SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

Town and Country Inn
Charleston, South Carolina

April 9-11, 2019

Summary Minutes

Scientific and Statistical Committee Members

Dr. George Sedberry, Chair	Dr. Luiz Barbieri
Dr. Carolyn Belcher	Dr. Jeffrey Buckel
Dr. Scott Crosson	Dr. Churchill Grimes
Dr. Eric Johnson	Anne Lange
Dr. Yan Li	Dr. Genny Nesslage
Dr. Marcel Reichert	Dr. Frederick Scharf
Dr. Amy Schueller	Dr. Fred Serchuk
Dr. Alexei Sharov	Dr. Tracy Yandle

Council Members

Jessica McCawley, Chair	Mel Bell, Vice Chair
Stephen Poland	

Council Staff

Gregg Waugh	John Carmichael
Dr. Brian Cheuvront	Myra Brouwer
Dr. Chip Collier	Cierra Graham
Dr. Mike Errigo	John Hadley
Kelly Klasnick	Roger Pugliese
Christina Wiegand	Dr. Julie Neer

Observers and Participants

Shep Grimes	Chris Liese
Lauren Gentry	Luke McEachron
Tom Okey	Erik Williams
Tracey Smart	Mike Larkin

Other observers and participants attached.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council convened at the Town and Country Inn, Charleston, South Carolina, on Tuesday, April 9, 2019, and was called to order by Dr. George Sedberry.

INTRODUCTION

DR. SEDBERRY: Welcome, everybody. Welcome to Charleston, and welcome to the SSC meeting. My name is George Sedberry, and I am the Chair. Our Vice Chair, Rob Ahrens, wasn't able to make it this week, and so, once again, Marcel, the former Chair, Dr. Marcel Reichert, has volunteered to fill in and help me out running the meeting and keeping me pointed in the right direction, and so thank you, Marcel.

I want to remind everybody that the meeting is being recorded and broadcast live via webinar, and so just keep that in mind, in the back of your mind, and the first thing we would like to do is go around the room and have everybody identify themselves, introduce themselves, so that we can recognize your voice on the recording. Let's start with Fred.

DR. SERCHUK: Fred Serchuk, SSC member.

MS. LANGE: Anne Lange, SSC member.

DR. JOHNSON: Eric Johnson, University of North Florida.

DR. SHAROV: Alexei Sharov, Maryland Department of Natural Resources.

DR. BARBIERI: Luiz Barbieri, Florida Fish and Wildlife.

DR. SEDBERRY: Welcome, Luiz. I understand that you had a few travel problems.

DR. BARBIERI: A few, yes, sir.

DR. BELCHER: Carolyn Belcher, Georgia Department of Natural Resources.

DR. CROSSON: Scott Crosson, NOAA, Southeast Fisheries Science Center.

DR. REICHERT: Marcel Reichert, South Carolina Department of Natural Resources.

DR. ERRIGO: Mike Errigo, South Atlantic Council staff.

DR. BUCKEL: Jeff Buckel, North Carolina State University.

DR. SCHARF: Fred Scharf, UNC Wilmington, SSC member.

DR. GRIMES: Churchill Grimes, SSC member.

DR. NESSLAGE: Genny Nesslage, University of Maryland, the Chesapeake Biological Lab.

DR. SCHUELLER: Amy Schueller, National Marine Fisheries Service, Southeast Fisheries Science Center.

DR. YANDLE: Tracy Yandle, Emory University.

DR. LI: Yan Li, North Carolina Division of Marine Fisheries.

DR. SEDBERRY: Thank you, everybody. We also have a few people in the room that I wanted to introduce. Steve Poland is the SSC liaison to the South Atlantic Council, sitting over there, and sitting next to him, but not at the moment, is Jessica McCawley, the Council Chair. Behind me, we have Mel Bell, the South Atlantic Council Vice Chair, and Shepherd Grimes, NOAA Fisheries General Counsel. Then we have Erik Williams, who is the SSC's Southeast Fisheries Science Center liaison. Anybody that I may have missed that I need to introduce? Okay.

The first agenda item is Approval of the Agenda. Are there any additions or changes to the agenda? Seeing none, I will say that the agenda is approved as distributed. The next agenda item is Approval of the Minutes, and we have minutes from our October meeting and the minutes from the February MRIP webinar that we had, and so those are Attachments 1 and 2 in your briefing book, and so do we have approval of the minutes of the October meeting? Any objections, changes, additions, deletions? The minutes of the October meeting are approved. What about the minutes to the MRIP webinar that were also distributed as Attachment 2? Any changes or additions or subtractions? All right. We will consider the minutes of both of those meetings approved.

We have several opportunities for public comment during the SSC meeting, the first one being at the opening of the meeting, and we'll also be open for public comment after each major agenda item, usually following the presentation for that agenda item, and so, if there's a presentation, we'll have public comment after that, and then we'll have public comment at the close of the meeting as well.

This is the first public comment period, if we have any members of the public who would like to comment at this time. Seeing none, we will move on. The next agenda item is SEDAR Activities, and there are no assignments for members for this particular agenda item, but, if you will recall, shortly after the briefing materials were distributed, I distributed a list of assignments, and we'll talk about those as the agenda items come up, who is assigned to what, but there are no assignments for this general item, but there are two attachments, Attachment 3 and 4, which review SEDAR projects and the scamp research track update, and I believe we'll have a presentation from council staff on this.

SEDAR ACTIVITIES

MR. CARMICHAEL: More of a discussion than a presentation. You have Attachment 3, which gives you an overview of the current projects and where they stand. It largely incorporates the impacts of getting things back on track after the shutdown, but, as we know, there is also going to be some more effects from the issues that have been raised about the MRIP data, which we will be talking about later in the week, in terms of how we recover from that and what the SSC needs to

have so that we can move forward on those assessments, and so, for now, things are in a bit of a holding pattern, until we figure out what to do with that.

I want to note that one of the projects that took the biggest schedule hit, in terms of dealing with the shutdown, is scamp. Because that was a research track and on already on a longer timeframe, the decision was made that, if we needed to shift something back significantly, more than a few months, as most projects did, that the significant impact would apply to scamp, and so, as a result, we're looking at a data workshop in March of 2020, and you have Attachment 4, which shows you the current revised schedule, and so, really, just what I want to verify is that, those folks who said that they could participate in scamp, that it still looks like, from now, that they are still able to. For the stock ID, a series of webinars in June, August, and September, and that's George, and you were down for that. Does that still seem pretty good for you?

DR. SEDBERRY: Yes, it does.

MR. CARMICHAEL: Okay, and then we have, for the research track, what's going to be called an ADT, assessment development team, and it's kind of a new acronym, and the idea is to have a consistent group of folks who run through the assessment data, assessment, et cetera, and provide the decision-making process. Some of you guys can recall that one of the issues has been inconsistency in terms of the decision-making throughout the entire process, and so this will be the analysts from the Science Center, representatives from both SSCs, and the potential for having some others.

For our SSC, we have Rob Ahrens, Alexei Sharov, and Marcel Reichert, and so you guys would, obviously, be involved with the data workshop in March of 2020, but also throughout the webinars that will follow for developing the assessment, and so I just want to make sure that you guys can still make that general timing, as laid out, and, if not, we can consider getting someone else.

The council will be making these appointments in June. Thumbs-up on Marcel. Rob, I think I'm channeling him, and he's saying okay, and we'll check with him for sure. Rob has been involved, and so I was thinking that he was okay. Alexei, does that seem pretty good with you so far? Thank you, Alexei. Then, at the data workshop, Jeff, we had you as a potential participant, and so you, I guess, or your designee, as sometimes is the cast, but for all of you all's vast experience in dealing with these critters.

DR. BUCKEL: Sounds good.

MR. CARMICHAEL: So I think we're in pretty good shape there. Then the other item to come out is yellowtail snapper. The data workshop will be June 25 through 29 down in St. Pete, and we had Marcel and George, and it sounds like, Marcel, you may need a replacement?

DR. REICHERT: Yes. I am, unfortunately, unable to make that workshop, and so I'm hoping that someone else on the SSC is able to replace me for that workshop. It's in St. Petersburg, I believe.

MR. CARMICHAEL: Yes, and so late June in St. Petersburg, and is anybody able to take part in the data workshop?

DR. SEDBERRY: Anybody perhaps located in that area?

DR. BARBIERI: That was a great point, Mr. Chairman. Absolutely, and I will be glad to. I mean, I've been trying to kind of keep my nose outside of that one, since this one is being led by the FWRI/FWC team, but, for the data workshop part, representing the SSC, that's fine.

DR. REICHERT: Thank you, Luiz.

DR. SEDBERRY: Thank you, and I can still participate.

MR. CARMICHAEL: I figured Luiz might be there. One of many hats that you'll probably be wearing that week. That is the business we needed to get updated on SEDAR, Mr. Chairman. Thank you.

DR. SEDBERRY: Thank you, John. I should also note that there is a new SEDAR Coordinator with the council, and is that correct, Kathleen Howington?

MR. CARMICHAEL: Yes, and thank you for reminding me of that, too. Things have been happening so fast around here. Actually, I will go ahead and say that this all started when Amber VonHarten, who was doing our Citizen Science Program, took a job with the Sustainable Fisheries Initiative and is working on developing fisheries in Indonesia, and so it created a vacancy, and Julia Byrd, who has been a SEDAR coordinator for quite a while, has moved into the Citizen Science Program Manager position, and so then that created a vacancy within SEDAR, and we have hired Kathleen Howington, who has been working with the council for a little over the last year and doing outreach related to the for-hire electronic reporting.

She has had some tire difficulties here this morning, and she is not here at the meeting, but I think she will be around here some later this week, for those who haven't met Kathleen yet, but she'll be taking on a lot of Julia's duties, and, on scamp, Julie Neer will be stepping in as kind of the lead, but they will both be working on scamp together, and perhaps, as Kathleen gets more experienced in SEDAR, by next March, she may be stepping back in and taking over more responsibilities on scamp as well, but you'll sort of see things coming from both her and Julie related to scamp and things from Kathleen coming in on the other South Atlantic projects, and so we'll get her over here and make sure she gets a chance to be introduced to everybody, so you all can put the face with the name. Thank you, George.

DR. SEDBERRY: Thank you, John.

DR. SERCHUK: One of the issues that has raised its head, based on our last webinar, is the need for data workshops for species that have a significant recreational component, and I don't want to open this agenda item yet, because we have a place on it, but it seems to me that doing these data workshops as one-off activities, when we may have generic issues related to MRIP, is we really are not fully taking advantage of the learning process that might happen if one group does it one way and another group does it another way, but using the same MRIP data.

I am just wondering -- I am concerned about this, because I think this should be an iterative process, and, if we have different people looking at individual assessments, we really don't capitalize, in a significant way, on issues that may be generic across assessments. I am not offering a solution

right now, but I am just pointing out that, the way that the process has been structured on a species-by-species basis, it may not give us the full advantage of looking at generic problems if we undertook a data workshop, for example, where two or three different species might be looked at, so that we could see the panoply of issues that might be affecting those. Again, I don't have a solution now, and I don't want to pre-judge our discussion on this, but we have a scheduling here that proceeds now on a species-by-species basis, and I'm not sure that the process is well served when we seem to have a generic issue related to MRIP. Thank you, Chair.

DR. SEDBERRY: Thank you, Fred, and I feel certain that the SEDAR Committee has considered this, and, of course, we'll be talking about this further on Thursday, if we don't get to it before then. Is there anything that you wanted to say to that, John?

MR. CARMICHAEL: No, other than to just reiterate that we'll talk about that on Thursday, and that's the reason why I said the existing South Atlantic assessments are on hold, because I think there is support from the council in allowing you to have just that type of workshop to deal with these issues, and we'll talk about that more on Thursday, but that's where I see this going, is to have a dedicated South Atlantic MRIP issues workshop to solve this, because this isn't an issue just with the assessed stocks.

It's an issue with all the unassessed stocks, and my opinion is, if you're concerned about MRIP estimates in an assessment framework, I'm done with the concern about MRIP estimates when all I'm using is average landings, and so it's something that we're going to need to look at for all of our stocks and all of our estimates, and that's going to be what we're going to need to talk about on Thursday with that workshop. We're not going to solve the problems at this meeting, but we hope you guys can come up with a structure and a plan that then we can then put in motion.

DR. SEDBERRY: Thanks, John. Is there any public comment on -- I'm sorry. Go ahead, Amy.

DR. SCHUELLER: For yellowtail, we talked about who was involved in the data part of it, but weren't the assessment and review workshops also scheduled and had participant volunteers? I seem to remember volunteering for the review workshop for yellowtail.

MR. CARMICHAEL: I think they -- I mean, I know that they do, and appointments have been made, and I think Julie had reached out to people with the changes in the schedule, to find out who was available, and so I don't know -- Do you remember if Amy was on that list or not, Julie?

MS. NEER: (Ms. Neer's comment is not audible on the recording.)

DR. SEDBERRY: Okay. Now, is there any public comment on the SEDAR schedule? Seeing none, Mike, could you just post the bullets that you had recorded for this particular -- Can you get them all on one screen there and make sure that we captured all of our -- That looks good, and there's no big action items or anything huge that we need to deal with, and so that looks good. All right. Thanks. Before we move on, anything else having to deal with SEDAR?

MS. LANGE: To the point raised a few minutes ago, this is tentative, right, depending on what happens with MRIP, or depending on if the SSC can have the work -- If they can resolve the issues with the MRIP data, and, I mean, everything is supposed to be on hold until that's resolved, and so the data workshop that is scheduled for June hopefully will be able to be met, but that's

assuming that the MRIP issue is resolved or not? I know we had issues with the cobia data workshop last week, because we're concerned also about the MRIP data.

DR. SEDBERRY: Right, and the council, at their March meeting, did -- That is the exact language they used, I think, is that SEDAR would be slowed down, or something along those lines, until the MRIP issue is resolved and has scheduled -- Or is working on a workshop to address the issues, and I'm not sure when that workshop will occur, but, again, we're going to talk about this more on Thursday, but did you have something to that point, Luiz?

DR. BARBIERI: Just specifically on the yellowtail snapper. Anne, it's not on hold, and so there is different scenarios being considered.

MS. LANGE: The scamp is what we were talking about.

DR. SERCHUK: I mean, this is the reason I brought up the point that I raised earlier, Chair. I know that the data workshop has been scheduled for yellowtail snapper for June now. Both Anne and myself and Amy, I think, were involved with the webinars up until now. At the last webinar that we had, we realized that this issue related to MRIP needed to be resolved, and so, while I'm fully aware that this has been rescheduled, I thought now what I heard from John was, well, we need a more extensive workshop, in terms of the SEDAR schedule, than what has been planned on a species-by-species basis.

Now, maybe I misunderstood, but I am not quite sure -- I am still confused about whether this is going to proceed, for example this June data workshop by itself, and then perhaps later on be replaced, or somehow superseded by a more comprehensive data workshop on MRIP, and I know that we're going to discuss it on Thursday, but locking in dates now, without knowing what this SEDAR workshop is going to be on MRIP, is a little bit confusing, and so I'm wondering -- On a species-by-species basis, it's been decided now, but this could change by what we discuss under SEDAR, and am I making myself clear, Chair?

DR. SEDBERRY: Yes, and I don't think the schedule for this particular SEDAR on yellowtail snapper -- The data workshop is not going to change. It's going to proceed, and --

DR. SERCHUK: That's why I'm confused. The MRIP problem is a generic problem, and I thought that we understood that MRIP would be evaluated in a more generic way than on a species-by-species basis, and maybe that's my misunderstanding, but, quite frankly, at the last webinar, it was said that we're going to put everything on hold until we have a better understanding of how the MRIP data and the implementation of the MRIP sampling scheme affects the estimates that are coming out.

DR. SEDBERRY: I don't have the answer to your question that I think you're asking. All I can say is that this assessment is being done by FWRI, I think, using their data. No? They will be using MRIP data?

DR. BARBIERI: It's using all data, just like any of the other assessments, yes.

DR. SEDBERRY: Okay. I don't have the answer to your question.

DR. BARBIERI: At this stage, Fred, there have been some preliminary webinars to discuss all the different data streams, and the MRIP data stream is there, the FES calibrated is there, and there are other data streams that are being considered as well, and so I think, if there is some resolution on Thursday, or anytime between now and then, we might get more guidance on how to proceed, but, right now, it's just preparing the datasets, basically, and getting them ready to be discussed at the data workshop. Meaning, Fred, I don't think there is any -- I mean, the process is not a decision-making process at this point.

DR. SERCHUK: Okay. I can accept that, and, again, I don't want to jump ahead, but some of the letters that we received and the attachment that was sent out basically say that some of the MRIP estimates are inconsistent with other surveys, and so on and so forth, and I'm not quite sure whether that means that, at the workshop, we consider which surveys best represent or whether we take a -- If we discount it, and I'm not really quite sure why then they are different. The questions that have been raised in some of these letters are either sampling intensity or somehow there is some shortcomings, and that's my concern, and that's why I raised the issue, and that's all.

DR. SEDBERRY: I think that's the purpose of the data workshop, is to evaluate all datasets and decide which ones are in fact good and which ones are bad and which ones they will use and which ones they won't use, and, if they make a decision about MRIP, that they can't use it, then they can't use it.

DR. SERCHUK: That's why I made the point, Chair. Is this a generic problem to species of that type, or do we see it as a one-off thing for particular species? I don't want us to reinvent the wheel every time we have a data workshop.

DR. SEDBERRY: But every dataset will be evaluated in every data workshop, and I don't see that as a big issue.

DR. SERCHUK: It will be evaluated by different people at different workshops. Therefore, quite frankly, you haven't drawn on the expertise that might be happening if you did a workshop where you took two or three species and looked at it and said, why is the MRIP data good for this, but not for this, and I am not trying to reinvent the process, but I am just saying that it's been my experience that, when different groups get together, they don't really capitalize on a learning process where you might do two or three species in a data workshop, to see whether the problems are generic or the problems are species-specific. That's my only concern.

DR. SEDBERRY: Okay. Noted. Thank you. Any other discussion? Okay. I think we are ready to move on to Agenda Item 4, the Snapper Grouper Fishery Economic Overview, and assignments for this agenda item are Scott Crosson and Tracy Yandle, and, again, I will ask that you take great notes, so that, at the end of this, we'll know what was said and be able to write a report. You all were selected based on your expertise in this matter, and so I feel like you can perhaps digest some of the stuff that I found a little hard to understand myself, and so there is two documents associated with this, Attachments 5 and 6.

There is the economic overview technical memo, which was a very thorough analysis and report, and then there is also the presentation, which is a summary of the report, and are we going to have -- We are going to have a presentation of that overview report.

SNAPPER GROUPER FISHERY ECONOMIC OVERVIEW

DR. LIESE: I am Christopher Liese, and I'm an economist at the Southeast Fisheries Science Center in Miami, in the Social Science Research Group. I presented this this morning to the SEP, and I hope that I will be a little faster than that time. I am here to basically inform you and present that these new reports -- We have started a new series of reports on what we call the Coastal Logbook Data Stream, which is the snapper grouper fishery, the Gulf of Mexico reef fish fishery, and the king mackerel fisheries.

We didn't just put out these one-time reports, but it's going to be a system of reports, a series, where hopefully we'll be able to update them annually, and so I'm not just going to be talking about the report, but a little bit about the methodology that went into developing these, because hopefully they will be an ongoing tool. We have a shrimp report that I've been putting out for years, and that was a lot of work, and so, this time around, and every year, it's the same process again, and so, these, we designed them from the ground-up to be sort of automated, using the R software, and so that's why I talk about a system.

This is an overview, and I will talk briefly about the economic surveys and their design and then about the system that we developed, and then I will talk mostly about the results for the 2016 snapper grouper economics, and a little bit about king mackerel, at the very end, which is still preliminary.

The survey design and the question development is guided by sort of financial statements that we want to put together for the fisheries, and we've been doing this for the shrimp fishery, and I said, well, we can look at it sort of like of public company, a stock company, that reports their annual financial reports, and we intend to put together a cash flow statement and an income statement and a balance sheet, which that gives you sort of a basic economic overview of the fishery, and the setup is always you have the inflows on the left-hand side of this balance, which is the fishing revenue coming from the snapper grouper fishery, or other fisheries, or they might have other operating income, such as, in these fisheries, a lot of for-hire fishermen.

On the right-hand side, you have the outflows of cash, which would be sort of their costs, the variable costs, like fuel, hired crew and other supplies, and then, on an annual basis, more of the fixed costs for rent and overhead and vessel repair, and the difference between the two would be the net cash flow for your operation. A cash flow statement, or an income statement, is always a period of time, and so usually it's a year or quarterly, and, so most of the time, we would be aiming for an annual sort of income statement.

The income statement is pretty much similar to the cash flow statement. The only difference here is that we add sort of economic costs that do not generate a cash flow, and so one of the most important thing is the owner's labor contribution, and so we have a lot of owner-operators in these fisheries, and, in order to get a real impression of what their net revenue from operations is, their profit, you have to account for the fact that they might be putting in a lot of in-kind effort, in terms of just their term as a captain. The other big thing is depreciation, the value of the vessel, and so it depreciates, it gets used up, in the process of fishing, year after year, and that has to be accounted, and so that's the income statement.

There is various measures, and I don't want to get too much into that, but this is sort of what guides the design of the surveys, and there is a balance sheet, which is a point in time, and we look at the asset value of the vessels and the gear, and possibly the permits, and, on the other side, you would have the liabilities, the loans outstanding on the vessel, and the difference would be the equity that the owner has in the business, and so that guides our survey questionnaire.

Our economics surveys are layered on top of the trip logbooks that have existed in these fisheries since 1993. The logbooks roughly have an identifier at the top and when the trip happened, and there is an effort section with the gear, what type of gear was used and how much, and then there's a catch section of the species, the area it was caught, and I think the depth that it was fished for.

These coastal logbooks are basically required for anyone fishing in these five federally-managed species of reef fish, snapper grouper, king and Spanish mackerel, shark, and dolphin wahoo. For the first three FMPs, it's a fairly reasonable assumption to assume that the logbooks collect almost a census of the fishery. In fact, it's probably somewhere between 95 and 102 percent that our logbooks match the dealer reported catches on these, but that will be a presumption, an assumption, that I make throughout the rest of the data, that the logbook is a census. It gives me the population data.

Since 2002 in the South Atlantic and 2005 in the Gulf, Jim Waters and Larry Perruso have added an economic component, a fourth section, at the bottom of each of those logbooks. It collects variable costs, like bait, ice, fuel costs, labor, hired crew payments, and we added a revenue in fairly recent years, the last five or six years, because that helped us a lot.

It's always been about a 20 percent vessel sample. We have to sample people before the year, when they get their logbooks for the next year mailed. We have to sample the vessel, and it's always been sort of like a sample based on how active those vessels were in the previous two years. Right now, the sampling strategy is basically we stratify into the highly active, the active, and not active, and we sample at 30 percent, 30 percent, and 10 percent, to basically focus our effort on people who are actually fishing and don't just have the permits. I have been running the data collection since about 2014, and so that's partly why these reports are for the data years 2014, 2015, and 2016.

At the end of the year, after fishermen report all year, when they've been selected for the economic trip costs, we send them an annual cost survey, and it's sort of supplemental. The primary focus is the bottom section, which is getting at the fixed costs that fishermen have, and so the vessel repairs, overhead, loan payments, insurance, those sort of things, but, because these fishermen engage in so many different activities besides the federal logbook fisheries, the state fisheries and for-hire activities and sometimes oil work and other recreational activities, we have to get a little bit at the overall activity of the fishermen as well, to make sense of the data.

Both data collections are implemented in-house. The trip data is really piggy-backed on top of the logbook data, and so we use their system, and it gets sent out to a contractor who does data entry, and then the data comes back and gets loaded, and we do data validations. We check for data entry errors. If that doesn't solve it, then we do send-backs, and we enforce sort of compliance through the logbook system, and so the compliance is very good, and the data is getting better. The annual data collection is run usually January through August, from our office, and we usually hire a

student to help with sort of mailing and validation, and there is a lot of call-backs, to figure out what the data actually means.

A couple of years ago, I raised funds to hire -- I'm sorry. I'm jumping ahead here. The data has been collected for quite a while, and it's been used sort of on an ad hoc basis, quite a bit, but always sort of someone wanted to do something with a certain species and the economic data, and you would extract that data.

It's been used for cost functions, and it was part of Jim Waters' simulation model that was used for a lot of amendments in the South Atlantic in the past, but it's never been sort of systematically reported, and the reason for that is it's quite a bit dataset, and so, in one year, you might have 30,000 to 40,000 trips, and it's for 1,000 to 2,000 different vessels, and we'll have economic data for a subset of those, and any analyst who wanted to use this data would pull out a particular sort of subset of trips and would clean them up and work on those, and it wouldn't feed back in, and so everyone would start again new, because no one had the time to really clean up the whole database.

With the new tools, with the R program, it seemed like more and more possible that we might be able actually to approach this systematically, and, as I said, I raised some funds, and then I hired a contractor who was very skilled in this, Elizabeth Overstreet, about three years ago, and she really built a wonderful system that extracted all the different datasets and consolidated them all and transformed them. We built these standardized cleaning routines, to clean up the whole datasets, and it's a whole variety of different datasets that get cleaned, and so it's the logbook data, it's permit data, it is vessel trade data, and then it's ALS data, which we use to put dollar values on the catch, and, finally, it's our economic data, which, as I said, needs a lot of cleaning, too.

Then you really don't -- You seldom want to report all of that data together, because this is a diverse set of fisheries, and so you have to post-stratify it, and we call that our segment of interest, and so you can condition the segment of interest on the water body, on the region or sub-regions, on time, on the whole season or the whole year, and species or species groups or gears or permits.

For the South Atlantic snapper grouper, for these reports, the general condition that we use is if you harvest one pound of a species of interest on a trip, that becomes sort of a trip. If it's a snapper grouper species, one pound or more, we call it a snapper grouper trip, and we call that a trip of interest, and then any vessel that has such a trip becomes a vessel of interest.

Obviously, a vessel of interest might have trips during the year which are not within the segment, especially if you segment down on gears and the like, but the type of segments of interest are pretty unlimited that you could pull out, but, once we built this system, and cleaned it overall, we can pull out a segment and basically write some code and condition the data on that.

Then, using further functionality of R, within R studio, we can write programs that basically turn that segment into six pages of results, or also into these reports, and so they are fully programmed, and, generally, if everything works smoothly, you just create that data on the subset, and it takes a couple of minutes to run, and then you load that into the programs that create the outputs, and that takes another couple of minutes to run, and you have like a lot of data results that you can look up and evaluate.

This diagnostic report is more for our internal purposes. Its purpose is to evaluate if our economic results are meaningful for the particular SOI that we generated, and so I think this SOI is actually South Atlantic -- It's any Southeast lionfish landings, and so it was just a throwaway SOI that we did, but this is the first page, and there is six pages of data, but we can evaluate if the SOI makes a lot of -- If that sub-population makes sense to look at, and a lot of it is to see if our economic observations are representative of that SOI population, and so, in this case, there were forty-nine vessels fishing this, and we had ten economic observations, and so this is just an example to look at the representativeness. We have a dozen tables for the logbook data to compare if they're a good fit.

As I said, we do a lot of cleaning, and we have tables in there that look at what the impact of those cleaning routines are, to evaluate if those cleaning routines might be impacting and driving the results, because, again we develop them at the overall level, and so, at any one SOI that we might be looking at, it could be introducing a lot of bias or something like that, and so we have to double-check what our impact of the cleaning is, and then it does the statistics, which, because it's a stratified sample with unequal inclusion probabilities, and you never know which vessel and which trip ends up fitting into which of those SOIs, it becomes a bit of math, but you can automate all of that, and then it generates basically the mean and the confidence interval for all the results.

Then we do all the same thing again for the annual vessel level economics, which is basically a separate data stream, since it's coming from that separate survey, and, to the extent that it had overlaps with the trip level stuff, it's a very good check on if the general qualitative results are the same. It will never be exactly the same, of course, and so that's a little background on how we designed this and the system, and we put out first the Gulf reef fish tech memo and got that reviewed, and then we got to the snapper grouper fishery next, and I think we published that in October of last year, and, very soon, we will get the king mackerel one out as well.

One thing about the snapper grouper fishery is it's a truly multispecies fishery, and the economic data, it's always important to realize, it really just works at a holistic basis, and so you might be catching a whole bunch of different species on your trip logbook, but there's only going to be one section on economics, at the bottom, and there's no way to really break out the cost for any one species, and, as you go to the vessel level, you get even more of that. Many of the vessels do snapper grouper part of the year and then king mackerel other parts of the year, and, again, they might be doing for-hire trips at another point, or at least a subset of fishermen in each SOI are doing quite a bit of for-hire fishing, and so you can't really break the economics out.

You just can account for it, but you can't separate out the costs, and, in the South Atlantic fishery, you can see that, in yellow highlights, are the species that have the highest share of about a $17 million fishery, and gag is $1 million, golden tilefish is $2 million, greater amberjack is $1 million, vermilion is almost $3 million, and that's probably the biggest, or yellowtail snapper is the biggest, at $4.6 million, but it's really it's almost its own fishery down south in the Keys, and so it could be analyzed separately.

When I put together the tech memo, we ended up reporting eleven different SOIs, and there is another five different gear-based SOIs in the appendix, because the gear-based SOIs cut it down so much that we lose too many observations for the annual cost data, and so the appendix only has the trip-level comparisons for gear and not for the annual cost, because, especially for longlines or traps, we were down to three or four observations, and it just became -- I didn't feel comfortable

reporting that, and so these eleven SOIs are all at the whole fishery, the South Atlantic fishery, and they're different species, and it's always one pound per trip that gets a trip and then its vessel into one of these SOIs, but, the more I looked at these different SOIs, and the reef fish fishery is like -- To a certain degree, the very first SOI is really the most informative.

It has the biggest sample size and there is a certain arbitrariness of any one trip say falling into the triggerfish fishery, because, really, you look at it, and the economics at least look very similar to all the other snapper grouper species, and so, in the rest, I am just going to report the very first SOI, the overall snapper grouper fishery.

As an example, the South Atlantic gag grouper fishery SOI, if you look at the revenue share on the average trip, it's 33 percent, and so that means, for a gag trip, only one-in-three fish is gag. If you look at the vessels that capture gag, it goes down to one-in-ten, and so, really, only 10 percent of the vessel's revenue is coming from gag, if that vessel catches gag at all, and so --

DR. BELCHER: Just a point of clarification. Back on your slide, a few slides ago, you have a couple of species that have asterisks with them, and it's the golden tilefish and the black sea bass. Can you just elaborate what the -- I didn't know what the significance of the asterisk was, and it's not explained in the table.

DR. LIESE: I think I just put a star there, and there is a footnote that explains which results -- Because, the black sea bass, many people want to look at traps, because it's traps for black sea bass, and, when you're looking at tilefish, lots of people want to look at longlines for tilefish, and so I think the asterisk is just pointing out that, in the appendix -- If you want to look at the gear basis, you can go to the appendix to look at the versions, because part of this table is just -- It's not the point of this presentation, but I just cut it out of the report, is to recommend different types of SOIs. If there is not a specific SOI, then what's the closest SOI to use, and so, if we're looking here for golden tilefish longlines, the footnote was just telling you that you can also look in the appendix for the longline one.

For each of these SOIs, the reports are entirely standardized, and it's basically six pages of results. The first page is sort of the census for that SOI, for that population, or sub-population, and it's the logbook data just summarized. The second page is then the heart of it. It's the economics of the trip, and so it's a representative sample of all those trips, and so it's the sample on the population.

I want to make the disclaimer that the first page is sort of our best extraction of logbook data, and it is not -- If you want really official numbers, then you have to go to Dave Gloeckner and have him provide the logbook data, and so, as an economist, my purpose is to create an economic result and give you context to it, but, qualitatively, these data are all very, very close to what Dave Gloeckner will give you, but they will not be identical to what the logbook program has, because there is a lot of research and judgment calls along the way to deal with all the little things that you go along, and, obviously, the numbers will also be different from stock assessments or the like, and so the purpose is to be informative. They are usually good to the thousand, or ten-thousand, if it's a million, but they are not identical to other numbers.

Page 3 and 4 are the same sort of setup. For the annual vessel level, it provides the extraction from the logbook for those vessels that fit into that SOI, and it sums them up, because it's the vessel

level, and there is a couple more pieces of information there, and I will get to that in a second, and then the fourth page is the economic data at the vessel level from that annual survey.

Then pages 5 and 6 are basically selected -- It's the most important things from those previous four pages, but with a time series element, and so there is the years 2014, 2015, and 2016 and then the three-year average for each those, the trip level summary, the trip level economics, the annual vessel level summary, and the annual vessel level economics. To compare sort of the economics through time, they are in percentage terms, because, again, revenue and all these things do change year to year, and so that's an overview.

This is the snapper grouper fishery, the trip level summary, and this is an extraction of the year 2016 in the coastal logbook, and there were about 11,000 trips that caught one pound of any of the snapper grouper species. There were about 509 vessels involved. The total snapper grouper revenue that we estimate they extracted was $17 million. On those trips, they also caught $1.5 million of other species, and probably most of it was king mackerel, and so they're specialized at 92 percent, and you can see most of the trips are actually very specialized, and then there's a couple of trips that might be king mackerel trips that catch say an amberjack or something like that and fit into this criteria.

We could change that. We have a SOI definition where you have to catch 50 percent of revenue from the species, and it's more restrictive, but we decided, for the tech memo, that we would go with a one-pound definition, because we see the people at the Regional Office always want to do that.

There is various other stuff in this trip summary. At the bottom here is sort of the typical trips for the snapper grouper fishery. It's 1.7 days, with two crew members, and 500 pounds of landings, and that's $1,650 of revenue, and, again, that's just context for our trip-level economics. Of those 11,000 trips that actually happened in 2016, we had selected vessels at the end of 2015 that ended up taking 2,766 trips, and so those became our economic sample, and, again, our selection was a priori before they actually took trips, and so we didn't know that they would end up here, those vessels.

We had responses for 2,711 of those trips, and then, after our cleaning routines, we were left with 2,612, and so it's about 23 percent of the population, and our response rate is about 96 percent in 2016, and those trip results are basically what was on the logbook at the bottom, and these are the summary statistics, the mean, the median, and, as was pointed out earlier to me, I should say, obviously, these are just the means for this population. The variation in the fisheries data for any individual vessel or any individual trip is very broad, and so you will have everything from negative net revenue to lots of profits, and, of course, outliers that we have cleaned out and the like, but there is a lot of variation, and these are just the central moments.

At the trip level, you can see there is 82 percent of the trips were owner-operated, and we can -- This is from our sample, and the days at-sea from our sample are 1.8, the estimate of the population mean. You can compare that to the actual census population mean, which is 1.7, where we have all the 11,000 trips, because it's a census on the logbook, and so clearly our economic sample is not exactly representative, but you can never expect that when it's a random sample, but it's close enough on crew size, and then, obviously, if these numbers were very much off, that's the type of diagnostic we do, and we might not want to report it or say that our sample is just too far off to be

meaningful, but this is fairly good. Total revenue was $1,760, and then these are the cost components.

We do not ask for the opportunity costs of the owners' captain time. We basically estimate that based on the hours and the wages they pay the crew, and so it's a regression approach to put a number on the owners' captain time. It's not going to be perfect, but it needs to be there as a placeholder to compare for-hire captain trips with others, if we're going to sum it up across the whole fishery, and then we have the net cash flow of $800, and, if you subtract sort of the labor contribution of the owner, it's about $500 on that trip.

In percentage terms, in that trip economic level, we see fuel and supplies are about a quarter of revenue, and hired labor is 29 percent, and then overall labor is 46, and so roughly half, and they are left with about a 29 percent sort of margin at the trip level. We also have the input prices. Fuel that year, in 2016, was $2.22, and we can estimate sort of the hired crew wage, at $274 per day, and some productivity measures. That is at the trip level, and so I call that trip net cash flow.

At the annual vessel level, again, this is the summary of the logbook data for those vessels, and so the big difference here is we start with the 500 vessels, and they are taking the 11,000 SOI trips in the snapper grouper fishery, but, on an annual basis, they are also taking another 3,926 other types of trips, and most of them are probably king mackerel trips, and so, at a vessel level, the snapper grouper is only about 73 percent of their revenue is coming from snapper grouper, and $6 million are coming from other species.

We have the permits, and I will just point out that the for-hire permits on this population is quite high. 28 percent of all the vessels have for-hire permits, and they have other federal permits as well, and we can sum up the logbook data at the vessel level, and so the average vessel takes thirty trips and spends forty-seven days at-sea, for the logbook data, and has about $46,000 of coastal logbook federal fisheries revenue.

We also have the vessel characteristics, and the length is about thirty-three feet, and I will just leave it at that, and then, again, at the annual vessel level, we have the economics, and there is 509 vessels, and we happen to have selected 132 at the beginning of the year, and the annual survey is a little bit -- Since it's a mail survey, and it's a year after they were selected, it's always a little harder to get them to respond, and we got about 102 responses. After removing incompletes and problem cases, we were left with forty-nine, and so we had forty-nine sort of annual economic surveys, which is really a totally separate data stream from the trip level stuff, and that's the summary.

Again, there's a lot of variation, but, on average, 89 percent are owner-operated, and 12 percent of those vessels do at least one day of for-hire fishing. They report to us, and it's an exact number of eighty days of commercial fishing. That's overall at the vessel level, and so that compares to what we -- When we look in the coastal logbook dataset, we were looking at -- It was at forty-six days, and so they are reporting more commercial days to us, and that makes sense. Some of them might be doing state-level fisheries, blue crab, or they could be shrimping, or they could be doing federal HMS, or they could just be counting differently, but the point is there should be a little bit more seafood revenue here than we have, which does work out nicely for the South Atlantic.

Instead of $46,000, they are reporting $57,000 of commercial seafood revenue and about $12,000 of for-hire fishing revenue, for a total of $69,000 at a vessel level, and then we have the costs that they report to us. Again, we estimate the opportunity cost of owner captain time, and we estimate a depreciation. We do not ask that.

In my experience, from the shrimp fisheries, you can't just ask people that and get useful answers, and so, really, what we're doing is we're just taking 5 percent of the vessel value, and so, if they report $93,000 of the vessel value, and we take 5 percent as the depreciation, and there is various -- It's probably not exact, but it's roughly right, and, again, both of those values, to me, are like placeholders. We have to correct for them, and they could be a little higher or a little lower, but we need to put something in there, and so, at the annual vessel level, you see they have a positive cash flow, but, once they pay themselves for their time at-sea, they are basically breaking even. There is no major profit above and beyond sort of their expenses, including their labor that they have.

Again, we can turn that into a graph in percentage terms, and so, again, fuel and supplies are 25 percent, which is exactly what the trip-level stuff was telling us as well, and hired labor is 28 percent, and 29 at the trip level, and so that's nice, and owner labor is a little bit lower in the annual cost survey. Fixed costs are 28 percent, depreciation 7, and the net revenue in 2016, which was the lowest year that we had, was actually pretty close to zero.

Then we look at a three-year time series, in percentage terms, and this is the trip-level stuff. You can see clearly here the fuel price went, in 2014, from $3.86 down to $2.22, and so that was quite a price decrease, and you can see that the fuel costs also went from 13 percent to 9 percent, as you would expect, but you can see that, as fuel got cheaper, people seem to have used more, and so the actual fuel used per day went from thirty-three gallons per day to forty-one gallons per day, and so the savings weren't quite as much, and then, if you look at a productivity measure, in terms of fuel use, of course, that would go down, if you start using more fuel.

This is the type of things that you can look at with this data. The reports are -- They are just sort of the data, and I am putting it out there, the results. It's not the raw data that is confidential, but these results are not really -- I don't think of them as the final results. That is for the analysts to take this data and then generate something with it. They are very -- I didn't mention this earlier, but, with these reports, I aimed for like keeping sort of interpretative stuff and prose to a minimum, and so I hope that we'll be putting out these reports in a timely manner, because, my shrimp reports, they are always behind, because I have too much verbose stuff in there and too much interpretation, and so I don't get around to doing it, and then it drags on and on, and I think these data should be out there quickly.

With this report, and I have heard a lot of criticism about it too, is there's just -- It's the tables, and the data is there, and, if people want to know more about it, there is a whole methodology section, and, if that's not enough, you can give me a call, and we can talk about it, but I didn't want to spend time writing up paragraphs that I don't know if anyone is ever going to read, and, again, because it just delays the process. The hope is to turn this out after a year is done and get the data out.

Annual vessel level economics, it's the same thing, and I will just point out that the net revenue from operations averages about 4.5 percent for the snapper grouper fisheries, which is sort of break

even, and probably the cost of capital, and it's sort of exactly what you would expect in any type of established industry, that they would be breaking even, and it's competitive, and so no one is making any type of abnormal rents or profits, as we economists would say.

I have sort of generated the report for king mackerel and the CMP fisheries, and I have not yet put it through our center's review process, and it has not been finalized, and so these numbers are still preliminary, but they're probably not going to change, and so I have the snapper grouper in the first column, and this is the 2014 to 2016 averages at the annual level, and so the annual vessel level, and what you can see with the king mackerel is it's a smaller fishery.

It's just as many trips as in the snapper grouper, and actually more vessels, but the percentage of king mackerel in their overall revenue is only 24 percent, and so, really, these vessels that are doing king mackerel, on average, are also doing the snapper grouper fisheries, and so, when you come to the economics, they actually do not look very different, the king mackerel economics, from the snapper grouper economics, because, at an annual level, they are really largely the same vessels that you are looking at again.

If you look at the trip level, there might be a little bit more difference, but it's usually exactly what you would expect. If there is more owner-operators and less crew, then the hired labor will be down, but then the owner labor will go up, and the like, and so this is why I always say that I think, after developing all these SOIs, it's often, for many purposes, descriptive in nature, and it's best to just look at the big overall SOI.

I will point out that sort of the Gulf of Mexico reef fish fishery and the king mackerel in the Gulf of Mexico, they have the same relationship, and so the king mackerel there looks pretty much like the reef fish fishery, from the economics, but the reef fish fishery is a much -- It's about three-times as big a fishery, with fifteen-million pounds instead of five-million pounds, and they have less trips, actually, because they go on much longer trips.

It's about the same number of vessels, even though the fishery is three-times as big, and so those vessels make a lot more money, in terms of revenue, and the fixed costs especially are, in absolute terms, the same, and so, percentage-wise, they are much lower, even though they have more expensive vessels. The deprecation and everything that we calculate is lower. They come up with a net revenue from operations that is 34 percent of total revenue, and so that's a huge sort of abnormally high profit, and that's what we economists call the rent from the fishery which is being generated, and, obviously, that is going to those IFQ shareholders and the vessel owners, and a little bit to the crew, but it's quite a difference from the regulated open access of the South Atlantic snapper grouper fishery. I think that concludes my talk. That's it. Thanks.

DR. SEDBERRY: Thank you, Chris. That was a very interesting and very data-dense and full of information presentation of a really complex report, and so I appreciate you presenting that to us. Before we take questions and open it up for discussion by the committee, I wanted to see if there's any public comment on this presentation. Seeing none, I open the floor to clarifying questions and discussion and comments from the committee.

DR. LI: I have a clarifying question about the survey itself. Because the responding rate is very high, given a survey questionnaire -- If you look at a questionnaire for the economic questions, never mind the questions for the tax returns and all that, like how much you earn and how much

you spend, and it's kind of sensitive personal information, and usually that type of information, if they are shown on the questionnaire, you are given a category that you can choose, like range of your income or whatever, but, here, it's exactly the dollars, and so I'm thinking -- Given the high responding rate, how do you select the sample, the economic sample, from the pool? Is it completely random, or is it stratified by something?

DR. LIESE: The response rate is mostly because it's mandatory. It's part of the logbook system, and so they have to fill it out, and so they complained a lot, of course, and, when we send the selection letters, we get a lot of calls about we don't want to do this, and another problem is that, on the annual form, we are asking, again, for fuel costs and other costs, and they're saying, well, we filled this out all of last year, and why don't you just add it up, and the truth is, for those people who strictly do the logbook fisheries, I can add it up, and I actually use it as a validation method, to double-check if they are giving me good data, but too many of them are also doing other things, and so I don't know -- They can't separate their fuel use for commercial fishing snapper grouper and commercial fishing king mackerel and commercial fishing for shrimp or for-hire fishing. They don't have separate accounts for that, and so that's why our annual form is at the annual level.

They always complain about that, and I have to explain it, and they also don't like us collecting this data, the economic, and they say, oh, why do you need this, and they resist, to a certain degree, but it's been ongoing for a long time now, and they have gotten used to it.

You asked how we sample, and so it has changed over time. It wasn't always the best. There were complaints about people -- I'm not going to go there, but there was a time when people were selected repeatedly. If they were high-liners, they were just sampled all the time, and it was partly an error and partly sort of an imprecision in the methods, and that's one thing that we changed in 2014, and so, these days, we look at people who had more than twenty days per year in the last two years, and we call those the very active, and we look at the people who have positive days, but less than twenty, and we call those active, and both of those pools we sample at 30 percent, and randomly.

It's totally randomly, and 10 percent for the not active people. Those might be new vessels or vessels that sort of just didn't fish for the last two years in our fisheries, and then the next year, again after much frustration from the fishermen, we have decided to eliminate people who were selected last year, and so it's not a perfectly random sample, and so, if you were sampled one year, you would be eliminated from the population the next year and not available for sampling, and that's just because people always call us.

There is always going to be someone, even at a 30 percent chance, if it's highly active, and some people would be, if you randomly sampled, be selected three or four or five years in a row. It's a smaller and smaller number, but they get angrier and angrier in the process, and so you spend as much time on the phone, and they had some legitimate gripes in the years 2010 to 2013, and there is another survey that these people are sampled for, which is the discard logbook, and so there is another thing they have to fill out, and so they get angry, and so we've decided it's not that critical.

If we randomly sample them one year and then take that random sample away from the population, there is probably some bias, but it's a very, very small bias, and it buys us a lot of peace, and so we can strictly tell people -- People call and say that I was doing this for the last three years, and

we can say, no, if you're being sampled this year, you were not selected last year, for sure, because that's how we eliminate you. Does that answer your question?

DR. LI: Yes, and, if it's mandatory, the response rate is not 100 percent. Second, how do you think that your sample of those people who were selected this year will not be selected for the next three years, and how would that affect the total estimate of your results?

DR. LIESE: I will start with that. People only get one year, and so we only eliminate from the pool for one year. After that, they are back in, and so it's always just like you don't do two years in a row. Then you're back in. If it's a perfect random sample each year, it should have no bias whatsoever. It's only when you start thinking about some vessels going out and coming in in a systematic way that you could have some bias. Of all the noise we have in the data, this is not a big problem.

Your other question was why don't we have 100 percent, and this is because it's a fishery data collection, and, in the perfect world, yes, but we're very far away from that. I mean, people just -- They die, and their wife tells that we can't do it, and we have to find ways to pass it, and when people do just one little thing -- I mean, there is the -- Technically speaking, the logbook program, which I don't do it, but they enforce, and so, if you are not compliant, you cannot renew your permit.

That's why we get to 98 percent or something like that, but there is still -- You can still call in and somehow get around the process, and I can't tell you exactly what a good example would be. I think sometimes we know that people are just answering and giving us really bad data, because they just want to be against us, and so they might not do it for the logbook program, but the economic data, and then we'll just blank it all out and still push it into the data.

There is another thing. We hold each trip until it's all validated and cleaned, and so, if you're not compliant, we still want that trip, if the trip looks good, to go into the master data, so it gets counted, even if the economic data might not be so good. We are just doing a sample, and so we don't have to have 100 percent, since we're doing a sample anyway.

It would be nice to have 100 percent, but, when do a mail survey, it goes down to 70, and that's still getting pretty much everyone, and it's mandatory, and we still tell them on the phone that you have to do these, and we usually don't enforce it strictly, just because it's always a major headache when you enforce something, because they call our Director directly, and, at the end of the day, we usually have to like get them back in the system, and it creates a lot of hassle and time and effort, and we just don't have the staff, and so we are very hesitant to actually do the hard enforcement, especially we the economists, on a sample survey.

The logbook system, as a whole, has a system designed, and they send out letters, and they are looped in with the Regional Office, which does the permits, and so that does get enforced, but, for the economic data alone, we usually don't push too hard on the fishermen. We try to convince them that it's in their interest to provide this data, because it produces a picture of the human element of the fishery and not just the biological element of the fishery, and usually we get compliance. There is only just a few people who really don't want to play ball.

DR. REICHERT: On your previous slide, and this is just a detail that struck me, and I noticed that the percentage for fuel and supplies in the Gulf of Mexico is considerably lower than that in the South Atlantic. Do you guys know if that's a fuel efficiency or fuel price issue? I was just curious.

DR. LIESE: The biggest difference is that revenue is so much higher. Prices are higher for the same species, and they just catch so much more, and they're much more productive. That is one reason it's higher, but they're much more efficient, and so it's actually -- What am I trying to say? In absolute terms, it is higher, and so they are spending more on fuel and supplies, but it's not proportionally higher. Like their revenue is even higher than that, and so that's why the proportion goes down.

DR. REICHERT: It's a percentage?

DR. LIESE: Yes, it's a percentage of revenue, and I didn't -- I mean, basically, if you look at it, 500 vessels are making $61 million, versus, in the South Atlantic, 500 vessels are making $18 million, and so it's not -- But you have to multiply, and I probably should have put a different number there, but it's divided by the 0.72 there to get at the vessel-level revenue, and so that's just the snapper grouper, and they get another 28 percent, and so it's probably that they're making $24 million, 500 vessels, and, in the reef fish fishery, they are making $63 million, when you count the non-SOI species that they are also catching, and so their revenue per vessel is much, much higher, and I can pull up the actual numbers.

They're in the tech memo, but I just selected these to throw out there, and so it's the same with the fixed costs. They are actually -- What they spend on maintenance repairs for their vessels and overhead and -- They are very similar. I mean, in absolute terms, they are almost the same, but, in the Gulf case, that's just 14 percent of the revenue. In the South Atlantic case, it's 25 percent of revenue.

DR. CROSSON: That's part of what is driving the difference in fuel costs, is the regulatory environment. In the South Atlantic, they are dealing with trip limits constantly, and so they can't be as efficient on the use of fuel. They are going out there, and they hit their limit, and they have to come back. In the Gulf of Mexico, they're dealing with an ITQ, and so they figure out how much fuel they're going to use based on what percentage of their ITQ shares they want to fish, and they work out the economics of that, so that they can generate more profit per gallon used under that system. The trip limits are also what is causing the South Atlantic fishery to have so many more boats in it. Again, with trip limits, there is only so many trips the vessels can make, and so, to catch a similar amount of fish, you're going to have to have more vessels in the fishery.

DR. NESSLAGE: Thank you. This is great and fantastic information. I just had a selfish question. How much of the logbook data, other than the economic data, are you cleaning? It looks like trips, days at-sea, and are you doing any of the other effort information, because, just selfishly -- Again, I just recently tried to reproduce the tilefish CPUE index from the cleaning that went on there, and it was well documented from the assessment, but I was surprised by some of the decisions that were made, and I'm sure that the decisions are different at each data workshop, and so it would be really great, if it's not already done, perhaps to have that done in preparation for our stock assessments with all the logbook data, and I'm curious what you think about that.

DR. LIESE: No.

DR. NESSLAGE: But can we steal your methodology and your R code?

DR. LIESE: Yes, and it is the government's, and so I'm happy to share. We didn't look at depth, and we didn't look too much at the gear. I mean, we went to a day, and we carried the gear type, but each gear -- You know it, and every type of gear has its own way of being measured, and so it's really hard to standardize across gears, other than days at sea, which is why we use days at-sea, just a count, and so it's not necessarily easy. You can probably do it, but, no, we have not done that, and it's not extracted, and I'm not extremely keen to do it.

I don't know if I said it in this presentation, but the contractor, Elizabeth Overstreet, who built the whole system, she left us in October, and so the system is still running, barely, because now I have to learn R, but there is -- Basically, the developer of the program isn't there to really keep it living, and so it's working, but it's not being developed, and so, until we find a replacement, or I find time to learn, this is the status quo, and it's going to stay this way, probably. Sorry.

DR. SHAROV: If I could, very briefly, and I probably have a very naïve question, but this is a great system of data collection and very valuable information, but my question is what do you do with it? Beyond, obviously, the interest in generating like an overall estimate of the revenue and how valuable different fisheries are, who are your principal customers? Who is using your information in relation to management, like questions of how regulations that are based -- That are developed based on the stock status effect and the changes in behavior. Are there models being developed that investigate this relationship between the status of the stocks or limits and how that affects economics, and vice versa, how economics affects different pressures? I just have no idea as to how intensive this data is being used, and so just real quick.

DR. LIESE: It had been used, but on an ad hoc basis, and these reports make -- Because the data is confidential, we can't give the data to people who are not NMFS, most of the time, because it's confidential economic data, and so this is -- These reports and these SOIs, if I generate them, they are not usually confidential, and so they can be distributed, and so I hope there is going to be a whole bunch of research being done with it in the future, but, specifically to the management process, I think there is -- In each of the amendments, there is the economic description, and, in the past, it was usually the revenue were reported, which is sort of -- We build on that method of putting revenue on things, but there was never any profitability margins or the like, or the costs we not included, because it's not on a regular basis, and, for economic analysis, really, you want to look at that margin and not at the whole revenue. That is just ignoring all the costs, and they can be important.

The Regional Office economists and the council staff will probably start using some of this in the fishery economic descriptions in the amendments, and then, when it comes to the economic analysis of the effects, in the Chapter 4 of those amendments, you would have to do more analysis, but some of these numbers might be the basis. If it's a simple thing, you would go and look at what's the profit margin on this and what's the -- You could use that margin and apply it, or I could run a separate SOI for that analysis and provide it to the analysts, and so that's the short-term way this is going to be used.

We are working on different types of research, and I've been looking at a preliminary sort of paper on looking at the rent in the reef fish fishery, to really quantify it, and I hope to get that published

one of these days, and then we're going to look at -- I want to do a paper on the comparison between the South Atlantic and the Gulf of Mexico reef fish, to these two different management approaches, because it's quite a -- I had done a lot with the shrimp fisheries on both those water bodies, and the difference there is -- They are all breaking even, and they are all regulated open access, and so, when we crunched the reef fish numbers, I had never seen such profits before, and so we economists always talk about the economic benefits of IFQs, but I hadn't measured them before, and that was quite fun to see.

That said, that is economic profit, and that is just that perspective. If you look at the number of boats, vessels active, they are both about 500 in these fisheries, which is like three times the size, and so, obviously, there is a lot of consolidation, and, if your metric is like participation and number of boats and labor, then those are other metrics that are being maximized not by an IFQ approach, and so this is just what economists always say is going to happen under an IFQ, and it was nice to actually see that. There is probably a lot -- As I said, these reports are very without interpretation, and, often, when I look through it, I'm like -- You see in the numbers things that would be worthwhile to check out and dig deeper and do some research and maybe find something.

DR. ERRIGO: I can see reports like this being used for, in some ways, the allocation discussions, because landings are becoming something that is less and less useful for allocations, as time goes on, but, also, we're looking at, in the snapper grouper fishery, doing away with the two-for-one permit, and a lot of people were asking where are we now, and have we gotten down to the point where we don't need the two-for-one anymore, is the fishery down to the number where, economically, we're good, that kind of thing, and everyone was like, well, I have no idea. A lot of these numbers actually would be extremely helpful in doing that kind of analysis, and so I can see this being helpful for lots of things.

DR. SEDBERRY: Thanks. We have a couple of action items to deal with, but, if there's any remaining questions, we can go ahead and take those before we break.

MS. LANGE: Just quickly, and it's sort of related to Alexei's question, but I am wondering -- This was presented to the SEP, and I'm wondering if there might be input from them, as far as their perspective on how useful it is or if there is information there that would be helpful or if that's going to be coming up in your report later on.

DR. CROSSON: That will be in the report, which I'm going to -- I am not going to get that done by the time this SSC meeting is done, but, just in general, the results from the SEP -- I mean, we thought it was fantastic, obviously, and there were a number of excited economists and social scientists in the room, but we thought -- In terms of being best available science and useful for management, absolutely, and, because what has generally been done, what's being done right now, are just reports of gross revenue, which is just very misleading, and it doesn't really show you much of anything. It shows what the value is something that came off the boat, and it doesn't tell you really why people were doing it or whether they are getting any kind of real benefits out of it.

It's the best available science with accolades, as far as we were concerned, and the size of this task that Chris and Liz were able to do over the past few years is really great to see. I mean, I just -- Liz is now at the University of Miami's Medical School, organizing their records now, and probably doing something fantastic there as well, but, yes, we responded very favorably to it, and some of the stuff that Mike just brought up about how would you think about the two-for-one and

is the two-for-one doing its job, and, looking at it right now, I would say that, no, they're still not generating sufficient profitability that the fishery should not -- If you want to increase the profitability of the fishery, you're going to have to further contract.

