much better than the
fixed TAC MPs, and so, basically, whether you are adjusting the
TACs in between the assessments, or just fixing them, the
performance was not that much different.

The thing that was different was that yield was more variable, and
it tended to be, you know, a bit -- The variability in the yield
tended to be a higher in the interim MPs, because we were adjusting
catch more frequently. I describes some alternative scenarios,
but suffice it to say that the results really didn't -- They didn't
differ, in a major way, from what we saw in the base scenario.

So a few summary points, and I think I'm on my last couple of
slides. In our current analysis, the performance of the interim
MPs was not really that different than the status quo approach,
where we have fixed TACs in between assessments, and the analysis
generally focused on that average long-term performance of MPs,
but there may be other performance metrics that suggest different
relationships among MPs, and so I gave you kind of our take on the
results, but, you know, there are other things that we could look
at, and maybe we would see -- You know, see some more
differentiation.

If the variability in yield was a concern, there are so many
different things you can do to these MSEs, and so we could modify
the interim MPs so that, you know, changes in TACs are not
necessarily implemented unless the change in an index exceeds a
particular value, and so, rather than the way that is was done,
the TACs just automatically change, even if it's a very small --
If it suggests a very small change, which is easy to do in this
simulation, and it would be much harder to do in reality, and so
that's kind of, you know, a modification and potential topic for
future work.

A couple of caveats, and the scenarios that I showed here assumed
stationarity and no model misspecification and no implementation
error, and so there's certainly more to do with MSEs, exploring
those assumptions.

You know, this is a slide that I think was put together -- It's
based on some things that we heard about in the Gulf, and so I
don't know how much I need to tell you about what you're doing
here, and hopefully you could give me feedback about what's really
being done, but we used this, what we read about being done in the
Gulf of Mexico, to try to get some discussion going about -- You
know, about how to actually go from developing a TAC adjustment,
which, in those interim calculations, is actually pretty easy,
from my side of things, and it's not a hard calculation to do, but
how quickly can you actually put one of those adjustments into
management, and how much is it worth doing, let's say if the
adjustment is pretty small.

My sense, from what's gone on in the Gulf, is that, when you
actually look at how long it takes to, you know, complete an
interim analysis, and actually implement the management, that it
could be on the order of twelve to eighteen months, and that was
from, I think, information from the Gulf Council website.

This is basically my slide, but just a couple of topics that have
been brought up with the South Atlantic SSC that might be worth
discussing here would be, you know, really, how well would interim
management procedures have to perform for the -- You know, to
compensate for the increased variability in yield, because it did
seem like, you know, by adjusting those catches, you're going to
have more variable yield, and how much better does say the stock
status have to be for that to be worthwhile?

We could change the council abbreviation here, but what performance
metrics are most important to the Gulf Management Council, and
then, you know, how quickly could -- This was kind of my big
question, that I really don't know the answer to, is how quickly

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1 could the catch advice be implemented, and, you know, could that
2 process be streamlined, as it's sort of assumed to be in these
3 MSEs, and that's kind of a big assumption, that it just assumes
4 that the numbers are generated, and then implemented perfectly in
5 the next year, which is obviously not realistic, but there's sort
6 of a whole separate set of discussions that need to take places to
7 figure out how that process actually takes place, and so I will
8 leave you with a peaceful picture of a tree and take any questions
9 you have. That's it. Thank you.
10
11 **CHAIRMAN BARBIERI:** Thank you, Nikolai, and so is this one from
12 your backyard?
13
14 **DR. KLIBANSKY:** No, and I think this is from a Japanese garden in
15 Portland, Oregon.
16
17 **CHAIRMAN BARBIERI:**   Well, thank you for that excellent
18 presentation, and I really appreciate getting this perspective of
19 application of an MSE approach to look into interim analysis and
20 look at the South Atlantic, and so let me open up the floor for
21 questions for Nikolai related to his presentation. Bill Harford.
22
23 **DR, HARFORD:** Hi, Nikolai. I think you've done something really
24 interesting here that contributes to our discussion today, and I
25 wonder if we could use one of your slides to highlight some of the
26 virtues of MSE and why we should care about it, and would you mind
27 going to the slide that shows the tradeoff plot between yield and
28 variation in yield?
29
30 **DR. KLIBANSKY:** I think it's this one.
31
32 **DR. HARFORD:** Yes, this one, and so just to point out to everybody,
33 and correct me if I'm wrong about this, but, on each axis, higher
34 values are better?
35
36 **DR. KLIBANSKY:** Yes, and good point. That's something that I meant
37 to say, that, for all of those -- In all of these tradeoff plots,
38 you really want to be in the top-right-hand corner.
39
40 **DR. HARFORD:** Right, and so you made this point in your discussion,
41 or you raised this issue in your discussion, as to whether interim
42 approaches -- So you could consider the idea that perhaps a
43 stakeholder might be interested in having both high and stable
44 yield, and so I guess my question to you is do these interim
45 approaches reduce that outcome, or do we just get variability and
46 reduction in yield, or do we just get variability and stable
47 yields, and like is it worth it? I think this is a really
48 interesting tradeoff plot, in that regard.

1
2   **DR. KLIBANSKY:** I guess part of where we ended up with this analysis
3   was to think, well, you know, we really need to get into the
4   details of kind of fine-tuning the management procedures that do
5   involve interim adjustments, because, you know, going into it, we
6   knew that it's not probably realistic to expect that, every year
7   between assessments for these stocks, that you would generate an
8   adjustment, and that's not the hard part.
9
10 The hard part is the work that's done by the SSC and the council,
11 which I know much less about, you know, of actually taking those
12 adjustment numbers and saying, okay, now let's see how we turn
13 this into, you know, management action, and so it's probably not
14 realistic to think that you would actually do that every year, and
15 so there's this whole separate discussion, that I just don't know
16 that much about, where you would need to talk about what the
17 process would be, how frequently would you do those adjustments,
18 and, you know, maybe you generate the adjustment every year, or,
19 you know, every other year, or something like that, but then you
20 don't actually change management unless, you know, the difference
21 between the -- Unless the adjustment was large enough, up or down.
22
23 That would, I think, reduce that -- That variability in yield
24 wouldn't be as big of an issue, and so, in some ways, it's a flaw
25 in the approach that we use, but I am not sure if I'm being clear
26 enough. I think that there are ways to mitigate that variability,
27 while not necessarily sacrificing some of the other performance
28 metrics that were good.
29
30 **DR. HARFORD:** Thank you.
31
32 **CHAIRMAN BARBIERI:** Thank you, Nikolai. Any other questions for
33 Nikolai? John Walter.
34
35 **DR. WALTER:** I think one of the -- Nikolai, maybe you can answer
36 this, but one of the key reasons for implementing the interim
37 approach in the Gulf has been when episodic events have come into
38 play that are pretty clear and evident, but the stock assessment
39 -- We can't generate stock assessment advice in time to be
40 responsive to it, and so that's one of the kind of clear like on-
41 fire issues that, when we talk about incorporating environmental
42 factors in assessments, when it's really evident, or when you get
43 episodic events, in which case you want that variability in yield,
44 because you're trying to be responsive to something that's going
45 on that is evident in your indices, and so variability in yield,
46 in your tradeoff plot, is seen as a potential negative, except
47 that the tradeoff is that you've got to do that to prevent
48 overfishing, and so that's the other axis that's not really

1 incorporated here.
2
3 Did you evaluate those episodic events for strong autocorrelation
4 in recruitment, which would potentially be -- At least in the South
5 Atlantic, we see pretty strong autocorrelated recruitments, and so
6 did you evaluate those things that would kind of mean that you do
7 need variability in that interim approach? Thanks.
8
9 **DR. KLIBANSKY:** Thanks for that question. I mentioned, early on,
10 that we ran a lot of other scenarios, and one was certainly similar
11 to this episodic M scenario that has been run by Huynh et al. that
12 I think gets at what you're talking about, is having these
13 occasional large mortality events, and I have to say that I don't
14 remember the results from that well enough, by my recollection is
15 that the results weren't different enough from what we presented
16 here to include them.
17
18 One thing that I've thought about, that, you know, may change the
19 way that we -- You know, that may change the conclusions of this
20 kind of work, is that all of the metrics that we're using are
21 really dealing with, you know, averaging across simulations, which
22 I think, in some cases, might fall short of what we're really
23 looking for, because, you know, in reality, obviously, we're going
24 to only experience one run, you know, one simulation run, and so
25 it may be better to, in some ways, develop performance metrics
26 that are going to look at like, you know, extreme events, and just
27 sort of, you know, not necessarily what is the average doing, but
28 like, you know, what's the chance of having one of these extreme
29 scenarios.
30
31 I think, if you had a performance metric like that, that maybe
32 that would change the results, because sometimes you would have
33 this extreme -- You know, extreme event that would -- Where it
34 would be really helpful to be monitoring more regularly.
35
36 **CHAIRMAN BARBIERI:** Thank you, Nikolai. Mandy.
37
38 **DR. KARNAUSKAS:** Thanks, Nikolai. That was a great presentation,
39 and really interesting results, and it gives us a lot to think
40 about, especially in light of the interim analysis that we
41 discussed yesterday, and I think you may have just partially
42 answered the question that I had, and I was curious.
43
44 In the performance metric that's dealing with the average annual
45 variability in yield, I'm kind of wondering what is really the
46 critical outcome for the stakeholders, and is it the year-to-year
47 variability, or it is more just avoiding really big shocks to the
48 system, like, for example, in the Gulf, recently, we had, you know,

gag grouper that had some downhill trends, and there was a lot of
stakeholder concerns that this assessment was outdated, and then
we got a new assessment, and then, low and behold, things look
really bad, and then there's major cuts, and those are the types
of events that I think, you know, drive a lot of the shocks to the
system, where you have major quota cuts, and it does wonky things
to allocation markets, the seasons, et cetera.

I was just wondering if there's another sort of performance metric
that you could calculate that would not be so much dealing with
the annual variability, but the avoidance of large shocks, which
is also related to this issue of having these episodic events,
which can drastically change the stock status in a short time.
Thanks.

DR. KLIBANSKY: Sure, and the quick answer is I don't know. I
think so, but, you know, we tended to focus on some fairly standard
performance metrics, and I think most of them, if not all of them,
are, you know, sort of canned performance metrics from the openMSE
software, but I started thinking about that sort of probability
of, you know, these extreme situations, and so I would be
interested to kind of think more about that.

Honestly, we got to what turned out to be sort of the end of this
project with just like tons more questions, and, you know, the
realization that there was potentially a lot more to do here, and
there's just this huge world of possibilities that you can explore
with MSE.

CHAIRMAN BARBIERI: Thank you, Nikolai. Any other questions, or
comments, for Nikolai? Peter Hood.

MR. PETER HOOD: Thanks. Peter Hood, Southeast Regional Office,
and I just wanted to mention that -- You know, for Nikolai, from
your perspective, you know, how long does it take to take
management advice and get it implemented, and, if it's something
straightforward, we're looking at something like a year, or a
little bit less than a year, but I did want to mention that both
council staff and SERO staff are looking for ways where we can
find some efficiencies, so that, you know, hopefully we can take
management advice from you guys and, you know, make the sausage
and create the regulations, and do it much more rapidly, and so -
- And more rapidly might be six months, but I just wanted to let
you know that. Thanks.

CHAIRMAN BARBIERI: Thank you for that, Peter. That's reassuring.

DR. KLIBANSKY: Thanks for that, and I appreciate that, and I have

1 tons of respect for the whole process. I know it's a huge ordeal
2 to go through, but part of what we've been talking about is, in
3 doing this analysis, it became apparent, at some point, that the
4 way that that process actually works, the sort of parameters that
5 would describe that process, there's something that actually could
6 be built into the MSE that could affect the performance of, you
7 know, MPs that include an interim adjustment or not, is how quickly
8 we do actually get the results implemented.
9
10 **CHAIRMAN BARBIERI:** Thank you, Nikolai. I have a quick one myself,
11 if nobody has a question, and I guess it's more of a comment and
12 a question, Nikolai, and it's about the timestep, right, that's
13 being used for this, and then the timeline, the timeframe, that's
14 being used to report the results. When you're looking at interim
15 assessments, and this kind of ties into what John Walter -- The
16 comment that he made earlier about the interim assessment is really
17 something that tries to do a little bit of a course correction
18 from the last assessment, to be responsive to some event, episodic
19 or otherwise, that may be impacting the stock abundance, right,
20 and that we need to be, management-wise, responsive to.
21
22 Seeing, you know, that the outcomes here, in the years 2041 to
23 2050 -- I mean, this is really such a long-term scenario, where
24 you're basically treating the patient along way, but just how often
25 you go to the room for a new set of medication, right, but you
26 know that, after fifty years, it's going to be healthy, and I'm
27 trying to reconcile, here in my brain, you know, how we can
28 understand the benefit of these more frequent interventions,
29 through the interim analysis, right, that would not give us this
30 final outcome, you know, relative to applying assessments every
31 five years, because you're talking about such a long time series,
32 or timeframe, for implementation.
33
34 I mean, is there a way, Nikolai, to generate some of these
35 performance metrics that are responsive, you know, in the next few
36 years, or the years between assessments?
37
38 **DR. KLIBANSKY:** Maybe what you're kind of getting at is something
39 that I really glazed over, which was looking at some of these time
40 series plots, where let's say we're looking at -- This is like
41 looking at -- Each one of these time series is representing -- One
42 management procedure is the median of like fifty runs of that
43 management procedure for a particular operating model, over the
44 whole projection period, and so it's starting out at the very end
45 of our assessment, sort of our actual assessment, and then going
46 through this projection period.
47
48 This is showing how those median values relate to one another among

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1 management procedures, and so, you know, you can kind of see --
2 Let's say, with red porgy, you don't really see much variability
3 among those medians over time, and, you know, among those four
4 different procedures there, they're fairly similar, whereas you
5 look at black sea bass, and you see these big swings. The
6 adjustments, when each assessment is happening, which is indicated
7 by those dotted-vertical lines, and you're seeing these big swings.
8
9 This sort of most dampened line is this annual assessment line,
10 the red line, and so you're getting sort of the smoothest results
11 out of that procedure, and, when you're doing assessments every
12 ten years, with TACs fixed in between, you're getting the biggest
13 swings, and then, looking at some of those interim assessments,
14 the purple and blue lines, you still get swings, but they're sort
15 of more dampened, and so is this the kind of demonstration of
16 results that you were thinking of?
17
18 I mean, you can see here, I guess, that the response varies a bit
19 over time, and so, depending on where you're looking in the
20 projection period, you get kind of a different result.
21
22 **CHAIRMAN BARBIERI:** Right, and, no, that's exactly it, and that's
23 exactly what I was looking for, because, you know, in this -- How
24 often, right, we're going to have a management intervention that's
25 informed by some kind of analytical process, right, that leads to
26 that intervention, and even looking -- I mean, if you look at the
27 snowy grouper, and you can see where they ended up, right, over
28 time, but not that much difference in the different management
29 procedures, right?
30
31 **DR. KLIBANSKY:** Correct.
32
33 **CHAIRMAN BARBIERI:** To me, that's very interesting, compared to
34 black sea bass there, and it might help us understand some of the
35 things that are happening and how they are responding to
36 management. Thank you, Nikolay, and that's exactly what I was
37 looking for. John Walter.
38
39 **DR. WALTER:** I think the fact that -- If the conclusion was that
40 the interim approach gets you about the same answer as doing an
41 assessment every five years, or ten years, I think it could be
42 interpreted either way, and I think the question you're asking,
43 Luiz, is what should the SSC choose, or recommend, to use, and
44 what should the Science Center apply in different situations, and
45 one of the key factors there is resources.
46
47 If you get the same answer with a tenth of the resources, well,
48 that's just basic parsimony, in terms of you want the simplest

1 mousetrap to do the job, and I think that's where my interpretation
2 of this is, that we can actually get the same answer, and arrive
3 in the same place, with interim approaches that do adjust, if an
4 adjustment needs to be made, and let's be honest.
5
6 We're not doing a stock assessment every year, and we're probably
7 not even doing one every five years, and we're probably closer to
8 ten years on a lot of stocks, or we do a red one very often, but
9 at the exclusion of some of the other ones, and that's kind of the
10 -- We have a lot that don't get the same attention, because of the
11 need to repeat something, but, if we could be responsive enough
12 with these interims, maybe that does buy us the time, and the
13 resources, to allow us to assess some of the ones that haven't
14 gotten that full attention, and I think that's where we kind of
15 need to factor in that resource allocation of all the players that
16 are involved, because it's not just an analyst, and it's all of
17 the data providers, the state partners, that go into full
18 assessments.
19
20 I think, if we did all that math, we would see the interim, where
21 it's just an index, and adjusting what you've got, being way more
22 parsimonious than the full assessment. Thanks.
23
24 **CHAIRMAN BARBIERI:** Right. I agree completely, but, on top of
25 that, for the SSC, right, there's the planning of the assessment
26 schedules, and the planning of the interim analysis schedules, and
27 what species we're going to prioritize, and so, looking at this
28 analysis, you can see the ones where the -- The interventions make
29 the most difference, relative to others, or it may not as much.
30
31 In terms of, you know, picking and choosing which ones would be
32 preferential, in terms of resource investment, I think that, to
33 me, this would be informative. I mean, that's just adding to your
34 point there, John. All right. I don't know -- Is lunch here?
35
36 **MR. RINDONE:** Your diet lunch is on the back table right there.
37
38 **CHAIRMAN BARBIERI:** Diet lunch.
39
40 **MR. RINDONE:** So, no, not yet.
41
42 **CHAIRMAN BARBIERI:** But it should be here momentarily. It's on
43 the way, and so I would say about we break for lunch now, and we
44 will reconvene at 1:00. Nikolai, thank you so much, and this was
45 super interesting and informative, and we really appreciate you
46 coming over and giving this presentation and addressing questions
47 and discussion. Thank you.
48

1   **DR. KLIBANSKY:** Sure. Thanks.
2
3   (Whereupon, the meeting recessed for lunch on May 3, 2023.)
4
5   - - -
6
7   May 3, 2023
8
9   WEDNESDAY AFTERNOON SESSION
10
11   - - -
12
13 The Meeting of the Gulf of Mexico Fishery Management Council
14 Standing and Special Reef Fish, Special Socioeconomic, and Special
15 Ecosystem Scientific and Statistical Committees reconvened on
16 Wednesday afternoon, May 3, 2023, and was called to order by
17 Chairman Luiz Barbieri.
18
19 **CHAIRMAN BARBIERI:** We are ready to get started for the afternoon,
20 and I'm going to ask SSC members to return to the table. Hopefully
21 folks online are already ready to reconvene, and we will start
22 this afternoon with another presentation by Dr. John Walter and
23 Dr. Cassidy Peterson, and it's An International Approach with ICCAT
24 for Bluefin Tuna, and, in his earlier presentation, John mentioned
25 the ICCAT MSE, you know, how long that process took, and how it
26 helped their issues get resolved, and so we are getting queued up
27 for that presentation. All right, and so, John, if you're ready.
28
29   **AN INTERNATIONAL APPROACH WITH ICCAT FOR BLUEFIN TUNA**
30
31 **DR. WALTER:** Thank you, Mr. Chair.
32
33 **CHAIRMAN BARBIERI:** By the way, before you get started, John, I
34 just wanted to take a minute to thank you for actually being here
35 in-person, to dedicate a full day to discuss all of these issues
36 on MSE with us, and walk us through, right, the main thoughts that
37 have been taking place in the Science Center and, you know, help
38 us understand the process and how it can be used, and so it's
39 really appreciated.
40
41 **DR. WALTER:** Thank you, Mr. Chair. It's sort of a conditioned
42 response for me, after eight years of doing this at ICCAT, that I
43 can't stop doing it, and so, even if you didn't want to hear from
44 me, I would probably talk about it. My family probably is already
45 sick of this, but I do appreciate the opportunity, and I think
46 there is a lot of potential here, and I think it's something that
47 we're going to want to try to explore in the Gulf, as well as the
48 South Atlantic is doing that, and potentially in other regions.

1
2   I will go into the case study here, which is Atlantic bluefin tuna,
3   and, fortunately, I can skip over most of the beginning of the
4   talk, as well as what is MSE, because we've already covered that
5   quite well, and I will dive right into bluefin tuna.
6
7   Bluefin is kind a unique situation, in that there are two, or more,
8   stocks.   There's a Gulf of Mexico spawning population, a
9   Mediterranean spawning population, and then they're spawning
10 outside of those areas. On the left is a series of electronic
11 tags, the blue ones being Mediterranean origin ones that went into
12 the Mediterranean during their spawning time period, and the red
13 being Gulf of Mexico origin ones that went into the Gulf during
14 spawning, and then there's substantial mixing and overlap of those
15 stocks, where you see that a lot of the blue is also in the same
16 area as the red, and so the fishery in the western Atlantic is
17 comprised of a substantial component of eastern origin fish,
18 meaning you've got a mixed-stock fishery situation, and so a single
19 stock assumption, which is what we've often assumed for stock
20 assessments, is violated by that.
21
22 One of the reasons the stock assessments were rejected,
23 particularly in the western assessment, is where that single-stock
24 assumption couldn't be made, and then we had evidence to suggest
25 that the western stock was substantially impacted by things that
26 were going on in the Mediterranean.
27
28 We've also got what may be time-varying or environmentally-driven
29 productivity, and there's been a long-standing controversy over
30 what the nature of the stock-recruitment relationship is, whether
31 it's a Beverton-Holt stock-recruitment relationship or whether
32 there had been a regime shift, starting in about 1970, to a new
33 low-productivity regime, with basically diametrically different
34 results for catch advice and stock status. The stock was either
35 in perfectly fine shape or overfished, and undergoing pretty severe
36 overfishing, depending on that assumption of the stock-recruitment
37 relationship, and the science really couldn't differentiate
38 between the two.
39
40 Then there's uncertainty in the age-at-maturity, which has been a
41 long-standing challenge, and the western population is assumed to
42 mature at a much older age than the eastern population, and then
43 the migratory behavior of the animals, where they cross what was
44 originally a management boundary, at forty-five degrees West, and
45 the fish don't seem to know that, and they move with impunity.
46
47 Previously, we had done a series of stock assessments, and it's
48 one of the few stocks in the world that still gets a virtual

population analysis, and the eastern and western stocks were analyzed with VTAs, and we also applied Stock Synthesis to the western and eastern stock, and, as I noted before, none of those stock assessments have been particularly useful for providing advice, and they, at times, were rejected for use for advice by external reviewers, which left us being the body who is tasked with doing those stock assessments to provide advice to the commission in a quandary, as to how we're going to provide that advice.

Fortunately, there had been, since about 2013, the makings of this MSE, and so, in 2022, the commission adopted this management procedure, which now provides the binding management advice for Atlantic bluefin tuna, for both the east and the west.

As I mentioned, we had taken away biomass-based reference points, because we could not determine what the stock-recruitment relationship was, and then we're providing advice only on a fishing-mortality-based management reference point, but, now, with the management procedure, that has changed all of that, and, as you can see on the right, that's the two stock-recruitment relationships. The red line is the two-line relationship, which has a much lower level of absolute productivity, and the blue line is the Beverton-Holt, which is a much higher productivity.

The Atlantic is basically a bluefin factory, and most of the world's bluefin catch comes from the Atlantic, in fact, and that's something that you don't think about, necessarily, how productive the Atlantic actually is for bluefin tuna, and the bulk of that catch comes from the Mediterranean. 94 percent of that catch comes from purse seines that operate in the Mediterranean, from fish that are purse seined and then taken to farms to be fattened up to then time the market, and so that's where the bulk of the catch comes from, and the bulk of the fishery is, and there's also the western Atlantic fishery, which is the U.S., Canada, and Mexico, and that's primarily a handline and harpoon fishery, but it's a much smaller total catch, and you can see the total catches on the upper figure, where the Atlantic and Mediterranean comprise the bulk of the catch, and the red is the western Atlantic.

One of the key aspects of the fishery, from the standpoint of control and monitoring, has been a time period from 1996, to about 2008, when there was a massive amount of overfishing going on, where catches in the Mediterranean were upwards of 50,000 metric tons, and this was a time when the catch limits were 15,000, and so the fishing was well above the ICCAT scientifically-recommended catch limits, and these catch records come from market receipts in Japanese markets, and so this wasn't even reported catch, and so

a lot of this was derived out of other reports and not well reported.

The catches, we think, spiked up to above 60,000 metric tons, right about 2007 to 2008, at which point there was a CITES Appendix 1 listing, I think, as well as a number of endangered species listings, that essentially triggered pretty severe action on the part of ICCAT, and ICCAT, to its credit, really reduced the total catches down to a much, much lower level and implemented a lot of monitoring, control, and surveillance measures, which reduced the catch and allowed the stock to begin to rebuild.

One of the key aspects, and the key challenges here, what happens in the east affects the west, when there is substantial fishing in the eastern population, not allowing those fish to leave the Mediterranean, and, previously, there was a lot of purse seining going on in the Mediterranean that was initially focused on two-year-old and younger fish, and that shifted to now nine-year-old fish, but, in many cases, during that time period of really high removals, there wasn't a lot of escapement leaving the Mediterranean.

However, once that has been released, we see substantial mixing, and the pies here are genetic stock composition, gold being the Mediterranean-origin fish, and you can see, in the eastern areas, it's a higher composition of Mediterranean, and a very small fraction of Gulf of Mexico.

In the western side however, it's much closer to 50-50, indicating a pretty substantial subsidy of the western fisheries with eastern catch. There is also a pie that is in gray, which is unassigned, and the genetic techniques are not 100 percent perfect, and they have error associated with them, and there's also the potential that there are alternative and other populations out there, and think, right now, one of the take-homes from genetic methods is they actually didn't differentiate the stock when the MSE started, and they've advanced, over the course of time, and there is still work in progress, in terms of the power of next-generation sequencing, in terms of what it's telling us about stock structure, and what we may continue to learn about stock structure, for this stock.

The management objectives, we talked about what conceptual management objectives are, the desired goals for the fishery, and then Bill nicely went over operationalizing them, turning them into specific codified measurable ones.

For this fishery, the commission has adopted management objectives

related to safety, status, stability, and yield. Those basically encompass four of the main objectives, two biological must-pays, and one being less than a certain probability of a stock falling below a point that is undesirable, or the biomass limit reference point, and, in this case, they had adopted 40 percent of SSB MSY as a biomass limit reference point.

A key thing about that is it was exceptionally challenging to get that adopted, both the probability as well as the reference point, through a commission, or any decision-making body, process, in particularly because there's a lot of concern that, if you go below that, does that immediately close the fishery.

One of the things about an MSE is that, in this case, the B_{LIM} only existed within the operating models, and so we couldn't tell, in reality, where the stock is, relative to B_{LIM}, because we don't know what the biomass is, and so we definitely don't know what the biomass limit reference point is, and so it's a theoretical concept that is within the operating models.

If the stock, in the operating model, falls below that operating model's B_{LIM}, then it would violate that safety threshold, and that was a key thing to allowing us to move forward, and I think for the commissioners to understand, that we weren't saying that the stock, or the fishery, gets shut down when you're below B_{LIM}, but we're evaluating that we want to -- Within the operating models, that you want a very low probability of ever getting to that, so that you have some surety that your accepted, or adopted, management procedure is unlikely to go where you don't want to go with the biology.

I can elaborate more on that, but that winds up being a real sticking point, a lot of times, in the decision-making process, because you're asking decision-makers to choose that limit reference point, under advisement of science.

Then status, the probability of being in the green, and we often, at ICCAT, use what we call a Kobe Age Strategy Matrix, which is a biplot of F over FMSY and B over BMSY, and so it tells you where you are relative to fishing, as well as where you are relative to BMSY, and you want a 60 percent probability of F being less than FMSY and SSB being greater than BMSY.

Again, this probability of getting to putting numbers on operationalizing these management objectives is one of the real struggle points, because you're asking managers to put probabilities on their level of risk that they are willing to entertain, but you've got to do that to be able to measure whether

you're actually meeting that, and stability, which is more of a
yield-based objective, and it relates to stakeholders' needs for
a stable fishery, so that the TAC, or total allowable catch,
doesn't go up or down that much from one year to the next, and, in
this case, the recommendation was that it should be less than 20
percent interannual change, or TAC change, between management
periods, and then, obviously, yield is a big focus for
stakeholders, and yield both in the short-term, years one to ten,
and then long-term, years one to thirty. Those are the four
operational management objectives that were then tested in the
process.

One thing that I will also note is that, when we presented managers
with management objectives, we presented them with four, and they
eventually came up with about twenty-seven different things that
they wanted reported out. When it comes down to it, there's only
a few things that actually matter, and most of them actually were
quite correlating.

When we looked at the correlation analysis between the twenty-
seven and the four, it essentially boiled down to about those four
were the primary ones, and everything else -- If you looked at the
yield in the years ten to fifteen, or the yield in the years
fifteen to thirty, all these other things wind up basically being
about the same thing as looking at the yield in the years one to
ten and then one to thirty.

I think you can overcomplicate this to ad nauseum, when it turns
out that only a few things really are enough to capture the
performance differences between different management procedures,
and that's really what you want to be able to convey, is that
Management Procedure 1 does better than Management Procedure 2.

What we're looking at is primarily empirical management
procedures, and we went over these basically index-based
approaches. When the index goes up, the TAC goes up. When the
index goes down, the TAC goes down. One could also evaluate, and
we did evaluate, some model-based management approaches, which
used a fairly simple either production-model-type analysis to
derive the TAC advice, similar to the stock assessments, but, given
the lack of success with the model-based assessments, we felt that
empirical approaches were likely to be more productive to follow,
and the basic recipe, or the ingredients, that go into a stock
assessment are largely the indices anyway, and so that's primarily
what's telling you how your biomass is changing over time.

You've got age composition as well, but, in this case, we figured
that working directly with the indices is probably going to be

1   more productive, and coming up with what combination of indices
2   would be most effective was really where the focus was going to be
3   most useful.
4
5   One of the key things was that this process started as a
6   competitive evolutionary process, with nine different groups
7   looking and trying to develop management procedures across
8   multiple different nations, multiple different groups, each one
9   developing their own management procedure, simulation testing it,
10 refining it, stealing from others, borrowing what worked, shedding
11 what didn't, seeing that somebody else did better than you on one
12 thing and saying what did they do, and then incorporating, which
13 is actually a valuable part in the process, because, if it weren't
14 for nine different groups exploring this solution space, we
15 wouldn't have found as far as we could push it.
16
17 There was a time when we thought that we were at the limit of what
18 we could squeeze out, in terms of yield, while maintaining the
19 biological must-pays, and then one of the other groups found some
20 other much better situation, and that pushed everyone forward to
21 say, hey, what did they do, and let's try to incorporate that,
22 and, by doing that, that evolutionary process works, and you get
23 to an even better result.
24
25 I won't go into all the details, because much of them are using
26 indices, but one of the key things is that it's modifying the
27 previous TAC, and so, rather than our stock assessments, which re-
28 estimate the biomass level every time you rerun them, and we've
29 seen, from like the Ralston sigma, that our sigma is about 0.40,
30 and that is the standard deviation in the total biomass estimate
31 when we redo a stock assessment.
32
33 That is meaning that, if we derive TAC advice from that, that TAC
34 advice could also fluctuate simply based on that, because the TAC
35 is a certain F times the biomass that the assessment says is there.
36 However, if you just modify the previous year's TAC, based on where
37 the index is, you're at least grounded.
38
39 If you say the TAC is a million pounds, that million pounds is
40 only going to get adjusted up by whatever adjustment the indices
41 say, which grounds you in at least something that is known, which
42 is one of the benefits of empirical management procedures, and,
43 for me, it was a real change in my thinking, in terms of because
44 I come from a place where I would rerun a stock assessment, but it
45 would give a different biomass, and which one is right, when the
46 answer is none of it's right, and it's all derived from a model.
47
48 When we give management advice, we do want some element of

stability. For better or worse, what we're currently doing is a
de facto unsimulated tested management procedure anyway, but we
just haven't written down the recipe for it, and we just apply it,
and sometimes the recipe changes, and sometimes the ingredients
change.

I won't go into all the details of the different groups, and I
will just note that -- I will kind of focus on the winner, because
it's performance that matters, and there was a lot of concern from
managers about all the details of these, and they wanted to know
all the innerworkings, and we tried to forestall those
conversations until we came down to some of the winners, because
trying to integrate nine different candidate management procedures
was basically like trying to learn about all the losers. There's
no real need to know -- If it doesn't perform, and performance is
based on those operational management objectives, then you don't
need to know about it. That's kind of the way evolution works,
and we don't focus on the fossils. We focus on the ones that are
still alive.

One survived, and that was BR, Butterworth-Rademeyer. The process
of getting to that was somewhat excruciating, to get to a winner,
how we selected the winner, et cetera, et cetera, and that probably
deserves its own book chapter, but, ultimately, what survived was
one management procedure that sets a TAC for the western area and
for the eastern area. It set the TAC for three years, based on
ten indices, and so we heard stakeholder feedback that they wanted
more indices, rather than fewer, and okay, and I guess there's
some redundancy in that, which is good, in terms of, if you lose
an index, or if one index goes haywire.

If you average multiple, then maybe you get the right answer, but
it also meant that you had to average across them, which means you
had to downweight any individual index. It was largely variance
weighted, and so indices with higher variance got downweighted to
achieve that overall master index from those ten, and then it was
relative to a reference year, to 2017.

There was a lot of built-in stability provisions that limited
initial TAC changes, because there were concerns about jumping off
the cliff, and what happens when we go to this new management
procedure, and are we going to just go into something completely
different, and we said, no, and, in fact, if you want stability,
and you want something that's going to be similar to what you have
in the past, we can build that into it, and that is one of your
operational management objectives, is we build in these bumpers,
as we call them.

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In the bowling analogy, you put the bumpers on for the first couple of years, so that you're not going to go haywire, or different than you are, and then you simulation test it, to say does putting those bumpers too much constrain you to be able to meet the biological must-pays, and it turns out that, no, you could still meet all the must-pays, of not overfishing and rebuilding, even with initial bumpers.

Then a key thing here is that the operating models had these really nasty regime shifts built in, where the stock-recruitment relationship was one thing, and then, ten years later, it flips to a different state. Then, in another one, it flips backwards. By putting in these really difficult solution spaces to navigate, it's basically saying is it climate ready, and, if the climate completely shifts the productivity of this animal, can we manage our way through it.

This had some challenges to present this, because people said, well, how plausible is it that it would be ten years, and how plausible is it that it would be that extreme, and it's not plausible really at all, and it's -- The point was that we wanted to put in something that was extreme, that could potentially happen, and the reason it could potentially happen was because the key hypothesis of the two-line stock-recruitment relationship was that it flipped, and productivity cut in half, in 1970, and so, if you're going to entertain that, you have to entertain that it could flip back, which was one of the assumptions.

Then whether this management procedure achieves -- Well, before I go on to that, the other thing about the operating model is there's a suite of models called a reference grid, and that is the ones that would be most plausible. There was also plausibility weighting, in terms of -- I think one of the questions that came up, asking about the operating models, and what if some are more -- I think Nikolai said that some might be more plausible than others, and we might want to put more focus on performance on this set of operating models than these other ones.

One way of doing that is that you plausibility weight the models in the reference grid, and this was done though kind of a Delphi approach, where the scientists in the room provided their weights for each of the hypotheses in the operating models, and then they were summed up to get an average set of weights for the different operating models, and so all the performance was weighted according to those plausibilities.

That's one of doing it, and the other way is to make it equal, but it allowed for the entertainment that maybe this regime shift is

225

less likely than for something to be stationary, and then there was a whole set of operating models that were called the robustness operating models, and those were not put into the reference grid. Those were the what-if scenarios about what if this were like this, and, even though we don't think it's plausible, but what if the Mediterranean sea level declines, and the Mediterranean closes up, and you no longer get a subsidy from the Mediterranean.

There was one robustness test that basically said let's shut off mixing between the east and the west, because that could happen. It's not likely, but we want to see are we robust to these really outlandish scenarios, which is those additional hurdles that are kind of nice to know, and sometimes they could be used to differentiate to equally-performing management procedures. They perform equally on the reference grid, but one fails one of the robustness tests horribly, and you might say, you know, let's take the one that does good on everything.

I think, in terms of this management procedure, this one performed the best across nearly all of the operational management objectives, and so it was pretty clear that this one was the best-performing one.

Again, it uses ten indices, and there's a series of fishery-dependent and fishery-independent indices, for both the east and the west, and what you can see there is the blue lines and the red dots, and we talked about conditioning, and conditioning -- Bill talked about it, and Adrian talked about this, and how do we know that this is going to fairly reflect the data we've got, and what if we don't really believe the data we've got, and we really struggled with the indices, because we've got multiple indices, and they're often conflicting.

They're not always saying the same thing, and you can see the indices here are not always saying the same thing, but the blue lines are fits to them from the series of forty-eight operating models, and a lot of the operating models had very different solution spaces through the indices, and so, because they are entertaining really different, divergent hypotheses about productivity, about life history, about the biology of the animals, and so these were all within this operating model space.

The lack of fit to this indices was what was then projected forward to represent the future potential behavior of those indices, and so, if there was lack of fit, and autocorrelation in that lack of fit, we projected that forward, so that the empirical management procedure fairly represented what that index actually represented in its conditioning, and so, if the fit was horrible, we projected

1 forward bad fits, with high autocorrelation, and so, presumably,
2 an index like that shouldn't work very well, and there were a
3 number that were actually removed from even consideration, because
4 their fits were just pathological, but, in these, the ones that
5 were the best fitting ones were retained, but you can see there's
6 a substantial lack of fit to some of them, and that was retained
7 in the future behavior of the index.
8
9 Here's the schedule for the management procedure cycle, which was
10 something that was predetermined before adoption, because people
11 wanted to know a number of things. One, what's the frequency by
12 which it's going to set a TAC. Three years, for both east and
13 west, and there was a long debate about whether it should be two
14 or three years.
15
16 People wanted to know what's the purpose of a stock assessment,
17 now that we're setting our TAC from a management procedure, and,
18 well, a stock assessment still plays a key role. One, it's our
19 only way to assess whether the management procedure is working,
20 and it tells us what the status of the stock is, and it may very
21 well be a good health check. Even if it's not giving us good TAC
22 advice, we can usually get relative stock status, and we can
23 certainly get stock status relative to fishing mortality, and so
24 there are going to be routine stock assessments, and that's
25 actually scheduled, in this one, for the 2026 to 2027 timeframe.
26
27 Then there's going to be a review of the management procedure, and
28 this is not a set it stone for thirty years, and there is a review
29 of it, whether it's meeting its objectives, and whether situations
30 have occurred that would be outside of what was simulation tested,
31 and these are called exceptional circumstance provisions, which
32 are the get-out-of-jail-free cards. If there are things that have
33 occurred that are outside of what's been tested in the management
34 procedure, then the exceptional circumstances provisions would
35 kick in.
36
37 In this case, if an index, or a suite of indices, are outside of
38 prediction intervals, if there's science that tells us that the
39 stock biomass is much higher, or much lower, than anything that
40 was tested in the operating models, or other things, like the
41 inability to update the management procedure, because there is no
42 indices, those kind of things then trigger an exceptional
43 circumstances provision, in which case the advice for the TAC would
44 have to be derived from some alternative procedure.
45
46 Most likely, it would be, if everything seems okay, but there's
47 just indices way above, or way outside, it would say let's start
48 up a new assessment, or recondition, and maybe we need to carry

over the TAC, or there's no harm in carrying over the TAC, for two
more years, but those are the things that give the options to get
out of the management procedure, and all of these were prespecified
ahead of time, so that it's clear to everyone involved what the
process is going to be.

Are there going to be benefits, in terms of efficiency? Well,
considering we did a stock assessment for three years in a row, I
certainly hope so, and I'm certainly hoping that we can forestall
a stock assessment until 2026, which allows us, from the standpoint
of the SCRS Bluefin Working Group, to focus on some things like
returning to the science that would be needed to support this
reconditioning, which is, I think, much more of what we wanted to
be able to work on, rather than continuing the crank of the stock
assessment. I think that's largely the bluefin, and I will stop
there, because I think the next slide is another topic. Thanks,
Mr. Chair.

CHAIRMAN BARBIERI: Thank you for that, John. That's a super
interesting story, and it's good to hear all those details and the
dynamics, the group dynamics, that goes on around it, and so the
second part of John's presentation is going to go more into the
Magnuson-Stevens Act and applications of MSE and the SSC input
into that process, or role, and so, before we go there, any
questions for John? Trevor.

MR. MONCRIEF: Just a quick one. I mean, ten indices seems like
a lot, and I noticed a fair amount of different names attached to
those indices, and were those all chosen because each region, or
each partner, kind of felt like theirs should be included, or was
there merit to it? Was it more like, if you're going to use
theirs, you've got to use ours, so to speak?

DR. WALTER: Yes, and there is a sort of everyone wants to bring
something to the table in the international arena, and you can see
that those indices come from a lot of different groups. In terms
of using them in the management procedure, it was performance that
mattered, almost exclusively, and so that was one of the nice
things, is the ones that didn't meet that had just horrible
residual patterns, like pathological ones, like ten years of
residuals that couldn't be fit, and there was a lot of pain in
excluding those, but there was just no way to say that they could
be reliable indicators, because we couldn't condition them. We
couldn't fit any of the plausible operating models to them.

The ones that remained remain, and probably we erred, for this
one, on the side of inclusion, but each of the developers were
allowed to pick and choose which indices they wanted, and so, for

1 the one that we put together, that Cassidy, Matt Lauretta, and I
2 put together, we only chose a much more reduced subset of indices,
3 partly because we were focusing on a set of western and eastern-
4 only indices that applied to certain size groups, and other groups,
5 other developers, also looked at indices that applied only to
6 certain size groups.
7
8 This developer just said throw them all in, and put them into one
9 big casserole, but, to do that, and, as it turns out, that was
10 better liked by the managers, because they felt -- I'm from Miami,
11 and so I guess people figure that five engines are safer than four
12 engines, or three engines, because it gives you more redundancy,
13 and, I don't know, and, to me, it's a lot more oil changes, but
14 that is kind of how that process happened.
15
16 **CHAIRMAN BARBIERI:** Any other questions for John? I have Dave and
17 then Mandy.
18
19 **DR. CHAGARIS:** Thank you. John, I'm interested in, you know, kind
20 of how the MSE gaming -- You know, where you had these different
21 teams evaluating different management procedures and operating
22 models, and was this kind of gaming situation -- Was this a
23 deliberate approach, as far as you all set out to do this, or did
24 it sort of just happen, by virtue, after you assembled all the
25 models and management procedures, and then do you think that, given
26 the bandwidth, and, you know, the infrastructure that we have in
27 the Gulf and the Southeast, do you think it's something that's
28 reproducible here, you know, to do that type of gaming analysis in
29 the Southeast, because I think that's really valuable, but,
30 obviously, it takes a lot of expertise, and so I was wondering if
31 you could just talk a little bit more about how that came to be
32 and how you think we could approach that here.
33
34 **DR. WALTER:** This was deliberate, in the sense of trying to have
35 multiple different independent groups. Can it be replicated?
36 Probably not, because you're not going to get that many -- That
37 much expertise. Can it be modeled, to some extent? I think it's
38 intriguing, because I think that one of the key parts about that
39 gaming is that you had groups who had really wanted particular
40 outcomes out of it, and so they were -- It's perfectly fine to set
41 up your management procedure to say I want the one that gets the
42 most yield for the west, or the most yield for the east.
43
44 As long as it meets the other things, that is perfectly acceptable,
45 and you can aim for that, and so, by that process, you could say
46 let's get different groups, who don't see eye-to-eye, to commission
47 their own, or to work on their own management procedure, and, as
48 long as it meets the other objectives, it's completely fair. It

1 could be the maximum yield one, or it could be the opportunity
2 maximizer, or it could be the NGO one that has the greatest
3 conservation. If it meets the other ones, then it's an absolutely
4 valid management procedure, and so there wasn't a need for
5 objectivity in the design, but it was objectivity in the
6 performance.

8 Now, how -- Whether we've got the bandwidth for a larger, or other
9 groups, I mean, I think that's sort of something that the FEI
10 process -- If they choose to use MSE, that's one road to go down
11 to develop a management procedure, and, well, allowing multiple
12 different groups to do that, and I will note that one of the key
13 aspects of making this happen -- I will just give a little bit of
14 -- Adrian and Tom, if you're still listening, you guys should just
15 close your ears.

17 They did a very good job of providing the infrastructure for
18 developers to be able to do this, and you didn't have to be a coder
19 of high competency to develop a management procedure, and you had
20 to be able to write a couple of lines of R code and run it through
21 the MSE framework that Blue Matter had developed, but they made it
22 very straightforward, and very easy, and so, in that sense, if
23 you've got that structure, then it allows those teams to focus on
24 their MP, but not focus on the code, and I think that's what made
25 that happen.

27 **DR. CHAGARIS:** Well, I mean, that's good to know, you know,
28 because, if we do go down that path, and we want to have this type
29 of -- Have people develop their own, and test their own, management
30 procedures, and bring them back, then the model itself needs to be
31 in a certain, you know, structure, or framework, that's usable.
32 Thank you. I think that's really cool.

34 **CHAIRMAN BARBIERI:** John, real quickly, a point of clarification,
35 before I go to Mandy, because it's related to what Dave just asked,
36 and so the flags there -- Is this representative of the funding
37 source for that team?

39 **DR. WALTER:** Correct, in most cases. The only -- There's some
40 difference, but, usually, either the funding, or the lead
41 developers, were from that country, and so, yes, they would have
42 funded them. I think Blue Matter's funding came from the ICCAT
43 bluefin tuna program, but they took their initiative to develop
44 their own management procedures, but they were funded by GBYP.

46 **CHAIRMAN BARBIERI:** Got it. Thank you. Mandy.

48 **DR. KARNAUSKAS:** Thanks, John. That was a great case study to

1   bring to us, and so thanks for the presentation. I think you just
2   answered my question, and I was intrigued by the international
3   competition, and I just wanted to clarify that it's not that each
4   team brought their own MSE, but there was a common MSE framework,
5   a common operating model, and the different teams just tested their
6   MPs within that framework, and is that how it worked?
7
8   **DR. WALTER:** That is correct, yes.
9
10 **CHAIRMAN BARBIERI:** An interesting point to that, right, on that
11 issue, is, I mean, there was a central -- ICCAT coordinated all of
12 this, to make sure that all the different parties involved were
13 well coordinated and working together in a really truly
14 collaborative way. I mean, even if there is competition, it's
15 concentrated from that mainstem of they set the parameters for
16 what the management procedures are going to be, or the bumpers,
17 right, and, therefore, within which you're going to be operating,
18 and so everybody has to work around that, and within that
19 framework.
20
21 **DR. WALTER:** That's correct.
22
23 **CHAIRMAN BARBIERI:** Okay. I don't see any other questions on the
24 bluefin tuna case study, and nothing online, Jess? Well, John, it
25 looks like we are ready for application of this in the U.S.
26 management framework.
27
28   **THE MAGNUSON-STEVENS ACT, MSE, AND THE POSSIBLE ROLE OF THE SSC**
29
30 **DR. WALTER:** Thanks, and so I will state upfront that this is
31 really ideas that are according to me and that we're really in the
32 early stages of a conversation about how to fit MSE, and really
33 management procedures, into our Magnuson-Stevens advice framework,
34 and in terms of the roles and responsibilities for all of the
35 groups here, and so I just want to enter a conversation, and I
36 don't want this to seem prescriptive, and I've just put something
37 down here as a potential set of options, and this is something
38 that the MSE FTE working group is putting together a paper that
39 will flesh this out more, probably taking into advice thoughts
40 from this body, and try to draft something in the next coming
41 months.
42
43 Here, I have set up a table that shows the key things that need to
44 happen in developing a management procedure. One, the first row
45 is you've got to build the operating models, and then you've got
46 to condition them, and you've got to define the management
47 objectives, and then you've got to develop the management
48 procedures, and, in each step, there are four main groups that I

have outlined and then what their role and responsibility could
be.

One is stakeholders have a key responsibility, and they can advise
on operating models, the structure and key uncertainties, and
usually stakeholders have pretty strong opinions about the nature
of things, and they have pretty valuable hypotheses about how
things might happen, and what the drivers are, and elucidating
them, through conceptual modeling, that we've done, for instance,
for dolphinfish, is helping us to build the operating models, in
terms of identifying what the drivers of the system are and the
drivers of dolphin productivity dynamics.

They also certainly advise on the management objectives, in terms
of saying what they want. Ultimately, however, there is a larger
-- There's a body that's going to eventually adopt them, and that
would be the council, and then stakeholders also advise on
management procedures, and they have, often, very valuable
insights as to what could be implemented, what would work, and
what would be dead on arrival, and so having those conversations
on those three elements is really key to have stakeholder input,
and, failing that, you are going to have a hard time getting buy-
in of the whole process, because, if the operating models are seen
as a fait accompli, and you haven't incorporated many of the
uncertainties that people think are part of the system, they're
not going to accept it, or they're not going to be very accepting
of it.

I think we're struggling with that sometimes with our stock
assessments, because our assessments can't incorporate all of
these uncertainties, and usually we have a single -- We condense
it down to a single model and sensitivities.

However, I actually think we've got a much better path forward
with this reference grid idea, or robustness grid, from using say
the stock assessment process of developing the models, developing
all the key uncertainties, and creating a reference grid out of
that, to then test things, which I think might actually more fit
our known uncertainties than being forced into coming up with one
base model, which never really satisfies anybody. I actually
think, from that standpoint, it's maybe even a better fit for our
existing framework.

Then there's a key role for the modeling team. You've got to have
a really confident modeling team, who is going to be basically
pushing this forward, doing the coding, doing the graphics,
providing curated material, Shiny applications for people to
access that material, and to make it very relevant to people, and,

1   in that case, the modeling team is likely be constructing the
2   operating models, quantifying the management objectives, and then
3   testing and refining the management procedures.
4
5   The developers, if there's a set of developers, who would develop
6   the management procedures, would be part of that modeling team,
7   but you've really got to have that core set of analytical staff to
8   drive the process forward.
9
10 Then here's where I think we've got a real strength to lean on, in
11 that there's a role for the SSC here. I think, in this case, the
12 operating models are largely a scientific decision, and it
13 shouldn't be a policy decision, in terms of the plausibility
14 weighting, because that's not a risk decision basis, but that's
15 scientific plausibility. Do we think that this hypothesis is more
16 plausible than this hypothesis, for say a stock-recruitment
17 relationship? That should be firmly in the realm of science.
18
19 That is where I think that the SSC could play a role, if they so
20 choose, in adopting the operating model and saying, yes, this
21 indeed does capture the scientific uncertainties, and it
22 effectively plausibility weights them, and here's the set of
23 robustness tests that we think should be done, and so I think
24 that's a key role for the SSC, as they do currently for our stock
25 assessments, where you adopt the ABC advice.
26
27 Then, for management objectives, I think the SSC would advise on
28 the basis of them, and say you need these to meet your biological
29 must-pays, and that is in your purview, and you could consider
30 these, that are more stakeholder concerns, or yield or opportunity-
31 based, or economic.
32
33 Then, in terms of management procedures, the SSC, I think, could
34 play a role in does this management procedure meet the biological
35 must-pays, and does the ultimate recipe, that management procedure
36 that gets adopted, meet the SSC's prerogative, and I think, in
37 that case, you would be able to say, yes, in expectation, this
38 management procedure recipe meets what we need to advise on for
39 ABC.
40
41 Then the council plays a key role as well, and I think one take-
42 home is don't embark upon this unless it's going to go before a
43 council and develop a management procedure that they're going to
44 choose, because, if you're going to go through all of that time,
45 you might as well make it count.
46
47 The council may want to advise on the operating models, and they
48 tend to have opinions on science, and that's fair enough, and they

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also reflect many of the stakeholder concerns, and so they have a
key -- They have the pulse of their stakeholders, and, if it's not
a suite of operating models that they can say, yes, this
encompasses our concerns, or, conversely, addresses the things
that they're worried about, then it's not going to be useful to
them, and, ultimately, this is a product for them.

They're going to adopt the management objectives, because it's
only a politically-appointed body who can actually make those
decisions on risk, make those decisions on what society wants, and
that's the way that MSA has actually set up the council process,
and so they would adopt those. They would say, yes, these are our
five operational management objectives, and here's the probability
of being in the green, here's the probability of not being below
-- Et cetera, et cetera. Then, ultimately, they will adopt, and
implement, the management procedure.

In terms of fitting into the process, the way we currently do our
rulemaking is our stock assessment goes through the SSC, and ABC
advice goes to the council, and the council determines an
allocation, and it goes back to the SSC for a rerun on that new
allocation, and it comes back and forth.

There's already a lot of iteration in the process, and, usually,
the council sees any kind of action three times, an initial
presentation, and then it goes out for scoping, and then it
eventually comes back, and it goes out for final, and then there's
a final action, which actually could work very well, in that, when
you get to what I call kind of like the death throes of the
management procedure development, when you've narrowed it down
from the nine, to probably three, and then you're talking about
refining those three, squeezing more performance out of those best-
performing management procedures, and that is can we get more yield
out of it, can we stabilize things, can we tune things up a bit,
and you've already settled on what your engine is, and you just
want to be able to see if you can squeeze more performance out of
it, and that's when that iteration is important, and usually --

When it started out with bluefin, we couldn't get the managers'
time, and we were trying to say, hey, we want to schedule a
conversation, but, when it got down to the end of it, they couldn't
get enough time, and they kept asking us for more meetings, and
more meetings, because, when it comes down to it, you've got a
decision before you, and, as a council, you're going to want all
the information you can, and so they're going to want to say we
like this management procedure, and can we get a little bit more
out of it, can we get a little bit more stability, because we don't
like the variability, and so all of that is built in in those final

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1 iterations, and those back-and-forths, that, actually, I think our
2 process allows for that.
3
4 That iteration would have to go -- If the council says, tune this
5 up a bit, and it goes to the SSC, and the SSC says, okay, it still
6 meets the biological must-pays, and it's getting better
7 performance than the other ones, and send it back up to the
8 council. The council gets it, and the council says this is good
9 enough to go for public scoping, and you send it to public scoping.
10 The public says, actually, no, we need a little bit more on this,
11 and can you try to tune it up here, and another round of tuning-
12 up, and then, eventually, it gets back to the council.
13
14 We're already doing that. You know, that's actually our standard
15 process, but we just don't often have -- At that point, we had a
16 really finely-tuned mechanism for putting any little tweak and
17 tune-up to our management, because it was a pretty well-tuned
18 machine to just take that BR and say let's try to squeeze a little
19 more performance out of it.
20
21 Then the other thing you got out of that is you've immediately got
22 all of your performance statistics, which feeds into if we need to
23 write that up on how it meets all the other objectives, and it
24 would make that write-up of it, for the amendment, quite -- I think
25 quite streamlined, and so I think it fits in pretty well with our
26 current system.
27
28 Now, the other question being -- Before I go on, the other question
29 that has come up is what about status, and, for bluefin, the
30 management procedure was empirical, and it doesn't give status,
31 and the question being how often do you need stock status out of
32 your management procedure, when your primary tool is your annual
33 catch limit? You can live without status, or a change in status,
34 for a good long time, and it's we're not required by Magnuson to
35 give status updates every year.
36
37 We are required to give an annual catch limit, and so, in terms of
38 the must-pay, it's that annual catch surely supersedes a change,
39 or an updated status, and so, in that reduced frequency of the
40 stock assessment, you would still get status on six, or eight,
41 year time periods, but you would at least have a responsive
42 management procedure. Now, you might be able to get a management
43 procedure that also gives you stock status, if you had a model-
44 based one, but I think it's a lower-tier priority on the hierarchy
45 of needs.
46
47 **CHAIRMAN BARBIERI:** John, before you move forward, just because I
48 think it would be easier if you go back one, if you go back one

1 slide, to your previous one, and I don't know about anybody else,
2 but, to me, I am having trouble understanding how the council is
3 not advising on the management objectives.
4
5 **DR. WALTER:** Well, I guess, when I put "adopt", I meant that final
6 decision-making rests with them, which encompasses "advise" as
7 well, in my mind.
8
9 **CHAIRMAN BARBIERI:** Got it. Yes. Thank you. I was just thinking
10 that, obviously, they have to be fully engaged, right, in this
11 process, and they're the key stakeholder in the process itself,
12 right, and, actually, in some ways, philosophically speaking,
13 driving the management objectives, because, like you said, they're
14 the ones really managing the -- The outcome of this would be what
15 they want to implement to achieve their management objectives for
16 the stocks in question.
17
18 **DR. WALTER:** Ideally, and, from experience, it helps to -- Often,
19 they can come conceptually with what the objectives are, but, in
20 terms of when it turns into turning into an operational objective,
21 the probabilities and quantities and timeframes -- It helps to
22 have some assistance with them, and, to get that decision, and
23 this is when the next slide I think is useful, those decisions --
24 Like the probabilities and risks come with tradeoffs, and, until
25 you see those tradeoffs, you're not going to agree to them, if
26 you're a decision-maker, and you're going to hold out until you're
27 forced to do this, because you want to know what the contingencies
28 are.
29
30 One of the key things about the process is we've got no decisions
31 whatsoever out of decision-makers until we put numbers in front of
32 them, and so this is -- It probably states kind of human nature
33 about, well, you're never going to make that hard decision until
34 confronted with it, and a good case-in-point was that there was
35 going to be this real concern of a tradeoff in yield between the
36 eastern stock, which has got ten-times larger catches, and
37 presumably a ten-times larger population, and the western stock,
38 which is at about twenty-seven to thirty-six metric tons, and the
39 eastern stock is at 36,000 metric tons of TAC last year, and then
40 it's going to go up for the management procedure.
41
42 The concern was why are we worrying about this western stock from
43 the eastern harvesters, and they were like why even bother, and we
44 catch that amount in one net, and the western fishery is like, if
45 you don't let any fish come over to us, we're going to be basically
46 starved, and not have enough fish, and so how you manage that space
47 -- People were very reluctant to put any numbers down, because
48 they thought it was going to somehow -- If you set too high of a

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probability of being in the green, for this presumably weaker western stock, you are then going to limit what the eastern fishery could catch, and so none of the eastern fishery are going to say that, because it's put numbers down, and so it wasn't until we showed them that the tradeoff space wasn't that severe, and this was largely the tradeoff space between eastern catch and western stock status.

The concern was, if we have to maintain this western stock at too high of a level, then it will completely curtail any eastern yield, and, in fact, if you played -- If you took this game to its ultimate result, you could get higher yields by just extirpating the western stock, which would be antithetical to the conventional objective, but people were sort of playing that game out, because it's international negotiations, and it's not a friendly environment, like our council environment is. We're all in the same country, and it's easy, right?

Until we put numbers down, and this is eastern average catch, and so this 50,000, or 60,000, metric tons, that's what the catch was going to be, and so this was real numbers that people -- Once you started talking about TAC, what the TAC was going to be, then everyone paid attention, and they said, 50,000 metric tons, or 60,000 metric tons, and we're at 36,000, and, wait, this isn't that bad. Okay. Maybe I can live with it.

You saw the wheels turn, that this wasn't going to be the death knell for the eastern fishery, that actually things were looking pretty up, and the western fishermen were not as happy, because they were hoping that they were going to get a much bigger increase, but it wasn't like they were -- Like the stock status was really in terrible shape, because this is western stock status, and so the tradeoff wasn't as severe as people had thought, and, once we were able to show that, we were able to start beginning to have the conversation.

Now, if the tradeoff was really severe, it was going to be an even more difficult conversation to have, but you didn't even start it, because of the fear factor, and so that's where you've got to be able to put numbers down, to get those -- To motivate those difficult decisions, and I think, in this case -- When I put "optimum yield" here is I think that's a very difficult conversation space right now, because we don't know what it means.

If it boils down to commercial yield and recreational opportunity, and let's say maybe that is the two operational management objectives that are most pivotal, is days of recreational fishing and commercial yield, and it might come down to that, and is there

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1 some solution space, and how diametrically opposite is that
2 tradeoff, and is there something that people can live with that
3 then becomes the de facto optimum yield, because we say -- The
4 council says this is a management procedure that does pretty good
5 for the recreational fishery, and pretty good for the commercial
6 fishery, and I think we can live with it.
7
8 That's optimum yield, right there, and then so -- But, until you
9 get those numbers, until the commercial fishery says what are the
10 yields out of this, and yields are things that matter to them, in
11 units that matter, then it doesn't resonate.
12
13 Then fitting MSE into MSA, and I think that probably we're going
14 to be pushed towards this sooner rather than later. The non-
15 stationarity is going to really challenge our advice framework,
16 and we've got some of the issues that a stock assessment just won't
17 work for some species, because they're too short-lived, and we've
18 got a delay between when management goes into place, and Nikolai
19 tested two years, and our delay is probably worse than that, in
20 reality, and I think that we've got a lot of opportunities that we
21 could develop management procedures, say in the South Atlantic,
22 based on exploitation rate, or a rate-based management procedure
23 that might use some novel thing, like gene tagging, that would
24 actually allow us to modify the TAC based on the thing that we can
25 really only control, which is exploitation rate, and you just
26 adjust TAC, up or down, based on whether you're achieving your
27 exploitation rate.
28
29 You monitor that exploitation rate based on tagging, and I think
30 there's some simulations ongoing as to whether that is possible to
31 do, and it might be something that could be tested in the Blue
32 Matters work for the South Atlantic, which could be game-changers
33 for some of our fisheries that we're maybe seeing that our
34 traditional status quo management isn't meeting the objectives,
35 and maybe something different might be a good path forward.
36
37 Nothing in Magnuson says that we have to derive our annual catch
38 limit from Stock Synthesis, for instance, and how it gets derived
39 is open to what the best method to do that is, and so it's not
40 specific on that, and I think that's where, if the management
41 procedure fully specified all of the ingredients and the recipe,
42 and it was just applied in any given year, there are closed
43 framework actions that allow for then the Regional Administrator
44 to just implement that catch limit, based on that, with I think a
45 fairly short, streamlined review process, which is something that
46 our Executive Director presented the council a couple of council
47 meetings ago.
48

1 With that, I think that's -- The only thing that I will just refer
2 to is our strategic plan from the Center on where we're going with
3 MSEs, and it outlines a whole series of desk MSEs, as well as the
4 flagship MSEs, and I will just leave that as background material,
5 and I'm happy to take any questions on that, but I think that
6 pretty much completes all the segments of this presentation. Thank
7 you, Chair.
8
9 **CHAIRMAN BARBIERI:** Thank you, John. I think, according to the
10 plan that we discussed earlier, we'll now pass the baton to Steve
11 Saul, and he's going to basically help us moderate this discussion
12 of this combined total, you know, the collection of points that we
13 just were exposed to during the day, during this workshop on
14 management strategy evaluation and its applicability, to address
15 any of those issues that Steve outlined briefly this morning.
16
17 <center>**SSC DISCUSSION**</center>
18
19 **DR. SAUL:** Thank you, Mr. Chair, and thank you to everyone who
20 provided a presentation today. I think they were really helpful
21 background, in sort of setting us up and kind of giving us the
22 fundamentals of what an MSE is, and some different tools that are
23 currently being explored for that, and examples of applications,
24 and then, finally, now kind of setting the stage for what I would
25 really like to discuss, which is to revisit some of the points
26 that I made this morning.
27
28 I'm sorry that I didn't prepare something in time for the briefing
29 book, to put on the screen or to share with folks, but kind of the
30 points that I would like us to consider, as an SSC body, are --
31 Just to kind of revisit what my opening remarks were this morning,
32 but, specifically, you know, in light of what we've learned today,
33 and what we know on the topic thus far, you know, what -- Is it
34 possible, for us as an SSC body, to define, in more specificity,
35 what our role might be in the MSE process?
36
37 John did a good idea of sort of outlining some ideas to that point,
38 and so it would be useful to carry that conversation forward,
39 noting -- I think another important point that John mentioned is
40 we already have a lot of this framework in place, with the sort of
41 current system of full council and SSC and Science Center and
42 Center for Independent Experts, et cetera, and the public comment
43 component, and this sort of back-and-forth that goes on when
44 translating science into management and management into formal
45 rulemaking.
46
47 Leveraging the sort of current system we have in place I think is
48 important, since we sort of know how it works, and where it works

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well, and where it does not work, and I think MSE, as John
mentioned, lends itself well to that current back-and-forth
framework that we have set up, and so what's the role of the --
What's our role in MSE, and under what conditions should a full
MSE be used, right, and so we talked about the different so-called
flavors of MSE, right, and different approaches.

You know, obviously, for every species, it's probably not relevant,
but there may be certain species where it is, or certain places
where -- I don't mean places geographically, but places within
what we're -- Within our scope of work, where using an MSE
framework might be most useful, especially if there's some kind of
regime shift that we suspect, and the management direction may not
be as clear, right, and so we can sort of pilot test these sort of
processes.

What sort of conditions do we use, right, or sorry, and that's the
point that I just mentioned, and then stock status, right, and how
often do we really need stock status? For me, personally, it's
hard for me to decouple the need to set catch limits without having
stock status, but I think that's just habitual, right, and we're
used to having the Kobe plots, and having the projections, and
having the table, and, boom, there we go, and then we set our
buffers, and that's it.

Sort of knowing, in your head, what stock status is sort of useful
to setting catch limits, but it can also be biasing, right, as
well, and so there's sort of two edges to that, and then, lastly,
like climate change and ecosystem considerations, and I think this
lends itself -- The MSE process lends itself really well to the
sort of ecosystem-based management, and ecosystem-based
assessment, that we're charged with moving forward with under
Magnuson, under the reauthorization of Magnuson, and I think, as
John mentioned, it can be used to test novel management procedures.

Some of the Asian-based modeling work that I've done, and not so
much with the Gulf model, but with this other tool that we're
working on, and that's a little more flexible, and we did run
different tradeoffs, and we actually simulated different
management process, and ran different -- We looked at different
tradeoffs, and so the utility of that exercise, although it's in
its sort of --

The model is in its sort of earlier phase, and it needs a lot of
work before it's ready for primetime, but the utility of going
through that exercise, on the academic side, was really
informative, and so, with that, I will shut up, and, just again,
in summary, what's our role, as the SSC, and when, or how, should

1 -- Under what conditions should a full MSE be considered? Stock
2 status, when do we need it, how often, and then, you know, how
3 does this fit in with the larger sort of ecosystem management
4 space, and any other thoughts and ideas that you all have, and
5 don't -- You don't have to really pigeonhole yourself to this, a
6 sort of list of five items, but what I'm trying to do is figure
7 out how we can operationalize this, and I guess that's where I'm
8 going.
9
10 **CHAIRMAN BARBIERI:** John.
11
12 **MR. MARESKA:** All right, and I will jump into this, and so, when
13 Bill started out just talking about, you know, the SSC's role, and
14 we're going to be evaluating these MSEs, to provide advice to the
15 council, and so, you know, we need to look at robustness, and he
16 went over a lot of things that I guess we as the SSC -- We might
17 need to pop the hood on to evaluate the robustness of the MSE being
18 the data inputs, and the uncertainty with those data inputs, how
19 the model was configured, and I think we were told, you know, that
20 these MSEs need to be reproducible, and everything needs to be
21 transparent, and there needs to be stakeholder engagement, and the
22 results need to be plausible.
23
24 You know, looking at the tradeoff plots, I thought that was very
25 informative for the SSC, and so is there any guidance, you
26 gentlemen that are doing the MSEs, that you can provide to us, to
27 say, okay, when you're evaluating these, are there other things
28 you need to look at, or is this all we need to look at, and what
29 is our motion going to look like, when we're done with an MSE
30 evaluation? Thank you.
31
32 **DR. HARFORD:** What I think the starting point is, it's to develop
33 a process. What you mentioned are a lot of the products of the
34 science that comes out. I think the place you want to start is
35 getting organized and start a process on this, and I think what
36 John spoke to, in terms of different roles, is probably the place
37 to start. That's an initial thought on that.
38
39 **DR. WALTER:** Well, when I put "adopt" on the operating models,
40 that it was the responsibility of the SSC, there's a lot involved
41 in that adoption, and, ultimately, it would probably be a motion
42 that the SSC adopts the suite of operating models, and their
43 plausibility weights, and this set of robustness operating models,
44 and so, in terms of the final kind of, yes, we bless them, and we
45 think that that's what should be tested, that's the playing field
46 that -- As Mandy said, are all the groups operating on this one
47 playing field, and you will adopt the testing ground for the
48 management procedure, and that's at least on the operating model

1 side of things.
2
3 In terms of how you would go about adopting them, you're going to
4 get things that look like stock assessment output, which are the
5 output from the conditioning of those.
6
7 If you set up one stock assessment model, there would be something
8 like thirty-six of them, with fits to the various data that go
9 into it, like fits to those indices, and you would look at residual
10 patterns to those indices and say, yes, these do fit well enough
11 that they are plausible, and, if it turns out that they can't fit
12 any of the data, maybe that operating model is not plausible at
13 all, and you will get fits to -- If age and length comp get used,
14 and so it's not going to look at that much different, and,
15 essentially, it is like fitting a stock assessment model, and it's
16 just fitting thirty-six of them.
17
18 You would have to have some kind of summary products, because
19 you're not going to want to look at every individual one, and you
20 will need something summarized, to be able to say that -- You will
21 be able to say does this encompass the key uncertainties, and, the
22 things that we know we don't know, are they in it, and then are
23 the things that we really -- That we don't know that we should
24 take into account, does it account for them?
25
26 Like does it incorporate non-stationarity, and then I think if you
27 said, yes, this looks like a good suite of models, and a good set
28 of robustness tests, it's not that much different than we think
29 the stock assessment incorporates the uncertainties, and the
30 sensitivities capture our concerns, and the only added thing is
31 that, if the SSC goes into actually plausibility weighting, you
32 have to come up with some weight for each of the models. Say, of
33 the thirty-six, a strawman would be they all are equal, but, if
34 turns out that you thought that some of the hypotheses were less
35 plausible than others, you could entertain differential weighting.
36 That's kind of the process that I would say could happen, which
37 isn't all that different than being presented with a stock
38 assessment.
39
40 **CHAIRMAN BARBIERI:** Thank you. I have Trevor and then Richard and
41 then Steve.
42
43 **MR. MONCRIEF:** I tried to write down everything that Steven asked
44 us to comment on, but I guess I will start with this. The SSC
45 role, obviously, is we look at statements of work for assessments
46 and everything else, and we have knowledge of most of the fishery-
47 independent indices, and we have knowledge of the landings,
48 knowledge of the species, that kind of stuff, and so I can see --

I think we can inform this stuff pretty well, given the choices in front of us to be able to narrow it down to what we would like to see.

My main comment, I guess, is I see this as a positive, for a lot of the species that we don't necessarily check in on constantly, and I'm thinking -- A couple in my head right now are vermilion snapper and gray snapper, things that have operated pretty well that haven't necessarily been touched too often, and we don't really deal with them a lot, and you can kind of run those, and maybe stress test them a little bit, to see what actually it would take to impact that species, because it might just run fine, and we might just need stock status, and then roll on for eight to ten years, and I think those species would be just fine.

I think the part I'm having difficulty, and this was my beginning comment in the whole part of it, and so Jim brought it up, and a point that Mandy made was this might be a way for us to be able to not circumvent, but maybe prevent, the falling off a cliff of ACLs sometimes, the drastic management changes that come and just really sidetrack a lot of what's going on.

The question that I wanted to pose, and Jim brought it up, was greater amberjack, and so, with greater amberjack, my opinion of it is that we're entering into this kind of negative feedback loop, when it comes to the management of that species. We've had numerous management changes. We've dropped bag limits, and we've increased size limits, and we've dropped seasons, and we've changed the season, and the stock doesn't respond.

We constrain the seasons even more, and the landings don't drop, and everything just kind of sits there and cycles, and we just keep dropping and dropping and dropping, and, every time we do it, I feel like we're increasing the uncertainty, and not necessarily quantitatively, right, with the landings, but just in general, and I have a hard time thinking of how -- Going through a procedure like this, how do you account for all of that uncertainty that's building without continuing the punitive measures that you're putting on a fishery?

I mean, how does something like this stop that spiral of, you know, hey, we don't have a good handle on this, and we would like to reevaluate it, and, if we put it into a framework like this, you know, I don't see where that stops that spiral. I feel like we get the uncertainty, and everything kind of goes up, and that we continue down that management trajectory of continuing to whittle-down on the stock.

1 That was my question, and my last comments are, and this is
2 unrelated to that, but it was Adrian's presentation of projected
3 impacts, and there seems like there might be -- I mean, we've got
4 socioeconomic folks here, and think about gas prices and things
5 that affect the fleet's operations, that kind of -- It just seems
6 like this is a pretty good avenue to include that kind of
7 information, to look at it, but amberjack was my main point.
8
9 **DR. TOLAN:** To that point, Mr. Chairman?
10
11 **CHAIRMAN BARBIERI:** Yes, Jim.
12
13 **DR. TOLAN:** Trevor brings it up exactly right, and the reason I
14 brought up amberjack, and I apologize to the presenter that is up
15 in I think it was Canada, and he may have not have understood --
16 He may not understand much about the amberjack problem, and I
17 brought up the point of the things we think we don't know, but we
18 really don't know, and that's really what I'm getting at, why I
19 asked that question, is I don't think, given the thirty years that
20 we've been trying to fix the amberjack problem -- We think we know,
21 but it's not working, and so I will let you tackle Trevor's
22 question. Thank you.
23
24 **CHAIRMAN BARBIERI:** Folks, since this is a conversation, panel
25 members, by all means, just jump in and start responding. I don't
26 know about the people who are online, and, Steve, are you keeping
27 track? Not just the SSC members, but the presenters are going to
28 be engaging in this panel, the MSE panel, the presenters.
29
30 **DR. WALTER:** Can I take the easy question first? Dodging the
31 amberjack question, the socioeconomics surely could be part of
32 this process. For bluefin, we were specifically requested not to
33 include economic considerations in our operational management
34 objectives. Ultimately, when it came down to it, the decision-
35 makers were like, well, we don't want 60,000 metric tons, because
36 it's going to kill the market, and so it was certainly in their
37 minds, but it wasn't explicitly quantified, and so I think that
38 might have been a missed opportunity, and I think that's something
39 that, as we go down this route, it might be good to more explicitly
40 consider the economics as part of the evaluations part of the
41 operational management objectives.
42
43 I will just say that Dan Holland was really one of the proponents
44 of -- He's an economists who is one of the proponents of MSE, years
45 ago, and so it would be coming back around again, I think, to where
46 it probably should be, because, as one of our -- One of our
47 operational management objectives really is economics, and, if we
48 aren't actually putting it in there, then it's somehow implicitly

considered, but, by not explicitly considering things, then I think you're not really doing due justice, and due diligence, to the tradeoffs, to then allowing for that kind of integration by decision-makers, when I think we should be explicit about it and try to parameterize things.

We may not have the data, but we don't often have the data for a lot of the other things that go into the operating models, and so I will touch on amberjack, because I think that's one of those situations where there are species that have just been, shall we say, resistant to our best modeling and management impacts, and, in those situations, it's sort of an unknown unknown, what's going on, and there's probably multiple different hypotheses of what's going on, and that's really great fodder for generating operating models.

We're going to have more information on amberjack coming out in the next year than we've ever had, which is even better fodder for our operating models, but it may not actually tell us what to do management-wise, and that's where it might be that it could really refine the scope of operating models.

For bluefin, and I didn't go into all the uncertainties, but the key uncertainty was in the scale of the population. It was either massive -- Big or massive, and the operating models entertained like a really wide range in total biomass, and particularly for the eastern stock, which meant that the management procedures really weren't finely tuned, and they had to build on a lot of precaution to deal with the worst-case scenario that the biomass isn't really high.

If we were to get an absolute biomass estimate, and we're working on that, with close-kin-genetic-mark-recapture, that's going to narrow down that uncertainty, which means that your management procedure could be much more finely-tuned, and probably much more aggressive, in terms of, when you don't know, you have to be more precautionary.

When you know, you can really tightly focus, and, in this case, we're going to get that information for amberjack, and I think the question becomes, if that's a priority for something to develop, like a rate-based management procedure, because maybe the absolutes are really hard to determine, because of one thing or another, and there's unknowns about stock structure and about productivity coming in from somewhere else, any number of those things, that might be a good candidate, but, again, it's what -- Where does it fall in the prioritization of activities, and is it an FEI right now? Maybe it could be, but thanks, Trevor and Jim.