That's what I would see right now, because, right now, it's sort of at an indifference point. Once you take out the opportunity cost of the owners' time and labor and all the depreciation, the fishery is just sort of there, and it's kind of right along the edge, and so I think, in comparison to -- Like Chris pointed out though, there is tradeoffs that happened in the Gulf when they moved to the IFQ system, but I think that was really important, and so we all thought that was of value.

Then I think what Chris talked about -- I never really kind of pictured how holistic a lot of this stuff is, and I think that's the difficulty, and I'm working with Chris and trying to -- Once you try and drill down to something really specific, you realize that this vessel also does this fishery and does this other fishery during parts of the year, and they also have a mackerel permit and they are catching mackerel.

A few ones that you think of in the South Atlantic that tend to be very specialized, where they're catching almost all of the same species with a specific type of gear, which Chris brought up that there is golden tilefish longliners and black sea bass potters, and you can pull SOIs out of it, but you realize how quickly the sample size shrinks down, to the point that you're walking a line about whether you should report it or not, but that was generally the SEP -- Tracy, what else did we comment?

DR. YANDLE: I think you captured most of it there. The other big thing is we just saw this, with the cleaning -- So much of the process is that this is -- Automating is overstating it, but it gets the point across. It's going to make the availability of this information in this detail be available so quickly and so relevant to when we are trying to figure out what's going on in a fishery, particularly when we're only looking at fishery-dependent data. There is some really exciting potential applications of this to management, and I think this is a great step forward.

DR. SEDBERRY: Thanks, Scott and Tracy. Scott, since you brought up best scientific information available, that is one of our action items, and, from what I heard you say, the SEP agrees that this is the best scientific information available. Is there any objection from the SSC to concurring with that, that finding? Okay, and so we have consensus on something. Thank you.

DR. BUCKEL: Just a few quick questions. Is there a plan to have this served up on a website? Maybe you mentioned that and I missed it. It's automated, and so each year it would get updated, and, instead of in a tech report, you could go online and find these updated numbers?

DR. LIESE: We probably will -- Right now, because the process creates a PDF, it's a tech memo. With markdown, it could be -- Those tables could be extracted and thrown on a webpage, probably, and I don't have the skill to do it right now, but, if there's the desire for that, it could be done. Now, that would be putting the SOIs that we have in the tech memo on the webpage.

If you're asking about could we have an interactive device, where you define the SOI, and then it runs the math for you, then probably not. Again, because we always have to make sure that everything is working right before we release those data, and so, because it's sample data and there is a lot of things that can go wrong, we probably always have to have an analyst look at each SOI

and the results, and that's what this diagnostic report is. It's to make sure it's working and then create the results that are for the public or for others.

DR. BUCKEL: The former would be a great start, but the latter would be awesome to get to, and then the second comment I had is some of the time series is in a table format, and, as the time series gets longer, it would be nice to see those in a graphical form, and so landings or price per pound would be really interesting to see, if that's going up for certain species. Thanks.

DR. LIESE: Point taken. Those tables would be nice to maybe have a companion database on the website, because I myself had the problem, for this presentation, that, when you have a PDF and you want to pull out the numbers, it's a bit of a pain to get them in the table format outside of a PDF, and so, yes, we can look into that, and that might be nice.

Right now, since the sampling design changed in 2014 -- Originally, I wanted to do backward-compatible to 2005, but that's never going to happen. It's too much effort to get the statistics right, and it takes so much time that we're now already at like -- I have the 2017 data, and so the next report will have a four-year average in it, and then the 2018 report will have a five-year average, and I think that's what we'll leave it at, because I think that's what the Regional Office economists usually tell us is what they like to use, five-year averages, but, of course, we'll keep the other data too, and so there will be, as time progresses, more and more years of data, and those will be difficult to put in a tech memo, and so, yes, it's a good idea to probably park those on a website somewhere, except that, as a federal government person, we almost can't do websites anymore, but thanks.

DR. SEDBERRY: One of our other action items is to discuss the uncertainties, and it seems to me that the entire analysis, the statistical analysis done, gives a measure of uncertainty in the analysis, but is there anything that you could say generally, just addressing this report and the method generally, about uncertainty in the analysis?

DR. LIESE: The sampling uncertainty is accounted for explicitly by doing the 90 percent confidence interval, and the fact that we go for a 90 percent and not 95 percent confidence interval is an indication of how much noise there is in these data. I mean, you see it in the census data, how much -- You know, some people go out there and catch four pounds, and then other people go out there and catch 10,000 pounds, and it's all in the same database, and they're all legitimate snapper grouper fishermen, and so you just have that huge variation.

Originally, when we designed this approach with SOIs, the hope was that, as we drilled down and define SOIs, we would find more homogeneous subsets within the fisheries, so that, even though our sample size would be going down, our variation would be going more than proportionally down, and we would actually improve our confidence intervals, and the truth is that I didn't -- So far, I haven't really found those type of subsets, and so, even if you go to the longliners, and they're all bigger, you still have a lot of variation from some people doing 500 pounds and others doing like 40,000 pounds, and I don't know, but the point is the variation just stays, and so there is -- It's big throughout, and it's one reason that I -- Right now, the methodology does not have sort of a section which advises which numbers to use in which typical sort of amendment context, and I've already told Mike Travis that we'll put that into the next round of the reports.

I like the three-year averages, because it's a sample survey. Each year, you can see they fluctuate, and it's probably just because of how you pulled the sample. If you average it across three years,

and I haven't don't the statistics of it, but it's a straight three-year average, and one day it will be a five-year average, and you should be -- With a five-year average, it should be half the noise, and so it should -- Those numbers should just be the central limit theorem, like getting less noise, but there are many, many steps along the way, and I always like -- Personally, I like using the numbers in a qualitative sense.

You look at statements like it looks like a quarter of revenue is going to fuel and supplies, and that, to me, is a statement that these numbers back up. I don't know if it's 24 percent or 27 percent, but there is enough noise there that it could vary, and not just the sampling noise, but all kinds of data processing noises and revenue estimation noises and all other things, and so one has to be careful about using it and not citing exact numbers. Rounding up is always a good idea.

DR. SEDBERRY: Thank you. Gregg Waugh, did you have a question?

MR. WAUGH: Thanks, George. Great presentation. One question about uncertainty that the council has discussed in the past, not so much with the economic logbook part, but the other, in terms of looking at the logbook. As you stated, people can just have to fill out their logbook before they get their permit, and so there was always some concern that those that turned in their permit relatively on time, versus those that turned it in after they were notified that you can't get your renewal until you submit the data, and have you all ever looked at that, to see whether those data are different than the normal data that's turned in on time, if you will?

DR. LIESE: Yes, we did that, and there's many other things that can go wrong too, like the logbook changes over the years a little bit, and people will use like five-year-old or ten-year-old forms when they submit stuff, and so the versions change, which is terrible, when you guys change the grid. The 2 might have been a very different fishing area ten years ago, and so there's all kinds of -- This is fishery data, which is always very messy, but, yes, we looked at the people sending in the forms later, and we actually did not find -- We looked at the years 2014, 2015, and 2016, and especially 2014, because that's the year we used to like design all of our automated cleaning routines, and I do remember that we looked at if there was like -- If trips reported within ninety days, within 180 days, within a year, or after a year, and we didn't see anything that looked systematically wrong.

If memory serves right, but I would have to check the code, I believe we just kept everything. We didn't throw out anything, because it didn't seem terrible, but, if you look at someone's king mackerel trips, they are usually one-day trips, with one person onboard, and you list them out, that they take 200 trips a year, and you look at those trips, they put down pretty much the same thing on those 200 trips, most of the time. Seldom do you see them changing much, and so it might -- Delayed reports might not be so bad, because they already do so much rounding upfront. One always has to remember these things. I mean, it's not the truth. It's just an estimate of a general tendency of where we should be. It's right in a magnitude.

DR. SEDBERRY: Any other questions?

DR. LI: I am still trying to -- I am still struggling with the one-year exclusion from the pool. You are saying like the people who were selected this year and they would be excluded from next year's survey, the same, and so it's not a complete random sample, because you are not sampling the same whole population pool. I can understand, from the perspective of operating a survey, because

people complain, and I guess that's what we have to do, but I just feel like -- When we're talking about uncertainty, that is part of the sampling method itself. There is an uncertainty there, but I don't know.

DR. LIESE: No, you're right, but, if you take the thought experiment, and say there's a thousand vessels, and it's the same thousand vessels every year, year after year after year, and so you randomly sample 200 of those in year-one. Then, next year, you randomly among the remaining 800 vessels. Because the first process was a random sample, the second one is a random sample too, and you don't introduce any bias, even by eliminating those. If the population stays constant over time, you are not -- We're not biasing it in any one direction.

Now, it gets a bit more tricky when that population changes a little bit and say we over-sample in Strata Number 3 in one year, accidentally, and then we have less people in that strata the next year, and so there might be these nuances, but, again, when you compare that to people filling out like $200 in fuel, when in fact they had $152 in fuel, it's probably not -- It's a tractable problem, that you can probably do mathematically, because you know it happens, but it's probably not one of the big biases we have. There's a lot of other guesswork going on that is much more -- That is creating much more of a bias in the processes.

DR. LI: Yes, I agree, and that's true. Given the pool of the population, they are uniformly distributed there, and so it doesn't matter if you throw out some of them, because they are uniformly distributed, and there won't be any bias, and the question is can you guarantee that they are uniformly distributed? Anyway, I am trying to -- I can understand, but I am just trying to figure it out myself. Thank you.

DR. SEDBERRY: Any additional questions or discussion of this agenda item? Thank you very much, Chris. Again, that was very informative and very useful, and we appreciate it. We will take a break now until 3:30.

(Whereupon, a recess was taken.)

DR. SEDBERRY: Thanks, everybody. Before we move on to the next agenda item, Regulatory Amendment 29, I just wanted to go through the notes, the bullets, that Mike recorded for the last item, the SEP report, to make sure that we have covered all of the important points that were made and any questions or discussion that we had, and so they're up there on the screen, on the left, in italics, and so just take a minute to read through the first six, and then Mike will scroll down, and then we'll just make sure that everybody agrees that that's what was said.

DR. CROSSON: That first line, the SEP deems these reports best available, and we also agreed with that, right, and so is that further down?

DR. SEDBERRY: It is correct that we concurred, and we reached consensus. I want that word in the report somewhere.

DR. YANDLE: Actually, both the SEP and the SSC had consensus.

DR. SEDBERRY: Excellent. If we scroll down, this is the next six.

DR. REICHERT: It may be good, in the bullet about the large variation in the data, in terms of landings per trip, that was -- That variation is described, and so I just want to make sure that the interpretation is correct, because I would like to see a little more explanation of what that means. We recognize there is a large variation, but that variation is described in the report, or in the data, that's presented. Does that make sense?

DR. ERRIGO: I think that's up to whoever is assigned to this agenda item.

DR. SEDBERRY: That was Tracy and Scott.

DR. CROSSON: I assigned it to Tracy on the SEP.

DR. SEDBERRY: Okay, and so, there at the bottom, the SSC concurs with the recommendations, and so we're all good with these bullets?

DR. YANDLE: If you want more detailed notes about exactly what the questions and answers were, I can email them to you, but I have a feeling that that would be in the department of redundancies.

DR. SEDBERRY: Go ahead and email them to me anyway, just so I have them. It's better to have them and not need them than need them and not have them, I guess.

DR. YANDLE: Okay. Will do.

DR. BELCHER: Again, if we're talking about procedural, since Dr. Liese was the one who brought up those points, should that stand as part of the SSC commentary? He was responding to a question from an SSC member, the variation being pointed out, and he was basically giving us how he had addressed the sampling bias and all, and so, just to be clear, those are clarifying points from the analyst and not necessarily standing points from the committee. We're not identifying those as sources of uncertainty. The analyst is.

DR. SEDBERRY: That's correct, and it's in the report, in the SEP report.

DR. ERRIGO: I would say that, as long as you agree that those are sources of uncertainty, you could have them in your report. If you disagree with that, then I wouldn't put them in there, or maybe a comment on why you don't think those -- But if you agree that those are sources of uncertainty, there is no reason to not include them if they are. You just mention that it was according to the analyst.

DR. SEDBERRY: Okay. I mean, we concur, right?

DR. BELCHER: Well, I don't disagree with that, but what I'm getting at is, if we're trying really to kind of stick to what the SSC is agreeing to and what the SSC's comments are, they're not necessarily our comments. They were clarification points, and I don't disagree with the identification, but I'm just saying they're not the SSC's identification of those points.

REVIEW OF SNAPPER GROUPER REGULATORY AMENDMENT 29

DR. SEDBERRY: Right. The important point was that was something that was presented by Chris, in response to a question that we had. I think we are now ready to move on to Review of Snapper Grouper Regulatory Amendment 29, and the assignments for this agenda item include Jeff, Eric Johnson, and Fred Serchuk. This is Attachment 7, which is the Regulatory Amendment 29, and we will have a presentation by Christina. Thank you.

MS. WIEGAND: I just wanted to give you guys sort of a brief, very brief, overview of the purpose of this amendment and where it came from, and then we'll dig into the specific actions and alternatives that the council would like you all to address, and so this amendment originally spawned from the snapper grouper visioning process that occurred back in 2014. A lot of stakeholders were expressing concerns about fish that were released due to regulations or other reasons that would not survive, and so this is the council's attempt at addressing best fishing practices in the snapper grouper fishery and encouraging their use.

There is three actions in this. The first two are driven at those best fishing practices, and they look at addressing the use of descending devices and/or venting devices in the snapper grouper fishery, and the second one looks at some modifications to current circle hook regulations. The third has bounced around from amendment to amendment, and it actually relates to powerhead use and either prohibiting powerheads throughout the South Atlantic or allowing powerhead use in federal waters off of South Carolina, where they are currently prohibited, and so the purpose of that is just to make regulations consistent throughout the South Atlantic. I am going to sort of exclude that action from today's discussion, since it's not really pertinent to best fishing practices.

What you've got is the document that was in your briefing book is the full amendment document, which usually we would put together a sort of summary document, and the reason that I included this in there, and it's very much in draft form, is because we're going to be talking a lot about how these best fishing practices can be considered in stock assessments, and the biological effects section right now has been put together in sort of a literature review form, and so there's a lot of valuable information contained in there, which is why I included this whole document, even though, like I said, it is very much in draft form, but the actions and alternatives that are in it have been updated to reflect the most recent council discussion at their March meeting.

The first action that I'm going to talk to you guys about is the action that would address requirements for the use of descending devices or venting devices when fishing for or possessing species in the snapper grouper fishery management unit. Currently, there are no requirements for fishermen in the snapper grouper fishery to carry these onboard, and there are two alternatives.

Right now, the council's preferred alternative would require fishermen to carry a descending device onboard a fishing vessel when fishing for or possessing species in the snapper grouper fishery management unit within six months of implementation of this amendment, and that six-month delay is just to allow additional time for fishermen to purchase this device and to allow for a bit more time of education and outreach on how to properly use these devices.

Right now, the council has selected sub-alternatives that would require descending devices onboard for all sectors. Just one note about this. By requiring that descending devices be onboard, that doesn't negate their ability to use a venting device, but they are just required to have that descending device onboard. The third alternative is similar, except that it would require a venting device instead of a descending device, and that is currently not selected as a preferred.

Descending devices and venting devices can be defined in many different ways. The current definition that the council has been working through with descending devices is listed there, and I do want to note that it's a bit of a work in progress. The Snapper Grouper Advisory Panel is going to be reviewing it in a few weeks, as will the Law Enforcement Advisory Panel, but, as it stands, and I will just go ahead and read it, since this is sort of a key part of the amendment.

For the purpose of this requirement, descending device means an instrument that will release fish at a depth sufficient for the fish to be able to recover from the effects of barotrauma, generally thirty-three feet, or twice the atmospheric pressure at the surface or greater. The device can be, but is not limited to, a weighted hook, lip clamp, or box that will hold the fish while it is lowered to depth. The device should be capable of releasing the fish automatically, releasing the fish by actions of the operator of the device, or by allowing the fish to escape on its own. Since minimizing surface time is critical to increasing survival, descending devices shall be rigged and ready for use while fishing is occurring.

There is a lot of information within this amendment that shows the benefits of descending devices and venting devices. I won't dwell on it too much, and I know there are people at the table that can speak with more authority than I on the benefits of descending devices and venting tools, but I will say the literature generally supports that both descending and venting improve the survivorship of released fish. There have been some recent papers that support descending over venting, simply because, if venting is used incorrectly, it can cause some damage to the fish. What the council would like is a bit of discussion from the SSC on how a requirement like this would be factored into future stock assessments and discard mortality.

DR. SEDBERRY: Thank you. Before we move on to questions and discussion, I would like to call for any public comment. No public comment. Okay. We have several action items here, but, first, are there any clarifying questions or general discussion? No? Okay. The first action item is does the SSC consider non-offset circle hooks and descending devices effective methods for reducing releases and release mortality?

MS. WIEGAND: Do you want me to go through the actions now or take it action-by-action?

DR. SEDBERRY: I'm sorry. I guess that would make sense, yes.

MS. WIEGAND: To go over it all now?

DR. SEDBERRY: Well, I think that's kind of the way our action items are arranged, and so it would be better to do it that way, I think. Sorry.

MS. WIEGAND: All right, and then I will give you guys a brief overview of the second action, which has to do with requirements for non-stainless-steel circle hooks when using hook-and-line gear and natural bait. Currently, non-stainless-steel circle hooks are required north of 28 degrees, which is about twenty miles south of Cape Canaveral, and so that's about where that line requirement is.

The council's current preferred alternative would require the use of non-offset non-stainless-steel circle hooks specifically, and so the important change there is requiring non-offset circle hooks,

and their current preferred sub-alternative is to require them north of that same line, where circle hooks are already required. There is an alternative in here that would require them throughout the South Atlantic Council's jurisdiction.

A third alterative, which is currently not preferred, would just require the non-offset non-stainless-steel circle hooks to be onboard the vessel, as opposed to requiring their use. Then Preferred Alternative 4 just addresses non-stainless-steel hooks, and it would just require all hooks throughout the South Atlantic to be made of non-stainless-steel.

Again, I don't want to dwell too much on the validities of individual studies, other than to say that research on circle hooks can vary quite a bit between species and the study, but the top co-occurring species in the snapper grouper species are black sea bass, red grouper, gag, scamp, greater amberjack, vermilion snapper, and gray triggerfish, and, excluding gray triggerfish, those fish all have similar mouth morphologies and would benefit from circle hook use, and there is additional research that does say that there is a benefit to using non-offset, as opposed to offset, circle hooks.

DR. SEDBERRY: Thank you. Now any questions, before we address the action items, any clarifying questions?

DR. NESSLAGE: I just want to make sure that I understand the venting and descending device language, and so, in the circle hook language, you specifically have the word "use" in there. However, in Action 1, it looks like the items have to be onboard and/or rigged and ready, but they could just keep fishing and not ever use them, correct, or am I misinterpreting how it's worded?

MS. WIEGAND: The council's intent is certainly to have the device used. The reason it's written that way is, one, there have been concerns about for-hire vessels, where you have a lot of people and individuals that are trained to properly vent fish that might prefer that method, and, also, there might be situations in which a fish might not need descending, if it's not experiencing systems of barotrauma. If you're fishing in shallow water, you wouldn't necessarily need to descend the fish, and so it's just to keep that option open.

DR. SERCHUK: As one of the people that was assigned responsibility for this, one of the things I did was to -- First of all, I read the chapter, and I thought it was well supported by the literature that existed, but, in the literature, there were some papers that were more recent than the ones that were given there, and I provided Mike, I think, with three papers, and one of them was from the west coast, and it talked about a descending device would improve survival, and there was another one by our esteemed colleague here, Jeff Buckel, and so I would defer to him for his expertise, but he also said that descending devices were promising tools.

Then there was another one that I thought was really quite interesting, and that was a study of subjective norms with respect to barotrauma, and it found -- It was done in Florida, by our colleagues at the University of Florida, and they found that -- I will read the sentence in the abstract, because I think it summarizes it: "Subjective norms and perceived control were stronger for venting tools than for descenders. Overall, subjective norms had the strongest influence on a fisher's intention to use either form of mitigation. Overall, outreach efforts focusing on reinforcement and subjective norms should have the greatest impact on increasing fishers' use of barotrauma mitigation methods."

There seemed to be a greater willingness to use venting devices, because the other devices were thought to be difficult to use and take more time and were expensive, and I'm just thinking that these sort of issues, if they weren't considered by the council, in terms of making the unilateral decision to use descending devices, should be something they should ponder.

I think their arguments in the amendment are well justified based on it, but I'm just wondering whether this sort of study result, suggesting what fishermen currently would look at, in terms of the two devices, and why the council then would prefer one device over another, particularly when the venting devices seem to be the device of choice, at least in this study and so I just wanted to raise those points, because these papers were not cited, and they came out more recently than were used in the amendment. Anything beyond that, I will refer to Jeff.

DR. ERRIGO: Is that the one by Kai Lorenzen?

DR. SERCHUK: The one that I am talking about with the norms was by Chelsey Crandall and Taryn Garlock and Kai Lorenzen, and it appeared in *The North American Journal of Fisheries Management*.

DR. ERRIGO: Kai actually came and presented that to the council, actually, and I do remember that, but I also wanted to make sure, because I wanted to put it in the notes.

DR. CROSSON: Can I ask a question about that? Right now, it says, does the SSC consider non-offset circle hooks and descending devices -- Should the latter -- There is a difference between whether you consider descending devices effective or whether you consider the presence of descending devices effective, and I'm not sure which one we're being asked.

MS. WIEGAND: I would say, given the way the alternative is currently written, it's the presence of descending devices onboard, though certainly the council's intent is that individuals be using these descending devices, but, again, the way the alternative is written, it's to have them onboard.

DR. CROSSON: Jeff, does the presence of descending devices --

DR. BUCKEL: I think the compliance is the thing that we really need to get a handle on, and I searched for compliance, because I remember that it was in here, and it's not now, and so I think that's going to -- The answer to these questions is going to -- Once the regulation is implemented, to try to get a handle on that compliance, but there is definitely folks using venting tools and descending devices now, and so I think that's been on the increase, and so, with this, there will be more usage, but, how much of the fishery, that's an unknown, but, just the presence, that won't help you, but the ones that use it, it will definitely benefit, from all the studies that are cited and the others that Fred just mentioned.

Just to weigh-in on the descender versus venting, we have a project that is not published, but it's ongoing, and we have been venting and descending, side-by-side, and we don't see a difference in survival. There is a slight increase in survival of descending over the venting, and that's for black sea bass, and it's species-specific, and so, at least for one of our important fisheries, they both work equally well, and so, as was mentioned, there is folks venting, and this will -- Sometimes you vent a fish, and it doesn't go down, and so the descending tool and having it rigged and ready will be

helpful, because then you can put the fish on that, and that's one potential benefit of this requirement.

DR. SEDBERRY: With all things being equal, if the fishermen prefer one over the other, then it would be better to have the one that the fishermen prefer.

DR. BUCKEL: Yes, and I think that's what this allows, right, and so they can still use the venting tool. They are not required to only use descending devices, is my understanding from this.

DR. REICHERT: To that point, one of our graduate students did a similar study and looking at the various methods, and, although the N may not have been sufficient for clear differences, the handling time was a lot more important than what method was used as a descending device, and I think that speaks to whatever the fishermen are comfortable with using. If that reduces the handling time, I think that would increase the survival of the fish, and so I think that's consistent with what you just said.

DR. SEDBERRY: Luiz, did you have something?

DR. BARBIERI: I did, but it was exactly what Marcel just addressed, yes.

DR. SEDBERRY: To get back to Scott's comment, what we're trying to address in this action is what the council wants to do or what the preferred alternative is expressing that the council wants to do, and so I think we do need to change the wording on this, as Scott suggested, since the council is just proposing that descending devices be available and not be used.

MS. WIEGAND: It's one of those funky intent versus how -- The council's intent is certainly to use the descending devices, but there have been concerns expressed about if fishermen perhaps prefer venting and know how to do it correctly or are fishermen feeling that they have to take the time to descend a fish even if it's not experiencing barotrauma and there appears to be no reason to use a descending device, and so it's trying to get around those concerns while still encouraging the use of these descending devices.

DR. SERCHUK: The problem that I had, Chair, was the one alternative is don't require anything, and the next alternative requires a descending device, which is the preferred alternative, and the third alternative is a venting device, but there is no alternative to provide either a venting device or a descending device, and, particularly when it seems the most important point is handling time.

That is why, when I saw these papers that were not included in the literature side of it, I thought that perhaps, had they seen these papers, they might have changed their mind, in terms of getting another alternative, and I think that's where we're trying to be helpful here, in saying, well, one or the other, when we should use -- Whichever one would be most widely utilized, rather than just requiring it onboard, but, second of all, in either case, it's the handling time which is the important thing, and so, if you require one that requires more handling time, then the intent of having the device is going to be mortgaged, and so that's why I'm thinking we need to sort of come to some consensus, if we can, about, well, the way these alternatives are structured, there might be a better way of having another alternative that you hadn't thought about, and I am saying we can say that to the council, particularly if there is literature that wasn't available to them at the time that they would considering the amendment.

MS. WIEGAND: Just to address that quickly, in previous iterations of this action, there was in fact an alternative in there that would have allowed fishermen to carry either a descending device or a venting device, and that alternative was removed, for a couple of reasons. One, the council would like to encourage descending device use over venting device use, because of information that fishermen don't necessarily know how to properly vent a fish, and so you are running into situations where descending is preferable, because venting is not being done correctly.

The council did consider a venting device requirement back in Snapper Grouper Amendment 16, I believe, and that action was not approved by NMFS, because of information that venting wasn't being done properly and was causing more harm to the fish than good, and so that's sort of the history of why that alternative was removed from this.

It would be on staff to sort of look at specifically research that has come out since that amendment was implemented and the venting device part denied, to see if there's been a significant change in the available research that would indicate that perhaps venting is now being done properly and could have the same benefit as descending, and so that's just a little background on why that alternative that would have allowed both was ultimately removed from this. That's not to say that it can't be added back in, if the SSC would like to recommend that to the council, and it's just background.

DR. BARBIERI: That was very helpful, Christina. I see this as basically the council trying to be responsive to public concerns about the magnitude, I guess, of release mortality and how much that is impacting management of fisheries and trying to take a step, perhaps, and to bring this more explicitly into sort of like a regulatory framework and say, okay, we're going to lead by example and now ask people to have this stuff onboard, and I think that's a positive -- Myself, personally, I see that as a positive step.

The thing is, is there any effort that has been thought about here to kind of do some kind of outreach and education campaign and promote the use and educate? I mean, I know that Sea Grant programs in the Southeast have been very engaged in this, directed at developing this sort of education programs, and so I wanted to hear how you felt that fitting into this whole discussion.

MS. WIEGAND: Outreach and education is definitely something that has been discussed quite a bit in conjunction with this amendment. We've seen a lot of public comment requesting education and outreach, and we talked to our Information & Education Advisory Panel about this, and they gave us a couple of recommendations of things to do.

One of the concerns was making sure we didn't sort of muddy the waters. There is a lot of information out there from a lot of different sources on descending and venting devices, and so sort of work closely with state partners to do that sort of outreach and focus on success stories from fishermen and just providing sort of the strict barebones information that fishermen need to comply and then work with state partners to sort of flesh out that outreach.

DR. BARBIERI: Right, and I've read some article somewhere that was kind of making the same points about way back when, thirty or forty or fifty years ago, the requirement for people to wear seatbelts and how that also involved a learning curve and a major outreach campaign to -- People know that is something that protects you, but, still, there is some period for people to adapt and for

that to become automatic, even though is regulatory, and some people are going to have a fairly high rate of non-compliance, even on those things that could be saving their lives, and so I see a similar type of process here.

MS. WIEGAND: That's one of the reasons that the council decided to put in that -- You'll notice the preferred alternative says within six months of implementation of this amendment, and that's to provide a little bit of extra time for these guys to get educated on these devices and be ready to comply, also understanding that part of this will be addressing social norms.

DR. REICHERT: I just wanted to clarify my previous remark about that study. I think one of the things, and I think someone mentioned it earlier, but the study that was I referring to, of course, those people are well-trained staff who know how to vent fish, and so I think that was one of the discussions about the venting, that there is always an increased risk of harm to the fish by people who do not know how to vent, and I think that's why I would support to have both onboard, because I think, for people who don't know how to vent, perhaps using a descending device may increase the survivability of the fish, and so handling time is important, but that's when people know how to vent fish.

DR. SEDBERRY: My experience has been that not only is venting sometimes dangerous to the fish, but it's dangerous to the person doing the venting, and those are sharp needles.

DR. BELCHER: I was just going to kind of piggyback on what Luiz said about education. I was at the council meeting when they were talking about the six months, and I know the Coast Guard was at the table, but we've been recently talking with LE, to kind of get our biologists to understand exactly how law enforcement does work in state waters, and I know our law enforcement usually uses a twelve-month period of education, and so it might be worth it, and I know this is outside of our purview, in the sense that it's kind of more the policy side, but just to kind of make that suggestion of talking to LE, to find out what their process would be, because, if they're willing to do twelve months for most things, it just seems kind of odd that we would force six for this.

DR. COLLIER: To Luiz's point, there's been a lot of outreach on descending devices, as well as some venting, and so FWC just recently published a paper on some of the work that they've done, and they also have a great video out there. NOAA has a great video called *Downscope* on several different descending devices, and the council has been working with the South Carolina Wildlife Federation to get out some descending devices. FishSmart has been working with all the states to get out descending devices, and we're trying to have a consistent message across the board, and so information is getting out there, and this is kind of the pre-implementation.

If this does become a regulation, we do have some information that is available, and, obviously, we would need to tell people that this is a potential requirement in the future, and so we're working forward on that and trying to get ahead of the game, and hopefully people are going to start using these more and more. There was discussion, I guess at the 2010 red snapper stock assessment, that nobody was using these descending devices, and so we do have some information in the beginning that it was zero, and then, going forward, that can be considered in management as well.

DR. NESSLAGE: Obviously, our thoughts on whether or not this will be impactful and have a positive impact on the population, with regard to reducing discard mortality, will depend on compliance, and I think we talked about that before, and is there any plan to have a specific data

collection program or a sampling program or a study to try and get at how often people are actually implementing these devices, if they are onboard, because that would really -- Without that, we won't be able to quantify the difference in discard mortality.

MS. WIEGAND: Right now, at a council level, I guess I would say that's a little to be determined, but there are certainly other studies out there that look at that, and council staff is working on a research and monitoring plan to recommend to NMFS. Currently, standard data streams, like MRIP and commercial logbooks and for-hire logbooks, don't ask about descending device or venting use. Like MyFishCount, that the council has been working on, does ask those questions, but, of course, those are voluntary and not mandatory, and so it's definitely something that's been a big part of the discussion.

DR. REICHERT: I think we should make it a research recommendation, because I think that's the only way -- One of the notes that I made is that we know that they are reducing -- I am pretty comfortable saying that they are reducing release mortality. How effective that is, I don't think we have sufficient information, and, for a stock assessment, I think that's critical information, if we want to see what the effectiveness is of these devices, and so I think this should be a very strong research recommendation. I am not entirely sure how to do it, but I think that's something we should look into, or that should be looked into.

DR. BELCHER: Just a point of clarification, because I've been trying to wrap my head around what is being asked in reducing releases. How are these reducing -- I get release mortality, but it says, "devices effective for reducing releases and release mortality", and so I know circle hook size, obviously, dictates some degree of size of animal that you catch, but I don't understand how you're reducing releases with these two things. If that's just a misprint, but it's a question, and I just wanted some clarification on what we were being asked on that.

MS. WIEGAND: I believe the intent is release mortality.

DR. SEDBERRY: Just cross that out, Mike. Go ahead, Fred.

DR. SERCHUK: This is just a follow-up to Marcel's suggestion about trying to get a handle on what the effectiveness of these devices are in terms of enhancing survival. It's been my experience that, in cases where the assessment has to come up with a way of estimating survival, it's been done on an experimental basis, and I think, unless -- I mean, the compliance is fine, but, quite frankly, I don't know of any study that uses a differential survival because of rapidly getting fish back in the water or using a different mechanism that has been used to change the survival rate, other than some studies, and so I think we need to be very careful here.

If we're going to recommend research, I think that's one thing. If we're going to be basing it on evaluation of compliance, we're going to be a long way away from getting a value, whether it should be 10 percent survival or 20 percent survival or whatever additional survival you think -- According to the study Jeff did, and they assumed zero, and then he assumed that we get an improvement of maybe 50 percent survival. I think our best bet is to think about a well-designed research project, or projects, to get at this, rather than trying to infer what the change in survival rate would be due to compliance. Again, that's my opinion.

DR. REICHERT: To that point, one of the things that I was specifically referring to is to get a handle on compliance, because, in addition to that, there is then -- There is still a release mortality, even with 100 percent compliance, and so I think those are two issues, and I think studies -- I don't know, but I think maybe it's easier to design studies to answer the second question than it is to answer the first question, but maybe I'm wrong, but I was more referring to the compliance part of this than the release mortality, just as a clarification.

DR. COLLIER: I did want to point out that there are two stock assessments in the South Atlantic region that use differential values for time periods, and one is SEDAR 41 for red snapper, where the discard mortality was reduced due to usage of circle hooks, dehooking devices, and likely education to fishermen, telling them that we need better practices for releasing. It was also done for black sea bass, with the regulation change for the back panels. Because there were fewer black sea bass of undersize being caught, there was less processing time, and so fish were getting back in the water, and so that was reducing the discard mortality. In addition to that, in the Gulf of Mexico, they do use differential discard mortality based on time periods for that stock as well.

DR. SEDBERRY: Thanks, Chip. Go ahead, Luiz.

DR. BARBIERI: I just wanted to say that I think that even this kind of sort of disagreement type of discussion that we are having here would be helpful to the council to know, that there is -- Implementing a rule like this, they will have to rely on compliance that is going to be difficult to be measured, at least for quite a while, so that they know that expecting real results from something like this may not be immediate, and it may take a while, and that perhaps integrating some additional studies to the process, to help inform this moving forward, would be a good way to go, because it's a gesture, I think, and it's an intention at this point that they are putting forth that is positive, but bearing fruit is going to be a little while.

DR. SEDBERRY: Thanks, Luiz. Genny.

DR. NESSLAGE: I'm changing my question now, after hearing what you had to say. Were all of those examples ones where the amendment said to require the use or the presence of those activities, because that is what we're getting at, right?

DR. ERRIGO: Circle hooks are required use. The issue with descending devices is that, if you require the use of a descending device, there is no way to enforce that. How do you know that somebody used it? You know that somebody has it onboard, but you don't know if somebody used it or not. It's similar issues with circle hooks, but, if you have it on your fishing rods, they assume you're using them. There's kind of the issue with what if you're catching a bunch of fish that don't need to be descended.

DR. COLLIER: Right. Handling time increases when you're using descending devices. If you just dehook it over the side of the vessel, handling time is minimal, and you don't touch the fish, and it doesn't drop on the deck of your boat, and its air exposure is decreased, and so several different things are there. If the fish is not showing signs of barotrauma, there might not be a need to descend the fish.

DR. BUCKEL: This is back to Fred talking about compliance versus doing more research, and I think this has to be -- When this gets implemented, or if it gets implemented, a workgroup maybe

of council user groups, or the council can appoint some folks that are on their advisory committees, recreational and commercial, to help in documenting the increased usage and the compliance and maybe help with that education, just being on the dock and are you using them, and there is some of the education and outreach events that Chip talked about, but it's amazing to me that, even with all the stuff that's being going on for twenty years now for Florida, with the venting, that folks still are not familiar with it, and there is new fishers, or they just don't hear about it.

If we had a group, either of folks that are on the council or council appointees, that could help throughout the South Atlantic, documenting not only compliance, but also helping with the outreach, I think that would be really beneficial, and then maybe that same group can also try to synthesize -- Some synthesis of the literature.

There is some meta-analyses that have been done comparing the increase in survival of venting and descending, versus doing either one of those, and so I think that the correction could be made, as Chip mentioned, with, okay, now we know there is 50 percent compliance, and so we're going to take the B2s and apply this new rate to 50 percent of them, and so getting a group together to start looking at that, and that's going to be species-specific, and so the project that Fred mentioned, going from zero percent survival to 50 percent survival, is deepwater grouper, and so that doesn't apply to a lot of the fish that we deal with here. That was snowy grouper and some deepwater -- Whereas, with black sea bass, it's already a fairly high survival without doing the venting or the descending, and so the details -- I think it would be helpful to have not just a research recommendation, but a workgroup that gets on it right away to help with the incorporation into the stock assessments.

DR. SERCHUK: First of all, I concur. Second of all, there is an expectation. If you're going to ask the fishing industry to change their practices, they're going to come back and say we are changing our practices, and where does it show up in the assessment, and I think you have to realize that.

They are trying to be good stewards and put out the education materials and put out the descending devices, and if you want to put out the venting devices and so on and forth, and they're saying, wait a second, I'm doing this every day when I'm out there, and, when I see the assessment come around, I want to see something more than 100 percent mortality, and you had better put something in the assessment to do that, because, quite frankly, I am trying to do the best thing. I know we're not discarding fish that are 100 percent dead all of the time, and so I think it comes back to us and the council basically saying, okay, how are we going to approach that analytically, and I think that's the responsibility that we have. Thank you.

DR. SEDBERRY: Thanks, Fred.

DR. BARBIERI: For your information, I know that the Science Center Miami Lab has an effort going on right now, and it has been for the last couple of years, in developing MSEs that are focused on evaluating the impact of not necessarily descending devices, or I think actually it is descending devices, in reducing mortality that goes into the assessment and the impacts on the assessment results.

There is a post-doc, I believe, that has been working on this, plus a couple of the analysts there that have been working on this, and they came and gave presentations to the Gulf SSC and then a

subsequent presentation to the council as well, and so, at least within our Science Center, there is some effort going that way. Obviously, our Science Center has a lot to cover, and not necessarily enough resources to wrap its arms around everything, but there is something there going on that perhaps the working group that Jeff mentioned could be coordinating with and getting involved with and trying to see if there is a way that we can learn through that process as well.

DR. SEDBERRY: Any other questions or discussion before we check our action items to see how we're doing? Okay. The first action was does the SSC consider non-offset circle hook and descending devices effective methods for reducing release mortality? Yes.

DR. BELCHER: I would go ahead and venture out there to say yes. I mean, there's enough information out there to say that they do help. The question is to what magnitude.

DR. SEDBERRY: Very good. Thanks.

MS. LANGE: Should we insert "use of"?

DR. SEDBERRY: I think that would help clarify what we're talking about.

DR. NESSLAGE: If I may amend to suggest we add "proper use" and I'm not as worried about the descending devices as I am about people venting fish randomly. I trust Jeff, and I wouldn't trust myself, and so just going -- That's not a diss on the average angler, but it's just we might be encouraging a lot of people who don't know what they're doing to kill more fish than they might have originally.

DR. REICHERT: Were you referring to the venting, because that's not part of this, or should we add venting?

DR. SEDBERRY: So proper use of descending and venting devices, and would that be -- I mean, I think --

MS. WIEGAND: The council's preferred alternative is currently descending devices, but I'm sure, if the SSC wanted to comment on the relative benefits of each, that's fine as well, but it's just that descending devices is in here because that's the council's current preferred alternative, is to require descending devices.

DR. BUCKEL: The benefit from the descender is, again, species-specific and depth specific, and so, if you're in shallow water and there is no pressure trauma, 100 percent are going to live without descending, and so there's no difference there, but, in deep water, then you get this big benefit, and so I think it's just a clarification that it can be species-specific, and, obviously, it's depth specific, how effective it is at reducing release mortality.

DR. SEDBERRY: I think, somewhere along the line, we said that whatever reduces handling time the most is an important factor. Under the guidance on factors, we said that handling time is a big factor and whatever reduces handling time is important.

DR. SERCHUK: Sorry to be a bugbear about this, Chairman, but I would like to see the venting devices put in there as well, and the reason I say that is I'm looking at the council's document

itself, and, even though they talk about a preferred alternative, when I come to the thing about administrative effects, it talks about educational materials would complement proper use and technique when using the required devices, and it would provide specification for what constitutes an effective venting and/or descending devices, and that's in the section on page 39, where they talk about the preferred alternative and Alternative 3. Alternative 3 is in their document, and I just think that we ought to take it very synoptically and rather than take it just by the preferred alternative, because we don't have a preferred alternative. The council does.

DR. SEDBERRY: Would the committee agree that we can go back into that first action and say -- Does the SSC consider non-offset circle hook and proper use of descending and venting devices effective methods for reducing release mortality?

DR. ERRIGO: I put it in your statement, that the committee considers the proper use of non-offset circle hooks, venting devices, and descending devices effective methods for reducing releasing mortality. Several other times in there, I have venting devices in there just as effective, and descending devices, as long as they are used properly.

DR. SEDBERRY: Recognizing that it may not be the council's preferred alternative, does anybody disagree with that wording that we have there for the first action item? Very good. Consensus. The second action item is are there any potential negatives to stocks of fisheries from these measures? I think, now that we have included venting devices, we would have to say that there are potential negatives.

DR. REICHERT: If incorrectly done.

DR. SEDBERRY: If incorrectly done, yes.

DR. SCHUELLER: I don't see why we don't be a little bit more specific here, because, plausibly, given my experience on some headboats and observations of venting, I am 100 percent sure that they kill the fish, and so it's plausible that there could be increased discard mortality with improper use of venting, and I think that needs to be in there.

DR. SEDBERRY: Any objection to that? Okay. I think you're right. Mike is typing something for us there. Any objection to that? Very good.

DR. BUCKEL: I don't know if this is a good place to put it or not, but just to -- There was discussion about outreach and education, and part of that should be that this is a depth when you should start considering this, or this is the symptoms you should look for in the fish where you should start considering these. In shallower water, if you don't see those symptoms, then don't do anything and just release the fish.

DR. SEDBERRY: That could be under the next action item, the factors affecting effectiveness can be -- One of those factors can be proper selection of the right method under the depth conditions where it's most effective. I think what you're talking about can go under the factors. The depth is a factor of when you would use this.

DR. BELCHER: Not to be nit-picky, but do you want to be consistent with the language? We have just switched from "release mortality" to "discard mortality", in case there is --

DR. SEDBERRY: Yes, consistency is good. I think we have covered the negatives, and we have listed several factors. Can the SSC provide any guidance on factors affecting effectiveness of these measures? Then we can talk about species. We have mentioned that venting devices are more popular and preferred, and that could affect their effectiveness, and compliance is a big factor, but measuring it is difficult, and quantifying its use in effectiveness and management would be even more difficult, and education and outreach are big factors.

Handling time is a big factor. Compliance might improve if fishermen see where their effort goes into the assessment. Any other factors that affect the effectiveness of the measures? Rather than species likely to benefit, are there any species that are likely not to benefit or are likely to be negatively impacted? Any other things that we need to add here?

DR. COLLIER: After you guys get done with this discussion, or maybe later tonight, we do have our tutorial online, and it comes up in our ribbon for the South Atlantic Fishery Management Council, and you guys can look at that as something that is being done for outreach.

DR. SEDBERRY: Okay. Thanks. Scrolling on down, if these methods are effective, will requiring non-offset circle hooks and descending devices allow the impacts to be applied in future stock assessments? Yes.

DR. BUCKEL: I feel like we should be a little more positive on this one, because this is -- For the reasons mentioned before. I think there could be -- After implementation, whenever the next stock assessment is done, those B2s could -- Something different could be applied, or at least some sensitivity, and so I think it could happen rather quickly, depending on the timing of the assessment on a certain species and after this goes into effect, and, as Fred mentioned, the fishermen want to see that we're doing something and let's see the impact, and you go from a 40 percent mortality to a 30 percent mortality or something like that, and so more of those B2s live, and that should be captured. I know there's some hurdles, but there can also -- At the minimum, some sensitivities could be examined.

DR. SEDBERRY: I would agree with that.

DR. NESSLAGE: Those sensitivities could include increased discard mortality, and so folks need to be aware that the stock assessment -- If the stock assessment group is hearing that there is actually negative impacts of increased venting by people who aren't doing it properly, it could end up backfiring in one of those sensitivity analyses, and so be careful what you wish for.

DR. SEDBERRY: Good advice.

DR. REICHERT: Since we were talking about getting data that is useful for stock assessments, I think it is essential to say that we are only able to quantify the effects -- This only can benefit stock assessments if we are able to quantify the effects of using these devices. That goes back to what we discussed earlier of, yes, we know they're helping, but we don't know how much they're helping, and the only way it's useful in stock assessments is if we know how much they are helping.

DR. SEDBERRY: That does make sense, and I guess where they would go into the stock assessment framework is in part of the release mortality.

DR. SERCHUK: For those species that do exhibit barotrauma, am I not correct in saying that the assumption now is zero survival?

DR. BUCKEL: It's species-specific, and so, in that paper that you were referencing from our group, that is on deepwater grouper, where the assumption was 100 percent mortality.

DR. SERCHUK: In the assessment?

DR. BUCKEL: Correct, and the management, because, for example, in snowy grouper, the management has been, if you catch one -- There was never a minimum size, because the assumption was that they were all going to die, and so don't put a minimum size on it, and so that was the assumption, is 100 percent mortality in those deepwater --

DR. SERCHUK: In the assessments?

DR. ERRIGO: Yes. Snowy grouper had 100 percent discard mortality, and blueline tilefish had 100 percent discard mortality.

DR. SERCHUK: In other species, do we have different estimates of that, and where were they taken from? I want to be consistent here in our approach. Were they based on fishermen's responses, or were they based on a study? Again, I am trying to be synoptic, in terms of how we look at it. We can't be intransigent, when our track record says, well, we took this value from this study, but now we're saying, when we use these devices that we believe will enhance survival, we're going to wait until there is undisputable evidence to change the mortality rate.

DR. BUCKEL: For many species that there are stock assessments in the South Atlantic, there have been multiple studies per species estimating discard mortality, or release mortality, of fish that are just released at the surface, for example, and the way they would be done in the fishery, and now there have been studies where folks have not only done the release at the surface, but also releasing with descender devices, or venting, and then comparing the survival of those different treatments. In the past, the stock assessments have used the releases at the surface, because that's how it's done in the fishery, but, in the future, some of those survival estimates that are coming out of experiments from the survival rate of the descended fish or the survival rate of the vented fish could be incorporated, and those are all species-specific studies.

DR. COLLIER: I think the one deepwater species that has a little bit different discard mortality is blueline tilefish. I think they had dropped that down to around 80 percent in the most recent stock assessment, but, the way that it's been done recently for discard mortality, or release mortality, is, generally, there is an ad hoc working group that is put together at the data workshop. Sometimes they will meet, via webinar, prior to the data workshop, and they will go through some of the background data and not make any decisions until they get to the actual SEDAR data workshop and then go through the data and select essentially a point or a series of points or the best method to estimate discard mortality.

The one I can remember the best is red snapper. Discard mortality, based on the literature, ranged from zero to 100 percent, and so we had to narrow it down, and, the first time we did it, we didn't

think it would have a huge impact, and we didn't do a lot of great research back in the -- I think it was SEDAR 15.

We had a pretty estimate of discard mortality, which I think was 90 percent for the commercial fishery and 45 percent for the recreational, and, based on projections, that led to serious complications, and so we went back and revised it and did a much better literature search on that, and we used basically an integrated formula to figure out what the discard mortality rate for red snapper was based on the depth of the fishery and what sector they were in, and then I talked to the fishermen about what do you guys see, which one seems most appropriate, and then we narrowed down which study seems to be representing the best discard mortality for that species, and a similar approach has been used for several of these stocks.

DR. SEDBERRY: I think we're ready to scroll down. We had two stock assessment action items, and I think we did both of them at the same time. Any additional information needed in order to take advantage of these benefits in the stock assessment framework, and I think we've kind of addressed that, too. I think we're done. Did we do public comment on this?

DR. ERRIGO: Yes.

DR. SEDBERRY: Okay. We kind of did this report, these bullets, as we went along, and do we need to go back to the beginning? Maybe not. Sleeping dogs. There will be future opportunities to edit them. Okay. Are we done with this agenda item? Any additional thoughts or comments before we move on? I pronounce us done with this agenda item.

MS. WIEGAND: There was a lot of talk about descending devices, which is fine, and non-offset circle hooks was also in there, because of Action 2, and I didn't know if you guys wanted to add any additional detail to what you have here specific to non-offset circle hooks, as opposed to descending devices.

DR. SEDBERRY: The first action item addressed that, and we said that, yes, they are effective, and that's all we said.

DR. REICHERT: I think a lot of these equally apply to descending devices and offset circle hooks, and so maybe we can -- If there are specifics when we go through the report, we can see if we need to make adjustments to the text later.

DR. SEDBERRY: That sounds good, and then the other part of this amendment is powerheads, but we're not addressing that at all. Okay. It's now twenty minutes to five. Do we have time for the Update on the Science Center Research Efforts? Okay. This is just kind of a report-out, and there are no assignments for this item. We have Erik from the Beaufort Lab who is going to update us on this.

UPDATE ON SEFSC RESEARCH EFFORTS

DR. WILLIAMS: All right. Thank you, Mr. Chairman, and hopefully this won't be too long. It's fourteen slides. I will take questions along the way, if you want, or at the end, however you want to do it.

DR. SEDBERRY: Since there is probably several research topics, maybe it would be better as we go, if any questions pop up, and we can do that.

DR. WILLIAMS: Yes, please interrupt me at any point. Here is a few topics that I will cover. It's basically five sort of ongoing lines of research that I'm going to cover, and the first one is a tracking project, which I reported-out to you guys last time, focusing on gray triggerfish, and that has pretty much finished up, and it has generated four reports, or reports and scientific papers, that are shown here, and so look those up and enjoy reading, but the work is continuing on, and, moving on to our favorite species, red snapper.

Right now, we're at the stage of doing a tank study, looking at the tagging devices and seeing how well they stay on and how it works with those fish, and so we're looking forward to seeing the results from that study with red snapper. Another project is working on larval transport, and we've got a post-doc that's at the Beaufort Lab looking at larval transport for multiple species, basically using some oceanographic models and sort of seeding them with particles and then looking at larval duration times and that sort of thing and looking at where our larval fish seem to be going, based on what we know about their reproductive habits and larval durations, and so one species that's being looked at right now is scamp, and here is sort of preliminary results from that, and you can kind of see that we get a lot of nice, detailed spatial information from these oceanographic models.

This is just showing if we seed populations, both in the Gulf and in the South Atlantic, where they end up, and, shown in this figure, you can see the blue dots, if you see those, which are the endpoints of those yellow lines are settlements that were released in the Gulf of Mexico, and in the red are settlements that were released in the Atlantic, and so they pretty much stay where they're supposed to stay, which is a good thing. There will be lots more results coming from this research, hopefully, and looking at some other species as well.

DR. ERRIGO: I think that this is a great study, and I was just wondering if some of the other species, like red grouper or any of the tilefishes, are scheduled to be looked at or what some of the other species are.

DR. WILLIAMS: That's a good question, and I don't know, exactly. I think it's going to probably going to come down to what we know about their reproduction and their larval durations and that sort of thing, and so which one we can sort of accurately seed these oceanographic models with. Another project we're working on, which is sort of a national level project, is we're going to look at a stock assessment model comparison.

Basically, the goal is to look at some of the major assessment packages that are being used across the country, and BAM is one of them, which is the assessment package we use primarily for the South Atlantic, but these other packages as well. There is AMAK, which is the Alaska model that's used, and ASAP, which is primarily used in the Northeast, but also by some of the states, and then Stock Synthesis, SS, and the idea is to do a simulation study and test these models. Basically use all the models to generate data and then use all the models to re-estimate the data for each of those models, and so sort of a four-by-four combination analysis, and we have funding for a post-doc to do this work, and we're hoping to get started on it, actually, at the end of this year, and so hopefully we'll see results from that soon.

Another thing, which isn't necessarily a -- Well, it's a line of research that is sort of now at the communication stage, more or less. It's FishPath, and some of you may have already heard of it, but it's a tool that is available for scientists and managers. Katie Siegfried at the Beaufort Lab has sort of been through a workshop and worked with this tool, and they're at the stage where they want to start rolling this out to the various regions to see how useful it might be for both sort of data-poor and data-rich stocks, but sort of get a feel for if there's any interest in using it in this region.

This is sort of more to come on this, and it basically is a way of organizing the data collection, assessment, and management measure possibilities, sort of given current information and government structure, and it's sort of hard to get into the details of this without actually just explaining FishPath in detail, but it has the potential to help aid scientists and the council in choosing an appropriate model, based on data availability and sort of the management framework.

Stakeholder involvement is an essential part of the process, and it's been, so far, well received in the Northwest, I think is primarily where they've sort of rolled this out, and so, at this point, I bring it up just to sort of say that this is coming your way eventually, and we hope to send maybe Katie Siegfried, probably, if you have room on your agenda, to your October meeting and bring this up.

DR. SEDBERRY: Is there a website where this is already being used that we can check out?

DR. WILLIAMS: That's a good question. I suspect, if you search FishPath, you might find something, but it wasn't put in the presentation, but, as I said, there will be more to come on this. Expect to hear about this at your future meetings.

DR. SHAROV: Erik, I'm still trying to understand what is the actual purpose of this software. Is this essentially sort of a replacement of the data workshop and sort of -- It is supposed to synthesize what's available and sort of recommend to you what type of assessment tools could be applied? If it's sort of a semi-automated process -- I am just still struggling. It says that it helps organize the data, but is it designed to help stock assessment scientists or managers? If you could clarify.

DR. WILLIAMS: I think both. I mean, I don't know the full details, but, essentially, if we have species for which we have, obviously, some landings information, and some we have indices for and some we don't, this is a way to sort of put all of that information in. Do you have age data, do you have length data, do you have index information, do you have landings information, do you have discard information, and then, from that, you then can also look at the type of management that you're trying to tackle, whether it be just -- Are you just setting quotas, catch quotas, or do you want to have reference points, what type of reference points, and it sort of then finds the suite of models that can get you those sort of estimates, and so, if you're very interested in sort of MSY-based reference points, then, obviously, that immediately limits the set of tools that you're going to use, because you need to estimate those MSY reference points, and so it's just sort of things like that.

Because there are so many tools out there now, I think that's why this is potentially a useful tool, because there is more and more sort of assessment methods out there than probably all of us realize, and so this is, hopefully, a way to help narrow that window of possibilities down, but, no, it's not going to replace the data workshop, by any means.

DR. SHAROV: Would it be fair to characterize it as an attempt to standardize sort of the selection methodology, based on the data? It seems like you have, particularly with the NOAA Fisheries system, you have different models, and you have somewhat different approaches in each geographic location, and so they are competing, and so standardizing this will sort of make the results more comparable, going back to comparing the assessment models, and would that be sort of the --

DR. WILLIAMS: I don't think that's the intended goal of it. It could head in that direction, but I don't think that's the intention. The intention is, honestly, to just sort of help people, help the managers and scientists, put in the available data for a given species, and then, with the sort of framework of available models that would match with that data and then what kind of estimates you want to get out, and it's a way to just sort of narrow down your selection process for potential models to apply. That's it.

The last one is to update folks on -- Maybe you aware, and maybe you're not aware, that we're in the process of developing an ecosystem status report for the South Atlantic, and the primary folks involved have been Kevin Craig and Todd Kellison from our lab, but it has involved quite a few folks, and they've been sort of compiling a whole bunch of information, and sort of the reason we're doing this is because it's been sort of prescribed under the NMFS Ecosystem-Based Fishery Management Policy Roadmap, and so it's been -- It's also been developed in a lot of other regions, and so we're sort of being pressured to provide one, because our region does not have one.

The intended use for this is for the councils and other management bodies, but it could also help to complement stock assessments and guide some management decisions. The idea is, once we get this done, then decide how often to possibly update it, probably after once we realize how much work is involved in actually putting it together in the first place, but, yes, it's going to be pretty comprehensive, and it's going to include a lot of summary plots and statistics on a whole bunch of things, from climate drivers to physical pressures and habitats and trophic-level fishery indicators and human dimensions and all sorts of good stuff that I think will be useful.

Here is just some of the plots and what they're looking like so far. The goal is to have this drafted by the end of this year, and so you guys will hopefully see a version of it maybe even by October, and I don't know. Maybe that is wishful thinking, but here is some of the other figures that you might see in the plot, looking at just sort of general overlying statistics about the whole complex and the region and the ecosystem, and I think that was all I had. Here is just another follow-up, and so the draft is going to be in 2019, and we'll be looking for review and feedback after and into 2020, and then hopefully 2020 is when it will be ready for consumption.

DR. SEDBERRY: Thanks, Erik. Any questions?

DR. REICHERT: Erik, do you have an update on the age validation studies? I think gray triggerfish and vermilion snapper you guys were working on?

DR. WILLIAMS: Yes, and I didn't have a slide on that, and it might be because Jennifer was really busy over the last couple of weeks, but, yes, I can update you. Triggerfish is pretty much done, and I think it's a matter of processing the spines and interpreting the results. Vermilion snapper, we hit a little bit of a setback with the Hurricane Florence, and that sort of reset our fish,

and so we're going to have to capture some more young-of-the-year fish and rear them and start the clock over again, so to speak, on some of those fish, in terms of marking and then rearing them in captivity for a year or more. That is kind of where we stand. Black sea bass is I think the same situation. We lost some of the livestock, and we're going to have to sort of replenish, and so Hurricane Florence sort of set us back a little bit for those two species.

DR. SEDBERRY: Any other questions or discussions regarding the research at the Southeast Center?

DR. BUCKEL: Erik, the larval transport, and you may have mentioned the different goals, but is there any plans to look at the current marine protected areas and to look at are they a source for our areas or -- All black lines, for example, because your black lines are ones that I think did not settle, and so I would be curious to see if, where they're currently sited, if they're a potential source for the South Atlantic.

DR. WILLIAMS: That's a good question. Actually, that's a good idea for something to look at specifically with those models, and so I would have to check with the folks that are doing that work, but, yes, that's a great idea, actually, to specifically focus on MPAs.

DR. SEDBERRY: That scamp map you showed, those are simulations of particles?

DR. WILLIAMS: Yes, and so the way it works is they have an oceanographic model that then you can basically seed in three dimensions, both latitude and longitude as well as depth of the water column, and you seed as many particles as you want and you run the simulation, and it's a stochastic simulation, and it will then transport these -- You pick whatever timeframe you want, and it will tell you where those particles -- The trajectory they take, once you have seeded them, and so the idea is treat the larvae as particles, and then, knowing their larval duration, you can hopefully figure out where they're going to end up settling out.

DR. SEDBERRY: That is really cool, especially for something like scamp. I don't know anyone that has ever seen a post-settlement scamp, a scamp this big, and who knows where they are. All right. Well, our next agenda item is kind of a big one, and so I think that we should recess, unless there is any objection. I think we're doing well on the schedule. We will start at 8:30 in the morning. We are recessed.

(Whereupon, the meeting recessed on April 9, 2019.)

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April 10, 2019

WEDNESDAY MORNING SESSION

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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened at the Town and Country Inn, Charleston, South Carolina, on Wednesday, April 10, 2019, and was called to order by Dr. George Sedberry.

DR. SEDBERRY: Good morning, everybody. Welcome back to the spring SSC meeting. We're going to pick up where we left off yesterday, and so we're on Agenda Item Number 7, South Atlantic Ecosystem Model Use in Fisheries Management. The assignments for this agenda item are Church, Genny, and Amy, and we have a couple of updated presentations. We heard about this at our meeting in October, and we have some updated presentations, and a path forward that will include establishing a modeling team that will have SSC participation, and so I believe that Roger is going to introduce the presentations and lead us through this, and is that right?

SOUTH ATLANTIC ECOSYSTEM MODEL USE IN FISHERIES MANAGEMENT

MR. PUGLIESE: I would like to open it up, and I appreciate the opportunity to bring forward the latest work that we have advanced on the development of Ecopath with Ecosim model for the South Atlantic region. It's been a long time coming to get to this point, and, today, you're going to be provided a review by Tom Okey about how the model has been finalized and where we are and some of the kind of provoking ideas that this is beginning to already show, even at this stage.

In addition to that, the opportunities, as was directed before, is to look at where some of those simulations potentially could begin to go and to show how this is opening the door to kind of this next step of understanding the ecosystem dynamics in our region and being able to provide tools and capabilities for future analysis in the South Atlantic region.

This is going to be followed by Luke McEachron, who is with Florida Wildlife Research Institute. Luke developed a Ecopath, Ecosim, and Ecospace model for the Florida Keys, and what we wanted to do is Luke is going to be able to touch on how you go from developing the base model into some of the capabilities that it provides, all the way to the farthest end, that they did get into the spatial capabilities and the ability to use that spatial capability, and so a vision into the future on how this evolves, because we are going to develop a comparable Ecospace component, as Ecopath and Ecosim for the South Atlantic evolves into the future.

With that, I think that sets the stage, and, as George indicated, the idea is that we want to come out with a -- We've got a modeling workgroup that has provided input in the past, but there is going to be, very specifically, a modeling team with Florida, and so we have a group that is going to be advancing and refining and developing this, but then a sub-group to do the initial review, some of the very specific points that were highlighted that needed to be done after this model, the first iteration, is completed, and so getting participation by a group of SSC members into that review and the advancement will provide the foundation to go beyond here, and, with that said, I will close my trap.

I would like to acknowledge also, in the finalization of the model efforts, that we also had Lauren Gentry with Florida Wildlife Research Institute participate very detailed, and one of the directives before was to get the most effective and refined diet composition work and work with a lot of the final tweaking and finalization of the model, and she provided that and will be providing and working on the model far into the future, as our partnership with FWRI and linkages with the Ecospecies system, which will be the repository for processed outputs and inputs from the model, and so, as the path forward says, we do have a path forward to work with the team to do a review and advance this and be able to build the capability for our region into the future, and, with that, I

would like to introduce Tom Okey. Tom is long-term, as I think he's acknowledged before, as our partnership has gone back all the way to the Sea Around Us project developments, back many years ago, a decade-plus, and so, with that, Tom is going to get into the finalization and where we go now.

DR. SEDBERRY: Thank you, Roger, and welcome back, Tom.

DR. OKEY: Thanks, George, and thank you, Roger, and thanks, everybody. It's great to see you all, and I have met many of you, probably most of you, so far. We are going to give you a -- I'm not going to dwell on the history of the development of the Ecopath model, the South Atlantic region Ecopath model, because we've gone through that a couple of times before, and most have seen it, and some haven't, and so I may just give you -- Just orient you a little bit as I go through, but, really, the main purpose is to give some tasters of how we can, with this tool, ask questions. Just mentioning that the purpose really is to give you an idea of how this model can be used into the future, in terms of addressing questions that people have, important questions, large or small, or even just curiosity questions.

We put the word "finalized" on here, but, really, what the region needs is a responsive model, something that is accessible and useable, and so, as we ask questions, and I'm going to try to give you this idea during this presentation that, as we ask questions and drill into the questions, we might get indications of something that is provocative or something that's counterintuitive, something we hadn't thought of, and we want to then, with this model, sort of drill into those questions, and then it will almost -- It will usually be necessary to refine let's say the sub-web that we're interested in, or that part of the model more, and so I want to sort of give you the impression that, ideally, the region needs a living model into the future, as opposed to something that is static, and so that relates to Ecopath with Ecosim.

The Ecopath part is the static model, or the static starting point, and our model, as you may recall, the starting point is the late 1990s, and so it's 1995 to 1998, is what we characterize, in terms of the biomass flows in the system and the fisheries, and then, from that point, we can project forward through time, which is in the past, and so we're reconstructing ecosystem change from the mid-1990s to present, and so, because we have a lot of quality time series of fisheries, and also of biomass in stock assessments and biomass indices, relative biomass indices, we can then try to fit those changes, or the trajectories of different functional groups or species through time, to calibrate the model, so that we can have more confidence that it's useful for us to ask questions, in terms of its dynamic behavior. The Ecopath part is the static part, and then we use Ecosim to project through time, dynamically.

This is a little bit tongue-in-cheek here, but it's to make just a few points about this model, and so here are some South Atlantic region model nicknames. We could call it the Squid Model, because some previous explorations in the 2014 iteration revealed that squid was a very strong interactor, the Ilex and the loligo, mainly. That's because a lot of species in this region feed on squid, and so, in order for that group to have mass continuity, there needs to be enough squid to feed all those groups, and so the squid tend to, rather than being a forage species that feeds low on the food chain, it sort of has a broad omnivory index, and so it feeds both low and high, and so squid can have -- Because it has a large biomass and a broad omnivory, it can have a really strong impact on the system.

We can call it the Updated Fish Diets Model, and that was mentioned by Roger already, and so Lauren Gentry did some amazing work, and, really, it was a great piece of work to put together, a diet matrix that is perhaps historically articulated, let's say, and of high confidence. That doesn't mean across the whole diet matrix that we have high confidence, because each separate diet is individual, and so, for a lot of the -- A lot of the diet data came from Marcel and Tracey and others, and I will show you the origin of those data, and so we have amazing diet information now, and it's much improved, and so, because we have that, when we go through the development and the balancing of the model, we just hang more confidence on the data, and then we look to other parameters, if there is thermodynamic inconsistency in the model, so that we can really adjust it to be balanced, let's say, and so I can get into more of that later.

Then it relates to this Who Eats Snappers and Groupers Model, and so this relates to how a lot of gut contents and diet compositions don't necessarily match the high articulation of groups that we have in the model, and so, where the diet composition can be really great, it doesn't have the same articulation, and so we don't know, necessarily, where to assign certain diet items or diet categories, you might say, and so, when we articulated all the snappers and groupers, independent individually, there was sort of like missing information, often times, and so just that part sort of jumped out at me as I was balancing this model and going forward, and so it sort of points to research in the future that we might want to try to understand better the predators of the snappers and groupers more specifically.

These are just lessons that I learned, and that's why I gave these nicknames, right, and so we can call it the Time Series Model, because we have such really fantastic time series information, as I said, and that gives us confidence in the dynamic integrity or the calibration of the model.

It may be the most Articulated Ecopath Model for Fisheries Research. There are other ecosystem models that are outside of Ecopath, such as in the Bering Sea and in the Gulf of Alaska, and also models in the Atlantis software that Fulton and teams have put together that may be more articulated, but, in terms of the accessible Ecopath models, this, I believe, may be the most articulated one, in terms of managed species, and so that's really exciting.

Then, last but not least, my favorite, the Model that Killed MSY, and I will show you why, because one of the simulations that people wanted to look at was what if we fish everything at MSY that we have MSY for, and what will have the overall -- Is there enough space, or is there enough food, in the overall system, if everything is fished at MSY independently?

Anyway, this is a talk that outlines just describing the final assembly of the 143-box South Atlantic Region Ecopath Model, and then these are some of the questions that people were asking, and, again, I didn't do complete investigations of these, but some initial explorations. Obviously, first, we learned a bit from reconstructing past ecosystem change, or a lot of questions come up, and that is a simulation that provides some interesting insights into, for example, red snapper and black sea bass interactions, which I will show.

Also, a simulation about large coastal sharks, that one functional group, and the result of that is also interesting, and then the question about MSY for all managed species that we just mentioned. Anyway, I've shown this before, and these are the general sources of the really fantastic data that this region has, for example the diet data, and then biomass index data, stock assessment data, catch data, discards data, and the recreational data, and so we have, I believe, the latest updates of

all these things expressed in the units of the model and properly input into the model, and so giving us a complete picture of right now, but, of course, data are always improving, and so, obviously, like I said, we want a living model, to continue to make it the most updated that we can, and we want it to be used.

One of the parameters, obviously, is diet composition, and we talked about that already, and so I won't dwell on this one, and we just want as good estimates of diet composition for this region as we can, and I think we did a great job on that, thanks to Lauren Gentry and Tracey and Marcel and others on the team, and so I'm just putting the -- I just wanted to touch base with the Ecopath master equations and the input parameters. Basically, these are the parameters that we are collecting and putting into the model, and I've gone through this before.

When we balance the model, on the right-hand side there, in the black panel, I just want to point -- Because we have -- Obviously, we understand biomass and characterize the biomass for each functional group, the production rates, the consumption rates for each group, and then the diet composition, and that gives us our food web.

Then, when the model -- When we construct that, or when we assemble all of that, initially, we get a model that hopefully -- If our information were perfect, then we would instantly have a balanced model, and there are some assumptions that I won't talk much about about how you're defining the area and what kind of migration in and out of the area, and so we just make some assumptions, usually, about having no migration, but it depends on the species. Sometimes we'll add a migration term, but, anyway, aside from those assumptions, when we have imbalance in the model, we try to then understand, using detective work, and we try to understand why that imbalance is occurring and which of the data might be the least confident, and then we can try to adjust those parameters smartly to come into balance.

I will just go through what I did with biomass accumulation, and then using the ecotrophic efficiency, the EE there, which is the production used in the system. If that number is greater than one, it gives us an idea that that group is unbalanced.

When I balance this model, I'm calling this Balancing Temptation Number 1, and so these six groups were the most problematic groups, in terms of being unbalanced, and so then I looked at the time series that we had to see if it was reasonable to specify a negative biomass accumulation for those groups, in order to balance them, because, if a group is declining, then less of that -- Then, basically, if you specify that decline, then you can go from out of balance to in balance, because you have specified a decline.

For example, with vermilion snapper, there is a downward trend there that, in the mid to late 1990s is about in the middle of that trend, and it seems justified to establish or to specify a negative biomass accumulation for that group, which would bring it into balance, and so, initially, I went through and I did that. I specified negative biomass accumulations actually for all of these groups, and some of them are more justified than others, right, and so it's basically saying that these groups are declining, or were declining, in the mid 1990s, and that gave us balance.

This is just an overall simulation, and it's very messy, but this is just -- You can see some of the groups that were specified to decline right at the beginning of that series and going below the line, and these are relative biomasses, and that horizontal line is just the line of no change, right, and

the X-axis is time over the twenty-three-year simulation, and so, basically, those groups were specified to start declining, and, this particular simulation, even though there are dots on the simulation, was not fit. There was no active fitting going on in this one, and so the responses of the rest of those groups are responding to specified declines, and so it's not easy to interpret or to run scenarios where you are asking the model questions about change when there is already change happening here, and so it's not very convenient to have a model that is balanced by adding negative biomass accumulation to it.

Also, what I learned, when I was fitting to time series, and this is just a panel showing these sixty different bins in the diet matrix, and so all of those cells that are in color are predator-prey interactions, and so this is like the diet matrix, and the rows are the prey, and the columns are the predators, and, essentially, if you identify the sixty bins, to adjust the vulnerability parameters, in order to fit the model to time series, forcing with fisheries catches over the time period, known fisheries catches over the time period, and then there is a routine, optimization routine, to reduce some of the squares of differences between the projections and the observed biomasses for each of the functional groups.

The parameter that's adjusted is the vulnerability parameter, which is the vulnerability of predators to prey, and so, when I did that -- Here is the forcing the historical catch, and this is just fifteen groups, but this was done for a whole broad suite of all of the fish species, basically, and then what I learned -- The first try of trying to fit time series is you see some of these groups, like vermilion snapper in the upper-left and then black sea bass in the upper-right, with those specified declines, negative biomass accumulation.

Of course, there are time series there of stock assessment, and so we know it's not true that they were declining like that, in terms of how this first attempt was trying to fit time series, and so, essentially, I decided to change the approach, and so the Balancing Temptation Number 2 for these trouble, problematic groups was to -- After going through the diet compositions in detail, and Lauren and I worked on this together, to try to find areas of error or uncertainty in the diet compositions, to adjust the diets, and we did that, to some extent, but then I decided, for these groups, at least temporarily, to increase their production to biomass ratios, to increase the production rate, and, at least for the pelagic sharks group here, it's -- I am totally violating the rules of Ecopath modeling here, because that is really unrealistic. The P/B is not 2.5 for pelagic sharks, and so that is cheating, that one right there.

The other ones are also cheating a little bit, and I think we should consider all of those temporary fixes to get a flat line, basically, but the problem with increasing the production rates of these groups is that they become unrealistically resilient, and, essentially, if you think about pelagic sharks, you wouldn't be able to really overfish pelagic sharks when you have a production to biomass ratio this high, production rate, and so this is just sort of a temporary fix, and so we want to be careful, especially with questions surrounding the pelagic sharks group.

The large coastal sharks, we didn't do this for, and so we can be a little bit more confident. Anyway, these are just the first runs of simulations, and then this was the overall effects of elevated -- With those elevated production to biomass ratios, and I saw this at first, and you see the groups that go up really fast right at the beginning, and I thought that was some kind of error, that there was something wrong with this model, but then, when we fit the time series, some of the groups -- These are only fifteen, but some of the groups really are increasing, except for the grouper and

the -- That's gag grouper on the far-left, and that's one that was sort of an outlier, and I wasn't sure why it was doing that, but I haven't looked at it in-depth yet, but, anyway, some of the groups were actually going up, and so, in terms of whether that's error or not, we still have to really investigate that, but some of those are actually really going up, and this is relative biomass here, and so some of those groups might have been really low compared to what their equilibrium levels are, and so that might have been a little bit of recovery there.

If you look at -- This is the fitting to time series. If you look at the upper-right panel here, that is black sea bass, and I think the tools panel there is a little bit in the way of the downward trend right at the end of the black sea bass there, but, anyway, it fits. Essentially, that was interesting, because the model did fit, somewhat, to the known stock assessment biomass change until the point at which the data were no longer available. For some reason, it's only until 2010 for the black sea bass, at least with what I had from Kevin Craig, who provided really awesome stock assessment summaries, but, anyway, why is that happening, the black sea bass decline at the end there?

This gets into one of the other questions that we had, and so then we can look at the Ecosim group plots in the simulation and try to figure out what's going on with black sea bass, and, if you look in the upper-right-hand panel here, here is the predation mortality, and one of these is red snapper.

The top one is red snapper here, and you can see the predation mortality increasing in a few groups, and so the most predation mortality is red snapper, followed by three others, and, in these panels, it's listed over here, and so benthic coastal invertivores, greater amberjack, and other jacks with high predation mortality, or increasing predation mortality rates, and you see that, because the biomass is declining of the black sea bass, towards the end here in the simulation, you can see, in the lower-right-hand panel, the fishing mortality is increasing, right at the end there, as you would expect. Then the catch time series that we had here had an increased value in 2017, and so this all sort of makes sense here that there is an increase in some predators in this simulation.

Then we can go through and follow-up with those -- The next thing I would do is start following-up with those predators and try to figure out why they were increasing, and then here is the red snapper plot that I started to do that, and it appears that their biomass sort of was decreasing for a while, and then it started to increase again, and then you can see the predation mortality, and so this one here is large coastal sharks here, and so perhaps -- It looks like they have recovered or increased over that twenty-three-year period, in this simulation anyway, and you probably have some knowledge about these things, but perhaps that high predation mortality is having an effect, at the end here, on the red snapper, but we can keep drilling through all of this, and it looks like maybe the increase here might be the result of the decrease in fishing mortality. That's a little bit of insight into at least what the model is pointing to with red snapper and black sea bass.

Then we have large coastal sharks here, and you see that this series -- In that first overall simulation that I showed you, it showed the line going up really fast, but it's just a different scale here, and so you can see that it's trying to fit to the observed data for large coastal sharks here, which is pretty variable, but it's actually doing the best job it can here, but it doesn't have any predators, and we can just see that the catch has declined here.

Anyway, we can really -- I am trying to give you an example of how we would just start to understand why the model is doing what it's doing in determining whether there is error in the model or whether it is relating to what might be happening in the real world, and it is a -- For these

simulations, it is a calibrated model, but it's not really a reviewed model, you might say, and there is more work to do to make the fits better and gain more confidence in what it's telling us.

It's a research tool that allows us informed thought experiments, at the very least, and so this is just relating to questions about large coastal sharks, and so what if we completely reduce, or completely eliminate, the fishing pressure on large coastal sharks and then they increase, as they did in the simulation that I did, to over three-and-a-half-times their abundance in the mid to late 1990s, and so they have been actually increasing, and so this is what the model says it would do. It would hit about an equilibrium above three-and-a-half-times what its biomass was, and so this is just giving you the gainers and losers, in terms of gaining biomass for the overall population and losing biomass for the overall population.

You can see that, like, for example, the black sea bass, the simulation is saying that black sea bass are facilitated by large coastal sharks, because, as we saw in the previous panels, there is a trophic cascade happening, and so the large coastal sharks are having more of an effect on the red snapper, which are having an effect on the black sea bass, and so I don't see red snapper here, but that doesn't mean anything.

That doesn't mean much, because the effect of large coastal sharks on red snapper might not manifest as big decreases in biomass, but it still may have that cascading effect through red snapper to black sea bass, and you can see some other winners here, other species that folks care about, the jacks, snappers, and groupers, and other things that it looks like large coastal sharks are helping, and then, of course, others that they are not helping are bonefish and Atlantic spadefish and things like that, and so, anyway, these provocative kind of results that make you think about the cascading effects, the indirect effects in the system, and then we can confront those with real data and studies, to see if these things are really happening, and, if they're not, then we refine the model or try to see what the error is in the model.

Again, I don't normally put these overall shots in, but I'm just making general points here, and, here, I am being very provocative, saying that MSY for all equals chaos, but I really should have a question-mark here, right, because the question is, is there instability in this model because it's newly balanced and calibrated, are there some errors in it, are there some problems in it, or is this a real effect that would happen if you applied MSY to all groups?

Now, when I say all here, what I did is I searched for MSY, because Ecosim can produce MSY for all groups that have any fishing pressure on it throughout the whole system, and so this is not the same simulation as applying MSY to all groups that are actively managed. This is MSY to all groups that Ecopath can calculate an MSY for, and so this is not a situation that actually happens here, but it's just kind of like a theoretical situation, and, again, we want to really confront this model and, really, we don't want to wave our arms about this, even though our title is provocative.

We don't want to wave our arms about this result, but I've actually never seen a model do this. I have seen models that have real fundamental instability in them, but they don't really look like this. They have instability from the start, from the beginning, and this one has stability to about halfway through this twenty-three-year period, and then it sort of breaks down like that, but, again, you can see a lot of groups dropping off at the beginning, and, essentially, what theoretically might be happening, if this is real, is that, if you fish everything at MSY, then the MSY isn't necessarily

considering the production that is needed for other groups in the system, and so you guys know the theory about that, right?

This is something, I think, to follow-up on and pursue, to see if this is -- But, anyway, here's an easier way to look at that simulation, and so this is just the anomalies from the start, the beginning, and, on the right-hand-side, I cut off the scale, and so the top gainer from this simulation is red lionfish, getting forty-times more abundant when you fish everything in the whole system at MSY.

Again, these are fun kind of provocative simulations to get us thinking, but, of course, we can't see all those groups, those losers and gainers, and so then I tried to limit it down to sort of fish targets that people care about in the management community. Then, when you look at that, you have even more losers than gainers, and, again, this is relative biomass and so it's set at one, and there's a whole bunch of groups that are just leaving the system altogether. Again, a grain of salt with these, until we can follow-up with them. Here is an easier way to look at it. These are the top twenty losers and gainers from that simulation, and I'm just showing you like how we can look at these things, so that we can think about them easily.

Those were just some provocative examples of the kind of -- Just addressing questions that people listed a little bit, that they would be interested in, and so, again, just the first phase is development and construction of the Ecopath model, which is the snapshot of the ecosystem, and then, essentially, for this, as Roger mentioned, we started this eighteen years ago, actually, with our strawman, or preliminary model, of the South Atlantic Bight, we called it, and it was, essentially, a bit of a smaller area too, because it really was within the South Atlantic Bight, but now we're defining it as the whole managed area, and so just over half-a-million square kilometers, the whole federally-managed area, plus the state-managed area inside of that.

The second phase, obviously, is Ecosim and calibrating the dynamic Ecosim model, and so we can ask these what-if scenarios, and the third phase that we want to go through is Ecospace, and I think I will leave that to Luke, to discuss Ecospace, and that can be used for spatially-related questions about any management questions, whether it's MPAs or climate impacts spatially, and we can learn even a lot more from this Ecospace, because, obviously, the organisms in the system are organized spatially, and it matters so much, and then it depends on data, but I think this region is perfect. It's prime for the Ecospace analyses, as Luke will probably tell us.

I think Roger already framed our question with our path forward here, just identifying SSC members to participate on an Ecopath model sub-group with the FWRI and certainly fishery management council staff, et cetera, and then really continue to develop a strategy to work with this model into the future and combining it with repository initiatives of ecological information, which Lauren is also centrally involved in, and so thank you very much for your time today, and I'm here today and tomorrow, and so any discussion or questions is great.

DR. SEDBERRY: Thank you, Tom. That was a very interesting presentation. I think what we might do here is have any clarifying questions that the committee might have right now and then hear Luke's presentation and any clarifying questions that might go with that and then take public comment and then have general discussion, if that would work for everybody. Okay. Church, did you have a question?

DR. GRIMES: Can you talk a little bit about the uncertainty in models like this, as compared to tactical models, like single-species stock assessment types?

DR. OKEY: Sure. This is a long-term question, and people have had this question since we started doing this and coming to this region, and the way I always answer that is that, especially in the early days, when you have let's say dynamic simulations with a whole ecosystem model like this, the most interesting part about it is the -- If you have some confidence in the model, like the direction of change, and you don't want to hang your hat on the magnitude of change in any functional group, like in terms of the management decisions based on that magnitude of difference, because it is a much more complex model, and we don't necessarily have all of the -- Have it tuned or refined well enough for those dynamics to match the magnitude of change that's happening.

Having said that, it is pretty amazing how some of these models have performed after they have been calibrated with the time series -- When the time series are -- When we have confidence in those, and so I think these approaches have come forward in leaps and bounds, and, obviously, the answer is that you need both, and we've always said that as well, and both approaches get informed by the other, and, obviously, we would really be nowhere in constructing these models if we didn't have the information that came from the single-species tactical models.

The flip side, obviously, is that those modeling approaches -- I have never been in charge of a single-species model, or done it as professional management myself, but it seems to me that one of the greatest uncertainties is the natural mortality or the predation mortality in those, and so this can be really informative there as well. My view is that it's completely complementary.

DR. SEDBERRY: Any additional clarifying questions?

DR. BUCKEL: Thanks, Tom, for the presentation. It was great. I asked this last fall, and I'm just curious if you had a chance to do some of the diagnostic tests of the Ecopath model and looking at the biomass versus trophic level, for example, to see if those things line up. Jason Link has a paper, and I can't remember what he called it, pre-balance, maybe, or something like that, but to check some of the relationships that you would expect to see from just the Ecopath side of things before you go to Ecosim.

DR. OKEY: Thank you, Jeff. No, we haven't gone through that, but I think that Jason's paper, in particular, is the guide for us to do that. I think that's like one of the first next steps for a working group, for sure.

DR. BUCKEL: Great. Thanks.

DR. LI: The first question is, when I look at the data table, that input into the model, and I had a feeling that was supposed to be like two groups, types, of data, and one is those information that you input to inform a specific parameter, for example the predation mortality and natural mortality to directly inform the parameter in the model. The other type of data is those used to calibrate the model, like in fitting, and I think that you have the abundance index to fit the model, and, also, you used the stock assessment output, the annual total biomass from a stock assessment, to fit the data, and so I recall, from the last meeting, we would like to see how this model can inform the stock assessment, and I have a feeling that the stock assessment is informing this model in some way, and so that's my first kind of comment.

My second question is how well this model can inform for a specific stock, because I understand -- This is great, and I would call this a simulation system instead of a model, and there's so much going on there that I can see, compared to a regular stock assessment model, and, here, additional information from this model -- I would imagine they have spatial information there, and do you have spatial input there?

DR. OKEY: Yes.

DR. LI: Also, you can see the interaction with other species and with other factors, and that is something missing in the regular stock assessment model, and so, because of that information, the large spatial scale, and maybe the resolution of the data may be high or low. It's good to inform for a species, but, in terms of informing stock assessments, we really want to see how much information from this model is there for a specific stock. For example, this model may be good for striped bass in general, but how about striped bass in Maryland versus striped bass in South Carolina? How high can the resolution be to inform a specific stock, because that's the purpose for a stock assessment.

DR. OKEY: Thank you for those questions.

DR. LI: I have one more comment, if I can finish up. The third comment is look at the balancing template that you showed, like the first one or the second one, and it comes out like -- I have a feeling that different sets of parameter values may lead to different outcomes, and either way, because, for such complex systems, and there is so much going on there, and one possibility is, when we look at outcomes, this specific outcome may come from a different kinds of parameter input values, and that's something that kind of worries me, because we want to know the estimate, but sometimes we get one set of estimates using it as it is, but maybe there are more solutions there for those types of models, and that's just a comment. Thank you.

DR. OKEY: Just very quickly, the first of the three questions, yes, this model is not independent of the information that is used in the individual stock assessments, and so, yes, we did, ideally, want to -- It would be great to have totally independent models to compare them, but this one is not independent, because, essentially, we used as much information as we could that was available to construct this model based on -- Oftentimes, based on the stock assessment information, et cetera.

The second question, that's such a great question, and, actually, Luke might have some perspective on this as well, because I think he's thought about this as well, but I think it's a -- Yes, two different approaches. Number one, the problem is that we have a really broad-scale model, and we're characterizing it for the whole area. That's our first goal, and so just the Ecopath model -- Just the broad model that we're using is not going to be scale-specific or contact-specific to particular sub-stocks in an area, but the Ecospace approach is sort of a different approach to that problem, which is also really kind of an independent approach.

It's really interesting and really exciting that what you do is you re-distribute each of the species to their preferred habitat, or you distribute them in space, as they would be distributed in real space, and, therefore, they are sort of behaving and interacting with the food webs in those spaces, and so you do get a different temporal simulation when you do it in a spatial context, and there is a lot

you can learn, I think, from Ecospace and really exploring it and getting into it that is independent from the individual stock assessment, even though the underlying model information is not necessarily independent. I think it's really exciting for the future, in that, and then the third issue was a little bit more difficult for me to -- Could you just remind me of the third issue that you had?

DR. LI: Sure. It's more kind of like a mathematical problem. When you have so many parameters, so many dimensions, to estimate and then, when you have the -- What we call multiple sinks, and you obtain the same equilibrium eventually, but have different sinks there, different sets of parameters, values, that may give you the same outcomes, but you don't know which one is the right one that you want.

DR. OKEY: I think the -- I mean, the parameters in Ecopath are -- I mean, the master equation is pretty simple. It's a mass continuity equation, and so, for the Ecopath model, at least -- There could be a whole family of different scenarios, and this is one possible scenario, but, when you get your starting base Ecopath model, there is essentially one balanced equilibrium place for each functional group, but it is true then that, essentially, that group is being influenced by all the other flows of predation and then the sort of competitive effects and everything from all the other groups too, and so, yes, you have less control over where it's going to go, or you might have less understanding of where it's going to go, but you can, ultimately, understand what -- You can deconstruct what has happened in your simulation to understand the relative forces of the other things that are influencing the trajectory of each functional group, if that relates at all to what you are --

DR. SEDBERRY: We have an SSC member online, Chris Dumas, who has a question, too.

DR. DUMAS: With the ecological model, I would just like to comment. Thank you, Tom. That was a great presentation, and I would like to applaud your efforts on this, and I think it's fantastic. The data collection, organization, and reconciliation effort must have been tremendous, and I think just that alone helps us identify data gaps, and it also helps us recognize implications of some assumptions that we make in some of the single-species models, and it helps us to identify when some of those assumptions may not be realistic, by looking at the whole picture, and so I think that's fantastic.

I think the goal of this type of modeling is really difficult to achieve. You're working, of course, with a large, non-linear, dynamic, stochastic system, and chaos theory tells us that that's going to be really hard to figure out, and so it's a difficult task you have set for yourself here, and I think the slide that you showed where the system seems to go chaotic, I think that's to be expected, in some sense, and the purpose of this type of modeling is to try to figure that out, and it's a really hard thing to do.

Another point is that the chaos sort of came about, or maybe it was most pronounced, when we were looking at setting everything at MSY, and I think that might also be to be expected, because, when everything is at MSY, everything is at its optimal point, and, a lot of times, those optimal points can be fragile. If they are not an optimal point, it's either at the top of the hill or the bottom of valley, and, if you've got optimal points that a lot of them are at the tops of hills, they can fall off the hill on either side relatively easily, and so everything at MSY could be relative unstable and chaotic.

The next point is addressing the issue of these large-scale Ecopath and Ecosim models versus single species models, and I think that both approaches are good to pursue and that both approaches complement one another, and the single-species models are taking a bottom-up approach to understanding the system, and the Ecopath and Ecosim model is taking a top-down approach.

We do the same thing in economics. We have microeconomics models and macroeconomics models, and they are sort of two different worlds of economics, and they try to meet in the middle, and in the middle is the hardest part of the system to figure out, and so I think the single-species models, working together with these large-scale Ecopath and Ecosim models are necessary, and the interplay between the two types of models is where a lot of understanding will be achieved, and so I think that's great, and there is so much work that you have done, and there is so much potential in the future from this type of approach, working together with the single-species models.

The last thing would be a question about the Ecopath and Ecosim model. What type of abiotic drivers are considered by the model? Does the model consider current ocean temperatures or latitude and sunlight? Maybe that would be with the Ecospace model. There is also the possibility of looking at extreme weather events that occur over estuary nursery areas, different places for different years, that might affect the -- Have effects on recruitment, for example. Thank you.

DR. OKEY: Thank you very much for those comments, and, in terms of that last question, that's a great segue for Luke's talk, and I'm sure he can speak to that, but I just wanted to mention that, even before Ecospace, within Ecopath, there are ways to specify non-trophic interactions or non-trophic mediation, and I've done it in a couple of publications, in terms of habitat effects, particularly habitat effects that I was specifically interested in, and I specified using this mediation function, and so that's just still in the reaction vat mode, which is the Ecospace, which is the whole area -- I'm sorry, which is Ecosim.

Then Ecospace really handles it much more completely, and then the other -- Something even further back, a more fundamental aspect about that vulnerability assessment parameter that I mentioned, the addition of that treatment in these model is what solved the long-standing problems that apparently they were having in the 1970s, and this is sort of a story that Carl Walters tells.

Essentially, these models were inherently unstable, because, in these models, they were reaction vats and simplistic, and there was no place for prey to hide. We know that prey hide, and they need refugia. They take refugia, right, and so that vulnerability parameter is essentially sort of a flow, and we're moving the biomass, proportions of biomass, from a vulnerable state to an invulnerable state, like a fish hiding in a reef, and so that consideration of space is what moved us to this new era of ecosystem modeling, thanks to Carl Walters and I think others that he was inspired by as well.

DR. SEDBERRY: Thanks. Go ahead, Fred.

DR. SERCHUK: I have two questions. The first question pertains to the utility of new information. You have some time series that are very long here, and I'm wondering whether you would be able to validate projections from the model or forecasts from the model by taking a subset and saying, okay, we're going to stop the model at 2002, with the data that we have from 2002 backwards, and see whether the observed trends that occurred after that in some of the species actually came to fruition.

To me, that's important for two reasons. One is it's a check on the robustness of the model, and it also is important because it suggests that, well, we need them to keep collecting the data, and I don't know which data are more sensitive in the model than others, but it seems to me that there are two aspects to it. One is the veracity, the validation, of the model, and the other is an ability to say, yes, we need to keep collecting these data, because the model is sensitive.

For example, the diet data, I don't know whether the diet data changes very quickly over two or three or four or five or six years, but, if it does, then that's an impetus for those agencies or those programs that are collecting the data and saying, yes, this is really important, because we see unintended consequences, when we keep collecting the data for food habits that we wouldn't have seen if we stopped the data collection at time X. That's the first question, or first comment.

The second comment is, because single-species management can often -- Has an expected outcome, which can often not be realized, because of the complexities of the ecosystem that you are trying to incorporate, and it would be interesting to see if the model, for example, could say, okay, we're going to stop fishing on this particular species, because we want to recover it within ten years, and that's a sort of Magnuson approach. If you did that in the model, would you be able to recover the species in ten years, or fifteen years, or whatever you felt that you needed to recover it, based on the life history characteristics, which is what Magnuson requires.

That would also be an interesting different point for managers. Rather from the system where they're saying, look, our model says that, even though you thought, based on the characteristics of the species, productivity and growth and so on and so forth, that it could be recovered in ten years, and our model says, based on that single-species projection, it is not likely to occur in the time period specified, simply because these other interactions are coming in, which are not considered in the single-species approach, and so, from a management point of view, that's a very practical thing, and, again, my first question relates to the value of data, and so I wonder whether you could comment on that. Thank you.

DR. OKEY: For sure. Thank you, and I will just take the second question first. The logo and the motto of Ecopath is no fish is an island. If you go to the Ecopath website, ecopath.org, you can see the logo, and, essentially, it's expressing what you said in the second part of your comment, that a single-species model might project that a stock will recover in X amount of years, and that may come true for some stocks, but there may be surprises, and it may not come true at all.

It may be being suppressed by something else that's happening in the system, and that's, essentially, why I got into this kind of ecosystem modeling, to actually operationalize ecosystem-based fisheries management to take a whole ecosystem approach to really consider what those other interactions might be.

DR. SERCHUK: Are there examples in the Southeast of exactly what you're talking about?

DR. ERRIGO: Yes, and black sea bass recovered faster than we thought, and red porgy hasn't recovered at all.

DR. SERCHUK: But my point is I want to know the reasons for that, quite frankly.

DR. OKEY: Yes, and that's sort of what I was showing with going through those panels and try to understand why something unexpected might be happening, something counterintuitive, or something expected, but why, and so to try to look at what those other interactions are.

DR. SERCHUK: Could you address my second question?

DR. OKEY: Yes, which was the first one you -- Yes. I think this model should be confronted with many different combinations of calibration and fitting to different time series and selecting only a few time series, and, essentially, the place that I started was actually driving the whole model with all of the -- Forcing the whole model with all of the historical fisheries changes that we had available and then fitting to all of the biomass indices and estimates that we had, and so that's the first, I think, overall general approach, but I think that people who have a lot of experience in this kind of calibration and fitting would tell you that there's all kinds of different combinations to try, and so it is sort of an experimental process, an iterative process, to do the fitting, for exactly the reason I think you laid out. Was that the full --

DR. SERCHUK: Yes, and I guess I would like a feedback mechanism to the data collection programs that say, okay, we have sufficient dietary information, and you can collect it every two years, or every three years. I mean, there's a lot of funds and a lot of people's efforts going into this, and I realize it would be better to have it on a real-time basis every year, but my feeling is that maybe the biggest bang for the buck is not there. Maybe it's in one of the other data collection programs.

I don't know the sensitivity of the model, but you can see what I'm saying, and it's scarce resources. Would there be some programs that would be critical to maintain, because of its variability, for example, or its impact on management decisions, and I'm concerned that -- The model is a great model, because we don't get the expected results we get from a simpler approach, and that's really important, because we know we live in systems, but these models tend to be so data intensive, in many cases, because the system is so complex.

I am concerned that the data collection systems are all not going to be able to keep a pace with it, and I'm just wondering whether there is some feedback mechanism to say, well, here is where our models get the biggest bang for the buck from a management perspective and not from an ecological understanding, but from a management perspective. That's all.

DR. OKEY: Thank you so much for following-through with that question, because that is, to me -- I have often said that that is the most important role of this ecosystem model, one of the most important, and it really is a roadmap, a strategic roadmap, for the information that you want, in terms of -- From the perspective of the Ecopath model, especially the questions that we're asking, it really -- We learn a lot, and this is the conversation -- This is very similar to conversations that Lauren and I have been having over the last -- Well, she's been working on it since November or something like that, but just, especially more recently.

The information that you really need and you don't have really jumps out at you as you go through this and start working with the model and try to balance it and everything, and so, yes, in terms of prioritization of research programs, I think it has huge potential. For me, from my perspective, because I'm an Ecopath nerd, I don't see how large initiatives and organizations like fishery management councils can live without one, for exactly that reason.

If you really want to understand what is happening in the system, you need tools like this, and you need to have a way of feeding back, so that people know the best ways -- What kind of information to collect, and it's never really been formalized, because I've always just kind of said this as an argument for why this is useful, but I think it probably should be formalized, in terms of getting that strategic information from the Ecopath model.

DR. SEDBERRY: I have Luiz, but Mike has a clarifying point to make.

DR. ERRIGO: This addresses specifically the comparing the results from the Ecopath model to actual results from data that wasn't in the model, and this is the biomass trajectory of black sea bass from SEDAR 56, which goes through 2016. Their data went through 2010, and it shows the downturn in biomass, the same as the model had predicted, and I don't think the scaling is the same. I don't think the magnitude -- It might be completely different, but I think a lot more studies like this probably should be done to compare how well the model can predict, and then have actual data to compare to, but I think it's promising to see that you predicted the downturn in biomass in black sea bass. That's just FYI.

DR. SEDBERRY: Keeping in mind that we're going to have additional general discussion of these models after we hear from Luke, I will take Luiz's clarifying question.

DR. BARBIERI: Actually, it's just a brief comment, Mr. Chairman. To just build on what Fred was saying, and, Tom, we've talked about this before, over the years, in terms of where we want to go with this, and I think contextualizing this, doing a better job, and this is part of the path forward. The first bullet there was to identify members to start working more closely and kind of bridge between this exercise that is going on, this effort that is going on, the SSC, and then bridging into the council, and I think it would be fundamental for that group to focus on this sort of contextualizing for the council.

This is going to very difficult, I think, for the council to understand, and I think you need, from the beginning, to lay out those basic uses of this and how it can actually, in a broader, sort of overarching type of context, help them understand the system and help look at these tradeoffs and perhaps use the simulation components that are built into the software to help them see, for example, rebuilding plans, tradeoffs of rebuilding plans, of predators that are rebuilding at the same time and are now competing for perhaps the same prey base.

I can see where Fred is going with this and the nature of his questions, because, even though we see this as very valuable, I think it's important for us to make sure that the council and the council members, and the public in general also, understand how this fits into this picture that we have of analytical exercises that we go through to provide management advice, and so that would be a recommendation regarding that path forward, and I wasn't thinking about that as much until Fred kind of brought that up and reminded me that we had discussed this, and I wanted to reinforce that point.

DR. SEDBERRY: I think what I would like to do now is to hear Luke's presentation and take clarifying questions on that and then take a break and then come back from some additional general discussion of the models, and would that be okay with everybody? Okay. Did you have a quick clarifying question?

DR. LI: Sorry, Mr. Chairman, but I just wanted to follow-up on my comments earlier, and they are just comments, and I can wait, but I wanted to follow-up on my comments that I made earlier, and is that okay? I can wait.

DR. SEDBERRY: Why don't we hear Luke's presentation, which may help clarify some things, and then, again, we'll take clarifying questions on that, and then maybe have a short break, and then come back and have some more general discussion, and you can provide those comments then, if that would be okay. Great. Thanks.

MR. MCEACHRON: My name is Luke McEachron, and I'm with the Center for Spatial Analysis at FWC, and so we're like a spatial ecology and GIS section that supports other sections and FWC partners, like the Sanctuary, and so a part of our Florida Keys model was to support Sanctuary efforts, and so I will talk about that model and some of the things that we got out of it. For things that we didn't do with the model, I will use some other models as examples, and so I think this presentation is going to really help the discussion that you guys just had.

It's true that there are like the Jason Link type of papers, where you have these general QA/QC methods for an Ecopath or Ecosim model or rules-of-thumb that seem to get passed down from like the master modelers to the apprentice, and so this talk isn't about those rules-of-thumb. We will talk about how you QA/QC an Ecospace model, because that's fairly new to the literature, but, otherwise, we'll talk about what you really get out of Ecopath and Ecosim, assuming you have done all that QA/QC type of work.

Just kind of to reiterate, when we talk about Ecopath and Ecosim and Ecospace, this is one piece of software collectively called EwE, and, in the Ecopath iteration, you are just looking at a snapshot in time of biomass production, consumption, and diets. Then you look at those dynamics over time in Ecosim, by fitting this vulnerability parameter, which just specifies the relationship between predator abundance and prey mortality. Then, in the last iteration, you are looking at those dynamics in time and space by further modifying that vulnerability parameter by a habitat capacity function.

I think of kind of two general categories of information that you can get out of this model, and so, first, there are indices that are stock to the model, and so, if you just run one Ecopath model, there is going to be a series of indices that come out that summarize that model, and a lot of that comes from this ecosystem science literature from Odom and others, and these Lindeman spines, where you're kind of putting things into boxes, and so this diagram on the right is just a representation of an Ecopath model, where you have your producers and then different trophic levels and then the amount of biomass and consumption and exports that are going in and out of each box. A lot of these indices are based on cutting up that box and summarizing those flows.

You can look at how those indices might change over time, as a way to evaluate your system, as some people have done, and then the second approach is more of a model selection type of approach, where you are confronting models of data, and you are comparing different iterations of the model, and you might need to use a third-party application, like R, or simply Excel. You are just exporting results from one model run of Ecopath or Ecosim and running it again under a different set of assumptions or parameter estimates, and then you're just kind of comparing those two different results.

In this first set, that table is a little hard to read, but it's just a long list of stock ecosystem indicators that come out of Ecopath or Ecosim. There are some terms that you might be familiar with, like total system throughput, which is just a measure of ecosystem size, and it's simply the sum of the consumption, exports, respiration, and flows times per square kilometer per year, and so some people use that to maybe compare to another system or to see if their size, in a conceptual way, is changing over time.

There is the mean trophic level of the catch, which speaks to that Daniel Pauly kind of fishing down the food web type of literature, where you're just estimating a trophic level for each group in your model and then looking at the mean trophic level in your catch data and seeing if that's changing over time. There are problems with that, obviously, if you have a crustacean-focused fishery that is more of an influence one year or something, but, in general, you're kind of looking for major changes between these. Then there is this keystoneness index, which I will talk about in more detail with the Florida Keys model, and this is where we're trying to determine individual group importance or influence within the system.

With keystoneness, Ecopath can do a kind of sensitivity analysis, where it's going to say, if I change, just artificially change, the biomass of one group in this model, what happens to all the other groups, and so that measures an effect, and then you might want to weight that effect by the relative biomass of that group, so that, more in line with the definition of a keystone species, you're looking for groups that have low biomass, but large effects on all the other groups.

In the Florida Keys model, we have a 36-box model, or just a 36-group model. We're plotting keystoneness against the relative total effect, so that our groups on the top right are going to be our groups with the lowest relative biomass, but that influence the other groups in the most important -- Like in the most sensitive ways. Then we can take snapshots in time, and so we have 1994, 2000, 2012, to see if those groups are changing. Are they changing in their ranking? Are lionfish at the top of the graph now? They're not, and it's basically these same five groups in any year that we ran this model for.

You will notice that on the top right is this requiem sharks group, and that's kind of interesting, because requiem sharks, in the data we used for this model, they are the one of the least-encountered species in the dataset we saw, but they have a broad diet, and we have no predation on them, and so it kind of makes sense that they're going to be at the top of this type of summary statistic.

Let me back up a little. In terms of a management application for the Florida Keys Sanctuary, every few years, they have to put together these sanctuary condition reports, and we have to answer questions like what's the status of biodiversity and how is it changing, what's the status of sustainable fishing and how is it changing, what's the status of key species and how is that changing over time, and so these indices speak directly to that, in a quantitative way that is relevant to the ecosystem science literature.

Also, we are involved with this group called the Marine Diversity Observation Network, and it's just a group sponsored by NASA and IOOS that we're looking at bringing together monitoring data from different regions in kind of an interactive dashboard for managers to look at, and so this supports that effort as well.

In this second approach that I talked about, where we're comparing iterations of the model, there are a couple of things that people do. They can look at the sensitivity of different model assumptions to management actions, and they can build different scenarios, or they can look at the sensitivity to parameter estimates, parameter variability or uncertainty, and identify data gaps.

How exactly does it do this? There is different ways. There is the sum of squares routines to test different Ecosim models or competing datasets. Say you had equal confidence in two sets of landings data. Assuming you are pretty confident in your vulnerability estimates, you could look at a change in AIC under those two different datasets. You can export these deterministic run results from an Ecosim run and compare a range of options, and I will go into detail about an example that did that, or you can actually run Monte Carlo simulations on different parameters, such as the biomass, the consumption, or even the diets and landings, to examine a range of possible results, given something you know about the uncertainty.

At the end of the presentation, I provided some citations as examples where they did different types of approaches, and so there's a couple of examples there of policy actions, of marine aquaculture, and there's some climate change scenarios and invasive species scenarios and hypoxia scenarios that have been done, and I will talk about, in Ecospace, kind of how we identified some research priorities and limitations in Ecospace, using the Florida Keys model. Nearly all of these examples had a clear research question from the outset of when they started making the model.

I will talk about Dave Chagaris's West Florida Shelf model, which I'm sure that many of you are familiar with. This is a good example of how you evaluate some different management actions and how that would complement single-species stock assessments. He basically ran six different Ecosim models. He looked at a status quo model that he was using just as base estimates, and then he took management actions from the Reef Fish Fishery Management Plan and ran scenarios under those scenarios, under those conditions, and so he reduced the mortality on gag by 30 percent and looked at what happened. He reduced the longline fishing effort by 60 percent and looked at what happened, and he did a couple of other things with phytoplankton productivity and baitfish in the baitfish fishery.

Then he was able to plot the trends in biomass under each scenario and compare all of those scenarios, and he also did some Monte Carlo simulations on biomass projections, assuming a range of variation in the initial condition, and he found that his projections for what would happen to gag under a reduced fishing mortality by 30 percent were in line with what SEDAR had estimated for their single-species assessment, and so that probably made both of them feel pretty good, I imagine.

Up until now, I've been talking about these general approaches, and 95 percent of Ecopath literature has used these general approaches thus far. The remaining 5 percent has only occurred maybe in the last five years, where we're talking about using these habitat capacity functions in Ecospace, and this is where we're defining some habitat relationship that is going to alter the amount of available prey in the Ecosim model that gets applied to Ecospace. There is a lot to unpack here, and so I'll try to go slow. In Ecospace, the species distributions are going to reflect these functional responses, with few exceptions, and that's an important point that I think you'll see expressed in the following slides.

In the traditional functional response and what has always been in Ecospace, is we're looking at a static environmental layer, and so, in this example on the right-hand of the screen, that histogram, that light gray, are the map values for distance to reefs in the Florida Keys, and so, in the bottom, you have a map of the Florida Keys, and that's just a screenshot from Ecospace, and, unfortunately, you can't add landmarks or anything, but Marathon is about in the middle of the map, for reference, and then those dark-black lines are a generalized additive model that we constructed for our fish groups to predict where biomass should be highest, given distance to reef.

That line is going to directly influence the vulnerability estimates, and so, in a way, if you spend a lot of time in Ecosim trying to find the best vulnerability parameters, and it kind of works against you in Ecospace, because they are going to be modifying that anyway. In this run here, and so on that bottom, that panel that says "Snapper 6/1/94 to 3/1/2000", you can see that the orange is the highest concentration of biomass, and the lighter colors are lower concentrations, and you can see, from that six-year run, the distribution has not really changed that much, and that's because my underlying distance to reef layer is not changing either, and the only thing that is causing the biomass to change in this map are the trophic interactions and some movement parameter that I specified and the change in fishing effort, given MPAs or whatever I could find as fishing effort.

In the new approach, now I can change that underlying layer on a monthly time step as well, and so now I can look at sea surface temperature, chlorophyll A, basically any remote sensing product of ecological relevance, and so now, on that bottom-right corner, you can see that peak in SST values, and so those are the average SST values that I used to estimate my GAMs for all my species, but you can imagine that, when I run this model on a monthly time step, that that histogram is basically going to change, but the GAM relationship is going to stay the same, so that, if there is a preference for high temperatures, and then summer comes along, you can imagine that the biomass is going to peak according to that change, and so it makes things a lot more dynamic, a lot more interesting, and a lot more challenging.

This map is animated, on the right, and so this is a video capture of snapper biomass changing according to underlying change in monthly SST, and we also have chlorophyll A working in the model a little differently, but just acting as a multiplier on primary production, and we also have our static layers in here, the distance to reefs and depth, which are constraining the distribution to reefs, but you can see -- On the top-right, you will probably see the biggest change there, and that's because that is a shallower portion of the Florida Keys, and so, in the MODIS SST data, there is a problem with bottom contamination in optically-shallow water, and so, in this relationship, it's saying that the distributions may be a little more closer to shore than we would expect, but it's because of this MODIS SST issue, but I hope you can see how that's changing, and I think, actually, in your model with the South Atlantic, that would be more appropriate for SST, because you're going to see a larger variation in SST.

It's hard to read these axes, but the range in SST values, even throughout the year, is only three or four degrees centigrade, and so it's not a huge amount being captured. It's basically just capturing this near-shore contamination effect, but we were interested in looking at this, because we would like to be able to detect Mississippi plume events hitting the Florida Keys and how that might affect our model, and SST might be a proxy for the loop current meandering closer or further away from shore, but there is other products that would probably be better, like sea surface height or something like that that we need to explore, but the main thing is that we have set up the framework

to do it, and now we can just start changing those underlying covariates, from SST to sea surface height or whatever we want.

You can imagine there is a couple of applications here. There is climate change, and we could artificially take that SST time series and just increase it by one degree and keep those relationships the same and see what happens, and we could try and capture some of those oceanographic events that might be tied to Mississippi plume water, which is what we want to do, but, importantly, the Florida Keys is rezoning all of their small twenty-ish MPAs throughout the Sanctuary, and we might want to evaluate what's going to happen under these new designs.

We would basically run the model from 1994 to 2012, using the new designs to see if the outcome would have been any different than the existing MPAs that are there now, but, before we can do that, we want to evaluate the ability of Ecospace to detect an MPA effect, and we can't really do that in the same way that we could in Ecosim or Ecopath. We can't run like a Monte Carlo simulation. We have to do everything by hand, and so we're going to run a bunch of different iterations under some kind of crazy conditions, and so we want to just stress the model to see what happens if we use a really big MPA and really big fishing effort and unreasonable movement. What happens if we stretch the limits here?

Here, we're keeping all of the relationships the same for the functional responses with chlorophyll A and sea surface temperature and depth, but we're going to draw these black boxes as just large MPAs and then the exploitation within it, and we're going to alter fishing effort and rates of movement, because we're not really confident in what those values are, and we want to see if we can detect an MPA size across a range of variation and movement and fishing effort. If we can't, then we need to spend more time really honing-in those two parameters, if we're going to even try to evaluate MPA size effects.

From 1994 to 2012, this is the distribution of biomass for our jacks group, and you can see there is some build-up in biomass within the large MPAs, and some reduction in biomass outside of them, which I guess you would expect, but maybe not as much of a build-up as you would expect, given the size, and that's because there is still this underlying habitat limitation of reefs, even though the MPA is really big.

If I triple the movement parameter and go five-times the fishing effort, what happens? Well, I still get a build-up in my right MPA, my eastern MPA there, but my western MPA is completely depopulative of biomass, and so what happened? Well, this was something we didn't really think about as a consequence when we first started doing this.

You have to define your map for Ecospace, and so that is limited by the amount of mapping that has been done, and so, according to this model, anything that is white on that map might as well be land. There is no other -- You can't fish the southern or northern parts of those MPAs, and so that's going to have a pretty big effect on my ability to determine how fishing effort is concentrating at an MPA boundary or something like that.

We need to either expand this map, or we need to be really careful if these new MPAs come out and they're at these northern or southern boundaries, but this is also what Carl Walters predicted would happen in his 2000 Ecospace paper, and so this is an example of a cumulative movement in balance, and so, when you have fishing effort building outside of the MPAs, which, in this case,

we have just limited them to this narrow band of reef, now I have a scenario where I have one MPA with basically one exploitable edge and one MPA with two exploitable edges, and the MPA with more edges lost all of its biomass, and that's because, in this model, the fished areas can only receive biomass from within the MPA, and, because this reef tract is so narrow, the effects of fishing are felt well within the MPA.

That tells us that, well, we need to really understand movement. In this simulation, we basically said that we have changed movement, but we know that fish move at different rates, and we don't really know what those rates are all for all of our groups, but, in this simulation, we just said everything moves more or everything moves less, and so it's a little simplistic. If we kind of hone that into individual groups, we can probably get at a better way of looking at MPA size effects. Then, also, we would like to look at these boundary conditions, which are just referring to determining -- It's doing kind of the same simulation we've done here, but looking at a range of SST values or sea surface type values or something like that.

Importantly, when you're spitting out these maps on a monthly time step, and I estimated last night that, if you guys do this for the 140-group model, and you create maps on monthly time steps for twenty years, it's going to produce predictions of biomass and catch for each of those groups, and that is going to be like 70,000 maps in one Ecospace run, and so it's a data management challenge, too.

We ran twelve different versions of this model, looking across effort and movement, and we had to write everything in R to just pull the files we wanted and average them together and look at the variation and pull out the biomass within these MPAs and outside of the MPAs, and so all of that had to be outside of Ecospace.

The last couple of slides here are some practical considerations, and we talked about the data volume issue. Your raster time series need to represent the whole period, and so that can be an issue. We ran our model from 1994 to 2012, but our MODIS data only went back to 2003, and, if that's of interest, we can get into the details of how I did that, but it creates a challenge for projecting forward as well.