1
2 **CHAIRMAN BARBIERI:** Before we move to the next question, Steve,
3 you have a supplement there?
4
5 **DR. SAUL:** Yes. To that point, I just wanted to reiterate that -
6 - I think the importance of, within MSE, the sort of socioeconomic
7 component, and I would also argue fisher behavior, and I'm,
8 obviously, selling my own research a little bit, but I also have
9 convinced myself that it's really critical to understand the way
10 people think and operate, the way our stakeholders think and
11 operate, when they're out on the water.
12
13 Time and again, you know, we, the council, we all sit around these
14 tables and try to identify what we think are ideal management
15 measures, and they end up being implemented, and then the -- When
16 the rubber hits the road, you know, it either hurts people
17 socioeconomically, or it hurts fishing communities, in ways that
18 we did not anticipate, and, obviously, in some cases, there has to
19 be that tradeoff to sustain a population biologically, and that's
20 understandable, but it has to be just that, a tradeoff, where we're
21 also sustaining communities and livelihoods, where we're doing
22 both, and I think that can be one of the real strengths of the MSE
23 process, depending on the operating model that you have, and that
24 is certainly a major component of the work that I've been trying
25 to pursue, is how do you integrate, and how do you understand those
26 couplings, and how do you incorporate them into an operating model,
27 and then how do you use that tool to try and better -- To try and
28 pilot test, as if you were like in a flight simulator, right, to
29 pilot test these different policies under consideration, a priori,
30 before they're implemented in the real world, to see if we can
31 identify potential pitfalls ahead of time. I think that, you know,
32 argues in favor of this sort of approach, this MSE approach.
33
34 **CHAIRMAN BARBIERI:** Thank you, Steve. Trevor, to that point?
35
36 **MR. MONCRIEF:** Just, real quick, I appreciate that point, and
37 there's not many times that this group is in the business of
38 finding ways to increase fishing mortality, or to increase
39 anything, you know what I mean, and so I think this is -- I say
40 that because of Mandy's point that she made earlier, and that kind
41 of cascaded.
42
43 Like, when you drop off a cliff, climbing back up that cliff
44 doesn't happen, it doesn't seem like, and I think this is a way to
45 deal with catching that on a frontend a little bit, and I'm a
46 proponent of that, for sure.
47
48 **CHAIRMAN BARBIERI:** Yes, and thank you for that, Trevor. I will

1 go back to the queue here, and I have Rich Woodward first, and
2 then Steve Scyphers, and then our very own Ryan Rindone.
3
4 **DR. WOODWARD:** Thanks very much. I guess the last discussion has
5 completely stolen my thunder. After a day in which I was
6 frustrated that there was almost no discussion, and I really
7 enjoyed the presentations, and I've enjoyed all of the discussion
8 so far, but I felt like there was a terrible absence of
9 socioeconomic attention, and then now, in this discussion, all of
10 a sudden, everybody is talking about that, and so that's great,
11 and I think that socioeconomic analysis is important for setting
12 objectives and within the behavioral responses of fishers, as Steve
13 was just mentioning.
14
15 We need to understand that, and, getting to the first point, in
16 terms of the role of the SSC in evaluating quality, I would say
17 that, unless you have a credible model that talks about how human
18 behavior is going to respond to management choices, and changes in
19 the fish stocks, the MSE is probably not credible, and it's not
20 the best available science, and so I think getting socioeconomic
21 analysis upfront is critical. Thanks very much.
22
23 **CHAIRMAN BARBIERI:** Thank you, Rich. Would anybody on the panel
24 want to respond to that, if a response is warranted?
25
26 **MR. RINDONE:** I mean, I kind of do, and so there was a comment
27 made earlier, by Josh, maybe, and maybe it was Josh, and maybe it
28 was somebody else, but about enforcement. It was Harry, and about
29 what Harry said about enforcement, and I think that might be a key
30 area to think about, is how fishers might respond to different
31 changes that are proposed, whether they're going to be, you know,
32 static or dynamic measures, and what sorts of effects we can
33 expect.
34
35 Of course, one of the things that we learn early on, when we're
36 learning about fisheries science and management, is that, if
37 something can't be enforced, it's of little value long-term,
38 because, if it's completely unenforceable, like hook size or
39 something like that, then the effects are going to be difficult to
40 discern, at best, and likely inconsequential, at worst.
41 Definitely, Dr. Woodward, I think something that could tie into
42 what your comment was, about evaluating human behavior, and
43 enforcement might be a good place to look for some guidance on
44 that.
45
46 **CHAIRMAN BARBIERI:** That's very true, and I remember, and I guess
47 it was in Bill's presentation, that he talked about compliance,
48 right, of the regulations is a component, and it needs to be fully

1 integrated into this process, for the loop to be completely closed,
2 and, of course, enforcement plays a big role in that, and so I
3 agree completely. Steven Scyphers.
4
5 **DR. SCYPHERS:** Thank you, Mr. Chair, and thank you all for those
6 presentations today, and they were all great, and they gave us a
7 lot to think about. I also had a socioeconomics question, and one
8 additional one after that, but I know the Center is doing a lot of
9 work in socioeconomics, and, a few meetings ago, we saw a
10 presentation about efforts to integrate social and economic
11 information into stock assessment, from the SEASAW workshop that
12 you all were involved in, and so I wondered if that activity had
13 MSE within it, and I didn't explicitly remember it, or just
14 generally how the MSE efforts are interfacing with the pushing
15 more into the stock assessment process.
16
17 **DR. WALTER:** I mean, one clear and evident way is the fact that
18 the first step for like the dolphin MSE was the participatory
19 modeling. That got us our conceptual management objectives, and
20 it really framed how we would build operating models, and so that
21 first step is what are the key stakeholder desires, what do they
22 want in the Florida Keys, what do they want in the Carolinas, and
23 we've got that pretty loud and clear, and now we're finally down
24 to operational management objectives, through stakeholder
25 modeling, and then we're going to refine that down to a smaller
26 core group of like key -- You need kind of like a core group of
27 stakeholders who follow through the process, so you get repeated
28 contact with, and so that process will refine to that.
29
30 In terms of how we're integrating SEASAW, or the SEASAW-like
31 elements into the MSE, and maybe I will just reflect back with
32 what -- With something that Rich brought up about integrating human
33 behavior and response into the actual MSE, which is probably, and
34 arguably, a very rudimentary part of the whole MSE process, because
35 there is the assumption, usually, that TAC is removed from the
36 population, and that that's all that happens, when the management
37 sets this, and there's not usually this added human element that
38 usually throws a monkey-wrench into the best-laid management
39 plans.
40
41 Right now, that's sort of probably a hole. One, I would say, just
42 in response to Rich, that I would be a little bit hesitant to say,
43 if it doesn't include that, that it's not best available science,
44 because, right now, that would be what's available, and so it's
45 kind, of by definition -- Availability is the key. Is it best is
46 kind of the question that we can't let the desire for best preclude
47 us from proceeding ahead with advice, and it might be better than
48 the status quo, and I guess what I will say is that I think that's

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where socioeconomics, and probably -- You know, as I looked at
SEASAW, but also following with an MSE process at the same time,
I said, actually, this is probably better suited to the MSE process
than the stock assessment, solely because you've got that missing
link between the human component of what you do -- When you set
the management, what are humans going to do? That is what is
actually going to happen in the population.

I think we're going to see that become really critical in something
like the South Atlantic experiment with the MSE, where you're
talking multispecies, because any action that's done on one species
can't possibly not have an effect on another, and so it's going to
be key to say that like a bag limit for one reef fish actually
increases the fishing mortality for the other, even though you
didn't plan on that, and, by not even accounting for something as
simple, and as rudimentary, to say that, then your implementation
error is really high.

I think that's where we can get a lot of help here, is what are
the kind of human aspects that are going to happen, that SEASAW
was starting to try to be able to derive, is what are humans going
to do when you put this regulation into effect. Thanks.

DR. SCYPHERS: Thank you. Can I ask a quick follow-up? The second
question is a little bit more technical, but down that same
direction, and it's -- So all of the presentations, to some degree,
talked about tradeoffs, and comparing tradeoffs, and most of them
showed two things, like tradeoffs between two particular
management objectives, and, if more things come up -- I mean, you
mentioned, in the bluefin tuna, that it came up with a whole bunch,
that you distilled back down to three or four, and, if more social
and objectives come up, that there is available data for, what are
the practical limitations of MSE on how many things you could look
at tradeoffs among, and then is it --

Is there like an objective optimization type of approach that just
says here's the best solution of these four, if you've had
stakeholders be able to say prioritize them, or the council
prioritize them, or something along those lines? Is there an
analytical way to optimize more than two objectives, and how big
is too big, I guess is kind of the short version of the question.

DR. WALTER: We played this game, and we realized that about seven
was the most that we could possibly even show in a table, and so
we just scored each management procedure according to where it
ranked, across seven different objectives, and that was about --
It was still probably overkill, but we tried to do something where
you ranked them, and summed them, and then said management

procedure over those one, two, three, and four, to rank them, and
that was moderately successful, but I think people needed to see
where it scored on those seven performance statistics, and then
they really -- Then there were some other things that they also
really wanted to see that weren't operational management
objectives, but were performance statistics, like yield in the
first year.

That was a big consideration, and let's face it. Most people are
short-term decision-makers, and they want to know what the catch
is going to be in the next year, and the management procedure that
gave the greatest catch in the first year was often, for some
reason, the preferred one. Now, I won't pass judgment on that,
but seven was about the max that could be reasonably shown.

In terms of an optimization, it was really -- We didn't try to
solve for the one that got the best across those, because the
solution space was so complicated, and it was more let's try to
get a little bit better on this one and then see how we do in the
others.

There was an initial step in the development tuning, where, to be
able to rank management procedures for that initial culling, where
you get them all the meet one common objective, and so they all
met one of the biological must-pays, and they all got 60 percent
probability of being in the green, and they had to meet that, and
then it allowed you to say, okay, once you've all met that, then
where did you rank on the others, which allowed you to look at the
difference between the others, which then allowed us to then score
the management procedure, that, if you all met the common
biological must-pay, but one had more yield, then presumably that
one is a better one on the yield, but that level playing field was
key for what we called development tuning. There's a number of
nuances in that process, but it was winnowing-down the nine down
to three, and that was one of the key things that got to that.

CHAIRMAN BARBIERI: Thank you for that, John, and I have one
myself, Steve, if I may. I am looking here at the background
materials, and so the Southeast Fisheries Science Center has an
MSE strategic plan, right, which is good to see, but because, here,
we rely so heavily on stock assessments, the traditional stock
assessments, and, you know, the interim analysis as well, in terms
of looking at management advice, can you give us an idea of where,
at this point in time, where does this MSE box fit within the
Science Center's stock assessment enterprise as a whole, and where
do you see it moving forward?

I am thinking in terms of like -- I mean, yesterday, we were

1   discussing the interim analyses, and we were talking about, you
2   know, building efficiencies, right, and you were talking about the
3   different flavors of MSE, and you talked about resource allocation,
4   and how resource hungry some of these, you know, processes can be,
5   and, when we look at the whole picture, of the entire stock
6   assessment enterprise for the Center, where do you see this
7   fitting, and how does it create efficiencies that we can see
8   translate into, you know, more, or better analytical products?
9
10 **DR. KILBORN:** Can I add to that question?
11
12 **CHAIRMAN BARBIERI:** Sure.
13
14 **DR. KILBORN:** To add to that, how could MSE be integrated with the
15 research track assessments?
16
17 **DR. WALTER:** I will try not to step into the processes that are
18 already in place, but we did present, at one of the SEDAR Steering
19 Committees, what we called -- It was met with lukewarm, I think,
20 applause, but the portfolio approach, or perhaps make a continuum
21 approach, which we, as a Science Center, say that we probably
22 should be looking into which method is the best application for
23 the job, and, in some cases, a full-on stock assessment is not the
24 right tool for the job, and it would probably be better done with
25 a management procedure.
26
27 Then trying to identify those locations, and places, of stocks
28 that we should prioritize to develop a management procedure,
29 perhaps through the research track, and shrimp being one of them,
30 where, if we can -- We didn't, in the terms of reference, strictly
31 say to put in MSE there, for reasons that, if you put it there,
32 then you are bound to do it, but it is one of the things that we
33 think -- For shrimp, it's an annual crop, and we've got a pretty
34 good index, and this is one that an empirical management procedure,
35 that meets all the -- It might actually really be the way to go,
36 and so that's something we're actually going to pursue in that
37 research track, but we haven't spelled out the terms of reference
38 of the MSE, simply to not kind of create the change that will then
39 sink us if we don't pull it off, because, right now, we're not
40 entirely clear how that's going to happen, because it's sort of a
41 work in progress.
42
43 Some other stocks that probably could benefit from that, what would
44 be good is to hear if there is -- Now that I think there is greater
45 familiarity with the potential here, is identify that, okay, we're
46 hearing amberjack come up as maybe the canonical stock assessment
47 may not be the right tool, and so, right now, I think we've always
48 thought that the stock assessment is the gold standard, and, if it

doesn't get a stock assessment, then it's not getting the full treatment.

Well, there's probably no higher-profile stock than Atlantic bluefin tuna, and the gold wore off pretty quickly on the stock assessments there, and I think people are now very happy to have gotten a management procedure, and so I think that we're turning the corner on that the stock assessment isn't the only tool in the arsenal, and so identifying those ones which might be better met with something else, and then making that change, perhaps through the research track, or perhaps outside of it, or perhaps with an independent party, but I think that's where we need to go, because we can't meet the pace of what the demands are for advice, I think, with full assessments every time.

I mean, we've got to find some of these efficiencies, and it actually may be beneficial to do so. It might be that that's actually what the need is, and dolphinfish being a good example of one that just wouldn't fit the stock assessment framework. Thanks.

CHAIRMAN BARBIERI: Now a bunch of hands are going up. Tom, did you have one? I have Ryan and then Tom and then Jim.

MR. RINDONE: This goes back to greater amberjack, but the council had passed a motion to explore regional management for greater amberjack, and this was one of those -- This is one of those species where, throughout the Gulf, there are different regions, and user groups within regions, that prefer to harvest the species at different times, and there are different selectivity and retention functions between the fleets, and so it's as you might imagine, just based on that little bit of information, it's a very dynamic environment.

Then you add, on top of that, our woes with assessing the stock, and its seeming indifference to any sort of management intervention over the last decade, and it's just another thing to add to the list of consideration, if we were to explore something like this, especially for something like greater amberjack, and, you know, hopefully it could certainly answer some questions.

DR. FRAZER: John, with regard to the bluefin tuna, right, and so you had three -- Not you, but the community as a whole, had three failed attempts, right, to kind of move this assessment through, right, and so do you have a -- I mean, does the group ever anticipate having one? I mean, is that part of the objectives, is to generate the information that would allow them to assess the health, or the status, of the stock, or are you just giving up?

1 **DR. WALTER:** No, because stock assessment folks are kind of
2 stubborn, and they always think that just give me another shot.
3 The thing is that we need some time to do actually the science
4 that would inform a mixed-stock assessment, and so the treadmill
5 of one assessment after another just didn't allow that, and so,
6 right now, the close-kin-mark-recapture that is going on for
7 bluefin, for western bluefin, will probably give us a population
8 size estimate for the western stock.
9
10 With a little bit of time, we can certainly develop models that
11 incorporate mixing, and we've got all this new data to incorporate
12 from the genetics, as well as thousands of more tags that could
13 actually inform a mixing-based assessment model that would account
14 for these issues, but we just needed the time to move off of the
15 previous platforms and into something new, and we're pretty
16 confident that, by 2026, we're going to have a better framework
17 for giving assessment advice, but, because we don't have the
18 pressure of that having to be for that annual, or whenever, every
19 two-year advice framework, it buys that time to do that, and I
20 think that's really the essential thing, that really also
21 translates here, to a lot of our assessments, is that our
22 assessment staff have the expertise to develop new models, and to
23 do the research that goes into correcting a lot of the issues that
24 we're facing with the models, but they don't have the time to do
25 that, because they're in that treadmill of an assessment every
26 year, and I think there's a lesson there.
27
28 It's allowing the analyst to step off the treadmill for enough
29 time to incorporate that new information, or to at least collect
30 that information, and bluefin is a good example. Thanks.
31
32 **CHAIRMAN BARBIERI:** Jim.
33
34 **DR. TOLAN:** Thank you, Mr. Chairman. I just wanted to say thank
35 you to the panel, and I certainly have a better appreciation for
36 MSE after today's workshop, but the question was what Gulf stocks
37 could benefit from something like this, and I will certainly offer
38 up both the shallow-water grouper and the shallow-water snapper
39 complex, that seem to be falling apart as we're picking things out
40 of them.
41
42 The two motions sitting on the table now, I think those could --
43 Because they're really index-based, and I think they could benefit
44 from this sort of approach, because there is not enough data to do
45 a full stock assessment, and we're asked to come up with catch
46 advice under the umbrella of these complexes, and I think that,
47 even if it's under a complex, it may benefit from this MSE
48 approach. Thanks.

1
2   **CHAIRMAN BARBIERI:** Thank you, Jim. Good idea. I have Josh and
3   then Dave Chagaris.
4
5   **DR. KILBORN:** Thank you, and so I think this question is probably
6   more directed towards the SSC, and maybe council staff, and various
7   others around the table, and not so much to the panel, because the
8   panel, I think, has made a good case that MSE can be used to help
9   us understand the frequency with which we need to do full-blown
10 assessments for various species.
11
12 I think my question relates to my confusion about how things
13 actually end up on the assessment schedule to begin with, and, you
14 know, is there a way that we can standardize that process a little
15 bit more, so that we can make sure that, you know, we identify the
16 species, and the frequencies that they need to be fully assessed,
17 so that we can free up some space on the schedule and not do so
18 many repeated assessments of certain species that might not need
19 to be done every three years, or, you know, maybe we could do them
20 every ten years, and include some of this other MSE, or interim
21 assessments, you know, into that process. Like how do we, as a
22 group, move forward with refining that process, so that we can
23 have a more transparent assessment scheduling system, basically?
24
25 **CHAIRMAN BARBIERI:** Well, I think I will defer to either Dr. Frazer
26 or --
27
28 **DR. KILBORN:** Should I have waited a couple of weeks, until after
29 my annual review, for that question?
30
31 **CHAIRMAN BARBIERI:** Right, or maybe both of them can provide --
32 You as a former member, or participant, in the SEDAR Steering
33 Committee process, in discussing the schedule and how much council
34 input directly influences, right, that process, but then getting
35 Dr. Simmons to also explain, you know, her perspective on this,
36 and I think that would be interesting.
37
38 **MR. RINDONE:** Dr. Frazer was actually recently re-conscripted.
39
40 **DR. FRAZER:** Yes, and so, I mean, I actually think that -- It's
41 not an opaque process, and I actually think the SEDAR process is
42 fairly open and transparent, and it's participatory. I think the
43 way that that process works is there is input, right, and things
44 get tentatively put on a schedule, and may stay on the schedule
45 for some period of time, and they need enough lead time to lock
46 some of those species in.
47
48 I think that's not really the problem, right, and a lot of people

here are involved in the SEDAR process, and I think the problem is
that -- I mean, there is only so many analysts, right, and there's
only so much you can do in that schedule, and what happens is,
because it takes a while to do an assessment, and you have to --
In the council setting, you have to respond to your stakeholders,
right, and usually it's a crisis of some kind, right, that says,
because we need to reconsider, perhaps, how we're managing the
fish, or we need to make changes, but the only way we can do that,
really, is to base it on an assessment, right, because that's how
you get the catch advice.

That's why you tend to see some species continually show up, you
know, red snapper or grouper or whatever, but I don't think there's
any real -- I mean, again, it's an overt attempt to try to -- It's
a complicated process, and it's dynamic, and it's fluid, and there
are delays, right, and things like that, and I really like the
idea of not having so many assessments. I mean, you know, if we
can go that route, I think we're all going to be better off, and
that's certainly an efficiency, moving forward.

DR. KILBORN: I just wanted to clarify that I don't think there's
any like obfuscation going on with the scheduling, but I do think
that it's not regular, right, and it's responsive, like you're
saying, and it's not proactive in any particular way, and so I
feel like that would be a good thing for us to move towards, is
more of a kind of prescriptive schedule, and less of a responsive
schedule.

DR. FRAZER: I think it was always intended to be pretty
prescriptive, right, but, to your point, we're very reactionary,
because there's a million problems that show up every day, and so
it's just hard to overcome the mountain of problems, you know,
whether they're environmental, or whether they're a result of, you
know, a lot of pressure, whatever.

CHAIRMAN BARBIERI: That's the thing, and, I mean, the schedule
that is there, and there's one now that goes through 2027, right,
but priorities change over time, and the process has to be
responsive to that, and adjustments are made, and sometimes they
just have to be accommodated. Dr. Simmons, did you want to --

EXECUTIVE DIRECTOR SIMMONS: Thank you, Mr. Chair, and so the
Steering Committee meets twice a year, and we try to, through the
council process, and with input from the SSC, decide what stock
assessments we think should be on that schedule, at least two years
out, and so I think, once that's firmed up, you guys get the scope
of work, and we get feedback from the Science Center, and then we
get the terms of reference, and then we get the assessment.

1
2   I mean, we've been asked to put this stuff out there so early, and
3   I think it's like the schedule is locked in like two years in
4   advance, because of the data providers, and we've tried to do that,
5   and I think we get about five slots, plus we get some assessments
6   jointly from the State of Florida, but, I mean, the Science Center
7   is strapped.
8
9   I mean, one of the things that I would like to see, that maybe we
10 could use the MSE for, with all these ongoing projects, is we have
11 so many changing baselines right now, with the recreational data
12 and the things that we're trying to do, but to see if there's a
13 way that we can try to streamline that through some type of stock
14 assessment process, be it not the full-blown stock assessment, but
15 some other manner, maybe, and we could try to get through a little
16 bit more quickly, as we could try to streamline some of that stuff.
17
18 The other thing I'm struggling with, as far as the management
19 strategy evaluation process, is we had the Ecosystem Technical
20 Committee meeting, what, two weeks ago, and so -- I know several
21 of you were involved in that, but one of the things that comes to
22 my mind is, as we go through this FEI FEP process, one of the
23 results could be having a management strategy evaluation request
24 from the council to address that FEI.
25
26 I am kind of struggling with where that fits in with our process,
27 and then with SEDAR and the overall resource limitation we have in
28 the Southeast process, and so I think, as we're kind of working
29 through this, if we have kind of a frame of reference that we could
30 kind of keep in mind on that, that might be helpful, with this
31 limitation in resources that we're talking about.
32
33 The other thing that I don't really understand is the data
34 limitations for some of this, and we talked a little bit about it,
35 I believe with Nikolai's presentation, but it's not clear, to me,
36 with some of the limited data availability we have in the
37 Southeast, how appropriate some of these MSEs are, moving forward,
38 and so maybe we could talk a little bit more about those
39 limitations as well, and so thanks.
40
41 **CHAIRMAN BARBIERI:** Thank you, Dr. Simmons, for providing input,
42 and I know that I have Dave and Trevor already, and we just had
43 some questions that were posed, right, to us, in terms of
44 discussion points that Dr. Simmons would like to hear us talk
45 about, but we are due for our afternoon break, and so how about we
46 go ahead with that now, and then we can come back and reengage
47 into those discussions, and so 3:15, and this will be a fifteen-
48 minute break.

1
2 (Whereupon, a brief recess was taken.)
3
4 **CHAIRMAN BARBIERI:** All right, everyone. I apologize, by the way,
5 to those online, and I'm coming back, and we're getting started
6 five minutes behind schedule after the break, but Dr. Matt Freeman
7 back there held me. He was asking critical questions, and I kept
8 telling him that I have to return to the table, and he held me
9 back there, and so that's why we are running late. Fortunately,
10 he wasn't even paying attention to this, and he doesn't know what's
11 going on.
12
13 All right, and so we are ready to reengage our main Science Center
14 response person for all these questions, right, and he's still
15 taking a bit of a break, but we will reengage soon, and I have
16 here a queue. I have Dave Chagaris, and then I guess Trevor, and
17 so we just went over the issues with greater amberjack, right, and
18 questions related to that, and stakeholder engagement, and then we
19 discussed, a little bit, the SEDAR scheduling process, and the
20 complexities associated with that, and so I would say how about,
21 Dave, if you go with the question, and other panel members can
22 step in and answer those, until John is back.
23
24 **DR. CHAGARIS:** Okay. Thank you, Mr. Chair. It seems like everyone
25 -- In the previous discussion, the idea was sort of being floated
26 that, you know, where we have struggles with stock assessments, we
27 can substitute an MSE, and develop a management procedure there,
28 and I'm struggling to see how that would work, for most of our
29 species in the Gulf, where we don't have an index of abundance,
30 where we don't have a survey that's really designed for some of
31 these.
32
33 Greater amberjack is a great example, the deepwater snapper
34 complex, and, you know, we don't have any information to base a
35 management procedure on, and so I'm wondering if maybe I missed
36 something, and how can an MSE replace a stock assessment, if we
37 don't have reliable indices of abundance?
38
39 **DR. WALTER:** I guess I would say what is the stock assessment doing
40 without that, but that opens up that it's probably working only on
41 the length comp, and the age comp, in which case why not develop
42 a management procedure that uses the things you've got, and that's
43 one of the sort of interesting things, is that, well, you dance
44 with what you've got, and you evaluate that, okay, you've got age
45 comp, and, well, that gives you a mean age, and maybe you just
46 modify the previous catch based on what the mean age is doing and
47 hope that recruitment is relatively constant, and it might -- You
48 could probably say that works pretty good, and the only thing that

1 blows mean length, or mean age-based, indicators out is when
2 recruitment is not constant, and so you add in something that
3 detects recruitment.
4
5 Perhaps you've got something like that, or perhaps we could come
6 up with something like that, from looking at the length comp, and,
7 I mean, there's ways to -- I know that Skyler has been looking at
8 some other indicator-based approaches that might be -- That could
9 derive TAC advice, and so I think that's -- What signal is the
10 assessment using to come up with, and then build that into a
11 management procedure, and the nice thing is you would only be
12 modifying the previous TAC, so that it wouldn't allow you to get
13 too far out of bounds, because you would probably build in some
14 stability provisions, and I think it could probably be done.
15
16 **CHAIRMAN BARBIERI:** Thank you, John, and, Steve, to that same
17 question?
18
19 **DR. SAUL:** Yes, and to that same point, and I would also offer --
20 I think John was alluding to this, that there are a whole -- I
21 don't know if Adrian is still with us remotely, but there are a
22 whole host of data-poor fisheries assessment techniques, and
23 toolboxes, out there that, yes, are extremely limited, and so I've
24 entered the -- I have stepped in the data-limited world, by working
25 on assessments in places like Indonesia, where we don't know what
26 the catch is, and it could be the reported numbers, or up to three-
27 times the reported numbers, and so I certainly don't have indices
28 of abundance, but I've got really good length comp data that's
29 been collected, and I have, you know, ballpark, with huge
30 confidence limits, catch.
31
32 What the hell do you do with that, right, and stepping away from
33 the Gulf, and the work that I've done there, and, all of a sudden,
34 it becomes rather uncomfortable, but what I can tell you is, from
35 the work that I have been doing -- One paper, which is in review
36 in PNAS, and should come out once I change some things and rerun
37 the analysis, but that, if you take a model ensemble approach,
38 where you combine these different data-poor assessment approaches,
39 and you are really explicit about the assumptions you're making on
40 your estimation of F, fishing mortality, and on your estimation of
41 biomass, you can couple those two and couple -- Again, combine
42 your models, and you can weight them evenly, or in some other way,
43 if you have reason to, and there are ways to sort of come up with
44 what I would say are actionable advice and benchmarks, and carry
45 that uncertainty all the way through the process.
46
47 It's not ideal, right, and the ideal world is to have all of this
48 in an integrated assessment framework, but it can be done, and I

1 think some of those approaches could be useful with respect to
2 some of the stocks for which we don't have, you know, indices that
3 -- Where they're not really well detected, and that could help at
4 least give us some ballpark range of advice.
5
6 **CHAIRMAN BARBIERI:** Thank you, Steve. Trevor.
7
8 **MR. MONCRIEF:** Dave went right down the direction that I was going
9 to make a comment, and so, obviously, all those presentations
10 mentioned, you know, a fishery-independent index of abundance, one
11 that's reliable relative to the stock, and, you know, hopefully,
12 and that was kind of the meat of my question when it came to the
13 bluefin tuna stuff, right, and you've got a lot in the Gulf, and
14 you might be compiling a lot, or whatever else, and, now, some
15 hope, I guess, for the future, and it's probably a little bit more
16 in the distant future, is that, outside of this group, there is an
17 effort undertaken by not just our state, but it seems like
18 Louisiana, and Alabama has been doing it for a little while, to
19 develop visual camera surveys for reef fish.
20
21 We've taken that on as a priority of the state, to figure out the
22 best possible method, and do our best to match it up where we can,
23 but, you know, seemingly, if we can get that through SEAMAP, and
24 there's some agreement, or we figure out a way to be able to
25 combine what we have, there could be another full Gulf, or
26 regional, index of abundance to lean on for this kind of effort.
27 Now, it's going to be in the future, but at least it's an approach.
28
29 **CHAIRMAN BARBIERI:** Thank you, Trevor. Doug Gregory.
30
31 **MR. GREGORY:** Thank you, Mr. Chair. I've got a couple of thoughts.
32 It's been hard for me to wrap my head around some of this, because
33 there's been so many sub-topics, and we got what I thought was an
34 excellent analysis from the South Atlantic Council on interim
35 assessments, and their utility, and Dr. Walter had mentioned that
36 maybe we don't need to do stock assessments, in a sense, and I'm
37 paraphrasing, and so I don't want to put labels on anybody, but
38 questioning that maybe we need a new approach, and I was shocked
39 to learn how -- How much of a legacy of analysis, and negotiations,
40 went on with bluefin, because it seems like we, in the Southeast,
41 are way past that.
42
43 We haven't used a VPA in decades, and the argument of using the
44 indices because I like this one, because it gives me more fish,
45 and we did away with that kind of argument decades ago, and, in my
46 naivety, I thought that MSE was a layer that would be on top of,
47 or integrated into, the assessment that would be like some of the
48 simulation analyses, and it would evaluate different approaches

1 that would help us make decisions on which way to go, as to even
2 allocations.
3
4 The one thing that stuck, in my mind though, is the reference to
5 optimum yield and how it was couched in terms of bluefin tuna, how
6 it was arguing with the western group, and they negotiated
7 something, and then the other example was commercial yield versus
8 recreational opportunities, and, well, in my mind, optimum yield
9 is much more than just that, and I think some of the people spoke
10 up about the social and economic needs, and optimum yield is like
11 Pandora's box.
12
13 One we open it, then do we not address potential impacts of climate
14 change, and do we not better integrate the ecosystem work that
15 we're doing, and layer that into the assessments in a management
16 strategy evaluation, and maybe we shouldn't go the optimum yield
17 route, as far as discussions go, because it is complicated, but,
18 eventually, we'll have to do all that, and I don't know how far
19 down the road that is, how close it is, but those are my concerns
20 and my thoughts about the presentations today, and the
21 presentations were excellent.
22
23 I have learned a lot. Some of it was confusing, but I applaud
24 everybody and the energy and the efforts they put into these
25 presentations this whole week, and it's just been an interesting
26 SSC meeting, and it's not our typical SSC meeting, and I thank
27 everyone. Thank you.
28
29 **CHAIRMAN BARBIERI:** Thank you for those thoughts, Doug. I don't
30 know if you have been jotting down, right, your thoughts there for
31 a while before you talked, and I don't know if you have them easy
32 in front of you, but, if you want to chunk, you know, those comments
33 into more specific questions about each one of those topics, we
34 have enough time, right, to engage the committee, and the panel,
35 into trying to address some of those. Is that something that you
36 want to do, Doug, or do you just want to kind of make a general
37 comment and then go from there and continue discussing?
38
39 **MR. GREGORY:** We can go from there, and I made notes for my comments
40 yesterday, but I didn't do that today, and my apologies.
41
42 **CHAIRMAN BARBIERI:** Okay, and so think about them and then, you
43 know, come back if you want to discuss each one of those points
44 with the panel members. Any other questions? John.
45
46 **DR. WALTER:** So two things. One, I did want to respond to what
47 Carrie had said, which was a number of things, and I'm wondering
48 if you could write them down, or at least -- It was right before

the break, and so, in fifteen minutes, my mind gets overwritten, and like I think the main thing was the -- Or the last thing you said was about how can we embark on these when data is limited, and is this the right tool, and I think that, actually, that's the situation, that it's probably more the right tool than the wrong one, because the stock assessment, with no data, we know where that goes, and so, in this case, and I think invoking the DLM approach, which, actually, inherent in the DLM approach is to do a management strategy evaluation, a desk MSE, at the outset, to screen methods that work.

In that case, I don't think -- It's still valuable when we don't have that information, and then, getting to Doug's points, which I think are kind of like this just seems like so much, and, actually, MSE is now something more than maybe it originally -- What people thought, that it was simply to kind of help inform how we do stock assessments, and, actually, wow, it could be something completely different and obviate the need for stock assessments for TAC advice.

If that's news, I think that's the news we need to hear, and that is the message of the presentation that I gave, in the sense that that's how bluefin tuna was invoking that, and that's how ICCAT -- That's the direction that ICCAT is moving, and it's not necessarily the direction that this council needs to move, and it's just an option, I think, in that continuum of approaches that could be used to derive the catch advice that this council could consider.

Then you invoked climate and optimum yield, and I think the climate -- From the standpoint of probably that is almost the standard thing that we would put into operating models, from this day forward, is some sort of non-stationarity, and I don't think it would even be useful for us to simulation test a management procedure that didn't have that in it, knowing what we know, and so I think that's just simply going to be part of the process, and we need to develop robust management to what changes may occur, and so I don't think that's going to be that much of a leap, and I think bluefin showed that that can be done, even with an empirical index-based management procedure.

I think it provides me at least some confidence that what initially might say, well, how are we ever going to develop climate-ready management advice, and, well, it wasn't that hard to put some change in the stock-recruitment relationship in, even if we don't know the mechanism, and I think that throw those things in it, in the operating models, and evaluate if our management is relatively robust to it, and that gets us through that we actually have the

1 mechanisms for what may occur, and so I'm more hopeful than
2 optimistic, and I'm hoping that, while it seems like a deluge of
3 information, I hope that it can be condensed a little bit, to
4 actually this is a structure process for addressing things, even
5 as weighty as optimum yield. Thanks.
6
7 **CHAIRMAN BARBIERI:** Thank you, John. That was helpful. Before I
8 go to Mandy, just because it's tied to this very point, John, I
9 mean, at some point, right, I think it might be helpful, and I
10 don't know if it's ready for primetime as yet, but to bring the
11 portfolio approach before this committee for discussion purposes.
12
13 You know, I was trying to kind of sort of go there, and, you know,
14 you followed immediately my thought process there, to see how this
15 whole thing fits, and, basically, the idea is to develop a toolbox
16 of multiple purposes, right, that can address -- It's a Swiss army
17 knife, and it's not just one tool, but it's multiple tools in one,
18 and you pull the one out that best applies to that specific job.
19
20 I think it's something that, you know, at some point, and I don't
21 know how far along that whole concept is within the Center, but,
22 if this is going to be a direction that the Center is going, I
23 think it would be interesting for the SSC to hear about it, at
24 some point, and then, you know, help carry that message forward,
25 because, I mean, I guess we see, from here, our own perspective of
26 the need for multiple approaches, because there is no one-size-
27 fits-all, and, you know, Dr. Frazer brought it up, and all of us
28 understand that full-blown stock assessments are so resource
29 intensive that we cannot accommodate, you know, this many species,
30 this many important fisheries, and be able to do all of it at the
31 Cadillac level, and so what can we do instead that is credible,
32 and acceptable, and informed by science. I am sorry, Mandy, that
33 my little monologue took -- As usual, it took a little longer than
34 expected.
35
36 **MR. RINDONE:** That has never happened. With respect to, Luiz,
37 what you said about like the Cadillac approach, and John's gold
38 standard, and I think, just from an optics perspective, you know,
39 when we're talking about these things, and you had used a phrase,
40 and I think I may have repeated it before also, about using the
41 space shuttle to go to the grocery store.
42
43 I think it's important, when we're talking about this stuff, to
44 just be mindful of these sort of colloquial tags that we put on
45 these things, because these can get carried forward, especially
46 with respect to the public and its perception that, well, the gold
47 standard, and like this is what I want, or a full stock assessment,
48 and that's what I want, and like I want -- I always want the

1 everything, and, well, you don't need -- You don't necessarily
2 need that, and it's not necessarily the right tool for the job,
3 and so, in ways that --
4
5 You know, especially when we're having to communicate this sort of
6 information, which, invariably, all of us are going to have to do
7 to someone at some point, and probably not very long from now, and
8 so, if you're council staff, probably tomorrow, but just to be
9 very mindful of how we talk about the different methods that are
10 available, and not to necessarily say that, you know, there is
11 some penultimate tool for -- Or infer that there is some
12 penultimate tool for all jobs, and it's, you know, what is most
13 appropriate for each job.
14
15 **CHAIRMAN BARBIERI:** Absolutely, Ryan, and I agree completely, and
16 I should be cognizant of the public perception and how these things
17 -- Because I pay the price myself directly, by people just wanting
18 to have that one tool that they feel is most applicable to their
19 situation, that is going to resolve their problem, even though it
20 may not, and it's just not understanding all the different layers
21 in the tier and that, you know, other things can work just as well,
22 and be a lot easier to accomplish, or better, you know, sometimes
23 better, than others, and so, anyway, thank you for bringing that
24 up. Mandy.
25
26 **DR. KARNAUSKAS:** This might redirect the conversation a little
27 bit, and so I'm glad to have tied up that bit. Carrie had some
28 questions, before the break, about how this relates to the whole
29 FEP, fishery ecosystem plan, process, and I am trying to digest
30 some of Doug's comments too, and I guess, to try and answer that
31 question, what we have mostly discussed, up to now in our
32 conversations, is using MSE to reevaluate the stock assessment
33 enterprise, and make it more efficient, and so looking at things
34 like evaluating our data streams, frequency of assessment, using,
35 you know, either the bike or the space shuttle or the airplane to
36 go to the supermarket, finding the right tool for the job, and I
37 think that largely falls within sort of the desk MSE category that
38 John has described.
39
40 We know the end goal, to get better catch advice, and it's
41 something that an analyst can do in front of their computer, and
42 we can kind of right-size the data streams and the tools for the
43 job, and that's kind of one type of MSE, MSE process, that I see.
44
45 Then there's this whole other process, where we might use MSE to
46 tackle some of these really sticky issues, like how do we respond,
47 or how do we reduce regulatory discards, or how do we mitigate the
48 impacts of offshore wind energy development, or climate change,

1 and how do we look at evaluating multispecies optimum yield, and
2 these are the issues that are going to require a more full
3 stakeholder MSE-type process.
4
5 As Carrie mentioned, we, just two weeks ago, set out a process,
6 within our Ecosystem Technical Committee meeting, for developing
7 issues with stakeholder input, for evaluating issues, prioritizing
8 issues, and, once we enter into a fishery ecosystem issue loop, I
9 think that management strategy evaluation is going to be one of
10 the major tools that gets used in that process. In some cases,
11 looking at a fishery ecosystem issue might be sort of equivalent
12 to doing a full-blown stakeholder MSE.
13
14 I just wanted to point that out, that I think there is kind of two
15 avenues for using MSEs, and there's the more desk MSE, refining
16 the single-species stock assessment process, but then we have this
17 whole ongoing process for trying to tackle fishery ecosystem issues
18 that is also going to involve the heavy use of MSEs.
19
20 **CHAIRMAN BARBIERI:** Yes, very true, and thank you. Jim Tolan.
21
22 **DR. TOLAN:** Thank you, Mr. Chairman. I am going to also take us
23 down another little tangent. I am going to go back to a question
24 that John originally kicked this discussion off with, and I want
25 to really get the perspective of some of the other SSC members,
26 and it deals with, number one, really what is the role of the SSC
27 in the MSE process?
28
29 I think the panelists had laid out a really nice table, in one of
30 the presentations, that says, you know -- At least John's idea of
31 what the role ought to be for the SSC, in terms of the operating
32 models and the management objectives and, again, the management
33 procedures.
34
35 Me personally, I don't think it's all that much different than the
36 SEDAR process now, where we've got the data workshop, and we have
37 a couple of us that will go to the data workshop and provide input,
38 and the same thing if we're coming up with operating models, and
39 a couple of us would go to that, and it would be very intensive,
40 and here's what we want.
41
42 Then the same thing with the review workshop, as it relates to
43 sort of the management objectives, but I am just curious, from the
44 rest of the SSC, how you see our role, especially as it relates to
45 Number 1. If we go down this road, and it's very different model
46 than what we're doing now, where do you see the role of the SSC in
47 not just giving a thumbs-up or a thumbs-down at the end of the
48 process, but how involved do you think we're going to be, and,