Defining a functional response using a GAM obviously requires occurrence data, but there is other approaches that are possible, and that's just one way to do it. You want to avoid defining a functional response for some groups and not others, particularly they are connected in the diet matrix, and that gets at a little bit more of a conceptual issue, but, now that the heavy lifting is over, we can refine it, and we can update it with new data, as monitoring programs continue, and we can look at different designs and movement rates and consider those, and we can still monitor the general structure and function in Ecopath and Ecosim of the system, given all of these different monitoring programs that can create like a fire hose of information when you're trying to write these sanctuary condition reports.

That's it, and so a lot of this work was funded by MBON and NASA and NOAA, and also as part of the RESTORE Act Program, but it's continuing, and so we're happy to help, and happy to work with people.

DR. SEDBERRY: Thank you very much for that very interesting presentation. I think what I would like to do now is take a break. Then, when we come back, we can take public comment,

and then clarifying questions, and then general discussion on both of the presentations, if that would work for everybody, and so why don't we come back here at 10:30?

(Whereupon, a recess was taken.)

DR. SEDBERRY: Welcome back. Before we get started, I wanted to take one minute to introduce Kathleen Howington, who is the new SEDAR Coordinator and will be handling some of the SEDARs that we'll be dealing with, and so it's good to see you, Kathleen. Then Roger wanted to make a few clarifying points about the data, but, before he does that, I just want to check and see if there's any public comment on the two presentations that we've had this morning on the ecosystem models. Seeing none, okay, Roger.

MR. PUGLIESE: Just really quick, a follow-up to Fred's comments on the data, and one of the things I think that is really important to understand is that, in this newest iteration, one of the best things that has happened is, in the diet composition information, the way it's been compiled and analyzed and put into a data format, not only can we identify where we have holes and data needs in it, but we can actually get in and prioritize what some of the species are, the most significant drivers within this model, and so it's going to be extremely useful to be able to identify those, to provide those who are already players on here with the SEAMAP coastal trawl surveys and the SEAMAP and MARMAP and SEFIS reef fish surveys and the state surveys that can collect the data.

It really sets the stage to not only identify where those are, but some of the most significant ones, and do it fairly timely, and then we also can clarify where there are species that may need to be collected more frequently versus ones that have not changed diets over the entire time series, and I just wanted to clarify that, because that's a really significant difference from the past.

DR. SEDBERRY: Thanks, Roger. Now any additional clarifying questions? Yan, did you still have your question, or has it been answered?

DR. LI: Yes, I do have clarifying questions for the stuff that Luke just presented. One is the Florida Keys 36-box model, what does the 36 boxes mean? What is that from? Is that thirty-six components or species in the system?

MR. MCEACHRON: 36-box means there is thirty-six trophic groups or functional groups.

DR. LI: So one box is one group?

MR. MCEACHRON: Yes.

DR. LI: Each group has multiple species, right?

MR. MCEACHRON: There were 224 reef fish species that we aggregated into I think twenty fish groups, and, the rest, we kind of lumped together, like crustaceans as a group, and so it's a reef fish model.

DR. LI: The second question is how many iterations will it take to have the model converge? I know it's depending on the complexity of the model, but, really generally, do you have an idea? How long does it take for one model run to be completed, to converge?

MR. MCEACHRON: Well, there is balancing the Ecopath model and fitting the vulnerability parameter estimates in Ecosim, and so it's not really a question of convergence time. That only takes five or ten minutes, maybe, but the hard part is just kind of the art of saying, well, this isn't balancing because I am uncertain about my production estimate here, or this isn't balancing because I have too much predation on this group, and that's because my diet matrix is a little uncertain in this interaction, and that's what takes a long time, months, years.

DR. LI: For the balancing part, it's like you have manual adjustments, right?

MR. MCEACHRON: Yes.

DR. LI: Okay.

MR. MCEACHRON: Yes, but then there's the Monte Carlo simulations, which the convergence time on those can be a while, and I haven't really done that, but maybe an hour or something, and I don't know.

DR. SEDBERRY: Any other questions or discussion?

DR. NESSLAGE: Earlier, in the previous presentation, the comment had been made that the diet data were outstanding, and then there was a concern -- You made a comment later about the snapper grouper diet data maybe not being as outstanding, and so, if this is a reef fish model, how would you characterize the diet data that went into this particular model?

MR. MCEACHRON: There is another reef fish model by Opitz in the 1990s, and she used most of her diet information from Randall in the 1960s, and so we tried to find the diet composition for every species that we could in our model, and then we just kind of did a weighted average to get a basic diet matrix.

DR. OKEY: Just a couple of responses as well. What we really tried to do with these models is document, in detail, the derivation of each parameter, especially if we're going to revisit this model years later and try to figure out where those numbers came from, so that we can maintain a view of what we're calling the pedigree across the model of the various parameters, and there is a pedigree routine in Ecopath models that you can use to track the level of confidence that you have in each of the parameters, including the diet composition, but also the other basic parameters.

Actually, those qualitative pedigree scores, there is kind of a scale for each type of parameter, and so you pick what the qualitative origin of each of those parameters are, and then it can convert it into a quantitative value, and so you can get pedigree value for your overall model and compare it to other models, if you wanted to, but, basically, it's sort of a map for us to keep track of the levels of confidence that we have across the model in different parameters, but you can do it in various ways.

Like, for example, when Lauren Gentry assembled the diet matrix, this latest diet matrix, she just had a really well-documented way of managing those data and citing all the sources and everything, and so you could do it with an Excel spreadsheet, like she has done with this diet matrix, but then we tend to also drop those comments, or those sources of data, into the model itself, because you can make notes in each of the cells of the spreadsheets of the model, and so I just wanted to mention that.

DR. SEDBERRY: Thank you. Any other questions?

DR. SCHARF: I just had a question on the prevalence of cannibalism in the diets. It looked like, on the diagram, that there wasn't much of that, which, at least intuitively, it seems like it would dampen a lot of the fluctuations, and was there any information in the diet about or can you comment on cannibalism?

DR. OKEY: Great question. In the original diets that were dropped into this latest diet matrix, there was more cannibalism than there exists right now, and so, during the balancing process, we tend to reduce, and sometimes eliminate, the cannibalism, but we have to think really carefully about doing that, obviously, because, like squid for example, has a high rate of cannibalism, and so do other species.

There is a computational issue that Ecopath and Ecosim have with high rates of cannibalism in the diet, which it's actually recommended in the -- There is a large user manual, and Villy Christensen has pointed this out in the user manual and otherwise, that it is -- It has sort of a multiplicative effect that is unrealistic, because of the way the dynamics are set up, but we still have to -- If something has cannibalism, we still have to really think about that and account for it, and so that's one of the things that we do that diverges from the way of what exists in the real world, because it can have disproportionately unrealistic impacts, even though cannibalism is realistic. We talk about this more later, and I can refer you to the literature on that.

DR. SEDBERRY: Any other questions? Okay. As has been mentioned, there is going to be an Ecopath model sub-group that includes members of the SSC and the modeling workgroup that will provide an initial review of this model, and so our action item is to discuss identifying SSC members to serve on the Ecopath model sub-group, who will provide this initial review of the model.

DR. LI: Mr. Chairman, can I make two comments before we jump to the action item?

DR. SEDBERRY: Sure.

DR. LI: I have two comments that follow-up my earlier comments made on Tom's presentation. One thing is I want to highlight that the problem that one single -- I mean, one equilibrium is multiple solutions and multiple sinks, and that is not a problem, but it's topic not just for the Ecosim and Ecopath model, but it's a general topic for all those models that have complicated systems, and so it's not particularly for the Ecosim and Ecopath. It's not a problem. It's a topic. There is no effective solution so far, and so that's one.

The second comment I want to say is the Ecosim and Ecopath, although it's not independent of a single-species model, but I would say it's a strength of the Ecosim and Ecopath, because they work

together with the single-species model, and my example that I experienced is when I did the blue crab stock assessment for North Carolina.

The stock status is determined as overfished and overfishing is occurring, and, when we presented these results to the fishermen, they asked like the high fishing mortality may not be due to high harvest, and it may be due to the high predation, but, from a single-species model, we don't know. We don't know the predation and what happens there, but the Ecosim and Ecopath model may help to answer that question in that moment, and so it's working, and it will be a great model to work with a single-species model. Thank you.

DR. SEDBERRY: Thank you. Okay. This working sub-group, and is that what we're calling it, the Ecopath model sub-group, I guess it's going to be people from FWRI, from the Center, and from the SSC, and I don't know exactly how many people we were looking for for this sub-group. Roger, do you have -- Can you give us a little better idea of what this group will be doing?

MR. PUGLIESE: The follow-up was pretty much highlighted with those points of which we can refine the terms of reference for the review and update, and I think that I was looking to have maybe four or five SSC members. I think both Marcel and Luiz were involved in the original modeling workgroup discussions and would help advance that, and I know that you were involved in the data -- At least involved in review of how we anticipated a lot of the snapper grouper inputs and information, and Rob Ahrens, I know, has probably done a lot more with some of the Ecopath and Ecosim capabilities, and I know Fred has a history, over time, of really understanding what has happened in other regions and how maybe we can advance what we're doing here, and so those were where I was thinking to start, and then how the members would like to be involved.

I think, again, it's to get that first review on what was compiled and how we did that and advance that, because, at the same time, I think we're going to be advancing this to the Ecospace and draw on that review and really take the opportunity, because many of the people and many of the capabilities we've talked about are aligning already.

We have people that were in the original workgroup, like Ruoying He and partners, that were actually tasked to begin to do that, and we weren't to the point until now to really make that happen, and so that's my thoughts on at least the group from the SSC side that would be involved, and then we can really flesh out a very focused review and then how that can advance into the next steps.

DR. SEDBERRY: Do we have any volunteers? A few names have been thrown out by Roger.

DR. SCHARF: Do you anticipate physical meetings of the working group or webinars or what? How do you envision this sort of proceeding?

MR. PUGLIESE: I think we may want to try to have at least one physical meeting, but probably most of it is going to be via webinar, to try to accomplish it, but I think there may be a benefit to try to get this done in a way that everybody kind of gets -- Identify the foundation of what we have and how it's been and kind of get into the weeds a lot more, and then we can really follow-up to do tasking on how to look at this into the future, if that seems like an appropriate approach.

DR. SEDBERRY: So one in-person meeting and two or three webinars, and then whatever prep you would have to do for those, and so that's kind of the time commitment.

DR. REICHERT: One or two webinars, and I think it's important that we have like terms of reference or a task before we can set that up, because I can imagine that the development of the model and how we ultimately, as an SSC, are going to use this to formulate recommendations or how we're going to use this as a tool may be an ongoing task or project, and so my question was, for this working group, Roger, do you see this as kind of a standing committee, or is this something that will have a beginning and an end, because I think that may help in getting volunteers for this working group.

MR. PUGLIESE: Right, and I think, as we discussed earlier on, I think you have to take the first step, and so the review, and so I think maybe you would consider it as a beginning and an end, so you get some of these tasks accomplished first to set the stage for where we go and then revisit on how you go into the future, because I think we've discussed this before, and they're kind of two different aspects. Let's kind of shore up where we are in kind of the foundational things, and then you can follow-up on how we create maybe a more sustained group, because you may want to expand that with other membership, et cetera, and look to the workgroup and other things, but I think this -- To keep kind of the momentum going and to keep a very clear and focused and a very defined terms of reference, maybe have it very specific to the task at hand.

DR. SEDBERRY: Right now, you're looking for just some members on an ad hoc committee to address this review of the model.

MR. PUGLIESE: Yes.

DR. SEDBERRY: Luiz, are you volunteering?

DR. BARBIERI: Yes, sir, I am.

DR. SEDBERRY: Okay. Luiz and Marcel. All right. Eric and Fred.

SSC MEMBER: And Rob.

DR. SEDBERRY: Is Rob online?

DR. ERRIGO: No.

DR. BARBIERI: All the more reason to volunteer him.

DR. REICHERT: If I remember one of the previous meetings, I think he expressed a --

DR. SEDBERRY: He did.

DR. REICHERT: We are volunteering him, but I think he had already expressed interest.

DR. SEDBERRY: Alexei. Okay.

DR. REICHERT: I think it would be good to put in here that I think one of the first things that we as a workgroup should do is determine the terms of reference. What is the task before us, because

even a review of the model is a pretty significant task, and so I think it's good for us to define very clearly what our task is.

DR. SEDBERRY: Any other comments or questions?

DR. SCHARF: A timeline would help too, in terms of what you're thinking about, in terms of maybe a physical meeting and what kinds of -- In terms of having a product for you, in terms of a review, and that would be good.

DR. SEDBERRY: Thanks, Fred. Anything else that needs to be considered right now?

DR. SHAROV: Who is going to develop these terms of reference? Is this the SSC or the council, because, based on what I have heard -- Number one, I didn't have a chance to -- I wanted to say thanks to both presenters on those models. They were exceptionally good presentations and an incredible amount of work. Clearly, in terms of the South Atlantic model, it's just a -- Well, the initial parameterizations is where we are. There is a lot of work to be done, and I think that the terms of reference should include at least sort of the near-term objectives, because it should go just a little bit beyond a review of how well the parameterization happened and what is the behavior of the model, because I totally agree that this is a strategic model. We are planning into the future, and so that's just a few comments, but the question is who is going to write the terms of reference?

DR. SEDBERRY: That's a good question, and it's kind of a chicken-and-egg thing. Should the -- Roger, did you have thoughts on this?

MR. PUGLIESE: I think I was going to work with some of the members to be able to develop that. I think what we need to do is look at what we have and how that is done for these types of models and then, specifically, get to some of the points about, beyond that review, how to guide things. I think some of the other aspects on guiding principles may be addressed through some of our other discussions on advancing research needs and things like that can be coupled in and connected through other discussions.

DR. ERRIGO: I think the terms of reference would most likely be developed by the workgroup, in conjunction with Roger and whoever else is involved in the model framework to come up with a nice, concise list of terms of reference. I am not sure about the full procedure, but we'll find out, but, if it's something that needs to be okayed by the council, then we can bring it to the council and have them take a look and approve or disapprove or add and things like that, but I think the first step is to have this workgroup work together with Roger and some others to come up with the terms of reference.

DR. SEDBERRY: That sounds reasonable to me. Marcel, did you have a question or a comment?

DR. REICHERT: I would just add that the first task of the workgroup and others, or the -- Anyway, clarify a little bit who is actually developing these terms of reference, whatever language you want to use. My other question would be does anyone around the table have any ideas, in terms of what aspects should be included in these terms of reference? We can revisit that later, but it would be good to get some guidance from others on the SSC.

DR. SEDBERRY: It might be a good idea to capture that right now, while we're here.

DR. BARBIERI: I was just looking at -- I had saved this, and I guess I'm a hoarder, and I had saved a PDF of this letter that the Council Chair had submitted to Sam Rauch, and this was October of last year, and it was talking about implementation of the EBFM plan in the South Atlantic region, and the letter, which has six pages, has a number of topics here, and that might be a starting point, at least from the council's perspective, of what they have in mind, in terms of identifying what they see as needs or uses of this.

DR. SEDBERRY: Excellent suggestion.

DR. REICHERT: Since you have that letter readily available, maybe you can distribute that to the group.

DR. BARBIERI: I would be glad to, yes.

DR. NESSLAGE: Is this a review of the general model structure and inputs or the actual kind of reef fish implementation-centric model, because then I might --

MR. PUGLIESE: No, I don't think it has anything specific to do with the reef fish. That component had to do with -- Well, it's part of the overall model. Those species are within that context, and I think, when Luke was discussing some of the reef fish components, that had to do specifically with the Florida Keys model, and so this is the South Atlantic, which is the entire system, of which snapper grouper is part of the entire system.

DR. NESSLAGE: Sorry to be confused there, but I just wanted to be sure that we knew which one we're talking about. Then I would just like to reiterate Fred's suggestion earlier that it would be really nice to see some sort of retrospective diagnostics for analysis done on this model. I think it's possible, and it would be really informative, to see how well the model is performing.

DR. SEDBERRY: Roger, do we know who else is going to be on this workgroup besides these five SSC members?

MR. PUGLIESE: I think, at the beginning, what we're going to do is draw on -- We have Luke McEachron, Lauren Gentry, Tom Okey, and we were going to look beyond who needs to be potentially from the original modeling workgroup, to kind of look at the context of the overall model, and that may include individuals like Ruoying He, but, that step beyond the core, I think we have to look closer.

Tom did remind me that there are other people that we may want to bring in specifically, like Cam Ainsworth and other ones that really could address these and provide a significant opportunity to that, and we may have some more generalized information, or guidance, on this from our broader Habitat and Ecosystem Advisory Panel that will be discussing the bigger context, and I think the point that Luiz made is very timely, because that response to Sam had to do with the overall EBFM directives, the implementation plans, and a lot of things are being finalized, and this is kind of a very good way of putting into context what we view that as meaning for our region and how to support this into the future.

DR. SEDBERRY: That AP is meeting next month?

MR. PUGLIESE: Yes, they're meeting in May.

DR. SEDBERRY: Do we need to come up with these terms of reference in time for the June council meeting? Did I hear that the council would need to approve them?

DR. ERRIGO: I don't know if the council needs to approve the terms of reference or not.

MR. PUGLIESE: I don't think so. I think is the task of the SSC and that group to advance this, because this is still in advance of being brought forward to the council. I think that's the thing that has to be done to refine it, to be able to then take it the next steps beyond this, so that then it can inform how it can be used through the SSC and the council, and so I think that's the context of this group.

DR. REICHERT: I would agree with that, because I don't think this will result in any direct recommendations to the council for management.

DR. SEDBERRY: Very good. Thanks.

DR. BUCKEL: In terms of the terms of reference, the question I had for Tom earlier about there are some papers that describe diagnostics of the Ecopath models and running some of those analyses to present to this review team would be good, and so the approaches that Jason Link outlined, and there may be others that I am not familiar with, but just to be able to look at does the model pass those tests, and that would be a good initial thing for that review group to check out.

DR. SEDBERRY: Thanks.

MR. PUGLIESE: Yes, and I think the one that would probably bring some of that also to the table is -- He wasn't able to be with us, but that's Howard Townsend too, and Howard is part of the AP, but just the timing issues continue on, but I think that he will definitely get to that, and I think, last time, he had raised some of those as being kind of the next steps that we need to take.

DR. SEDBERRY: Okay. Any additional discussion on this agenda item?

DR. BUCKEL: I have one more, and this maybe should have been for Tom's presentation, and I'm not sure if it's a terms of reference or not, but I just remembered that you have some of the fishery-independent abundance indices, but then you also have the biomass estimates from stock assessments, and so those aren't independent, because some of those fishery-independent indices are used in the stock assessment, and I don't -- I guess I'm not sure exactly how you use those, but, if they were used simultaneously for fits -- I just wanted to check on that. Thanks.

DR. SEDBERRY: Okay. Are we ready to move on? One more thing from Mike.

DR. ERRIGO: Just we may want to identify a workgroup leader, just someone who would be the person who reports back to the SSC, and, if the report comes out or anything like that, they would just be responsible for getting everyone together and just being the go-to person for the SSC members and the liaison for the SSC from the workgroup.

DR. SEDBERRY: That's a very important point, and I think I saw Marcel getting ready to volunteer.

DR. REICHERT: No, I was not. I was going to suggest that maybe, once we have our first webinar, we can talk amongst ourselves within the group and identify a, quote, unquote, chair, rather than trying to do that right now.

DR. SEDBERRY: Yes, and that sounds more democratic anyway. Thanks. Again, thanks again to Tom and Luke for those excellent presentations. This thing really is moving forward, and we're glad to see that, and so thank you very much.

The next item on the agenda is the South Atlantic Research and Monitoring Plan Review, and the assignments for this item are Anne and Marcel. This is an overview or an opportunity to review the research and monitoring plan, as the council will consider this plan at its June meeting. Do we have a presentation? Mike is going to run through what the research items are.

SOUTH ATLANTIC RESEARCH PLAN REVIEW

DR. REICHERT: Do you want us to discuss them item-by-item, or do you want to run through your presentation and then discuss?

DR. ERRIGO: It's not really a presentation, but I'm just going to go through and just show you the structure of this. This way, we can have public comment, and then we can go through and discuss it like section-by-section.

DR. SEDBERRY: That sounds good. Go ahead.

DR. ERRIGO: Okay, and so this is basically almost the same research plan that you guys saw the last time, but updated, and so anything that's been completed has been removed, and it's been circulated around to staff and others, and anything that we thought might need to be added was added in, and now it's being put before you guys to see if you might have any other suggestions for what might need to go in here, if we missed anything or anything like that, and so it's broken up into sections.

The first section is the short-term research needs, and these are the kinds of things that need to be completed within the next year or two, and these are mostly having to do with assessments that are coming up within the next couple of years, and so research needs for those assessments, for the most part, and I believe those are -- That's pretty much all that is there.

Then there's a section on the special management zones, research needs for those within the next five years, and so that has its own specific section, and then we've got MPA monitoring within the next five years and the types of research and monitoring needs, specifically for MPAs, and then we have these longer-term needs to be developed within the next five years, but it may actually take longer to complete, like life history traits for all managed species and that kind of thing, evaluate management strategies to reduce discard mortality in the snapper grouper fishery, and so those are larger-scale-type research needs.

We have the habitat section, habitat research and monitoring, specifically, and it's separate from like fisheries monitoring and things like that, and then we have specific monitoring needs, increased funding for certain monitoring programs, add a monitoring program or expand something or develop a program for certain species. Then there is a citizen science section and priorities for citizen science research.

This section down here is specific annual reporting requests, and these are things that the council would like reports on and what the status of those things are, and so like SAFE reports and a report on the SEFIS program, the annual progress report by the Science Center at the council meeting, and so that's what those are. Then the tables down here are the assessment priorities that were developed using that tool that you guys reviewed a couple of years ago now, where you put the stocks in, and it would rank them, which ones were the priorities that should be assessed first and then a down-the-list kind of thing, and so these are ranked in here, from 1, 2, and 3, and here's what that means.

High data collection priority and age-based assessment goal, that's Number 1, and so that's most of the species that we're already assessing regularly. Level 2 is still a high data collection priority, but we don't have enough information to do an age-based assessment, and then Level 3 are stocks that we have issues assessing or even collecting data on, and so, if you have any suggestions or changes to make in this area, feel free to do that. That is the whole thing, and those are the different sections of it. I figured that, when we go over it, we'll take it section-by-section, and you guys can feel free to add or change or provide comments, whatever we need for this or to okay it as-is, whatever is appropriate.

DR. SEDBERRY: Before we go through section-by-section, we need to see if there is any public comment on this. Is there any public comment on the research plan that the council will review at their June meeting? All right. So the way we're going to do this is you're going to bring up the document, and we'll just scroll from the beginning to the end and see if there are any edits, changes, questions, clarifications, that the committee has.

DR. SERCHUK: I have sort of a general issue. I think that taking cognizance of needs is really very important, and so I applaud the exercise. On the other hand, I have seen many iterations of these priorities across a number of councils, and the question that is always foremost in my mind is, apart from listing these, which, in many cases, all councils do, and, in some cases, they are required to provide information to the Secretary, in terms of five-year plans, is how well have the previous versions of our priorities been used in terms of accomplishing the tasks that have been identified.

I recognize that it's nice to have lists, and I think it's important to prioritize within those lists what needs are critical needs, and I think you've done it with some of the assessments there, but how well has our planning process actually produced the sort of research needs that we have outlined? I think we need to keep that in mind, in terms of has this approach really worked to our satisfaction, and, if it hasn't, why hasn't it?

Again, I am not belittling the approach. I think we need to start thinking about it, but they often turn into laundry lists. For example, I know, because I participated in a webinar for the New England SSC, that they had a list of a hundred priorities. Ninety-two were listed, and they were developed by different groups within the councils. They had their different plan development

teams, and so I am just trying to keep in mind that we have to put a research plan together to address the needs, but it's also important to see have we been successful in the past, and, if so, how has that been accomplished, and, if we haven't been successful, is it because we haven't really -- The money hasn't been there, or we haven't really emphasized what are the highest priorities. I am sorry to bring this up, but I actually think it's really important that, if these are really outstanding needs, that they really be addressed, and, if they haven't been addressed in the past, we need to think about why not. Thank you, Chair.

DR. SEDBERRY: Those are important questions, and I just wonder about the SSC's role in following through on our research suggestions. I mean, I don't know. Maybe the council staff can address what happens to these suggestions after we make them, but they get them from every SEDAR and every AP, and so this is, I guess, a prioritized list of all that input, and I don't know. Let me think about this.

DR. ERRIGO: Just real quick, the previous iteration of this had all the things that were already addressed crossed off, and those were removed. The point of this document is it goes to the Science Center, and it informs the priorities for the MARFIN grants and the Science Center's priorities for their research and stuff like that, and so they don't need what was accomplished. They need what the priorities are now, which is why those were removed.

I can have a separate document for the SSC which includes the accomplished tasks and goals as well as the new priorities, and so I can do that, and then I can just -- The accomplished tasks would be at the bottom of each section, but the purpose of this is it goes to the Science Center, and it informs priorities for research, the MARFIN grant priorities and Science Center research priorities and things like that.

DR. SEDBERRY: Thanks, Mike.

DR. GRIMES: I was just going to say that, and Gregg is probably old enough to remember this, but, long ago, there used to be an annual meeting between the Science Center and the council to actually have a chance to discuss the priorities, and I don't know if that made any difference or not, but it might be a time to try to re-establish something like that.

DR. SEDBERRY: I think the information that Mike just provided helps me a lot to understand the priorities are looked at by the council, and the things that are being done are being crossed off, and the things that need to be done are being passed on as MARFIN or S-K or other priorities, and so the process, to me, seems to be working, even if it's not apparent in this document that it's working, and maybe what Mike has talked about in providing additional information to the SSC about the outcomes of these priorities would be helpful for our future meetings.

DR. SERCHUK: I just want to clarify. Is the list of items that are under each of the sections in priority order, or are they all equal priorities? That's the first question that I am concerned about, because, if they're not in priority order -- Let's say that they are. Then I have no problems. If they're not in priority order of urgency, or criticality, then I think that we need some discussion of having that in there, because it's a long, long list for a lot of things. Thank you.

DR. ERRIGO: Within each category, they're not really in priority order. They are broken up into short-term and long-term research needs and goals. The short-term goals, obviously, need to be

done right away, in order for the assessments to take place. For the most part, that's what those are, and so, by default, they are higher priority.

We have simply broken down that these are the things that we really need the most, and these are the categories that we need them in, and that's how it's broken down, and then it's short-term and long-term needs, and then there is monitoring needs, and there is research needs, and those are separated, because we found it difficult to prioritize do we want to increase funding to fisheries-independent monitoring, or do we want to get the information necessary to run this single-species assessment next year, and which one is the higher priority, and so we've broken it into sections.

DR. SEDBERRY: The council is not asking the SSC to set priorities on these. The council is asking the SSC to express what we think the research needs are in the region.

MR. CARMICHAEL: A little more background. One of the reasons it's presented like it is, with the short-term and the long-term and specifically the assessment items with timing, is based on feedback from the Center, and it was through Bonnie a few years ago, and I think two iterations of this previously, to try and make that part very specific. The council has discussed making individual priorities within this, and they have decided not to do that, and the Center felt that the short-term priorities was a good way to help them know what they needed to focus on in the near-term to address this.

As far as how well it works, there is a number of things in there about asking for reporting back to the council about what is being addressed, and Clay regularly does that now at the council meetings, and you see Erik coming here to the SSC, as he did yesterday, and talking about research, and it's kind of part of the spirit of what was asked for there. Marcel and his staff present the survey trends each year, which is another thing that's getting at one of the things that are in there, and so we're trying to do a number of things to get the feedback back to the council and the SSC about what is being met.

One of the things that is probably unknown to us is to what extent these things do make their way into say workplans of the Science Center and the research that they are intending to do, and, obviously, this is one of many things that they consider when they are developing their plans for the future and what they're actually going to work on, but we do this, and it is required by the Magnuson Act at all councils.

Under the reauthorized act, all councils were required to do this and file it on a regular basis, and they're like five-year plans. We started out doing this annually, and we're now doing it every other year, because things just don't happen that quick, and that seemed to be a little bit better approach for getting at it, and so that's kind of the background on where we are. If you look, as I said, there is a lot of things in there about reporting back to us about what's being done, just so we can keep tabs on it.

DR. SEDBERRY: Thanks, John.

DR. SCHUELLER: I am going to ask a question about the process by which this list is compiled, specifically for the single-species assessments. It seems like there are species that are missing. Clearly, the assessment documents provide many more research recommendations than are on this list, and I understand that they are short and long-term, but it doesn't seem like there is any species-

specific long-term recommendations on this list. They are more general, and certainly there was something -- There is more than one recommendation for Spanish mackerel, and I don't know that anybody has been working on Spanish mackerel, and so I guess what I'm wondering about is how is the council taking what is in those assessment documents and converting it to this, and what's the process?

MR. CARMICHAEL: To focus on these in particular, again, this comes from the guidance that we got from the Science Center leadership a few years ago, which was to focus on things that weren't just general, but that were more tangible and more direct and that were considered to have the most bang for the buck, in terms of the upcoming assessments, and to focus on just, within the next few years, things that need to be provided for those upcoming assessments, and so things that are like ten years down the road for being assessed are not addressed.

The common needs, like better fishery-independent surveys, are not really making their way to these short-term things for individual assessments, because the idea was like those are much more global, and those aren't really the types of things that you're going to go after on an individual species basis, and so you see those in more of the long-term, general needs about the information the council needs for the species across the board.

These come from what is listed in the stock assessments, the research recommendations from the assessment documents, and then, when we come to you and you review an assessment, and we say things like, all right, what are the big uncertainties and what are the important things, the most important research needs for this stock that would make a difference, then that's the kind of stuff that we look at for this.

DR. CROSSON: Just a comment is that I do notice that -- I mean, when our group, the social science group, in Miami is asked to prioritize things for like MARFIN or some of the other federal grant opportunities, we do look at these lists, and some of these are familiar, and I know that our group has recommended them, and some of them have popped up on MARFIN before, and so it doesn't totally go into a hole.

DR. BELCHER: I am just going to give you a few directed comments on housekeeping. Your top part, where you talk about items noted with an asterisk are candidates for citizen science, and it says to see Section 6, it's actually Section 7. Section 6 is relative to a different grouping, which kind of caught me off-guard. Then Section 7 is actually asterisks, and so just to kind of, for a point of clarification, how you're wanting to do that.

As you go through the short-term, and you have white grunt identified, conducting stock identification studies for white grunt, and seeing that as a citizen science effort, there is kind of two parts to that. Yes, your citizen science can help you obtain the samples to support that, but, if you have nobody to do the analysis, or no funds for the analysis, they're just going to be archived, and so I think, somehow, there needs to be a little bit more description that goes behind why you think it's a good citizen science approach and like as to how you're going to do that, because, I mean, it's great if we can get archived stuff, but, if we've got no one to do the analysis, it's not going to come in short-term or long-term.

Similarly, with the otolith chemistries, when you're looking at gag and saying that we want to do the research on otolith chemistries, is that something that can be turned around quickly? I am not

the person who does that breakdown, but, based on samples available, is that a realistic goal, short-term-wise, to get that to be in play? I know, a lot of times, we've had to kind of bump back assessments because ageing has been behind, because of shifts in priorities and that kind of thing, and so it's just, again, kind of pointing out some of those issues that could potentially be -- You know, if you're identifying these as things that need to be focused on, what if they can't be obtained? Does that do anything to de-rail the overarching project?

DR. SEDBERRY: Thank you.

DR. REICHERT: I completely agree with what Carolyn said, and I have some specific comments on some of the points here, and I know some of them, especially under 1, are items that ultimately will appear in the terms of reference, but, under red snapper, it said needs, and perhaps the -- Because I think that's a critical piece of information, is the bycatch mortality estimates, especially relative to the Amendment 29, and I think that's critical.

I also think that's true for all species, but I think in particular for red snapper is -- I am not sure whether that's a research need, but what were the previous recommendations, because I think we discussed that on various occasions, in terms of where can we get the best bang for our buck, and bycatch mortality is one, but there may be some others that would be good to take a look at. Again, I am not sure whether that should be in the language here, but that may be another source of key research needs. We can talk a little bit more about red snapper, or do you want me to move on to some other species?

DR. SEDBERRY: It sounds like we're starting to go through the document. Should we start at the top and work our way to the bottom? Okay. The first item is the short-term research needs to be completed in the next year or two.

DR. SCHUELLER: Part of my initial comment was because I think there's a glaring error in this section. Specifically, in the species table down below, black grouper is rated very high, and then there is a note about data issues concerning gag. However, if you look at the short-term research list for gag, and there's not a single mention of that with respect to black grouper on this list, and, to me, if you can't do that, you can't have an assessment. No offense, but I don't -- If I'm running an assessment, I'm not doing larval transport modeling. That's not a high need for the assessment, but knowing which landings are actually gag is critical, and so that's why I don't understand how these are the pieces that are coming out of the assessments.

DR. ERRIGO: That wasn't put in here for gag, because it was determined that it wasn't a significant issue for gag at the assessment, and so it wasn't put in, but it was the other way around. It was a significant issue for black grouper, but I did not make that determination.

DR. SEDBERRY: However, if you think it's still a big issue and should be a priority, this is the SSC's chance to comment on that and let the council know that it should be moved up. Now is the time.

DR. BELCHER: To Amy's continued -- Kind of adding on to what she had said, the other thing I'm thinking about too is that there is a list there, and it's the same thing. Will that help us advance the assessment, number one, and then the question becomes that -- Again, harping on the otolith chemistries. Anybody doing that work, to know that that's even going to be available to help in

that process, and so, again, short-term and long-term, I think that's kind of those questions of what are these things that really are going to hinge on whether or not the assessment can move forward.

To that point, that was the frustration of having been on that black grouper assessment, is that you had one assessment move through, and it's a ying and a yang, I mean, their percentages relative to each other, but one goes forward and the other one, all of a sudden, when we focus on it, it decouples and goes off the rails. I mean, I don't see how it can't be a shared problem. It has to be a shared problem.

DR. SEDBERRY: So, I am hearing that the species identification problem should be included as a high priority under the operational assessment for gag that's going to be done next year and that black grouper is not in that first category of short-term research needs, but, because of those two problems being complementary, that it should be.

DR. ERRIGO: Black grouper is not being assessed in the near term.

DR. SEDBERRY: Okay. Did we capture that? Jeff, did you have a --

DR. BUCKEL: If folks still want to talk about that bullet, but mine has to do with the first two, and so I agree with Carolyn. The first one, if no one is working on that, the likelihood of it helping, but the second one is true too, and is anyone working on genetics? Has someone shown that you can tell about the genetic structure in gag on the east coast? Those two would be longer. They would be moved to a longer-term, for the reasons that Carolyn described.

DR. REICHERT: Well, that's true for the long-term continuous monitoring of age structure too, and it's under the short-term research needs, but this is a long term. I was wondering whether the intent was a fishery-dependent or fishery-independent, and that's just a question that I had.

DR. SEDBERRY: Does anybody disagree that the otolith chemistry and the genetics of spawning gag and the long-term monitoring should be moved out of short-term research needs? Does anybody disagree with that?

DR. BELCHER: I am not disagreeing, but, in support of Amy's comment too, the larval transport would be another one of those.

DR. SEDBERRY: Yes, I would want that in there too, and it would be a great thing to know, but I'm not sure that it's a high-priority need for the stock assessment. What does that leave us with? These things are all kind of related. The larval transport is related to the otolith chemistry, and it's related to the genetic stock structure, and it's related to the gene flow, and they can all help us to understand recruitment variability in gag, but I don't know that they are going to help us with the stock assessment.

DR. SCHUELLER: Is there going to be a species ID workshop for gag? Is that the intention here, or a stock ID workshop, and so several of the species that have been coming up have had these sort of stock delineation workshops, and is gag scheduled to have a stock delineation workshop?

DR. SEDBERRY: This is an operational assessment, and I don't think a stock identification is included in an operational stock assessment. It's just that it's come up with the data issues, and

gag recruitment is highly variable, and it depends on all these oceanographic things that happen in the very unusual early life history of gag and makes it difficult to understand, and it would be great to understand all of that, but I don't know what it would contribute to the stock assessment.

DR. BELCHER: When we finish with gag, I will come in on some others.

DR. SERCHUK: Because we're only going to have operational assessments and research track assessments, if stock ID is a real issue, then we have to move it from one to the other, and this is a problem when you have a binary system, and so I think we're raising issues now about the types of assessments, and I know we've discussed this before, but, since we've now taken four or five categories of treating assessments, from updates to standards and benchmarks and so on and so forth, and lumped them into two categories, when we come up to issues of where we can't consider it, because we can't consider it in an operational assessment, then we really probably need to do some introspection about whether the process that we've set up for ourselves will really be serving us when we have some immediate needs.

We either have to change how we look at what goes into an operational assessment, if it's critical, or we have to then put that into the operational assessment category, if stock ID is a little concerning to a research track. I know this is a little bit of an aside, but, as we move forward on these sort of things, we really need to think about the paradigm that we have set up for considering assessments and whether what we've described as operational or research are really going to be serving the council's needs relative to timing. Thank you, Chair.

DR. SEDBERRY: Good point, Fred, and thank you.

DR. SCHUELLER: To nit-pick even further, short-term here means like basically next year at this time, which is -- Obviously, the funding mechanism wouldn't even maybe get the money to the people by this time next year, and so this is sort of related to Fred's statement, and it could still be a need, but maybe it's a medium-term need and not necessarily by next year at this time. I mean, this is getting super nit-picky about the definitions and timelines here, but I have seen assessments rank things as like within the next two years, in a mid-term range of two to five, and then five-plus, and that might benefit from something like that.

DR. SEDBERRY: Yes, I agree. I mean, this is not going to happen in time for next year, and it's a five-year study, and so why not be in a five-year plan. Marcel, did you have something?

DR. REICHERT: I was making that exact same point. If this is relative to the operational assessment for mid-2020, then everything in there should be something that can be accomplished in order to assist that operational assessment, and those bullet points are not going to be completed, and so I completely agree.

DR. BELCHER: So, backing up one species, that was where I would have to defer to whoever does the histology for Spanish mackerel. Is that something that can be done on this fish? I don't know. Again, I don't know what the backlog is on histology for that. Is that something that can be addressed by mid-2020 for Spanish mackerel?

DR. REICHERT: I can only address our coastal trawl survey, and we do catch those smaller fish, and that is something that we do or can do, and I'm not sure about other programs.

DR. SEDBERRY: That one is at least doable. Okay, and so we'll leave Spanish mackerel the way it is. Gag, we're going to move those -- I guess all of those into a five-year plan.

DR. BUCKEL: I just remembered Erik's presentation yesterday on the larval transport, and so there may be gag larval transport information from the post-doc that is working at the Beaufort Lab, since that's current research.

DR. SEDBERRY: Okay.

DR. SHAROV: I guess I have a more general comment, and so it's not directly related to the rearranging of the priorities, but it seems to me that what is defined as the short-term research needs are essentially the priorities identified by each individual assessment, and so that's probably how we could look at it. Otherwise, I don't see a unified system which we're using to sort of great -- Identify the appropriateness of each research priority.

I think what would really be helpful, and I understand that it's not possible at this moment, but if we could -- For each of these research priority items, if we could provide information to what extent this research priority is supported, and that is, is this just simply a wish list, or is this the work plan? For some of these research priorities, there are funds already allocated, or there is a plan funding based on the research proposals through the granting agency, and so if I could look at this list and see that like fifteen or more that there are resources allocated, and there are people allocated, and there is money allocated for an experimental study, or if this is the -- If it does not require any material support and it only requires an analyst's time, and so it would easier if I could just color them in this way, in green or yellow or red or whatever. It would be so much clearer as to what is most likely to be addressed and in what timeframe and what the subject is for further discussion. Thank you.

DR. ERRIGO: Those kinds of decisions are made based on this, and so that's a chicken-and-egg problem. They use this to make those decisions, and so you can't get that information to put into this, because they use this to get that information. This is like a wish list. These are the things that -- We want to have these things, and figure out what you can do, and do that.

DR. BELCHER: I think the hard part though is that, without knowing what is currently doable -- I mean, it's one thing to put on there that we want otolith chemistry work done in the next year, but, if nobody is doing it, we can't materialize otoliths, and we can't come up with short-term funding and make it happen.

I mean, I think there needs to be some context for it, because, just putting the list forward, I think, at times, you're just setting yourself up for someone to roll their eyes and skip off to something else, because it's like, well, where is the information? If you don't have it, we can't make it happen.

Marcel's group has been very flexible over the years, when you think about SEDAR schedules have changed, and it's like, okay, we've changed Species A in front of Species B, and vice versa, and they've been in the middle of ageing things, and they've had to stop, and they've had to jump over to a different process, but they have at least got the ability to do that, because they've got an archive, but, if you don't have an archive, you can't change a priority to something that doesn't

exist, and so I think this is the hard part of it. Without the context of what is available, putting something forward and saying I wish I had this isn't going to help the process.

DR. REICHERT: For the record, given the funding, that flexibility has largely disappeared, and I just wanted to make sure that everyone understands that we increasingly do not have that flexibility anymore.

DR. ERRIGO: I think that's the point of this document. You put what is needed, and we don't know what is currently going on and what's available, this and that, and we look at this -- The Science Center might look at this and say that this research is already ongoing, and this research is about to start, or we can start this now, if we allocate money to it, and have it finished in this time, and this one can't be done, and so it comes off, because they know all of that, and we don't. We have no idea if anybody is doing exploring samples from Mexico for gene flow and connectivity or genetic spawning stock captured in the commercial fisheries, and I have no idea, but the people who use this do, and so they're the ones that can go through, and they will take out what they can do and what they can't do, but I don't know how else to -- I don't have context for much of these, or pretty much all of them.

DR. SHAROV: All of these research priorities came either from the stock assessment reports or other documents prepared by people that have been working on this, and they have this clearly stated, that these are sort of the breaking points in their analyses, and they are -- They know that -- Let me take Marcel as an example. His laboratory is working on the ageing techniques for say gray triggerfish, and he would know that this is going on and that this will be done, unlike others, where people say that we just simply need to do this, but there is no history of anybody working on this, and so I think that the information is available, but it's just a matter of us sort of putting it together.

I thought that, collectively -- Unfortunately, I'm not the one involved, and I'm not doing specifically the assessments for the region, but, collectively, most of us around the table are involved with the different aspects, and they should be familiar with whether it's just a wish list or it's an ongoing project. Am I missing something?

DR. ERRIGO: No. However, if a project is already ongoing, and we're going to get data from it, why do we need to put it on this list? This is the list of things that we need that maybe need to be started or need funding allocated or things like that, and I really would just take this as here are the things we need, here is the things we would like to see, and then let the people who use this sort it out, and I don't think that it has to be too terribly involved.

DR. BELCHER: But I think that's part of the problem. Again, with the years of sitting and knowing that Marcel's group has a lot of influence with those reef species, because that's what MARMAP focuses on, there is some background to say that we have the ability to shift the priority towards that, because, in a way, especially these that have dates of mid-2020, if there is this tie to it that says -- To me, when we have short-term research needs -- Again, Spanish mackerel, is this a make-or-break short-term research need? Can the assessment be done without it? If the answer is no, then somebody has got to shift the priority to make that a top priority so it's done to be available for 2020. I mean, that's kind of the way I'm looking at that.

Similar is the whole idea on the use of otolith chemistry. If that's necessary for gag in mid-2020, and somebody is doing that, then that's probably an easy goal to obtain, but, if nobody is doing it, and there is no project in line to do it, then is that going to tank the ability for us to go into a gag assessment?

Those are kind of the ways that I am looking at that with that information, saying that, without this information, we can't proceed forward. These are things that we have to put a priority to to get it done to enhance our further development of these assessments, because, otherwise, why make it a short-term effort? I think, again, looking at Marcel's shop, if there is that flexibility, where they are shifting between how they are ageing things or doing histology on things, they have that ability to be reactive now and shift their priority, but that's something that, again, if they're in the process of thinking they are getting prepped for black sea bass or something, and now, all of a sudden, something jumps in front of that, that's a halt. We can do the short-term address and change that priority, and so there is an inherent priority list in there, too.

DR. SCHUELLER: I agree with what Carolyn just said. I am just trying to make sure that I fully understand how this is being used, and so it sounds like it's being used to prep for stock assessments, and it sounds like it's being used to make a priority list for funding opportunities, and, to me, those are different things, fundamentally.

DR. ERRIGO: That's why there is all the different sections.

DR. SCHUELLER: Yes, and I guess I'm -- For example, if something shouldn't be on here, if we're already addressing it -- Under gray triggerfish, it says address age determination issues, and those may be multiple, but there is some work being done in Beaufort on that, and so I guess it would be nice if -- I mean, we've heard about that from this group. Is this list passed to Center staff at all, for them to say that this is underway, or this piece is underway, but this piece isn't?

DR. ERRIGO: This list goes to the Center, and then they go through it, and they use it as they see fit. If they say, oh, this is already done, then they will just cross it off.

DR. SCHUELLER: Okay. It just seems like maybe this would benefit from a little bit more --

DR. ERRIGO: The research needs that were put on here, in this particular section, they are the research needs that were identified either by the assessment team or the SSC as being the issues that had the largest amount of uncertainty in the model and from which the assessment could benefit the most from, and so they are the higher priorities. However, the assessment ran the last time, and so, if we had nothing on any of these, except for triggerfish, and that one -- If we don't have the age determination issues solved for triggerfish, it will again fail its assessment, but everything else already ran, and so I don't think anything will kill an assessment, per se, but all of these are the higher priority. If we had this, then the amount of uncertainty and the issues that we had would go down a lot, and so we get the best bang for our buck.

DR. REICHERT: I agree with you, but I think there were a number of assessments where we had considerable issues, and so that's where some of these research recommendations are really critical. Yes, we may be able to re-do what we did, but I would argue that, preferably, we wouldn't want to do that, because we want to make sure that, the next time around, we have a better stock assessment, and so that's why we, as an SSC, make the recommendations, in terms of issues that

need to be addressed, the uncertainty, and so I think these are important. If we move down, I have a comment on gray triggerfish, but I can wait with that.

DR. SEDBERRY: Can we move on?

DR. BUCKEL: One nit-picky thing. If the spawning gag, if that one gets moved down, I think, unless I am missing something, I don't think that commercial fishermen are going to catch spawning gag, if our closures work, and so there is a spawning --

DR. SEDBERRY: As someone who has actually done research on a lot of these very things, with this species, I think this is all really important science, and it would really be great to know, and it would help us really understand the life history of this species and perhaps explain some of the weird variation we see in its abundance that may not be related to fishing. It's unfortunate that it's under the title of short-term research needs for stock assessments to be completed in 2020, because it's not -- None of these things are short-term research needs for the stock assessment, and so why don't we move them to something else and then move on?

DR. ERRIGO: Would it help if I changed that section heading and just said "stock assessment research needs" and have that section -- Have a separate section that says "stock assessment research needs", and we'll list all of the research needs that we need for stock assessments, and then we can prioritize those or something, and would that help?

DR. SEDBERRY: Yes.

DR. ERRIGO: Okay. Then we will consider that.

DR. SEDBERRY: Excellent recommendation. Now we can move on to something simple, like the red snapper research track. I don't know what we need to do here. I just know that, when we had the presentation about the chevron trap issues and the selectivity, we came up with a lot of research needs that resulted from that study dealing with red snapper and getting true selectivity, rather than relative selectivity and what else was evaluated in those traps, and so there might be some research needs for red snapper, but let's hear what John has to say.

MR. CARMICHAEL: I am opposed to changing the header there, because that was the guidance we were given by the Center leadership. I think, if the SSC wishes to make a suggestion about how to restructure this to better get all the stock assessment needs, then that would be fine, but it was specific guidance that we need to focus on things that can be handled in the short term, and I agree with the discussion that there is things that can't be handled in the short term. Then, by all means, let's pull them out and make them as long term, but I think we do need to hang on to this short term.

If the SSC thinks that's not functioning for some reason, make that comment, and then we can go to -- When the council looks at this, with Clay there, we can see what they think about that and if they want us to change the format, but there was a lot of back and forth at the council and several levels of review that led to these, and so we're kind of bound by that until they come and tell us that another thing will work. I know you don't seem to like that, Amy, but that's sort of where we are.

DR. SEDBERRY: Well, if we are bound by that, then we can, like you said, make the comment that this does not work and that, going forward, we need to come up with some other classification for research priorities.

DR. ERRIGO: We can make a -- If you feel that we should, we can make a recommendation that we perhaps restructure the document, but we can go through and continue doing what we're doing and saying that that's not a short-term research project and that's going to take too long, or that is, or this should be added as a short-term project, or things like that.

DR. SEDBERRY: I think that would work. Kind of our overall comment is that the structure of the document needs to be examined, and then these individual research items under gag need to be moved to a section that's more long term, mid-term to long term, because one of them actually has the phrase "long term" in it.

DR. BELCHER: Like I said, I'm not going to fall on a sword for it, but I think the asterisks -- I understand why we're putting them there, to say that there's a tie to citizen science, but, without the context of how that can fall into it, I think it gets confusing, because, like I said, for some of them, you can infer -- Like I said, the stock identification is easy to infer, and it's collections, but, when you start getting into the baseline data for spawning SMZs, I don't even know what we're talking about relative to what's going to be considered baseline data to know whether or not this is a citizen science project. Complete multibeam surveys of MPAs, I don't know what citizen has a multibeam approach, and so I'm just -- I understand how we can tie it in, but, without that context, we're just kind of speculating how that's working as a citizen science project.

DR. ERRIGO: This is evolving somewhat. There is going to be a separate citizen science research and priorities document, because it's growing too much, and so it got too unwieldy to just stick it in here, and so we're actually going to change how this works, and there is going to be a separate citizen science research and priorities document that will specifically go through these types of research needs and how citizen science can be used to address those topics.

DR. BELCHER: Does that mean that you will be removing Section 7 and the asterisks and the header section that references that? That will come out of this document and go into a different document?

DR. ERRIGO: I think that is where we're going to go with that. We will just take out all of the citizen science references from here, and there is a separate citizen science -- This is still a draft that we're fixing. That happened, and I wasn't sure about that until after this went out as an attachment, but, yes, that will come out of here. There won't be any citizen science in here. That will have its own separate document, and all of those references will come out.

DR. SEDBERRY: We are getting very close to lunch, and I was just wondering if there is a place here where -- Is there part of this that we can finish up and stop at? I think we have addressed gag and the citizen science issue.

DR. REICHERT: I want to repeat what Amy said earlier about address age determination, and that is being addressed. I think what's critical for the research track assessment is, because a lot of the gray trigger spines, both at the Science Center and in our shop, have already been aged, and that means that they likely -- We may have to re-age all of them, and so it's critical for the research

track that resources are available, if that's necessary to re-age them all, because, if we can't do that, then we will not have an age-based stock assessment.

DR. SEDBERRY: Could re-ageing them be considered part of the age determination issues, or you're saying that you're already addressing the age determination issues and you need to --

DR. REICHERT: The validation is being addressed. The re-ageing is not. I don't know whether that should be in there.

DR. SEDBERRY: I would say re-ageing of gray triggerfish by January of 2020 is a research need then.

DR. REICHERT: That is both fishery-dependent and fishery-independent. I think both shops face similar challenges. We can wordsmith later, and I can provide some language there.

DR. SEDBERRY: By the time of the data workshop. Are we good for now? Let's break for lunch and come back here at 1:30 and ready to move on to black sea bass.

(Whereupon, a recess was taken.)

DR. SEDBERRY: Welcome back, everybody. I hope you had a great lunch. We were in the middle of -- Well, not exactly in the middle, and we had spent quite a bit of time on this, and I was not planning on this taking that long, and so I'm hoping that we can, of course, thoroughly review it, but move this along a little faster, because we have a couple of really big items still to go for this afternoon and tomorrow.

I think we had finished up gray triggerfish, talking about what was being done, as far as the age validation goes and that those spines have to be re-aged in time for that assessment in 2021, which brings us to black sea bass, red grouper, and mutton snapper that have operational assessments coming up in 2021, but no research priorities listed, but just that there's an assessment coming up for those, and so there's nothing we really need to do with those.

DR. ERRIGO: If you have suggestions for research, I would be happy to write them down. If not, nothing came up so far.

DR. SEDBERRY: Okay. Any research needs that anybody knows of for black sea bass, red grouper, or mutton snapper? Okay. Then, in 2022, we have the white grunt research track assessment, and that will have a -- Since it's a research track, it will have a stock identification workshop, and stock identification is listed as a research need, with citizen scientists collecting the samples, but the analysis being done at a DNA lab somewhere.

DR. REICHERT: We just finished a study, and it's going to be published soon, about the genetics on the white grunt in this region, and so some studies were recently completed, and so I'm not sure what other information may be needed. I know that Jennifer Potts, in the past, has done some comparison of growth and similar parameters.

DR. SEDBERRY: I think, in the past, there has been comparative growth studies between south Florida and the Carolinas, and your lab has just finished up a DNA study. Anything else that might

be needed for the white grunt assessment in 2022? Great. Moving on. Let's see. Develop annual abundance for all managed stocks adequately sampled by SERFS, including methods to merge indices accompanying new sampling with those based on pre-SERFS MARMAP efforts by June 1 of 2018, and so that's already done, and is that right?

DR. ERRIGO: That's to report at the December 2019 council meeting on this previous research priority need, which has not been done yet. It hasn't been presented to the council yet.

DR. SEDBERRY: Do you have anything to add to this, Marcel? This has to do with the video index, the chevron trap index?

DR. REICHERT: To be honest, I'm not sure. The only thing that I can add is the chevron trap index that I have been presenting, and so I'm not sure whether this is the CVID, the video trap index, combined, and I'm not sure.

DR. SEDBERRY: You currently have a fishery-independent index of abundance for all of the managed stocks adequately sampled by the chevron trap, correct? I mean, that's already being done.

DR. REICHERT: But that's just the trap catches and not the video. We have some for the videos that have gone through the stock assessment, and I'm not sure if the Science Center has looked at some of the others yet. I simply do not know.

DR. ERRIGO: The council was interested in looking at those species -- The MARMAP chevron trap index, they appreciate getting, and they would like to continue to get, but this was also meant to address the new CVID index, or the video index, and they would like to also get similar trends for those, and so that's what this bullet point was meant to address. They were just asking for that report in October of 2019, or an update on that.

DR. SEDBERRY: Okay, and that's currently being developed, right, or you don't know?

DR. ERRIGO: The council asked for this, and I don't know what stage of development it's in, if it is at all. I have no idea.

DR. SEDBERRY: So we can give our blessing to the council asking for this, and I guess that's it. We really don't need to do anything with this, unless anybody has any comments. Okay. Then moving on to short-term needs for spawning special management zones to be completed in the next five years. There is four research priorities there, basically aimed at documenting spawning and collecting data from the spawning SMZs to, I guess, eventually, evaluate their management. Marcel, you are currently -- Your program samples in SMZs if your random stations fall into them?

DR. REICHERT: Yes.

DR. SEDBERRY: That sampling would be part of this?

DR. REICHERT: I assume it will be. I mean, we collect information on reproductive stage and fecundity and other reproductive parameters, and so, in that respect, we can document spawning.

DR. SEDBERRY: I would say that this would be ongoing for the next five years, and you would produce an annual report, right?

DR. REICHERT: Yes, and I'm not sure if this meant to also state that there is a need to increase sampling in the SMZs. Some of them are very small, and so the question is then how do you document spawning in those SMZs, but that's more the detail of how you're doing it, rather than that need is there.

DR. SEDBERRY: That third bullet addresses evaluating the sampling program. Is any of that going on with graduate student research?

DR. REICHERT: Some of it is. We have a paper upcoming on gag and scamp.

DR. SEDBERRY: Is there any reason to alter these four bullets as they relate to research in the spawning SMZs? We're all good with them? Okay. The next item is somewhat related, and it's short-term needs for MPA monitoring to be completed within the next five years, and the MPAs are the larger protected areas that have been in place for a longer period of time.

DR. REICHERT: One of the questions that I had, as clarification, is it says to maintain annual monitoring, and so I'm wondering -- Of course, I know about our efforts, but I was wondering if there is other ongoing monitoring efforts that need to be maintained, and I'm not sure what other monitoring efforts are ongoing. There is maybe the video survey that you were involved in, George, but, again, that's just a clarification of what are the annual monitoring efforts that are ongoing that need to be maintained.

DR. SEDBERRY: The ones that are ongoing are the chevron trap survey, and, again, some of your random stations fall within the MPAs, and some of them fall outside of the MPAs, and so you have the inside and outside comparison, and I think there was another survey being conducted by Andy David, conducted by NOAA Fisheries out of the Pascagoula Lab.

DR. BUCKEL: Yes, and there's a publication from that, and that was ROV and maybe another gear, but definitely ROV data that Andy and Nate Bacheler and -- But I don't know if that's ongoing.

DR. SEDBERRY: One of those labs that starts with a "P". I think it's Panama City, and you're right. Then, again, the reproductive biology, and that's being done as part of the MARMAP survey. The multibeam surveys of MPAs was ongoing with Andy David, and that was done on the Pisces, I think, and they multibeam everything as they go.

DR. REICHERT: SEFIS had some of those efforts too, while they were on the Pisces doing their reef fish survey.

DR. SEDBERRY: Okay. Evaluate the sampling program, again, I think there is some graduate student research being done alone those lines.

DR. SHAROV: A comment on the previous two sections. The ones marked with stars are supposed to be the ones that would potentially be addressed through the citizen -- What is it called?

DR. SEDBERRY: The Citizen Science Program.

DR. SHAROV: The Citizen Science Program, and so I don't know how a multibeam study would be addressed through a citizen study, but, on the other hand, the one I was pointing out for the snapper and grouper species probably could, similarly to the one above it, and was the just mistaken coding, or is that actually how it looks like?

DR. SEDBERRY: I am on the Citizen Science AP, and I think that was -- The multibeam stuff was considering the possible use of portable multibeam sonar units that are available for small boats now, that there might, in the future, be some of those available that could be used by fishermen. As they are fishing, they could collect multibeam data at the same time. I think, overall, we've already talked about moving the citizen science projects to a completely separate document, or maybe have them in both places, but remove the citizen science references from this document. We have these five bullets. Are there any additions or corrections or changes to these? Is everybody happy with these for short-term needs in the MPAs? All right. I don't see any shaking heads.

DR. BUCKEL: This is one that I mentioned to Erik yesterday, but the seeding, the hydrodynamic model and larval transport, to release some within the MPAs, to see if the current MPAs, and maybe that's for SMZs too, if those spawning areas are places that have a high likelihood of leading to recruitment in the South Atlantic or are they going to be lost, and so sources versus sinks.

DR. SEDBERRY: Yes, that's a good suggestion, both for the MPAs and the spawning SMZs, to look at connectivity between those protected areas where spawning might be protected and occurring and other habitats.

DR. SERCHUK: Sorry, Mr. Chairman, but I'm in the slow group, and so I apologize for this, but it relates back to the previous section, if I just can make one intervention. There are a number of stocks that you have covered, like black sea bass, red grouper, and mutton, and there are no research recommendations that are associated with these species, presumably, at least in the short term, but, just as a check, I went back to the black sea bass assessment that was done in 2018, in SEDAR 56, and there are a number of research recommendations in there.

Some of them are long-term, but there is one that talks about discard mortality for -- My question is not to be specific, but, when the list was created, did the individuals go back to those previous SEDAR assessments and see whether there were any research recommendations that could be either divided into short term or long term, just as a generic question, because there was something about getting information on hooking mortality for black sea bass.

DR. ERRIGO: Yes, and that's where most of those research recommendations came from, but they were pared down to those that would be of most importance to the assessment by looking at comments that were made during the assessment or SSC review or the review workshop review, to say that this would really, really reduce uncertainty, or this was one of the biggest areas of uncertainty in the model kind of thing, and so, if it wasn't really listed as being a large source of uncertainty, then it probably wasn't listed under the short-term research needs.

DR. SERCHUK: If I may, I'm sure the people, when they do the assessments, really thought about these sort of things, and so, when I see something like investigate discard mortality due to hooks

in shallow water for black sea bass, I am assuming that somebody felt that this was an issue that was sufficient to merit being included, and I don't see where that is anywhere in this document, and I'm not being critical, because I wasn't participating in it, but I am just wondering if that has been lost, in terms of a need, if it doesn't appear?

DR. ERRIGO: If it doesn't go in here, it's just not in this process, but it still is a research need in the assessments, which are looked at as they go through, but it won't go into this process, which guides like MARFIN funding or Science Center current needs and long-term needs. We are trying to put the highest-priority things in here, and, as things move up in the priority list, they will be added to this. If you feel that it's a high priority and something that really should be addressed, we could add that.

DR. SERCHUK: Typically, what happens in the next assessment is they look at the research recommendations from the previous assessment and say, well, what progress have we made, and maybe some of this is done by people that are interested in black sea bass, and so they do it individually, to improve it, and sometimes it can't be done, because there is no funding for it, or it doesn't rise up enough to a level where someone says, hey, this is a research need that's been identified by the council and maybe I can seek out money, given that that's been identified as a priority, but, if it's not identified as a priority, there is no basis, really, to move forward, other than it's listed in the report.

That is why I'm trying to think about what is the conveyance of research recommendations that appear in SEDAR assessments and then what gets translated into a priority from a council perspective in their list of priorities. I mean, I'm not trying to be negative about it, but I'm trying to find out a process to address research priorities that have been identified from a scientific perspective relative to the council's concerns, and that's all. Thank you.

DR. SEDBERRY: Moving on, we're at Group 4. These are long-term needs to be developed within the next five years, by dealing with life history, effects of climate change, economic and social impacts of regulations, evaluating existing management strategies, validating ages, fishery-independent surveys and sampling, tagging, reproductive biology, other life history, more climate change, evaluating projections and performance, and investigating juvenile habitat. I guess these are longer-term things, things like life history studies, that take several years and that may need to be planned and developed for species that are going to be at a research track assessment sometime beyond the next five years.

DR. ERRIGO: Like gag is there, for example, and we're having an operational assessment soon, but this is a research need, and let's say that it's going to take quite a while, and so the idea is that we might use this information for an assessment down the road, but it's important information that we need to collect, but we just recognize that either it's a research project that will take a long period of time or it's not as high of a priority, and it's not time sensitive, and so it doesn't need to be completed very soon, and so that's what this is -- It might be an important priority research topic, but it's not time sensitive, and so it doesn't have to be done now.

DR. BELCHER: Just for clarification, with the developing models to predict changes to shrimp, shallow-water, deepwater coral, et al., for that one, and it's like the third bullet from the bottom of that group, are we talking about distributional changes, because it says, specifically, the

populations due to climate change, and so are we looking -- Just to kind of clarify, again, are we looking at distributional shifts, abundance changes, just so it's clear what we're asking for.

DR. ERRIGO: This is left vague on purpose, and so, yes, distributional shifts, and, yes, changes in abundance, changes to reproductive habits. For corals, increases in the instance of coral bleaching, any of that kind of thing. These are -- Because they are longer-term goals, they are left less specific than the immediate research needs, which are made very specific, because, if they need to get done over the next year or two, what exactly do you need done? These are we're thinking of develop and maybe start within the next five years, but they don't need to be complete for a while, and so turning in proposals and this and that and the other thing, and so they are left general on purpose, for the most part.

DR. SCHUELLER: How is that bullet different from the second bullet? They both reference climate change.

DR. SEDBERRY: They are not very different, but maybe they came out of different processes, different SEDARs.

DR. ERRIGO: I think that's just an oversight. This one was meant to be more specific for these species, and that one was just a general -- I think we felt that one was too general. I think this one was supposed to be removed and replaced with the other one, and I think it was an oversight that it wasn't removed.

DR. SEDBERRY: I think that would be a good suggestion, to go ahead and remove it.

DR. SCHUELLER: I was going to say combine them. You could leave this bullet as-is and say that the council is particularly interested in species X, Y, and Z. That way, it's -- I'm sure there are other plausible species that may have some impacts related to climate change, and so I guess I would be more general and less specific.

DR. SEDBERRY: That's a good suggestion. Anybody else have any other suggestions or additions? Again, these are longer-range things, and they're a little more general.

DR. NESSLAGE: Forgive me if this ended up in the document earlier, but I know that Marcel had mentioned monitoring compliance or studying compliance with potential new changes with descending devices and/or venting and educational expansion of the use of venting, and so that might be another thing that the council or others might want to consider going forward, if that ends up being -- Even if it's not implemented, just people are becoming more aware of the issue and starting to use it, and tracking how that's going would be an interesting study.

DR. SEDBERRY: Yes, I agree. Good idea. Does anybody object to that? Okay.

DR. BUCKEL: On the tagging bullet, to conduct tagging studies of snapper grouper species, you can get more from the tagging studies than just movement, and so maybe to evaluate movement and -- To evaluate movement and estimate demographic rates, like survival or abundance.

DR. YANDLE: Going back to Carolyn's earlier points, I would argue that -- I get that you don't want to be getting super specific at this stage, but I think trying to more fully capture ideas, as

much as we can, is a good thing, and I would support just even adding the language on that climate change bullet to say something like including, but not limited to, these area topics, so we've at least recorded what we were thinking about. Then that can be refined and more amplified as things go on, but it just seems that losing information is never a good thing.

DR. ERRIGO: I have a comment in there to actually combine the bullet, and so I will make it so that -- I won't remove those things, but I will add them in relation to not limited in scope and list those kinds of things, so that we show that these are the kinds of things that the council would like to see and these are the areas or types of species or populations that the council is very much interested in.

DR. BELCHER: The bullet for evaluate assessment projection performance, considering their ability to estimate landings, recruitment, and biomass levels, I would argue for that to be something other than a long-term need to be developed in the next five years. I mean, we've had a lot of conversation about it, and the need for it, and it just feels like we're kind of kicking it down the road further by putting it not in a -- I mean, to me, it feels like there should be evaluation tools. We are working with folks who are skilled in management strategy evaluations and things like that, and couldn't this be part of what we task them to possibly look into? It just feels like it's just -- To say that we're going to develop it is still not putting it on the horizon for our use.

DR. BARBIERI: I don't know, Marcel, if you guys received communication from the Science Center on this, but the Science Center is now trying to do an evaluation of all the fishery-independent sampling for the southeastern U.S., from North Carolina all the way down to Texas, and it has been contacting all of the people, and they are planning to put together a workshop that would kind of pull all the existing surveys that are being conducted by NMFS, but also in collaboration with different partners in the states, and discuss and identify some efficiencies and evaluate which ones are perhaps duplicative or not achieving what they should be achieving, and so there will be an opportunity there, and that's an issue that just came up recently to have this discussion about evaluation of fishery-independent surveys and biological sampling.

DR. SEDBERRY: I think this bullet deals more though with projections and model projections, rather than -- Evaluate assessment projection performance.

DR. BARBIERI: That's why. I am looking at a different bullet. Fred, by the way, I am joining you in the slow group, I guess.

DR. SEDBERRY: I think Carolyn has suggested that this is a good thing, but it just needs to be something besides -- More of a near-term thing and not just developed within the next five years, but --

DR. ERRIGO: I put it to move it into the short-term research needs, and so that would be completed within the next five years.

DR. SEDBERRY: That sounds reasonable. Marcel, did you have your --

DR. REICHERT: Just, to Luiz's point, I think several of us have received a request for input.

DR. SEDBERRY: Anything else that needs to be developed within the next five years or needs to be developed sooner and moved out of the develop within the next five years? Okay. I think we're ready to move on to habitat research.

DR. BELCHER: As we've come down the list and we have ones like obtain life history traits for all managed species, I guess I'm going to ask the question, because it's showing my ignorance on red grouper, but why specifically do we have to pull out reproductive biology on red grouper and some of the gag and red grouper juvenile habitat and abundance? I mean, is there a more pressing need for those species that we would single them out, but kind clump life history for the rest?

DR. ERRIGO: I believe those were specified in the assessment process as being something that really needed to be looked at for those particular species, but they weren't recognized as immediate short-term, within the next year or two, and so kind of research projects, and so that's why they were put in there as species-specific. In general, we also need information on snapper grouper species on the whole, but those were put forward as specific research needs for those species, and that's why they are broken out.

DR. SEDBERRY: It's really focused on earlier life history stages, juveniles, for red and gag grouper. There is two bullets on -- I need to move into the slow lane, too.

DR. BELCHER: I would probably just argue for shifting it and, again, starting more general, with parenthesized i.e.'s or however you want to do that, because it's really kind of talking about "and other shallow-water groupers". Well, maybe shallow-water groupers are probably the better way to look at that, because it's not -- Like I said, unless there is this really blazing need on red grouper, why is red grouper to the front of that, with everything else kind of picked up in the fray, and I would almost argue the reciprocal on that.

I don't know that it's necessarily that, but, where we have the specific instances down at the bottom, where it's update reproductive biology work on red grouper is a stand-alone, and it's the fourth bullet from the bottom, and then investigate juvenile habitat, and then we have, in parentheses, gag and red grouper, so my only thought was, if we wanted to try to be more to an overarching -- Unless there's a specific target for gag and red grouper, which is kind of it has more been identified there, but, really, it's more of a pressing need on shallow-water groupers, is what I am trying to get at. Are we better to focus on shallow-water groupers and understand that there has been two that we have assessed, which happens to be red and gag?

Like I said, it just feels like you're extremely targeted on a species and a species goal when you start putting species upfront like that, and so the question I have is, okay, if I'm going for an S-K or MARFIN or whatever, is this going to be a blue-blaze hot topic, or, if I can get you some other shallow-water grouper species, is that going to meet the same research need?

DR. ERRIGO: Yes, that's true. For red grouper, if someone came with a project, and it was either red grouper or some other shallow-water grouper that's not assessed, red grouper would be a higher priority, because it's assessed and the council needs that information, or, if it's a shallow-water grouper species that the council doesn't manage, and so that's why these are put here as council priorities. That's kind of how it is. They are higher priority than the other. Like red grouper, in terms of updated reproductive biology, is a higher priority than other shallow-water groupers.

DR. SEDBERRY: Can we live with it the way it is? It expresses the council's priorities, and we don't object to them, or we concur that they are priorities. Okay. Habitat research and monitoring needs. Mapping and monitoring. Does anybody have any comments on these? Really, Mike, it says map shallow-water and deepwater coral distribution, and it's just map coral distribution then. If you're mapping shallow and you're mapping deep, you're mapping it all. Is monitoring health of coral reef systems a council priority? I mean, it says it is, and so I guess it is.

DR. ERRIGO: We do have a Coral FMP, but, also, it has to do with the health of all of our snapper grouper species and some of our CMP, coastal migratory pelagic, and dolphin wahoo, and they all are kind of dependent on the coral reef system.

DR. SEDBERRY: Is everybody okay with these two? These are pretty general, and so it would be hard to object to them. They're like mom and apple pie. Okay. Specific monitoring priorities. Now, here is a whole pile of specific monitoring priorities. The first few deal with fishery-independent monitoring programs and maintaining or restoring their funding, so they can continue to provide the fishery-independent indices that we use in stock assessments.

DR. BELCHER: I was just going to say that this goes to Luiz's point, because, obviously, the Science Center is looking at those that are specifically funded with NOAA funds, although MARMAP wasn't on the list, right, Marcel?

DR. REICHERT: No.

DR. SEDBERRY: One of the bullets reflects back to the MPA and SMZ monitoring that we mentioned earlier. The next one is monitoring mixing rates of Gulf and South Atlantic king mackerel, which appear to be changing over time, as climate changes.

DR. GRIMES: I would add cobia to that, just to that bullet, because we had the -- At the stock ID review, we identified that there are two stocks of cobia, and there is a pretty similar mixing zone along the east coast of Florida.

DR. REICHERT: To that point, and, Mike, maybe you can clarify, but management of cobia is now an Atlantic States Marine Fisheries Commission responsibility, and so that's maybe why that species is not on the council list. Mike, is that correct?

DR. ERRIGO: Yes, the council just delegated, or gave, management authority over to the Atlantic States Marine Fisheries Commission for the Georgia north stock of cobia, and so we no longer manage it, and so we no longer are worried about the stock ID issues.

DR. GRIMES: Why did we have a stock ID workshop then?

DR. ERRIGO: Well, it's a long story, but part of the deal was that we would do the assessment.

DR. SEDBERRY: All right, and so everybody is good with the king and Spanish mackerel, or king mackerel? The next one is implement a monitoring and research program to address issues relevant to ecosystem management, trophic dynamics, food preferences, predator/prey relationships, ecosystem connectivity. How could you object to that?

DR. SCHARF: It seems like this bullet is kind of linked to the top one, where most of the data that informs that are coming from those surveys up above, the MARMAP surveys and SEAMAP surveys and a lot of the diet data. The other is just a comment. There aren't any specific research priorities related to the ecosystem models that we just heard about this morning under the long-term needs, but I suspect, after the working group gets together, there may be some, and so just to expect some more fruitful ideas in that area down the road.

DR. SEDBERRY: I am sure research needs -- There will be a list of research needs coming out of that, but this perhaps could be more focused or added to in the future. Okay. The next one is develop monitoring programs for dolphin and golden crab that could support future quantitative stock assessments for these stocks. Any thoughts on this?

DR. BELCHER: Just to point out, when you go down to the list of assessments, dolphin is one of those ones that says that it involves international, and so --

DR. ERRIGO: That makes it extremely difficult, but not impossible, to assess. There are many other issues with dolphin that makes it difficult to assess, and there is a lot of monitoring needs for it, but, yes, it is difficult to assess, but there is a want for an assessment, or there is a desire, to assess dolphin, and so that's why it's there.

DR. SEDBERRY: Golden crab is there too, I guess. For different reasons, that's quite difficult as well.

DR. ERRIGO: But, again, there is a desire from the industry, actually, for an assessment.

DR. SEDBERRY: The SSC concurs. All right. Develop and implement enhancements to the MRIP survey to increase sampling and decrease uncertainty of estimates for federally-managed offshore species. Is anybody opposed to increased MRIP survey sampling? Okay. Maintain or improve the ability to document commercial and recreational landings and discards. Again, I think there's a lot of work being done in this direction, particularly for recreational, and that's just kind of continuing, isn't it?

DR. ERRIGO: Yes, there is a lot of movement in this direction on the recreational side, but also on commercial. We're slowly moving towards electronic logbooks in the commercial sector, and we're going to electronic logbooks for the for-hire, and we're looking at voluntary electronic logbooks for the private boat sector, and so there's a lot of stuff going on, but the idea here is to make sure that that's maintained as a priority.

DR. SEDBERRY: Is everybody okay with that? All right. Develop alternative survey methods to monitor stocks, or portions of stocks, not sufficiently sampled by current surveys. I imagine this is focused on fishery-independent.

DR. BELCHER: The one thing that I just kind of struggle with with this is that I agree with it, because there are times that -- So a state puts in for -- I'm going to use our state as an example. Many years ago, we sat down and talked about the idea of doing a black sea bass survey, and putting in for a federal funding source for that, and we were told, because we could only afford and do a time window off of the State of Georgia, that it would have lower priority and consideration, because it did not have a regional impact.

Unless the framework of the grants change, to at least allow for that, I think you're going to find that that's going to be part of the kick. Like I said, we weren't discouraged from applying, but we were told that, unless it could expand across the region, it would probably be on the lower end of things.

DR. ERRIGO: This document is not only for like the MARFIN grants, but also for the Science Center, to let them know that he's where the council really has their priorities and to help direct where they might put funding for research or monitoring needs, and so it's not necessarily for the granting process only, but also if the Science Center was considering developing a new survey or whatever, or if they had money to dedicate to something, here is where we would like it to go kind of thing.

DR. BELCHER: Right, but we've had -- SEAMAP, we can come to that point with red drum. I mean, we're in that mode where we have federal intervention telling us that we all need to be standardized, but, yet, we have very different habitat types that allow for different surveys, and so there's just a little bit of push-and-pull back on forth on is it sufficient enough to be used beyond the scope and then, if it's not standardized across the region, it's problematic as well, and, for me, that's just to kind of put that in a frame of context, is the states do get caught in that, because they are trying to be attentive to needs, but, because they're too small-scaled or don't have the exact same use of gear, it limits their ability to be pulled back into the system, and so those are the feedback loops that we're getting at the state level relative to surveys like that.

DR. SEDBERRY: Any other comments?

DR. BUCKEL: The bullet two or three above on dolphin and golden crab, this seems redundant, and I'm wondering if we can just put high priority on dolphin and golden crab in parentheses on the last bullet, unless there is a difference to others, and then they could be kept separate, but they seem redundant.

DR. SEDBERRY: If we do that, are we leaving out some other important species, or do we just want to say, for example, dolphin and golden crab, or is there something the council is specifically pushing about dolphin and golden crab?

DR. ERRIGO: Yes, and the impetus behind the dolphin and golden crab bullet is because there has been a desire on the part of either the council or the industry for an assessment for specifically dolphin and golden crab, and so those are put forth as specifically priorities for those two species, and I think the bottom bullet is a catch-all for anything else that we're missing, let's say an age range for a stock that is not being captured by the chevron trap survey or something like that. I can put them together, but we still want dolphin and golden crab to be a high priority, and we don't want to limit -- We didn't want to limit which species you might be able to develop another index for, let's say, or monitoring program, and I think that's why we separated them.

DR. SEDBERRY: The heading for this group is specific monitoring priorities, and it, to me, kind of makes sense to have something specific, like the golden crab and dolphin, listed separately, if there really is a council priority specifically towards those, which it sounds like there is.

DR. ERRIGO: Also, that last bullet was modified from its original form. It originally was to implement a hook-and-line survey, but we decided to not be so prescriptive, because what if we can come up with a survey that's not hook-and-line, but still addresses the issues that we have.

DR. BUCKEL: It's fine to keep them separate for those reasons, but, if we can be more specific on the last one, that would be great, like if it's a snapper grouper species that aren't being sampled sufficiently by the chevron trap survey, and was that the intent, or is it broader?

DR. ERRIGO: The original impetus was snapper grouper. In fact, that hook-and-line survey was originally piloted for red snapper, and so I think snapper grouper might actually cover what the intent was, but we will suggest that and ask the council if that is what they were thinking.

DR. SEDBERRY: Okay. Moving on, the next item is citizen science, which is going to be removed?

DR. ERRIGO: Yes, that's going to have its own research and monitoring document, and so we don't need to go over any of that.

DR. SEDBERRY: We will review that at some future date?

DR. ERRIGO: Yes.

DR. SEDBERRY: Okay. Then Item VIII is Specific Annual Reporting Requests, the SEFIS reports, the annual progress report by the Center, and these are just kind of ongoing things, aren't they?

DR. ERRIGO: Yes, and these are things that the council has requested to have each year at particular meetings.

DR. SEDBERRY: The council is requesting that these be provided every year, but they're not currently provided, or they sometimes are?

DR. ERRIGO: We get the MARMAP chevron trap indices, and we also get a progress report from the Center via Clay, and he comes to the meeting and he gives the update, and we don't get anything to do with the video index yet, and the SAFE reports is not really -- It hasn't really materialized yet. We were working on putting that together, but it's extremely time consuming, and so having someone to actually work on that is kind of an issue, and so that hasn't really materialized yet out of here.

DR. SEDBERRY: But these are still council priorities?

DR. ERRIGO: Yes.

DR. SEDBERRY: Okay. Go ahead, Carolyn.

DR. BELCHER: I am going to ask this, only because this is probably a bee that's been stuck in my bonnet since about 2004. I don't understand how we can not get SAFE reports elevated. I mean, we have literally requested that since about 2003, and, I mean, it's a thing that we see in

other regions, and it is a producible report. It's not that we're asking for something that's an unrealized thing, and it would be one thing to understand more of why it's not something that is feasible, I think. I mean, we keep asking for it and asking for it and asking for it, and then, as you see job duties change within the Center, and things change priority, SAFE reports are still something that, again, other regions see them, and so how is it that SAFE reports are a low priority in the Southeast? Is there something we can say or do to help -- Like I said, for as long as we have been asking, it's just one of those things that --

DR. ERRIGO: I don't know. Council staff tried to get involved in creating them, but it became a big time sink, and we just didn't have the staff to dedicate to it, and so that's what happened there.

DR. BELCHER: But I don't see that as council staff's job.

DR. SEDBERRY: So we're just going to leave this as a council priority that the council is going to continue to struggle with to get. Okay. Any other comments on this reporting item? Okay. I think that's it.

DR. ERRIGO: Unless anyone has issues with the table, if they think a stock should be changed or moved or whatever, and so if they have something to say, but that's all we have.

DR. SEDBERRY: Okay. Thanks, Mike. I think we're ready to move on to the ABC control rule, but, before we do that, let's take a short break to mentally prepare ourselves.

COMPREHENSIVE ABC CONTROL RULE AMENDMENT

MR. CARMICHAEL: Hopefully folks have seen the story map that goes through the ABC control rule. The first couple of sections of it just give you an overview of what it's about and the actions that are included, and so I just wanted to bring you up to where we are. You also have the attachment that gives you the overall document as it is now, and it includes public comments that we received from when we did scoping back in January.

The timing of this for the council is that they intend, in September, to look at the document again and to be able to look at the risk ratings, which is our topic of business here today, is to look at those preliminary risk ratings, and so they want to be able to have them from you here, so that they can be folded into the document, and then they will be able to discuss them in September, and we'll probably actually be looking at approval of the amendment probably like in March at this point, just given the timing.

There is a lot of other things that the council is working on which are a little more pressing, and dealing with this means dealing with new ABCs, particularly unassessed stocks, and dealing with the MRIP data, and so there's a lot of foundational things related to this that are going to have to be addressed before we're actually around to incorporating the ABC control rule information into the management program.

The way we want to go through this is there is a lot of details about the process that's been worked up with the staff and working with just the IPT and others to try and come up with a way of establishing those risk ratings. Mike built off of what was done for the previous ABC control rule

efforts, looking at the PSA type of work that was done, and then he tried to focus on the attributes that really address risk, as opposed to things that address say stock productivity and things of that nature.

That has really been the focus, because the intent here to focus on the risk, and the end result is that there's a high, medium, or low risk rating for each stock, which will then translate over into a P*, when combined with stock biomass, and that's the summary table that Mike has shown there on the left screen, and that's in the amendment, and that is basically the product that would come out of this, and so there's a lot that goes into getting the risk ratings.

Encouragingly, when we talked about this at the scoping, the public really liked the idea of knowing the risk ratings of stocks going in. They felt that was a good way to judge different stocks and evaluate them, and so that was helpful, and then the SEP talked about the traits that are related to socioeconomic concerns, and I think, when we get around to those, we'll ask Scott if he wants to make some comments on that, because they had some really good discussion and came up with some ways of relaying to the council why the social concerns could affect the risk and why, over the long-term, being more precautionary to stocks that are really important could be useful.

With that overview, everybody got it open, and so I guess we can go ahead and take a break and try to get this up on the screen, which is the plan, and feel free to poke around on this while we're doing the break, while we try to get it up on this computer.

(Whereupon, a recess was taken.)

MR. CARMICHAEL: We've solved our technical difficulties. Anyway, this story map went through the details of the different attributes that are being considered to set the risk ratings, and so, if we click on the biological attributes, we can work through this piece-by-piece. It shows everything sort of put in a high, medium, or low type of ranking, and we considered natural mortality, and we considered age at maturity, we considered the natural -- There's just two, I guess. That makes sense.

The natural mortality, but there were a lot that were discussed, and then these were sort of winnowed down to things that are really expected to relate to what the council might want to consider in terms of risk, and then the text here addresses kind of why that was being included as part of the risk thing.

Then there is a number of what is called the human dimension attributes, which relate to things like here, and the ability to regulate the fishery, with the idea being, if the council can't control the fishery within its limits, then the consequences of pushing yourself closer to those limits are much greater. We have a potential for discard losses, and, again, it's something that can undermine your best efforts to manage the stock, but the commercial value and recreational desirability, because these get at how important these may be, and this is one of the things that -- Scott, I don't know if, here, you want to talk some about the SEP, but there was a lot of discussion about this, and these are taking a little bit of a different slant than they have, probably, in a lot of considerations in the past, where the idea has been that, if this is a really important stock, than it might be in the best interest to allow higher landings and push the limits a bit more.

While that is certainly true in the short term, the other side of the coin is that, over the long term, the risk of this stock becoming overfished and you losing yield in this is much higher to the community, and so that's why these are being viewed in a little different way than they probably have. That was a lot of the SEP discussion.

DR. CROSSON: I am still compiling the SEP report right now, and everybody has sent me all their notes, and one thing is that economists are clearly not economical in their prose. There is a lot of stuff here for me to incorporate, but what you just mentioned a minute ago, the way they were talking about risk, and I remember that was the subject that I think John Whitehead said it was the short-term economic risk versus the long-term biological risk. Tracy, you're looking at me like there was something else.

DR. YANDLE: The other thing we were really talking about is how, when you look at what's being measured, it's really measuring impact, and so, when they're talking about risk here, it's a little bit different concept than we're using to talking about risk on the SSC, and what we're really measuring is the risk of adverse impact in the future and trying to quantify that in various ways. We had a few tweaks that we suggested, in terms of how to measure it with a little bit more subtlety than was here and to capture some of the geographic locations that are dependent on multiple species rather than on the single species, but, conceptually, I think, with that little tweak in the understanding of what risk is, we thought it was a pretty sound idea.

DR. CROSSON: I always think of risk as probability times impact, and that's your risk level, but, yes, I'm looking at that in the notes, and I can see that you and Chris Dumas were talking about that. The other stuff, we gave some input on the different criteria of the low and medium impact, and we suggested some sensitivity analyses that could be run, and Chris Dumas had a really interesting idea, and I hadn't thought of it before, but looking at all four of the states in South Atlantic have sales tax, and so you can look at the general revenue that is produced from all sales in an area and compare fisheries revenue as a portion of that, and that gives you some information about how important it is to a particular community.

Then you, Tracy, brought up the aspect that some of the -- There was no cumulative amount of risk that was being assessed, and, as you went species by species, you would see that this one is number one here, but it's number seven here, and it's number three here, and it wasn't in any way kind of adding those across the fact that some of these communities are dependent on a lot of different species, and I think you said like Jacksonville or some of the other ones that kept popping up over and over and over again, and so that's something else that might be addressed at some point. I don't know what else, and I'm still looking at my notes here.

MR. CARMICHAEL: I think Tracy coined the phrase, and I had written this down, of the risk of social impact is what this is kind of capturing, which I think does get at the idea, and it is relevant, because what the goal here is, it's for the council to do what the Magnuson Act requires, which is to set its risk policy, and so we feel like the social and human dimension attributes and economics are all part of the council's risk policy.

Then we add social concerns in there, and I think that was the last one, and then there's a few environmental attributes, and these are handled a little bit differently, in that they're more of, as it says here, an on/off type of switch, and so looking at ecosystem importance. If something has a high ecosystem importance, that that could be considered to be brought in and affect the risk, and

the other one was climate change, and so, if there stock is expected to be especially affected by climate change, this would be another one that would come in and affect the risk rating.

There is the formula, which you've always got to have a formula, and there is some options in here that are getting at sort of how we deal with scoring these things out, and these are some of the parts that we can get into more detail, if people have questions or concerns, and, Mike, do you want to talk a little bit about the two options here that were laid out in the paper?

DR. ERRIGO: Yes, and so there are two options for how to calculate the risk score, and one, as you can see here, all you're doing is you are adding up all the ratings, and so, for biological, you're adding up all the biological ratings, and then you divide by the number of attributes that were rated. If it's zero, then it just gets a score of two, and then, for environmental, if it's zero, it just gets deleted, since that's an on/off switch, and so you're just taking the average, and then you're taking an overall average of those categories for the risk score, and so it's the average of biological effects, the environmental effects, and the human dimension effects, but the second option has to do with adding in a penalty if you don't know the -- If you can't score an attribute.

The second option adds in a penalty if you don't have any information on a particular attribute, and, so, before, if you had no information on an attribute, it just drops out of the equation. In this scenario, if you don't know what -- If you can't score an attribute, you get like a half-attribute penalty for not knowing what it is, and so there are two attributes under biological.

If you know one, and you don't know the other one, you take the score of that one attribute, and you divide by one-and-a-half, rather than one, and so that's your penalty for not knowing that one attribute, and that's how you get the score. There is no penalty for the environmental attributes, because, again, they are just switches. That is how the penalty works. Then you average the scores from all three to get the risk, the final risk, rating, and so those are the two options, and then the amount of penalty can be adjusted to whatever value.

DR. CARMICHAEL: The hope is not to go to the council with options, but these are options for the SSC to consider, in terms of how we score these, and I guess the big question is do you feel that unknowns should be treated as unknowns or the unknowns get treated as something that causes you some penalty for the lack of information, and, as I recall, when we looked at the difference between the MRAG and the NMFS approaches on that PSA business, one of the big differences in those was MRAG tended to make a conservative assumption or apply some -- In cases, it became, essentially, a penalty for unknown information, versus the NMFS approach was more like Option 1, which was an unknown was simply an unknown, and the stock wasn't penalized as a result of that. That's a question, and I would, I guess, throw that out on the table, if we want to discuss that now or make note of that for later, and that's sort of you all's decision.

DR. BELCHER: Just for clarification, and I kind of asked Luiz and someone else at lunchtime, and so this is an actual additional level of a PSA approach that is accounting for management risk, right, and so we have the PSA still in our control rule?

MR. CARMICHAEL: No, we wouldn't be using the PSA approach any longer. The idea is to get away from that, and one of the concerns, and that's the whole reason for this amendment, was the SSC was concerned with that mixing of productivity and susceptibility and mixing, therefore, of the council roles and the SSC roles and the assessment outcomes. We are trying to get to the actual

council's risk tolerance policy and how they want to view the risk of overfishing, how risky they want to be toward overfishing for any individual stock, and be able to set that up a priori to know, and so this, essentially, is replacing all of that PSA-type stuff.

DR. BARBIERI: Going back to the very, very beginning, when this whole thing was developed, I guess the idea was, in the beginning, that we recognized that the P* method, the way that we are applying it, at least the dimensions that we decided to use, was integrating both components in there, and so we had dimensions that were dealing with scientific uncertainty as part of the buffer, but, of course, we are recommending the use of a P*, which is a probability of overfishing, and it involves a component of risk, and so there were dimensions in there as well that were integrated in that table, stock status and the PSA, that were more explicitly associated with risk, and what's the willingness of the council and how much risk do you want to take in managing this stock. Now this basically tries to separate, to some extent, those two handled in way that the scientific uncertainty and the risk -- I am kind of rephrasing this, just because it's discussion that we had maybe two meetings or three meetings ago, and we were trying to discuss how to break that up.

DR. NESSLAGE: To follow-up on Luiz's comments, I guess I worry that we're moving more down towards the road we were on before, where we were double-whamming the species that were high risk, because the species that have high uncertainty in things like M or fecundity, whatever the input is into the assessment, and that's going to go into the MSE, and that's going to get incorporated into the OFL uncertainty estimate, and then you're going to whack them again here for that? I mean, I thought we were trying to get away from that whole PSA approach and just leave this at what's the management and socioeconomic risk issues, component of this issue, and this is the council's --

MR. CARMICHAEL: That's why we've been left with two biological attributes, natural mortality rate and age at maturity.

DR. NESSLAGE: Which is accounted for in the assessment, is it not?

MR. CARMICHAEL: Yes, it's in there for an assessed stock, definitely, but this needs to work for unassessed stocks, also. Now, I guess you could recommend not including these, and I think that we talked about that, but we felt like these sort of got at the idea of risk of overfishing. Now, if you don't think that we should keep any of these biological attributes in there, in terms of the risk policy, then I think that's a fair recommendation. I would say that we had a whole bunch before, and the initial discussions kind of narrowed it down to these, feeling like these probably should be incorporated, but maybe not.

DR. YANDLE: At the risk of opening up a whole new can of worms here, could it be possible to have -- Sort of almost start creating some kind of decision tree, where, to avoid the double whammy, if we have the assessment and we have the information, then this is how we decide, and, if we don't have it, then we look at the biological characteristics that we hopefully do have, so that the well-assessed stocks don't get double hit, but we still have a way of using the information that's available for those that we don't have as complete information on.

DR. REICHERT: I may need some clarification here, because I think we are using these in the stock assessment to assess the stock status and not the risk of overfishing. Where it's used here is

-- Sorry, the management risk. Where it's used here is to assess the management risk, and so I have -- I am struggling with where that double counting is happening.

MR. CARMICHAEL: I think that's probably why these were retained, because the thought was there is something about the natural mortality and the age at maturity that should affect how close the council pushes the line on any given stock, above and beyond the assessment, and that was the reasoning that led to us to keep these, after throwing out all of the other parameters that are included in that PSA analysis, because giving it the thought that, well, all of those are really captured in the assessment, and they're kind of included, but we felt like these kind of did get at that just fundamental how close should the council push this limit, and can you push the limit closer on a menhaden than on a grouper, and that's just the thought, or on a dolphin that lives a few years or on a grouper?

DR. ERRIGO: These categories are broad. They are wide, so that you end up with three, the low, medium, and high. The idea is you're trying to say is this a productive species, a very productive species, it's not productive at all, or it's just in the middle of the road. This way, like John, said, you can say, well, if it's highly productive, then we can push closer to the limit, and it will recover very quickly if we happen to go past the limit or something like that.

If it's not productive, of a very low productivity, like deepwater grouper, then we may want to be more conservative about setting our catch limits or pushing close to the ABC when we set our catch limits, because, if it goes over, then the recovery time -- If we push it down into being overfished, the recovery time is going to be very long.

MR. CARMICHAEL: Would the council use the same risk rating for white grunt as it used for red grouper if all we considered was the biological traits? I think you would take these out individually and think, if this were all I were considering, do I think that would be important for the council to consider when establishing its risk policy, and our thought was, well, yes, but, even if you have an assessment of the stock, capturing something about that stock's natural mortality rate is probably important to how close you push the line, because it really gets at how fast we would get back above the line if you were overfished and how dangerous it is when you get down there close to the line. That's the kind of simple sort of underlying approach we took to throwing out about fifteen other things and keeping these.

DR. BELCHER: I think where I'm getting confused, and I don't know if maybe this is where Genny has kind of been with it too, but I am thinking about the Level 1 stocks and going to the second alternative. When we look at the current -- We have a 10 percent penalty from us that goes for the PSA, and so the PSA is going to go away, and we're not going to include that in ours, and so now that means that we're going to be working off of 30 percent, and so we supply 30 percent of the penalty, and then, through this alternative approach that we're talking about here, this is where the potential of up to the additional 20 percent can be added to our 30, because I am kind of lost as to how the P* --

MR. CARMICHAEL: This table here that's in Alternative 2 is how the P* would be done, and so the ratings that we're talking about is this. The goal of the discussion we're having is where should each stock be, in terms of classified as low, medium, or high risk rating, and then, when you do the stock assessment, and you determine the biomass, the biomass level of the stock, combined

with the risk rating, determines which P* you have, and so there is no more levels and any of that stuff that we've been doing in the past.

This table essentially captures how the P* would be determined, and it's simply that risk rating, with those attributes that we were just showing, and the biomass level that is estimated for an assessed stock. For an unassessed stock, obviously, we have to do something different, because we don't have the biomass level, but that's something the SSC could make a recommendation on where they think each stock should be that's unassessed within this, but, thinking in lines of the assessed stocks and how we've done it in the past, we're no longer dealing with those levels and splitting up who does a penalty or a reduction or anything like that. It's more of a direct approach to setting the P*.

DR. SCHARF: Just to clarify, from this table up here, you have three levels of risk and three levels of biomass, and their contribution to your P* is exactly the same. In other words, neither is weighted more than another, based on the way that table is stacked, right, and so, in other words, the risk rating that we would decide has just as much -- It carries just as much weight in determining that P* as the biomass.

MR. CARMICHAEL: I guess. I mean, the table is fairly balanced, yes.

DR. SCHARF: It's exactly balanced, I think. As you go down the columns and rows, it's balanced. Is that by intention?

MR. CARMICHAEL: It was. Part is one thing is that it started out by going to 0.5, and we decide that was too high, and we felt like 0.2 was a reasonable range, and so, yes, then it just sort of got -- This is where it ended up, and this is something that has been -- We talked about this for three or four meetings, but it is. It's generally balanced, and it's not intending one to have any major impact. There certainly hasn't been any discussion in the past that we should unbalance it and give one more influence than another.

DR. SCHUELLER: I am just trying to make sure that I'm clear. This is just for stocks that get assessed, and stocks that are not assessed use what? I was just worried that I was conflating this with the PSA stuff, and then I was like, well, if you're doing a PSA on an unassessed stock, how would you know what the biomass is, and who decides that? That's why I'm asking, and I just want to make sure that I'm clear.

MR. CARMICHAEL: Action 2, Alternative 3 is the focus of unassessed stocks, and so Option 3 would assign unassessed stocks to the moderate biomass level, unless there is a recommendation from the SSC that justifies a different level, and that's sort of saying that we have sort of an assumption, and then we would go through an evaluation of all of those stocks, like we have, and then it would be up to you guys to kind of -- Like when we used the decision tree and stuff in the past, and, if you think, for some reason, a given stock should maybe be at a different level of biomass, then that could affect its P*. That's the hope.

DR. ERRIGO: I have Attachment 12 up.

DR. REICHERT: On the left screen?

DR. ERRIGO: Yes.

DR. REICHERT: What is the page there?

DR. ERRIGO: PDF page 12.

DR. SERCHUK: I think the Mid-Atlantic also has a concern for unusual life histories, and I wondered whether you considered that. That is a category for protogynous hermaphrodites, where we're really worried about sex changes and where you're fishing, in relationship to the stock, and did you consider that at all?

MR. CARMICHAEL: I think we did, in general, by giving an allowance for deviating from the original recommendations, the basic recommendations, and so, if the SSC felt like we went through this, and this is the risk rating of this stock, but, for this life history concern of this species, we think the council should modify its risk recommendation, then that's what you would do.

We tried to avoid being very prescriptive, and this was the discussion that we've had for years in talking about this, because we really -- When we started down this path, we felt like what we were doing was too prescriptive, and so we've just simply tried to give you leeway to make recommendations and deviate from the base that comes out of it, if necessary, to account for a specific life history trait. We didn't feel like that there's any way to go in and pre-program that, as we've had to do in the past.

DR. ERRIGO: There was a biological trait that looked at things like that, but we had no information on it for most of our stocks, and a lot of our stocks have that life history trait actually, and so it became kind of a conundrum there, and so we figured why not just leave it open, like John said, and, this way, if you feel that that is contributing more to this stock's risk, then you can adjust the value.

DR. SERCHUK: I would have thought that the logic would be just the reverse of that. If you have a lot of stocks that exhibit that trait, and you know very little bit about the dynamics of the stock, that would be more of a concern than if you had one or two stocks in a region, and most of those stocks were either case-selected or R selected, which is what your M is about, and you could use that, and so I am -- I understand why you are saying that, but, if you have a number of stocks that have that rather unusual life history characteristic, you would want to consider that explicitly, rather than taking it implicitly.

MR. CARMICHAEL: I think I would say, if that's something the SSC wants to add to the mix, that would be fine. As I said, most of this is based on discussions that we've had around this table for several years now, and what I was saying about making the adjustments is, if you look at Option 2, to adjust the risk levels by 0.1, and so, if you had a species, and it came out to end up with a P* of 0.3, if it was one of the moderate levels and it's unassessed, and you said, well, we think this stock has a life history trait that should require the council to be less risk-prone with it, then you could recommend that actually they manage that one at a 0.2 risk level.

It's in there, and it specifically says that it's recommendations from the SSC, and so that really gives you leeway. It doesn't just have to be hermaphrodism. It could be anything that you see that you feel like justifies the council adjusting that risk level, and so that's why we're trying to go

through this exercise of getting these initial values, because then you're going to need to make sure that you're comfortable with the outcomes for all of these stocks and if there's any in which you would want to adjust your recommendation based on these other outstanding concerns.

I guess we can kind of go back, if we can, to the other question, or -- I think the first basic question was what do we do when something is unknown, in terms of the attributes? Do we have a penalty for that, or do we just leave it as an unknown and take a straightforward average of the attributes that we do have?

DR. SCHUELLER: Penalizing something for not knowing is fine by me. I feel like, if we don't know, it adds to our uncertainty, and so why wouldn't we -- I mean, it's a way of acknowledging the fact that we don't know, but it might also be a good impetus to do some work on that topic area, and so I think penalizing makes sense, to me.

MR. CARMICHAEL: I guess I just think of nomenclature matters, and I don't know that, when we get into it and write this up, that we'll call it a penalty, but it's more do we adjust the risk level? Do we apply a lower risk if we feel like there is something that's unknown? You consider that we're down to just a handful of attributes. If we can't get natural mortality on a stock, and we thought that was important, then maybe it does justify taking a more precautionary approach to that stock.

DR. BELCHER: I just wanted to add the support to Amy's, because, again, it's that whole idea of, if you continue, it's something that you need. At least, by having that ability to say, you know, this is an important part of that, and, because of it -- If we're uncertain because we don't have that, it does give us a little bit more leverage to try to get that part addressed, if we at least use it as part of that.

DR. JOHNSON: I was just going to -- Looking at the comparison of the two, it doesn't change it a whole lot, and what's the maximum for a species that you know almost nothing? Like what would be the -- Can you just do the formula real quick?

DR. ERRIGO: The maximum and minimum scores just go from one to three, if you're taking a straight average without any penalty at all. I don't know what it would be -- If you had all zeroes, if had all unknowns, then there is a default value of two that goes in for that category, and so, if you didn't know anything, I have a value default set up of two, which is actually another question that the SSC could address. I didn't know what to do if everything was unknown, and so I just put in moderate, but, if that's not -- If the SSC has another suggestion for that, I would love to hear it, because I wasn't sure what to do.

MR. CARMICHAEL: It sounds like a low rating would be more consistent with where the SSC is standing, in terms of if you knew nothing, right, and you would just rank it as low. I think that's fair enough.

DR. ERRIGO: Low risk?

MR. CARMICHAEL: Yes, low risk.

DR. SCHUELLER: Low score and high risk, right?

DR. ERRIGO: Okay, and so as a one?

MR. CARMICHAEL: We had a lot of discussion about this too, as I recall, and, Mike, remember about the high versus low and the scoring versus the risk, because it does get confusing when they are not aligned.

DR. ERRIGO: I am sorry that the scoring and the risk is the way that it is, but it's that way for computational ease. It's just, if it's the other way, or if one is one way and one is the other way, it makes things extraordinarily difficult to keep straight and finagle, especially when add the penalties, and so this makes it much easier.

DR. SEDBERRY: Genny, did you have a question besides the -- Was it something else?

DR. NESSLAGE: It pains me a little to say this, because the biologist in me, who is asked is the stock at risk, wants to say, yes, let's penalize for not having information, but then I have seen situations where managers are stuck in situations where it's a perfectly fine fishery, and it's chugging along just fine, and it's a small fishery, and we don't know a lot about it, and, therefore, it's not well studied, and it's not a big deal, and it's not on anybody's scientific radar, and so we don't know what N is, and we don't know what the maturity is, and so you might end up penalizing a fishery that's behaving just fine, or that is not at any great risk of overfishing, just because it's a small fishery, and you have so many fisheries in the South Atlantic.

It's not like the Mid-Atlantic, where there is -- You can count them on your two hands, and a lot of them are very small, as the report that we saw yesterday said, and so I worry that -- I guess I am leaning more towards not penalizing, even though -- Because this is something that the council is supposed to be determining and not the -- I mean, ultimately, the risk is the council's responsibility, and I guess I would bring up that concern to the council, that you might end up penalizing small fisheries that are doing just fine, just because we don't have enough money to go out and study them all adequately.

DR. SCHARF: I guess, just to that point that Genny just made, I guess I wonder if, in that case, even though we might penalize for biological uncertainty, would the human dimensions attribute offset that, because we have enough certainty, in terms of ability to regulate or low commercial value or other things, that it wouldn't end up being penalized and it would still become moderate, maybe? That wasn't really what I was going to say though.

I wanted to ask this, just out of naivety, and forgive me, because this is my second year on the committee, and I'm still confused as hell as to how all of this stuff works, because we didn't have orientation, which we talked about starting orientation, and so we're going to apply these risk scores, and we're going to come up with a risk score here and apply these as we calculate an ABC, and so what recommendation are we making to the council if we've already directly incorporated the risk score into our -- Because there is an overfishing limit, and then we calculated our ABC at something below that, based on this risk, and so then what does the council have to decide after that?

MR. CARMICHAEL: The way this is going to work is the risk ratings will all be done upfront, as you say, and then you will know, the public will know, the council will know, where the risk

rating is for each individual stock, and you will make a recommendation to the council that will be reviewed by the APs, and then the council ultimately will set that risk, and they will set that rating and decide where each stock falls, after considering everybody's recommendations, and then, when you've got a particular stock assessment, and it came to setting the ABC, it would be the function of wherever this stock is ranked in terms of the council's risk policy and the stock's biomass that comes out of the assessment that would then tell you that here is what the ABC is.

Now, if you felt that something were learned in that assessment that justified changing the risk rating of that stock, then you make that case to the council, and they may go ahead and change the risk rating of that stock, if some of these parameters change, if maybe these attributes changed, and so the global view is that we will do this for all stocks upfront as part of this amendment, and we need to have that in there to talk about the impacts of this amendment, and then it will be updated.

Every assessed stock will be an opportunity, when you're giving an ABC, to update those recommendations, and then we'll think about, for the unassessed stocks, do we need to look at these every so often and make sure you're comfortable. I think it would be kind of like we do things now in our unassessed stocks. If some new information becomes available, then you, as the SSC, always have the ability to tell the council that, all right, we think it's time to change the rating of this individual stock.

DR. SEDBERRY: Okay. I think we have Chris Dumas online with a question or a comment. Let's get that.

DR. DUMAS: It seems to me that these questions about risk and how to incorporate unknown risks especially sort of lend themselves to a Bayesian statistics framework, and so, for example, with unknown risks, those could be included as non-informative priors in the risk analysis, and so this whole thing really lends itself to sort of a Bayesian-type of model, where you've got a number of different types of uncertainties, and you're trying to combine them together and determine the probability of some event in the future, such as the probability of overfishing or the probability of exceeding some threshold.

Just think about putting this in a Bayesian framework. Then you could incorporate multiple sources of uncertainty, including some type of uncertainty where the risk is completely unknown, sort of as a non-informative prior, and then get probabilities, predicative probabilities, of events happening in the future, or you could work it backwards and say what if you wanted to have a certain probability of some event occurring, and you could work backwards to say, okay, what would the probabilities need to be on the inputs in order to achieve a certain output probability.

I know there have been workshops at the American Fisheries Society meeting on Bayesian modeling, and I'm sure a lot of the biologists there are familiar with that, but that might be something that we might want to work toward, and it seems like the discussion here is sort of going around and around, and all of these issues might be better addressed through a Bayesian framework, if not immediately, then perhaps a goal to work towards in the future. Thanks.

MR. CARMICHAEL: Thanks, Chris.

DR. SEDBERRY: Thanks, Chris. I have Marcel next. Did you still --

DR. REICHERT: This is briefly to Genny's point. I think there are options for us to deviate from that ABC control rule, and so, in those instances where we feel uncomfortable, for instance we don't know anything, but we think that the fishery is okay right now, I think that would be a prime example of where we can document why we are deviating from our ABC control rule. I think, in this ABC control rule, there is that flexibility.

DR. ERRIGO: I did think of one other thing, and it was a justification for using moderate. The species that tend to have no information in a category tend to be the ones that are rarely encountered and not targeted, and they tend to be just bycatch in some other fishery or something like that, and so they tend to be low importance when it came to recreational and commercial, and so we figured that a moderate was fine, because they weren't particularly sought-after species. If it happened to be a sought-after species, then that would certainly be justification to change it, but that's why -- It didn't happen terribly often, but, when it did, it was typically a species that just wasn't encountered that terribly much, because people don't target it.

DR. SERCHUK: My comment refers to this using age at maturity as a concern, and I have two reasons for being concerned. There are cases where fish mature I would say moderately early, and I would say age-two, and, because of removing older animals from the population, the entire -- Most of the spawning stock is right at the knife-edge of being mature.

There are two concerns there. Studies that have been done suggest that larger, older fish are more productive in their reproductive things, and it may be the yolk size, or it may be the larvae that come out of that are better able to survive, and that's been shown in a number of studies, and so it's just not maturity.

A lot of stock, the buffer, quite frankly, is in the larger, older fish, and so using the age at 50 percent maturity is not a good reliable -- Particularly when you have fished down stocks and you have truncated the age distribution. You could still allow for one spawning, but that's not really very good, in terms of sustainability of the stocks. It would be like having a carapace length on lobsters, where, all of a sudden, you allow the first spawning to take place, and there are no larger individuals, or very few larger individuals, and that is a very risky policy. What I am saying is you could still meet the letter of the law, in terms of age at maturity, and put the stock in a very high-risk situation, and so I am not in favor of just basing it on median age or average age at maturity, and I think that's a very dangerous thing to put a risk tolerance on. Thank you.

MR. CARMICHAEL: So is there an alternative? I mean, we're kind of getting to the end of the line on this, in terms of coming up with things. We need to have specific things from the SSC. If we want to reject age at maturity, if we want to bring in some other parameter, if we want to adjust the levels here that are applied for age at maturity, I think all of those are viable options, but we do have to get at specifics, and I think we have to guard against one of the founding principles that has driven all of this before, is not to double count for things that are going to be in the assessment. I think, to some extent, some of that stuff is probably going to be in the assessment, but, if is there some other parameter, some other biological attribute, that you think should be retained in this, then let's have a clear recommendation, and we can include it.

DR. SERCHUK: Well, in terms of this, I would talk about multiple age groups in the spawning stock. If you wanted to have a risk level, you would want a sufficient number of age groups in the

spawning stock, one to allow for a greater productivity of the larger animals and, second of all, to avoid age truncation in your stock. That would be something that, off the cuff, I think would be more realistic, in terms of a risk tolerance, than just looking at age at median maturity.

MR. CARMICHAEL: For the other side of the table, would that be considered getting into double counting for those things, because that would be included in the assessment? We would only have that for assessed stocks, and it wouldn't be anything for unassessed stocks. We're hoping we can get age at maturity for more of our unassessed stocks. I think we had it for most of them, didn't we? Yes. We were kind of driven by things that we knew we had for a lot of stocks also, but that's my only concern, is I'm cautious against getting into this double-jeopardy situation that we're trying to avoid.

DR. ERRIGO: Remember that this is one of a long list of attributes that is not taken by itself. There is this and natural maturity and all the human dimension attributes that work together to get a risk score, and nothing is weighted higher than anything else, and so they all come together to give the risk score. If it happens to be that you have an early age at maturity, but you're heavily overfished, first of all, that will show up in the biomass, when you do the P*, but, also, it will show up in several of the other attributes.

DR. SERCHUK: Just one other question. How would you deal with it with a sequential hermaphrodite here with age at maturity, black sea bass being an example?

DR. ERRIGO: If you went from female to male, it was when the females matured, because all males are mature.

DR. SHAROV: I just want to support what we have here. I mean, I think the age at maturity clearly here is considered as the evolutionary characteristic of the species and that, essentially, is an attribute describing its productivity. I understand what Fred is getting at, but what he's getting at is more related to the status of the stock rather than the risk, and so I am in support of what we have here, and I think it's appropriate. The age range is also a double-edged sword, because, depending on -- Well, it's all sort of intercorrelated. The age range is correlated with the maximum age of the fish. The maximum age of the fish is correlated with natural mortality, and so, in that sense, it is already in here as well.

DR. GRIMES: Just, to Fred's point, actually, I don't think the stock assessment does take into the quality of egg effects, the fact that older females produce -- They provision their eggs better, and they produce larvae that survive better, and are larger, and it has been shown. In fact, *Science Magazine* had an article in it, a couple of issues back, about how this wasn't taken into account, and it was just fecundity of --

DR. SCHUELLER: I agree with Fred's statement about maturity, because I do believe there is enough scientific literature out there suggesting that there is a lot of plasticity, whether it be phenotypic or some sort of evolutionarily changing population, and that trait has been shown to change and decrease with increased fishing, in some circumstances, and so it's kind of tied to F, too. I don't know.

When you asked for a recommendation, I was scratching my head, and I was wondering if max age would be a better placeholder for that, because that says something generally about the life

history of the species, rather than the -- Because the maturity can change, although we can not have a good estimate of max age, in certain circumstances, to do the sampling, and so, again, that has another uncertainty.

DR. ERRIGO: Max age was there. We removed it, because it's directly correlated with natural mortality. In fact, a lot of the species estimates of natural mortality came from max age.

DR. BARBIERI: To Fred's comment as well, and I understand, Fred, your point, and Amy's as well, but look at the papers in the southeastern U.S. that have been done over the last two or three decades, and the magnitude of change in that age at maturity is not very large. In this case, when you consider equal methodologies, sizes sampled, sampled during the right time of year, where you're going to be -- Where those studies can be actually comparative, you don't see that much difference, I don't think, in terms of -- I think, in terms of capturing that evolutionary type of thing, the high, medium, and low productivity, I think age at maturity, in this case, would be adequate, because it's in those bins that would be keeping it from varying too much, if that was the case, due to fishing.