1 really, I think that's the question that John was trying to get
2 at, and so I'm just curious to see what the rest of the panel
3 thinks. Thank you.
4
5 **CHAIRMAN BARBIERI:** Trevor.
6
7 **MR. MONCRIEF:** I agree with you on the SEDAR process. I'm on the
8 same page, as far as, you know, I would imagine that we would have
9 some SOWs put in front of us, or whatever else, and we would be
10 able to review it, add things, subtract things, whatever we think
11 is appropriate, and then, whenever there is some group together,
12 then there would be a contingent of this group that would go.
13
14 I think the more complex side of this, and I'm not sure how it all
15 mixes together, is the management procedures, and that road,
16 because that starts delving into topics that might -- It would be
17 a little bit out of our purview, and we might all have opinions on
18 it, or thoughts on it, but I don't know -- That would be a hard
19 one, for me, I think, and I think it would be a difficult one for
20 the group to come to, and I think there would be a little bit of
21 a back-and-forth. If we do this, the original time, I think there
22 will be a little bit of disagreement between entities, and who
23 says what, and who recommends what, but I see that being the larger
24 side of this.
25
26 **CHAIRMAN BARBIERI:** Thank you, Trevor. John Mareska.
27
28 **MR. MARESKA:** I guess I didn't see kind of what Jim was thinking,
29 or what Trevor was saying, because I was thinking that -- You know,
30 if it's based on a stock assessment, that's going to be like a
31 desktop MSE, and we probably wouldn't be involved in that, and I
32 didn't even see the MSE kind of being in the SEDAR process, or
33 enterprise, and so, if it was something that wasn't based on a
34 stock assessment, then we probably would need to provide,
35 potentially provide, some individuals to, I guess, participate in
36 a workshop for the development of the MSE, but I don't see it as
37 the same level as the SEDAR process.
38
39 **CHAIRMAN BARBIERI:** John Walter, not putting you on the spot, but
40 putting you on the spot, and, I mean, this is a collegial
41 conversation, but just us trying to understand, right, how the
42 plan -- How well cooked, or ready to go, right, the plan to fully
43 integrate MSEs into the whole Science Center stock assessment
44 enterprise it is, right, and it might be still something that is
45 still in development, and you've kind of put some in place, and
46 you guys hired Cassidy, and you've started putting together the
47 strategic plan, and you've started engaging, and here we are having
48 this full-day workshop, you know, that's super informative, but,

1 to some extent, we're trying, I guess mentally, to tie this, to
2 supplement what John just said, with the stock assessment, the
3 SEDAR stock assessment, process, having an ADT, right, that is
4 involved in that process, so you have buy-in and engagement of the
5 SSC during the entire process, right, or what Holden and Skyler
6 mentioned yesterday about their approach using that co-production,
7 right, perspective for the ecosystem models, and they come and
8 present some early version draft of it, or here is the plan, and
9 help us guide this forward in a way that ties, you know, the bridge
10 between the science and the management and the role the SSC plays.
11
12 I think it's just trying to understand, and it may be that process
13 is not complete yet, which is fine, and it's in development, but
14 I think this is part of what we're trying to understand, is how
15 this -- If this is defined yet, and, you know, how this fits into
16 that.
17
18 **DR. WALTER:** Well, I think this is the conversation we're trying
19 to have, is really to define that, and I think probably my
20 recommendation is let's get a few done, and see what process works,
21 rather than define something that we wind up having to modify
22 afterwards, and, really, I think that is what is already going on.
23
24 We've got the South Atlantic, and we'll see how that works, and
25 they're primarily using their Reef Fish AP as their kind of key
26 group to evaluate things, that they're doing a lot of repeated
27 engagement with, and I think that what probably we could do is
28 embark upon something as an FEI and see how it works, in terms of
29 probably coproduction, having some SSC members appointed to it,
30 however the FEI process works.
31
32 Let's say, for example, chasing OY becomes -- The council says we
33 really want to chase OY, and we want to do it with a management
34 strategy evaluation, and we want to do it for reef fish,
35 multispecies reef fish, and we want to incorporate stakeholder
36 feedback to get what the conceptual and operational management
37 objectives are. Beyond simply yield, we want to be able to
38 quantify opportunity, kind of like what the Mid-Atlantic did for
39 flounder, where they're looking at what do recreational fishers -
40 - What is their recreational utility.
41
42 Okay. Then we bring in socioeconomics, to try to define that, and
43 we use stakeholder workshops to get that, and then we build into
44 an operating model, or perhaps multiple operating models, that we
45 need maybe to hire an outside group to facilitate those, and, okay,
46 and maybe that happens, and then, eventually, it works its way
47 back to the SSC, and they say, okay, and we get to look at this,
48 and we give some ruling that it meets the biological must-pays,

1 and it goes back to the council, and there's a couple of
2 iterations.
3
4 The council could say, okay, we want to adopt one of these as the
5 management procedure, and, probably within the existing structure,
6 it could be fit in, without having to predefine all of that, and
7 we could kind of see what works, or what needs to be tuned up, and
8 I don't know that we want to be that prescriptive right now, partly
9 because we did present to the Steering Committee the role of SEDAR
10 in MSE, and I think SEDAR has its hands full right now, and they
11 have got a process that is pretty outlined, and the only thing I
12 would say is could we identify some stocks that were on the books
13 for a SEDAR assessment that might be better addressed through an
14 MSE, and maybe take some pressure off of SEDAR, and then address
15 it through MSE.
16
17 I am not sure if SEDAR is the right process, and I think it has a
18 lot of infrastructure, but I think that's a conversation for the
19 SEDAR Steering Committee, as to whether that's the infrastructure
20 to address it, but I would say let's embark on something, and then
21 we'll kind of see where the process leads before being -- Before
22 setting out something and micro kind of prescribing it, and that's
23 just my thought.
24
25 **CHAIRMAN BARBIERI:** That makes perfect sense, and that's exactly,
26 I think, what some of us, and myself personally, are trying to
27 understand, where we are in the process, and what you said makes
28 perfect sense to me. Trevor.
29
30 **MR. MONCRIEF:** I was just going to -- Just to clarify it, I think
31 what I was thinking of is some SEDAR-like, and not necessarily
32 within SEDAR, but some workshop level, and not put it within that
33 framework itself, and then, yes, I think looking at the schedule,
34 and maybe picking out a couple, is a very worthwhile endeavor of
35 -- I mean, we kind of know these species pretty well, and I know
36 there's plenty of people at the table a lot more experienced than
37 me, and with a lot more knowledge, and I think that there's a
38 couple in there that you can probably point to and say, let's go
39 ahead and do it, because, you know, going through the full-scale
40 exercise might not be informative, at this point, and we know it
41 might not yield anything that's going to drastically change our
42 outlook on the stock.
43
44 **CHAIRMAN BARBIERI:** Thank you, Trevor. Dave Chagaris.
45
46 **DR. FRAZER:** I mean, I appreciate that, if you were able to pursue
47 an MSE, with a species, or a particular problem, it make take some
48 pressure off SEDAR, or the staff somewhere in the Science Center,

1 but you're just shifting workloads, and, whenever we have these
2 types of conversations, I am just trying -- The ideas are very
3 good, and they're worth pursuing, but I don't understand what's
4 being taken off the table to accommodate this activity, and so I'm
5 just curious, right, because I don't see a lot of new resources
6 just coming down the path.
7
8 **CHAIRMAN BARBIERI:** Go ahead, John.
9
10 **DR. WALTER:** I said "take off", and that means that, for one of
11 those slots that is slated for a stock assessment, it's taken off
12 of those slots, and not refilled with something, and it gets moved
13 to, as Trevor said, the same -- We want to go down developing an
14 MSE for this one, so that those resources are shifted, with the
15 hopes that that will pay off dividends in the future, but it isn't
16 just duplicating and saying we're going to take that SEDAR slot
17 off and now it's white space and let's fill it back up. No, and
18 we're going a different route.
19
20 **DR. FRAZER:** Fair deal, and, if there were truly efficiencies
21 gained by the approach, right, we would get that MSE done as fast
22 as you would have got the assessment done, and you wouldn't have,
23 you know, other scheduling problems that come up, right, and, if
24 they conflict -- If your workload slows down, right, and it's a
25 real question, and I'm not trying to be argumentative, but I'm
26 just trying to figure out how -- Every idea that we have requires
27 resources, right, and we can make things better, even in an ideal
28 MSE world, right, and it's still a data-rich endeavor, right,
29 because, in the best case, you would have a lot of indices, right,
30 and you have to invest -- Somebody has to make an effort to invest
31 in a sampling program that's going to yield valuable indices that
32 make MSEs worth pursuing, and so all I'm asking, you know, is --
33
34 I mean, people have asked where are the efficiencies, and,
35 conceptually, I see where the efficiencies are, but, if you take
36 an assessment off the table, and you embark upon an MSE, I think
37 you will start to see where -- How much they actually cost, and I
38 don't know how much they actually cost.
39
40 **DR. WALTER:** If I could comment on that, because I think the
41 bluefin can, and should, scare everybody. Bluefin is always the
42 stock that has taken up 80 percent of the entire resources, and
43 most people say that ICCAT is the bluefin commission.
44
45 I think the example that probably is closer -- That should be
46 looked at is swordfish right now, that we'll probably go from start
47 to finish, and Adrian might, who is leading that, if he's still
48 on, could chime-in on the timeframe from start to finish with

swordfish, where I think they're going to adopt an MP this year
for northern swordfish, and I think it started maybe two years
ago, and so that might be a three-year, start to finish, for a
management procedure, which shows what can be done, and I know
that that one is proceeding much faster, and by all -- From what
I have heard, it's going very smoothly, and so I think that bluefin
shouldn't -- It has a lot of good lessons learned, but it's also
one of the most challenging ones for us, and it shouldn't be taken,
I think, to scare people away from it, and I think maybe something
like swordfish might be closer. Thanks.

CHAIRMAN BARBIERI: Thank you, John. Dave Chagaris and then Doug.

DR. CHAGARIS: Thank you. Kind of going back to the Question
Number 1 up there that Jim brought up, and I think the SSC has a
role throughout the entire process of the MSE, you know, starting
with actually recommending, or requesting, an MSE, and I can think
of a handful of cases, over the last three or four years, where
we've actually said, at this table, that, hey, we could use an MSE
for this, and those would the desk-type MSEs, you know, thinking
about where we've changed our reference points, like for gag
grouper, from a combined -- From female-only to combined sex, and
with not really knowing the implications of that decision, and an
MSE would help us understand that.

There was a switch from, you know, one minus M to 0.5, to get the
minimum stock size threshold, and we don't really know what the
implications were for that, and those would be simple types of
MSEs that I think could be done rather quickly, especially coming
off the heels of an accepted stock assessment.

Then we would have a role as far as the review process, of even
the final recommendations, and so, I mean, I think that the SSC
would be very involved throughout the entire process, and I agree
with what John said, as far as, you know, let's pick one and move
through it. You know, I think that there's a lot of low-hanging
fruit out there, especially if we're talking about these desk-type
MSEs, and I think that will get this committee more engaged, and,
now that we know more, having seen the series of presentations, I
think, once you have the capacity to do MSEs within the Center,
then I think we could probably start requesting them on a fairly
regular basis, probably more so than you might would like, and
those could be done quickly.

Now, what Mandy is talking about, for the ecosystem UTC and FEIs,
I think that's a much bigger process, but doing these desk MSEs,
you know, for more discrete questions, and single-species
questions, I think will kind of grease the axles, you know, going

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1 into a big FEI-type MSE, and so that's how I think we should
2 probably move forward, and I don't know how far away we are from
3 actually saying, hey, would like to see an MSE on the backend of
4 this assessment, to help with this specific decision, and I don't
5 know how far away we are from actually being able to do that, but
6 I know it's come up, you know, several times, but, anyhow, thank
7 you for the presentations, again, and I think it really kind of,
8 you know, gives us an idea of what we can request, and I think we
9 just need to know when we can start requesting them, and they don't
10 all have to be replacements for a stock assessment.   I think
11 that there's probably some capabilities, even within SS, you know,
12 to do some MSEs on the backend, that we could utilize that in the
13 short-term. That's all. Thank you.
14
15 **CHAIRMAN BARBIERI:** Very good points, Dave. Mandy, obviously that
16 ball was left there, and it bounced there, right, and so somebody
17 has got to kick it.
18
19 **DR. KARNAUSKAS:**   Dave's comment actually reminded me that we
20 actually have done some desk MSEs that have never really seen the
21 light, and I'm thinking of Bill's work that he did, and so, back
22 in I think it was 2014, there was actually a council motion to
23 look at whether or not current harvest control rules were robust
24 to episodic mortality events, and that was back when we were, you
25 know, looking at incorporating red tide into stock assessments,
26 and how do we deal with the whole red tide, and not knowing future
27 frequency of red tide.
28
29 Bill actually did a whole analysis, looking at the buffers on the
30 catch limits and the tradeoffs between catch limit, or yield, and
31 overfishing, probability of overfishing, and I don't think that we
32 actually ever circled back and showed that, and, Bill, correct me
33 if I'm wrong, but I don't think that ever made it to the SSC or
34 the council, and so, as a start, we might want to -- You know, we
35 could use some of the analysis, some of the desk MSEs, that we've
36 actually already done, and look at whether or not it could inform,
37 and so it's a published paper, but, yes, I agree with what Dave
38 said.
39
40 **CHAIRMAN BARBIERI:** Yes, and sure thing. I have Doug Gregory, and
41 then I think we're going to be hearing live from the Pacific
42 Northwest and Will Patterson.
43
44 **MR. GREGORY:**   I seem to be picking up two different discussions
45 about MSE, and the SSC is having a discussion about, and Dave's
46 recent discussion was right on, about evaluating different harvest
47 control rules, and would this work better, or would that work
48 better, but John keeps coming back to using MSE as a negotiating

1 tool between competing users, and I just wanted to say, and I don't
2 know if I'm preempting Will at all, but we do have a turnover, and
3 we have new members on the SSC, but, historically, the biologists
4 on the SSC have been adamant about not getting in the middle of
5 allocation decisions, or that sort of user group negotiation, and
6 so bringing that sort of thing back to the SSC could be
7 problematic.
8
9 I'm not saying it will, because we've got more sociologists and
10 anthropologists and economists on the council, on the SSC, I think
11 than we've ever had, and so we have a broader discussion going on
12 now, but it could be problematic, and I think we ought to get
13 straight what MSEs can be used for. Are they a useful negotiating
14 tool between competing users? Thank you.
15
16 **CHAIRMAN BARBIERI:** Tom Frazer. I was waiting for John to bite
17 the hook, but he didn't.
18
19 **DR. FRAZER:** I just want to respond to Doug a little bit, and I
20 think that -- I mean, I am going to choose my words carefully,
21 and, whenever you can develop an objective tool, right, to help
22 inform a decision, I think that's a good thing, right, and so, at
23 the council level, you have to make a lot of values-driven
24 decisions, right, and some of those are based on economics, and
25 some are on social factors or whatever, but I see a value coming
26 out of an MSE, again, to provide an approach, and a methodology,
27 to help inform those decisions, and I don't view -- As long as the
28 tool is credible, defensible, that certainly falls within the
29 purview of the SSC, right, and you don't have to make the decision,
30 but you just have to provide the tool that's going to help inform
31 the decision-makers.
32
33 **CHAIRMAN BARBIERI:** John.
34
35 **DR. WALTER:** Doug, I will take the bait a bit, and I think maybe
36 the choice of words that you had, that it's a negotiation tool, is
37 not how I would see it. I would see it much more in the way that
38 Tom said that this is a tool for decision-makers to make an
39 informed decision. Ultimately, it is the council's decision which
40 management that they put into place, or what allocations they
41 choose, and we are just providing them performance results, based
42 on their stated operational management objectives for several
43 management procedures, which is exactly what we're currently
44 giving them when we give the no action alternative and then two or
45 three other alternative management actions, with a suite of
46 biological, social, and economic implications.
47
48 Here, those are just actually quantified, such that each of those

alternatives have quantitative numbers on how well they meet those suite of their objectives, and, in terms of does it allow for them to negotiate, I think that's where -- That's where it happens, and a negotiation is what the council does, because they have to eventually come up with one management advice, but, the more that science can inform that, I think the better that that's able to be done.

I think, to kind of get to the spirit of when you say a tool for negotiation, when you can see the tradeoffs from two competing groups, and Group A and Group B can both see where the management procedures stand, based on the things that they value, even if they value different things, it does allow them that space for finding compromise.

Until they have their objectives stated, and are able to see what the performance is, it's all done implicitly, and they're just assuming that one is better or worse, but it's not clearly written down what that performance is, and I think that's where it's providing informed decision-making, which is I think where -- I know that the economists that we work with in our group, where they're saying, yes, we should be able to inform on things like allocations and such that -- That biologists might not have wanted to tread on, because that's actually what social science is providing information on, to inform the decision-makers, and I think that's the key, is you're not making that decision. You're not telling them how to make that decision, but you're giving them the data to do that, and I think that's the role that this plays. Thanks.

MR. GREGORY: If I may, Mr. Chair, just real quick?

CHAIRMAN BARBIERI: Sure. Follow-up, Doug. Sure.

MR. GREGORY: I agree with you, John, and I said we now have, I think, more expertise, in that area on the SSC, than we've ever had in the past, and so that's a real possibility, running something like that through the SSC, but that's a different kind of MSE than what some of us biologists have been thinking of talking about, and, in the past, some of the biologists have been reluctant to delve into this area, even though it's a legitimate management area and with scientific expertise, and I'm just saying that could be a stumbling block here in the beginning, but I agree with you that we've got the expertise, and it's a legitimate way for the scientists to get involved in the management, but it's not the same kind of MSE that us biologists have been talking about all day, and so that's all. Thank you very much.

1   **CHAIRMAN BARBIERI:** Thank you, Doug, and now let's see if this is
2   actually real, if we are having live -- Will.
3
4   **DR. WILL PATTERSON:** (Dr. Patterson's comments are not audible on
5   the recording.)
6
7   **CHAIRMAN BARBIERI:** Sorry, Will, but you're going to have to drive
8   to Anchorage, or some other place a little closer to cell signal.
9   We want to hear from you, but let's wait a little bit. Cindy.
10
11 **DR. GRACE-MCCASKEY:** Thank you so much, and I've really, really
12 enjoyed the discussion today, and the presentations, and I think
13 it's really exciting to hear about the possibility of integrating,
14 or using, MSE more frequently, and I just wanted to follow-up on
15 a couple of the comments regarding kind of the role of the social
16 scientists on the SSC with these MSEs, and I think -- You know,
17 one thing, and I think it was John that was getting at there at
18 the end, is that, just like the biologists, and the stock
19 assessment folks, on the SSC would evaluate those biological data,
20 those ecological data, that are being used in the stock assessment,
21 or the MSE, for example, you know, that is, similarly, what us
22 social scientists would do with the social science data.
23
24 Are the economic data sufficient, you know, especially when it
25 comes to things like stakeholder participation, and was enough
26 effort made to actually get representative and -- I guess
27 representative perspectives from those stakeholders, right, and so
28 we would evaluate those data from our expertise, and so I could
29 see that as being an important role for the SSC members who are,
30 you know, so inclined. Thank you.
31
32 **CHAIRMAN BARBIERI:** Thank you, Cindy. Any other questions or
33 comments, while we wait for Will to call in, as he gets to --
34
35 **MR. GREGORY:** I think he's in a helicopter.
36
37 **CHAIRMAN BARBIERI:** Yes. I was just reminded here that, you know,
38 looking at our scope of work, you know, it would be good for us to
39 get a motion from the SSC that basically, you know, expresses the
40 committee's main recommendations towards this -- You know, the use
41 of this MSE approach.
42
43 As John Walter pointed out earlier, we already gave this
44 presentation, or at least a summarized version, to the council,
45 but, because their presentation came before our workshop here
46 today, and this is not one presentation, but a collection of
47 presentations, and a lot of, you know, good questions and answers
48 and discussions, and whether we can prepare something that clearly

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1 presents the council with our perspective on the value of MSE to
2 informing what this committee actually has to accomplish, in terms
3 of providing scientific advice to managers.
4
5 Steve Saul, I don't know if, from your notes there, you have
6 something that you can start structuring that, and, you know, we've
7 been talking a lot about a variety of -- You know, a spectrum,
8 right, of things, and I don't know if there's enough there to put
9 something as synthesized as that, but this is something that we
10 could, you know, really be explicit to the council about. I know
11 that you're going to be coming to the next council meeting, right,
12 to present this part of the SSC report, and so it would be valuable
13 to have your input in this directly.
14
15 **DR. SAUL:** Yes, and I would be happy to. I don't want to -- I
16 have my own thoughts on this, obviously, but I want it to be
17 reflective of the group as well, and I have not drafted anything
18 in text, other than just notes that I've been taking, which are
19 messy, but --
20
21 **CHAIRMAN BARBIERI:** At this point, I don't think that it needs to
22 be anything too specific.
23
24 **MR. RINDONE:** I think, in terms of trying to guide you guys towards
25 recommendations, it doesn't necessarily need to be, you know, like
26 do an MSE for greater amberjack, or something like that, but, you
27 know, perhaps it could be something more along the lines of, you
28 know, the SSC recognizes the value in pursuing MSEs to address
29 certain council management objectives, and it encourages the
30 council to strongly consider using these tools in evaluating --
31 Evaluating and prioritizing objectives that it thinks might be
32 best met by -- Or by desk and stakeholder-informed MSE approaches,
33 or something to that effect.
34
35 **CHAIRMAN BARBIERI:** There we go. Bingo.
36
37 **MR. RINDONE:** Well, I mean, you guys get where I'm going with it.
38 You know, something to that effect, where you're not going to try
39 to marry the council to anything specific, and, you know, like
40 Mandy had talked about, there are some approaches with regards to
41 trying to rein-in regulatory discards, and that might be a larger
42 stakeholder-informed process, but it would benefit multiple
43 species, and probably all species, and, you know, then there are
44 more pointed issues that might be addressed by a desk approach,
45 and so, as the council works to try to identify what its objectives
46 and priorities might be, both at the FMP level and at the species-
47 specific level, it will be able to provide feedback and
48 communication between itself and you guys to identify where to

274

1 start with certain things and what approaches to endeavor upon
2 first.
3
4 **DR. SAUL:** I am writing something now, but others feel free to
5 beat me to the punch, or not.
6
7 **CHAIRMAN BARBIERI:** Sure thing. In the meantime, you know, I want
8 to say that I thought, John, that engaging this process in helping
9 us address optimum yield I think is a great idea. I mean, it's
10 something that we've been discussing, around this table, for as
11 long as I can remember, and I have gone before the council several
12 times for SSC reports over the years, and tried to engage in this
13 conversation, and I remember calling Mandy a few years back -- I
14 saw her give a presentation that had this flavor of, you know, all
15 the factors that come together, right, conceptually in OY, and I
16 was thinking that, well, Mandy, you should come before the council
17 and kind of help them see where is this, you know, headed, and
18 what the value of this is, and I think that having these tradeoffs,
19 and having these issues addressed more directly, through a
20 structured process, like an MSE --
21
22 Like you said, John, I mean, when you put that, you know, two-
23 dimensional plot there before the ICCAT commission, right, and
24 kind of helped them see where their stocks were, you know, relative
25 to those factors, and relative to each other, and it kind of --
26 They start engaging more and seeing the value of getting that
27 discussion going, and I think that, here, there are so many issues
28 that could lead us that same way. We are going to try Will one
29 more time.
30
31 **DR. PATTERSON:** (Dr. Patterson's comments are not audible on the
32 recording.)
33
34 **CHAIRMAN BARBIERI:** Will, we really, really appreciate that input,
35 and those are points that we had not thought about yet, and so we
36 really appreciate it, and we look forward to your safe return.
37
38 **MR. MONCRIEF:** I threw one up there, a simple one. Steven Saul's
39 might be a lot better, but I just wanted to --
40
41 **DR. SAUL:** I sent two sentences to the Meetings email as well, and
42 so feel free to -- Whatever others have written too.
43
44 **CHAIRMAN BARBIERI:** In a way, since this is a work in progress,
45 maybe we can fuse the two, right, and kind of merge them together,
46 right, and then it's co-authorship of that motion. I mean, his is
47 short and to the point.
48

1 **MR. MONCRIEF:** You can erase that top one.
2
3 **CHAIRMAN BARBIERI:** This is now a motion on the floor by Steve
4 Saul and seconded by Trevor. Do you have another one, Mandy?
5
6 **DR. KARNAUSKAS:** I sent a version, but I think it's pretty similar,
7 and I think we can work with this one.
8
9 **MR. RINDONE:** "Council" is a proper noun, and so capitalize
10 "council" and divide "socioeconomic" into "biological, social, and
11 economic" benefits. That's all I had.
12
13 **CHAIRMAN BARBIERI:** John.
14
15 **MR. MARESKA:** I will second the motion.
16
17 **CHAIRMAN BARBIERI:** Actually, it had already been seconded by
18 Trevor, but this gets it done. There is a motion on the floor for
19 discussion, and are there any discussion points? Dave Chagaris.
20
21 **DR. CHAGARIS:** I mean, I like the motion just fine, but I think
22 that it's maybe -- I think it stresses kind of like the -- I don't
23 want to say the Cadillac, but some -- You know, the full-blown MSE
24 that gets at all of these things for the council, but there is
25 also this other utility in the MSE that helps us with decisions
26 following stock assessments, right, and so like when we're
27 challenged with new benchmarks, or certain things in a stock
28 assessment, and I'm wondering if we want to add any language to
29 the motion to capture that, because not all MSEs have to
30 necessarily be tied directly to management objectives, and they
31 could also help inform decisions that we're faced with, just at
32 the SSC. I don't know how folks feel about that.
33
34 **CHAIRMAN BARBIERI:** Right, and Steve was giving the thumbs-up
35 there, and so, Trevor, are you okay with that? It's just a matter
36 of reworking some of the text there, Dave.
37
38 **DR. KARNAUSKAS:** I had written something along those lines, and I
39 put the SSC recognizes the value of MSE in evaluating the
40 efficiency of the stock assessment enterprise, and so maybe that
41 gets more to what Dave was talking about, and it's not just a
42 council tool to evaluate their objectives, but also to increase
43 the efficiency of the decisions that we're trying to make.
44
45 **CHAIRMAN BARBIERI:** Right, and I like that as well, because it's
46 a bit more general, right, and, I mean, it doesn't go -- It can
47 still have multiple uses, and we are not being specific about it,
48 but it provides, you know, unequivocal, I think, explicit support

1   of the value of this that is recognized by the committee in working
2   with the Center and moving this forward. Has it been modified to
3   the -- Do you want to help, Mandy?
4
5   **DR. KARNAUSKAS:** Maybe you could add, to the end of the first
6   sentence, "to help address certain council management objectives
7   and assess the efficiency of the stock assessment enterprise", or
8   something, and I don't know, and, Dave, maybe you can help me
9   reword that, and so another clause at the end of the first
10 sentence. The SSC recognizes the value of pursuing management
11 strategy evaluations to help address certain council management
12 objectives and to evaluate the efficiency of the stock assessment
13 enterprise. Does that get at what you were trying to say, Dave?
14
15 **DR. CHAGARIS:** Yes, and I think it's getting there. I wasn't --
16 I think it can do more than just the efficiency side, and so I'm
17 wondering if -- Maybe "management objectives and to address stock
18 assessment" -- I don't know. I hate doing this, and this is why
19 I never do it. You could maybe say "stock assessment needs and
20 efficiency of the stock assessment enterprise". There is two
21 different avenues here, and that's all I'm trying to capture. You
22 know, there's a pure management, informing management, but also
23 supporting and enhancing stock assessments.
24
25 **DR. TOLAN:** With that first sentence, and is that second sentence
26 even needing to be up there? I think the first sentence captures
27 what we really want to say.
28
29 **CHAIRMAN BARBIERI:** Steve.
30
31 **DR. SAUL:** I am fooling with that in my head as well. I want to
32 capture, somehow capture, this idea that it could help evaluate
33 those dimensions, across dimensions of the biological, social, and
34 economic, but I don't want to lock us into that either, in cases
35 where the data is not available, and so I am trying to figure out
36 a way to include that, while keeping it flexible, like and/or type
37 of language.
38
39 **MR. RINDONE:** To that?
40
41 **CHAIRMAN BARBIERI:** To that point, Ryan.
42
43 **MR. RINDONE:** To that specifically, when we draft the scopes of
44 work and the terms of reference, we specifically use language like
45 "evaluate", because evaluate does not mean do, and evaluate just
46 means look at it, and, you know, is this possible, and do we have
47 the data to support this, and, if not, then you don't, and that's
48 -- You say that, and you justify why, and you move on, but I think,

1   by saying evaluate, that that's strict enough, in that sense.
2
3   **CHAIRMAN BARBIERI:** Tom.
4
5   **DR. FRAZER:** I just wanted to -- I am trying to follow-up and think
6   through Dave's comments over there, and I guess, really, what I am
7   hearing, around the table, is that the SSC recognizes the value of
8   MSEs as a decision support tool, right, hard stop, right, or
9   perhaps "for example, in helping to evaluate management
10 objectives", blah, blah, blah, blah, blah. That way, you don't
11 pin yourselves in.
12
13 **CHAIRMAN BARBIERI:** Personally, I was leaning more towards a more
14 general, right, basically an endorsement that this methodology,
15 this approach, is valuable, and that we're willing to work with
16 the Center with moving forward with this. Steven.
17
18 **DR. SCYPHERS:** Thank you, Mr. Chair, and so I'm fine with that
19 too, and I think a general motion is good, and I will just mention
20 that I sent Steve and the Meetings email a potential follow-up
21 motion, what I thought would be a second motion to this, if the
22 first one was general, emphasizing the -- Encouraging the council
23 and the Science Center to continue collecting the social and
24 economic information and look for existing data as potential
25 performance measures that could be used in the near-term, and so,
26 I mean, it could be considered however the motion makers, and the
27 rest of the committee, would like, and it could be certainly a
28 second follow-up, but I just wanted to mention that I sent that.
29
30 **CHAIRMAN BARBIERI:** Thank you, Steven. We'll consider that, I
31 guess, separately. Will Patterson. Will, let's see if we can
32 hear you now.
33
34 **DR. PATTERSON:** (Dr. Patterson's comment is not audible on the
35 recording.)
36
37 **CHAIRMAN BARBIERI:** Okay. Sounds good. Will, if you want to send
38 comments to Jess by email, that might be easier. Trevor.
39
40 **MR. MONCRIEF:** Sorry if I'm getting overly pragmatic here, but so
41 you've got a full stop, right, and so as a decision support tool,
42 and stop it there. If Steven has got another part to add to it,
43 and I don't think this thing warrants two specific motions, can we
44 pull up his language, have the full stop at the end, and tack on
45 Steven's and see if the motion maker and the seconder agree with
46 that change?
47
48 **CHAIRMAN BARBIERI:** Yes, I'm okay with that, and so why don't we

1 try that, and see how that sounds? Can you pull up Steven Scyphers'
2 motion, copy-and-paste, and then post that there on the board, so
3 we can see where it fits?
4
5 **MR. MONCRIEF:** So, for the top one, the SSC recognizes the value
6 of pursuing management strategy evaluations as a decision support
7 tool, is that we said, period, and then the sentence after that
8 will be the SSC encourages the council and the -- Just the next
9 one, and so just knock them all into one.
10
11 **CHAIRMAN BARBIERI:** Steven Scyphers.
12
13 **DR. SCYPHERS:** Thank you, Mr. Chair, and so one contextual comment
14 on that part that I sent, and I wasn't trying to be exclusionary
15 to the biological element, but I was trying to emphasize the social
16 and economic, and so that is one reason to consider this as a
17 second follow-up motion, so that it doesn't infer that first part
18 of the motion is narrow to social and economic, but I did intend
19 it to emphasize the need to continue to expand the emphasis on
20 social and economic, and so that's the reasoning for that part
21 being left out.
22
23 Then a small, I guess, grammatical correction to myself is that -
24 - Where did it go? That latter part, and delete that second "for
25 use", and I think it will read better. It doesn't need that, and
26 towards the very end, the "potential data for use", and I don't
27 think that needs to be there, because it makes "use" be there
28 twice. I am open to however the rest of you all feel that it fits,
29 particularly the motion maker and the second.
30
31 **MR. MONCRIEF:** I think, if we just add in "biological, social, and
32 economic", then we're there, but I will let Steven comment on it.
33
34 **DR. SCYPHERS:** If I may respond, and so that's actually what I was
35 saying that I don't think I -- that was not the intent of the
36 motion. I wrote the motion with the intent of just being the
37 social and economic, because that is the data that's lacking, and
38 so that was the reasoning that I think it would be my preference
39 for it maybe to be a follow-up motion, but it's not to say that
40 similar text couldn't be, you know, substituted here, but it's
41 just my thought.
42
43 **CHAIRMAN BARBIERI:** Will, go ahead.
44
45 **DR. PATTERSON:** Can you hear me now, Luiz?
46
47 **CHAIRMAN BARBIERI:** Now we can. There is the Will we know.
48

1 **DR. PATTERSON:** Sorry. We just landed the helicopter for a little
2 while, and so I've got a few minutes to chat.

3

4 **CHAIRMAN BARBIERI:** You're safe?

5

6 **DR. PATTERSON:** Yes, we're safe, and we shot a couple of seals
7 this morning, but they sunk, and so we'll have to go back and get
8 those later. I'm kidding. I am sitting in Gainesville, and, for
9 some reason, the phone wasn't working properly before, but I think
10 the comments that I had about this discussion earlier, when I
11 couldn't get through, they followed on some things that Mandy said
12 about red tide.

13

14 I think it captures maybe some of the conversation here, in that
15 management strategy evaluations are important decision support
16 tools, but they can be utilized, on the assessment side, to examine
17 assessment -- You know, model parameterization and model
18 assumptions about things like ageing error, or discard mortality,
19 or the implications of red tide, or they could be utilized to
20 actually evaluate the implications of different management
21 strategies and how that feeds back onto the whole system. I think
22 that's part of the discussion here, about kind of those two
23 different directions, and I think we could probably capture that
24 in this motion more effectively.

25

26 **CHAIRMAN BARBIERI:** So do you have some text that you can propose
27 there on how to edit that, Will?

28

29 **DR. PATTERSON:** Well, maybe on the fly here, and so "after decision
30 support tool", something such as "management strategy evaluation
31 can be utilized, through a simulation, to examine assessment model
32 parameterization or assumptions, or conducted to examine" -- Then
33 strike everything up to "social", the first "social", "or economic
34 implications of different management strategies".

35

36 **CHAIRMAN BARBIERI:** You know, this is an issue -- Will, this sounds
37 good to me, but this is an issue about, you know, lumpers and
38 splitters and how different some of us think about this, and we do
39 have a report, right, and, personally, I prefer to have motions
40 that are very action-oriented, brief and to the point, and they
41 are basically like topic sentences, right, that you basically
42 communicate the main thrust of an idea, and you provide context,
43 through our more extensive, several pages long, meeting report
44 that is going to be put together to help, right, explain all the
45 other components that come into this.

46

47 That's just my opinion, and I'm not against this, but I'm just
48 thinking, you know, as we go before the council, and you read

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1 something like this at the council meeting, whether this would be
2 intelligible or clear to them, in terms of what are we trying to
3 communicate through a motion to the council. Dave Chagaris.
4
5 **DR. PATTERSON:** If you think add Steven Scyphers' text as the last
6 sentence here, it says that we encourage them to explore these
7 tools. Anyway, there was just a lot of discussion about that
8 assessment approach, on the frontend, that we seemed to be missing
9 in the earlier version.
10
11 **CHAIRMAN BARBIERI:** Right. Yes. Dave Chagaris, do you have a --
12 By the way, thank you, Will, and I forgot to thank you for providing
13 this additional language and clarification.
14
15 **DR. CHAGARIS:** I mean, I have a -- Maybe, to simplify the motion,
16 you could say -- You know, we haven't seen all the specifics of
17 everything that the MSE can do, and it's still, you know,
18 conceptual for us, right, and so I don't want to go too far in
19 saying that it can be used to examine, and you can make
20 implications, and I;m sure that it could, but we haven't gotten
21 that far yet.
22
23 I was thinking, maybe just to keep it general, you could say "as
24 a decision support tool with applications for stock assessment,
25 fishery ecosystem planning, and council decision-making", or
26 something like that, to keep it -- Then everything, you know, can
27 fall in there, in the discussion. I mean, just within stock
28 assessment, you could write, you know, several pages about the
29 different ways that it could be used there. I can reiterate that,
30 if people think they might like that. All right.
31
32 "As a decision support tool with applications to stock assessment,
33 fishery ecosystem planning, or fishery ecosystem issues, and
34 council decision-making", and it doesn't capture -- It doesn't
35 explicitly capture, you know, what Steven had written, and then
36 everything after that sentence, I think, could -- There is the
37 lumpers version.
38
39 **CHAIRMAN BARBIERI:** You know how I feel about this one, right, and
40 to the point of being simple, but, of course, this should be a
41 full committee decision, and Steve and John Mareska, as the --
42
43 **DR. SAUL:** Yes, I'm okay with the shortened version.
44
45 **MR. MARESKA:** Yes, I'm fine.
46
47 **CHAIRMAN BARBIERI:** By the way, the idea was not to not consider
48 your input there, Will, which I thought was valuable, but it was

1 just trying to simplify it, right, in terms -- I mean, maybe a lot
2 of that can be integrated, what you brought up, can be integrated
3 into our report, you know, in a more discursive, narrative
4 description of what the capabilities are. Mike.
5
6 **DR. ALLEN:** You know, I like these changes, because it acknowledges
7 that an MSE can include an assessment model, and it's something
8 separate from an assessment model, necessarily, and an assessment
9 model can be part of the MSE, modeling the whole system, but this
10 doesn't emphasize what Steven was trying to emphasize, which is
11 that there's a need for integrating more social and economic
12 indicators into this process, and so I don't know if a second
13 motion would be the way to do that, but --
14
15 **CHAIRMAN BARBIERI:** Steven and then Jim.
16
17 **DR. SCYPHERS:** Thank you for bringing that back up, and I likely
18 will remake that motion, after this, and so I'm okay with this,
19 but I will comment, at least for the discussion, that I really
20 appreciate the way the Science Center considers the ecosystem
21 elements to include, the human elements, and so a lot of the
22 participatory modeling work that Mandy and Matt McPherson and those
23 teams have done have fallen at the interface of ecosystem, and so
24 I think, as long as we emphasize the fishery ecosystem issues here
25 include some social and economic elements, then I am okay with
26 this, but I probably will make a follow-up, too.
27
28 **CHAIRMAN BARBIERI:** Sounds good. Jim.
29
30 **DR. TOLAN:** That's exactly the compromise that I was going to make.
31 In the report, it could emphasize that those fishery ecosystem
32 issues include the social and economic things, and so that was my
33 compromise.
34
35 **CHAIRMAN BARBIERI:** All right. We have a motion on the floor.
36 Any additional discussion? Dan.
37
38 **DR. PETROLIA:** Thank you, Mr. Chairman. A minor thing on grammar,
39 I guess, and "evaluations" is plural, and "tool" is singular, and
40 can we make it -- Can we drop the "s" on "evaluation"? I feel
41 like I did something today.
42
43 **CHAIRMAN BARBIERI:** You just did, yes. All right. Any additional
44 thought or input? Dr. Frazer.
45
46 **DR. FRAZER:** I just wanted to make sure that -- I mean, the way
47 that it's written, and I think everybody understands, that "with
48 applications to stock assessment", that people don't misread that,

1 that that's the MSE actually replacing a stock assessment, and I
2 just wanted to make sure of that point.
3
4 **CHAIRMAN BARBIERI:** Well, and this is the advantage of having, you
5 know, Steve come to the council meeting and address this part of
6 the SSC report during the Sustainable Fisheries Committee, right,
7 and so there will be ample opportunity for the council members to
8 ask questions, and that will be a softball there that could help
9 him articulate that point explicitly, I think.
10
11 **DR. FRAZER:** Yes, and I appreciate that. Again, sometimes you're
12 left, you know, five years down the road, with just words, right,
13 and so I just wanted it in the record that it's not a replacement.
14
15 **CHAIRMAN BARBIERI:** Will, were you going to say something there?
16
17 **DR. PATTERSON:** Sorry, and I had my hand up, but it didn't recognize
18 me, and so I really like Dave's simplification of the text here,
19 but the only thing is there's nothing actionable about this motion,
20 and it just says we recognize the value, and so that's why I
21 thought that adding Steven's text to this, or something similar to
22 that, would be more meaningful than just saying we recognize the
23 value.
24
25 **CHAIRMAN BARBIERI:** Right. Jim.
26
27 **DR. TOLAN:** For Will, it's "pursuing" sort of that actionable verb?
28 It gives it -- We're not just saying we recognize it, but we are
29 saying we would like the council to pursue MSEs as part of the
30 stock assessment.
31
32 **MR. RINDONE:** If you really wanted it to be actionable, you could
33 say the SSC recommends the council pursue management strategy
34 evaluation, blah, blah, blah, and so that would make it actionable
35 and retain everything else that -- Pursue management strategy
36 evaluation and so delete "the value of". **The SSC recommends the**
37 **council pursue management strategy evaluation as a decision**
38 **support tool with applications to stock assessment, fishery**
39 **ecosystem issues, and council decision-making.**
40
41 **CHAIRMAN BARBIERI:** Will this do it for you, Will?
42
43 **DR. PATTERSON:** Yes, and I think this is a nice change.
44
45 **CHAIRMAN BARBIERI:** Okay. Thank you. All right, folks. Is Steven
46 okay with this?
47
48 **DR. SAUL:** Yes.

1
2 **CHAIRMAN BARBIERI:** Thumbs-up from John. There is a motion on the
3 floor, and discussion has been completed. **Is there anybody in**
4 **opposition to this motion? Seeing no opposition, the motion**
5 **carries unanimously.** Steven Scyphers.
6
7 **DR. SCYPHERS:** Thank you, Mr. Chair. If I may, I would remake the
8 follow-up motion that I submitted, with some initial wordsmithing,
9 as soon as it's put up. One process-related question is should
10 the motion be solely directed to the council, and then the council
11 passes on encouragement to the Science Center, or it acceptable
12 the way that I had written it, to have the council and the Science
13 Center included?
14
15 **CHAIRMAN BARBIERI:** Ryan, to that point?
16
17 **MR. RINDONE:** So, I mean, depending on what's being asked to be
18 done, it may not necessarily be the Science Center that does this,
19 I mean, that does a desk MSE, and so, I mean, it depends on the
20 circumstances, and it depends on their resource availability to
21 commit to it, and the council's needs for -- You know, outstanding
22 needs for stock assessments, and so I certainly wouldn't constrain
23 it to that it has to be the Science Center that is conducting it,
24 and so flexibility would be wonderful.
25
26 **DR. SCYPHERS:** So you can feel free to remove that part then, and
27 then also that last "for use", right before "social and economic
28 performance measures". So remove the "and Southeast Fisheries
29 Science Center", so that it's just directed to the council, and
30 then I will leave it there for now.
31
32 **MR. GREGORY:** For everybody on the SSC's concern, we can only make
33 recommendations to the council and not to anyone else.
34
35 **MR. RINDONE:** I would remove, also, "encourages", to say
36 "recommends", and I would remove "to continue pursuing", and change
37 that to "pursue", and I might -- Steven, I might even consider
38 deleting "including the use of existing and potential data",
39 because that would kind of be a given, or unless you wanted to say
40 "evaluating all" -- "Evaluating available data as social and
41 economic" -- Or "Evaluating available data for social and economic
42 performance measures". I am just trying to un-word-salad it a
43 little bit. I don't want to take away from whatever it is that
44 you're actually trying to say, and so undo anything that I said.
45
46 **DR. SCYPHERS:** Okay, and so here was my thought process. It was
47 that there may be some available data, within the social science
48 branches, or within other sources, that are already available and

could be suitable for performance measures in an MSE, and there
could be other datasets that are useful, but not available, and
would need to be collected, and so I was trying to inclusively
suggest both, and specifically I guess, suggest both of those, but
there is some redundancy, obviously, in the way that it's worded,
and so wordsmithing is certainly welcome.

MR. RINDONE: I think, by saying "all available data", it would be
inclusive of that which is known and that which could be
considered, and so I know we talk, often, about non-traditional
datasets that we might use in that sort of an application in here,
and sometimes we actually get to evaluate those, and this would
certainly open the door to that, I think, by saying "all
available", because that doesn't constrain it in any way.

DR. SCYPHERS: Okay. Here's a suggestion, and let's try this. If
we take "performance indicators", please, and move it up in the
sentence, to where it says, "include social and economic data as
performance indicators in MSEs", in that first part before the
comma. The SSC recommends the council pursue opportunities to
include social and economic data as performance indicators in MSEs,
including the use of available and potential data. I am not tied
-- Then you can delete that part, after "data", and I not tied to
that last part, if it feels jargony or redundant, and you're
welcome to encourage deleting it.

CHAIRMAN BARBIERI: Dan.

DR. PETROLIA: Thank you. Could you simplify it even more, Steven,
and just say, "pursue opportunities to incorporate social and
economic performance indicators into MSEs", period, and do you
have to say, "data"? I mean, it seems implied. Let's see.
"Recommends the council pursue opportunities to incorporate social
and economic performance indicators into MSEs."

MR. MONCRIEF: I will second it.

DR. WOODWARD: Can I jump in?

CHAIRMAN BARBIERI: Yes, please, Rich. Go ahead.

DR. WOODWARD: I guess I -- There is two points. First of all, I
think we shouldn't just limit ourselves to data, although I guess
that's been eliminated now, but it's not just performance
indicators, and it's also behavior responses, and that came up
repeatedly in our discussions, and so I would just -- Instead of
"pursue opportunities to incorporate social and economic analysis
in MSEs.", and then you would sort of cover everything. If you

1 want to explicitly say "performance indicators", then you should
2 also mention behavioral responses, but I don't think that's
3 necessary.
4
5 **CHAIRMAN BARBIERI:** Does that capture the --
6
7 **DR. SCYPHERS:** I mean, we haven't -- I don't disagree, and I think
8 behavioral responses are important, and we have National Standards
9 that tell us, you know, certain social and economic things that we
10 should have performance indicators aligned with, and we almost
11 never have them, and so I think I would like an option that has
12 both, if we can incorporate -- Make sure "performance indicators"
13 is in there, and maybe that's where --
14
15 **CHAIRMAN BARBIERI:** Well, then add the other. Add the --
16
17 **DR. WOODWARD:** So how about "incorporates social and economic
18 performance indicators and economic analysis and behavioral
19 responses in MSE"? If you strike "analysis" from that statement.
20 It's "social and economic performance indicators", and then, after
21 "performance indicators", say "and behavioral responses".
22
23 **CHAIRMAN BARBIERI:** Rich, this is getting the thumbs-up here from
24 folks in the room, including Steven Scyphers, and the second, and
25 so the motion is on the board for discussion. Mike Allen.
26
27 **DR. ALLEN:** Thank you, Mr. Chair. I would just recommend to go
28 ahead and spell out "management strategy evaluation", just for
29 clarity.
30
31 **CHAIRMAN BARBIERI:** Sounds good. Done. Any additional comments
32 or discussion points? Jim Tolan.
33
34 **DR. TOLAN:** Where it says, "indicators and behavioral responses",
35 shouldn't that be "performance indicators as well as behavioral
36 responses"?
37
38 **CHAIRMAN BARBIERI:** Thumbs-up. John Walter.
39
40 **DR. WALTER:** What about "human" in front of "behavioral"?
41
42 **CHAIRMAN BARBIERI:** It seems like he is just amused by this, right?
43 No, but good point. Good point. I think that's what Rich was
44 referring to, yes, and so that clarifies it, yes. Okay. Any
45 additional input or comments?
46
47 **MR. GREGORY:** Mr. Chair?
48

1 **CHAIRMAN BARBIERI:** Doug.
2
3 **MR. GREGORY:** I am sorry, but I just put my hand up. I understand
4 the purpose of this, and I support it, and I was just wondering if
5 we should, if we could, insert the word "ecological", or
6 "ecosystem", "to incorporate ecosystem, social, and economic
7 performance indicators". I am just asking the question, and I am
8 not trying to change the motion, but it just seems, to me, that
9 that's a big blank, a bit gnat, right now.
10
11 **CHAIRMAN BARBIERI:** Steven Scyphers, to that point?
12
13 **DR. SCYPHERS:** Doug, just a response, and a question for clarity,
14 and so what kind of examples of ecosystem indicators are you
15 thinking here?
16
17 **MR. GREGORY:** Well, climate change for sure, but the whole
18 discussion that we had yesterday, and I thought, in my mind,
19 originally, that was part of the purpose of MSE. Now, I want to
20 be clear that I'm not trying to diminish where you're going with
21 this motion, and, if this diminishes that, then we can drop it
22 out.
23
24 **CHAIRMAN BARBIERI:** So then here's a question on that, Doug. If
25 you re-read the previous motion, would the ecosystem then be
26 covered there?
27
28 **MR. GREGORY:** Yes, it would. I'm sorry.
29
30 **CHAIRMAN BARBIERI:** Bingo.
31
32 **MR. GREGORY:** My apologies.
33
34 **CHAIRMAN BARBIERI:** No, and it's no problem. I mean, that's the
35 discussion we need, to make sure that we have all of the input
36 incorporated. Rich Woodward.
37
38 **DR. WOODWARD:** I am good now.
39
40 **CHAIRMAN BARBIERI:** Okay. Thank you. Okay. I am waiting a little
41 bit before I call again, and is there any additional comments, or
42 input, on this motion? **If not, is there any opposition to this**
43 **motion? Seeing none, the motion carries without opposition, with**
44 **no opposition.**
45
46 We are going to have to, I guess now, wrap up our discussion on
47 MSEs, again thanking all the participants in our MSE panel for the
48 workshop today, for the great presentations, and great discussion,

1 and, also, thank Steven Saul for agreeing to, you know, help us
2 structure this discussion and volunteering to go present this
3 report to the council. With that, we're going to close this. John
4 Walter.
5
6 **DR. WALTER:** I wanted to follow-up, because -- These motions don't
7 have a lot of action, which is fine, and I think that the general
8 support is good to convey to the council, but there are going to
9 be some actions that are going to need to happen, because we're
10 going to have to put things in motion to actually achieve some of
11 these, and so maybe what I would say is that it would be good for
12 this body to start considering some actions, maybe sooner rather
13 than later, to inform particularly which ones of the FEIs maybe to
14 promote.
15
16 The council is going to probably make some decisions on those, and
17 I guess they will get presented with them in June, the FEI
18 recommendations, and two things that came up that I wanted to
19 follow-up, in particular, was amberjack, which there is a research
20 track scheduled, but that might be the opportunity to turn that
21 into an MSE.
22
23 What I'm thinking with that is that we probably have a pretty
24 decent index from the GFISHER work for amberjack, to derive a
25 management procedure, and we're going to have all of this
26 information from the great amberjack count to inform operating
27 models, and it may be that this is one of those stocks that just
28 doesn't suit itself very well for a conventional stock assessment,
29 and it may be that the time is right to use that slot to develop
30 a management procedure.
31
32 I think hearing that from a body like the SSC, to say, hey, you
33 know, actually, by that time, when that comes along, I think we
34 would be ready to entertain that, and then at least it would set
35 the process in motion of getting the terms of reference drafted to
36 achieve that, rather than what it would normally be, would be to
37 develop a stock assessment, under the research track.
38
39 I think that's, just thinking ahead for the future, of how --
40 Because the SEDAR planning calendars really run two years in
41 advance, we're setting up the terms of reference for 2025 work,
42 and it would be good to get that kind of guidance, and I am hearing
43 a lot of inkling towards that, and a lot of kind of like, actually,
44 maybe that might be the right path to go, but it would be good to
45 get something a little more concrete on that. Thanks.
46
47 **CHAIRMAN BARBIERI:** Thank you for that, John. Dr. Simmons, do you
48 have some input there?

1
2 **EXECUTIVE DIRECTOR SIMMONS:** Yes, and thank you, Mr. Chair. John,
3 I think you provided a presentation to the Steering Committee on
4 this, and we really felt like more information was needed, because
5 there was, in the report, some outcomes that indicated that we
6 didn't want the MSE, or management procedures, to fall under the
7 SEDAR administration and the committee at this time, without more
8 information, and so I don't -- I guess I'm struggling with whether
9 it's the appropriate time to get that in front of this group, until
10 it goes back to the SEDAR Committee, and the council concurs, and
11 then we bring it back to the SSC.
12
13 **DR. WALTER:** Have you not gotten more information today? Joking
14 aside, there's -- I mean, I think that the SSC was -- I was hearing
15 some comments, from the SSC, about what they heard about MSE and
16 its potential applications, and I know that the SEDAR Steering
17 Committee has stock assessment as the kind of main thing they've
18 heard about, and they have not heard about MSE, and so, I mean,
19 other than we gave them a presentation that largely said this could
20 operate outside of SEDAR, and so SEDAR really wouldn't necessarily
21 need to be wrapped up in it, and the question really being do we
22 take a SEDAR slot for something like an MSE for amberjack, or do
23 we schedule and set up a terms of reference for an immutable
24 research track, and I think that's why now is the time to have
25 that conversation, at least from the science perspective, of what
26 -- Like the body is going to either get a stock assessment off of
27 that or a management procedure, and whether there is some thought
28 one way or the other. Thanks.
29
30 **CHAIRMAN BARBIERI:** Well, John, here's a compromise, perhaps. If
31 we can skip going to that level of specificity, right, at this
32 point, to make that formal recommendations towards great
33 amberjack, and perhaps have you come back, for a briefer report,
34 but basically provide, you know, the basic outline of what that
35 MSE for greater amberjack would entail, and not necessarily with
36 any specifics as yet, but, basically, present that and say, you
37 know, in May, I presented this conceptual thing, and we had a lot
38 of discussion, and we evaluated the value, and now I'm coming back
39 and seeing the possibility of having this as an application that
40 we heard directly come from committee members, right, that they
41 felt that there would be value there. I think that would be a
42 little easier for that to be handled, through the SSC
43 recommendation process. Does that make sense?
44
45 **DR. WALTER:** Yes, I think that makes sense, and so let me just
46 reiterate what I'm hearing, and so, if we provided sort of a path
47 forward for addressing the greater amberjack research track
48 through an MSE, with sort of an outline, or a sketch, of how it

would go, and we would build the operating models, based on the
new information, and then test the series of management procedures,
and, depending on the degree of stakeholder input, and, if we don't
have the operational management objectives, we would have to get
that, through that process, but, if they're pretty well defined,
then we can do it as a desk MSE, with a number of other probably
coproduction, through kind of the same process of having appointees
to a data workshop and maybe an assessment or review of the MSE
workshop, but at least kind of fit it within a similar structure.

Then take that to the Steering Committee, to allow them to consider
that, and then I think that's maybe getting to the more information
that's needed, and I'm looking at Carrie.

EXECUTIVE DIRECTOR SIMMONS: Well, I mean, I guess this has kind
of been set in motion already, through the Steering Committee, not
only by the Gulf, but the South Atlantic, and I don't know that
our council has really been briefed on this, necessarily, and so
I guess I'm not -- I don't want you to embark on a lot of work
without having some council input, I guess, into this, since we've
kind of agreed, coming from the Gulf and South Atlantic, that
there's this huge research, and all this new information coming in
on amberjack, and it's been in the tank for a long time, and we
haven't been able to rebuild I think in thirty years, and I guess
it makes me nervous to ask you to do all of this without getting
a little bit more input from the council, if that makes sense.

CHAIRMAN BARBIERI: This is why I was thinking, John, along the
lines that, you know, if we postpone that more specific discussion,
then I think we can frame it in a way that we best incorporate the
council input into that process, and this has -- Dr. Simmons and
Dr. Frazer, and other council members, can have the opportunity
to integrate more of that input from the council, you know, given
their level of discretion within the SEDAR Steering Committee and
how the stock assessment schedule is built. I don't think it's
opportunity lost, and I think we are basically just allowing for
a little more vetting of that concept, you know, going forward.

DR. SAUL: If we go down that road too, then the SSC can endorse
that specifically for amberjack, if that would be helpful in moving
the council forward towards agreeing to that, within the TORs, and
I don't know what that -- I forget kind of the specifics of that
process, but --

MR. RINDONE: This bit of the conversation is characterized in the
summary, and it's certainly something that Dr. Saul can mention,
that, you know, the SSC talked about greater amberjack as a
possible candidate species for application of an MSE approach,

1 and, you know, if the council decides to carry that further, then
2 they certainly can have that conversation there, and then we can
3 move forward beyond that, but I agree with Dr. Simmons that we
4 don't want to get into a point where the council -- It would seem
5 as if the council is being led, as opposed to being able to make
6 the decisions about especially things that are going to affect the
7 broader SEDAR schedule, which there's a lot of blood, sweat, and
8 tears from all sides that pours into that, and so, to the extent
9 to which the Science Center is having to commit its own resources
10 towards council requests for MSE, the council needs to be cognizant
11 of what those costs are and what that means for the things that it
12 has already requested. We have stuff on the schedule out to like
13 2027, and we tried to keep the fluidity of that calendar as limited
14 as possible, and so --
15
16 **CHAIRMAN BARBIERI:** Right, but there is momentum, right, and I see
17 that the committee is really excited about this approach, and we
18 see the utility of the approach, but I think we just need a little
19 more time to digest some of these procedural steps, in working
20 with the council, to get to the point of where we could engage
21 into a more direct recommendation that specific.
22
23 **EXECUTIVE DIRECTOR SIMMONS:** I think it's the switch-out that's
24 causing the nervousness, and I'm not saying that I'm not in favor
25 of us looking at this, and the SSC weighing-in, but I don't want
26 John and his team to go off and it not be the direction that our
27 council wants to go, as well as the South Atlantic Council, and so
28 I don't want to say that I don't want to support it, but I just -
29 - Maybe amberjack is not the best one, and maybe we should think
30 about that some more, and it's the switching-out that kind of --
31 That I'm not comfortable with.
32
33 **CHAIRMAN BARBIERI:** Yes, John.
34
35 **DR. WALTER:** I think that's why today's momentum is really
36 important to build on, is that people are going to think that that
37 switching-out is somehow short-selling them, and that, I think,
38 myth needs to be dispelled, and I think that's -- If you get
39 nothing out of this, the bluefin example, that actually that's a
40 better-quality piece of advice than any one of the assessments
41 that we gave, and it's climate ready, and it addresses a lot of
42 the key uncertainties, and every other piece of advice that we
43 tried to give out of the assessment was severely challenged, and
44 I think that's where -- When we've got these really model-resistant
45 stocks, or stocks that are not responding to the best we can do
46 for it, which amberjack seems to be one of those really challenging
47 ones, and it hasn't rebuilt after everything we've done to it, and
48 that seems to be resistant to what we're currently trying to do.

1
2 Do we think that another stock assessment is just going to give
3 that answer for what to do? I think that's where we need to say,
4 hey, you know, maybe a different approach is what's actually the
5 Cadillac for this stock, and not just another stock assessment,
6 and I think that's where beginning to start having that
7 conversation that it's not a negative to replace that out, and it
8 might very much be a positive, is going to help there, because the
9 council takes their science advice from this body, as it should,
10 and so the council is going to ask, well, wait, do you mean to say
11 that we're not going to get a full research track, and an
12 operational, and I'm like, no, and you're going to get so much
13 more, and I think that's the conversation that, when it's presented
14 to the council, is going to be an effective case to make. Thanks.
15
16 **CHAIRMAN BARBIERI:** Right, John, and I don't disagree. I just
17 think that we can prepare ourselves to make that point clear,
18 right, completely unequivocal to them, what they would be getting
19 with it, but I think that that presentation that would come, and
20 it doesn't have to take forever, right, but it would basically be
21 focused on identifying those things, and there is opportunity for
22 questions and answers, right, and all of this would be more
23 explicitly discussed, and it would give us the peace of mind to
24 know that we are in sync with the council, in terms of, you know,
25 providing scientific advice on a management issue that they have
26 prioritized at this point.
27
28 It's really what we're trying to do, and stay in our lane, and I
29 think we can still take advantage of the momentum that was
30 generated today, you know, to make this a constructive direction
31 that we're going. All right. Doug, do you have something critical
32 to this?
33
34 **MR. GREGORY:** Put me on the spot, why don't you?
35
36 **CHAIRMAN BARBIERI:** I often do, Doug.
37
38 **MR. GREGORY:** The way forward seems simple. The Center negotiates
39 with the council, and the council asks us to talk about it and
40 make a recommendation in July, whether amberjack should be done as
41 an MSE or a SEDAR or both, and we just go forward with it. I mean,
42 this is a specific issue that has come up at the last minute, and
43 it's too late in the day for us to make a recommendation on it
44 now.
45
46 **CHAIRMAN BARBIERI:** Right. Point taken. With that, we're going
47 to close the conversation on MSE, and, again, I thank the panel
48 for providing those presentations, and we are going to move on to

1   close the day with public comment. Do we have any members of the
2   public who would like to address the SSC, to make comments? Jess,
3   I don't see any hands up there, and so it's not a one-and-done,
4   and so, tomorrow, the committee meets again, starting at 8:30 in
5   the morning, and we're going to have another opportunity for public
6   comment tomorrow, and so it's not all done, but let me thank
7   everybody again for a great day of discussion, and we start
8   tomorrow at 8:30.
9
10 Please let me remind you, right, to think about the situation of
11 those two items, agenda items, on the midwater snapper and the
12 shallow-water grouper catch advice, and I would like to start
13 tomorrow morning with that and get that taken care of before we
14 move on to the other items.
15
16 (Whereupon, the meeting recessed on May 3, 2023.)
17
18   - - -
19
20   May 4, 2023
21
22   THURSDAY MORNING SESSION
23
24   - - -
25
26 The Meeting of the Gulf of Mexico Fishery Management Council
27 Standing and Special Reef Fish, Special Socioeconomic, and Special
28 Ecosystem Scientific and Statistical Committees reconvened on
29 Thursday morning, May 4, 2023, and was called to order by Chairman
30 Luiz Barbieri.
31
32 **CHAIRMAN BARBIERI:** All right, folks. Good morning. Jess is
33 giving us the thumbs-up. Welcome back to the third, and final,
34 day of the May 2023 Gulf of Mexico Fishery Management Council's
35 SSC meeting.
36
37 We have a couple of items that we need to deal with first, Agenda
38 Items VII and VIII, that we had tabled for discussion today, and
39 I would like to get started, dealing with those issues first, and
40 getting them off of our agenda, before we proceed with our
41 regularly-planned agenda.
42
43 The first item is Agenda Item VII, Review of Queen Snapper, Silk
44 Snapper, and Blackfin Snapper Landings and Catch Limit
45 Consideration. Do we need to have a refresher on what we are
46 trying to accomplish here, Ryan, or --
47
48 **MR. RINDONE:** We can bring the presentation back up. I can't show

1 you guys the data, because of confidentiality issues, but, if you
2 give me time series that you want to know information on, I can
3 pull up a table and send it to Jess, and then she can put it up
4 there, and so --
5
6 **CHAIRMAN BARBIERI:** Right, and so how about you breeze through,
7 really fast, just as a refresher to frame the topic that we are
8 dealing with here.
9
10   **REVIEW OF QUEEN SNAPPER, SILK SNAPPER, AND BLACKFIN SNAPPER**
11   **LANDINGS AND CATCH LIMIT CONSIDERATION (CONTINUED)**
12
13 **MR. RINDONE:** Sure, and so you guys recommended that the council
14 evict wenchman from the midwater snapper complex, based on all the
15 data you looked at at the last meeting, and so that leaves blackfin
16 snapper, queen snapper, and silk snapper remaining in the complex,
17 in increasing order of relevance to the landings.
18
19 The landings have been pretty stable, once you remove wenchman
20 especially, for the last ten years, for the remaining three
21 species, and so, at this point, we're at a situation where, if
22 we're giving wenchman the boot, we need to have a revised OFL and
23 ABC for the remaining three species, which we can use Tier 3a or
24 3b to examine, and since -- There is some interannual variability
25 in that ten-year period, but it's generally stable, as we had
26 looked at, and so, Jess, I think it's Slide 4, or maybe 5. If we
27 give wenchman the boot there, you lose that jump in 2020 and 2021,
28 and so it's pretty stable in the period, and we talked about those
29 2009 landings as being unreasonable.
30
31 **CHAIRMAN BARBIERI:** Right. Thank you, Ryan. We've done this
32 before, multiple times, right, and so we are basically just
33 applying our ABC Control Rule and going to the tier that is
34 appropriate to the data availability, and the analytical
35 availability, right, and so these are unassessed stocks for which
36 we have to develop catch level recommendations based on average
37 landings, and so, basically, we're just updating the time series
38 up to more recent data, and also updating the currency, so to
39 speak, of the data that's now going to be measured in FES for the
40 recreational portion. With that, I'm going to open it up for
41 discussion and ask if anybody has a motion to deal with this.
42 Trevor.
43
44 **MR. MONCRIEF:** I have sent a motion to Meetings that I think covers
45 the aspect, and we just need to change the year, on the last
46 sentence, to 2021. I will preface this by basically saying that
47 I understand the task at-hand, what we've been asked to do, and I
48 certainly, you know -- I recognize that we don't have much

1 knowledge about these species, and, you know, I'm not quite sure
2 what's going on with the fishery itself, and I've always been a
3 proponent of looking into the deep-drop fishery, and trying to
4 describe it, and kind of see what they're landing, and proportions
5 and everything else, but I think that kind of work exists outside
6 of the task that we have today.
7
8 I think that moving forward this way basically puts the OFL in
9 place, and it puts it into a spot where management intervention is
10 not going to be hopefully needed, unless there's a drastic change
11 in this fishery, which is I think about where it needs to be, and
12 so, yes, that is the motion, and I will welcome any criticism or
13 adjustments or anything of that nature.
14
15 **CHAIRMAN BARBIERI:** Before we open it up for discussion, and thank
16 you, Trevor, for that context and background, and is there a
17 second? It's seconded by Mike Allen. Thank you, Mike. Ryan.
18
19 **MR. RINDONE:** I have sent the table with the OFLs, or the OFL and
20 the ABCs, for the different levels of standard deviation to Jess
21 for putting up on the screen for you guys.
22
23 **CHAIRMAN BARBIERI:** Just one comment here, Trevor, is that, looking
24 at Tier 3a, right, if we're going to be using Tier 3a, we set the
25 OFL at mean landings, I mean the ABC at mean landings, and the OFL
26 at the mean landings plus 1.5 standard deviations.
27
28 **MR. MONCRIEF:** It's -- The way I read it, it's set OFL at mean
29 landings plus two standard deviations, and then the ABC has
30 multiple options, a, b, c, or d, and I've just selected a, just
31 given that we don't really have much concern about these stocks.
32 The difference between the OFL and the ABC I don't think should be
33 to the point where it has dropped down for that option, and so
34 that's why a is there.
35
36 **MR. RINDONE:** Mr. Chair, if we could clarify something in the
37 motion, that the SSC recommends this for the midwater snapper
38 complex, excluding wenchman, or why don't we just delete the first
39 sentence? That's probably cleaner. After "for the midwater
40 snapper complex, excluding wenchman", blah, blah, blah.
41
42 **DR. FROESCHKE:** While you're wordsmithing, I would recommend, on
43 the OFL, to put, in parentheses, "mean plus two times standard
44 deviation", and then, for the ABC, add "mean plus the 1.5 times
45 standard deviation". Where it says, "mean", or not mean. It
46 doesn't say "mean", and that's what I was trying to say.
47
48 **MR. RINDONE:** Just put "mean plus two SD". Not two times SD, but

1 just "plus two SD". Then, for the ABC --
2
3 **DR. FROESCHKE:** Do the same thing.
4
5 **MR. RINDONE:** Mean plus 1.5 SD. The point of this is to provide
6 a recommendation though that John will be able to convey to the
7 council, and that council staff will be able to turn into the
8 appropriate management alternative for council to consider, and I
9 think, with this, it's understood what is being asked to be done
10 here.
11
12 **CHAIRMAN BARBIERI:** John Mareska, go ahead, because I was thinking
13 the same thing.
14
15 **MR. MARESKA:** Just looking at the ABC Control Rule, it actually
16 says, for the ABC, it is 1.5 times the standard deviation, and so
17 that should be corrected.
18
19 **MR. RINDONE:** Do it for the OFL also.
20
21 **CHAIRMAN BARBIERI:** No, the OFL is plus.
22
23 **DR. FROESCHKE:** It's the same.
24
25 **MR. RINDONE:** No, it's the same, and it's the mean plus the --
26
27 **DR. FROESCHKE:** You calculate that they have two standard
28 deviations, and, whatever that value is, you add it to the mean,
29 and so, in reality, you could put more parentheses in there, but
30 I think you've got it.
31
32 **CHAIRMAN BARBIERI:** All right, and so, with that, if we are
33 satisfied now, I think we can -- We can open it up for comment and
34 discussion. Harry Blanchet.
35
36 **MR. BLANCHET:** Remove the period after "Option a".
37
38 **MR. MONCRIEF:** Real quick, any reason not to use 2011?
39
40 **CHAIRMAN BARBIERI:** I'm sorry, but can you say that again?
41
42 **MR. MONCRIEF:** Any reason not to use 2011?
43
44 **CHAIRMAN BARBIERI:** I don't know. This is your --
45
46 **DR. FROESCHKE:** It doesn't have to be a ten-year period, and it's
47 recommended to be at least a ten-year period.
48

1 **MR. MONCRIEF:** I'm good with it either way. I think the result
2 ends up being the same either way, and so --
3
4 **MR. RINDONE:** Looking at the data, I don't think that there's going
5 to be a difference.
6
7 **CHAIRMAN BARBIERI:** All right. Thank you, Trevor and Mike and
8 Ryan and John, for, you know, clarifying and cleaning it up. Any
9 other discussion on this motion? Hearing none, then I think we
10 can put it up for a vote. **Is there any opposition to this motion?**
11 **Seeing no opposition, the motion carries unanimously, with no**
12 **opposition.**
13
14 Thank you, folks. That handles Agenda Item VII, and it allows us
15 to move on to Agenda Item VIII, which is Review of Black Grouper
16 and Yellowfin Grouper Landings and Catch Limit Consideration. I
17 would think that this one is fresh in everybody's minds, and not
18 necessarily, you know, needed to have a background review, brief
19 overview, discussion, in terms of introduction to the topic, but
20 so everybody understands where we are, right, with this item?
21
22 Dr. John Froeschke, council staff, prepared a little summary
23 presentation, after looking through the data, and hearing our
24 discussion the other day, and seeing the direction that the
25 committee was going, and seeing what the committee wanted to see,
26 he prepared a summary presentation, with some analysis done, that
27 will help facilitate us discussing this issue. John.
28
29 **REVIEW OF BLACK GROUPER AND YELLOWFIN GROUPER LANDINGS AND CATCH**
30 **LIMIT CONSIDERATION (CONTINUED)**
31
32 **DR. FROESCHKE:** I just have a couple of thoughts, and I put it
33 together here, with a couple of tables and slides, that might
34 inform some of the discussion, but, to me, at least looking at the
35 black grouper data, you know, the one question is do we trust the
36 landings information that we have for the purposes of management,
37 and, for what I am going to present here, I'm working on the
38 assumption that we do, and I don't know how else we would use it
39 if we don't, and so that's what I will show you, is kind of that,
40 but that's for you all, I suppose, to discuss.
41
42 In keeping with the rationale of how the Tier 3a and 3b look in
43 the amendment, one of the ideas is to look for a period of stable
44 landings, and so I tried to look at that just a little bit
45 differently, and I show you a chart, and so, from there, if you
46 had a period of stable landings, you potentially could use that,
47 or a subset of that, in order to select reference years and do
48 something akin to 3a or 3b.

297

1
2   If we scroll down to Figure 2, this is the black grouper landings,
3   and so just -- I have a figure below this, but the yellowfin
4   grouper landings are essentially inconsequential. I mean, you're
5   less than 500 pounds, and so the chart looks virtually identical,
6   and so, for the purposes of this discussion, it's okay, and so
7   there's this long cascading decline in landings, either real or
8   not, and then, initially, I had kind of indicated that highlighter
9   green color as a potential reference period.
10
11 After this discussion, if you go back up to Figure 1, I did a
12 little just trying to think about this whole idea of what's a
13 reference period, and this idea of stability, and so what I did is
14 I just took the landings data, and I applied a generalized additive
15 model with a smoother, and then, for each year, I calculated the
16 point, the derivative, of each year, with the confidence intervals,
17 and so, in theory, a derivative that's not statistically different
18 from zero, or a series of those, you could say is a period of
19 stability.
20
21 In the chart, the area in, I don't know, pink would be a reference
22 area that you could say that, for these purposes, you could
23 consider stable, and perhaps consider for the use of a reference
24 period, and so that's one idea.
25
26 The next thing -- If you go down to Figure 4, I guess, just so you
27 can -- This is the one with black and yellowfin, and, like I
28 mentioned, it really looks the same, by and large. However, when
29 I did -- There are some odd years, I suppose, even just at minor
30 magnitudes, but, when I added those data together and did the same
31 thing, and so that's Figure 3, what you will see here is, according
32 to this analysis that I did, you get a much longer period of
33 stability, perhaps trending towards zero more towards the end of
34 the time series, but not significantly different from zero,
35 perhaps, all the way from 1999 through 2021. That's a different
36 way you could look at it, as far as the reference years. If you
37 scroll down -- If you have any questions, just -- Those tables.
38
39 There is two tables here, and Table 1 would be using the reference
40 period based on Figure 1, just the 2010 through 2021, and that
41 would apply for the black and yellowfin grouper, using the standard
42 methods that we just did for midwater, and so the OFL would be the
43 mean plus two standard deviations, and then the ABC would be the
44 mean plus one, and that would be Tier 3a. Tier 3b, which we have
45 used sparingly in the council, but is appropriate for stocks that
46 there might be concern of overfishing, or depletion, and the way
47 this one works is that the OFL would be set at a mean of the
48 landings over a reference period, and, in this case, I have kept

them the same, and then the ABC would be set at a scalar, and the default is 75 percent of the OFL.

For those same years, the landings would be in that third column, Tier 3b, and, to arrive at a value for the complex, I have illustrated, in 2024, that we would add -- One way it could be done is take the Tier 3a or 3b and then add that to the existing OFL and ABC recommendations that you provided from the scamp assessment, sum those up, and then those far two right columns -- That would be the Tier 3a plus the scamp and yellowmouth column, that middle column, and then the 3b would be the Tier 3b plus the scamp and yellowmouth, and so that's one way to do it.

The Table 2 is exactly the same concept, but just using the longer reference years, and, when you bring that window back, you encompass a series of landings for black grouper that is much higher, at least in the earlier part of that, and so the corresponding calculations is higher.

Table 3 is just a summary of the landings that were used in there from 2010 through 2021, and I didn't extend them all the way back, because I don't think I have all of those, at least handy for this, but just to give you an idea of what's in there, and then the next figure -- You can scroll down, and that's just a quick chart of the various components.

Then the last thing I have is just trying to think of something different, and so what I did here is I looked at the historical composition of the scamp and yellowmouth catch, relative to the shallow-water grouper as a whole, that complex, and, historically, from the -- I think it was 2010, and I extended it back, and it was 74 percent -- If you look at table legend, 74 percent of the shallow-water grouper landings were scamp and yellowmouth grouper, and so what I did, to just think about it differently, is, essentially, if you took the scamp and yellowmouth OFL and ABC we have, and assume that that was 74 percent of the catch, and the percentages would continue forward, and you scale that up, you could then estimate what the black and yellowfin grouper could be, to comprise the additional 26 percent, to arrive at a total OFL and ABC for the shallow-water grouper complex, that far-right column. That was what I did, as far as just some things to think about, if that's helpful for the discussion.

CHAIRMAN BARBIERI: Thank you for that, John, and I think this is very good discussion points here, and background thoughts for us to think about, and so I'm going to open up the floor, both here in-person and online. Will Patterson.

DR. PATTERSON: Thank you, Luiz. John, I'm looking at the files posted online for the meeting, and I don't see this one, and I think you indicated that you just recently completed this analysis, and is that right?

DR. FROESCHKE: Yes, and I just put it together last night and this morning.

DR. PATTERSON: Could you post it to the meetings address, or have it posted, or sent to us? I am curious, looking at the landings trends, if you could go up to either the black plus yellowfin or just the black landings trends, and that's one is fine, Figure 4, or Figure 3, excuse me.

The thing that's kind of troubling to me about this approach -- You know, obviously, we don't have any other information here about the dynamics of the fishery over time, or the age composition of the landings in the present day versus historically, et cetera, but, you know, this analysis would say the potential reference period of the past twelve years is appropriate, given the stability that is seen here, but, if you look back in time, you know, landings are estimated to be nearly three-million pounds in the early part of the time series, which wasn't really that long ago, you know, in the mid to late 1980s.

If we take this approach in setting the OFL and ABC, which is what we've done historically, we're basically saying keep fishing at this more recent level, but the productivity of the stock was higher back in time, or the stock was fished down to an incredibly low level, or stocks, and, you know, if this were Chesapeake Bay oysters, or if this were Gulf of Mexico red snapper, and we saw this trend, and it was due to fishery removals, to the point where there is nearly no catch in the present relative the past, you know, we would say this needs to be closed. I think we would say that, and so it's really kind of an interesting process here that, yes, we have stable catches in recent years, but they're just a fraction of what they were historically.

CHAIRMAN BARBIERI: Thank you for that, Will, and I will jump in, just because, you know, within FWRI, we've been trying to deal with this black grouper issue, right, and the assessment, and we took the lead on SEDAR 19, and then again on 48, and we had to stop at the data workshop stage of SEDAR 48, and I actually wrote a letter, officially, from FWC/FWRI to the SEDAR Steering Committee formally, you know, stopping the process of continuing with that stock assessment, because there was so much, you know, confusion, and problems, with the landings information, especially the historic ones.