DR. REICHERT: I don't fully agree with you. I think there is species where there is a considerable plasticity in size and age at maturity. Red porgy is a prime example, and that was one of the questions I had, is, if we use those biological parameters, are what point are you measuring them? Is that like the most recent estimate, or is that an average over a long time, and, if there are studies that indicate that there are changes in maturity, then how do take those into account? I don't disagree with these biological attributes, but these are some of the issues that I am struggling with a little bit, and how much of a change -- How much change in those parameters will make a difference in that particular biological attribute.

DR. BARBIERI: Do you have that paper, because I haven't seen --

DR. REICHERT: We will have that paper soon.

DR. BARBIERI: Okay, and so it's unpublished at this point.

DR. REICHERT: But that data was presented at SEDAR stock assessments.

DR. BUCKEL: I think, just like for natural mortality, the longevity -- You shouldn't use a max age that is on a fished stock. You should go back and say, okay, this was a max age thirty years ago, and that tells you something about the natural mortality for that species, and the same with the age at maturity. My vote would be to go with the earliest study when fishing had an influence, but I can't -- These are pretty broad, like going from greater than four years to less than two years, and I doubt there's been a two-year jump on that age at maturity, and I think the natural mortality and age at maturity have been shown to correlate with vulnerability to fishing. We know sturgeons and sharks, with greater age at maturity, are much more susceptible, compared to species that have a lower age at maturity, and so I'm fine with both of these for the biological attributes.

DR. ERRIGO: Most of the species had a single study on the age at maturity, and some of the assessed species had age at maturity over time, and I probably took it from the most recent assessment, and it varies, with the species, when that study was done, and so, for those, I can look and see, but, the vast majority of them in here, it was one study done sometime, like a long time

ago, and they've got an age at maturity, and then nobody ever looked at that species again, and so that's what I used. For the most part, I think I'm getting the right estimate, but, for some of the more recently-assessed species, I can probably go back and get an older estimate, or at least look for like a maximum age at maturity estimate.

DR. NESSLAGE: It is very possible that we've discussed this before, and so forgive me if I have forgotten what we decided, and you guys will remember. I think this is fine as-is. I mean, it's supposed to be a rough guide, right, and then is it possible, to address our very detailed concerns about all these potential conflicts, life history exceptions that will probably pop up from time to time, as we do assessments or come up with reviews for ABCs, and is it possible to make a TOR at the beginning of each assessment that says here is the chart, here is the number, that comes out from the biological thing, and it's low, moderate, or high, based on the back-of-the-envelope quick calculations, and then say to the analysts, at the end of the report, tell us whether you think there is something exceptional that makes it high or low risk, if it's a moderate.

If you don't think this is an appropriate category that it should be in, advise the SSC, and we can explain that it doesn't have to be a big deal, but just let us know that we got it wrong in our initial attempt with this spreadsheet and then advise us, and then, when we go to do the -- It will just get re-adjusted, and I think, on a species-by-species basis, the assessment folks should be the ones who know the species best and have just looked at the most recent data and the most recent papers that will came out, and they will have that fresh in their brain, whereas we're just tossing around ideas, and I don't know, and is that possible?

MR. CARMICHAEL: Yes, that's absolutely possible, and I think the only question is do you want to have the done as a SEDAR, or would you have that done when the SSC reviews the results of the assessment? I kind of like the idea of putting it in with the SEDAR, for the reasons you said, about that's when you're debating all this stuff, and I think they would look at that high, medium, low rating and decide.

One thought on having -- In terms of all of these concerns, and I thought about it as you were bringing that up, is, rather than saying to deviate by 0.1, which would say you were medium and moderate, and you would be at 0.4, and it would say you could deviate by like -- You could go to 0.3, or I guess 0.45, but what about just saying that you could change the risk rating directly?

You could say this stock came out as medium, but we think, for all of these reasons, that this stock should be rated as low. After all of this, and seeing what we actually had written about the deviation, I kind of like the idea of allowing you to directly change that risk rating, and I'm not sure if that's how it is explicitly written in the alternatives now, but I think that might give you even more flexibility.

DR. NESSLAGE: Let me see if I understand what you're saying. Would this be for all of the aspects of the risk rating or just the biological? I am talking about just the biological.

MR. CARMICHAEL: Just for the outcome. That's what I'm thinking. In terms of an SSC -- I think, at the assessment, looking at the biological would be the appropriate way. Then I think, to take to the next step, it's to say, when we've rated all of our stocks as one of these three, low, medium, or high, rather than tweak say the P*, which is kind of what it says, but would it be better to allow the SSC to change the actual risk rating directly, and so you wouldn't just -- It's sort of

like you have this limit, and you could say, you know, this stock has an awful lot of things that concern us, and we're concerned about the age structure, and we're concerned about hermaphrodism, and we know this stock has been ranked at medium, but we really think this stock should just be low across the board, and I feel like that is a little more direct, but I don't think it's how we've written it.

DR. SHAROV: I agree with John. Generally, this approach is based on the categorical values rather than the direct quantitative analysis, where you deal with the continuous variables, where everything changes in incremental steps, and so definitely. There is a level of subjectivity here on many steps or where we would make those categories, for say natural mortality, three categories, or four, because there's low and high and something in the middle. Where do we make those breaks?

It is, to some extent, subjective, but that is the system that we're building, and we just have to acknowledge that, therefore, yes, there has to be an opportunity to re-evaluate and adjust, particularly if there is some unusual species, and so be it, but we can't -- It's a template, and we can't push all kinds of species through that template and remain unchanged. Some species will just not fit in there as easy.

DR. NESSLAGE: I would be fine with what John suggested, with the exception that I don't think the stock assessment team should be commenting on the human dimension attributes. We are not qualified, in most cases, and so I don't know if that could be tossed to the SEP, or just to the managers themselves, and that would make me feel more comfortable.

MR. CARMICHAEL: I agree, and I think we should have them, because then, the way this is set up with the scoring, you get a bio-ranking, and so we could ask them to comment on the bio-ranking, but what about these environmental attributes, where we have ecosystem importance and climate change? Those might be something that you would have a good group to evaluate at that point too, and so we could include both of those.

DR. REICHERT: That goes to a question that I had, and so that is -- We may have talked about this, but remind me. When are they scored, and by who? This is, for instance, done at the -- Some of these are done during the stock assessment process, or is the SSC going through all of these and ranking them? There is a couple of attributes that are still rather vague, or not vague, but they are more qualitative.

For instance, in the human dimension, the fishery is consistently kept below the total ACL, and does that mean always, or 90 percent, or mostly kept below? I think it would be good to make sure that we are as specific as we can get, to avoid having lengthy discussions about whether or not that particular -- After the fact, whether or not a particular species is mostly, consistently, or generally, and do you know what I mean? I'm not sure if that was discussed.

MR. CARMICHAEL: I think there's a lot of questions in there. I think the first one was you were asking when is this going to be done, and this is being done now, and that's why you have these examples. You have the spreadsheet, and you have this, which shows all the summaries.

You are making those initial rankings, and they will be reviewed by the AP, and they will be reviewed by the council, and, ultimately, the council has the final say, but the idea is that the result

of your outcomes hopefully lines up with -- You make a good case for the rankings that you give for these risk levels, and, given the discussion of some deviation, it may still take yet another bit of SSC meeting to look at them and think about them and make sure you're comfortable with all the outcomes, which we always expected would happen.

The goal is that the outcomes that we will go forward with as a first step will be in the amendment when it's approved, and then you will be free to update them when you have new information, and they will be reconsidered each time we do a stock assessment, which is kind of how we have handled the ones in the past, and then, in terms of refining some of those levels, I know the SEP talked a lot about the human attribute, and so I think we would -- I would sort of want to wait and hear from them about getting into some of the details on those, and our hope here was to focus more on these biological ones and the general scoring approach, and then let the SEP kind of delve more into the details of the human dimension parts.

DR. REICHERT: Thank you.

DR. ERRIGO: I will say that the one about being able to regulate the fishery looks more wishy-washy than it actually is, because it was a teeny space to try to fit all of the writing in there, but consistently means that it didn't go over the ACL, and then I think it says there that, if it exceeded the ACL one or two out of the last five years, that's a moderate, and then more than that is high, or something like that, but there are other factors that were considered, like if the majority of the landings were in state waters and that state didn't comply with federal regulations, and it didn't really fault the council for not being able to regulate the fishery, per se, or it did.

If the council doesn't have any control over it, then that would push it over the line, even if it was closed, and so, when things were closed at the line, there were certain factors that I looked at to push one way or the other. If it had a high instance of recreational catch, and the PSEs were super high, that pushed it one way or the other, but there was a cutoff. The ones that are very expert judgment and what do you think are the environmental factors.

DR. REICHERT: Thank you, and I did see some other language in the actual document, but thanks for that clarification.

DR. BARBIERI: What I was going to say, Marcel, also, because we've been struggling with this for a while, is how much do we set this in a very formulaic and structured way, where we have an algorithm, basically, that we just follow almost to the letter and how much we give ourselves a little room to be able to adjust for some of these species that are difficult for us to put in a category, and so it's been trying to find that balance.

DR. REICHERT: I agree, but I think, as a committee, we also discussed the fact that we need to be careful that some of these scorings were not made based on the outcome of the stock assessment, and so that's why we need to be very careful, and this clarifies that, but, as a committee, we discussed that in previous meetings, about developing this new ABC control rule also, and so I think, the more specific the language is, the better it is, in terms of defining how we get to our scoring. Do we have any other questions or clarifications?

DR. SCHUELLER: Can you talk about the timeline on this again? We're talking about it here, and then what?

MR. CARMICHAEL: Our hope is to have preliminary risk ratings for the council to look at in September, and then you would get to look at it again in October, and the council would look at it again in December, potentially approving it for public hearing like in December and then doing the hearings. Then they would be looking at taking final approval say in March.

As I said, this timeline has been pushed back a few times, and we know that fully implementing this thing is affected by the timing of working out the MRIP issues and all of that stuff, which is one reason that it hasn't been quite as rapidly simmering on the front burners, and so I think, if -- It seems, to me, based on the discussions here, that we've had some just really great input on the scoring, and it would be nice to have kind of a cleaner look at what the outcomes are, particularly if we want you guys to have the ability to say, no, we really think that one should be low or high, for whatever reason, and I think that would be a good thing to be able to do in October.

DR. BARBIERI: At the risk of sounding like the lovey Latino once again, I have to compliment you guys for putting something together that -- I mean, I think that, gosh, over the last couple of years, basically, we have been looking at so many iterations and so many complex sort of outlines that would have bullets and sub-bullets and going in all the combinations and permutations of all these different criteria, and I think that this -- As imperfect as it is, and it will never be completely perfect, but I think it captures very much what we wanted to see, and it provides some direction, going forward, that I think will be very useful to us and the council.

DR. REICHERT: Thank you, and I agree. I had one question. There was one attribute where you said that one option was like the zero, if we don't know, or penalize the scoring, and did we provide enough guidance for you on that one?

DR. ERRIGO: Where we finished up was, if an entire -- The SSC was in favor of increasing the risk if you didn't know a particular attribute, and so the small penalty. When a category is an unknown, when every attribute in the category is unknown, originally, I had a default value of two, moderate, but the SSC suggested a default value of one, which is high risk, and so that's where we're at now. If everyone is good with that, we can leave it in. On a species-by-species case, if you feel like that's overly conservative, we can change it.

DR. JOHNSON: If you switch it from a two to a one, do you still need the penalty, the 0.5 sort of thing, that goes in there?

DR. ERRIGO: They're different things. If they're all zeroes, the penalty doesn't apply, because there is nothing to average. That's only if let's say there were five attributes under human dimensions and you know three of them. If you don't know the other two, you get a small penalty for not knowing them. If you don't know all five, then there's nothing to penalize.

DR. SCHUELLER: In your story map, are you going to use this for other venues besides here, or are we going to see this again in October, because, if we are, it would be really great to put some actual example species in there with the numbers, like walking through each step, to how you get to your score. Maybe I am missing something.

MR. CARMICHAEL: We did have some -- In the first bit of using this, yes, hopefully, and big thanks are owed to Chip for his skill, in terms of dealing with this Shiny and then whatever that

other app is in there that does the other stuff that he has linked into Shiny, and I don't know where this guy comes up with this stuff sometimes, but our idea was to try to come up with something that could go from the SSC to the AP to the council, because this is such a complicated topic, and not have to create different documents for every venue.

The idea is that we could include the SSC comments and kind of modify this when go to the AP and say, hey, here's where the SSC is, and then go to the council and then come back to you guys, yes, and so the hope is that this sort of stands as something that evolves as the discussion evolves, and that's why we kind of went back and included all the actions and alternatives and everything in the beginning that were kind of focused on this one, and so I hope so, and so any comments, in terms of how to make this better, would certainly be really appreciated. We kind of get at that here in this table, but I don't know if it really gets at everything that you would want to see, because I don't know that the final scores are in there or not, but I think this is a step towards what you want, but a little bit more.

DR. SCHUELLER: I love step-by-step, and so you know how you could click through the attributes for like -- I mean, it's plausible that you could have like pictures of three or four different species, and people could click on them and then walk through, step-by-step, how they got a score.

DR. ERRIGO: Bar jack is actually a great example of one that had no known information for the biological category. They were both zeroes, and it got a default value of two, but that actually -- I don't know if anyone remembers, but, when we did the ORCS workshops, bar jack got a rating of low risk.

I think it was the only species that got a rating of low risk, and so, when we're going through, and if we assigned a high risk to that category, it might be one that you might want to reconsider, because apparently it's not targeted, and it's rarely caught, and there is no problems with it, which is why it got a risk rating of low in the ORCS, and so that's a good example of the kind of species that tend to get zeroes. It's usually the biological. There's enough information for at least one or two of the human dimension attributes to be scored.

DR. BELCHER: I like the story map as well. The one thing that I did note is that, and I know it's in the context of the fact that we're looking at the amendment, but we do have the three other FMPs that are on there, and I know -- Obviously, shrimp is an annual stock, and so it doesn't have the ABC criteria applied to it, but I was trying to remember why king mackerel isn't there, and it's because -- I go back to the FMP, and our preferred alternative was to adopt the Gulf Council's ABC control rule, and so I think just to have that background, because we do say, specifically for coral and that, that we don't have an ABC control rule for that, and so just to put those three in context I think would be helpful.

MR. CARMICHAEL: Mackerel was not included, because it's a joint plan with the Gulf. The Gulf was making their own progress on control rules, and the plan is then to sort of see where these end up and decide what to do with the South Atlantic side on mackerel, but, yes, I think it's good to hear that it's helpful to get even more details in this and make this tool more useful.

George, I just want to go back through the questions we had here at this stage. I think we've had a lot of discussion of the attributes and their use in the risk rating, a lot of discussion of any that could be added or removed, and we discussed the scoring for them. To some extent, we may want

to refine those a little bit more at our next look, and we discussed -- We didn't really discuss the weighting of the different categories, and is that correct, Mike?

We talked about the things not having any information, and so I guess the question is, with the biological, the human dimension, and the environmental, does anyone feel that any one of those should be given more weight than the others, and also knowing that the environmental is a little different, in terms of being an on/off switch, but do you feel like the biological versus the human dimension should get any more weight, given all the we've discussed and the ability to directly change the risk rating if you don't feel like it came out right?

DR. ERRIGO: If you say yes, you need to suggest what the weighting should be.

DR. BUCKEL: I am not going to answer that question, but some of the -- When I read the human dimension attributes, I think of some of the things that would deal with management uncertainty, going from the ACL to the ACT, and so that may determine how that got weighted, if some of those things are going to be accounted for again, and so getting them as double counted, because this is just for the ABC, right?

DR. ERRIGO: If the council sets an ACL let's say that is significantly below the ABC, and manages to that, then the chances of the stock exceeding the ABC is going to be much lower. Therefore, it should come out as a low-risk in that category, and so those kinds of things -- We tried to work those kinds of things in. That was the if it exceeds the ABC. It should be in the outcome of scoring the -- Because, for a lot of stocks, ACL equals ABC, and so, if the council is being conservative for this particular stock, that should show up there.

DR. BUCKEL: So, to maybe put it another way, it sounds like there won't be another -- Say it takes a long time for you to get the landings for a species, and so there is always overages for that species, and that's going to be handled here and not as another uncertainty buffer, where this value coming out of this would be decreased further for management uncertainty, and this control rule is going to handle both scientific uncertainty and management uncertainty, and is that fair?

DR. ERRIGO: What you're saying is the reason why the council can't regulate the fishery is because the landings aren't coming in -- Yes, that is taken into account, and it does go into this. We didn't have a separate category for that.

MR. CARMICHAEL: I guess, somewhat, I feel that, yes, there is some aspects of the management uncertainty that are incorporated, but I think the council would have the option to reduce from ABC for ACL if they felt like there was more that they needed to do.

DR. BUCKEL: Okay.

MR. CARMICHAEL: I think that's the best answer we can come up with for that.

DR. BUCKEL: Given that, I'm fine with the weighting the way it is.

MR. CARMICHAEL: We talked about the blanks, which I think was good discussion there, and the most appropriate method to assign the risk scores to the risk ratings, was that the averaging approaches? What was that?

DR. ERRIGO: That has to do with -- Because you get a continuous number that comes out of the risk score, because you're averaging, and so I came up with a scale, and, from this number to this number, you get low risk, from this number to this number is moderate, and this number to this number is high, for the overall risk score, and so I was just asking if that was appropriate.

MR. CARMICHAEL: This is what that is referring to, what Mike was talking about. It's what numerical value ends up being high, moderate, and low concern, high, moderate, or low risk.

DR. ERRIGO: Right, yes, and that bar graph is the distribution of species, frequency of species, that fell into each of the three categories as they are defined now.

MR. CARMICHAEL: There's many in the moderate, which always seems to be the case whenever we go through these exercises, remembering ORCS. I think that's all that was in here. That was the last question, I think. We've talked about a lot of other items, and we've built a pretty good record for why we're considering what we're considering, and we've been true to a lot of the guiding principles that we've talked about around the table in the past, and so I think that's been good discussion.

DR. SEDBERRY: I think we still might have a few questions, and we need to go through the action items and our notes here, to make sure we capture everything, but, before we do that, I do need to check and see if there is any public comment on this ABC and risk presentation. Any public that would like to comment? No public comment. I think, Yan, you had an additional comment or question here?

DR. LI: A question for the how to assign the score to the rating, and how did you choose the threshold value of the 1.7 to 2.4? What is the range, the possible range, for the risk score?

DR. ERRIGO: The range is one to three, and so the categories are roughly broken into thirds.

DR. LI: I am just thinking, is this a good way, or the best way, and I don't have a suggestion of a better way, but I am thinking of is there a better way to do it.

DR. ERRIGO: I tried to think of another way to do it without it being results-based, like I want the red to be a little higher, or I want it to be more even with the green, but I tried looking at it where I evened out all three categories, but that didn't seem right at all. The bins were oddly -- One bin was really tiny, and another one was huge, and so that didn't seem correct. I wouldn't expect a third of all species to be high risk and a third to be moderate and a third to be low. This seemed likely, that most of our species would be moderate, and we have some high risk and some low risk, and so I figured that, of all the scenarios that I thought of, this one was the most plausible, but I couldn't think of another way to do it that was objective.

DR. LI: I agree, and, so far, although it's based on number only, but I don't know of another option. I am thinking that, ideally, if we can come up with something that is based on the biology of the species or something, management or something, and that would be better than just based on the number itself, but I don't know the answer here.

DR. SEDBERRY: I think our two action items were to review and discuss the approach and the results of the initial risk tolerance recommendations and to provide further recommendations regarding actions and alternatives, as necessary, which we've done, and the council will consider our recommendations at its June meeting, and so we need to make sure that our bullets here have captured what our recommendations are and that they make sense.

DR. ERRIGO: The language of the first one just means that we put a penalty if you don't know -- If you can't score the attribute. I didn't want to say "penalty" though, but that's what that would mean.

DR. REICHERT: I was looking at the third bullet point, and I think that was the point that Genny made, and it may be good for us to -- I think we said that there is flexibility in the ABC control rule to deviate, and so that would be an example where we could deviate from the ABC control rule. Otherwise, I'm not sure what that sentence tells us, basically, and so it's just to give a little more information on where we were going with that bullet point.

DR. SEDBERRY: Just sort of a follow-up to what that means and how we can act on it. Okay. Yes, that makes sense.

MR. CARMICHAEL: I think, in the last one, I would say they're not changing -- Well, I mean, the score is part of it, but, actually, we're changing the risk ranking or category, and what do we call that, the low, medium, or high? Is that called the score? I just want to make sure we use the right language.

DR. ERRIGO: Or category. I mean, it's the same thing.

MR. CARMICHAEL: It's the same thing, but I think that's a little simpler and more direct, and it makes it clearer exactly what we're doing. I'm thinking in terms of writing this up as an option in the alternatives.

DR. SEDBERRY: Age structure?

DR. ERRIGO: That was the whole discussion about age at maturity and accounting for age structure and that whole discussion and the weighting, and I didn't want to lose any of that, and, at the end, this is the recommendation, I think, that came from it. We could use age at maturity, as long as we make sure to use -- Let's say, if you have several of them, the oldest one that might give you the age at maturity before heavy fishing pressure may have been on the stock, and so I guess I can take that out.

DR. SEDBERRY: Okay. Are we ready to move down to the further recommendations?

DR. ERRIGO: Does that capture your comment, Amy, about the step-by-step walk-through for a few species, to see how the attributes were scored and then how the risk score was calculated for those? Okay.

DR. SEDBERRY: Okay. Are we all happy with this? I see lots of smiles.

MS. LANGE: I just have a real quick question. How does the output, or outcome, from this relate to the other versions that we've done in the past? Are species still considered in the same general categories, or is this just the total complete change from how we would have rated the risk with a particular stock in the past? I know it's different metrics and intent, but I'm just curious. Did we really change everything a whole lot, or is it just a different approach?

DR. ERRIGO: It's a little difficult to compare. The only stocks that have these categories assigned are ORCS stocks, but, in ORCS, we have more categories. We have low, medium low, medium, medium high, and high, and so it's a difficult -- They're broken up differently, and so it's hard to judge if this is coming out the same or not. I would say it's probably going to be somewhat different, but it's hard to judge exactly, because, not only was the scoring different, but the categories are different, and it's only for the ORCS stocks. Nothing else had a categorical assignment.

MR. CARMICHAEL: For the assessed stocks, we do have the P*s that you chose last time, and we have the biomass, and so we would go through this and compare the P*s, using the table, and we could compare the actual P*s that would come from this versus what are in place now, which I'm sure our in-house lawyer will make sure that we do, to compare the impacts of this amendment to what we have in place now and thoroughly compare how things would change under these decisions and what we have now, and I think it would be kind of interesting to see. I would expect that we'll have that at the next SSC meeting.

DR. BELCHER: For the record, could we actually get that as a recommendation, to have the P* compares for the next meeting? I mean, can we request that?

DR. SEDBERRY: Sure, and so the side-by-side P* comparison for the next meeting.

MR. CARMICHAEL: I'm sure the council will want to see that.

DR. SEDBERRY: Okay. I believe we're done with the ABC control rule until the next time we deal with the ABC control rule. The next agenda item is the Socioeconomic Panel Report, and we don't have assignments for this, but I'm sure that our representatives from the SEP will give us a great summary for inclusion in the SSC report eventually, and so, Scott, are you going to be reporting out on that?

SOCIOECONOMIC PANEL REPORT

DR. CROSSON: I will give kind of a brief overview. I'm still compiling the report, and so I will get it out to the committee when I get -- I will get it to the SEP and get the feedback from them and then send it to the SSC. We already covered some of the stuff about the ABC control rule, and I'm trying to see what are some items -- There is an item that I want the SSC to discuss though, and I will get to that in a minute.

We looked at recent and developing council actions, and we didn't have any comments, other than, in Dolphin Wahoo 10, they're considering removing the restriction on bag limit sales by charter captains, and the SEP, a few years ago, actually spoke about the benefits of allowing charter captain crews to sell fish caught on charter trips at the dock, and we saw that as a win/win/win,

because the captains are happy, the charter customers are happy, and the people buying the fish are happy, and I know there's some folks in the commercial sector that don't like it, but there are other ways that they can be compensated to adjust for that that would still probably be better than banning it, and there's also a question about how well people are actually following that rule. I think I've seen it being violated myself.

We already discussed the ABC control rule, and we gave some input to them on that, and we have a lot of stuff about we were asked to give feedback on the recreational accountability measures and handling how to handle different PSEs, and you'll see those comments when I get that report written up, and we definitely had a lot of ideas there.

You all already saw -- We saw Christopher Liese's presentation before you did, and so you know what we thought about that, and the one item that I would like the SSC to discuss is we were asked to look at the fishery performance reports, which are being, right now, done by the advisory panels, and so council staff interviews the APs periodically, I guess once a year, in theory, about changes that they are seeing in the fisheries, and it's a fairly lengthy process, and sometimes there is no way around that, because doing any kind of focus group or anything like that is going to take a lot of time, but we were asked about the questions that the advisory panels are being given, and our thought was that the highest priority -- Any time you do a focus group, there are things you absolutely need to get done and try and get them out, some information that you really, really need to get out of the group that you're interviewing, the things that are absolutely the highest priority, and everything else is kind of lower than that.

Those really high-priority items, the way the fishery performance reports originally were designed, and this is how they were designed in the Mid-Atlantic, which I think started doing them before the South Atlantic did, was that, when it comes time to doing a stock assessment, there tends to be this very ad hoc process, where people sort of sit around the room, and it's commercial fishermen, or charter captains, and I think, twenty years ago, this was happening, in the summer of 1988 or 1998 or whatever.

The fishery performance reports are designed to be a long-term way of getting around that, so that, when it comes time to doing a stock assessment, or doing an ABC recommendation, if you want to know what happened in 2014, if there was anything unusual going on that affected the fishery, that might explain a drop or a rise in catch numbers, you have that document that was recorded at the time.

What we would like to know, from the SSC -- To my mind, that's the biggest question. That's the biggest, most important thing that comes out of fishery performance reports, are if there were any fluctuations in the fisheries that were unexpected and what accounted for them, and the two factors that I would think of that could cause that, besides a change in the amount of biological stock, the two primary factors besides that would be economic, that there was something else, either in this fishery's prices or in another fishery's prices, that were more attractive, and so guys jumped out and started fishing for tunas or some other species that was more profitable.

Tracy and I saw that in the wreckfish fishery, when we did our research years ago, is that everybody jumped out of the wreckfish fishery and went into tuna, and that's why the landings dropped so dramatically, or something meteorological or otherwise dealing with the environment. Was it that a hurricane came in? Was it that, in the month of April, the winds never stopped blowing, and so

nobody could get offshore, and that's why the fish wasn't caught, and then, maybe, by the time that May came along, people were jumping into normally their May fisheries, which are different than the April ones.

Is there, from you all's perspective, especially in doing stock assessment sciences, but also from the members of this committee, setting ABC recommendations for the council, what are your thoughts on that? What do you absolutely want to see? If you were thinking about what you would get out of these fishery performance reports, what would you be hoping for?

What would be of value for either doing a stock assessment, especially during the data workshop, and during the assessment stage as well, I guess, or from setting an ABC recommendation when this committee is meeting, and am I kind of correct the way I'm thinking about it, that you would want to know about the economics of what was going on and whatever kind of environmental factors, like meteorology? Okay. Is there anything else that I am missing? I mean, is there anything else that the fishery performance reports are extremely valuable for, beyond that? Those are the two big setups, right? It's SEDAR and it's doing the ABC setting.

DR. SEDBERRY: Do they describe any unusual market conditions, or is it just strictly what may have affected the boats and the fishermen?

DR. YANDLE: I believe the idea was to capture sort of any usual conditions that would affect fisher behavior, and so that would include market conditions.

DR. REICHERT: I think, in the past, we also discussed some general observations. Like, I remember red grouper, where landings were very low, and the fishermen were telling us that they tried, but they just couldn't land them, and the same with I think why the ACL on black sea bass was -- Why the landings for black sea bass were under the ACL, and it's not because of a lack of trying, and I think those are signals that I think are valuable for us to interpret ACLs and landings and the things that we occasionally, and the council too, the things that we occasionally look at, and that helps us interpret those signals.

DR. CROSSON: Yes, particular results from specific management measures is something I wasn't thinking of, but that's really important, because, with black sea bass, it wasn't that they couldn't catch the fish, but it was that they couldn't retain them, because the size limit was too high, right, and so they were discarding huge amounts of fish, but not having difficulty finding the fish.

DR. REICHERT: Or maybe they have difficulty finding fish. I mean, those are signals that are important for us to interpret why landings are under or over the ACLs, signals from the water before we do a stock assessment.

DR. YANDLE: Sort of building on that, one of the things I think is so potentially important about these reports is that we'll be able to gather the information contemporaneously while it's happening, and so we don't need to worry about things like recall bias, when you're asking right before an ABC is about to be set, and it will be there in the historical record when it was happening, and I think that will make it a lot more robust data for us to use and interpret.

DR. CROSSON: This is the whole point of these things, and it's a very, very long-term goal. It's going to be years before a lot of these start really paying off, but hopefully -- We want to make sure that we're gathering the right information right now.

DR. SERCHUK: Actually, I think the information could be useful even before the ABC setting stage. For example, if there are significant changes in the spatial dynamics of the fishery, and we use a fishery-dependent measure to track performance, and it could be a catch per unit of effort sort of thing, that would be nice to know, really, during the assessment stage.

It may not be transparent to the assessment scientists that the index this year is not comparable to the index last year, because they were fishing a slightly different area, and I think that's an important -- That's why I think it's important to gather that information, perhaps at an earlier stage, when the assessment is being conducted, because that may illuminate a situation more to the assessment people, in terms of whether the index is comparable to the previous years or cannot be used because it's different, and rather than being misled by apples and oranges, and that's just an example, but I think there are probably other issues that might come up that would be helpful at the assessment stage, in addition to being helpful at the ABC stage.

DR. SEDBERRY: Thanks, Fred. Anybody else? We also need to take public comment on this report. Is there any public comment on the SEP report? No public comment. I believe we're done with this, and I don't think we have time to tackle the MRIP issue, but there are some smaller things that we can fill in with and give us more time tomorrow, but Mike had something first.

DR. ERRIGO: If you look up on the screen there, I actually did -- This is not using the most -- Well, this is using my iteration, the current iteration, of the risk analysis, and so, obviously, it doesn't incorporate any of the changes suggested by the SSC now, and I can send this around, and this may have even been an attachment in a previous SSC meeting, but this has species, year of the assessment, and then Column C is the original P* value that was used, the risk tolerance for that species, the category, and then where the biomass fell, and was it high, moderate, or low, and then what the new P* value would be.

Biomass 1 means there was a -- One of the alternatives was to use 110 percent of SSB MSY for Option 1, rather than SSB MSY, and so it only changed the biomass for greater amberjack from high to moderate, but it didn't change the P* value, and so you can see the differences. For some, it went up, and, for some, it went down.

I used the biomass and all that from the same assessment. Some were very, very similar, and so it had a varying effect. I will send this around to everyone, but I just wanted to let you know that I did have some of this, but, for the next meeting, I will incorporate some of the changes that the SSC suggested and re-run the analysis and then use those new risk categories to re-do this table with those new categories.

DR. SEDBERRY: That sounds good. Thanks, Mike. I am going to suggest that we skip over to Agenda Item 12, if we can do that, the Council Workplan Update, but I'm not sure if someone from the council is available and ready to present that. It's Attachment 25 and 26.

COUNCIL WORKPLAN UPDATE

DR. ERRIGO: This list here on the left should just give some of the amendments that we're working on currently, and the council staff person who is responsible for them is over here. We have got, just really quickly, an amendment looking at blueline tilefish north of Hatteras and setting what to do with the ABC up there.

We've got the one about the turtle release gear, and that's just changing some of the requirements for what to have on the vessel. There is a yellowtail snapper amendment, which is kind of a long-term amendment that has kind of been put on hold for a bit, especially since the assessment is coming up right now, and so I think they put that one on hold for now.

Recreational permitting and reporting is also a very long-term one, and that has to do with getting a better handle on snapper grouper effort and private recreational reporting, and so having let's say a permit for -- If you're going to snapper grouper fish, getting a specific permit or something that says that you can snapper grouper fish, so that we can get a handle on the effort for just snapper grouper fishing, or something like that, so that we can parse out effort better in the MRIP survey.

Here is Amendment 29, which you guys went over yesterday for best practices, and there is red grouper rebuilding, and we've been trying to get that one through, and that has hit a few kinks, with waiting on the revision assessment and not quite sure what to do there, but I think it's finally going to go through at the June council meeting.

Wreckfish ITQ review, I think that's well underway. This one is golden crab areas and transit provisions. Some of the golden crab fishermen want to be able to fish in different areas and things like that, and this one is kind of more of a long-term one also, and it's not one of the high priorities.

DR. SEDBERRY: Mike, that's an expansion of the existing golden crab area, or is it just moving some areas?

DR. ERRIGO: Brian can help us, because I don't really know.

DR. CHEUVRONT: In the northern zone, for the golden crab allowable fishing area, they want to consider increasing some of the areas where they can fish. Right now, what they're waiting on is bottom mapping that is supposed to be completed before they can move forward with that. There's been some disagreement on where there actually are things like corals in different places, and it's more -- The areas that they really want to expand to not only are just further north, but they are on the landward side of the corals, and they don't want to have to go further offshore from that, but the allowable fishing zones, especially in the northern zone, is a very, very narrow area, and they would just like for the council, based on whatever information that they have available, to see if they have enough information to help them consider expanding the current areas.

DR. SEDBERRY: Thanks.

DR. ERRIGO: There is also an amendment looking at Spanish mackerel allocations, Atlantic Spanish mackerel allocations, and they want to look at those. There is Christina, and that's her amendment, and I'm not sure which way they want to go with that.

MS. WIEGAND: CMP 24 is actually sort of a bit of a placeholder. This is an amendment the council started working on back in 2014, and it was put on hold for other priorities, and it was meant to address increasing participation in the Spanish mackerel commercial fishery. They were consistently hitting their ACL, whereas the recreational sector was way below it.

At the last meeting, we did talk again about some concerns with the commercial Spanish mackerel fishery and closures. The council indicated that, if they were going to move forward, they would want to start over, and they wouldn't want to continue on with CMP Amendment 24, and so, at the next meeting, we're going to be talking again about these issues in the commercial Spanish mackerel fishery and the way to move forward. Whether or not that would be allocations is still to be determined.

DR. SEDBERRY: Thanks.

DR. ERRIGO: They are having similar problems with the dolphin fishery, but they are not considering allocations as the solution. There was talk about sharing of the quota, or carryover provisions and things like that, to try to temporarily give more quota to the commercial sector, and so that's what that amendment is about, but I think that one is also on hold for now.

There is the ABC control rule, which we were just going over, and then there is the recreational AMs amendment, and so what the council is trying to do is try to get more consistency between accountability measures across fisheries, because, right now, they are all over the map, and it's very frustrating to try to keep a handle on all of them, and so they're going to try to sync up all of the accountability measures and try to move away from, especially for the recreational sector, in-season monitoring and closures, especially because, with the high amounts of uncertainty when tracking landings in-season, using MRIP data, they wanted to see if they can handle managing the fisheries with post-season accountability measures rather than in-season accountability measures, and so they're looking at a lot of those kinds of things.

There is a bunch of stuff here that doesn't have amendment numbers yet or anything, like commercial electronic logbooks, and that is extremely long term, and we've been looking at that for years. Then bycatch reporting, and I think that's kind of in limbo right now, and then there is the allocation trigger plan, and that actually was just handed down from on-high, that everyone has got to have an allocation trigger plan.

That means what is the triggers that will trigger the council to look at allocations, and so they have to have some plan in place that says, after this amount of time, or if this happens, or if these criteria are met, then you will look at the allocations for this particular fishery. You don't necessarily have to change anything, but you have to evaluate them, and so that's what that is. That is hand-in-hand with actually looking at all the allocations due to the changes in the MRIP survey and the changes in the recreational landings, so those two kind of go hand-in-hand.

Then there is this marine aquaculture plan, also handed down from on-high, and that hasn't really started up yet, but we'll see where that goes, and I'm not sure where we'll go with that, but a lot of areas have an aquaculture plan right now. There is Brian.

DR. CHEUVRONT: The marine aquaculture plan is on hold right now because of legal issues that I believe one area plan was upheld in court and the other was struck down, and so there needs

to be resolution, and I believe the ball is in NMFS's court, literally with the courts, to figure this one out before the council can move forward on it. We thought we were going to be doing this, but then the legal stuff happened, and we just said that let's just wait on this one.

DR. ERRIGO: That is everything that is going on currently that's in the works or just being finalized or things like that, and so, if anyone has further questions, these are the council staff leads, and I can try to answer as much as I can. Luckily, Brian is here, and a few of the other people are here, and they can come and answer questions, if you have any right now.

DR. SEDBERRY: Thanks, Mike and staff. We get these updates from the council at all of our SSC meetings, and so we are invited to comment or provide technical advice on any of those items, and so, if the SSC has anything they would like to comment on, now is the time. We also take public comment on this as well, and so is there any public comment on the council's work plan?

We are running a little ahead of schedule, but we have a little bit of time left, and so I thought we could address that other agenda item, the Other Business item, or is that against Roberts Rules of Order to take up Other Business before you do all of your regular business?

DR. REICHERT: We can take up some other business.

DR. ERRIGO: You're the Chair.

OTHER BUSINESS

DR. SEDBERRY: Okay. Prior to our meeting, prior to this meeting, the SSC Executive Committee met for a half-a-day to kind of just go over some of our procedures, to see if we could improve them, and the SSC Executive Committee is the Chair, the Vice Chair, the immediate Past Chair, and then the council staff that coordinate the SSC, Mike and John, and so we met, and we invited Carolyn to join us, as a past chair, and Luiz to join us as a past chair, but Luiz was stuck in an airport somewhere, and he didn't make it.

We were looking at our procedures, to try and come up with an update prior to our October meeting, prior to our next meeting, and we have a procedures document that you probably haven't looked at in a while, and I don't know, but we're kind of finding that maybe some of those procedures need to be updated to make us a little more efficient, and so this is just a really brief, broad overview of the kinds of things that we discussed, and we haven't come up with a final document or amendment to the procedures manual, but we will, and we'll distribute that before our next meeting.

What we were trying to do through this is to increase the input of all of the members of the SSC, to get everybody involved in the discussion, to continue to ensure that we have accurate reporting that's readable and people can understand what we discussed and what we concluded was particularly capturing recommendations and advice at the end of our meeting. What did we come up with that we can advise the council on moving forward?

To facilitate and record consensus, when appropriate, and try to reach consensus, and then, also, to document alternative opinions. We do work on consensus, and we don't vote, but we try to

come to consensus on all of our agenda items, but sometimes there might be a minority opinion that we also want to capture as well, and so we would like to come up with a method to do that.

The first thing we would like to change is the timing of the meeting. We now meet from Tuesday at 1:30 to Thursday at about 3:00, and we thought that we could get a little more done if we started first thing in the morning on Tuesday, which would make Monday a travel day, and we could start the meeting on Tuesday morning at 8:30 and have a daily report-out at the end of Tuesday, and then, on Wednesday, have a full-day meeting, with a daily report-out on that. Then, on Thursday, we could cover these final agenda items, like the next meeting and those kinds of things that we always cover on Thursday, and then sit down and spend some time drafting the report and then adjourning at 1:00, rather than at 3:00 on Thursday. It would add some time at the beginning of the meeting and take off some time at the end, but actually end up with a net gain of a couple of hours that we can use for report preparation.

DR. CHEUVRONT: Mr. Chair, I am not sure if you had anybody there who spoke about the SEP, when they meet jointly.

DR. SEDBERRY: No, we totally ignore the SEP.

DR. CHEUVRONT: Well, because, typically, what we've done is allowed the SEP to travel on the first half of Monday and then meet the second part of Monday and early on Tuesday. If you all decide to go with this schedule, that means that the SEP is going to have to travel on Sunday to meet all day on Monday.

DR. SEDBERRY: We did consider that, and we're not sure how big of a burden that would be, but it's certainly something to be considered.

DR. CROSSON: The other question was that, last year, we met separately. The SEP met separately before the SSC, like a month or two ahead of time, and I know that's a budget concern that you all have to pick up and think about.

DR. CHEUVRONT: It's not only a budget concern, but it's a matter of a timing issue as well, because I think it probably is better if the SEP meets fairly close to when the SSC meets, so that, if the SEP makes recommendations, since they are a sub-committee of the SSC, they report to the SSC. Like we did last year, it was actually a couple of months, and there was a council meeting in between, and we couldn't bring the SEP's recommendations to the council until they had been brought to the SSC, and so there was a couple of month delay in between the amount of time from when the SEP made their recommendations to when they actually could be brought forward to the council.

DR. SEDBERRY: Thanks, Brian, and those are certainly some things that we need to consider, and, again, this is just kind of the first shot at this, and so I appreciate your input, and everybody's, really. Kind of the way we thought this would work is that we'll have daily participation and reporting, kind of like we do now, but maybe a little more organized with the reporting part of it.

We'll continue to append our discussions and decisions onto the overview document as the basis of the report, which is what we do now, to address the action items and make sure we capture recommendations and consensus and the uncertainties and the best scientific information available

statement and really any other conclusions or consensus we come up with. Then, each day, have small groups assigned to write up each agenda item. For about an hour at the end of each day, to write report sections, and then come together after that for maybe thirty minutes at the end of the day to just review what has been written for that day, to make sure that we have captured everything.

DR. ERRIGO: Just to add that, for the overview, what we would also do is -- For a particular agenda item, if it's been discussed in the past, all SSC recommendations and consensus statements and things like that would be in the overview, so that there would be a record of the history of what was discussed and decided on, to help the SSC stay up-to-date for each agenda item that's been discussed over and over again.

DR. SEDBERRY: Right, and it would be sort of like the history of management sections that go into some of the SEDAR documents, and it's really useful to kind of review the history of what we've done on this particular agenda item up to that point and then kind of -- That will help us move forward in the right direction.

On Thursday, again, trying to finish by 1:00, we would finish up our small business items between 8:30 and 10:00 in the morning, and then, at 10:00, we would break out into the writing groups to finish sections of the report, and that would include documentation and reasoning for decisions and the recommendations.

It would include research needs and deliverables that would be brought up at the subsequent council meeting in June or December, and then we would draft a minority report, if needed, if there is strong feeling by some members of the committee that, even though we have a consensus statement, that there is additional considerations, and we can draft that, if needed. Then, late in the morning, we can reconvene in plenary to review that report and then adjourn at 1:00, so that people can get on the road, or in the air, in Luiz's case, to get home, or not, or just to spend the night in Charlotte.

That's kind of what we're looking at for how to run the meeting and get the reports done, and we had a lot of discussions about other ways that we operate, and we'll be writing that up and distributing it prior to our October meeting, but I just wanted to kind of give you a heads-up that the days that we want to meet are going to change, so you can be planning on that for October. Any questions or discussion?

DR. YANDLE: If I'm doing the math right, the plan is we lose six hours of discussion time. It's one-and-a-half hours on day-one, one-and-a-half hours on day two, and three hours on day-three.

DR. SEDBERRY: Yes, and, again, those are kind of -- I'm just thinking about how long it might take to draft things, and, as we draft the stuff we put in italics now as we go along, it may not need -- We may not need that much time at the end of the day, but I just wanted to take time at the end of the day so that members of the committee can get together and work on sub-sections of the report as a group and have their input to it and then all of us have time to review it. It may not take an hour-and-a-half at the end of the day, but you're right that it will eat into our discussion time, but it will also include some kind of finalizing the discussion, to me, and so it could be considered part of the discussion.

DR. BELCHER: In theory, we're gaining four hours. If we go with starting on Tuesday morning, we're gaining those hours on Tuesday to help offset some of that, too.

DR. SEDBERRY: Any others?

DR. CROSSON: I don't know if you all discussed this, and lord knows it's impossible to tell when this committee is going to hit a snag or an item that you think would otherwise be kind of non-controversial, but I really would like to see a greater use of sub-committees by this SSC, as some of the other SSCs do, because there are items -- Whatever happens tomorrow, hopefully we'll get it straightened out with MRIP, but that thing could have been handled, I think, a lot more efficiently if a sub-committee of the SSC had been appointed ahead of time and had dealt with this and had maybe met repeatedly with some of the analysts and then was better able to walk the rest of the committee through it, when it came time for discussion.

I think that is the big snags that we hit constantly, and, again, you don't know when those things are going to happen, but it seems like there are some items that you know are probably going to drag out, and I think it would be nice if we had -- Obviously, it's probably not feasible to do these in-person, but to have webinars occasionally, where we have sub-committees, and I just really think this SSC needs a more active use of sub-committees beyond what we do right now.

DR. SEDBERRY: Well, we certainly have the ability to name sub-committees and workgroups that can involve people that aren't on the committee, and so get additional help with some of these more complex problems, or, like you said, bring in some people that were actually involved in writing the document that we're reviewing, and so that's also a good idea. Again, I think we have the ability to do that in our current procedures, but we'll be reviewing that and seeing if we need to tweak it or add to it, to make sure that we take better advantage of those opportunities.

DR. NESSLAGE: I'm really excited that we're going to have kind of this active report writing activity. I guess it would be really nice if we could come to kind of consensus ahead of time on how we characterize discussion versus consensus statements, whether consensus statements are in bold and discussions are not, something simple like that, because, right now, I think a lot of the nit-picking and the things that we attack Mike for half of the time are because he's trying to take notes on everything, and some of it is consensus and some of it is just discussion points, and having some guidance before we jump into our first October meeting implementation of this on how we should write it up would be awesome.

DR. SEDBERRY: That's a great point, and that really becomes important at the end, of what did we come to consensus on and what are our actual recommendations and what is just discussion and random thoughts.

DR. REICHERT: I think that's very good. I think part of what we discussed also is that that is particularly important for the Chair, when he reports out to the council. In our current report, sometimes we are missing the justification and the documentation of some of the discussions that we were having, and then, if issues arise, it is very difficult to use the report to find out what exactly the discussions were, and that's complicated, because, as we all know, sometimes we go around and around and around in circles, but this may allow us a little bit of time to have those consensus statements and those bullet points, but then also add a couple of sentences to capture the essence of our discussions, and I think that's really important for the documentation of our discussions.

We all know, if we look at our report, it's relatively limited, if you compare that with the sometimes lengthy discussions we have, and we shouldn't have to include every single item that we discussed, but it's my experience, and I think George's also a little bit, that, sometimes at the council meetings, we are asked about the specifics of our meeting that are very essential, but are not captured in our report, and so hopefully this helps a little bit with that, just for the building of the record.

DR. SEDBERRY: Right. Our report now just kind of consists of really bullets that address the action items or the recommendations that we make, and those are good, and it makes it very easy to read, and it makes it very easy for the council members or whoever wants to find out what did they conclude, and they can get to it fairly quickly, but then, like Marcel said, you get to the council meeting, and you have that one bullet up there on the slide, and someone says, well, how did you come up with that, and, well, I will have to go back and read the verbatim minutes to remember how I came up with it, and so having -- For those kind of more complex things, to have a very brief explanation of how we arrived at that conclusion would be really useful.

DR. REICHERT: Without making it a 700-page report.

MS. LANGE: Before Mike started putting together the bullets and everything in that, we did -- Each member was assigned a section or something, and we did draft the reports in paragraph form, unless I'm remembering something different.

DR. SEDBERRY: No, you're remembering it correctly. We did used to do it that way, and I think I'm trying to get back to something like that, where there is two or three people working together on that one agenda item together, and being in the same room to be able to do it together, and then coming up with a narrative that explains what that bullet point conclusion means.

DR. REICHERT: A question for Mike. Correct me if I'm wrong, but this is kind of a recommendation that we put forth to the committee, and I assume that this needs to go to the council or council staff, because it has some scheduling and potential budgetary implications? I am not sure where we take it from here, is my question. Or is this just basically a procedure that we decide on?

MR. CARMICHAEL: It's that, and I think this is your procedure that you're deciding on. Things that would affect the travel and the timing of the meeting or something that we might have to consider within the context of the budget, but, in terms of how you approach the meeting and getting a report done, no, that's fine.

DR. REICHERT: I was more referring to the first part.

DR. LI: In terms of how to manage a consensus statement clear, I don't know if it's a good idea to vote. We can have like six people agree that this is the best science available and then four disagree, and I don't know.

DR. SEDBERRY: Marcel, to that point?

DR. REICHERT: John is probably better able to address that, but I think our policy is that we work by consensus, and so --

MR. CARMICHAEL: You're right, and that's been the policy, is to work by consensus, and that's certainly a bush we've been around many times, and one of the concerns was that we had a pretty unsatisfactory experience with this at one time, in getting a lot of votes, which then you didn't know the reason why people voted for or against something, and we had an episode of a whole bunch of things voted on and a bunch of motions about ABCs and such, and then a bunch of motions the next day to reconsider changing all of those, and it really wasn't a clear record as to why people were doing what they were doing.

That's when the council discussed, well, is voting really the best way, and so we try to work with consensus and the idea that everyone agrees with what is put up there on the screen and how the pros and cons of an issue are reported, but getting to a clear consensus statement is an important part of that, and that's something that we can probably work on, even regardless of actually voting, but I thought that Genny's comments on that, about what are we putting in here and getting that kind of stuff is good, and that's the kind of stuff that we do need to think about with our report.

Giving us more time, I think, to work on it here, to me, will give us the chance to kind of expand our abilities and get better at it than maybe we have been by trying to do this email stuff, and we realize that there's one point that we're not sure what people consented on, and hopefully this gives us a chance to talk about that.

DR. ERRIGO: I could very easily make it clear what's consensus, and here's the consensus statement, and it used to be more -- It used to be clearer, and I used to have "SSC Recommendation:", and then here's the recommendation statement, and then notes on discussion. Things have gotten a little muddy in recent years, and so it's hard to tell what was the consensus statement that addresses -- The discussion and the bullet points all kind of relate to the action item, and so it was more difficult to come up with the particular statement, but we can get back to, and I think we should get back to, is this the consensus of the SSC on this item. Now, if it's just recommendations on something, like what are your recommendations for the risk analysis, I can list here are the recommendations, and, if there's something that needs consensus, I can make that clear.

DR. SEDBERRY: There might be legal implications, and so let's check that out.

MR. GRIMES: Thank you, Mr. Chairman. I wasn't planning to offer this, and I had no idea that this was going to come as a topic, and so I do have some general thoughts, and I have a lot of experience with a variety of SSCs around the country. First off, I think, in terms of voting -- I deal with your work product on a regular basis. I get the minutes from these meetings, and I bet you that I am one of the only people on the planet that will read every word of what you say at these meetings, and the same thing with council meetings.

I read the last one, and I read your last two coming before this meeting, and I'm a firm believer in that, especially if you have repeat issues, and it's great preparation coming in, but I can tell you that it's not always easy to discern a conclusion, and I know it's not a great example, but I will use your last webinar as an example.

I went through the minutes of that, and so you guys are certainly not alone in the way you do things, and maybe it's science panels, but something is put on the table before you, and you all attack it, and you pick at it, and you're pulling every loose thread and all the vulnerabilities, and, in the end, you all walk away, and there is this tattered thing on the floor in front of you, and that's what I get, and that's what the council has to go forward with, and so the idea that you would take time and say, all right, now that we've attacked this thing, what can we do, and maybe we end up with a two-legged stool when you start to put it back together, but you can say, all right, what was good about it, so, at the end, what is sort of the take-home message from it. That would be fantastic, but I think it's going to be a challenge for you.

I also wanted to say one other thing. In terms of voting, and I have seen SSCs that vote, and I have seen SSCs that don't vote, and you're operating by consensus, but then there are times here when we're like, well, I see things that are consensus.

The first meeting that I came to, you had a consensus red snapper statement that I didn't hear and I wouldn't have guessed from the meeting or the discussion that was there, and I was like, well, if you read the minutes, that isn't where I would end up, and I don't think that's where a reviewing judge or a court is going to go with it, and so voting, in some respects, saying that you know -- If you have a scientific recommendation, and you have a five-to-four vote, how much of a scientific recommendation do you have, and I think that sort of -- That goes to the strength of the underlying recommendation, and I'm sure there would be instances where I would regret that you voted, because we wouldn't have a strong decision, but the council would consider that.

It may be tougher, in some contexts. Like the ABC recommendation would be a tough one, because, if you did have a close vote, you have to have an ABC recommendation, and you would have -- If you have one that's lukewarm, then that might introduce challenges down the road as well, but, in other instances, I think it would be good, and the SSC had a lot of discussion over this, and it wouldn't hurt if you even come to consensus on it and say, well, we came to a general consensus, but it might be a general consensus on not a particularly helpful or informative conclusion. Because we couldn't get consensus, we watered this down to the point where everybody would agree to something that doesn't necessarily say a whole lot.

Keep all of those things in your mind, because, at the end of the day, and I think particularly since Magnuson has been changed to give you a binding ABC recommendation, at least on that level, it has increased the importance of the record that you build, and then that recommendation sets the foundation for the council discussion, and that's the ultimately decision. All of this goes in the administrative record when we get into litigation, and, depending on the nature of it, of the litigation, and it could be very technical, like our golden tilefish case that went away, and so keep those things in mind. Anything you can do to help us at the end of the pipe is a good thing.

DR. SEDBERRY: Thanks, Shep. That was helpful. I think we all agree that that was helpful. Any other additional discussion?

MR. CARMICHAEL: I think, along those lines, when you have ripped it to shreds and you're left with that tattered, two-legged stool, even without voting, you can still sort of go through what you would do to make a motion, and, when we first went this path, that's one of the things we did. It was like, well, you can make that statement, and say, well, how is this for a consensus statement

that would essentially be what someone might make as a motion, even though you don't actually vote on it.

I think Shep is exactly right that sometimes -- I feel like, the more it's been tattered, the less likely we are to want to circle back to that core question and say, okay, what did we decide, and, normally, people are like, I don't even want to look at this anymore, and we move on, and I think that's what some of this process will make us do, and we just have to try to be more cognizant of that during the discussion, that we go back and say, okay, we've been through this, and what is the final recommendation, as Shep said. I think we should be able to handle that without actually calling the vote, as long as we do that circling back to say, well, okay, what comes out of this in the end.

DR. SEDBERRY: Thanks, John, and I agree with that. I think that we can come up with a statement that we can put up on the board and we can say, is there anybody in the room that disagrees with this, or can we all agree that this is our consensus, and we don't have to take a vote, but just -- Some people don't like votes, and it exposes you, and some people are concerned about that.

DR. CROSSON: Are you aware of what Ben Franklin after he signed the *Declaration of Independence* with everybody else?

DR. SEDBERRY: No.

DR. CROSSON: We all hang together or we will hang separately.

DR. SEDBERRY: Yes, that's what I was kind of getting at there, yes.

MS. LANGE: I think this will also -- With the report writing and coming together at the end -- There was an issue, for instance, with the MRIP discussion, where I felt pretty comfortable that the consensus was -- A part of the consensus was such and such a thing, and, when I sent it, and I don't know if it was to George or to Mike, it came back that, well, I don't think that we all agreed on that, and so, by having the write-up here, and then coming back to plenary, do we have the option at that point to re-discuss it?

I am assuming we do, and so my interpretation is that we have this consensus, but we're not really sure, and do you guys all agree, before we put it in the final report, that that was a consensus, and so I think that would help get more consensus completed, as opposed to leaving those tattered things hanging out there.

DR. SEDBERRY: The MRIP webinar was a good example of a bad example, and that's what I want to avoid. I had to actually, like Shep said, go through the verbatim minutes and say that I swear that we were headed towards consensus, but we never got there, and we never have that statement, and so I want to make sure that we get those kinds of statements, one way or the other, for whatever the issue is and that we're clear about what our advice is to the council.

DR. ERRIGO: Yes, you can go back over something with the full SSC on the record.

DR. SEDBERRY: Anything else on that agenda item? Anything else before we recess for the day? Tomorrow, we have an exciting discussion. I can't wait, and so I will see you tomorrow at 8:30.

(Whereupon, the meeting recessed on April 10, 2019.)

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April 11, 2019

THURSDAY MORNING SESSION

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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened at the Town and Country Inn, Charleston, South Carolina, on Thursday, April 11, 2019, and was called to order by Dr. George Sedberry.

DR. SEDBERRY: Welcome back, everybody, to the third and final day of the spring SSC meeting. This morning, we're going to look at Agenda Item Number 11, the Use of the FES Calibrated MRIP Data, and our assignments for this agenda item are Luiz, Chris, and Amy. We are going to have a discussion of this, and so we have, at the table -- Erik Williams and Richard Cody have been invited to sit at the table, because they will have a lot of input for this agenda item, and then Dave Van Voorhees is online, along with John Foster. The first thing we want to do is Erik Williams would like to make a statement on behalf of the Science Center.

USE OF THE FES CALIBRATED MRIP DATA

DR. WILLIAMS: Thank you, Mr. Chairman. I would like to just make the following statement that hopefully will help you guys with your following conversation on the topic. During the past two SSC meetings, there has been considerable discussion around the incorporation of the FES data into what I will refer to as the revision assessments for blueline tilefish, black sea bass, vermilion snapper, and red grouper.

The same underlying concerns have arisen in the ongoing assessment for greater amberjack, and the Southeast Fisheries Science Center remains unequivocal in the position that the FES, the Fishery Effort Survey, data represent an improvement over the CHTS, the Coastal Household Telephone Survey, data previously used and that the FES data constitute the best available data regarding current recreational catch in the South Atlantic.

As reflected in the state letters in the briefing book for this meeting, Florida, Georgia, and North Carolina acknowledge the methodological improvements from CHTS to FES data. Consistent with that position, the Southeast Fisheries Science Center would be comfortable basing management decisions on the revision assessments incorporating the FES data without the benefit of a review workshop. However, the Southeast Fisheries Science Center acknowledges the discomfort expressed by some in the process and isn't insensitive to the concerns raised with the

FES estimates or the associated resistance to the incorporation of FES data into ongoing assessments.

In light of those facts, and the decisions made relative to similar assessments in the Gulf of Mexico, the Southeast Fisheries Science Center is also comfortable not relying upon the revision assessments for management recommendations at this time. The Southeast Fisheries Science Center would support waiting for future assessments, where the process could accommodate a review of the FES data on a stock-by-stock basis as they are incorporated into future stock assessments, and that's it. I will take any questions, if anybody needs any clarification on that.

DR. SEDBERRY: Thank you, Erik. Are there any questions, clarifying questions, or discussion from the committee?

DR. BARBIERI: Erik, thank you for that statement right upfront that kind of sets the tone for the Science Center's position, and I just want to bring this discussion, because I have been involved, as you know, with some similar issues and discussions that are taking place in the Gulf, and, last week, at the Gulf Council meeting, we had sort of like a leadership meeting of the Science Center, Regional Office, council leadership, and council staff leadership to discuss a way forward with the SEDAR schedule and how these issues would be impacting stock assessments and management recommendations going forward.

I heard Shannon Cass-Calay mention that the Science Center has been working on developing a guidance document for how to proceed, how the Center is going to proceed along the lines of these issues, and so do you have an update for us on that? I mean, is this something that involves the Beaufort Lab as well?

DR. CODY: Luiz, I think what you're referring to what we are calling the white paper. Basically, it's a paper that's being developed right now, and there's a draft in circulation internally, that would lay out basically the pros and cons of the different survey designs in the Gulf and how they match up against each other, basically, and present some information that would help with the discussion of choice, as far as the selection of sort of type, and this right now is in the draft format. It's specific to the Gulf, and so it compares the different Gulf surveys with the FES, and it provides some recommendations as well. Dave Van Voorhees has been involved with drafting the initial draft that is in circulation, and he may want to elaborate on what I have responded.

DR. SEDBERRY: Thank you. Dave, did you want to add something to that?

DR. VAN VOORHEES: Yes, and I would just say, to clarify for everybody there in the room, and for folks on the webinar, this is not a paper that tries to tell anybody which survey is the most accurate in estimating fishing effort or catch of any particular species. It just lays out what the current survey designs are, how they work, to produce estimates, and that all of the survey designs, including the MRIP general surveys, as well as the specialized surveys for red snapper and reef fish species, have vulnerabilities related to the potential for non-sampling errors.

The designs have all been -- For the most part, all of them have been certified by MRIP, and there are a few exceptions, but those that haven't been certified yet will most likely be certified in the near future, but the certification just means that the survey designs are statistically valid and all their assumptions are met, but they all make assumptions about things that can't be directly

measured, and that's where there is some vulnerability for what we call non-sampling error, and it just points that out.

It's not making a call on which survey design is the most accurate, but it's just pointing out that there are vulnerabilities, and, if any of those assumptions are not being met, there is potential for bias in all of the surveys, and that could help explain why we see differences in estimates coming out of two survey designs conducted in the same state for a specific fishery. It's also giving a recommendation about what is the best information to use in assessments right now versus what may be the best use in the near future, and so that's all I will say right now, and I would be willing to take any questions that people may have.

DR. SEDBERRY: Thank you. Do we have any follow-up questions for that or anything else that Erik presented?

DR. REICHERT: Just a clarification. This is a white paper that exclusively addresses the Gulf of Mexico surveys, correct?

DR. CODY: That is correct.

DR. VAN VOORHEES: That is correct.

DR. REICHERT: Thanks.

DR. BARBIERI: But it includes the FES and the MRIP FES calibrated, right, because, Dave, we talked about it a few months back, that this paper was being developed and that eventually -- I think the discussion was that this -- After it went through internal review, what we discussed is that this would be inclusive of all of the other participants in the Gulf that developed the MRIP supplemental surveys, eventually for review and discussion, right?

DR. VAN VOORHEES: Yes, that's our intent. I do want to point, again, to folks that -- I think most of you know, but we've been very much involved in working with the states and the interstate commission and the Science Center and our Southeast Regional Office to develop these survey designs, and so they're not -- They weren't developed totally independently by the states. The states have been doing a lot of the work, obviously, of implementing these surveys, but we have provided support to them, in terms of our staff expertise and by providing support from expert statistical consultants, and the collaboration has been very positive. I don't want people to get the misunderstanding that these surveys are viewed by us as separate state surveys. They are definitely surveys that MRIP has been supporting.

DR. SEDBERRY: Thank you. Thanks for that clarification. Any other questions? I think what we're going to do next is Mike is going to present a presentation of the council's needs from the SSC regarding the MRIP data.

DR. ERRIGO: I am just going to give a brief intro of what we need to do here and what the council had discussed. Basically, in terms of the council's needs, the council needs to move forward with management, and so they are looking for a solution, in the short term, to be able to get assessments done and be able to get the ABCs for the species and be able to track the ACLs using the data coming out of the current FES survey.

They have directed staff to organize a workshop, and the SSC recommended a workshop to look at the FES data, and so they did okay that, and so, at this workshop, it will identify whatever concerns the SSC has with the FES data, and we can look at all of those and evaluate any of the potential biases and uncertainties and in order to come up with recommendations on how to proceed forward with management and ways to incorporate the data into assessments and all that, and so that is where the council is.

There are other ongoing efforts to look at larger issues affecting multiple regions for the FES, like you were just seeing how there are disconnects between the FES estimates of effort versus some of the other surveys in the Gulf, the effort surveys in the Gulf, and they are looking at those, and so there are some longer-term studies and efforts going on to try to figure out what is going on there, but we're trying to figure out, in the short term, right now, how can we move forward while these other efforts are going on, and so that's our goal.

Today, we need to figure out what are these concerns and what are the questions that the SSC has that we can address at the workshop, and so that is today's task, and let me just address Action Item Number 1, especially in light of what Erik just said, and this was a follow-up from the webinar, because consensus was unable to be reached, but, given what Erik said, and given that this workshop is coming up to address all of these issues, it seems that we don't really -- It's something that we can address perhaps at a later time, or maybe not even at all, and so I don't think we need to address that first action bullet today, and so we can just move along from there, if that makes everyone more comfortable, and we don't have to do that.

Other than that, what we really need to do, in general, is what are the questions and issues and uncertainties that the SSC has with the FES estimates that need to be addressed at this workshop, and so we're basically going to take those and come up with terms of reference for this workshop, and then we'll come up with probably a sub-panel to attend the workshop, along with some state folks and MRIP folks and Science Center folks, and so that's our task for today.

DR. SEDBERRY: Thanks, Mike, and so I guess we can just jump right in on what are the questions that we would like to see addressed at this local, for lack of a better word, local workshop dealing with -- As Mike said, that can help us to, in the short term, to move on and perhaps also provide input to a broader, later, national or more regional workshop. I think we can just open the floor here to any suggestions or questions, and I know we have lots of questions about this, and so feel free to express them.

DR. WILLIAMS: I don't want to step on too many toes, but, from my perspective, some things that need to sort of just be addressed, in some fashion, is these MRIP revision assessments, although I recognize what Mike Errigo just said, there probably still needs to be some sort of final statement about what is the status of those and what is the intention for the use of those, and, whatever that is, it's what it is, and so I would say that you need to probably have a directed conversation on that topic.

The other one that is hanging out there that, from my perspective, is of concern is the ongoing assessments right now, and so we have greater amberjack and red porgy that are already into the process, and they have started using the FES data, and so some discussion around that, on how we're going to address that, and then get into, I think, what is really the meat of your conversation,

is going to be what do we do from here on. I just wanted to make sure that those other two topics were kind of addressed intentionally in some way. Thanks.

DR. SEDBERRY: Thanks, Erik.

DR. ERRIGO: We do have action items that address current assessments, yes, and so we can start with those, if you would like.

MR. GRIMES: I think it would be a good idea, if for no other reason than the sake of clarity, since, if we aren't going to move forward and make new ABC recommendations based on these assessments, that you reaffirm your existing ABC recommendations that were based on the prior versions of the assessment and make clear that those are still binding and that those are what we will use in making management decisions until this issue is resolved, or however you want to characterize it.

DR. SEDBERRY: I believe we had already done that, that we had said that the previous assessments stand, both in the webinar and I think at our October meeting, and I can look back and make sure, but I believe we've already done that. Does anybody remember differently?

DR. SCHUELLER: If the only person that actually reads our minutes word-by-word doesn't think we did that, and they're a lawyer, perhaps we should clarify.

DR. SERCHUK: I have a further concern, and that is, because, in the future, beginning in 2018 and onward, the estimates of recreational catches are only going to come from the calibrated MRIP data. In other words, from the telephone surveys now, and we're going to get estimates that are not consistent with the projections from the assessments, because they were based on uncalibrated data, in some cases, and so we're going to have a problem in trying to reconcile projections that were based on previous data, before the calibration was done, and so we're going to have to think about how we utilize the recreational catch data that is provided to us. Do I make myself clear on that?

DR. SEDBERRY: Yes, I think you do, and I think that the SEDAR data workshop process does that, how they judge and handle every incoming data stream that they pass on to the assessment.

DR. SERCHUK: I am not talking about -- I'm talking about a different exercise. I am talking about, if we use the existing information for the projections, and let's say they go out two or three years, or four years, and the data that are coming in, with respect to how well those catches are in conformance with whatever ABCs are set -- The catch data that we're getting from the recreational component will be based on the new MRIP collection system and not on the catches that went into the projections. Do you understand my concern now?

DR. ERRIGO: Yes, I understand what you're saying, which is why they calibrated the old data, to try to get them on the same level.

DR. SERCHUK: I understand that you can calibrate back.

DR. ERRIGO: Is there something that you wanted to see to address that concern?

DR. SERCHUK: Well, I think it's a concern that we ought to be discussing, quite frankly. I mean, you can back-calibrate, if you believe the calibrations are appropriate. I mean, the whole idea right now that we're thinking about is, is there some issues that are coming forward with some of the assessments that are underway that suggest that, wait a second, we have concerns about how these data are, and they seem unrealistic, in some cases, and so that raises the question then of how those data are going to be used in the future for the assessments in which the data, the calibrated data, were not used and the old system was used, and that's all I'm saying. It's a performance evaluation and not an assessment evaluation. It's a performance evaluation. Thank you.

DR. REICHERT: I have got a quick clarifying question for you, Fred. You are concerned about monitoring ACLs, in particular?

DR. SERCHUK: Yes.

DR. REICHERT: Thank you.

DR. BARBIERI: Rich is here, but John Foster should be on the webinar, and you will recall that John Foster and Kelly Denit, last year, went around to the councils, and I think presented to the SSCs as well, and they gave a presentation talking about the transition, and, actually, if I understand what you are saying, Fred, I think that presentation discusses how they were handling this and the issue of calibration being able to go both ways, from Coastal Household Telephone Survey to FES and back, was because reference points from the previous assessments were estimated using the data, and so, until you have new assessments that can re-estimate the reference points, the units that you are talking to are really Coastal Household Telephone Survey-based units for the MRIP data -- This is why they provided a way to convert back, so that monitoring of the fishery could be done until new assessments would come online and re-estimate the reference points, and isn't that correct, Richard?

DR. CODY: Yes, that's correct. The thing would be though that, the further you get away from the last time that you collected CHTS information, the less reliable the calibration would become, and so, obviously, that would be a concern if you keep using the CHTS, plus the fact that we know that the CHTS was not representing the population that we wanted to sample adequately, and so you are converting back to something that was on a trajectory that really didn't reflect reality.

DR. SERCHUK: I am very familiar with what Luiz is saying. I participated in the calibration peer review. The question that seems to be raised, and this was raised at the greater amberjack webinar that I participated in, is, in some cases, people are thinking, wait a second, we're getting results that do not seem to make sense, in terms of the magnitude. The calibration may have been done correctly, but there are some underlying issues that came up in terms of, well, we believe that this can't be true, and I think you see some of that in the letters that we got from the states.

They are saying, wait a second, and we see something of a different pattern in things, or we can't believe the effort is that much, and, if you read those letters from the states, they talk explicitly about that, and so there is a concern there about the use of the data, and what I am suggesting is that the only data that we're going to be getting in the future from the recreational catch is going to be from the calibrated system, and so it's not whether you can back-calculate.

Certainly you can back-calculate. There's no question that you can go forward and you can go backwards, but the question that was raised during the amberjack thing is, well, some of these things don't seem to coincide with what we know about our effort patterns or our catch patterns in our fisheries, and that is the question that I'm raising, in terms of, well, what sort of performance evaluation will we then have in terms of modifying -- If you believe the data have to be modified, or have to somehow be examined to be reliable, to say, okay, we now have an assessment that was done four years ago, with projections out to 2022, and ACLs have been set, and how do you then compare the accomplishment of those ACLs, whether they are right on target, with data that come in from the new calibrated MRIP data, from the telephone survey, because there's not going to be any more mail surveys. That is my only question. It's a question not of assessment, but it's a question of evaluation of performance.

DR. ERRIGO: This is a concern that was brought up by the states to MRIP, and I believe that MRIP is looking into some of these issues, and is that correct?

DR. CODY: I can elaborate a little bit. We have begun discussions with Florida and planning for a workshop specific to the Gulf Reef Fish Survey, and you probably are aware that we did receive a letter from another state in the Gulf also, and so it would be our preference to address those separately, because they are different. There are differences between the surveys, but it may provide some context here for your plans to conduct a workshop, but, right now, at this point, I have talked to Luiz, and we are planning on setting up a workshop to look at the differences between the Gulf Reef Fish Survey, specifically, and the MRIP FES-based estimates.

DR. SERCHUK: I may have misspoken, and Anne just reminded me. The data that are going to be coming in the future are going to be from the mail survey and not the telephone survey. Sorry if I misspoke on that.

DR. SEDBERRY: Fred, the question that you're posing is a question that you think needs to be addressed, that you would like to see addressed, at the workshop?

DR. SERCHUK: I think it's a question that the SSC will have to come to terms with sooner or later, and so, if it can be addressed at a workshop, I think that would be an appropriate way to do it.

DR. SEDBERRY: Thanks.

DR. LI: In terms of what to address in a workshop, from my perspective, the whole process involves four steps. The first is we have a survey to collect the data. Then the second step is to analyze the survey data to extract some information to be generalized, and then the third step is we expand that generalized information, based on survey data, to expand this information to the interested region or stock. Then the end product from these four steps will be the MRIP data, the data, that will be used for stock assessment or management.

To me, the first step, the survey, the FES survey, we all agree that it's a better survey, an improved survey, in terms of the survey design and in terms of the response rate, and I don't remember if it's 38 or 39 percent responding rate, compared to the old telephone survey that is like 9 percent or something, and the design also of the survey itself has been reviewed by a third party and the council itself, and so it's an improved survey.

To me, I believe a better survey is supposed to provide better-quality data, and that's for sure, and so the data is from the survey directly, and the original raw data should be good-quality data. Then the problem is, because the end product we observe does not match what we believe in the trend in old data, and that's why -- I mean, the problem should be the middle two steps, the data-analysis step and the data-expansion step. To me, we talk about the outlier in the trend, and a certain year is different, quite different, only in a certain year, and that may be what we talked about during the webinar and the last meeting, and that will be the data analysis part, something there that we can look at.

Then, for the data-expansion part, I remember, from the letter from North Carolina, the letter addresses the old telephone survey, and they have stratified the survey region, and they have the bank, nearshore part, and they have the manmade structure part, but, in the FES survey, they collapse those two parts as a shore mode, and so, for this kind of expansion, because you're extracting some information from that part, but you are trying to cover the region that is beyond that part, and so, if the distribution of the population within the shore mode is not evenly distributed, and so you are extracting the wrong information and expanding them the whole region, that's what may cause the end product to be much higher, the magnitude much higher.

If the trend from old and new data is singular, but the magnitudes are quite different, that might be from the -- It's a scale issue maybe from the expanding step, and so I'm thinking, for the workshop, that we can focus on these two steps for now and then to figure out where is the problem, and maybe it has to be stock-by-stock, and each stock may have different issues, or state-by-state, and I believe that Florida and Georgia may have a different issue, but they all seem like quite high magnitude with the old one, but maybe it comes from different causations. In North Carolina, we can see the collapse of the two models into one model, and there might be some problem there.

DR. SEDBERRY: Thank you. Any additional questions? There must be questions that we can develop into terms of reference for the workshop.

DR. ERRIGO: We need specifics. We need to know what needs to be prepared and who needs to come and what we need to do.

DR. BARBIERI: Well, it would be difficult for us -- If we want something that is immediate, I mean, I don't know how we could develop terms of reference here that would look into the -- How we would look into this and come up with some resolution. As a way of background, the questions that I have had about this is because, as Richard said, and Dave said as well, the Gulf Reef Fish Survey that has been implemented in Florida has been in development for six years, and this was done together, the whole time, with MRIP staff and the statistical consultants along the way.

Our first workshop that we had in 2003, I guess, Richard it was, or 2013, that we had, John Foster came and gave a great presentation talking about the LPS, the Large Pelagic Survey, and, basically, he explained that, when you have fisheries that are somewhat specialized and potentially not being well captured by a generalized survey, the MRIP framework accepts development of supplemental surveys to come in and be supplementary and targeted towards those fisheries.

Our discussion in the Gulf started with red snapper, because those were very short-season fisheries that we felt would not be suitable, really, to be sampled by a general survey like MRIP, and then,

eventually, this evolved to be more like a reef fishery, at least for Florida and Louisiana, a reef-fish-specific survey that included other species as well. When you look at the proportion of trips, it's what, Richard, about 5 percent, right?

DR. CODY: That's about right.

DR. BARBIERI: About 5 percent of saltwater fishing trips actually that are targeted, really focused, on that reef fish component, and so the discussion was centered around the fact that sampling, in that case, gets somewhat swamped by the 95 percent of trips that are actually covering all the other species that we have for all the in-shore fisheries and all of that stuff, and the revised and upgraded designs for both APAIS and FES try to address this, and I think it's a significant improvement compared to the previous designs, but, still, when you have specialized fisheries, and we developed this specifically, along the way, six years in developing and testing side-by-side, with statistical consultants, to be done that way and to provide more precise and accurate estimates of reef fish, and so, to me, questions come up that, when we see those differences between the general FES estimates in the Gulf for reef fish and what is coming out of GRFS, it generates questions, basically.

It's not a matter of FES being wrong or GRFS being wrong, but it's just a matter of trying to understand why would these things come up differently, and, as scientists, isn't this our role, to be asking questions when there are issues that we do not understand?

Last September, we had a -- Richard actually was part of the organizing committee and was present there, and so we had a workshop in New Orleans, and this was our fifth, I guess, or fourth workshop since the 2013 initial workshop, to continue this discussion and talk about calibrating this, and we had three statistical consultants there, and we had all the MRIP senior staff in the room, and we discussed, in detail, all the different results and designs, and we couldn't, at that point, really come up with a clear understanding of why those results were different, why those estimates were different, and the idea was that, well, let's continue exploring this, and MRIP very graciously engaged the group of consultants in more detail, to get all of that data and start this process of looking in more detail.

A report was supposed to be produced that would explain to us that, okay, here is why, and, now that we have an understanding, we can move forward, and so my only point, and I think this is the nature of this white paper that is being developed, is that, at this point, until I see some additional discussion and analysis that can explain why those differences exist -- The State of Florida is in a particularly uncomfortable situation, because we have reef fishes on the Gulf side and the South Atlantic side, and so, for me, I need to understand why these differences between GRFS and FES are coming up, so that I can actually have more confidence in interpreting the results that are coming out of the South Atlantic region. It's difficult, in terms of immediate solutions, and I can't think of how we would look into this, in the short term, and I think that Yan provided an initial good suggestion there to look at some of the issues, but I don't know how we would accomplish this.

DR. CODY: I agree with what Luiz has just said. I think that there are a couple of things that we can do. We can provide some information that shows the types of things that we would be doing to address non-response bias and things like that with the FES in general, but Luiz is correct that -

- I think to look at the differences between the supplemental surveys, such as the GRFS and others, and the FES would take a bit more time.

We started work with Florida, for instance, and, even though both of these surveys are mail-based surveys, they use different frames, and they account for off-frame adjustments differently, and so those are things that we're looking at right now and trying to develop a plan where we basically switch the types of questions that are used in the FES, or in the APAIS and the GRFS survey to make those adjustments. These are things that we will have answers for eventually, but it will take some time.

DR. SEDBERRY: So you're working on explaining the differences between the MRIP and the other Gulf surveys, and there is a timeline for this, and is there an expected completion date? Then, if you find differences, will the work that you're doing there point to which one might be right or wrong?

DR. CODY: Well, the first thing would be to see if the behavior of the surveys change with the adjustments that are made, and then we could see what happens after that. John is on the phone, and he can probably elaborate a little bit on the kinds of things that we are looking into, but I think, at this stage, it's early on, and there is no timeline, definite timeline, in place to address the differences between the actual state surveys in the Gulf and the FES. Obviously, if we are to do any kind of a side-by-side comparison, we would be looking at several months, at least, for comparison purposes.

DR. ERRIGO: I have just a few things. One is I agree completely with Luiz about the reef fish or snapper grouper being specialized, and, if we had a way to get at that effort specifically, that would be a great improvement. However, we do not in the South Atlantic, and we haven't since the inception of MRIP, and we have lived with that up until now.

If MRIP decides that the reef fish survey in Florida is actually more accurate and a better way of doing it, I'm not sure how that helps us. We do not have a reef fish survey here, and so, if we started one, it would be many years before we even got data from it, and then we would have to do side-by-side and then figure out another calibration, and so that would be exciting, and then we would go through this again.

I find that to be an extremely long-term solution, and so perhaps we can let that take its course, and, instead, here -- Terms of reference, I understand, are kind of difficult to come up with, and so how about we just focus on what are the questions, like we're going through, questions that we have and concerns, and then we'll see what can be looked at in the short term and what will take a lot longer, and so this is, obviously, a long-term approach, and, for some other things, they may be short term, and so hopefully we can sort those out.

DR. SEDBERRY: So questions that we can address in the workshop that might help us and the council to move forward in the short term, while we wait on these long-term solutions.

DR. REICHERT: I think one of the questions -- In thinking about this, one of the questions that I would have is the results of the white paper, the results of the comparison in the Gulf, and how is that going to help us, knowing that we don't have that comparative survey on the South Atlantic? I don't have a solution, but I think that would be -- Because, if we don't address that question, then

that would be a moot point for us in the South Atlantic, and so that was one of the questions that I thought of that would be good. Again, I'm not sure if there is a solution to that, but --

DR. SEDBERRY: We have a question online from David. Go ahead, David.

DR. VAN VOORHEES: I did have my hand up, but I took it down, based on where the discussion was going, and so I don't really have anything to say right now. Thanks.

DR. SEDBERRY: That's okay. Fred, did you have a question?

DR. SERCHUK: I had a question back to Luiz, if I may. Luiz indicated, or at least I understood Luiz to say that there was a disparate pattern between the FES data and the data coming out from the state surveys, and is that correct? Is that a major concern, is the state surveys are showing one pattern and the FES is showing a different pattern, or magnitude? Have I misunderstood you?

DR. BARBIERI: No, but, again, and I think this is an important point, that we call these -- Unfortunately, basically, for -- I am going to stick my neck out there, but, for political reasons, we call these state surveys, but they are really surveys that were developed in complete coordination and support from MRIP and their team of statistical consultants for six years, and they implemented -- I mean, this is an effort that MRIP graciously agreed to participate in with us, and Gulf States Marine Fisheries Commission helped organize workshops, and the idea was how can we develop the supplementary survey and test pilot different designs throughout the Gulf, thinking the eastern Gulf, northern Gulf, and western Gulf may have different fisheries.

Maybe they do not require a one-size-fits-all survey, but there is something that is compatible along that whole area that can provide estimates that are for the entire region, and so these are really MRIP supplemental surveys that were being pilot tested and were submitted for the MRIP review and certification process.

DR. SERCHUK: So my question was were they integrated in the CHTS estimates, or were they just separate estimates?

DR. BARBIERI: They were completely separate estimates.

DR. SERCHUK: Okay. Then my question is how well did they agree with the CHTS estimates, and what data were then used in the assessments? Were they just the CHTS estimates, or were they the state estimates? I am looking to the comparability, not of the FES data, but, because you're doing the surveys, were they vastly different, were they the same, were they one estimate, and that's the question.

I know that the question you're raising is they are giving you different values than the calibrated data, and I understand that, and they seem to be really different, and I'm just wondering how different were they from the telephone survey data, and, if they were different, why was the CHTS data used in the assessments? If they were really different, why wasn't the question raised earlier of, wait a second, we're seeing something different in our own survey estimates than we see in the CHTS estimates?

DR. CODY: I think what you're referring to really is part of the process of certification. Each of the state surveys are supplemental surveys, MRIP supplemental surveys, and they have been certified, and what that means is that, on paper, they have a valid statistical design. It doesn't pertain to implementation, but part of the certification requirements are that they have to have a transition plan that allows us to transition between the CHTS, or FES, and the supplemental surveys, so that those estimates can be integrated.

That is part of what is needed, and we're at the point right now where we had our last workshop on integration and calibration of those state-based survey estimates, and where we are right now is at the point where we're developing calibrations for the different Gulf surveys, and those are expected to -- There are two paths that were looked at. One was a more short-term, relatively-simple fix, which would be a ratio-based calibration, and then the other was looking at model-based approaches over the long term, and it may not be necessary to go the sophisticated route, and we feel pretty comfortable that we can have the calibrations ready by the end of the year for those surveys.

Integration is another thing we looked at, and that's pretty complex, I think, because you have a number of different surveys, and you're trying to combine estimates from different surveys that have different coverage characteristics as well, and so what we looked at was composite estimation, and the preliminary results we were hoping for was an automated way to integrate the different survey estimates to come up with a Gulf-wide estimate, and that didn't seem to be possible at this point. We are still pursuing that as a potential option.

DR. BARBIERI: If I may, Mr. Chairman, to that point, that's absolutely right, Richard. It's because we're still in the process of looking at this, and we have engaged the MRIP staff, and we have engaged their consultants, and so we are looking into this, and we don't have a full understanding yet, Fred, of why there are these differences. Maybe there is something that just needs to be adjusted, and I don't know, with whatever survey, but we're just trying to still understand that process.

One of the things that, as Richard mentioned, one of the things that we have been discussing is that perhaps using an integrated estimate that combines some proportion of MRIP plus the supplemental surveys might provide the best estimate, and how to weight this -- This is a recommendation from the statistical consultants at the last workshop, and there is different ways to accomplish this, and they discussed some of these methodologies, but all of this is still being evaluated and discussed, and we are waiting on that white paper to basically see whether, at this next workshop that we are planning with them, whether we need to go with additional data collection, a little bit of side-by-side, for whatever time, so we can actually find a way to see what adjustments need to be made to whatever survey. Basically, it's a work in progress.

DR. CODY: I probably didn't answer Fred's question, which I think what you were getting at was what's being used in the assessments, and, right now, the supplemental surveys are not being used in the assessment. The last assessments included CHTS, and so that's -- The idea would be to look at FES and the supplementals.

DR. SERCHUK: A question to you, Richard. Then, in terms of the calibration backwards, before these surveys were done, would there be an adjustment made back to the time series if there was a calibration to it?

DR. CODY: Well, there would have to be calibrations for the supplemental surveys, and so I think there would be adjustments made if you went with the supplemental survey as the standard.

DR. SERCHUK: Well, that's a supplement, right, and so you would have to have a different adjustment factor than has currently been used with the FES data going forward for the entire time series, and am I understanding that correctly? The only comparisons we have now for the calibrations are the three years in which both the telephone survey and the mail survey were done, 2015 to 2017, as I understand it.

Those were used to derive calibration factors that were then used in terms of bringing the historical series up to what it would be had a mail survey been used the entire period, and I'm just trying to understand now, using the information that's from the supplemental surveys, if a different -- If they show a different pattern for the years in which you have the supplemental surveys and the periods which you have -- The federal surveys, whatever the kind, and will you think about, okay, wait a second, we have a better estimate, because we're using the supplemental data, and either it's more attentive in certain areas or so on and so forth, and is it then the expectation to have a different calibration going back for the entire time series? I am just wondering how the data are going to be used, whether they're going to be used retrospectively or they're going to be used prospectively in the future.

DR. CODY: The FES is ongoing, and so that's available for side-by-side going forward, and I think the issue would be what would be the simplest, or the most effective, way to proceed. Obviously, if you have one standard, that makes it a little bit easier, but, if you have five different or four different standards to deal with, then you potentially could have four or five different estimates for the Gulf, if you go by each of the standards.

I think that it's a question that we're looking into, in terms of producing calibrations. What we looked at in the workshop really was a way to convert the supplemental survey information into the FES standard, so that would be available, but, for management purposes, the state surveys would be used, because they are more effective, in the field, at getting higher resolution data, when it comes to landings information.

DR. REICHERT: I understand all of this, but I am still struggling with how we in the South Atlantic, or as the South Atlantic SSC, are going to use that information in terms of formulating our recommendations, because we don't have that comparison, and so I'm --

DR. SCHUELLER: I feel the same way, Marcel. I feel like we're talking about a Gulf SSC problem, and we're the South Atlantic SSC, and it's nice that the Gulf has other alternative data streams to have these discussions and make these comparisons and have a way forward, but we're not on the Gulf. We're on the South Atlantic, and I don't understand where we're going, and I'm supposed to be taking notes for this, and so I don't --

DR. SEDBERRY: To that point, Marcel?

DR. REICHERT: Yes, and it's not to minimize the issue in the Gulf, but I am struggling with how we in this region, not having that additional data stream, how we then move forward, because, as Mike said, even if we would have those additional data streams, they won't be available for quite

a while, and, in the meantime, we are asked to provide recommendations, and so that's my main struggle with this.

DR. SEDBERRY: It is a struggle, and we have what we have, and there is no indication that what is going on in the Gulf -- What's better and what is worse, and these things haven't even been calibrated against each other.

DR. LI: From my perspective, in terms of South Atlantic stuff, I feel the comparison between the Gulf state surveys versus FES would be very helpful for us, because, in terms of South Atlantic stuff, we all agree that the survey is not a problem, as Luiz and Richard have pointed out. The state survey and FES, they are certified and statistically sound and well designed, and so it's a good survey, and so, as long as they are calculating the same population, they are supposed to get the same data, a similar dataset, in terms of accuracy, and I'm not talking about precision.

Precision may depend on how you implement the data and the details and how you formulate questions. To me, even if you use different questions on the survey, you are trying to extract the same information, for sure, the information that we are interested in, and so, I mean, the data from both surveys should give us the same accurate data, with different precision, maybe, but, from those comparisons, we can see what are the factors that might be causing those differences in observations. Those factors might be also be able to applied to the South Atlantic states.

As I mentioned, the causation factors, they might be state or stock specific, but there might be some common factors there, and then, if Luiz figures out that one outlier caused these different trends, then we can look into our data, FES data, to see if there is outliers in our analysis, and so I wanted to draw attention to those two steps. I mean, the survey itself is about the design, and then the data analysis and data expansion, and especially data expansion. It might be like stock dependent, and it might be state dependent, but data analysis should be kind of consistent. It should be a consistent protocol for how to analyze -- For example, how to handle outliers -- It should be a general guidance of how to handle outliers.

DR. SEDBERRY: So those middle steps you were talking about earlier might be where the issues are.

DR. CODY: Just to kind of elaborate on what you were talking about, I think, in the near term, we can address the concerns there seem to be about the disparity between the CHTS and the FES estimates, and some of the comparison in the Gulf is based on the fact that the Gulf surveys tend to favor the old CHTS lower estimates, and that could be totally unrelated to the surveys or the CHTS survey, but I think what we can do is we can -- If you were to develop a workshop, we could at least provide you with information that shows the kinds of things that we're doing to address bias with the FES, and so there's different things that we're doing to look at avidity and to look at the demographics of the response and then also just the other general quality assurance steps that we take with the data, and I think that would at least probably dispel some of the fears about the disparity between the CHTS and the FES.

DR. NESSLAGE: It's clear that one of the TORs has to be about the disparity and trying to explain where that's coming from, so that we can either correct for it or accept it. The other things that -- One of the things that Yan mentioned that I would like to reiterate is how do we treat the data for species, in assessments for species, that have low recreational catches, in general, and we spent a

lot of time on the webinar talking about species like tilefish, that don't have a large recreational component, and that has never -- That's going to be an ongoing issue, regardless of where the calibration issue -- How it pans out.

In that case, I think it would be helpful to have some stock assessment folks involved in the process, because that is really a how do you treat that in the model question. It's less so a survey design and implementation question, and just something that's been stewing in the back of my brain since our webinar was a comment that Erik made that I've been dwelling on and thinking about.

For these species that have a low recreational component to their fisheries, the survey, if it's properly designed and implemented, should -- You would expect outliers. They shouldn't be biased though, and so you would expect some high points, every once in a while, and some underestimates as well, and, in that case, I would love to see a discussion amongst stock assessment folks at this workshop, or however it ends up panning out, about whether we should actually be trying to input annual estimates of recreational landings for these species that have low recreational catches, just because maybe the average is more appropriate, in that case, and that's something that -- We tend to like to put in all these annual trends, but maybe, in those cases, it's not appropriate and the best thing to do with the data, given how small the recreational fishery is, and so that's something that I would really like to see incorporated into one of the TORs, if that's possible.

DR. SEDBERRY: Yan, to that point?

DR. LI: Just to that, I agree with Genny, and sometimes how to handle this data could be like species and fishery-dependent. If the recreational is not a big component, then maybe we don't need that component and we can just focus on the commercial fishery. Like blue crab in North Carolina, we don't include the -- We do not include the recreational catch in the stock assessment, because it's only like 0.4 percent of the total catch, and so, if that's the case, then how to handle -- The whole discussion of MRIP data is less of a concern for those species.

DR. SEDBERRY: Thank you. We have a question or a comment from John Foster online.

DR. FOSTER: I apologize that the conversation has moved a bit, but I just wanted to sort of reiterate the point that Richard made. If it would be helpful for this conversation, for your meeting today, and just without going into a lot of detail, because that's sort of I would think the focus of the workshop, but the kinds of information that we would be able to present for the South Atlantic would be sort of, to the extent we have the data, the sort of detailed explanations and demonstrations for sources of the differences between the FES and the old CHTS estimates as well as sort of providing details on the degradation of the CHTS over time, particularly in terms of its sample frame and how that impacted trends in the CHTS effort.

We would focus, of course, specifically in the South Atlantic, and we could show other regions as well, so that -- To help illustrate the issues that were in the CHTS and, again, how they carry forward from the survey estimates of effort into catch. Then, again, with information that we have from the FES, the new mail survey, including detailed demographics, we can demonstrate sort of how the frame of the Coastal Household Telephone Survey, the landline telephone frame, how that impacted the effort series that we saw in the old estimates and then correcting for those frame

deficiencies and essentially not covering everyone and why that has resulted in higher estimates for the FES, and, again, be able to do that with a fair amount of specificity in the workshop.

Again, we can also, of course, speak to other issues, as were raised, like the outliers and things like that, but, if that's helpful, that's sort of the information, again, that we could have available for a workshop, sort of in the short term, and, as has already been mentioned, as we are waiting on information to come in perhaps for Gulf, the questions related to the different Gulf programs. Thank you.

DR. SEDBERRY: Thanks, John. That is helpful, and it would be helpful for the workshop as well.

DR. ERRIGO: Regarding outliers, if the SSC wants to see any information regarding outliers, it would be helpful to know what the SSC considers an outlier.

DR. BELCHER: Kind of one point that I'm struggling with is there is a couple of -- There is two things that are going on relative to landings. We've got the fishery effort, and we've got the APAIS, and, right now, we're focusing on the effort component of this, but the catch has its issues as well, and so, when we talk about outliers, are we talking about outliers in effort or outliers in landings, because I think there is two different things.

When we were talking during the webinar, we were focusing on landings, and so we're kind of decoupling, but focusing on only one component of what is leading to that outlier. We might have effort that looks perfectly fine, but have some extreme trip that shows up that the landings are up, and it has nothing to do with the effort, and so I kind of feel like there is two components of this that we should be focusing on and not just leading towards the FES part of this.

DR. SEDBERRY: Very good point.

MS. LANGE: I think the reason we were focusing on the effort part is, going back in time, that is what has changed. They are using the same catch data, and the question is that that, going back in time, those estimates have changed, based on the effort that has been applied, and is that not right?

DR. CODY: No, there is also a calibration for the APAIS portion as well, and so, for instance, now we do twenty-four-hour type sampling in blocks, and so what we tried to do is do a, through a ranking process, mimic the distribution that we get with the days type of data collection and send it back in time, and so there's actually a calibration for the APAIS as well as the FES.

DR. REICHERT: Remind me, but wasn't there another effort going on to address the confidence intervals in rare species and how to deal with that, in terms of recreational landings, kind of separate from the new survey?

DR. CODY: Yes, and there's a working group right now, and Erik is on it, and a few other people, but it's looking at rare-event species, and we have some consultants onboard at the moment, and they're going to look at -- Basically, it depends on how you define a rare-event species, but they're going to look at the types of things that you were talking about here, spikes in the landings over time, and ways to address that, either through the survey design itself or through other methods, such as smoothing or re-sampling of data.

DR. REICHERT: Because I think that's probably very relevant to the conversation that we are having, too. I realize those are two separate issues, but I think we discussed, even today, both issues, and so I think that information would be really helpful to where that workgroup is going.

DR. NESSLAGE: This is more of a procedural thing, but it seems like there's a lot of cool work going on right now that will help us make some of these decisions, but I am worried, if we have this workshop, and my air quotes are now on the record, that either we're going to rehash or reinvent the wheel or not do it as well, and I would love some guidance from, and I see some heads nodding, but the folks who are in charge of all these processes of how -- Do we wait, as an SSC, to maybe have all of this presented to us before we start going off in different directions?

DR. BARBIERI: This is very much the way I feel, Genny, about this. I mean, this is the issue. It's not that we are saying that we do not accept FES or the FES data has a problem, but it's that there are these efforts going on, ongoing evaluations, and I think that they would help us look into this issue and have a much better understanding before we provide scientific -- Look at our role as providing scientific advice to the council.

There would be consequences, in terms of catch level recommendations that come out of this, and there would be consequences, in terms of potential reallocation issues that could come out of this, and I would feel much more comfortable going before the council, whenever we have to explain why we made this recommendation and to have a better basis of understanding of why some of these things are turning out the way that they are turning out, and it's just a matter of perhaps waiting a little longer to see what's going to happen and see more results.

The agency has been actively working on addressing some of these things, and maybe, just to finish, maybe -- John makes some good suggestions on presentations to come before the SSC that would go into more detail about -- Maybe we start there and then identify some other points for direction.

DR. SEDBERRY: Good suggestions.

DR. ERRIGO: That is kind of against what the council has asked the SSC to do. However, if the SSC is going to make that recommendation, then you're going -- You really do have to tell the council what they should do about current assessments and how they should track ACLs, being that there is only FES now, and how long should we wait, because, the longer you wait, the more they have to back-calibrate, and, the longer you back-calibrate, the more uncertain those back-calibrations become. You do need to address all of that.

DR. SEDBERRY: Yes, and that gets to some of Erik's initial remarks too and things that he would like addressed as well, and so I'm going to suggest that we take a break right now and think about these things, and those that need to check out can check out, and those that need to do other things can do other things, and let's come back at 10:00.

(Whereupon, a recess was taken.)

DR. SEDBERRY: Welcome back. John Carmichael has a few things to say before we continue on.

MR. CARMICHAEL: The first thing is that we started out talking about the -- Shep made the point about the existing ABCs, and you talked about it a little bit, and the comment was put there in the notes, but there is a concern that that wasn't actually stated in the room, and so, therefore, it's not on the record, and it's not in the minutes. Then, when people go back and read the minutes, to see how your consensus statements were supported, and they don't see this stated verbally, then there's a question as to whether or not it was truly your consensus. I think, George, it would be helpful just to read this and make sure that that's in the record, so that it's clear that's you all's opinion, and then we'll talk about the workshop.

DR. SEDBERRY: I think I can read it from here. The SSC does not deem these assessments useful for making catch level recommendations. Therefore, the ABC recommendations based on the previous assessments still stand, and so that is what will be on the record, unless we adjust it right now.

DR. LI: Should we put for now, that the SSC does not deem these assessments useful for making catch level recommendations for now, at this moment, or something?

DR. NESSLAGE: Just going back to our webinar report, we said the SSC did not recommend the use of these revision assessments for making fishing level recommendations at this point, and so we had that caveat, and that's kind of nebulous, but it was in the previous statement, and "at this time" would be fine.

DR. SEDBERRY: So we have already said this, and, when we said it before, we said it at this point. Do we feel like we need to say "at this point" again? Okay. That would be consistent with what we have said before.

MR. CARMICHAEL: I think then that confirms that you do support the ABC recommendations that you have given previously for those four revision assessment stocks. Then the other is with regard to the workshop, and so I think, Mike, it would be helpful to scroll up to the council's guidance on the workshop.

When the council was talking about this, they were informed by representatives of the agency that there were a number of things underway to continue to evaluate the FES data and how it has changed from the prior MRIP data and that there were studies underway, but these things could take years to play out, as we've seen, and I think we've already talked about how the existing process we're in is six or more years that just led to doing the two studies and implementing them side-by-side and evaluating them, not to mention the probably decade that went into figuring out what the heck was wrong and what they were going to do to fix it, and so we're talking very long processes here.

The council's concern was what do we do now, because the assessments of red porgy and greater amberjack are on hold until we figure out what to do with these things, because the SSC wanted a chance to evaluate the data, and then what do we do with the unassessed species? The council really wants to have some recommendations for just as they say there, how to proceed in the short term for using the data in stock assessments and developing the ABC recommendations and evaluating the ACLs, knowing that there is a much longer-term process that's going to play out on different regional scales.

I suppose, if the SSC says there is just no way, then don't beat around the bush and say that, and we'll hear from the agency on whether or not that's even practical, but bear in mind that the agency is going to decide how to evaluate landings against catch limits, and they are obligated, under law, to do that, and so just sort of saying don't use it, I don't think is a very realistic solution, and it's probably not going to help further any of your concerns, because it will just be saying, well, you're not being practical and useful, and so I think that sort of needs to be in the back of our minds, perhaps.

I think, if there's any questions about what the council really needs that isn't clear to you guys in the guidance that they gave, then the SSC liaison, Steve Poland, would be glad to come up and talk to you, and the Council Chair is here as well.

DR. SEDBERRY: Thank you, John. That helps me. It clarifies it, in my mind, and I think it will help maybe move this discussion along.

DR. BARBIERI: John, I agree completely. I just feel somewhat unprepared, at this point, to make a decision, right here and right now, about this. I mean, I think that would all greatly benefit from having this discussion with the MRIP staff, Dave and John and Richard and others, that can come and kind of walk us through some of these issues, or at least give us a better understanding and help us make a decision going forward, and I'm not saying by the end of the year, but maybe we can schedule something sooner than later. I just feel that -- That, to me, would be necessary, because, at this point, I just feel that folks going before the council to make a recommendation and explaining all of this --

MR. CARMICHAEL: We're not asking you here at this meeting to make a recommendation for solving these problems. We're asking you to state some of the problems and give some guidance on a workshop that you would devote to developing those recommendations. We recognize that it's well beyond the scope of this meeting to do that, and we had no idea what information would even be necessary for you to do that, but, if you have a sense of what you think would be useful for you to evaluate, who would be useful in the room, and what some of your concerns are, then that would all guide this workshop that will happen at some future time.

DR. SCHUELLER: I am dying to speak at this. As the note taker for this, I have sort of put together like three lines of where I think we are, and then, at the risk of putting my head on the chopping block, I will make a recommendation. It seems that we agree that the FES survey design is BSIA, best scientific information available, but we have some interest in exploring the expansion and analysis part of the process, in particular with respect to rare-event species outliers, the disparity between FES and the Coastal Household Telephone Survey, a low recreational catch species, and tracking of the ACL. If I missed anything that anybody had on the list, let me know, but that's what I have.

The question that is on the table is what to do in the meantime. As a pragmatic assessment scientist in this position all the time, if this was a maturity we were talking about, we would charge forward with an assessment, and, when that maturity information came in, it would be incorporated the next time around, and I don't see how this is different.

We have a landings time series, and it's what we have, and it's the best, and all of these things are things we're still discussing, and it's the nature of science. We don't push the hold button and stand there while we wait for studies to be done in other aspects of assessments or life, and so I don't see why we would do that now. That's my strawman on the table.

DR. SEDBERRY: Thank you, Amy. Just to clarify in my mind, does that include that we should proceed with a workshop, sometime between now and our next SSC meeting, to talk about those things?

DR. SCHUELLER: Yes, and so I think the workshop is to address the expansion and analysis concerns and that list of things that I put on the table, which I think captured everything we had in the discussion. For example, the rare-event species, there is a workgroup, and those people should be included. Some of the other things that got talked about, then the work that's being done with the states should be included, and all of those folks should be included in one workshop, or training or whatever it is that that's going to be, based on the terms of reference.

DR. SEDBERRY: Thank you. I had, next on my list, Genny, but I'm not sure whether you had a question or you were just jumping up and down. All right. Steve, did you have something that you wanted to say?

MR. POLAND: Since you called on my after I turned my back and walked away, but thank you, Mr. Chair. I'm Steve Poland, council liaison to the SSC. I just came up here to reiterate what John said, in response to Luiz, that it was really the council's intent to help the SSC facilitate discussion on this issue and come to some type of resolution or agreement or whatever on being comfortable with providing ABC recommendations was to have this workshop, and I think Amy did a really good job of laying out all the concerns that have already been discussed today, and it sounds like that there's already a pretty good, clear path forward for this workshop and really ironing out some of these issues.

The council, we have concerns, and we want some resolution to this quickly, but we also acknowledge that this is a very complex issue, and we want to make sure that the SSC has a full breadth of discussion on this issue and is confident and comfortable in the recommendations that they give us, and so we do have some flexibility, as far as timing, of when to have this workshop, if there is other reports or other data sources out there that need to be put in a cleaner package and to be available for the workshop.

I did discuss this with Madam Chair, and we would like to see this workshop wrapped up by the end of the year, with some -- Not ABC recommendations on all of our species, but at least a clear path forward in providing those catch level recommendations that the council needs to manage our resource. Thank you.

DR. SEDBERRY: Thank you, Steve. Luiz, do you remember what your question was?

DR. BARBIERI: It wasn't a question, but it was basically -- John, you were right. In terms of recommendations, I feel a little unprepared to set specific topics. I think Amy's summary captures some of those well. I just feel that having this workshop and involving the full breadth of MRIP staff, who have been very helpful in helping us understand some of these issues, would be the best way to go.

DR. SEDBERRY: John, to that?

MR. CARMICHAEL: Yes, and, to that, that's one of the -- I totally appreciate that, and you're right. We know that it's a big lift, sometimes, to actually come up with terms of reference, especially the way we traditionally think of that phrase. One of the thoughts that I had going into this, and while we have focused on, well, what are your questions and what are your concerns and what information would you like to have, is, if we could get that, then I felt like we were potentially framing the question for a potential SSC workgroup or a workshop organizing committee, which could get together and then try to take your general thoughts and then hammer out all of the specific details of the terms of reference and who will come and what kind of briefing materials we'll get and when we'll do it and all that kind of stuff.

I kind of had, in the back of my mind, if this proved to be too heavy of a lift, then we can create a working group, steering committee, I guess we can call it, for this workshop and talk about when we're going to have it. That affects the timing, but I think that's okay, and they could then start working on those details with staff and keep the SSC informed, over emails and whatnot, and then maybe we can get this thing planned out in the next few months. That is always an option for you guys, when something just becomes more than we can handle at this stage.

MS. LANGE: I was just going to suggest that Amy send her strawperson to Mike, so we can put it up, and then maybe we can attach additional things to it or wordsmith it, as I think an excellent starting point.

DR. SCHUELLER: I am sending it right now. It's not totally fully formed in a sentence way that I would put it normally, but --

DR. NESSLAGE: While we're waiting, I might share a thought on the strawman. I agree with Amy that we often have to hold our noses and go forward and make progress. What needs to be very clearly communicated to the council and stakeholders though is that, if we go forward with these assessments in the interim, with the current data streams as they stand, and then maybe by the end of the year we have a different approach for handling these data, the answer is going to change by the end of the year, or whenever the deadline is for this workshop.

Are we going to re-run the assessments? Is there a plan for that? I just feel like that's -- I agree that waiting a year and putting everything on hold is not acceptable, but I am sure that having recently-published assessments that are already deemed problematic, if we find that there are problems with the data, is going to be just as problematic, and we're going to be back to re-running those assessments at the turn of the year, and that would be a consequence we need to -- Or we need to accept and make sure it's well communicated to everyone in the process that that's what we would be doing.

DR. SEDBERRY: Agreed. We have the notes from Amy up there about the things that we would address.

DR. NESSLAGE: I know that the SEDAR schedule has several of these species in it, and I know that several of these species are recreationally-heavy species, and that's why they're problematic, but we have some that are commercially-heavy species, like golden tilefish, that's up for a standard

-- That has been pushed. Why don't we push golden ahead of these other species that are recreational species? We know it's not as big of a problem, and we can get those done in the meantime, and then we don't have to redo those, and that's just a suggestion, and it may be a terrible one, because I'm not as informed on the schedule, but --

DR. SEDBERRY: I think that's a recommendation that the SSC could make to the SEDAR Committee or whoever does the scheduling. We discussed the SEDAR schedule earlier, and MRIP did come up, and now we're on MRIP, and SEDAR is coming up, and so maybe we need to make that connection, that some of the assessments surely can proceed, because there's not much recreational data to deal with, and, again, recreational data is just one small component of all the data that come in, and some assessments can go ahead.

DR. ERRIGO: Just to that, it's not quite that easy, especially when you have processed ages and this and that, and, if you're going to switch species, then you need to process all of those, and so you can't just swap schedules, unfortunately. If that does happen, then the whole schedule needs to be redone and shifted, and it has to be redone in conjunction with the South Atlantic, the Gulf, the Caribbean, and the Science Center, and it's fun times, but you can make the recommendation.

DR. SEDBERRY: Just so that we always have this in the back of our minds, that there is things that we can do without being too concerned about the MRIP data.

DR. SERCHUK: It seems to me then that one of the critical issues is when do we think that such a workshop could be conducted, and, if it could be conducted in three months, then it's certainly well worth waiting for such a workshop. If it's six months off, or eight months off, then I think we have to go to Plan B. I think we need to think about when we could convene such a workshop and address the issues that we've talked about, so that any subsequent work done on assessments will have the benefit of that, and so I think the timing is a critical issue with respect to how we proceed.

DR. SEDBERRY: Mike, did you have anything in mind, or did the council have any open dates in mind that might work for it, are we completely flexible there?

DR. ERRIGO: We have not started planning for it yet, and so we need to know who needs to come, so we can coordinate the schedules and all that, and we need time to prepare briefing materials, and it would probably have to be noticed in the Federal Register, and so there's a lot of things to think about, and so we have not started planning for that yet. I don't know if John had anything else to add.

MR. POLAND: The council just had a general timeframe of sometime this year. We really wanted to see the discussion this week at the SSC and really iron out these terms of reference and participants and potential data sources and that kind of stuff, but, no, we don't have a hard-and-fast date at this time.

MR. CARMICHAEL: I think, George, earlier, you mentioned trying to have it before the October SSC meeting, and I think that's kind of our working thought, knowing that we would have to respect the schedules of the other participants that are really considered critical, but, if we could have it before the fall meeting, I think that would be very good timing, and that would get information to the council before the end of the year, and so I see that as kind of a working target,

and I'm glad that Fred brought that up, because that was my concern, too. If it goes longer than that, then, yes, we need probably a Plan B.

I think that timing fits in, and we did discuss the tilefish situation a little bit at the council meeting in March, and they weren't interested in bumping that ahead of all the other stuff, because I do think they were kind of under the expectation, as Steve said, of, if this workshop gets done during this year, and by the fall, then tilefish can probably continue on as it is and have the benefit of this, knowing it's not as recreationally oriented as say greater amberjack, but, with these new estimates, maybe there is more recreational tilefish than thought before, and that could have an impact. If the workshop took until sometime next year, then the council may reconsider their thoughts on tilefish, because that is a big priority.

DR. REICHERT: That's the golden tilefish, right?

DR. SEDBERRY: Right.

MR. CARMICHAEL: Tilefish, according to AFS names of fishes.

DR. SCHARF: Is there any general feeling of consensus within the SSC for John's recommendation of forming a smaller steering committee to iron out some of the specifics, using the strawman notes that we have, or are we going to try to get specific terms of reference or something similar to that here, because it sort of affects how we proceed over the next couple of hours, right? I am not volunteering to serve on it.

DR. SEDBERRY: I'm looking at what else we need to cover, and I think we can probably get a lot of this done while we're all here. The terms of reference may be a list of the critical participants, and that will help us start to think about who really needs to be here and what their schedules are, and then, if we have -- If it starts to get late, and we realize we're not getting there, maybe we could defer the rest of it to a sub-committee or a working group.

DR. ERRIGO: If we could, some definitive answers to some of the questions here about current assessments. Should we go forward with them as they are on their current schedules and have this workshop and then, based on where they are and the results from the workshop, we can modify as needed, or just go ahead with them with the data, as Amy suggested, and then, next time around, if there's any changes, we update, and so something -- A consensus from the SSC of how to handle the current assessments I think should definitely be done now, with the whole SSC.

DR. SCHUELLER: In the strawman I sent you, it says "strawman", and then I wrote down what I -- Move forward with assessments and adapt as new information arises. That's what I basically put on the table.

DR. SEDBERRY: Okay, and so we do still have a list of action items that need to be addressed, and so we need to make sure that we get to all of those as well.

DR. REICHERT: I've got one clarification question, and that is that we are talking about a full SSC workshop? Okay. That may be important for the timing, and so it's not a working group. This is not going to be framed in our SSC working group framework, but this is a full SSC workshop, and I just want to make sure that that's on the table.

DR. SEDBERRY: Yes, and thanks for that clarification. That's important.

DR. REICHERT: I would make that "ongoing assessments".

DR. ERRIGO: Yes.

DR. SEDBERRY: Here is a proposed consensus statement. The SSC recommends moving forward with ongoing assessments and adapt as new information arises.

DR. NESSLAGE: Does this include the revision assessments or just the new assessments that are ongoing, just to be clear?

DR. SEDBERRY: In my mind, it's the SEDAR process that's going on now, assessments that are going through SEDAR right now.

DR. REICHERT: Because, in the earlier comments by Erik, I think that kind of addresses those, the revision assessments.

DR. SERCHUK: Having participated in the greater amberjack, and I wonder whether, Mike, you could put up that greater amberjack figure that I am talking about. You can see there is a point, early on in the time series with the new data, that we were faced with at our workshop, at our webinar, and so the question was raised of, well, how come that point, and I believe it's 1990 -- It looks like it's so far out of whack with the points around it, and we had a discussion of whether it was real or whether it was an artifact, and we didn't actually know what the sampling frame was in that year, and maybe it's a low sample size. Therefore, it could be a good estimate, but not representative, because the sample size could be lower.

We really basically said, well, wait a second, we really need to have a better understanding of how the individual estimates were based on it, and that's the reason that we decided that, wait a second, we better take this and think about it a little bit more.

Now, it could be real, and it could be an artifact of low sample size, but it's very much different from the adjoining points, and it was the point that Amy raised about, well, is this an outlier, and my point is, if we're going to do a more thorough investigation of the MRIP data, maybe our problem could be solved before we actually go ahead with the assessment, and I don't know whether that point makes much of a difference, in terms of the assessment results, or not. That wasn't the issue. The issue was we don't understand why that point is so much different.