300

1
2   I don't remember all the details, Will, but, if you were to sit
3   down with the Bob Muller and Behzad Mahmoudi and Dustin Addis, and
4   have this conversation, because they were so involved in SEDAR 19
5   and 48, but there is a lot of documentation that indicates that,
6   in the beginning part of the historic time series -- There were
7   issues, first -- I mean, one of the issues is stock ID and people
8   not being able to differentiate between the two, especially the
9   smaller ones, but then there is also the issue of --
10
11 You know, you find this in written records, right, from port
12 samplers, going back quite a while, basically saying that, because
13 there were issues, that they didn't want to market something called
14 gag, right, that would go to a restaurant, and they would change,
15 for marketing reasons, right, and change that to black grouper.
16 It was a much more appealing nomenclature, right, to sell something
17 that people eat than "gag".
18
19 At least at that time, you know, it was something that -- Those
20 things were being done, and so, you know, as you know, for SEDAR
21 72, with gag, the Science Center data folks actually had to apply
22 an algorithm, and this started back in SEDAR 10, right, in the
23 original benchmark for gag, and it was that they had to apply some
24 kind of an algorithm to separate the two, because, if you just get
25 the straight landings, as they are reported, especially earlier in
26 the time series, you have no real confidence, and this generated
27 a problem, like you said, Will, in being able to evaluate stock
28 productivity, because historic landings are so equivocal.
29
30 At this point, what we have on the SEDAR schedule is a black
31 grouper assessment now scheduled for 2025, or 2026, and I think
32 2026, but, there, you know, the discussion is what can we do to
33 actually come up with better management advice on black grouper,
34 because we don't really have a way to resolve a lot of the problems,
35 and so these are some problems, and then there is the issue of
36 this not being really a targeted -- By and large, and it's not
37 there isn't some targeting, but, by and large, you know, this is
38 not really a targeted fishery, and it's more incidental catch with
39 other species, and this generates problems when you're evaluating
40 fishing effort and parsing out -- You know, lots of problems with
41 the composition, you know, being able to tell what you have there.
42
43 For what it's worth, Will, that's just some background on that
44 complication, with that issue, right, and so what we decided, at
45 FWRI, is to say, okay, and I discussed it with Clay, is maybe we
46 can do a combination and having the Center people work with our
47 people and try to do a data-limited methods approach, if that's
48 possible, but, you know, spend that slot of the SEDAR schedule

1 exploring possible approaches to generate better-informed
2 management advice.
3
4 It's not going to be easy. You know, two or three weeks ago,
5 during the SEDAR data discussion, and, you know, the Center has a
6 discussion about preparing data for the SEDAR schedule, right,
7 with all the collaborators periodically, and this issue came up,
8 and, you know, we're still trying to see what we need to request
9 from the Center, and, how we're going to approach this at this
10 point, we just don't know, and so that's just some background
11 information there, Will.
12
13 One other thing real quickly, that I mentioned the other day is,
14 when this issue of us having to step out of doing a quantitative
15 model-based assessment for black grouper came up, lots of questions
16 came up from people concerned about the status of the stock, of
17 lack of management advice, and how that would impact, you know,
18 management and conservation of the stock, and, to me, you know, it
19 made an impression to hear from people like Bob Muller, who is
20 looking at the composition data and saying, well, it's reassuring
21 to see that, for a fishery that's not targeted, we still find very
22 large sizes, and we find, in the composition, enough of the older
23 ages that do not indicate stock juvenescence.
24
25 This is like considering that the number of biological samples is
26 relatively small, because you can't target sampling for a non-
27 targeted fishery, and so, you know, this just creates more
28 uncertainty, right, to what we're talking about here, and so I
29 just thought that this would provide some general background on
30 the situation with black grouper. Will, I will let you think about
31 this, and then we'll get back to you. I will start forming a queue
32 here. Jim.
33
34 **DR. TOLAN:** Thank you, Mr. Chairman, and thanks, Dr. Froeschke,
35 for putting this together so quickly. I just want to pick your
36 brain for just a second, and I'm just curious why you chose the
37 route to go for derivatives of a generative model, because it's
38 always been my experience that the best use for GANs are ways to
39 link pretty disparate independent variables with the dependent
40 variable, and get away from a lot of the interactions, and so,
41 here, you have just one variable, and I'm just curious why you
42 chose that route to go to explain this. Thanks.
43
44 **DR. FROESCHKE:** Well, I mean, in general, you can use a GAN for -
45 - You don't have to use it in a multiple-predictor-variable kind
46 of concept, but I just was looking for something that was
47 efficiently -- That I could smooth it such that I could calculate
48 a derivative, and, I mean, there are a number of ways that could

1 have done it, but that was sort of what I had spooled up in my
2 head.
3
4 **CHAIRMAN BARBIERI:** Thank you, John. David Griffith.
5
6 **DR. GRIFFITH:** Thank you, Mr. Chair. Yesterday, or the other day,
7 when we were talking about this, I know Eric Schmidt stood up and
8 said he didn't believe these figures, and then, after that, I was
9 a little troubled that -- It seemed like a lot of the biologists
10 in the room kind of jumped on that and said, well, it seems like
11 the -- I mean, this was my impression, but it seems like the black
12 grouper isn't really in such bad shape as we think it is, and it
13 bothered me that just one voice from the fishing community had
14 this effect on everybody in the room, or not everybody, but,
15 anyway, just the fact that he said, well, there wasn't a problem,
16 and I was thinking that maybe, as part of assessing the stock, we
17 might talk to more fishermen, I mean, because just one voice really
18 isn't enough to cast doubt on these figures, but I think it's
19 enough to maybe think about doing some more work with the fishing
20 community, because I know that was effective with the red snapper
21 thing earlier. Thanks.
22
23 **CHAIRMAN BARBIERI:** Ryan, to that point?
24
25 **MR. RINDONE:** Yes, to that point, and, Dr. Griffith, I think that's
26 a perfect opportunity for using Fishermen Feedback, to try and get
27 a better look at what the fishing community as a whole thinks is
28 or is not going on with the stock. Some of the things that we
29 have heard, both in combination of things heard here and outside
30 of here, is that -- I mentioned some of this in the presentation,
31 but that the fishermen that I talked to prior to the meeting had
32 said that the better black grouper fishing is in deeper water, and
33 then south Florida -- The old saying of a foot a mile definitely
34 rings true, more so than it does elsewhere on the Florida shelf.
35
36 It takes a considerable amount of fuel to get out to 200-feet-
37 plus, where these guys are saying black grouper fishing is better,
38 and so it might simply be an access issue, and it might be that
39 the vessels that are capable of going out to those depths, mulling
40 around out there for the day and coming back, are just
41 proportionally much less likely to use public access points, and,
42 therefore, are less likely to be intercepted for catch sampling.
43
44 They should, by function of survey design, they should still be
45 captured on the effort side, but their harvest would otherwise be
46 going unrecorded, and so it might just be that we're not catching
47 the catch, so to speak, and that's why, you know, like when Luiz
48 was talking about some of the fishery-independent data that have

1 been collected that haven't really shown juvenescence, and that's
2 a very interesting indicator that is a little bit contrary to this.
3
4 I mean, we would expect, primarily, only smaller fish, if the
5 population had in fact crashed to this degree, if that was the
6 perception, and then, if we're looking at the proportional standard
7 error from the S&T website, it's high. There's not a single year
8 that is below 40, and most of them are hovering close to 50, and
9 this is for the last ten years, and over half of them are over 50,
10 and some of them -- I think there's one year where there are no
11 data reported, because the PSE is 100.
12
13 Basically, the take-away from that is that the landings data
14 themselves may not be representative, in totality, of what's going
15 on with the stock.
16
17 **CHAIRMAN BARBIERI:** Thank you, Ryan. Dave Chagaris.
18
19 **DR. CHAGARIS:** Just to add to what Luiz said, and David Griffith
20 said, and to point out for Will, who wasn't here on Tuesday, but
21 these landings also do not include Monroe County, correct, and so,
22 you know, this is an incomplete picture of the harvest.
23
24 **CHAIRMAN BARBIERI:** Yes. Very good point. I should have pointed
25 that out. I have Steve Saul.
26
27 **DR. SAUL:** Thank you, Mr. Chair, and I'm sure that folks have
28 thought about this, but if the issue -- If I'm remembering
29 correctly, and understanding correctly, that the issue is that
30 black and gag are mixed, in terms of the landings reporting, if we
31 fractioned out gag for the gag assessment, couldn't we like simply
32 sort of adjust this time series, by fractioning out the historical
33 gag, and then what we're left with are black grouper, to sort of
34 re-calibrate this?
35
36 I don't know if that's possible, but, if we believe that we've
37 captured the gag -- You know, if the issue is gag and black are
38 mixed, and I don't know if yellowfin is in the mix of all those
39 three too, and that one shouldn't be too hard, because of the
40 stripe on the fin, but could we just sort of fraction out the gag,
41 and then adjust this trend, to get a better picture?
42
43 **CHAIRMAN BARBIERI:** Steve, thank you, and absolutely that can be
44 done, right, and this is exactly what we have been discussing over
45 the last several weeks, right, is trying to reach out to get that
46 paper from SEDAR 72 and go through, but then, you know, basically,
47 you have to rerun that analysis, using the complement, right, of
48 those proportions, and so it's something that could be done, and

1 I think needs to be done, but we need to have a better understanding
2 of it before we actually use it, and that's why we kind of waited
3 a little bit, to see that, okay, since we are just a couple of
4 years -- I mean, we're already getting organized on the data side
5 of things to get that analysis started, right, and we're just
6 waiting to work with the Center on how we get those things, those
7 wheels, moving. Thank you. Ryan, to that point?
8
9 **MR. RINDONE:** Thank you, and that's definitely something that could
10 be explored, and I think it probably has -- There's a lot of hope
11 that that would be successful, but I think an area where it might
12 end up falling short though is if the survey is not -- Is not
13 intercepting the people that are catching these fish, and then,
14 even doing that, we're still going to be missing those fish, and
15 so that will be an important consideration, and perhaps Fishermen
16 Feedback could tell us a little bit more about, from a qualitative
17 standpoint, and it might tell us, you know, based on where the
18 fishing activity is occurring, which fishery-independent surveys
19 might be more representative of what's going on with the stock.
20
21 **CHAIRMAN BARBIERI:** Thank you, Ryan. Doug Gregory.
22
23 **MR. GREGORY:** Thank you, Mr. Chair. I've got a couple of comments.
24 For one, I've been raised to trust the data, knowing that it's not
25 perfect, but it's better than speculation or unstructured
26 anecdotal data, and so that's what we've got to go on today, and
27 we don't have a stock assessment.
28
29 In reference to the lack of juvenescence, I would very much like
30 to see what gear type those fish come from, because, again, if
31 they're longline fish, they're fishing in those offshore waters,
32 and they're not going to show the juvenescence, and, to the
33 contrary of that, all the studies the University of Miami has done
34 in the Florida Keys, mostly with fisheries-independent reef census
35 surveys, indicate that black grouper have been in trouble for a
36 long time, and have been overfished, and have been juvenesced, and
37 so we've got that contradictory information that I don't think has
38 made it into the stock assessments, and/or they have not included
39 stock assessment information, and so we have some contradictory
40 information there.
41
42 I go back to my question from Tuesday about this species ID
43 problem, and how current is that problem? Is it ongoing? I can
44 see, from this graph, that, in the 1980s, yes, and we didn't even
45 have port samplers until 1986, thanks to the State of Florida
46 starting that, and we didn't have active management, kind of by
47 species, until 1990, and so I'm wondering, if we look at the data
48 from 2000 on, in my mind, we should have confidence that that data

1 is correctly identifying the species. If not, then we have a
2 really serious problem, but I seriously doubt it, and it does show
3 a decline from the 2000 period. What else have I got?
4
5 In reference to PSEs, and I've heard this a couple of different
6 times this week, and am I to believe that, if we have recreational
7 estimates of PSEs greater than 0.5, that we are not to use that
8 data? Certainly it adds to our level of uncertainty, but I don't
9 -- I am nervous about the implication that we don't use that data,
10 and so those are my comments, and I will close with the fact that
11 black grouper mature at twice the age, and twice the size, of
12 scamp, and they have never been adequately protected with size
13 limits, or with closures, unless it was the closures starting in
14 2010, and we still haven't resolved whether or not these low
15 landings from 2010 onward are the result of management action or
16 a decline in population or a change in climate, and so, you know,
17 we really have a quandary.
18
19 I like the idea that John put forward of using, I guess, for the
20 interim, Tier 3a, much like we did with the mid-level snapper, and
21 then try to straighten this out, seriously straighten this out, in
22 the stock assessment in 2026, because we can't continue to manage
23 this fish with benign neglect, and it's just too valuable of a
24 species, and too critical to the ecosystem of south Florida and
25 the coral reef system. Thank you.
26
27 **CHAIRMAN BARBIERI:** Doug, thank you for those comments, and I think
28 they are relevant, and I agree with you that we're going to have
29 to, in this next SEDAR process, do a deep dive into black grouper
30 and try and get some of these issues resolved and get a better-
31 informed way to move forward with management advice for black
32 grouper, and I can tell you -- I mean, I got a call from Dr.
33 Simmons, and, you know, this was probably a couple of years ago,
34 really concerned about the lack of an assessment for black grouper,
35 and the way that -- You know, she wanted to understand if there
36 was a sense of direction for us to go with providing a more
37 analytical way to, you know, generate catch advice for black
38 grouper.
39
40 You know, her impetus is what got me to work with Clay and say
41 that we've got to put this back into the SEDAR schedule and try
42 and join our teams into looking into this and doing a deep dive,
43 to try and see what we can get resolved, and so I think that
44 everything that you're saying, Doug, is relevant, really. Thank
45 you. Harry.
46
47 **MR. MORALES:** This may have been already said, and so I might be
48 repeating it, but this graphic that we have here, showing the

1 landings for black grouper, is that something that is drawn
2 straight off of the landings website, or has that been adjusted
3 for the proportion, or estimated proportion, of gag reported as
4 black?
5
6 **CHAIRMAN BARBIERI:** Ryan.
7
8 **MR. RINDONE:** These are the landings as reported to us by SERO,
9 and so any adjustments for -- Any adjustments, at this point, are
10 to have already occurred, and so this is black and yellowfin.
11
12 **MR. MORALES:** So this is as reported, and so we know, for a fact
13 then, that some of those landings in the 1980s are actually gag,
14 and we just haven't applied any sort of proportions, or anything
15 like that, to bring that back to -- I mean, for the gag assessment,
16 both times, it was done, to remove the gag from that, and to
17 estimate how much of that was gag landings and how much was black
18 grouper landings, and, as other people have said, if we want to
19 really look at what has gone on with black grouper, we should look
20 at what's going on with black grouper and remove the gag, as best
21 we can, from those landings.
22
23 There was a report, in both of the gag SEDARs, on information on
24 how that might get done, and so I think that that should be step
25 number one, before we go making any set of any ABCs, and I think
26 that's a simple step, and you might be arbitrary, but we have two
27 reports that could be used as source information to make those
28 calculations, and then we take a look at what is left of black
29 grouper, and do we have the trend that we're seeing now, or do we
30 just have a trend in better reporting. Thank you.
31
32 **CHAIRMAN BARBIERI:** Thank you for that, Harry. Paul.
33
34 **DR. MICKLE:** Thank you, Mr. Chair. I just wanted to, I guess,
35 listen to the discussion, and it was circling back, to me, that
36 we're still, as a body, very confused, and uncertain, about the
37 data that we're looking at and discussing, and we even had
38 conflicting data and anecdotal information brought to us at this
39 meeting, that's highly spatially pointed of a certain area of the
40 southern part of, I guess, the Gulf overall, and understanding the
41 PSEs very little.
42
43 Even the N behind these PSEs, and we seem to just jump straight to
44 PSE and look at that value, but the N behind that -- There has got
45 to be some thresholds, and a lot of people don't lean on that as
46 much as I like to, but, when you have a small N with a PSE, it
47 makes you think of it a little bit different. If you have a really
48 large N, and a large PSE, that gives even more information about

1   the uncertainties, which would help in this case.
2
3   Then understanding about the landings, and we're seeing, here in
4   this figure, about spatial, episodic, temporal within the year, if
5   it's highly seasonal, if it's just from one fisherman, or one gear
6   type, and, you know, specific to gear type, and all of those would
7   help us, and I guess it's an argument that we're having about how
8   much to lean on what we think about the fishery, but it seems like
9   we have very highly-conflicting views about the status of this
10 fishery, and it makes sense, because they're episodic, and the
11 data is very limited, but I think we have tools, and we actually
12 have a motion that takes a swing at giving us some more, I guess,
13 idea about what it is, and maybe give us some better discussion,
14 but I did think exactly the same as Griffith's statement earlier
15 about just one fisherman coming up and providing an episodic
16 anecdotal example, in a highly-spatialized area, but,
17 understanding all these things, it just seems like there is more
18 data out there, and it may help out with this discussion.
19
20 I would recommend that we bring the motion up again, and maybe add
21 to it, and craft like we always do, and add complexity to it, maybe
22 to include independent data, as I think the motion is heavily on
23 the dependent side, of maybe including Monroe County in some
24 aspects, and all these things are very beneficial discussion points
25 we've made, that I think we need to bring to light to be able to
26 move forward, in my opinion. Thank you.
27
28 **CHAIRMAN BARBIERI:** Thank you, Paul, and so I have Trevor, Mike
29 Allen, and then Dr. Bill Harford would like to say a few words,
30 too.
31
32 **MR. MONCRIEF:** I've got a little bit of a different viewpoint on
33 this one, and I am happy to express it. We've got high PSEs, and
34 I know those, right, but, in the face of those uncertainties, we
35 have to basically combine years, like what is proposed in 3a and
36 3b, and compile averages, and try to do the best we can with the
37 data that we have.
38
39 My concern, or I guess not really concern, but what I see -- To
40 turn Luiz's metaphor around on him, we're going to the supermarket,
41 right, and so we're talking about taking the bicycle to the
42 supermarket, right, and then the airplane, and what I don't want
43 us to end up doing is grabbing the unicycle out of the garage and
44 going up stairs to the supermarket, if we getting to the same
45 destination, and I think some of the options laid ahead of us, and
46 folks may not agree, right, but, you know, 3b is a more
47 conservative approach than 3a, and 3b is there for -- I think it's
48 kind of like this, where we've got information, and we've got a

little bit of concern with what's going on in the stock, with a
lot of uncertainty, and 3b kind of sticks it to, all right, let's
keep it to exactly where it is now, and then figure it out along
the way.

To a degree, I kind of like that approach more, because it sets
something in place, and then we can work, not delaying the decision
until we have the same information, to probably come up with the
same decision, at the end of the day, and that's just my opinion
on it, and I think we'll end up in the same spot, but, like I said
two days ago, I understand the due diligence side, but I just feel
like we're going to end up in the same route.

CHAIRMAN BARBIERI: Thank you for that, Trevor. Mike.

DR. ALLEN: Thank you, Mr. Chair, and just a couple of comments,
and we covered some of this the day before yesterday, but, you
know, we have a scamp assessment now, and we have catch advice for
scamp, and scamp is somewhere around 75 to 80 percent of the total
landings for the complex, and that's actually pretty consistent
across the years.

There's a black grouper assessment on the schedule that would look
at this in more detail, and I still agree with this motion, that
we have high uncertainty, and we don't have enough information to
provide black-grouper-specific advice, but I also think the
alternate side of that is that we don't have enough information to
change the landings substantially at this point, right, and we're
in the place where we really can't make recommendations for a
change.

CHAIRMAN BARBIERI: Thank you, Mike, and, by the way, just one
point of clarification, because I go to you, Bill, but one point
of clarification. These conversations that we've been having,
right, with the Center, and Vivian Matter leads that effort in
getting all the data organized and working with the SEDAR schedule,
and, I mean, we're trying to move in that direction, right, but,
of course, the Center has a variety of assessments going on, and
priorities, and so these things need to be scheduled, and
structured, in a way that fits all of that, and the same thing
with us at FWC.

We are, right now, you know, just about to start a data workshop,
and getting all the preparation for the mutton snapper assessment,
and we're already gearing up for the hogfish assessment, that
includes both Gulf and South Atlantic, right, and so it gets
complicated to have the bandwidth to go into doing all of this
analysis when we have something that we know, in a couple of years,

1 we're going to do a deep dive, right, and so, basically, we are
2 just in need here to put an interim status quo, of sort, right, of
3 measure, that would allow things not to change substantially until
4 we get to that deep dive analytical process.
5
6 That's just to clarify why, right now, doing all of those analyses,
7 and pulling all of this data, and all of this may not be a reality,
8 considering the schedule that we have in place and the data
9 processing and analytical capacity that we have between our two
10 organizations, and, with that, Bill. Then Doug.
11
12 **DR. HARFORD:** Thank you. I want to preface my comment by saying
13 that I recognize that you're facing a near-term sort of immediate
14 need for a decision here, and I in no way want to derail that, but
15 what I wanted to point out, given our discussion of MSE yesterday,
16 is that this is precisely the kind of problem that MSE is designed
17 to address, and so many of you may be grappling with this idea of
18 what are the consequences of the decision you're going to make,
19 and potentially what are the consequences of the next time you
20 have to make a similar decision, and so I just wanted to point out
21 that we can address these sorts of issues directly through what we
22 talked about yesterday, using MSE, and it will allow you to
23 understand the consequences of this, as you move forward. Thank
24 you.
25
26 **CHAIRMAN BARBIERI:** Thank you for that, Bill, because, you know,
27 this is like one of the windows, right, or doors, that opened up
28 yesterday, during that discussion, right, and, as we look forward
29 into addressing issues like black grouper, it's to draw, right, on
30 these approaches that are being explored now to look into these
31 things this way, and so, yes, this has really created possibilities
32 that, up until now --
33
34 I mean, a couple of weeks ago, I had been involved with some of
35 these discussions with the Center, talking about how we're going
36 to get this data going, and talking with the analytical team back
37 at FWRI, and kind of being at a loss of how do we handle this,
38 because there are so many uncertainties, so many data issues, and
39 what route would we take here, right, with this, and I think, you
40 know, exactly to your point, and that opened up possibilities that
41 I think are going to, you know, lead us to a more positive outcome.
42 Thank you. Doug.
43
44 **MR. GREGORY:** Thank you, Mr. Chair. I'm comfortable with the Tier
45 3a, like we did with the snappers, or using scamp as an indicator
46 species in the interim, until we get the black grouper assessment.
47 I am not comfortable with Tier 3b, and for both the statistical
48 and the management viewpoints.

1
2 Statistically, yes, keeping the fishery at about the mean sounds
3 good, but that -- If we put an ABC, or an OFL, equal to the mean,
4 that means that, 50 percent of the time, year after year, that
5 fishery is going to be overfished, and the council, and NMFS, are
6 going to have to go through a whole management process of
7 correcting that. It's going to be followed, the next year, by it
8 not being overfished, because it went below the mean, and so, I
9 mean, that's a very untenable, I think, situation.
10
11 3a makes a little more sense, and OFL is a standard deviation above
12 the mean, or say two standard deviations, and that means, what, 5
13 percent of the time, just due to random variability, that will be
14 exceeded, and that doesn't mean the average catch of the fishery
15 has changed, but that just means that annual variability has caused
16 that, and we need to think about it in those terms, and the impact
17 that it has on management, particularly since we're only talking
18 about a three or four-year time period. Thank you.
19
20 **CHAIRMAN BARBIERI:** Thank you, Doug. Mike, to that point?
21
22 **DR. ALLEN:** I agree, Doug, and I think, given this discussion, I
23 would like to amend this motion to go with something basically
24 identical to what we did with the midwater snapper, and use 3a,
25 with the ABC at 1.5 times the standard deviation, with the thought
26 of that being that we're basically suggesting no change in the
27 future, until more information comes to light, which is consistent
28 with the original motion.
29
30 **CHAIRMAN BARBIERI:** Right, and one of the points that Mandy made
31 the other day kind of hit me, right, which was, you know, thinking
32 about the consequences of what we do here, and so not taking an
33 action on this, and what impact this could inadvertently have, not
34 just on black grouper, but on scamp as well, and so, to me, that
35 kind of hit a nerve, and I thought that this is a very good point,
36 because, you know, we get sometimes caught into the moment, and it
37 becomes a little bit of an academic exercise, right, and we forget
38 that there are consequences to those actions, and not taking action
39 may actually not be the best option. With that, Trevor.
40
41 **MR. MONCRIEF:** I was just going to agree with Doug completely, and
42 the reason why I brought up that 3b option was, if there was that
43 much concern over the group, that this is truly, you know,
44 something going on, that's -- I think that's kind of what it's
45 there for, and that's why it's probably used very sparingly.
46
47 To that end, right, within the discussion of this motion, which,
48 you know, I agree with, there is the cascading levels of ABC, for

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the a, b, c, and d options that bring down that additive for
standard deviation that kind of, you know, line up with how much
concern there might be and where the focus should be, but, no, I
agree with this direction, and I think this is the route to go.
Let's put something in place and then work on it in the meantime.

CHAIRMAN BARBIERI: Thank you for that clarification, Trevor.
While staff is double-checking on the numbers here -- While they
work on the numbers here, I mean, the core spirit of the motion is
there on the board.

MR. RINDONE: What time period do you want to use, 2012 to 2021?

DR. ALLEN: That's what I was thinking, Ryan, 2012 to 2021, the
shorter time period.

DR. FROESCHKE: What I presented I think was 2010 through 2021,
for black grouper, and so we can update it to 2012, but I didn't
know if you wanted us to update the data or you wanted to use what
we presented.

DR. ALLEN: I was thinking you would use what you presented, 2010.

CHAIRMAN BARBIERI: Okay, and so they're going to update the
figures there, the numbers, but before -- We should have that,
and, before we open it up for discussion, the motion is by Mike
Allen, and do we have a second for this motion?

MR. MONCRIEF: I will second it.

CHAIRMAN BARBIERI: It's seconded by Trevor Moncrief. We have a
motion on the board, and it has been seconded. I will read the
motion. **The SSC recommends using Tier 3a for setting the OFL (mean
plus two standard deviations) and Option a for the ABC (mean plus
1.5 standard deviations) for the shallow-water grouper complex,
with both to be converted to MRIP-FES units. The reference period
used for landings is recommended to be 2010 to 2021.**
Clarification, John?

DR. FROESCHKE: I have a couple of questions, and so, just from my
understanding, this is for black grouper and yellowfin and not
necessarily the shallow-water grouper complex, because that would
include, potentially, the scamp and yellowmouth landings, and, if
we want to go that way, then the other little wrinkle in there is
the scamp and yellowmouth is actually on the -- On the OFL side,
it was a yield stream, and it's a very small, declining yield
stream, and so we would want to put that together, just very
quickly, because I think the ABC is 203,000 pounds, but it starts

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1 at like 271,000, in the OFL, and it goes to like 267,000, in 2025,
2 and blah, blah, blah, but I'm just not sure what your intent is
3 here.
4
5 **CHAIRMAN BARBIERI:** Well, I think we need to understand, first,
6 just to clarify, right, whether the council was going to continue
7 managing this complex as a complex, and we have catch advice that
8 the SSC has provided, right, from an analytical model-based
9 assessment, for scamp, and so I think that this would be the black
10 grouper and yellowmouth component, and it's yellowmouth and not
11 yellowfin, right, or is it yellowfin? I always get the two
12 confused. It's yellowfin? So we would do black grouper and
13 yellowfin, right, within the shallow-water grouper complex. Wait
14 a second, John, if this is a comment about this, because I have
15 Paul in the queue. Paul.
16
17 **DR. MICKLE:** Sure, Mr. Chair, and I apologize, and my staff has
18 figure out that I'm not in Tampa, and they keep walking in and
19 bothering me, and I'm sorry, and is this a second motion to the
20 first, for clarification, and I am trying to figure out -- So, if
21 this would fail, do we fall back to the first one, because this is
22 so different from the first one, and I'm just confused about this
23 motion, and how it plays out, but I am in support of this motion,
24 and I just wanted to make that clear with the question.
25
26 **CHAIRMAN BARBIERI:** Thank you for that, Paul. I see this as,
27 procedurally, a substitute motion, right, within Roberts Rules,
28 and this would come in as a substitute motion, and it supersedes
29 the previous one.
30
31 **DR. ALLEN:** Yes, and that's what I was thinking too, Mr. Chair.
32
33 **CHAIRMAN BARBIERI:** John.
34
35 **DR. FROESCHKE: To that, in the motion, where it says "shallow-**
36 **water grouper complex", do you want to change that to "black**
37 **grouper and yellowfin grouper"?**
38
39 **DR. ALLEN: Yes, because we've already made recommendations on**
40 **scamp.**
41
42 **CHAIRMAN BARBIERI:** That is a great point, because it makes --
43 John Mareska.
44
45 **MR. MARESKA:** Just for clarification in my brain, and so this is
46 -- We're making this recommendation for these two species within
47 the shallow-water grouper complex, and scamp and yellowmouth are
48 going to be the indicator species, and is that the approach here?

313

1
2 **CHAIRMAN BARBIERI:** We haven't discussed that issue yet. I mean,
3 this is not part of what this discussion entails, as I understand
4 it, John. Jim Tolan.
5
6 **DR. TOLAN:** Just a quick procedural. I have slept twice since
7 Tuesday. The motion that was tabled, was it seconded?
8
9 **MR. RINDONE:** Yes.
10
11 **DR. TOLAN:** Okay. Then this should be a substitute motion then.
12
13 **CHAIRMAN BARBIERI:** Yes, and so this is a substitute motion. Paul.
14
15 **DR. MICKLE:** Mr. Chair, that was from the previous comment. Thank
16 you.
17
18 **CHAIRMAN BARBIERI:** Thank you, Paul. All right, and so what we
19 are doing now is just getting the right numbers from that little
20 summary analysis that Dr. Froeschke put together. So we'll copy-
21 and-paste that into the --
22
23 **DR. FROESCHKE:** That table, it should just be the first two
24 columns.
25
26 **CHAIRMAN BARBIERI:** By the way, for those of you who watching her
27 in motion, this is Super Jess, kind of fixing our --
28
29 **DR. FROESCHKE:** Just the first two left columns are the only ones
30 that you need, and the Tier 3b column you can get rid of. There
31 we go.
32
33 **CHAIRMAN BARBIERI:** All right, and so there is the same motion,
34 right, that I read before, but now having the table that specifies
35 the actual OFL and ABC for black grouper and yellowfin grouper
36 within the shallow-water grouper complex. Mike Allen.
37
38 **DR. ALLEN: I think, for clarity, to capture this, we could use**
39 **the first two sentences of the original motion at the start of**
40 **this, just to set the context before this recommendation about**
41 **black grouper and yellowfin grouper.**
42
43 **CHAIRMAN BARBIERI:** Yes, and, Trevor, are you okay with that?
44
45 **DR. ALLEN:** The idea is that this catch would be added to the scamp
46 catch, for the total complex, and am I thinking about that right?
47
48 **CHAIRMAN BARBIERI:** Yes. Josh.

1
2 **DR. KILBORN:** Thank you, and so I'm looking at these numbers, and
3 I'm looking at the Table 3 that John sent us, with the totals from
4 the catches by year, and this recommendation for Tier 3a, for the
5 overfishing limit, is higher than any landings that we've seen in
6 the time series that we're considering. I feel like, if we're
7 concerned about this stock at all, I feel like we're being a little
8 too aggressive, and so I'm a little uneasy about this, as it
9 currently sits.
10
11 **CHAIRMAN BARBIERI:** Ryan.
12
13 **MR. RINDONE:** So the highest year in the time series I think is
14 2015, which combines about 341,000 pounds, and so you're right in
15 that it is higher than any of them in the time series, and that's
16 by design, yes, and so why that might not be such a bad thing is,
17 if you look at the MRIP landings, and how annually variable they
18 can be, like the difference between 2016 and 2017, as an example,
19 and 2016 is 242,000 pounds, and 2017 was 28,000 pounds, and I don't
20 have a terrible amount of confidence in either one of those.
21
22 Then 2019 and 2020, and 2019 is 20,000 pounds, and 2020 is 158,000
23 pounds, and I don't really have a lot of confidence in that either,
24 and so the interannual variability in the recreational landings is
25 high, and so, if we set the OFL in a more constrained manner, the
26 odds of there being a recreational exceedance are near-guaranteed,
27 based on the interannual variability that we've observed in those
28 landings. By setting the OFL at a level like this, you're
29 accounting for that variance, at least as best as we can, given
30 the data we have.
31
32 **CHAIRMAN BARBIERI:** On that point, Josh, I think that's a valid
33 question, and I think that, for a lot of people who were not here
34 after the last Magnuson reauthorization, and us moving into these
35 ACLs and developing the ABC Control Rule, I think it would be
36 valid, like in July, when we have that item on the agenda, to go
37 into a review of the rationale between each one of those tiers
38 within the ABC Control Rule and how they align with different
39 stocks and why it was structured the way it was, because, at first,
40 it seems counterintuitive, and so I will try to work with Jim and
41 Ryan in preparing something for the July meeting that would give
42 an overview of the ABC Control Rule and why, you know, it was
43 structured this way, as a review for the new SSC members, because
44 it has been a long time, and we haven't revisited that, Josh.
45 Will.
46
47 **DR. PATTERSON:** Thank you, Mr. Chair. Josh just made the point
48 that I was going to make, in that the mean is 153,000 pounds, and

1 so the standard deviation is 103,000, and that's a lot of variance,
2 and I understand Ryan's point, that, if you take -- If you set OFL
3 as the mean plus some lower level of standard deviation, then some
4 years, in the past ten years, would have been over that threshold,
5 but the goal here is to set a realistic threshold, given our
6 perceptions of stock dynamics and productivity that are based
7 solely on catch data.
8
9 They aren't to make sure that the fishery doesn't exceed that, and
10 it has to be closed, or some accountability, right, and that's --
11 We're not trying to set this, and, I mean, if that were the case,
12 then we should just set it at 500,000 pounds and ensure that the
13 landings never cross that, given the recent performance of the
14 fishery, right, and so that's not really our goal here.
15
16 **CHAIRMAN BARBIERI:** Right, and, before I go to the queue, Will, to
17 that point, which is valid, we are just applying our ABC Control
18 Rule, as approved by the council, you know, the one that we put
19 together and that are now working on revising, and, you know, this
20 may be one of the issues that we want to revise, to start revising
21 in July, but this is the one that we built, and it follow the
22 rationale that we, you know, have established.
23
24 **DR. PATTERSON:** I understand that, Luiz, and your statement to --
25 Your earlier statement about it may seem counterintuitive, unless
26 you knew the background, but I was there during the discussion,
27 and some of it was counterintuitive to me at the time, and it
28 remains that way, but I understand that this is the approved
29 control rule.
30
31 **CHAIRMAN BARBIERI:** Right, and so the queue here -- Thank you,
32 Will. I have Dan and then Mandy and then Doug and then Trevor.
33
34 **DR. PETROLIA:** Thank you, Mr. Chair. Just an observation that the
35 original motion made clear our concerns about data, and the need
36 to work on that, and the second one does not, and, just being new,
37 I'm curious about signals we send to the council, and is there a
38 risk that the second one might imply that we have more confidence
39 than we actually do? I mean, should there be a statement that --
40 You know, in other words, maybe I'm offering a friendly amendment,
41 and so we retain -- Do we carry down some portion of that last
42 sentence about data and the need to go down that path? Thank you.
43
44 **CHAIRMAN BARBIERI:** Good point, in my view, Dan, and I am looking
45 at the motion --
46
47 **DR. ALLEN: I agree, and I would be open to an amendment to put
48 some of that language in there about uncertainty.**

1
2 **DR. TOLAN:** To that point, Mr. Chairman. If the substitute motion
3 is approved, the council will never see the first motion, correct?
4
5 **CHAIRMAN BARBIERI:** Correct.
6
7 **DR. TOLAN:** Okay.
8
9 **DR. PETROLIA: I would put it right before -- Right after the "for
10 consideration".**
11
12 **MR. RINDONE:** It should be for black grouper and yellowfin grouper,
13 since these data represent both. **So "for black grouper and
14 yellowfin grouper".**
15
16 **CHAIRMAN BARBIERI: Should we add "for the next stock assessment"?**
17
18 **DR. ALLEN: Yes.**
19
20 **CHAIRMAN BARBIERI:** Right. Thank you, Dan. Very good point.
21 Mandy.
22
23 **DR. KARNAUSKAS:** Thanks, Mr. Chair. I agree with a lot of the
24 previous points that have been raised, and Josh and Doug made some
25 good points about potential reasons to want to be conservative in
26 this situation, but I also see some reasons that we might not want
27 to be conservative in this situation, and I worry about penalizing
28 the fishery when we don't really have hard evidence that the stock
29 is in trouble.
30
31 I worry about, you know, the species complex, and a lot of the
32 other grouper species, the deepwater, are in the tank, and gag is
33 going to be cut way back, and I think that black is somewhat
34 substitutable for gag, and we might see some push, or redirecting,
35 of effort to black grouper, and I wouldn't want to limit options,
36 and limit the fishery, when we don't have good evidence that there
37 is not a reason to do so, and so I'm comfortable with this motion,
38 and I think it leaves some wiggle room for, you know, fisheries to
39 change targeting, and I have a hard time making a decision to --
40 I just wanted to add that balanced argument.
41
42 **CHAIRMAN BARBIERI:** Thank you, Mandy, and I agree completely.
43 Doug.
44
45 **MR. GREGORY:** I pass. Thank you.
46
47 **CHAIRMAN BARBIERI:** Thank you, Doug. John Mareska.
48

MR. MARESKA: The information that we were presented yesterday for black grouper was in gutted weight, and so what are the units for these landings, because yellowfin are typically in whole weight, and so what units are we looking at? We had the units for the previous motion.

MR. RINDONE: It's all gutted.

CHAIRMAN BARBIERI: All right. Any additional discussion points on this motion? Seeing none, are we ready to vote on this motion? Should we do a roll call vote?

DR. FROESCHKE: I would try a show of hands.

CHAIRMAN BARBIERI: All right, and so, those in favor of this motion, please signify by raising your hand, including online; those opposed.

MR. RINDONE: It carries twelve to two, or twelve to three.

CHAIRMAN BARBIERI: How many abstentions? I would imagine, Will and Luke, that you are raising your hand as abstentions, and the same with Rich?

DR. FAIRBANKS: I was going to vote against the motion.

DR. PATTERSON: Me as well.

MR. RINDONE: So it's twelve to four with one abstention.

CHAIRMAN BARBIERI: Rich, how about you?

MS. MATOS: Rich, what was your vote? Rich Woodward, what was your vote?

DR. WOODWARD: I would like to abstain. I'm having trouble with audio here.

MS. MATOS: Got it. Thank you.

CHAIRMAN BARBIERI: Thank you, Rich. This now closes Agenda Item Number VIII, and let me, you know, thank the committee for the very robust discussion for consideration, and we started with a lot of confusion about this item, and, you know, I'm glad that we gave ourselves time to think a little more about it, and I want to especially thank staff for looking into this further and putting together, you know, more analytical products to help us really see the different options to go forward with these catch level

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1 recommendations, and so it's greatly appreciated.
2
3 We can now resume our regular meeting agenda schedule, and this
4 might be a good time to have a break, a little earlier than we had
5 scheduled, but it's a good breaking point in the morning, before
6 we move on to other items, and so let's have a fifteen-minute
7 break, and we will return at ten after ten.
8
9 (Whereupon, a brief recess was taken.)
10
11 **CHAIRMAN BARBIERI:** All right, folks. Going back to our agenda,
12 originally, we had reserved some time, if needed, for discussion
13 on the MSE issue, and the workshop products, and I think -- My
14 personal impression is that that was completed, what we had
15 intended to do, and that we're going to hopefully have the
16 opportunity to revisit, you know, that issue in the not-so-distant
17 future, right, and now considering the use of MSE for some of the
18 stocks that we need to provide management advice on.
19
20 With that, I would say we move on to Agenda Item XIV, Review SHELF
21 Fish Egg Monitoring Program, and we have Dr. Chris Stallings, from
22 the University of South Florida College of Marine Science, who was
23 kind enough to come and join us today and give us an overview of
24 the SHELF research program as USF CMS. Chris, before you get
25 started, I would ask Ryan to look through the scope of work and
26 provide an introduction to your talk, Chris. Thank you for coming,
27 Chris, and it's great to have you here.
28
29 **DR. CHRIS STALLINGS:** Thank you for having me.
30
31 **REVIEW SHELF FISH EGG MONITORING PROGRAM**
32
33 **MR. RINDONE:** All right. Thank you, Chris, for coming today.
34 Chris is going to present the Spawning Habitat and Early Life
35 Linkages to Fisheries, or SHELF, project, which is funded at the
36 Florida RESTORE Act Center for Excellence program. This project
37 was selected because it held potential for applying novel
38 approaches to long-term monitoring of living marine resources in
39 the Gulf, and it has two conceptual parts.
40
41 It started in 2017 as a broad pilot study, and it was formally
42 reviewed and simplified by external review in 2020, and the
43 monitoring program has been operating for several years, and it
44 consists of annual surveys of planktonic fish eggs that are
45 collected through SEAMAP, and the eggs are identified with DNA
46 barcoding.
47
48 A specific objective of the monitoring effort, in addition to

1 locating important fish spawning areas, is to produce a time series
2 that detects changes in the amount or location of spawning by
3 individual species and to detect changes in fish egg community
4 composition over time, such as that brought about by climate
5 change, fishing, or changes in habitat quality, and so Chris is
6 going to summarize the work and results thus far and outline
7 planned work for the next few years.
8
9 The impetus for this talk is to inform you guys about the program
10 and to determine if there are any data products from the program
11 that the committee thinks would be useful to make recommendations
12 to the council, and also for consideration in stock assessments
13 and things of that nature, and Chris loves questions, and so ask
14 as many as possible.
15
16 **DR. STALLINGS:** All right. Well, thank you. That introduction
17 kind of summarizes what I'm trying to get across here today, and
18 I know we have an hour-and-a-half blocked out, but the presentation
19 is only twenty-five minutes, but I do hope that we have some
20 discussion afterwards.
21
22 Okay, and so I have two primary objectives of this talk. The first
23 is to inform you of the objectives of our program, as well as the
24 data products that we're coming out with, and the second is to,
25 again, ask you guys if there are data products that we can provide
26 for you.
27
28 The work is broken down into the work that we've already completed,
29 as well as the work we have planned, and so I will give a very
30 brief overview of a two-year pilot that we conducted, a review of
31 some work that we recently finished for the second phase of the
32 SHELF program, and this is when we began that egg monitoring
33 component of this.
34
35 We recently completed this second phase, in February, and we began
36 the third phase just recently. We're going to continue this egg
37 monitoring program, so that we can build this long-term time
38 series, and then, last, I will give a very brief overview of our
39 long-term vision.
40
41 First, this brief overview of our pilot, and the SHELF program
42 really benefitted from some work from previous FLRACEP funding,
43 where my colleagues were able to show that we could successfully
44 DNA barcode fish eggs, and so, based on that, we focused on a daily
45 egg production method to estimate spawning stock biomass, and we
46 did so successfully for vermilion snapper, and we have a paper in
47 preparation for that.
48

1 Because we were identifying eggs, or collecting eggs, across a
2 broad range of the shelf, we also were able to identify spatial
3 distributions of these eggs, and we found that they tended to be
4 most abundant nearshore, and there was a possible hotspot near
5 Cape San Blas.
6
7 We then followed up with some physical oceanography models to
8 explain these distributions that we observed, including that
9 apparent hotspot, and then we also used these models to estimate
10 retention and export dynamics, and so we found that eggs that were
11 spawned in the inner and middle sections of the shelf tended to be
12 retained, and those that were spawned on the outer sections of the
13 shelf tended to be exported out of the system, and we have a paper
14 in review about those results.
15
16 **CHAIRMAN BARBIERI:** Chris, just one second. Is everybody -- There
17 we go.
18
19 **DR. STALLINGS:** Cool. Then, last, we explored the use of various
20 other tools and approaches, such as using stable isotope analysis
21 of eye lenses to estimate spawning locations, as well as a towed
22 camera system and hydrophones, to estimate fish abundance.
23
24 Of course, at the end of that two-year pilot, we submitted a final
25 report, which was reviewed by the Program Management Team, which
26 oversees all of the FLRACEP-funded projects, and they suggested
27 that, moving forward, we focus on the egg monitoring component of
28 our program. In addition, and this was a really -- This was a
29 really great part of this funding source, is this second bullet
30 point here, that they also wanted to include some flexibility in
31 funding for targeted studies, and that's potentially where this
32 presentation comes into play with this audience, because, if there
33 are additional data products that would benefit you, then let's
34 please enter those discussions about what that would look like.
35
36 Okay, and so, moving out of SHELF 1 and into the second phase,
37 that's when we began the egg monitoring program, and so, in 2019,
38 we collected eggs from forty-nine stations across the West Florida
39 Shelf, and we completed the processing and the barcoding in late
40 2019 and early 2020. Now, the previous barcoding work that we had
41 done used individual egg barcoding, and, in other words, we picked
42 out each individual egg and barcoded each one.
43
44 Moving forward in this long-term program, we wanted to explore the
45 use of metabarcoding, because the individual egg barcoding is very
46 time-consuming, and it's very expensive, whereas, with
47 metabarcoding, you take all of your eggs from a single station and
48 you barcode them together, and so we explored that, and we did

1 that, and we recovered thirty-seven taxa, from over 4,700 eggs. I
2 am not going to go through these maps here, but the taxa that we
3 identified corresponded well with what we think we know about the
4 types of habitats that they should be occupying, and so, from this
5 perspective, the metabarcoding approach appeared to work quite
6 well.
7
8 However, there are also some other pros and cons that we had to
9 weigh to decide whether we were going to use metabarcoding, moving
10 forward, and this is the biggest pro of metabarcoding. Well, the
11 time component, as well as the cost, and so, for one site, it's
12 about $65 to metabarcode, and so that's very cheap. For individual
13 egg barcoding, based on ninety-six eggs per site, which is how
14 many we run, it's about $500, and so that's a key advantage to
15 metabarcoding, but that's where its advantages end.
16
17 It is not quantitative, and you're only getting presence-absence
18 data, and you're not getting -- Unlike individual egg barcoding,
19 where you're getting proportions, and you can estimate the
20 proportions of eggs of different species, and this third row, the
21 ability to return to individual eggs, and so we've had about 80
22 percent barcoding success, which is good, but it also means that
23 we've had about 20 percent of eggs that we have not been able to
24 successfully barcode.
25
26 With individual egg barcoding, you can go back to an individual
27 egg, and you can resample it up to about fifty times, and we
28 actually have some contingency plans to improve our barcoding
29 success in the next phase of SHELF, whereas, with metabarcoding,
30 you consume the entire sample. You can't go back. In this last
31 row here, this is really a big one. With metabarcoding, we had a
32 very high prevalence of false-positives and false-negatives, and,
33 in fact, we had a lot of stations that returned more species than
34 we had eggs, which, of course, is impossible, and we think that,
35 you know, that's happening because of some kind of contamination,
36 eDNA or whatever.
37
38 With individual egg barcoding, we have a very low prevalence of
39 false-positives and false-negatives, and so, when we weigh all
40 these pros and cons, moving forward, we decided, if we're going to
41 build this long-term program, and build a time series, then we
42 decided to use the individual egg barcoding, moving forward.
43
44 That was early 2020, when we kind of wrapped that up, and so now
45 we have a plan, and we're doing to do our long-term egg monitoring,
46 and we were gearing up for our 2020 season, and, of course,
47 everybody knows what happened, and I don't even have a graphic
48 here, and so we were not comfortable putting our students and our

1 science staff on research vessels, where they would be living and
2 working, you know, in tight quarters, and so this created some
3 challenges for us, and we had to overcome them somehow.
4
5 Fortunately, as Ryan already introduced, and as I'm sure everybody
6 in the room is familiar, the SEAMAP program collects eggs, across
7 the entire West Florida Shelf, every August and September. I mean,
8 they run -- Obviously, they run other cruises, but they have been
9 sampling, and collecting eggs, on the West Florida Shelf for over
10 a decade now, and they do that using this continuous underway fish
11 egg sampler, or CUFES, and the samples that you get from the CUFES
12 are extremely clean.
13
14 You know, if you pull a plankton net, and you're going to have to
15 pick out all those eggs, it's tedious, and the CUFES delivers, you
16 know, samples that are almost entirely just eggs, and so it's
17 really nice, and so we reached out to them, and they've been
18 collecting these eggs for over a decade, but they haven't been
19 able to do anything with them except for archive them, until we
20 reached out to them, and we said, hey, we can DNA barcode those
21 eggs, and let you know what species they are, and would that be
22 something that interests you, and they said absolutely, and so it
23 ended up being a win-win for NOAA and for us.
24
25 During the second phase of SHELF, we analyzed archived samples
26 from 2013, 2014, and 2019, and we barcoded 251 stations. Again,
27 we have that 80 percent success rate, and, so far, we have
28 identified 163 taxa.
29
30 I am not going into a lot of detail on the results, and I know
31 this is really hard to see, but this kind of high-level result
32 just shows that we found community structure of the fish eggs,
33 along an inner to outer shelf gradient, and that, when we look at
34 these representative species within that gradient, it makes sense,
35 according to what we think we know about where those fish live,
36 right, and so this is just three example taxa that are
37 representative of those three different communities.
38
39 We can, and we have, made similar maps for all 163 taxa, and, in
40 fact, one of them that might be of interest here is the
41 distribution of yellowedge grouper eggs that we have found, and
42 so, of course, it's a deepwater grouper, and we know relatively
43 little about its biology and its reproduction dynamics, and so
44 this work has now identified that they appear to be spawning about
45 the Pulley Ridge Habitat Area of Particular Concern, and so this
46 is a good kind of first-order result, if you wanted to go in and
47 more carefully study the reproductive dynamics of yellowedge
48 grouper, and now you know where to look, right, and so we can do

these same approaches with other species as well.

I didn't include it in this talk, but, if we look at the 2013 and 2014 red snapper eggs that we identified, they're all off the Panhandle, and we don't see any further south than that. In 2019, the distribution expands, and it goes further south, and so, obviously, that's just three years, and that's not a time series, but it's at least, you know, an indication of the kinds of things that we can do with this in the long-term.

SHELF 2 ended in February, and we have just now completed a contract for Shelf 3, where we're going to continue our egg monitoring program, and we also have some of these targeted studies that I mentioned before.

Here you see the table of eggs that we are barcoding, and, of course, the first three, we already did in Shelf 2, and we're now going to barcode 2022 through 2025, during this third phase of SHELF, and so, at the end of this, we will have identified seven years of spawning, across a thirteen-year timespan.

Then our targeted studies fall under two categories, and the first is to better understand spawning dynamics on the West Florida Shelf, and so this is more of the kind of scientific-leaning targeted studies, and the other two are to examine some of our assumptions.

The first targeted study is to examine eggs collected across seasons on the West Florida Shelf, and so, again, I know this is not easy to see, and it doesn't really matter, but this is a spawning table for a list of managed species, and each row is a species, and then the columns on the right are different months of the year, and so, if a cell within that column is gray, that means there is evidence that spawning occurs during that time of year for that species, and, if it's black, then that's peak spawning for that species, and I have, highlighted here in blue, the time of year where SEAMAP is sampling these eggs and delivering them to us.

Obviously, they're capturing a number of different species that are spawning during those late summer months, but, also obviously, they're missing a lot of species that are spawning at other times of the year, and so we're going to supplement this with two years of seasonal sampling, and we're going to sample those other three seasons by building our own CUFES system and placing them on the FIO vessels, and, in fact, one of my students is up -- He's on a bluefin tuna cruise right now, and he's going to bring back the SEAMAP CUFES system to USF, so that our machine shop can build it

1 exactly the same way, and so we're going to use the same methods
2 that they use, using the same equipment.
3
4 The other kind of more scientific-leaning targeted study is going
5 to test whether we can link adult fish abundances to egg
6 production, and so, when SEAMAP goes out, and when we go out on
7 the FIO vessels, we sample at locations that are predetermined,
8 based on a gridded system, right, and so we don't really know a
9 whole lot about the abundance of adult fishes in the water column,
10 or on the bottom, underneath those sampling locations.
11
12 My lab has been conducting a reef fish visual survey on paired
13 artificial and natural reefs, located off the Tampa Bay area, for
14 ten years now, and so we have ten years of seasonal visual survey
15 data from these reefs, and so we're going to continue that program
16 of the seasonal survey data, but add to that two years of
17 collecting eggs, and identifying them as well, and determine if we
18 can link adult fish abundances to egg production.
19
20 I kind of view this as a pilot, because this is a fairly small
21 scale, of course, but I've been in contact with the FWRI
22 researchers that run the camera array systems, as a part of SEAMAP,
23 and, if this is successful, then we can possibly expand across the
24 West Florida Shelf, and team up with them.
25
26 Okay, and so the next two targeted studies are those that are
27 testing our assumptions, and the first is that surface sampling
28 fully characterizes spawning in that area, and so the CUFES system
29 samples three meters below the surface of the ocean, and we assume
30 that that fully characterizes the spawning that happens underneath
31 it, because fish eggs are rich in lipids, and so it's going to
32 make them buoyant, and so we assume that sampling at the surface
33 will be sufficient.
34
35 However, we also know that different species of fishes have
36 different amounts of lipids in their eggs, and so it is possible
37 that they could become neutrally buoyant at depths below the
38 surface, and so we're going to examine this by, again, going back
39 to some of the archived samples from SEAMAP sampling, where they
40 use protocols across these six depth gradients.
41
42 They did this in the wintertime, and they were trying to catch
43 grouper larvae, and they didn't catch any larvae, but they said
44 that each depth zone was chock full of eggs, and so this can happen
45 for one of two reasons. Either they intercepted the eggs as they
46 were making their way to the surface or some of them were neutrally
47 buoyant at different depths, and so this is an important assumption
48 to examine, because, if there are species that we're not capturing

1   in our surface sampling, that just contextualizes our results.
2
3   Then the last assumption that we're testing, at least in the SHELF
4   3 program, is whether we can improve our barcoding success and
5   determine why those failures do occur, and I'm not going to go
6   through this whole contingency plan, but there are multiple reasons
7   why we might not have 100 percent success, and so my co-PI and her
8   lab created this contingency plan that we'll examine in this third
9   phase.
10
11 Then the last part of the SHELF 3 component is kind of a broader
12 impacts sort of aspect, and the first is to continue our existing
13 collaborations and develop new ones, and so, moving forward,
14 working with SEAMAP, and this has been a really exciting
15 collaboration, and we work really well together, and they are going
16 to continue to supply those eggs for us. I'm reaching out to my
17 colleagues at FWRI, to start to plant that seed about maybe
18 combining their camera array surveys with what we can do, to see
19 if we can match up adult fish abundances to egg production.
20
21 We'll disseminate our goals and products to stakeholders, and
22 that's part of the reason why I'm here today, is to share what
23 we're doing and what our vision is, and I also plan to reach out
24 to the organizers of the NOAA Science Seminar series, to give a
25 presentation, so that I can cast an even broader net to the
26 fisheries science centers and regional offices, and then, last, we
27 need to make sure that the program is fully operationalized, and
28 we're going to do that by writing a standard operating procedure.
29 That way, as we have students and research staff onboarding and
30 offboarding, we keep consistency in our methods. It will also
31 have contingency plans, when various unexpected challenges emerge.
32
33 Then, very briefly, looking forward, if we are funded for the
34 entire duration that is possible in this program, that will be
35 seventeen years of funding, and that's part of the reason why this
36 program is so exciting. In addition, we can -- As I've already
37 shown, we can successfully DNA barcode eggs that were collected
38 before the program began, and so we can barcode archived samples,
39 and so, looking forward, we'll continue this long-term time series.
40
41 At the conclusion of it, we'll have almost a quarter-of-a-century
42 timespan, and so that's when you start to get into an actual time
43 series realm, and that will help us to better understand, you know,
44 long-term dynamics, responses to disturbances, whether they're
45 acute, like an oil spill, or chronic, like climate change, and we
46 might start seeing tropicalization. Recovery of species, and how
47 different species might be responding to rebuilding plans, et
48 cetera.

1
2 Hopefully, at the conclusion of this program, we will have shown
3 the value of building such a time series, and hopefully we can
4 leverage additional funding from other sources, beyond FLRACEP,
5 and then, finally, this brings us to our discussion today.
6
7 We have the ability to have targeted studies, and it's a flexible
8 program, and so we can respond to issues as they emerge, and, you
9 know, we can team up with the great counts that are happening, if
10 that would benefit them, and we can incorporate other tools, such
11 as physical oceanography modeling, but, also, I'm just curious to
12 hear from you guys, you know, what sorts of data products we might
13 be able to provide to you, and that can involve even if it means
14 us adding tasks to our program. Thank you.
15
16 **CHAIRMAN BARBIERI:** Great. Thank you so much, Chris, for that
17 great presentation and great overview of what seems to be a very
18 well-put-together project. I will open the floor for discussion
19 and questions for Chris. Mike Allen.
20
21 **DR. ALLEN:** Chris, thank you for the presentation, and this is a
22 really neat dataset, and I wondered about the potential to use
23 these data as an alternate independent measure of reproductive
24 output, at least a time series, or an index, of reproductive
25 output, and what you think the potential is for that, and it could
26 be used in stock assessment as another -- The eggs, obviously, are
27 pre-recruitment-compensation-type indicators of reproductive
28 output, but it could be an indicator that we could use in addition
29 to things like spawning stock biomass and those kind of indicators,
30 and so your thoughts?
31
32 **DR. STALLINGS:** Thanks, Mike. I think they could be, and I think
33 they could be used in a couple of ways. As I mentioned, since
34 we're using individual egg barcoding, you know, we could look at
35 the proportion of certain species that are observed at different
36 sites over time, and we could also just look at the number of sites
37 over time that had those data present.
38
39 It hasn't been clear, to me, how it would directly feed into stock
40 assessment, and more of a kind of bigger picture, you know, but
41 that's also a little bit out of my wheelhouse, and so I am open
42 to, you know, suggestions for how that might -- Not only how that
43 might work, but if it would require some kind of modification, or
44 addition, to what we're doing.
45
46 **DR. ALLEN:** To that point, my thought was that, along with a stock
47 assessment, this data stream could be -- It could inform -- For
48 example, if spawning stock biomass is flat, but the eggs are either

1 substantially increasing through time, or substantially decreasing
2 through time, that might shed some light on what we know about the
3 stock, and so, you know, I think it would be another source of
4 information.
5
6 **DR. STALLINGS:** Yes, and I definitely agree with that, and I was
7 thinking about that this morning, that, if we're not seeing, for
8 example, indications -- Let's say we just don't collect red snapper
9 eggs in August and September, which would be a shock, right, yet
10 the assessment is saying that the opposite is happening, it sets
11 a context, right, and like these two things don't agree, and so
12 why is that? Likewise, if they do agree, then that gives more
13 confidence.
14
15 **CHAIRMAN BARBIERI:** Thank you, Chris. John Mareska.
16
17 **MR. MARESKA:** Thank you, Chris, for that wonderful presentation.
18 Being kind of involved with the SEAMAP program, I wondered if you
19 could get a hold of samples that are collected traditionally with
20 the neuston and the bongo that SEAMAP does, at a site that also is
21 collecting the CUFES, to see what kind of differences you may be
22 seeing in species distribution abundances, and so --
23
24 **DR. STALLINGS:** That's actually something that we've talked about.
25 The only problem, to my knowledge, is, when CUFES -- When they run
26 the CUFES, do they still run the bongo and the neuston nets as
27 well? I would have to talk to Glen about that, to see if they did
28 that, and, if so, are those archive samples available. Thank you.
29
30 **CHAIRMAN BARBIERI:** Good point. Trevor.
31
32 **MR. MONCRIEF:** I have two quick questions. That was a cool
33 presentation, and I think this is a pretty neat thing to look at.
34 The first one is have you looked at all at the spawning periodicity
35 of these species and compared that to the amount of eggs you see,
36 and like let's say vermilion snapper, and they're daily spawners
37 sometimes, or even most of it is like one to three days in between
38 spawns, and so you would expect that you would probably see them
39 at a higher probability than something that has a little bit more
40 delayed.
41
42 **DR. STALLINGS:** So we have not done that. I agree that's a good
43 idea, since, when we sample at a particular station, it's -- You
44 know, that's it for that year, right, and so, if we're in the wrong
45 lunar phase, we might miss a species, and so, yes, going in and
46 looking at not only that, but looking at how -- Where we spawn,
47 and when we spawn, and how that lines up with what we know about,
48 you know, lunar phases, and one problem with that is how little we

1 often know about the reproductive dynamics of fishes.
2
3 I recently did a study on white grunt, which I just assumed that
4 we knew what lunar phase they spawned in, and I couldn't find it
5 in the literature, and so we actually went out and conducted
6 sampling in all four lunar phases, during their peak sampling, or
7 during their peak spawning, and we found very clear evidence that
8 they spawn during the full moon, which makes sense, because they
9 have a fourteen-day pelagic larval duration, and so their larvae
10 is settling during the new moon.
11
12 Anyway, I'm just telling you this because, for a species like white
13 grunt, to not know what lunar phase they're spawning in, at this
14 point in -- It surprised me, and so I agree with you, and I think
15 there are challenges though, and there are a lot of data gaps that
16 still remain.
17
18 **MR. MONCRIEF:** Yes, and then the other one is, on your list, and,
19 given, it's not a concern for this group, but you've got southern
20 flounder on there, and that's one that has been of concern in the
21 northern Gulf for a while, and, you know, one of them is population
22 declines and increases that might not be tied to the fishery at
23 all, and the other is, you know, where exactly they spawn, and I
24 think, if you've got some information on that, that would be very
25 handy, at least for the state folks.
26
27 **DR. STALLINGS:** That gets into some of the targeted studies aspects
28 of this. If, for example, that was an area that, you know, the
29 State of Florida wanted us to sample intensively, then we could do
30 that, and we could also do things like -- You know, for habitat
31 restoration projects, we could compare reproductive output in
32 restored habitats versus degraded habitats, and so there's just
33 tremendous flexibility in these other targeted studies that we can
34 do, and, you know, there are a number of different questions that
35 I could just ask for just general ecological interest, but I want
36 these data to be as useful as possible for applied science, and so
37 really great point.
38
39 **MR. MONCRIEF:** Thank you.
40
41 **DR. STALLINGS:** Thank you.
42
43 **CHAIRMAN BARBIERI:** Harry. Harry, let me skip over you for now,
44 until we get that issue handled. Josh.
45
46 **DR. KILBORN:** Thank you. This is a cool presentation, Chris, and
47 I really like this stuff. You mentioned that there's that archive
48 that FWC has, or FWRI, or maybe NOAA, and I can't remember, and

1 somebody has an archive, and how far back does it go, and can you
2 use it to fill in that gap between 2014 and 2019?
3
4 **DR. STALLINGS:** I know it goes back to 2013, and so the short
5 answer is I don't know. The longer answer is, in some years, they
6 didn't sample with the CUFES, and they sampled with other gear,
7 and we don't want to mix gear types, you know, for building this
8 time series, but that's something that I will reach out to see.
9 It's conducted by SEAMAP, and some of the samples are archived at
10 FWRI, and we just walk right next door, but some are up at Stennis.
11
12 **DR. KILBORN:** Thank you.
13
14 **CHAIRMAN BARBIERI:** Harry, let's see if we can hear you now.
15
16 **MR. MORALES:** Thank you. I had to dial back in, for some reason.
17 Man, I've got so many questions, and this is near-and-dear to my
18 heart. You talked about proportions of the eggs, and do you have
19 any method to come up with egg density? Do you know what volume
20 was sampled, et cetera, and can you estimate the proportion?
21
22 **DR. STALLINGS:** Thank you. Yes, and so, you know, they sample --
23 The way that they do the sampling is highly standardized, right,
24 and so the volume of water that they sample is standardized by
25 moving the vessel at a consistent speed, et cetera, et cetera, and
26 so, at the end of that, you've sampled a consistent volume of
27 water, and you have a vial of eggs, and sometimes that vial might
28 have, I don't know, for example, fifty eggs, and sometimes it might
29 have 500, and so we could get densities, either by volume, or we
30 could get it by number of eggs that we collected, and we would
31 just have to go in and count the eggs that we did not barcode that
32 remained in that vial. Does that answer your question?
33
34 **MR. MORALES:** Yes, and so something just as simple as doing a
35 culture count, or something like that, and you could do a quick
36 count of the number, and then you've got an estimate of eggs per
37 hundred cubic meters. That, to me, is a huge step forward,
38 because, while there are some egg surveys in other parts of the
39 world, because they have the fortune of having identifiable eggs,
40 just by eye, and we don't have that in the Gulf of Mexico very
41 much, and let's say there are very few of them, and that's a huge
42 benefit, and, if you could use that -- If you have that, and you
43 have then a method -- Basically, what they have been doing, in the
44 past, is, for red drum, the Gulf Coast Research Lab, and I guess
45 Joanna Lyczkowski-Shultz developed a method to back-calculate to
46 eggs from larvae.
47
48 This seems a much more straightforward method of coming up with

1 egg production, which is directly relatable to adult biomass, if
2 you have adequate sample size, and this is, I think, a tremendous
3 source of potential input to a lot of stock assessments for adult
4 biomass indices of abundance, and I'm very excited about it. Thank
5 you.
6
7 **DR. STALLINGS:** Thank you, Harry.
8
9 **CHAIRMAN BARBIERI:** Yes, and thank you, Harry. I have Dave
10 Chagaris.
11
12 **DR. CHAGARIS:** Thank you. Great talk, Chris, and thanks for coming
13 to share this with us. You know, I have -- I am wondering, you
14 know, thinking about groupers on the West Florida Shelf, and, you
15 know, how well you can maybe address some of the challenges that
16 we're facing with them now, and so one that I'm curious about is
17 the timing of the season when your sampling occurs, if you're able,
18 or willing, to pivot and sample more in the winter months, when
19 groupers are spawning, but, also, thinking about, you know, where
20 we're at with some of our grouper species, especially gag and red
21 grouper.
22
23 There's a lot of uncertainty, a lot of concern, about their stock
24 status, but, also, you know, there's a rebuilding plan coming for
25 gag, and that sort of presents like a natural experiment, where
26 you can now say, okay, where there is actions, we are going to
27 manipulate the system to allow gag spawning stock biomass to
28 increase over the next five or ten years, and can the SHELF
29 project, you know, detect that change, through its egg sampling?
30
31 That might be something, you know, to look at, moving forward,
32 because then you have this -- You know, we know that -- We've
33 interjected, and we've done this experiment to increase gag
34 biomass, and, now, does SHELF detect that? That would be really
35 valuable, I think, and that would, you know, basically solidify
36 the value of this survey for gag.
37
38 Then, you know, but that's if you can switch the sampling from the
39 summer to the winter, which creates another set of challenges, I'm
40 sure, and then the other value that I see too, looking at kind of
41 the species lists, and I know a lot of the emphasis is on managed
42 species, but you're probably getting a lot of eggs on the forage
43 base, and that's also something that we know very little about,
44 and, coming from the ecosystem perspective, it would be interesting
45 to hear a little bit more about maybe what you can do with those
46 species.
47
48 I mean, they're probably protracted spawning periods, you know,

1 but maybe digging into those data a little bit, to see what
2 information is there, as far as timing, the geographic space, the
3 spatial domain of where eggs are being located, and that could
4 also be informative, and then trying to like tie that back to
5 environmental conditions, for these lower-trophic-level species,
6 and I think that would also be really interesting.
7
8 Then the other thing too, and you may already be doing this,
9 because you mentioned the physical oceanographic modeling, but I
10 think this type of routine data collection could probably really
11 help inform some of the connectivity modeling that was done,
12 looking at spawning sites, and dispersal, and understanding more
13 about egg morphology, and it sounds like you probably have already
14 thought a lot about that, but those are just some initial thoughts,
15 but I bet we could probably sit around the room and come up with
16 a lot of other ideas, but I think it would be really helpful to
17 see how well this tracks, you know, future recovery of spawning
18 stock biomass for some of these species, if that's possible.
19
20 **DR. STALLINGS:** Thanks, Dave. Those are all great suggestions,
21 and I definitely think that we can track success of a rebuilding
22 plan, you know, especially if we're talking about gag having such
23 low spawning stock biomass now, and we're kind of at a good
24 starting point, almost sort of like a control, right, for this
25 experiment, sort of a before-and-after type approach.
26
27 You know, I think the two years of seasonal sampling that we're
28 going to do is going to be very informative, moving forward, and,
29 if we continue to be funded for SHELF 4 through 6, we can make the
30 decision to continue to take those eggs from the SEAMAP sampling
31 in the late summer, but then supplement it with winter sampling as
32 well, or spring sampling, and we might find that it's really
33 important to sample in the winter and in the spring, but very few
34 species spawn in the fall, for obvious reasons, and so it could be
35 just that we just drop that fall component and supplement the other
36 way.
37
38 Your second point, about forage fishes, yes, tons of forage fishes,
39 and some of them, you know, are broadly distributed across the
40 entire shelf. Some of them, you know, are more constricted to
41 certain areas, but your point about, you know, then taking those
42 data and connecting them to the environment is really well taken.
43
44 One of my students just published a paper that showed a linkage
45 between, you know, estuarine forage fishes and both the NAO and
46 NSO indices, and so I would assume that those effects would be
47 even stronger, you know, in the open ocean, compared to in the
48 estuaries. I am forgetting your last point, and I think it went

1 back to groupers.
2
3 **DR. CHAGARIS:** (Dr. Chagaris' comment is not audible on the
4 recording.)
5
6 **DR. STALLINGS:** The connectivity. Yes, and, I mean, you know,
7 again, for gag, we assume that most of the spawning that occurs -
8 - I mean, one of the assumptions, and I'm not talking for
9 everybody, but one of the assumptions is that most of the spawning
10 that does occur occurs in the Madison-Swanson area, right, but
11 there have been copperbellies caught much further south than that,
12 and so that's been something that I've been interested in for a
13 long time, is, like, okay, is it really constricted to such a small
14 area, or are they spawning in other areas, and so, yes, I agree
15 completely. Thank you.
16
17 **CHAIRMAN BARBIERI:** Thank you, Chris. Will Patterson.
18
19 **DR. PATTERSON:** Thanks, Luiz. Chris, thanks for the presentation.
20 I am curious, and, you know, a lot of the questions that are coming
21 up about relating this to abundance, and even just as an index of
22 abundance in a stock assessment, you know, they will rely on this
23 being a quantitative measure, versus a qualitative, or semi-
24 quantitative measure, and so one of the things that you mentioned,
25 early on, was the issues with false-positives, or false-negatives,
26 with the initial barcoding, and that that was being worked on.
27
28 Can you tell us how you estimate whether you have a false-negative,
29 or a false-positive, and then, also, if those issues have been
30 resolved, or are close to being resolved, and then, as a secondary
31 question related to that, you mentioned, you know, barcoding single
32 eggs is quite expensive, and that you're doing more of the
33 metabarcoding now, and there are tradeoffs, and it seems, to me,
34 that a lot of these quantitative measures that would be useful in
35 an assessment context would require the more quantitative data,
36 and so I'm curious, you know, beyond the detectability issue, which
37 any fishery-independent, you know, estimate has to deal with
38 detectability, and so your false-positives and false-negatives
39 come in there, but, beyond that, if -- To get fully-quantitative
40 estimates, you would need the single-egg barcoding, and do you
41 think that's cost prohibitive, or will that be a potential, moving
42 forward?
43
44 **DR. STALLINGS:** Hi, Will, and so thank you for joining. Are you
45 still in Alaska?
46
47 **DR. PATTERSON:** No, and I'm back in Gainesville.
48

1 **CHAIRMAN BARBIERI:** He was rescued. There was helicopter rescue
2 yesterday, and he made it back to Florida, safe and sound.
3
4 **DR. STALLINGS:** Will, I agree with you about having to be
5 quantitative, and not semi-quantitative, and I'm sorry if I didn't
6 make this clear, but we tested the metabarcoding approach for eggs
7 that we collected in 2019, and we weighed the pros and cons, and
8 we agree with you, and so we are only using individual egg
9 barcoding, moving forward, and so that kind of addresses that point
10 of your question.
11
12 For your other point, of how we detect false-positives and false-
13 negatives with the individual barcoding, I'm going to let my co-
14 PI, Mia Breitbart, answer.
15
16 **DR. MIA BREITBART:** Thanks, Chris. Hi, Will. Hi, everybody. The
17 false-positives and false-negatives are really a bigger issue in
18 the metabarcoding, and that's one of the reasons that we've decided
19 to not move forward with that.
20
21 Before going back to the individual ones though, I do want to
22 address the cost issue, because it expensive to barcode the
23 individual eggs, and we're working on a hybrid solution right now,
24 and so there are ways that you can have specific primers, so that
25 each egg gets labeled individually, and then you amplify them, and
26 then you pool them altogether, for sequencing, and that will
27 hopefully cut down the cost a lot, and so that's one of the things
28 that we're kind of just trialing right now, because I think we
29 agree, and it sounds like you guys agree, that this has to be
30 quantitative, in order for it to be valuable for the purposes we
31 want.
32
33 On the individual eggs, we haven't seen any problems with false-
34 positives. We're literally putting one egg into a tube and
35 smashing it up and then amplifying it. We do sometimes get
36 negatives, and that was kind of that complicated flowchart of
37 trying to figure out what's happening, and there's a few
38 possibilities there, and some are worse than others, in terms of
39 their implications, and so the first is that there might just not
40 be enough DNA per egg, right, and that's possible.
41
42 These eggs are going to have different copying numbers of cells,
43 right, depending on their age, and so we're going to be, first,
44 kind of quantifying all the ones that didn't amplify, to see if
45 DNA quantity or quality is an issue, and the other possibility,
46 which I think would be worse, and is important to know, is that
47 the primers that we're using, that are supposed to pick up all
48 fish eggs, might not be picking up all fish eggs, in which case we

1 would have some selective bias against certain species.
2
3 To get at that now, starting with the 2022 samples that we're
4 processing right now, we're going to be applying several different
5 primer sets to the ones that failed, and so, if it's a DNA quality
6 quantity issue, we should get negatives kind of across-the-board.
7 If we start getting products with the other ones, then we know
8 that it's a primer bias issue, and we can apply multiple primers,
9 and so that's one way around this, and that doubles the -- So, for
10 two primers, instead of one, it doubles the cost, and so that's
11 where it kind of starts to get tricky.
12
13 If we do find that we're missing some species specifically, we can
14 adapt our primers, to see if we can include them and improve them,
15 and so I think that will be helpful. The other -- There are
16 several markers out there that people use, but the databases are
17 by far the best for the markers that we're using, and so, if we
18 needed to completely switch markers, we would basically have to
19 develop Gulf databases specific to like all the fish here, and
20 make sure that we're capturing them all.
21
22 **CHAIRMAN BARBIERI:** Thanks, Mia.
23
24 **DR. PATTERSON:** Luiz, can I follow-up to that?
25
26 **CHAIRMAN BARBIERI:** Sure, Will.
27
28 **DR. PATTERSON:** Thanks, Mia, for all the information. I'm
29 wondering if you've tried to do some design primers, where, if
30 you're mostly interested in snappers and groupers, from a fisheries
31 context, or not mostly, but if that is one of your questions of
32 interest, to design primers that are optimized for those families,
33 and the second question I have is, if the DNA in the eggs isn't
34 amplifying, or even you're unable to extract it, given the low
35 amount of DNA present, I'm wondering if you're having any
36 contamination issues, or what is the prevalence of that, if you're
37 coming up with some oddball stuff that just shouldn't be in there.
38
39 **DR. BREITBART:** So far, we haven't seen any oddball results, and
40 we have occasionally recovered eggs from like squid, and other
41 things that are not fish, but make sense for the location that
42 they're recovered, and we haven't seen anything that indicates
43 contamination, and we run, you know, negative controls, and process
44 controls, with all of these.
45
46 The first question I think is a really good one, and this is also
47 an advantage to doing the individual egg barcoding, because we can
48 go back to those eggs over time, and so, for example, sometimes

we'll get sequences that match a tuna species complex, and I don't
know if "complex", if I'm using it the same way that you guys
would, but, in the case where we can't distinguish two closely-
related species, based on that species fragment alone, and so the
best we can do is say it's one of these two.

In those cases, we have gone back to those individual eggs, with
specific primers that can distinguish those two species, and nail
that down, and so any advice that you can give on species that you
specifically care about, and I've been writing down the flounder
and gag and things like that, and we can absolutely design specific
primers to go after them, and then we could also use those on all
the -- We have all the DNA that we've processed so far still in
the freezer, and so we can go back to those and look for specific
species of interest as well.

CHAIRMAN BARBIERI: Thank you, Mia. Tom Frazer.

DR. FRAZER: What an amazing group of folks up at the podium.

DR. STALLINGS: You're not biased.

DR. FRAZER: Not all. Actually, thanks, Chris and Mia, for coming,
and my question is really about the time series, you know, and so
it's a relatively young time series, right, and, when you look at
examples, like in the CalCOFI system or something like that, and
so I really have two questions.

One talks about how variable, right, are the data that you
generate, and it's limited thing from year to year, but how
variable are the data as well for individual species perhaps in
the CalCOFI system, and the second part of that is are there
examples of egg data, right, that are used as an index along the
California coast, and so can we learn from that, is what I'm
asking.

DR. STALLINGS: I think we can learn, because, obviously, CalCOFI
has been going on for decades now, and, in terms of whether --
They do look at like the clupeids and anchovy egg data for that,
I believe, and I think that is one particular good example for
doing that, and so, yes, I think looking into that, and maybe
asking -- You know, looking at their data, and trying to figure
out how they're using them, and how we might be able to do some
similar things, is a good idea.