That's the reason that I asked when the workshop was going to be held. If the workshop is going to be held in four or five months, then perhaps some of the issues related to the underlying data and its representativeness and its accuracy would be resolved, and we wouldn't have to deal with it, in the sense of saying let's just plunge ahead and then see what happens and then we can come back and make the adjustments.

My feeling is a small delay, and I'm only using this as an example, but it might appear in other assessments, might be useful across-the-board, before we get into the assessments, and that's why I asked about the timing. I don't know whether the council could wait to delay these by six months,

so that all of the assessments would benefit, rather than going forward two or three assessments right now and then realizing afterwards that, wait a second, had we had that information, our approach to the assessment might be different. That is the only reason that I raised the timing, because I think, if it's a small amount of time, relative to the council's needs, then it would be better to have the workshop and then proceed with the assessments, rather than to move forward.

MR. GRIMES: I was just going to ask if it's consistent to say we don't think the existing revision assessments are best available for making ABC recommendations, yet we're going to move forward with these other assessments, doing exactly what we did with the ones that we just poo-pooed, and that, to me, seems internally inconsistent, and so if you could explain why the --

DR. SEDBERRY: We're not going to be doing exactly the same. We're saying that the SEDAR process can go forward. Those revision assessments did not go through the SEDAR process, and they were very constricted about how they were done, and so they were done completely different than the normal assessment process, and what we're saying is that the normal assessment process can proceed and not to do what was done with the revision assessments, but to do what is normally done, using all the data available. I think that's what we're saying.

MR. GRIMES: If I may, please, in responding, it seems to me that -- The revision assessments made modifications to incorporate the FES, but the underlying assessments did go through the SEDAR process, right, and what got you to that point, and then you make these adjustments. My understanding of part of the problem with greater amberjack is it's all about not having a data workshop to review the data and look at these issues in-depth. If I understand Fred Serchuk correctly, it seems to make a lot of sense, to me, that you would wait to move forward on those until you had this workshop or training session or whatever you're going to do relative to FES, and I could be completely wrong about that, but it seems inconsistent.

DR. SEDBERRY: No, they're different. The SEDAR process on the revision assessments, they went through the regular SEDAR process, and then the revised MRIP data were added, without going back to the data workshop. Those data never went through the data workshop or through that SEDAR process.

Even though those revision assessments had a SEDAR, and they did have revised MRIP data, those two things didn't happen at the same time, and the data workshop never got the chance to look at the MRIP data to decide whether it should be included. It was just included as part of the way that it was mandated that those revision assessments be done.

MR. CARMICHAEL: Part of it is just -- I think the statement that the agency made through Erik about the revision assessments kind of plays to that as well. Just a thought on dealing with this point and the data workshop. So, when we say data workshop, within SEDAR, we only have what is called and what people tend to think of, and what happened in this very room last week for cobia, for an entire week, as a data workshop only happens for the benchmark stock assessments.

For the standard assessments, we tend to do those, in the South Atlantic, through a series of webinars, and, on those webinars, you talk about the data, and you talk about the assessment, and things can come up, such as this point, which maybe you can't resolve on that particular webinar, and then guidance is given to the analyst to say, hey, dig into that more at the next time and let's talk about this in some greater detail.

Prior to all of these events with this revised data, that is most likely what would have happened with this point. There would have been a request to figure it out. Mike has figured out points like this and dug into them, to find the basis for the estimation and when and where and the time of the year that this high catch occurred and explained it and get better understanding. Was it a big catch in a high-effort area where the species is unusual, or was it an unusual species showing up at the end of a pier kind of thing?

Normally, that's what would have happened, but we had all these other concerns, and, as Fred has raised a couple of times, there is the concern about this being this revised data, and there are a couple of assessments underway, and not having different decisions for different assessments because of different groups of people.

I sort of thought that one of the things that we could do in this workshop that we've been talking about is devote a bit of it to understanding and doing kind of a maybe a one-day or half-day SSC data workshop on amberjack and red porgy, as two of the underway assessments, and maybe tilefish, that is coming up soon, so that then we could look at the estimates and look for outliers like that and do the due diligence to try and better understand for you guys what was the cause of that, and then that would allow you as the SSC collectively to figure out how to deal with those, and then you would be giving guidance to your folks like Fred and Anne, in the case of amberjack, who would then carry that message back to get that assessment going.

That's what I thought of when we said having kind of a data workshop for those species, and I think that could be part of this workshop that we're planning, and it doesn't have to be separate, but I think that would be useful, and the other thing we're looking at is now, knowing more about this, the assessments that will come will have the benefit of this workshop we're planning for the SSC, and hopefully we won't be in the same situation as we are right now with, most importantly, the amberjack and the porgy assessments.

I wasn't at all surprised to see Fred questioning that as a potential statement, because this is an issue that we have been talking about for quite a while, and particularly thinking, in SEDAR, how we resolve it, and it's why those assessments are on hold.

DR. SEDBERRY: Marcel, did you have something to that point?

DR. REICHERT: Just as a clarification, and so would it then be good to have a limited number of species that are currently undergoing those assessments to address in that particular workshop? You mentioned red porgy and greater amberjack.

MR. CARMICHAEL: I think, from the sense of doing a, quote, unquote, data workshop type of review, focus on the assessments that are underway right now and consider if tilefish should fall in that mix or not or whether the timing of the workshop would be such that it doesn't need to fall into that, kind of along the lines of Fred's Plan B, but I think, for those, and I think in terms of the broader discussions of the workshop, I think you guys need to -- You need to look at these, and you probably need to look at the estimates for all of our stocks, and we've done that before.

Mike has a whole presentation where we looked at the time series of every species, and I think we did it a year ago, and so you have all of that available, and we need to look at all of the stocks,

because, to me, there is two foci for this workshop. It's what to do with the assessed stocks, as we just sort of talked about, but then there's these unassessed stocks, and what are we going to do with those, and their needs are going to be very different, because you're not going to have any sort of analysis and SEDAR-type of approach for those unassessed stocks, and so dealing with the ongoing assessed stocks could be part of dealing with this kind of mini half-day data workshop, so you guys can look at all the details, like they would at a data workshop normally.

DR. REICHERT: Again, does that mean that you propose that we look at all of these species at the upcoming workshop, as part of that upcoming workshop, because, initially, I thought that you were mentioning the ongoing -- Like red porgy and greater amberjack, and potentially tilefish, but then you also mentioned all the species that Mike provided that spreadsheet for and to take a look at that and perhaps discuss some of the patterns in those, correct?

MR. CARMICHAEL: Yes, and I think you need to look at all species, and I think you need to focus on the data-limited, unassessed species and how you would use those estimates to deal with ABCs, and then I think you need to focus on the more detailed issues, like this greater amberjack situation, for those assessments which are underway, so that they can continue to stay on track, and so I see that as being a couple of parts, and it's really probably the level of detail that you're going to get into with these different species.

You are not probably going to -- I mean, you may look at those unassessed stocks and end up with some sort of averaging approach, as Genny mentioned earlier, and you may do something different to deal with a time series like this on an assessed stock, because it's going in the assessment framework, or maybe you will come up with some sort of smoothing technique for points like that, and I don't know. It might come down to what the point is. If it's a shore mode point that you think is weird, maybe you don't use shore-mode estimates. I mean, I wouldn't suppose, but those are all ideas that could be thought about as part of sort of a mini data workshop component to that broader workshop.

DR. BARBIERI: I was just going to ask about the PSEs for those new estimates, but this is something that -- I think that what John brought up is that we explore this when we get to that workshop and have a much better idea.

DR. SEDBERRY: Anne, you had your hand raised some time back.

MS. LANGE: I guess it was relative to what Shep was saying about the difference between the revision assessments. One example was blueline tilefish. During the data workshop, the original data workshop, there were a couple of outliers that were under considerable discussion on what to do with them. It turned out that they were averaged, or there was an adjustment made, and the assessment group did not have the opportunity to put the MRIP data through that type of a data workshop. They put in the data as it came out, and so that outlier was not only magnified, but it wasn't adjusted. That is where some of the differences, I think, occurred.

DR. ERRIGO: Specific to blueline tilefish, that outlier was in the charter mode, which is not affected by FES.

MS. LANGE: I stand corrected.

DR. ERRIGO: One thing is, if we're going to look at specific points, obviously, you will -- This is one that is of a concern, and is that it in this time series? Is this an outlier? Is this an outlier, because this point here is significantly different from the points around it, and so is this one and this one, and it depends on what you consider significant. This one is kind of weird compared to these.

DR. SERCHUK: Mike, the problem is, for me, the trend in the old recreational data is consistent in all the other years, and that year isn't. You can see a declining trend, and there's a slight uptick, but, after 1989, they all go down, and that point goes up, and, when you're thinking about a scaling, you tend to think about we're going to see the same thing, but raised up to a certain level, and that doesn't occur that year, and that's another concern. I don't want to get into the assessment details, but typically what you see, in most of the assessments that you did, is that they're scaled up, and the patterns are the same.

DR. ERRIGO: Right, and all I mean is that, to help me identify the points that need to be looked at, are there any kind of criteria, or, if it just looks like it's really weird, are those the ones that I should pull?

DR. SERCHUK: One of the discussions we had was was the sampling frame in that year, either in terms of the intercepts or in terms of the assessment, very different, in terms of the sample sizes that were used in the previous years. The point was made that, hey, it's a real point, and we have it, and maybe the sampling intensity in that year was very much lower than it was, and so you were liable to get a point that's accurate, based on the sample size, but the sample size may be very much different. That was the reason why some of the discussants said that, well, we really need to have a better understanding of the underlying sampling that was done in that year versus the other years, and that's all.

DR. ERRIGO: Right, and I just need to know how to identify the years to look at, and should I just look at all years and look at the sampling? That is what I am asking, and I can just look at the sampling across all the years.

DR. NESSLAGE: This is one of the reasons why I love to explore getting away from identifying outliers and getting more towards -- I know the idea of averaging the catch or smoothing the catch is problematic to some, and we were having discussions offline about maybe there really was a real year of a big spike, but, ultimately, if we can't justify that in examination during a data workshop or assessment process, whatever it happens to be, then I think we need to default to some sort of smoothing or averaging.

DR. SCHARF: I was just going to make a suggestion for Mike's benefit, in terms of just trying to identify these points that you might want to investigate. You generally have the new recreational data and the old recreational data, and there is some -- You could come up with an average sort of proportional difference. Like Fred said, in typical cases, it just scales up, and so you could define what that is, sort of what that tends to be, species-by-species, and then use some threshold, if it exceeds that, that you kind of look at that data point.

Ultimately, it really only matters how much that deviation impacts the assessment, or stock status, but that's a much harder question to answer. At least, my perception is it's not so simple to conduct sensitivity analyses for a single data point, but it could at least give you some guidance on which

ones to take a look at, to say, well, typically, this one is three-times higher than the rest, but, if it's six-times higher, then I should look at this, some deviation from the normal scaling that's occurring, and, what threshold is, I don't know, but you could define some threshold to use, at least to give you a rule-of-thumb, so you're not looking at every point.

DR. SEDBERRY: Marcel, did you have something?

DR. REICHERT: Fred made the point that I was going to make, but, in addition, in terms of outliers, and I think Chris made that point during the webinar, we tend to look at the outliers that are going way up, the peaks, but there is a number of outliers that go the other way, like zero catches, and do we believe that there is zero catches, and so I want to caution not just to look at the high peaks, but also the low ones, and, as I said, I believe that Chris made that point during the webinar.

DR. SERCHUK: I don't disagree with the tenor of the discussion or the points that have been raised, but, aside from the assessments, these issues about what the relative proportion of the recreational catches are to the commercial catches can have a huge impact on the allocations, and so how we average, when we average, that data point in the end of the time series would have sort of a greater impact on what the recent recreational catches were versus what they were historically relative to an allocation decision.

I know that we're only focusing on the assessment right now, but recognize that there is another issue, in terms of those resources, in which there are both commercial and recreational catches, relative to how any ABC and ACL are decided, and so we need to be very circumspect and realize that the data are going to be used for two different purposes.

DR. SEDBERRY: Okay. Now where are we?

MR. CARMICHAEL: Right back where we started. I am wondering now if this issue of outliers -- This one is interesting, because, within SEDAR, there is probably differences of opinion, I'm sure, across modelers about how you handle what is an unusual point, and they're sort of called outliers because we're talking about a survey, and you really don't know that they're outliers. Sometimes they are true.

There is a really weird point in wahoo that was talked about when we first did ACLs based on landings and looked at allocations that just looks totally out of place with everything else, but all the evidence at the time was it was one heck of a year for wahoo, and this spring has been one heck of a spring for wahoo, and I'm wondering if we won't maybe see something like that again.

I think there's a bigger-picture discussion of outliers. What is an outlier, and how is that dealt with in the assessments, and I know that's one of the points of contention, and I'm just not sure how much of that is something for our SSC to deal with versus it's something that needs to be addressed more through best practices within the assessment process, and maybe there's a role for SEDAR to be held in there, and certainly there is a direction and guidance and best practices role for the agency and the analysts that work there and do the bulk of this work, certainly, to play.

I think that's something that could be talked about within the workshop context and maybe how we deal with those. Maybe recommend a SEDAR procedural workshop to deal with this issue of

outliers, and the Gulf and Beaufort teams sometimes approach things differently, and I'm sure different regions approach them different, and I don't know, and I think there's a lot of issues there. We probably can't resolve them all, but I think it could be an interesting discussion and maybe guidance on how to go forward.

DR. SEDBERRY: That is certainly something that we can add to the list of topics and questions we want to address at the workshop.

DR. LI: Here, I would not call this an outlier. In a time series, you can have large deviations relative to older time series, and so it's not called an outlier, but that point might be caused by some outliers of abnormal values in your original dataset, but include them in a data analysis, and that goes back to the step number two, the data analysis part.

From my perspective, the outcomes would fall into three groups. One group is something like this, that you see the trend kind of consistent, except there is a certain year that has a very large deviation relative to the older time series. For this one, we may be able to look at the data analysis part, and there may be some outliers in landings data or in the survey data that may cause that thing, or maybe other things, and I don't know.

The second group would be similar trend, but the magnitude is different, and another thing that I would guess is the problem may be the scaling issue and the data expansion, that step. The third group would be a totally opposite trend. In that case, it might be raised in the data analysis part that you are projecting the wrong functional relationship from the survey data and you apply that information relationship to expand the data, and so I would think that would be the three groups, and we can separate them out and look at them separately.

Again, depending on species, if recreational is not a big part, then it's a lesser concern, and we can focus on those species with a large recreational component. Again, it could be species dependent, and it's hard to see, in general, what these outliers -- Statistically, there is a definition for what is an outlier in the data, but, here, I would not call this an outlier. It's an abnormal value in a time series somehow, but it might be caused by outliers in the data.

DR. ERRIGO: Also, everyone should be cognizant of the fact that, when the calibration was done, the earlier part of the time series was mostly just scaled. The later part of the time series did have a differing trend, due to the increasing use of cellphone only, and so the decreasing use of landlines, and so there may be a differing trend in the later part of the time series that is there specifically due to how the calibration was done, due to the changes in participation in the CHTS and the percentage of households that have cellphones only, or don't have a landline, kind of thing, and so there are changes in trend that are there, noticeably in the later part of the time series, for a lot of species, and they should be there, just so everyone is clear.

DR. SCHUELLER: I am getting a little concerned that the things that we're trying to cram into this workshop -- That there is no way that we'll actually be able to address them sufficiently in whatever time we're allocated. We do need to keep that in mind, and, as John said, there is multiple pieces coming in at different points, and so it seems, to me, that there is some potential that this isn't one workshop where we're like done and done. This is going to be an ongoing issue.

DR. SEDBERRY: I agree, and I think someone mentioned, and maybe it was John, that some of these things might be best taken up in the SEDAR process, and we can, as part of the workshop, just point out those things that are likely to come up and decisions be made during SEDAR.

DR. CODY: I was just going to point out that we could provide some of the documents associated with the calibration reviews, if they have not already been provided, but for both the APAIS and the FES, and so that will kind of elaborate on what Mike was talking about with some of the modeling aspects of it and what to consider when you're looking at the data.

MR. CARMICHAEL: An idea on the workshop, given Amy's comments, and she's exactly right, is some of these things -- The more pressing things of interest to the South Atlantic is we're really looking for recommendations. For others, there might be some concerns and issues and a way forward for the next stages. We know there is other MRIP workshops going on, and having some discussion of the South Atlantic's concerns, within the context of those bigger workshops, would be useful.

I sort of think, in terms of preparing and telling whoever ends up on this organizing committee with Fred there, that keep in mind something like having perhaps working group assignments for the workshop, like some SSC members that may be thinking about these outliers and how to deal with the unusual estimates and assessments framework, and maybe someone thinking about finding out more about the other MRIP workshops that are underway and maybe how we determine the South Atlantic's role within those other workshops and your concerns on those topics. There may be some other group looking at the kind of mini data workshop aspect of these assessments that are underway, and, for that one, I would immediately turn to like Fred and Anne and whoever is on red porgy, because you guys are kind of already involved in that assessment.

That could be a way to sort of farm out the work and have some kind of discussion leads when we get around to the actual workshop itself. I'm thinking of a SEDAR data workshop, where we have dedicated groups dealing with different specialties of the data within that framework, and that could be a way to be more efficient, in terms of getting through these topics.

DR. SEDBERRY: Thanks, John. Okay. So, to move forward in workshop planning, what would be the next best step? Should we try to form that steering committee and then have the steering committee take the steps that are remaining, or do we want, as a whole group, to maybe look at who needs to be invited besides the SSC and other details?

DR. REICHERT: I think, also, what we -- That's why I was asking or clarifying the fact that this is a full SSC meeting, and it may be good to perhaps identify some timeframes, and, personally, I am thinking about our field season, et cetera, and so, the sooner we pick a date or a week, and I know people who are in the academic institutions may have some other responsibilities. If you go into the fall, you've got the teaching, and so I think, for me, that's an important part of planning this workshop, and I think we should do that sooner rather than later, and I'm not sure if we can do that right now, which may be a little difficult, but I think, for me, that's a high priority, picking a date, and then we can move on from there, but I also agree that we probably should have that steering committee, so we can start organizing that sooner rather than later.

DR. SEDBERRY: Let's see if we can come up with a steering committee list, and then we might be able, while we're all gathered here, to at least narrow it down to a couple of weeks in August,

for example, that might work for the SSC as a whole and then think about the list of other experts that we want to invite in and what their schedules might be like. The floor is open for volunteers for the steering committee, besides Fred, of course.

DR. SCHARF: I will volunteer.

DR. SEDBERRY: Okay. Thank you, Fred.

DR. DUMAS: Ironically, I was just unmuted, and so maybe I'm volunteering.

DR. SEDBERRY: We just wanted to make sure you had the opportunity, but we did hear you just volunteer.

DR. DUMAS: Yes. Depending on the week and the timing, but I will volunteer, and I apologize for being absent from this morning. I had to go teach a class.

DR. SEDBERRY: We could probably use a couple more. I believe Luiz raised his hand. He did and Yan. Very good. Thank you. I believe that would probably be enough to get this going. You can go ahead and put my name on there, too. I think we can, maybe, while we're all gathered here in the room, come up with a week or two that would work for the majority of the SSC.

DR. REICHERT: Well, August was mentioned, and so the first week of August is August 5, and so I'm not sure if we need to go into the this works for one person and that doesn't work for another, but --

DR. CROSSON: If we're going to do this, don't have everybody just shout out this or that, and, usually, we do the online poll, and so we can throw up a spreadsheet right now and do it without all of this, and that's one option. Otherwise, everybody is just going to get bogged down in arguing about what they can and can't do.

DR. ERRIGO: It may be better to do it by a doodle poll, especially after we identify some of the other people who need to be invited. I have an idea of some of the other people who probably need to be invited, and I'm sure the steering committee can formalize that list. If we can come up with like the perfect week, and then none of the other people can make it, and without them there is no workshop, and we may want to wait until we get that list of people.

DR. SCHUELLER: So who is the chair of that committee, because I think -- Sorry, Fred, but I think that one must be appointed. In my experience in the past, if there is no chair, these committees don't do anything.

DR. SCHARF: If you make me chair, I can guarantee that. I mean, I am fine doing that, just to get the four of us organized, so that we can -- I think what would be nice is if we had a charge here, when we left today, so we know what we were trying to do, in terms of some of the things that John mentioned, in terms of organizing who might take the lead on certain pieces for the workshop.

DR. SEDBERRY: Thank you for volunteering to chair, and I think the first thing that we need to do is look at the calendar and send out the doodle poll and finalize a list of who, outside of the

SSC, needs to be invited, and we can start that list right now and then start checking on who would be available after this meeting. How about suggestions for who needs to be invited to this workshop?

DR. CODY: I can talk to MRIP folks about the availability of John or myself or Dave or all of us, but it just depends, but, if it involves getting the consultants onboard, maybe that might take a bit more coordination.

DR. SEDBERRY: I don't have a feel for how important it would be to have the consultants here, but certainly, if you guys were here, that would help a lot, some or all of you.

MS. LANGE: What about the Center staff, Erik and some of his crew and who he thinks might be appropriate?

DR. SEDBERRY: Yes, I think so.

DR. ERRIGO: He is also on that rare-event species working group.

DR. DUMAS: (Dr. Dumas's comment is not audible on the recording.)

DR. ERRIGO: As an SSC member, he's already on that list.

DR. CROSSON: But those are good suggestions, Chris. When does UNC-W -- When does the academic school year start for you guys?

DR. SCHARF: It starts on August 21.

DR. CROSSON: So this really does need to be early August, for professors and stuff to do this.

DR. LI: I am thinking that it might be very helpful to have at least one representative from each state that is involved, especially a representative very familiar or specialized in recreational fisheries, and that would be very helpful.

DR. SEDBERRY: Yes, and I think each state probably has a recreational fisheries coordinator that might be useful to invite.

MR. POLAND: It was the council's intention that each state would send somebody in addition to their SSC member, and we had some discussions about the best person would probably be the state's recreational statistics lead, whoever that might be.

DR. SEDBERRY: Thanks.

MS. LANGE: Are we talking about the steering committee or the overall committee? Is the steering committee solely SSC members, and then they are setting up what will happen at the full meeting with the SSC and the extra people?

DR. SEDBERRY: That's correct.

DR. BARBIERI: George, then Beverly Sauls should be coming for --

DR. SEDBERRY: She would be the Florida state person. Okay.

DR. NESSLAGE: When we first had the original webinar introduction to all of these changes, I know there was a question about shifting demographics of who is actually being surveyed, and I didn't know if -- Are the people who would be here from MRIP -- Will they be able to talk to those issues and some of the -- It sounded like there was some ongoing research into that as well, and will those people be able to describe that or address those issues and questions, to changes in demographics and who is actually being surveyed?

DR. CODY: Yes, and we have information that we would like to present.

DR. SEDBERRY: Well, that's a good start, and the steering committee can take that and work with it. I think we need a couple more states to be represented there, South Carolina and Georgia.

DR. ERRIGO: Either staff or someone on the steering committee will contact the states to see who they would want to send. I can think of people, off the top of my head, but I don't know if those would be people that the state would want to definitely send. I will contact each of the states to see who they would send and get them on there and then get the doodle poll all set up.

DR. SEDBERRY: Okay. Let me see where we are on our list of things to do. We have work towards developing the questions and the terms of reference and key participants. We discussed outliers, and I think that we have addressed all of our action items for this agenda item. Is there any additional thoughts on this?

DR. ERRIGO: Mel just made a suggestion, for people to invite, that we may want to reach out to the commission, to see if they wanted to send anyone as well. I can do that, and we can include them and see if they want to send someone to this workshop.

DR. SEDBERRY: I know we have a lot of notes on this particular item, and can we just kind of scroll through them and make sure we have captured everything that we said? We have a couple of summary statements that I think we've already checked the wording on and we're all happy with that, but let's just kind of look and see what else we've got.

DR. ERRIGO: Are we still good with this one or not, or this one, and I was going to ask.

DR. SEDBERRY: Is the SSC still happy with this, or not happy, but --

DR. ERRIGO: Is this still the consensus?

DR. SCHUELLER: One of the things that was recommended by John when he came up to the table was to take the species that are ongoing and to include that as part of this workshop discussion, and so I have that in my continuation of notes, and so we may want to add that to this, is that, for ongoing assessments, the species will be considered at this workshop, or something along those lines. My only question related to that is I don't know the timeline of those assessments, and so I don't know when the different workshops are and where they're going to be

when we actually have this workshop and make those decisions and whether or not that's too late in the time table or not.

DR. REICHERT: As a point of clarification, we know what those species are, and so let's put them in there, rather than "those species". We are talking about red porgy and greater amberjack and potentially tilefish. I am in favor of trying to be as specific as we can be.

DR. SEDBERRY: Red porgy and greater amberjack are ongoing, and they have --

DR. SHAROV: I have a general question. What is our expectation of what this workshop will achieve or what are our expectations of what we should be able to uncover or learn through this workshop, specifically in the application of these four species? Maybe that will be very well identified by the sub-group, when they work on the terms of reference, but, just thinking forward about all of this, maybe we could think of what possibly could be done and what certainly could not be done under that time.

The assessment process itself, I don't think that there is a need to review the process, and we are pretty much familiar with the assessment models and steps that have been done, and they will be done in a similar fashion as well, obviously, and so the matter at hand is sort of the quality and the potential uncertainty in the presence of biases in the MRIP dataset, and so how do we expect it to be handled differently?

Are we going to just simply look at the two different streams of the old MRIP and the new MRIP, the FES-based and the CHTS-based, and would we then just make qualitative judgments as to why this is a potential outlier and this is not? This probably would not be particular productive.

If we suspect that there is something going wrong with implementation of the survey itself and the data stream, are we expecting or do we plan to ask people, most likely people within the MRIP program, to provide a detailed analysis of the calculation of the effort and the catch per effort and look at those elements in detail to attempt to identify where in those calculation steps are the possible reasons for the development of those numbers that the group believes are unlikely or whatever -- To summarize this, do you expect to actually request a particular in-detail analysis for one or two or three or four of the species to be done?

In this case, I am afraid that we will have to ask people from the outside or the MRIP to do that. I am not sure if that's going to be -- That may put some time restrictions, et cetera, if they are willing to do that, or, if you don't think that that's needed, then how else are we going to make progress?

DR. ERRIGO: Those are interesting comments, and thanks, Alexei. There is a couple of issues going on there, and so one is the outliers issue, and I think where the SSC is headed is we're going to investigate any kind of issues with the particular data streams and points for the species that have ongoing assessments, but you also mentioned about having the problem with -- Having MRIP talk about how the estimates are calculated and things like that, and I think there are two pieces.

One is, and I think that this is already in there, the data that was collected for the side-by-side and how that was different from the CHTS and what is causing some of the differences there, but, also, not just how effort is calculated, and effort is calculated in the same manner as it was for the CHTS, but the calibration models -- It's the calibrated data that we're looking at, and so do people want

to see, in-depth, how the calibration models work and what assumptions went into them and in-depth explanations of the calibration models, because that is what is producing the new estimates and not the actual FES. If so, then I think we definitely will need to have at least one of the consultants there, because some of the modeling is rather complex, and they are the ones who developed it, and so I just wanted to make sure that we know who to get to come kind of thing.

DR. CODY: There are some things that we can do. I mean, we're limited in the amount of deep-dives that we can do into the data, just because of staff availability, but, with the listed species that are up there, I think we could go into the data and point to some of the characteristics of the data that might be affecting the outcomes, and so it could be the weights, or it could be how the APAIS calibration affects the APAIS data and its role with producing the ultimate estimates. There could be some things that we can point to, at least, that would provide some guidance. As far as the calibration information, that's all available, and it's online, and so people can be looking at that ahead of time.

DR. ERRIGO: Yes, but I know that, for a lot of people, if you just went and read that, it wouldn't really help to truly understand what's going on, and someone who understands the workings of the model would be good, and maybe John Foster can do that. He has a pretty good grasp of a lot of that, and so that might be all -- We may not need one of the consultants.

DR. CODY: That would be part, I think, of -- Any kind of a dive into the data would be explaining how the calibrations work, in terms of what we see with the data.

DR. SHAROV: Just as a follow-up, for the numbers that have been currently produced, yes, it's calibration, but it's in FES in itself as well, because the calibration is based on what figures of the landings survey compared to the old survey. Based on what you just discussed, I hear two elements. One is educational, essentially us learning, in detail, the aspects of the FES and the calibration, to the extent that people get comfortable with how it's being done, comfortable meaning that you don't look at this as a black box that has been approved by somebody else, and you truly understand this, or at least the calculation of the steps.

Number two is actual revision of specific numbers that are pertinent to one or two or three species of interest, where you have say recreational folks and folks that are running MRIP and/or assessment biologists that are intimately familiar with the species that could comment on the information that actually is being processed.

I guess, by detailed review of -- At least one example of the step-by-step calculation, the old CHTS estimates, and here is the effort and here is the catch per effort from intercepts, et cetera, et cetera, and here is how it's been done. With the new method, here is what the calibration leads to, and so, in the end, either everybody agrees that, yes, that's reasonable, or they disagree with some of the steps, and that's sort of the way that I could see this being somewhat helpful in making progress, is to how those numbers are derived. If there are any other ideas, I would be happy to hear that, but, at least for the steering committee, it probably is useful if we could say something about how we see this workshop being done, so that we get something positive out of it. Thank you.

DR. SERCHUK: It's my expectation that, by looking at a couple of the assessments in the workshop here, that there will be issues that will be raised that might be encountered in subsequent

assessments that could be useful, in that sense, in terms of looking at the data. I don't see, looking at these two or three assessments, as us uncovering issues that are only unique to these assessments.

I am hopeful that, if there are issues that we can explore with people that understand the data systems and the sample sizes and so and so forth, that, in subsequent assessments of other species, the issues that we uncover here, or go into depth here, will also be applicable for subsequent assessments of other species. Otherwise, I am just thinking that we will have to rediscover the wheel every time an assessment comes up, and so I think that we should be focusing on generic issues that we uncover here that would also be of interest when other assessments are being formulated. Thank you.

DR. DUMAS: As far as the investigation and the findings and the recommendations of the steering committee and the full committee, in the end, these should be generic and not specific to a fishery, so that they can be applicable to all future studies, and, with that in mind, I think there are three critical issues. One is the sampling method, the FES, and the second is the actual sample of data that were collected, and the third is the analysis method used to analyze the sample data and produce the estimate, or estimates.

I think we need to sort of review those three things, the sampling method, the actual dataset collected, have actual sample data that was collected and what could affect the analysis, and then the third is the analysis method used to analyze the sample data, and, if they were -- I assume there are, but, if there were technical memos available for the sampling method and for the analysis method, we could, of course, review those ahead of time and determine whether there are any specific issues that we might want to focus on when we meet together, if we can identify any potential problems.

We might identify some problems with the sampling method, and we might identify some problems with the analysis method. If we don't, then the issue may simply be one of the particular data sample collected for a particular fishery that turned out to be an unusual sample and had some outliers, for example, that we have talked about, and so it may just be a consideration of how to make sure that our message is adjusted to account for situations when the data sample we collect is an unusual sample, in terms of outliers, or unusual in some other way.

I think these are all very possible things to do, and I think, if the actual estimates that we're all concerned about are incorrect estimates, then I think, in going through this process, we will find what is causing these estimates to be inaccurate, if they are in fact inaccurate, which they appear to be, comparing with the previous historical data. Thank you.

DR. CODY: Just a note. I would be very hesitant to use the previous historic record, or whatever you want to call it for the CHTS, as the basis of deciding whether the FES is accurate or not. I mean, I understand that there is a need to look at these different components of data collection, sample, and analysis, and there is plenty of review materials that we can provide ahead of time for a workshop, and, in looking at the three species that are there, I think they provide a good variety, or diversity, of species that would reflect different issues with the behavior of the data.

DR. DUMAS: I am just saying that the reason why this is such a big issue is because of the large difference between the new estimates and the older historic estimates with the old method, and

I'm not saying that the historic estimates are better or correct, but I'm just saying that the large difference is the reason why this appears to be an issue, if I'm understanding correctly.

DR. CODY: Thanks for the clarification.

DR. SHAROV: I am little bit uncomfortable with what I've heard from Chris, in the sense that, yes, I agree that, ideally, there would have to be some generic or general learning from this exercise, but this should not be a -- I hope it's not going to be another attempt to review actually the methodology, but what I hear is that we must review how the data are being collected and then how they've been processed, and this has been reviewed very thoroughly through the separate MRIP workshops on FES and APAIS. I don't think that we should be repeating that exercise, and that shouldn't be the purpose of this workshop.

DR. BARBIERI: I just want to second that point that Alexei brought up, because, yes, the methodology has been reviewed in detail, over several months, and this is unequivocal that the methodology is sound and has been considered the best scientific information available. The issue here is, when you go into the implementation phase, there are things that could happen that could cause some of the estimates to get off track, and keep in mind that there is a human dimension to any of these responses, to a mail survey or a telephone survey, and whether people are responding in terms of their avidity or their fishing habits, and there are things that, really, from a purely statistical perspective, may be, and are, seem to be completely correct, but there is a cognitive science response to surveys, and this is something that we have been discussing with the MRIP staff, in terms of the design and implementation of the mail survey for the FES and then looking at how responses are coming back, and it might be that the implementation phase is influencing something that was not predictable in the design phase of this study, or the survey.

DR. DUMAS: I don't disagree with that, and, if you're willing to assume that certain parts of the process are correct, based on prior review, I'm fine with that, and then we can focus on the parts of the process that we think where it might be having problems.

DR. SEDBERRY: Very good. All right. Do we have everything we need to move forward with this for the steering committee, a potential list of invitees, a target month, issues in some ongoing stock assessments that we want to look at, outliers, and I think we have addressed all the bullets and action items under this agenda item.

DR. BUCKEL: I'm just looking at the three species, and I know those are all upcoming, and I'm just wondering if there may be another species or two that might help us -- That there may be other issues with that there wouldn't be with those three species, and so, if folks think we're covered, then that's fine, but I noticed, in the letter, there was a mention of king mackerel and the pier and shore, and that may be a reason that the new estimates are biased high, and I don't know -- I don't think any of the three species we have currently would get at that particular issue, and so maybe king mackerel would be one that we could add, if the folks think we have time, or if other folks on the committee now think that that's important to look at.

DR. SEDBERRY: I see a lot of heads nodding around the room.

DR. ERRIGO: Should we add king mackerel and take out golden tile? Golden tile has extremely little recreational landings, even with the calibrated data, and it's still an exceptionally small proportion of the landings.

DR. SEDBERRY: I think that's a good suggestion.

DR. REICHERT: Yes, I think so too, but remind me. Spanish is on the schedule, or not?

DR. ERRIGO: King mackerel is actually going through an update right now.

DR. CROSSON: Are golden tilefish -- I know it's low landings, but, when you do it through the trips, is it a pretty targeted species, because one of the things we're supposed to be looking at is the lower-encounter species, and so it might be good to have at least one thing in there that's not a big recreational component.

DR. ERRIGO: I don't think it shows up as a target species very much, but I can't remember off the top of -- If it does, it's very, very low on the proportion of trips targeting.

DR. SCHUELLER: I think Scott's point is well taken. One of the topics that we have on our list is rare-event species, and, if we're going to invite the rare-event species group, perhaps we should look at a rare-event species.

DR. SEDBERRY: Okay, and so keep tilefish and king mackerel.

DR. CODY: We may have some information on tilefish, depending on the timing of the workshop and what we can get done with the rare-event species workgroup.

DR. SEDBERRY: Great. Anything else on this agenda item? I see shaking heads. Good. I am going to suggest that we break for lunch.

DR. ERRIGO: For this, there is nothing to --

DR. SEDBERRY: Then I think we can -- I will ask the pleasure of the group. We can continue on for another hour and finish up, or we can break for lunch and come back and do an hour's worth of stuff. The biggest thing we have to do is just go through the report items and make sure we all agree. We went through the first day's, and Mike had sent that out, and Mike wasn't able to send out yesterday's and so we need to go through that and then what we did today as well, and so would we rather continue on? Okay. Let's do that then. Let's take a ten-minute break, and so be back at noon.

(Whereupon, a recess was taken.)

DR. SEDBERRY: The remaining items we have are to review the report and to check the schedule for our next meeting, and I don't believe there is any other additional items.

DR. REICHERT: Public comment.

DR. SEDBERRY: Public comment, yes. I'm sorry. Let me do that right now. Is there any public comment on Agenda Item 11, our FES --

DR. REICHERT: No, this is the entire meeting.

DR. SEDBERRY: This is the entire meeting public comment, you're right. Sorry. This is the general public comment period, and so is there any public comment on anything that we have discussed this week at the SSC? Okay. Mike is sending out, right now, even as we speak, the report in its usual format, which is the overview document with our consensus statements and recommendations and advice and other pertinent notes typed in in italics at the end under the action items for each agenda item.

What I would like to do now is take fifteen minutes, and everybody look at that. Then, at like 12:20, we will open up the floor for any changes, additions, or corrections to those notes. Marcel has noted that Other Business actually comes on the agenda before this report item, and so is there any other business that we would want to bring up? We did the meeting procedures, which was the only other business that I knew about at that time.

DR. NESSLAGE: To make this manageable, the response to the notes that just got sent out, can we focus perhaps -- May I suggest we focus on the consensus statements and not nit-pick the discussion ones? I think the people who are the leads haven't had a chance to even provide our initial feedback on this yet, and I feel like this could get really crazy fast.

DR. SEDBERRY: That would be fine, yes. You will have the next week to refine it, but I just want to make sure that there is nothing major missing from what we have so far, and so we can nit-pick over the next week, via email, the finer points of the notes, but just go through it and make sure that the consensus statements, in particular, and the recommendations are worded the way that we want them worded. Then, at twenty after, we will open it up, and, anything that needs to be brought up and refined or re-discussed, we will do that.

(Whereupon, a recess was taken.)

DR. SEDBERRY: Are we ready to talk about this? Does anybody need more time?

CONSENSUS STATEMENTS AND RECOMMENDATIONS REVIEW

DR. CROSSON: Again, without doing the nit-picking that we're trying to avoid, the two items that I noticed that we should be considering before we leave here today, and we don't have to put these in the report, but we should at least answer these questions. Amy's point earlier, about how, when we form workgroups, and, if we don't appoint a chair, a lot of times they don't end up happening or meeting, that made me concerned about the fact that the Ecopath workgroup doesn't have any chair right now, and so, if it's not going to be decided -- Right now, it's written in the notes that it will be decided when the group meets, but I don't know how the group is going to meet if somebody doesn't take charge and organize that, and so that is something to consider. I don't know if we have to choose that person right now or if somehow you all really make sure that -- That's one point.

The second point is I'm still confused about how the SEP report gets approved by the SSC, and so I gave kind of a brief synopsis of what we did, and I will make sure that the SEP report goes out to the SSC pretty soon. I mean, I'm trying to draft it up right now and send it to the rest of the SEP, and they will comment, and I will incorporate that, and then I guess it goes back to the SSC at that point to be approved, but I don't think that it needs to wait until October or whenever, and so can we put something into the comments in the SSC report that the SSC will approve the SEP's report, pending review, or something?

DR. SEDBERRY: That would be fine with me. Does anybody on the committee object to that? Okay.

DR. YANDLE: Looking at the economic report that we all received, the consensus statement seems to accurate reflect what I have in my notes, and the bullet points seem to reflect basically the preponderance of the discussion that was going on. The fourth and sixth were more one or two members' comments, and I'm not sure -- I am unclear about whether or not that was expressing the consensus of the committee, and so that was the making this data available on a website would be helpful and that we would like to see data presented with a moving five-year average. Those sort of seem a little bit more -- They're sort of more generalized comments and possibly response to question discussion than consensus of the committee.

Similarly, the sampling uncertainty is accounted for with a 90 percent confidence interval, that was a directed response to a question by the presenter, and then, seeing as how one of the things we were charged to do was to discuss the uncertainties, I would actually recommend combining the last three bullets in that section into just a single statement of these were sources of uncertainty that were noted by the SSC, and I can write that up and put it in an email, if that would be more helpful.

DR. SEDBERRY: That would be helpful, yes, and thank you.

DR. YANDLE: But the consensus statement seemed to be spot-on.

DR. SEDBERRY: Okay. Thanks, and you kind of raise a bigger issue there. We often have these consensus statements, or everything that we agree on, that the committee agrees on, when we're discussing it, and then there may be additional points brought up or answers to questions about a presentation that end up in the notes that aren't necessarily that important to our discussions and not necessarily consensus of the committee, but they end up in our notes as statements, and so we need to make sure of things like that, like the sampling uncertainty is accounted for by a 90 percent confidence interval, and that's not something that the SSC agreed to. That's just something that the presenter stated. Sometimes those things can make it sound like this is an SSC consensus, and it's really not, and, for those things that might matter, we should probably just take them out.

DR. REICHERT: Or, as Tracy said, just put them in one statement that makes it clear what the SSC's intent is with those statements, and the other thing is that I think we expressed appreciation for the presentation in the report, and I think we should put that in there too, because, more often than not, we are talking about our comments and some of the things that could be improved, but I think it would also be good to put in our notes that we appreciated the presentation, and it was great information, and that we would like to continue to see that type of information to help us formulate recommendations to the council.

I think we expressed that, but we rarely put it in the notes, and I think it's important to put it in there, and it's the same with the presentation, for instance, for the ecosystem modeling. We commented on the specifics, but it would be good to state that some of these presentations may be very helpful for us to move forward.

DR. CHEUVRONT: I just wanted to get a little bit of clarification on the relationship of the SEP report and its approval with the SSC. Is it the SSC's intention that the SEP report will be approved at the same time as the full SSC report, because that has implications. We've got a June council meeting coming up, and the SEP made some extensive comments on one of the amendments that the council plans to be working on in June, and I want to be able to make sure that the SSC has approved the report, so I can include those comments in what I bring forward to the council, because, if the SSC hasn't done that, then I will have to wait until September, or, actually, until December, when the SSC will have approved it formally in October.

I am trying to think of it from a practical perspective, from staff being able to present this information, and so, if we can get some clarification on what your actual intention is on when this is going to be done, and even, at some point, I'm sure you're going to say when you think the final SSC report will be completed, because, at that point, that's the earliest that I would be able to start to incorporate that information.

DR. CROSSON: To that point, you're talking about the recreational accountability measures, and we spoke extensively about ways about monitoring and how to deal with PSEs and everything, and so there were a lot of suggestions, and I have a lot of notes that I am trying to pull together for that, and so I apologize that I couldn't get it to this committee in time, but, yes, that's something that it would be good if the SSC did sign-off on it, because those are very practical, real things that may get incorporated into the amendment, in terms of monitoring.

DR. SEDBERRY: The timing of this, though, is that the SSC report needs to be in in time for the briefing book for the June meeting, and the SEP report is not on that same schedule, are they?

DR. CROSSON: I haven't given them a schedule yet, because it is going to depend on what we choose to do, but I did get notes from everyone, but there are just a lot of notes, like I said, and I have to organize them into something sensible, and so my goal is, the beginning of next week, I guess, to get something out to the SEP and get feedback from them and then maybe get it to the SSC after that's done, but that's going to fit in with the timeline on the SSC report, and I'm not sure exactly what you're hoping for, in terms of getting the SSC report out.

DR. ERRIGO: Being that this meeting happened early this year, you have almost five-and-a-half weeks before you have to have your report in for the briefing book. You have a little extra time, and so we could probably accommodate the SEP report, and Brian is going to correct me.

DR. SEDBERRY: So, I'm not sure -- Again, I'm not sure of the procedure. The report of this meeting is the report of this meeting, and, at this meeting, we did not approve the SEP report, because we haven't seen it yet.

DR. CHEUVRONT: Right, and I understand that. I came back because of the timing that Mike was talking about. If you all are able to approve the SEP report outside of the formal meeting and

vote to include it in your final report, that's fine, but I can't move forward until that has occurred, and so, in five-and-a-half weeks, if you're right up until the briefing book is due, that's not enough time to get that information incorporated into the amendment. However you all can work it out would be really helpful.

DR. CROSSON: Then perhaps it should be something to the effect that the SSC will approve the SEP report via email, unless there are significant objections, or something like that, to the content.

DR. SEDBERRY: That will work.

DR. REICHERT: Brian, when you said that the deadline for the briefing book may not give you enough time, what is your timeline for that? That may be important for us, to make sure that we approve the SEP report in time for you to have the information available.

DR. CHEUVRONT: What we can do is -- I am just thinking that May 3 is a Friday, and that should give me enough time to at least say this is what the SEP recommended to be done and get that included into the report, because there won't be enough time for me to get in there and revise any actions and alternatives based on what they have said and get it to the interdisciplinary planning team to review it and get it back and all of that in time for the briefing book. I would just like to be able to make sure that we can get that information out in front of the council at the June meeting, if at all possible.

DR. CROSSON: May 3 to have the SEP thing absolutely approved by the SSC? Okay. Then I need to get the SEP report -- Within the next couple of weeks, I need to make sure that the SEP itself has signed-off on it, so that I can get it to the full SSC for that approval.

DR. SEDBERRY: Thanks, Scott.

DR. NESSLAGE: In the MRIP section, the consensus statement -- Amy and I were just chit-chatting about the last two words, "before proceeding", and that might be a little restrictive. There's a lot that can be done in an assessment outside of just slapping in the recreational landings, and so I would caution that perhaps we take out the words "before proceeding" and just say that we're going -- Whatever this says. We recommend that the species data be looked at in more detail at the upcoming workshop to resolve any issues. That doesn't preclude the assessment scientists from continuing work on the other aspects of the assessment that aren't the recreational data streams. If everyone is okay with that, that would be good, probably.

DR. SEDBERRY: Yes, I think that makes sense, and I don't see any objections around the table.

DR. REICHERT: I know we are jumping back and forth through the report, and, if everyone is comfortable with that, I talked with Mike a little bit about we need to adjust the language under the ABC control rule, 9.51, because it talks about increasing the risk score, and we need to be careful with the language, because the score -- If you increase the score, you decrease the risk, and so we need to make sure that our intention is in the report.

DR. ERRIGO: I corrected that here. That was because I hastily changed the language of this bullet point from "applying a penalty" to "increasing the risk", and I wrote "risk score", which is incorrect. We'll be increasing the risk, which means decreasing the score.

DR. SEDBERRY: Good catch.

DR. REICHERT: Also, a couple of bullet points under the MRIP that are empty, and I think, a lot of those, we can just add that they will be addressed within the workshop framework.

DR. SCHUELLER: I was going to ask how we're going to move forward from here, because I have five pages of notes from the MRIP discussion this morning. How do you guys perceive that being compacted into what we have here? Because I can take what I have and distill it down and put it into this part, but I know there were other people that were taking notes on that as well, and so what is the process?

DR. SEDBERRY: Would you like to talk about the process, Mike, or do you want me to talk about the process, as I see it? Here's how I see the process. We send our notes to Mike, and Mike incorporates them into a document that he then sends back to me and the Vice Chair and John, and then we edit them and then send them out to the entire SSC, so that you can make sure that your changes are in there and that everything that's in there is what we agreed to at this meeting, and so that does that make sense?

DR. ERRIGO: Yes, but I'm not going to wordsmith or re-write, just to get the gist of anything, because I don't want to lose anything or re-write it with my own spin, because it's not my conversation and discussion or words, and so I am literally just going to compile. If two people said the same thing, I will just put it in there once, but I'm not going to change anything. If there is other notes, I compile everything in here and send it back out. If people want to add in stuff afterwards, or wordsmith, that's up to the SSC and not me.

DR. SEDBERRY: This is the kind of way we've been working for the past several SSC meetings, and we're going to change that in the future, but that's the way we're doing it now, with this meeting.

MS. LANGE: There are two options. I take cryptic notes, and I put initials, that so-and-so said this, and do you want that, or do you want me to just go through and say the discussion was -- You want not just what we captured during the meeting, but you want us to go through and make a paragraph or two about the discussion for that item, so that you can -- A finished product.

DR. ERRIGO: Don't leave any interpretation up to me. I will not interpret.

MS. LANGE: Okay.

DR. REICHERT: But, on the other hand, also, raw notes are usually not very useful for us to compile the final report, and so I think, generally, it's --

MS. LANGE: That's what I wanted to clarify it, that you wanted -- You want to be able to just cut it out of our email and paste it into that section that we took the notes for.

DR. SEDBERRY: That may not make it into the final draft, because someone else may have the exact same kind of notes, but, yes. Any other issues or changes or edits?

DR. CROSSON: Again, jumping back around, the economic report that Chris gave on Tuesday, he gave it twice, and the SEP thought it was very valuable, and he also thought that it might be something that they recommended a condensed version go to the council at some point, and is that something -- Would that be out of line for the SSC to suggest, that a condensed version of that be presented to the council at some point, or is that not in our purview?

DR. ERRIGO: The SSC can certainly recommend that, but, if the SSC approves the SEP report and all of their recommendations, then that would go to the council.

DR. SEDBERRY: Anything else?

DR. SCHARF: I was just going to say that, if Amy has more detailed notes, if she's going to summarize those and distill those to send them to Mike, I think, as the steering committee for the workshop, we could use the detailed notes, and so feel free to send those to me, and I can share them with Luiz and Yan and Chris.

DR. REICHERT: Under SEDAR activities, we have that there is concern about proceeding with species, and that's one of the comments that I always have a -- When we write the final report, compile the final report, that's always where I have a little heartburn. What does that mean, that there is concern? I think we need to be a little more clear in what the concern is, and there is probably a couple of other areas in the report that we expressed concern. Then, when we provide the overview, or the report to the council, it's like what is the concern?

DR. SEDBERRY: Yes, that's a really good point. If you can be specific, whoever the note takers are, about what those concerns are, that really helps, because, like Marcel said, when I go to the council meeting and, having a bullet there saying the SSC expressed concerns, it's just really no help.

DR. SCHUELLER: In this instance, this was a statement made really out of the topic area in which it should have been made, and so, from my viewpoint, delete that. Then all of those MRIP concerns will be listed in the actual section.

DR. SEDBERRY: Yes, that kind of came up out of place.

DR. SCHUELLER: I think we're just removing it there. In MRIP, we have a clear list of what the concerns are, and so it will be captured within that section.

DR. REICHERT: I think, if we are looking at my -- I catch myself doing that all the time. If we look at own notes, it would be good to be cognizant of those type of comments of like we have concerns.

NEXT MEETING

DR. SEDBERRY: Anything else? Okay. Going once, going twice. The next and final agenda item, Number 16, is the Next Meeting. Last October, I think we had looked at a couple of different weeks in October for our October SSC meeting, and we've kind of settled on October 15 to 17, and I can't remember what was bad about the next week.

DR. ERRIGO: The next week is the Gulf Council meeting and the Habitat AP is also the next week.

DR. SEDBERRY: Okay.

DR. ERRIGO: Having it the next week shortens the report prep time.

DR. REICHERT: Especially with all of this coming up.

DR. SEDBERRY: Yes, and it's really difficult to move this. Monday is now the travel day, and that is Columbus Day, and so ask your boss for comp time.

DR. ERRIGO: There are things to consider. Depending on the schedule and what items need to be addressed, we may be able to start on Tuesday afternoon and still have all the time needed for the report writing and everything, depending on how heavy the schedule is, and so we can look at that as we build the agenda. The only other suggestion or thing that we could do is we have had the SSC meeting not on a Tuesday, Wednesday, and Thursday before, and we can try that. Not Monday, Tuesday, and Wednesday, but I mean Wednesday, Thursday, and Friday. That's also, I don't think, ideal, but that is another possibility.

DR. REICHERT: I propose to leave it as-is and, for this meeting, obviously, because it has financial implications, with the approval of the council, to plan on a full day on Tuesday, a full day Wednesday and Thursday, as we proposed, and just see how that works, and then we can take it from there.

DR. SEDBERRY: Does that sound good to everybody?

DR. REICHERT: Especially since this is not a meeting where we have an SEP prior to it, and so that gives us a little bit of flexibility. When we have an SEP, then, obviously, we may have to talk a little bit about timing, et cetera, but, for this October meeting, we may not have to do that, and I personally would really like to see how this new format works for us.

DR. SEDBERRY: Okay.

DR. NESSLAGE: The gentleman to my left just pointed out that this will be his last meeting, Church, and I think we should thank him. *(Applause)*

DR. ERRIGO: I thought that you were undecided. I figured I would convince you to stay.

DR. SEDBERRY: This meeting sent him over the edge. Just for the record, we're applauding your service and not applauding the fact that you're leaving. Thank you very much, Church. We certainly have appreciated not only your service on the SSC, but everything you've done in the Southeast here over the course of many decades, and it's greatly appreciated, and so thank you. Meanwhile, we have the June council meeting from the 10th to the 14th in Stuart and then the September meeting here in Charleston and the December meeting in Wilmington.

DR. REICHERT: It would be good for you to let us know what your timeline is for the report. When do we need to get what to whom, in order to get the report in time for the briefing book and for you to prepare for the council meeting? It would be good to jot down a couple of dates, unless you want to email them to us.

DR. SEDBERRY: Well, we can talk about it a little bit, but it probably would be good for me to email it when things are more finalized, and I'm not sure what the briefing book deadline is, but there are several iterations that have to happen before then, and so your notes need to go to Mike, and Mike, as he said, compiles them, and they need editing by the Executive Committee after that, and then they go back out to you for further editing and then come back. Then, from that, I have to prepare a presentation that also goes into the briefing book, and so the report and that presentation need to go into the briefing book, and that deadline is --

DR. CHEUVRONT: May 17.

DR. SEDBERRY: May 17. I need to have everything kind of finalized a week prior to that, and so let's say that -- I don't see any reason why the note takers shouldn't be able to get their notes to Mike by the end of this week. Then Mike can have a week to -- I don't know what your schedule is like, but is a week enough to deal with that?

DR. ERRIGO: I think we can give people at least until Monday. I would start working on them if I got them tomorrow, but I don't have to. If I got them on Monday, it probably would just take me a few days to compile everything, and so, sometime next week, I can get that back out.

DR. SEDBERRY: Okay, and so back out to the Executive Committee by the 19th, and we would take a look at it for a few days and probably get them back out to the committee on the 24th of April, and then we'll give you all a week to edit those and get them back to me by the 1st of May. That will give us enough time to format it and clean it up and get a presentation together and make sure that everybody is happy with that and get it into the briefing book by the 14th. Does that sound good? Okay.

DR. SCHARF: Just in terms of the timing of the MRIP workshop, are we going to do a doodle poll or something, and that's going to come from Mike, once we kind of figure out the duration of how long we think it needs to be and that sort of thing?

DR. ERRIGO: Yes, and we'll discuss it. I will talk with John and see when we can -- What dates are feasible, and I will get in touch with the people over at MRIP and look at their schedules, and then we'll find a bunch of dates and send that out, and so we'll try to figure that out. The steering committee, I think their biggest focus is going to be organization of the workshop and terms of reference kind of things and what are we going to focus on and how are we going to do it.

DR. SEDBERRY: Anything else for the good of the cause of the SSC or the fish? All right. Thank you, all, very much. I appreciate all your preparation for this meeting, and I know it's not easy. It's four-hundred-and-something pages of new material, and I appreciate your participation, and preparing for it as well, and so thank you very much, and we are adjourned.

(Whereupon, the meeting adjourned on April 11, 2019.)

Certified By: _____

Transcribed By:
Amanda Thomas
May 1, 2019

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Attachment 1: SSC October 2019 Meeting

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McHan	Chris
Franco	Dawn
Glasgow	Dawn
Arias	Emilio
Fitzpatrick	Eric
Burgess	Erika
Helies	Frank
Sedberry	George
Carmichael	John
Howington	Kathleen
Howington	Kathleen
Siegfried	Katie

Lee	Laura
McPherson	Matthew
Larkin	Michael
Travis	Michael
Mehta	Nikhil
Milloway	Olivia
DeVictor	Rick
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SSC April 10, 2019

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Dumas	Chris
Pickens	Chris
Wyanski	David
Franco	Dawn
Glasgow	Dawn
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Burgess	Erika
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Townsend	Howard
Laks	Ira
Stephen	Jessica
Hadley	John
Klasnick	Kelly

Lee	Laura
Clarke	Lora
Seward	McLean
Bell	Mel
Larkin	Michael
BROUWER	MYRA
Mehta	Nikhil
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Cheshire	Rob
Pugliese	Roger
crabtree	roy
CRABTREE	ROY
Hudson	Rusty
Robinson	Shantal
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SSC April 11, 2019

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Cheshire	Rob

Pugliese	Roger
CRABTREE	ROY
Hudson	Rusty
poland	steve
Cross	Tiffanie
Park	William