The variability aspect is a little bit harder to respond to with
just three years of data, I think, and those three years of data
span a six-year time period, and so that's why I'm really excited,

1 moving forward, you know looking forward, at future SHELF
2 iterations, when we really do start to build, you know, decades-
3 long indices, and time series, or not indices, but time series.
4
5 **DR. FRAZER:** Again, the reason I was kind of asking, right, is I
6 just am trying to get realistic expectations of how long it might
7 actually take, right, and why you have to invest for the long-term
8 here, and you're not going to see these kind of temporal trends,
9 or establish indices, with six years of data, and it's going to
10 take a while.
11
12 **DR. BREITBART:** I think the more -- Like the longer the time series
13 we can gather, obviously, the better, and the eggs preserve really
14 well, so far at least, in our hands, and so, as long as -- I think
15 we do as much collection as possible, even if we can't afford to
16 process them all until later, just so that they exist.
17
18 On the spatial variability, I think we already have more samples
19 than we've processed, and so I think that's interesting, and one
20 of my students, actually in Josh Kilborn's class, has been doing
21 some statistics, and certainly the sites that are located more
22 closely together have more -- They're more related, in terms of
23 species composition, but Chris showed like kind of all of the CUFES
24 samples that we have, and then we don't process all of those, and
25 so, if we do start to see like, okay, here appears to be an
26 interesting hotspot for Species X, we can go back to all the
27 surrounding samples and look specifically at that.
28
29 **CHAIRMAN BARBIERI:** Thank you, Mia. John Walter.
30
31 **DR. WALTER:** Thanks, Chris and Mia. I've got a couple of comments,
32 and one in particular, and I haven't heard this come up yet, about
33 using these as marks for individuals, and if it's possible that,
34 as we embark on things like close-kin-mark-recapture, which shows
35 the potential for that for bluefin tuna, for using larvae, and
36 presumably eggs might provide something similar, but you've got to
37 deal with things like how related the eggs might be, and they might
38 be clustered from like a single spawning event, and, particularly
39 as we embark upon those things, with like the South Atlantic
40 Research Program, that's going to a half-sibling approach, and
41 what do you think the potential is for using the eggs for that
42 kind of an exploration?
43
44 **DR. STALLINGS:** That's getting a little bit out of my wheelhouse
45 again, and, you know, John and I have been in conversation about
46 this, with bluefin tuna, and one of my PhD students is looking
47 into the potential to do this, but he's also just starting to
48 understand the methods and understand, you know, how much material

1   is needed, while also addressing that potential bias that you just
2   raised.
3
4   You know, if you're going through an area, and you're picking up
5   eggs released from just one or two females, it might give you a
6   different answer than reality, right, and so we've got to figure
7   out how to handle that aspect, whether that means shorter sampling
8   at more locations, you know, and do you want --
9
10 **DR. BREITBART:** Were you asking about more like population genetics
11 approaches, and like could we apply microsatellites to these eggs,
12 in order to -- It wouldn't necessarily tell you -- It's not going
13 to tell you the one individual spawning or not, but, in terms of
14 trying to get down narrower.
15
16 **DR. WALTER:** Not really population genetics, in the sense of like
17 stock structure, though it could inform that, but, no, this would
18 be actually individual genetic signals, where you were actually
19 recapturing that individual's genetic signal.
20
21 The way the bluefin works is we use the larvae, and each larvae
22 has two parents, and then we recapture the parents in the fishery,
23 and so you've got the basis for a mark-recapture experiment, and
24 it's the same math as mark-recapture, and the issue, for the
25 larvae, was that you have a fairly high relatedness within a larval
26 tow, because it's from one spawning event, and only a couple of
27 days of mixing has gone on, and so it doesn't create a bias, and
28 the math is actually in one of the papers we published.
29
30 What it does is it reduces your effective sample size, and it
31 increases the variance, because you have to throw out a fish that
32 you've -- If you've already captured its parent, because you've
33 caught two siblings, then, rather than having, for two larvae,
34 four parents, for two larvae, you might have -- If they're full
35 siblings, you only have two parents, and that other larvae is
36 extraneous, and it's not giving you any more information.
37
38 However, we showed that it's not that bad, and, actually, you do
39 get -- As you get more larvae, you get more and more parents, which
40 tells you, in terms of designing your sampling, that you can target
41 aggregations, and you still aren't saturating the parental pool,
42 which bodes well for potentially eggs, if you can maintain the DNA
43 quality, because you've got to have really high quality for the
44 next-generation sequencing, and then you also want to make sure
45 that you're not just getting it all from one spawning event, but
46 I think, in terms of, as we embark upon using close-kin, probably
47 more frequently, I think we need to think about those kind of
48 singular opportunities to be able to get materials that otherwise

1 we wouldn't be able to get.
2
3 **CHAIRMAN BARBIERI:** It's definitely something worth exploring.
4
5 **DR. WALTER:** I have one follow-up, and so, given that -- I think
6 the platform is really great, and what I would say is -- Because
7 you asked can we add more of your stuff, and, since that costs
8 nothing right now to say that, I would say that eDNA might be the
9 thing that's the missing link, in the sense that, right now, what
10 you've got requires the fish to be spawning, and so, as I look at
11 the maps, I'm like, well, what if they're not spawning, and we
12 want to actually know if they're there but not spawning, or if
13 they should be spawning and they're not.
14
15 I'm wondering if you've thought about putting some sort of eDNA
16 platform, in addition, and it also allows you to get things that
17 don't have eggs, like elasmobranchs.
18
19 **DR. STALLINGS:** Exactly. Well, we haven't formally discussed that,
20 but, I mean, it is a good idea, because it does -- You know, if we
21 want to start to piece together, you know, species distribution
22 maps, and presence maps, those kinds of things, and you're right
23 that it could help us get species that don't release eggs, as well
24 as species that release eggs, but lay their eggs, right, like gray
25 triggerfish.
26
27 **DR. BREITBART:** I've done a lot of eDNA work, but not in combination
28 with the fish eggs, and I think you've clued-into like exactly an
29 exciting next place, and the place that we were hoping to do is on
30 paired artificial and natural reefs, because they have all the
31 data on the adult fish that are there, and so then, if we can add
32 eDNA sampling and egg sampling, then it will be really interesting
33 to see kind of does the eDNA correlate more with adult fish, either
34 abundance or biomass, or with the eggs, and, with eDNA, getting at
35 actual abundance, or biomass, I think is tricky, and I know that's
36 maybe not a popular opinion, and I don't think it's as
37 straightforward as people think it is, but I think that would be
38 a great scenario to let us try comparing it, and certainly, any
39 cruise we're on, we can add eDNA sampling fairly easily.
40
41 **CHAIRMAN BARBIERI:** Thank you for that, Mia. Mandy Karnauskas.
42
43 **DR. KARNAUSKAS:** Thank you, Chris, for that great presentation,
44 for bringing this to us, and it's really fun to see, and so,
45 assuming we can tie to the egg concentrations to the spawning stock
46 biomasses, and create some robust abundance indices, it seems like
47 this has the potential to be sort of an ecosystem survey, since
48 you're capturing so many species, and so I agree with Dave's point

1 on managed species, and particularly the forage, and that's a big
2 gap, and we hear a lot of concern from the fishing community about
3 lack of forage, lack of bait, and so that would be something that's
4 really interesting to look into.
5
6 It seems like, in terms of setting baselines for disturbance
7 events, and maybe detection of rare species, getting some early
8 warnings on like potential range shifts, or shifts in phenology,
9 and I think we're a long way from managing for biodiversity, but,
10 if we ever get to that point, this could be -- You know, if we
11 could create some sort of indicators of biodiversity, or if we saw
12 big shifts in that, it might signal that there is something going
13 on with the environment, and so I can see a lot of potential to
14 this, from an ecosystem management perspective, and so thanks.
15
16 **DR. STALLINGS:** Thank you for that, Mandy, and I agree, and, you
17 know, we have 163 taxa, and, obviously, that means the vast
18 majority of them are not managed species, and so, yes, I agree
19 with you, and I like the idea of sort of ecosystem-indicator-type
20 species. Thank you.
21
22 **CHAIRMAN BARBIERI:** Thank you for that. Josh.
23
24 **DR. KILBORN:** Thank you. One comment and then one other comment,
25 I guess, and the first one is in response to what Dr. Frazer was
26 saying, and the student of Mia's, who is taking my class, who
27 started kind of digging into these data a little bit, showed that
28 2014 was the more variable year of the three that you presented,
29 with respect to diversity of those eggs, and the other two years,
30 2013 and 2019, were not significantly different, and 2013 was
31 indicated by -- What did we have? The vermilion snapper, and then
32 2014 was the bigeye scad, and then 2019 was Syacium papillosum,
33 and so those are your indicator species that he found, but they
34 had very low indicator values, and so, you know, there's more work
35 to be done with all that stuff, but it's really interesting beta
36 diversity results coming out of these data, and so I think there's
37 some really interesting stuff that we can do with that.
38
39 That kind of leads into the second comment, which is I made this
40 comment a couple of days ago, because I really do think that, if
41 we can get this built into a nice, quantitative time series, this
42 is the kind of data that I think would be really useful for the
43 interim assessments, and so it might be good to try to figure out,
44 you know, which species are most subjected to these interim
45 assessments, and try to focus in on some of those, to try to give
46 some additional data for those complex assessments. Thank you.
47
48 **DR. STALLINGS:** Thanks, Josh, and so, first of all, that's the

1 first I've heard of that result, and so thanks for sharing that
2 with me.
3
4 **DR. KILBORN:** He just presented those like last week.
5
6 **DR. STALLINGS:** Cool, and, yes, and, you know, I hadn't thought of
7 that, of the interim assessments, you know, because we are going
8 to -- We are continuously going to be doing this, I hope, and so
9 good point.
10
11 **CHAIRMAN BARBIERI:** Yes. Excellent point. Thank you, Chris and
12 Mia, for coming over and giving this presentation and getting us,
13 you know, exposed to this very neat project that can bring up some
14 very important information into our processes, and so we really,
15 really appreciate it, and hopefully we're going to continue you
16 seeing coming back, at different times, and addressing the
17 committee, and providing an update, right, as this thing moves
18 forward, because it's really interesting, and there's lots of
19 potential, and we really appreciate you coming over to give us
20 this overview.
21
22 **DR. STALLINGS:** Thanks for having us, and thanks for your attention
23 and the nice discussion.
24
25 **CHAIRMAN BARBIERI:** This completes Agenda Item XIV, and that leads
26 us into moving to Agenda Item XV, which is Scope of Work for the
27 Upcoming Gray Triggerfish Stock Assessment, and we're going to
28 have Ryan Rindone and Dr. Katie Siegfried walk us through that
29 scope of work and identify, you know, the main direction that we
30 are going with this scope of work for gray triggerfish.
31
32   **SCOPE OF WORK FOR UPCOMING GRAY TRIGGERFISH STOCK ASSESSMENT**
33
34 **MR. RINDONE:** All right, and so I'm going to review the proposed
35 scope of work for gray triggerfish with you guys, and we originally
36 had this listed as a research track, and so this is a change from
37 that. Gray triggerfish was last assessed in full in SEDAR 43,
38 using data through 2013, and that assessment found it to be
39 overfished, and another stock assessment was attempted in 2019,
40 but, late in that assessment process, an internal review identified
41 some inaccuracies in essential data inputs that couldn't be
42 reconciled, and so work was halted on SEDAR 62, and the council
43 concurred with that conclusion.
44
45 The SSC should evaluate this proposed scope of work, which
46 represents the operational approach, as opposed to a research
47 track, as originally planned, and this change is to accommodate
48 other Science Center assessment scheduling needs, while also

1 providing timely management advice to the council for gray
2 triggerfish, and, again, the data that we're working off now, for
3 the last assessment, is from 2013, and so there's a layer of dust
4 on it.
5
6 The proposed assessment will explore essential model and data
7 modifications, including consideration of recreational landings
8 and discards, ageing, recruitment, and discard mortality, and you
9 guys should recommend any modifications to the scope of work, as
10 appropriate, with special consideration paid to things like
11 topical working groups to address specific subjects, and so we can
12 go ahead and bring up that scope of work.
13
14 Just for everyone's edification, this has been ping-ponged back
15 and forth between the chair and vice chair of the SSC and council
16 staff and the Science Center a few times, and so it has undergone
17 some tuning, at this point, but certainly we need you guys' input
18 to take it the next step.
19
20 **CHAIRMAN BARBIERI:** Thank you, Ryan, for that introduction, and I
21 will open up the floor for SSC comments on this operational
22 assessment scope of work for Gulf of Mexico gray triggerfish.
23
24 **MR. RINDONE:** I have a Word version that I can make any edits to.
25
26 **CHAIRMAN BARBIERI:** That might be helpful. Thank you, Ryan.
27
28 **MR. RINDONE:** I think Jess actually has it up, and it looks like
29 it's a Word version that she has up. As is typical for these
30 scopes of work, you will see some language in here, like under
31 Scope of Work Number 1, to evaluate and revise the SEDAR 43 base
32 model, using data through 2024, where possible, and this model was
33 a state-space-at-age surplus production model, which is not a
34 modeling framework that we use anymore, but, typically, what we do
35 in these circumstances, is we start with the last thing that
36 worked, and then we work our way forward from there, and so that's
37 why that's in there.
38
39 Then Point Number 2 there would be to explore the appropriateness
40 of an age-based, length-based, or hybrid-style model, and the
41 hybrid approach is something that's currently being considered for
42 snapper, and it's being observed to have some success there, and
43 so providing a little bit of flexibility in basically where to
44 take the data next for this stock assessment.
45
46 We would update the recreational harvest information, using MRIP-
47 FES, and also take a look at the state-specific surveys. To my
48 knowledge, all of the state-specific surveys track gray

1 triggerfish, and -- They don't? Okay.

2

3 **MR. MARESKA:** No, and Mississippi is only red snapper, for Tails
4 'n Scales, but we use that to get, you know, effort of trips,
5 offshore trips, and we use it for that.

6

7 **MR. RINDONE:** So that's contrary to what we heard from Mississippi.

8

9 **CHAIRMAN BARBIERI:** Unfortunately, Trevor --

10

11 **MR. MARESKA:** Well, we had a conversation with Trevor, last night
12 at supper, and he was pretty adamant that Tails 'n Scales was red
13 snapper only.

14

15 **MR. RINDONE:** Okay. Well, we'll clean that out of there then.

16

17 **CHAIRMAN BARBIERI:** Any other comments, or questions, for Ryan,
18 regarding the scope of work? I personally have a few, right, just
19 in terms of clarification, and so -- Now we are having some names
20 show up in the queue, but let me just make my points first. One
21 is what we are trying to accomplish here, and you said that this
22 scope of work has already been reviewed, and it's basically
23 approved by the Science Center.

24

25 **MR. RINDONE:** Well, I'm not saying that it's approved by the
26 Science Center in total, and I'm saying that Katie and I have
27 passed this thing back and forth, and, typically, there's always
28 one or two more things that get finessed, at some point or another,
29 and I am just trying to -- The only point that I was trying to
30 illustrate is that, you know, I didn't just draft this up and throw
31 it out there in a vacuum, and that we did receive some input on
32 this prior to putting this together, and that was all.

33

34 **CHAIRMAN BARBIERI:** Right. Thank you. I will go through the queue
35 now. Will Patterson.

36

37 **DR. PATTERSON:** Thank you, Luiz. Under Item 4 there, I would just
38 -- Instead of saying "applying any ageing corrections", I would
39 just say "review of recent age validation and ageing structure
40 analysis studies and consider their appropriateness for inclusion
41 in the assessment", and then just delete the rest of that.

42

43 **MR. RINDONE:** Got it.

44

45 **CHAIRMAN BARBIERI:** Is that it from you, Will?

46

47 **DR. PATTERSON:** That's the one that caught my eye, yes.

48

1   **CHAIRMAN BARBIERI:** Thank you. Harry.

2

3   **MR. MORALES:** To the point that John Mareska brought up, you may
4   be able to use the effort information off of Tails 'n Scales, and
5   so leave Tails 'n Scales in and say, "inform catch and/or effort
6   for the recreational sector". You might follow-up that with
7   Mississippi, and they may say that's inappropriate, but at least,
8   at this point, I would want to -- If we've got a potential, I don't
9   want that to be excluded from the terms of reference.

10

11   **MR. RINDONE:** I've got it.

12

13   **CHAIRMAN BARBIERI:** Thank you, Harry. Paul.

14

15   **DR. MICKLE:** Thank you, Mr. Chair, and just a question on Section
16   4, and I guess the last bullet, which I'm very in favor of, and
17   I've always really been interested and wanted to see some of the
18   sargassum work that's being going on with some great folks at USF,
19   NMFS, and USM to look at these different potential correlations,
20   right, with sargassum coverage and recruitment of this species, as
21   well as potentially one other, or two others, but where is the
22   line, and I guess this is a question, I guess to whoever works
23   with SEDAR the most, but where is the line for an operational
24   assessment and a potential new index of this type, because the
25   methodologies, from my understanding, of the sargassum coverage,
26   are quite novel, from the GIS perspective of not being done really
27   before and getting the resolution high enough to actually quantify
28   at the resolution level needed to do this, and so is this
29   appropriate for an operational assessment? I'm in favor of it,
30   but I'm still foggy about where the line is with such novel
31   approaches. Thank you.

32

33   **CHAIRMAN BARBIERI:** I just see, Paul, Katie's name showing up in
34   the queue, and she might be directly addressing that question.
35   Katie, please.

36

37   **DR. SIEGFRIED:** Thanks, Mr. Chair. To address that question, when
38   we were looking at our calendar and realized some of the difficulty
39   scheduling everything in, one of the suggestions we made was to
40   make this an operational assessment, so that management advice was
41   provided at the end. That way, approximately, the timing of the
42   management advice would be the same, if we had to push back the
43   start date, and so the short answer, to your question, Paul, is
44   that, at the end of this, there will be management advice, but, at
45   the end of the research track, there won't.

46

47   At the Center, we're trying to show that a lot of the data issues,
48   and the modeling issues, can be handled through the topical working

group framework, rather than sending everything to a research track, and so this is more similar to a benchmark, of late, as opposed to an update, but that's the sort of spectrum of operational assessments that we hope to employ at the Center, and this one just happens to be much more topical-working-group-heavy.

CHAIRMAN BARBIERI: Thank you for that, Katie, and, to that point specifically, on the topical working groups, right, I was looking at the number of topical working groups, and this in-person multiday workshop, which, to me, resembles very much a data workshop, right, including all of those working groups there, and I want to make sure that all of this is kosher and within, right, the bounds of what an operational assessment lives in, and that the staff is comfortable going forward with this, and so I assume, Katie, since you have already seen this draft, right, that, basically, it's a tacit approval that having that number of topical working groups is acceptable.

DR. SIEGFRIED: To that point, we are recommending an in-person workshop to go through the data issues, so that the number of topical working groups is limited to analytical work after the fact, and so, at the bottom of this scope of work, there is a recommendation for an in-person workshop that will cover all of those topics, but I guess that's something we need to discuss with the SSC more explicitly, is what would turn into a topical working group, as opposed to just being covered during that in-person workshop.

CHAIRMAN BARBIERI: Right. Thank you. Yes, and I agree completely. I also see Julie Neer's name there, and, obviously, our SEDAR coordinator, and so Julie.

DR. JULIE NEER: Thanks. Good morning, all, or almost afternoon, and so Katie is correct that this was initially a research track, but the overload in the schedule, of what the Science Center can accomplish and get things done in a timely fashion to meet the management needs, is getting a little tough, with all the requests that are coming in, and so this is probably really pushing what we could call an operational assessment should consider.

However, we're trying to find ways to move forward, as Katie said, and the Steering Committee is actually meeting on May 17, to discuss -- This issue, in particular, is one of the things on their agenda, discussing whether we should perhaps put a benchmark-type category in there that will allow for things such as in-person meetings and panels again, those sort of things that were part of the benchmark previously, and produce management advice in a timely fashion.

1
2 As you all know, research tracks do not produce management advice,
3 and there has to be an operational following that, and so the
4 committee will be discussing this, and we need something, it seems,
5 between the -- The committee has discussed, and they did this in
6 February, that there might be a need for something between the
7 operationals, which are pretty much tightly constrained, or more
8 constrained, to what was done during the last time of the
9 previously-approved benchmark, and restraining in terms of
10 participation and in-person workshops and those sort of things
11 that could change, especially model structure, which this one is
12 probably going to be changing model structure, and the research
13 tracks that are incredibly thorough, but not at all efficient, and
14 are really bogging-down the system a bit.
15
16 I would suggest that the SSC focus on the requests that you're
17 asking, the things you would like the panel, or topical working
18 group, or whatever it may end up being called, but the things that
19 you would like to have that group review, with regard to life
20 history, bycatch, those sort of things, and make comments on
21 whether you believe -- You know, does the SSC need to be involved
22 in the development of the assessment portion or not, because,
23 currently, the way this is set up, it's only looking at a data --
24 At a topical working group for data, and nothing for the assessment
25 part.
26
27 As Katie said, that's something that the SSC should comment on and
28 not focus so much on whether this is sort of going beyond the
29 bounds of an operational assessment or not, because the Steering
30 Committee is going to weigh-in on that, in just a few weeks, and
31 anyone who wishes to listen to that discussion, it's May 17, and
32 it will be broadcast, if you're got extra time in your schedule
33 and you want to listen, and please join in.
34
35 I would focus on what you believe the data should be -- What data
36 you want reviewed and what you think, in terms of where the SSC
37 should be involved in the process, and we'll figure out the
38 logistics of it later. Thanks.
39
40 **CHAIRMAN BARBIERI:** Thank you for that, Julie. That's very
41 helpful. I have Will and then Josh.
42
43 **DR. PATTERSON:** Thanks, Mr. Chair. As far as Julie's recent
44 comments, I'm all in favor of SEDAR granting itself more
45 flexibility here, and I don't think we have to get too caught up
46 in what we call this, but these things definitely need to be
47 explored, even if there's not time for gray triggerfish to be
48 considered a full research track assessment.

1
2   My second comment is, under topical working groups, discard
3   mortality is listed here, but it's not listed under Number 4 above,
4   and so I think another bullet under 4 would be to consider recent
5   gray triggerfish discard mortality studies and analytical results
6   and incorporate new release mortality estimates, as appropriate,
7   and that should be there.
8
9   Then the last thing is, you know, my recollection, back to SEDAR
10 43, and then how the last gray triggerfish assessment process kind
11 of got off-track a bit, is there were issues with how recruitment
12 was being estimated in the model, and all the biomass, or most of
13 the biomass, is estimated to occur in the eastern Gulf, but most
14 of the recruitment was occurring -- The model was putting it in
15 the western Gulf, and so I'm not sure how to indicate that here,
16 in the terms of reference, but that model structure, and issue,
17 you know, definitely should be explored, and I don't know if --
18 Maybe Katie can answer this, but whether, you know, assessment
19 scientists working on gray triggerfish have explored that already,
20 or what sort of the plans are for that, but, you know, there's
21 this sort of fundamental disconnect, where it seems like the
22 population dynamics weren't being fully captured, and how could
23 you have all of the biomass in one side of the Gulf, but the
24 recruitment is being estimated in the other side of the Gulf, and,
25 you know, just some issues there that should be explored.
26
27 **CHAIRMAN BARBIERI:** Thank you, Will, and, you know, this is really
28 one of my concerns, right, here, is to make sure that we are asking
29 for everything that we need to ask to get an assessment that we
30 feel is sufficient, right, for us to provide management advice,
31 and I wasn't involved in the last gray triggerfish assessment,
32 whatever SSC involvement we had in the last assessment, and I
33 wasn't in any of those working groups or ADTs or -- But, you know,
34 I imagine that some of you, right, and I think, Will, you were
35 part of that, and so I just want to make sure that, here --
36
37 When something starts, and cannot get finished, right, because
38 there were issues that, at the time, the analytical team felt could
39 not be properly addressed, and there were repairs that needed to
40 be made that were too much, right, for that effort, and to make
41 sure that all of those things are included here and that we are
42 very careful in developing terms of reference, right, that address
43 all of those issues, because, eventually, and especially now, if
44 this is an operational assessment, and it's not going to be
45 reviewed by CIE, right, and we are the main review body for this
46 assessment.
47
48 We've got to make sure that we have enough input into the scope of

1 work, and in defining the terms of reference, to make sure that,
2 later, we don't ask for something, or we complain about something,
3 that we didn't think about including in the scope of work and the
4 terms of reference. Katie, before I get to you, Ryan has a comment
5 to that point.
6
7 **MR. RINDONE:** Yes, and just about how prescriptive you guys are,
8 and, I mean, definitely include anything that you absolutely want
9 to see considered, and, as it relates to the CIE, if there's any
10 desire to have like a desk review, or something like that, prior
11 to you guys getting the review of this, that would be something
12 that would need to be coordinated with the Center and SEDAR, in
13 order to get something like that scheduled, if that's something
14 that you think would be helpful, especially since the probability
15 of pivoting away from SSASPM to SS is, I would say, 100 percent.
16
17 **CHAIRMAN BARBIERI:** Right. Katie.
18
19 **DR. SIEGFRIED:** Thanks, Mr. Chair, and so I may not cover
20 everything that was just brought up, but a few comments, and so
21 the topical working groups that are at the bottom of the page are
22 not meant to be just data workshop, and, when Ryan and I were going
23 back and -- Or data related, and, when Ryan and I were going back
24 and forth about this, and I discussed it with Shannon, and we saw
25 certainly that the life history focus there, which includes
26 sargassum, would carry through, because we see some need to have,
27 you know, SSC and other input during the modeling phase and not
28 just during the data phase.
29
30 I also, when I looked at the website that the council put together
31 about what the state surveys cover, it said that all states listed
32 gray triggerfish as a voluntary reporting for landings, but not
33 for discards, and so there may be issues with, you know, whether
34 or not the state survey data are used in general, and so that may
35 be something that's possible for a topical working group, but, in
36 general, we saw the in-person multiday workshop to cover these
37 bullet points in particular, and it wouldn't be a full data
38 workshop, where everything was reconsidered, like for a benchmark,
39 but where we had these sorts of groups to meet to discuss these
40 topics.
41
42 I would expect SSC input throughout the process, as the topical
43 working group members, and so that's when there would be a lot of
44 input, and we're not opposed to a desk CIE, if that becomes, you
45 know, necessary.
46
47 The other thing I wanted to mention was to Will's comment that,
48 you know, there's a recruitment issue, and that there was an east-

1 west model developed, and, at least last time, that didn't go
2 through, but we anticipate a pretty big reevaluation of the shrimp
3 bycatch data, and a lot of model dynamics were driven by the
4 bycatch, which is why I wanted it discussed in detail during the
5 in-person workshop, and so I see that that's covered, recruitment,
6 explicitly in the life history bullet at the bottom of your page,
7 and so I would suggest that that be carried through as a topical
8 working group throughout the process, which would demand, you know,
9 an SSC member's time, more so than other operational assessments.
10
11 What was the other point that I wanted to make? Let me look at my
12 copy here. I do agree with listing the discard mortality research
13 under Point 4, and that's a good addition, and I do want to point
14 out that we -- For Number 1, we did want it to say "evaluate and
15 revise that model", because it did not go through the full review
16 for -- Was it 61 or 62 that was halted, and we do want to examine
17 the east-west split, once we look at all the data at that in-
18 person multiday workshop. Is there anything that I missed, Luiz?
19
20 **CHAIRMAN BARBIERI:** No, and I think this is it, Katie, and thank
21 you for that, because, I mean, I agree with everything you're
22 saying, and I do feel that it's reassuring, right, that all of you
23 have thought so much about all of this and getting the SSC
24 integrated into the process, and so I really appreciate those
25 comments. Ryan.
26
27 **MR. RINDONE:** Thanks, and, as far as the topical working groups
28 are considered, you know, when it comes time for us to conscript
29 some of you into service for these, you know, the expectation
30 should be that, you know, there will probably be some webinars
31 ahead of that in-person workshop, and probably some webinars after,
32 and then leading into the assessment phase, and so your involvement
33 will be kind of -- It will be virtual and in-person, and so we'll,
34 obviously, communicate all of that with you guys, and we'll work
35 with the Center to try to figure out, you know, what the best
36 approach is for -- You know, since there are so many of them, and
37 if it's better just to have like one group of individuals that
38 advise all of them, or if we should segregate things out a little
39 bit, or what would be the best approach.
40
41 **CHAIRMAN BARBIERI:** That makes sense. Thank you, Ryan. Steve
42 Saul.
43
44 **DR. SAUL:** Thank you, Mr. Chair, and thank you, Katie and Ryan,
45 for clarifying these points, and Will as well, and I'm just
46 wondering if we need to be more just explicit in the TORs here
47 about the need to explore the sort of spatial idea and the issue
48 with recruitment imbalance, or is that sort of implicitly going to

349

1 happen, I guess, or do we need to add that language, to ensure
2 that that is looked at?
3
4 **MR. RINDONE:** Well, I think it's important to be precise in the
5 language with that, because we're not -- We're not suggesting that
6 there needs to be a stock ID workshop or anything like that, which
7 is usually what leads to these discussions about different spatial
8 delineations and spatial frameworks for the model.
9
10 I mean, you guys could add something under -- Like under Point 4
11 there, to say, I don't know, to evaluate spatial variability in
12 recruitment patterns, or something like that, and, you know, if
13 that leads to having, you know, an east-west setup, or something
14 like that, then that will be something that can evolve with the
15 process. Katie, by all means, jump in here.
16
17 **DR. SIEGFRIED:** I agree that it's -- It's okay to have it listed
18 in here, and I don't want it to be ignored, just because we chatted
19 about it on the call, right, and so it could be, you know,
20 reevaluate spatial assumptions in the previous model, especially
21 with respect to recruitment, or something like that. That way, we
22 can cover both of those.
23
24 **MR. RINDONE:** Do you want that in Number 2 then?
25
26 **DR. SIEGFRIED:** Let me pull up my screen. Well, 2 -- I know why
27 you initially put 2 in, because we're exploring that with red
28 snapper, and 2 is completely new, and so I would leave it in 4.
29
30 **MR. RINDONE:** Leave it in 4? Okay.
31
32 **DR. SIEGFRIED:** Yes, and it seemed like that was your thinking
33 too, is it's completely new, and let's examine that, because it
34 seemed to be good for red snapper model fitting, but, in 4, this
35 is sort of take a look at what was done before, and make changes,
36 as appropriate, and so I think that what I just said would go
37 better in 4.
38
39 **MR. RINDONE:** I put "reevaluate spatial assumptions in
40 recruitment", and I put that at the top of the list, since that
41 was -- Not that the order is necessarily important here, but --
42
43 **CHAIRMAN BARBIERI:** Steve, to that point?
44
45 **DR. SAUL:** Yes, and thank you, both. That's really helpful.
46 Anecdotally, when I put the assessment outputs in, and run them
47 through simulation models, you do get weird behavior, because of
48 that kind of split, and so that's why I'm kind of -- That's why

1   I'm glad that it's being reexamined.
2
3   The other sort of question that I had, but I think it's in there
4   okay, and Will can maybe confirm this, but it's the fact that these
5   things are hard to age, right, and these animals are really hard
6   to age, especially -- In general, there's a lot of variability,
7   but, also, it's hard to get the small ones, and I don't know if
8   that's -- That's been a problem in the past, and I don't know if
9   there are recent samples that have addressed that issue, and it
10 sounds like it's being addressed in Point 2, under Number 4, where
11 it says to apply ageing corrections to historical data, but I don't
12 know -- I was curious if someone could elaborate a little bit more
13 on that. Thank you.
14
15 **CHAIRMAN BARBIERI:** Thank you for that, Steve. Josh.
16
17 **DR. KILBORN:** I think Will wanted to elaborate on that a little
18 more.
19
20 **CHAIRMAN BARBIERI:** Will, in response to that specific question
21 from Steve Saul?
22
23 **DR. PATTERSON:** Thanks, Mr. Chair, and thanks, Josh. I can give
24 a quick synopsis of where we are on the ageing, if that would help.
25
26 **DR. SAUL:** I didn't want to take us on a tangent, and I'm just
27 more wanting to -- If this thing is going to go fully operational,
28 it's important, I think, that that's addressed, I guess.
29
30 **CHAIRMAN BARBIERI:** Well, I mean, right now, ageing -- An
31 evaluation of ageing is explicit, right, in the scope of work, and
32 I think that, you know, between Will, and other folks, who have
33 been really more directly involved in that, they can continue
34 participating in this process, and I think that those ageing issues
35 will be addressed, but then this is a scope of work, Steve, and so
36 we're going to have to make sure that, if there are specific things
37 that we feel, in the terms of reference, right, that we would like
38 to have evaluated explicitly, that we address them there. Okay,
39 and so I have Josh and then John Mareska.
40
41 **DR. KILBORN:** Thank you. I just want to -- Two things. The first
42 is, on Bullet Point 4 here on the screen, at the bottom, it says
43 "reevaluate spatial assumptions", and what Ryan said included
44 specifically with respect to recruitment, but I kind of like it
45 better the way it is on the screen, without the specificity for
46 recruitment, because I think we should reevaluate all of the
47 spatial assumptions, and I think that's reasonable, but maybe not.
48

1 **CHAIRMAN BARBIERI:** Ryan.
2
3 **MR. RINDONE:** I just think that we need to be careful about how
4 much we're trying to take on. The more things that are added, the
5 more things that have to be done, the more time that's required,
6 and so, by being specific about recruitment, it focuses us on that.
7
8 As far as, you know, the data that will be coming out of the other
9 indices and whatnot, you know, those could either support
10 hypotheses surrounding any variations in spatial relationships
11 with recruitment, or not, and so I just -- I am trying to keep us
12 from going down a stock ID path, because that's not something
13 that's been identified as being necessary here, and that's where
14 I stand.
15
16 **DR. KILBORN:** That's fine, and I just wanted to just put that out
17 there, just in case, but my real reason that I really raised my
18 hand was because the change we made on Bullet Point 3, to include
19 the effort in the state data, I want to make sure that we include
20 that at the bottom, in the topical working groups, on Bullet Point
21 1, to change that to "recreational landings, effort, and discards".
22
23 **MR. RINDONE:** So landings is catch and effort, but I can break it
24 out explicitly and say, "recreational catch, effort, and
25 discards".
26
27 **DR. KILBORN:** I think we should be explicit about it.
28
29 **MR. RINDONE:** I made that edit.
30
31 **CHAIRMAN BARBIERI:** Will.
32
33 **DR. PATTERSON:** Thank you, Mr. Chair. Can we go back up to 4,
34 please? The specific issue that I raised about the estimated
35 spatial distribution of recruitment, versus adult biomass, it's
36 not really a data issue, and it's a model configuration and output
37 issue, and the way I read "reevaluate spatial assumptions" has to
38 do with population structure, because it's not really an assumption
39 of the model, but it's actually -- The concern I raised was to
40 evaluate the estimated spatial distribution of recruitment versus
41 adult biomass, and I think those are different things.
42
43 **CHAIRMAN BARBIERI:** How about we rephrase it that way that he just
44 said?
45
46 **MR. RINDONE:** That's fine. Reevaluate estimated spatial
47 distribution in recruitment. Will?
48

1   **DR. PATTERSON:** Yes, that's fine.
2
3   **CHAIRMAN BARBIERI:** Thank you for that, Will. Any other comments
4   regarding this scope of work? Thank you, everyone, and thank you,
5   Ryan and Katie, for teeing this up for conversation and then, you
6   know, addressing some of the questions that we've had regarding
7   the scope of work. Now refresh my mind here, and, as this scope
8   of work gets approved here, I think it goes back to the Center,
9   and when do we expect to see the terms of reference?
10
11 **MR. RINDONE:** Julie?
12
13 **DR. NEER:** One second. I apologize. They're also talking about
14 SEDAR 91 at this very moment at the Caribbean SSC, and I have both
15 going on, and sorry, but what was the question? Was it when are
16 we going to do terms of reference for this?
17
18 **MR. RINDONE:** Yes.
19
20 **DR. NEER:** So this is now slated for 2025, and I believe this has
21 been pushed back, and so we will -- Once we figure out the details
22 of the process from SEDAR's end, working with the Center and the
23 council, but the terms of reference will probably come to you guys
24 in early 2024, since this is not going to happen until 2025. We
25 needed to get the scope of what you guys were interested in done
26 now, so we can finalize the 2025 schedule, and so, yes, the terms
27 of reference will come to you probably in 2024.
28
29 **CHAIRMAN BARBIERI:** All right. Sounds good, Julie. Thank you so
30 much. If there are no other questions or comments regarding the
31 scope of work for gray triggerfish, I think we can conclude this
32 item and move on to Public Comment. I don't see any members of
33 the public here. Harry Blanchet, and is this for gray trigger?
34
35 **MR. BLANCHET:** No, and this is for public comment.
36
37 **CHAIRMAN BARBIERI:** So this is Mr. Harry Blanchet, citizen of the
38 Gulf of Mexico.
39
40   **PUBLIC COMMENT**
41
42 **MR. BLANCHET:** Baton Rouge, Louisiana. I was surprised to hear,
43 on day-one, that Benny had resigned from the committee, and I just
44 wanted to comment that Benny has been a long-time contributor in
45 scientific research in the Gulf of Mexico. The first time I ran
46 into him was when we were still working with a reef fish stock
47 assessment panel, and he came to us with a proposal, and we were,
48 I believe, looking at one of the early red snapper assessments,

1 and he came to us with a proposal that we take a look at not using
2 an arithmetic average of shrimp trawl bycatch for red snapper, but
3 something that closely resembles a delta lognormal approach.
4
5 That was robustly shot down in that reef fish assessment panel,
6 but, a few years later, that similar approach was being taken up
7 much more widely, and so I just wanted to make the point that,
8 even when Benny didn't make an impact, he had some good ideas
9 coming forward, and it was always interesting to hear what he had
10 to say, and I appreciate his service.
11
12 **CHAIRMAN BARBIERI:** I couldn't agree more, Harry, and, just looking
13 at the meeting, looking around the table, I can see a lot of people
14 nodding and agreeing with your statements, and we are sorry to
15 see, you know, Benny having to step down from the committee, and
16 we're going to miss him, because he, like you said, has been
17 involved for a long time, and he has been a major contributor to
18 Gulf of Mexico fisheries research, and he's a valuable member of
19 this committee, but he needs to look after himself first, and so
20 we understand his reasoning, and we wish him the best.
21
22 You know, we have cards that are now circulating for signatures,
23 and they're going to be sent to Benny, and we greatly appreciate
24 his service, and it was great for you to provide that kind of
25 little bit of history of how that issue developed, and how he
26 contributed to it, because it just adds to our positive thoughts
27 about Benny. Thank you, Harry.
28
29 Any other public comment that we need to bring before the
30 committee? Jess, nobody online? Okay. That then completes public
31 comment, and it moves us to our last item on the agenda, which is
32 Other Business. Any other business that anybody would like to
33 bring before the committee?
34
35 Well, seeing none, I think we can conclude this meeting, and let
36 me again thank all of you for a great three days, a great meeting,
37 and I think that we accomplished a lot of stuff, and I really
38 appreciate seeing this much participation and involvement by the
39 committee, and, of course, we always thank the council staff, for
40 always being attentive to our needs and providing us with the
41 background materials and all the stuff that we need to look
42 through.
43
44 Dr. Frazer, our council liaison, for making himself available to
45 address questions, and we can really put him on the spot here, and
46 he's always agreeable to provide that input, which is helpful, and
47 this is why having this council liaison is such a plus, and, of
48 course, the MSE workshop panel presenters, and here in the room

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 1  now is John Walter and Bill Harford, and Steve Saul for agreeing
 2  to basically coordinate those sets of presentations and then help
 3  moderate the discussion and develop the questions that we were
 4  addressing, and I think we had a great meeting, and I thank all of
 5  you, and so I'm looking forward to seeing everybody at the next
 6  SSC meeting, and the meeting is adjourned.
 7
 8  (Whereupon, the meeting adjourned on May 4, 2023.)
 9
10                              - - -
11
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